

**PROGRAM FOR ENVIRONMENT
PROTECTION AND REHABILITATION (PEPR)**

EXTRACTIVE MINERALS LEASE 5331, 5864 and 6449

TOOPERANG SAND QUARRY

Section 257 Hundred of Nangkita

LEASE HOLDER

Mr. Mark Steen Meyer & Patricia Anne Meyer
P.O. Box 16 Ashbourne. S.A. 5157

MINE OPERATOR

Visy Sand Quarry Pty. Ltd.

CONTACT DETAILS

Mr. Mark Steen Meyer
P.O. Box 16 Ashbourne. S.A. 5157

Mobile:

0408 366006

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1. DESCRIPTION OF THE ENVIRONMENT

There has been no change to the environment since the Mining Lease Proposal was submitted in January 2014.

2. DESCRIPTION OF THE PROPOSED MINING OPERATIONS

2.1 General Description and Maps of the Operations

There are several farms surrounding the Tooperang Sand Quarry. The land is zoned for general farming which does not preclude mining. The aim of this program is to mine the resource for the next 60 to 70 years in such a manner to ensure supplies of resources and that the rehabilitation is able to be intergraded and harmonise with the general, natural contours of the surrounding topography.

The operator is currently mining the resource in EML 5331, and this will continue until the resource is exhausted. To achieve this, the direction of quarrying will be turned in a south-easterly direction following the same resource into EML 5864, which is behind EML 5331.

The operator shall mine progressively in a north-westerly direction (from ML 5331), shown as stages 1-5 on Figure 9, whilst mining concurrently in stages 6-9 in order to blend coarser sands within stages 1-5 with the more clay-rich resource in stages 6-9. The concurrent mining will produce a more suitable material for processing. Stages 1 & 6 will be mined concurrently, followed by stages 2 & 7, then stages 3 & 8 etc.

The method implemented to quarry the sand will be to cut across the layers in the sand deposit and push the sand down a long batter with a Bulldozer. The blend required to run the sand washing plant needs to be consistent at all times.

The mining activities are kept 2 metres above the water table.

The topsoil, subsoil and overburden will be removed and stockpiled for future rehabilitation. Some overburden is used to conceal the operation on the tenement boundaries when required.

The slimes from the sand washing plant are pumped into various silt dams on the tenement. Refer to Existing Conditions Plan, Drawing Number 1, Drawing 2974MN01.

The slimes in the dams are left to dry before a second layer of slimes is pumped in. The slime dams are cleaned out so that they can be re-used. When the slime dams are no longer needed, they are covered with overburden, then topsoil and then sown to permanent pasture.

The following nine (9) plans are included:

- Existing Conditions Plan.
- Existing Conditions Plan “Enlargement” of the Operation.
- Existing Conditions Plan
- “Cross Sections” of the Operation.
- Proposed New Access Road Plan.
- Working Plan.
- Working And Conceptual Surface Plan.
- Conceptual Closure Plan.
- Conceptual Closure Cross Sections.
- Indicative PEPR Staging Plan

2.2 Reserves and Products

2.2.1 Geological Environment

The south-eastern corner of EML 5331 contains outcropping of Cambrian metasediments consisting of predominantly phyllites and metasandstones.

These basement rocks have been deeply eroded by west-northwest trending, Permian glacial channels. The erosional boundary created valleys ranging in slope from about 30 degrees to almost vertical on the south wall of the old Council quarry.

Permian fluvio-glacial sediments have infilled the glacial valley with coarse gravels and sand close to the bedrock contact.

The main glacial channel which is at least 200 metres wide, trends west-northwest and continues in that direction onwards from the western Lease boundary of EML 5864.

Test holes have been dug by the operator to determine the next stage of development on the southern side of EML 5331 and into EML 5864.

Additional test holes will be dug, and drilling will be undertaken as the quarry develops.

The sediments vary from 10% to 30% clay content. The sand is mined with an average clay content of approximately 17%.

2.2.2 Reserves and Resources

The reserves over part of the tenement are estimated to be up to 4 million tonnes. Proved reserves for the current expansion amount to 1 million tonnes including the glass sand located in close proximity to the existing Lease and a bit beyond to the south. Further drilling may be warranted at a later date to justify expansion to the east and west. Drilling carried out pre EML 5331 in the 1990's indicates a fine, coarse quality sand ideal for the construction industry.

Existing cross sections drawn from the development of EML 5331 show that most of the extractive sand and gravels are situated at lower elevations slightly north and west of the current operation.

Test holes were recently dug in the proposed development area southwest into EML 5864. This revealed fine sand to 3 metres, medium sand from 3-5 metres and coarse sand from 5 metres and beyond. Refer to Working Plan, Drawing Number 5, Drawing 2974MN01, for future expansion of the operation and probable reserves.

2.2.3 Production rate and Product

The yield per year is expected to continue at between 150,000 to 200,000 tonnes per annum. The filling, blending and concrete sand fall within the typical needs for Adelaide's construction market with a fineness modulus greater than 1.8 and less than 2.5. (Ref: P. Johnson – Geologist 1990).

Some gravel and pebbles are also sold. From 2012 products such as "frac sand" for the mining industry, filter sand, horticultural sand for nursery work, foundry and glass sand will be sold. The tenement holder has endorsement to sell sand for a prescribed purpose (foundry/glass sand on EML 5331 and 5864 but not EML 6449).

Mine life will be approximately 33 years based on the known proven resource. The area marked as Probable Reserves on site plan Existing Conditions Plan, Drawing Number 1, Drawing 2974MN01 will be drilled to prove the resource there and this will extend the quarry life.

2.3 Mining Plan

2.3.1 Type of Mining Operation to be carried out

The quarry was established in the 1960's by the local Council. The evidence is on the eastern end of EML 5331.

The methodology of mining at present will remain the same now and for the future.

2.3.2 Sequence of Mining and Rehabilitation Operations

This operation will be mainly sand, with a limited amount of gravel. Some remedial work will be carried out where possible. The surface will be left even and slightly undulated with gentle batters to blend in with the surrounding topography. Refer to Working Plan, Drawing Number 5, Drawing 2974MN01.

Sequence of Mining

The operator shall mine progressively in a north-westerly direction (from ML 5331), shown as stages 1-5 on Figure 9, whilst mining concurrently in stages 6-9 in order to blend coarser sands within stages 1-5 with the more clay-rich resource in stages 6-9. The concurrent mining will produce a more suitable material for processing. Stages 1 & 6 will be mined concurrently, followed by stages 2 & 7, then stages 3 & 8 etc.

After the concurrent mining within stages 1-9, as shown on Figure 9, continued mining from stage 10 onwards will be in a south-easterly direction into EML 5864. Refer to Working Plan, Drawing Number 5, Drawing 2974MN01, and Figure 9.

The withdrawal of MC 4338 outside the north-western corner of EML 5331 will be rehabilitated, planted with trees and sown to permanent pasture during 2016 and 2017 at the operator's expense.

The concurrent mining stages will require a big enough operating area to maintain a sand blend with a maximum of 17% of clay content.

The direction of site expansion after the proposed ten stages (see Figure 9) are worked out will depend very much on market demand. It is proposed to work all the tenements as shown on the working plan and the conceptual mine closure plan.

Mining Operations Method

The topsoil and subsoil will be removed to expose the sand. The topsoil and subsoil will be pushed into long windrows and placed on the perimeter of the working area by a bulldozer/loader. The topsoil and subsoil will be managed for weeds and erosion whilst stockpiled before returning in the same as stripped for rehabilitation.

Progressive rehabilitation is limited at this point of time as the material mined is pushed down on a long, gentle batter to achieve the necessary blend of product to be washed. As each stage is worked the material is pushed into the previous worked out stage ready for loading and hauling to the plant. At all times a clean area needs to be maintained on the quarry floor to minimise contamination of the mined product.

A bulldozer is used to mine the sand. It will push the sand from the surface down the long slope

in a low profile gradient usually 20 – 30 degrees, following on from the existing slopes within the Lease. This method of mining will establish the final terminal batters. An excavator will be used if benches are required for drainage and accessing the resource.

The northern side of each mined out stage can be progressively rehabilitated from the top to three quarter way down the slope, leaving a bund wall near the bottom to hold loose material and minimise contamination of the mined product.

The southern side of each mined out stage will also be progressively rehabilitated in the same format as the northern side.

Water used in producing concrete and glass sand is recycled using a clarifier before entering into a series of catchment dams to settle. Each dam is treated differently, pending the location.

The operational dams are generally cleaned out annually by using a long arm excavator. The clay is stacked on the perimeter of the dam where it is left to dry. Once the clay is semi-dried it is loaded and carted and used for backfilling in worked out areas in the pit.

The dams constructed within the pit are left to settle, excess water is drained off, once semi-dried another layer of clay is pumped in and again left to dry. Once these dams reach near full level they are covered with overburden, topsoiled and sown to permanent pasture.

Sequence of Rehabilitation

Terminal batters will be formed automatically as the pit is worked to the perimeter of the staged mining plan. It is proposed to change direction of mining, from where the operation is at present, in a south-easterly direction and in behind the old workings. The older parts of the quarry site will be progressively incorporated into the rehabilitation process with backfilling some faces, where possible, and forming final batters.

It is anticipated that in 2016 and 2017 that a portion of the western working face will be covered with topsoil and sown to pasture. This is only a temporary measure to reduce the visual impact from Bull Creek Road. At some stage, in years to come, the topsoil and pasture will be removed, and mining will be undertaken.

Progressive rehabilitation is at present being undertaken on an area between cross sections “B-B” and “C-C”. Refer to Existing Conditions Plan “Enlargement” Drawing Number 2, Drawing 2974MN01, which shows the proposed temporary rehabilitation and the rehabilitation undertaken at the present time. At present, the full silt dams are being covered with overburden, topsoiled and sown to permanent pasture. The slope angles are from near flat on the top of the hill. The downward slope will vary between 12 to 14 degrees. It is anticipated that this section of rehabilitation will be completed by 2018.

The triangle outside the north-western corner of EML 5331 (Ex Mineral Claim 4388) will be rehabilitated by the operator. The rehabilitated area will be top-dressed with topsoil, final trimmed and seeded to permanent pasture suitable for this area.

Remedial work and progressive rehabilitation will be undertaken continuously throughout the life of this mine.

Due to the topography of this tenement no screen planting will reduce the visual impact of this operation from Bull Creek Road. Progressive rehabilitation will keep exposure of this mine to a minimum in years to come.

Due to the high clay content in the sand mined silt is a continuous problem. There are dams spread over the main workings of EML 5331. The mine operator has worked out a system to manage the silt as the sand is mined. Refer to Schematic Rehabilitation Section, on Conceptual Closure Plan, Drawing Number 8, Progressive Rehabilitation design method using dried silt and overburden. The methodology shown on the Drawing is a typical way of burying the silt clay and restoring the land for grazing.

2.4 Mine Completion

2.4.1 Description of Mine Site Completion

It is envisaged that all the final batters will be created over the mine life by the methodology implemented in the method of mining the resource over these tenements.

The present topography of a high hill will ultimately be lowered and re-formed into a large dish-like depression at the end of mining. Most of the re-shaping will occur during the mining under the proposed mining and rehabilitation sequence. A 0.5 metre high bund wall will be constructed on the perimeter of the top slope to stop water from draining over the face thus minimising erosion.

The site will be physically stable with no risk of erosion or slumping as nominal compaction will be carried out during the progressive rehabilitation and re-establishment of the pasture as a complete surface cover. The gradient of the slopes will be between 15 and 20 degrees and the floor generally flat to enable agricultural machinery to traverse the slopes. The floor area will be left with a gentle slope and drainage patterns will be reinstated to marry in with natural catchments and depressions.

The slopes and floor area of the excavations will be shallow ripped to a depth of 200 – 300mm, 2 metres apart, parallel to the slopes before covering with subsoil and topsoil and then sown to permanent pasture.

The shallow catchment and holding dams will be cleaned of any silt. The silt will be left to dry and then mixed with interburden and overburden and then used for backfilling when rehabilitation takes place. Refer to Schematic Rehabilitation Section. The shell like structures that remain when the dams are emptied will form a gentle depression. These depressions will be topsoiled and sown to permanent pasture and allowed to develop naturally into a wildlife zone and catchment area. No mine dams will remain on the site at closure.

Decommissioning will require the removal of any fixed plant, sheds outbuildings, machinery, screening plant, fuel tanks and a general clean-up of the immediate areas.

Any mining infrastructure that remains on the site will become the responsibility of the landowner.

2.5 Mining Operations

2.5.1 Modes and Hours of Operation

At present the mine is worked 8-9 hours per day. If market demands, this will be extended to 12 hours per day. The sand washing plant operates from 6.30am to 7.00pm. As demand for product increases the sand washing plant will need to work until 10.00pm. Hours of operation on this site will be from 6.00am to 10.00pm, 6 days per week, Monday to Saturday.

Activity	Hours of Operation
Extraction, Rehabilitation work	6.30am to 7.00pm
Processing	6.30am to 10.00pm
Maintenance	6.00am to 10.00pm
Truck Loading	6.00am to 8.00pm

2.5.2 Use of Explosives

Explosives will not be used on this site

2.5.3 Type of Equipment

Type	Size	Number of Units
CAT D8L Bulldozer	12m ³ blade	1
Komatsu 250Z Wheel Loader	2.5m ³ bucket	1
Doosan 250 Wheel Loader	2.5m ³ to 3m ³ bucket	1
Doosan 450 Wheel Loader	4m ³ bucket	1
Sumitomo 22 tonne Excavator	Long reach with 0.5m ³ bucket	2
Samsung 280 Excavator	28 tonne 1.5m ³ bucket	1
Komatsu 30 Artic. Dump Truck	30 Tonne capacity	1
John Deere 2030 Tractor	60hp Grader & Slasher	1
Trailer 6x4	Fire fighting	1
Trailer 8x5	With generator set and 600 litre diesel fuel tank	1
Generator set	18 KVA	2

2.6 Stockpiles

Product stockpiles with several different products from 1,000 to 3,000 cubic metres and approximately 4 metres high are located near the sand washing plant on EML 5331.

There will be no stockpiles outside the main pit area other than topsoil and subsoil. Topsoil and subsoil will be stored in windrows along the perimeter of the workings and will be used for rehabilitation and screening when required.

The topsoil and subsoil will be stored in long rounded mounds and will be no more than 2.4 metres in height and will be sown to permanent pasture thus preventing wind and water erosion.

Ongoing stripping of topsoil and subsoil will be carried out progressively ahead of the mining program from the existing quarry and the proposed site development. These stockpiles will be placed on the perimeter of the pit in such a manner that they are not disturbed during mining.

From time to time some product stockpiles will be retained on the quarry floor in the old workings, however the intention is to minimise stockpile numbers and size so that the material is not double handled.

All stockpiles of topsoil, subsoil and interburden/overburden will be kept separate at all times.

2.7 Processing and Product Transport

2.7.1 Fixed Plant

There are two sand washing plants on the site. The original sand washing plant is located in what used to be the Council quarry in the eastern end of EML 5331. The production of this plant 40 tonne per hour and is only used periodically for the production of frac-sand.

The new sand washing plant is located towards the western end of EML 5331. The production of this plant is 100 tonne per hour. From the 100 tonne, 50 tonne is glass sand, 30 tonne is concrete sand, and the remaining is waste. These figures can vary pending on the raw feed.

Refer to Appendix for a comprehensive description of the main sand washing plant. **This information is to be kept strictly confidential.**

2.7.2 Type of Mobile Plant and Equipment

A mobile plant is not required for the processing of product on this site. All the products are fed through the sand washing plants on EML 5331.

2.7.3 Hours of Operation

Hours of operation on this site will be from 6.00am to 10.00pm, 6 days per week, Monday to Saturday. The sand washing plant operates from 6.30am to 7.00pm. As demand for product increases the sand washing plant will need to work until 10.00pm.

2.8 Wastes

2.8.1 Overburden

Some overburden will be produced as the deposit is uncovered to expose the sand source. The overburden consists mainly of topsoil, subsoil and some cover clays. Overburden will remain in the pit area until it is needed for backfilling when rehabilitation work is carried out. No overburden will be stockpiled or dumped on undisturbed areas on the tenement.

The topsoil and subsoil will be stockpiled around the perimeter of the workings until needed for final rehabilitation.

2.8.2 Processing Waste

The waste produced is in the form of silt clay from the sand washing plants. The silt clay is pumped into various dams across the tenement to dry before a second layer is pumped in. Other dams are kept to semi-dry before a long armed excavator is engaged to pull the semi-dried clay out and stockpile it on the perimeter of the dams to dry further. Once dry enough it is carted away and used for backfilling old dry dams and backfilling worked out areas in the pit.

The use of chemicals on site is restricted to the utilization of a biodegradable flocculent used in the sand drying efficiency process. Type used: BASF Microflox 1090; used by way of sachets (powdered form) of approximately 20kg. per day.

The chemicals used, such as flocculants is retained in dumped silt clay so therefore there will be no disposal issues. The operator generally holds no more than one month's supply of flocculants on site at any one time. As the flocculants are biodegradable there will be no impact on groundwater recharge.

2.8.3 Industrial and Domestic Wastes

Industrial waste produced from maintenance and servicing of equipment will be removed from site.

Broken down equipment will not be left on site for any length of time. Machinery parts such as screens, tyres and drums will be removed and recycled through a recycling centre.

A management plan will be implemented in the event of spills and all waste will be disposed of as per EPA standards.

2.8.4 Silt Control and Drainage

The undulation of the haul road towards the entrance gate into EML 5331 rises slightly upwards for a few metres then into a depression which means that no water or silt can leave the site. The elevation of the main silt retention dam in the old quarry is approximately 1.5 metres below the drainage level at the entrance to the quarry. Refer to Existing Conditions Plan, Drawing Number 2, Drawing 2974MN01. (WL stands for water level at the time of surveying.)

The runoff from the access road and other areas will be retained by bund walls/screening mounds and diverted into the silt retention dam in the north-eastern corner of EML 5331.

The surface runoff water over the disturbed areas external to the direct excavation will be directed into the existing excavation where it is harvested and used through the sand washing plants.

The silt retention dam in the north-eastern corner will pick up all the runoff from a portion of the quarry floor and stockholding areas.

The silt dam in the north-eastern corner of EML 5331 and EML 6449, south of the access road, is dry and at this stage not rehabilitated. The runoff from the remaining part of EML 5331 is retained within the tenement.

The runoff from any of the rehabilitated areas is retained within the operating EML 5331.

The haul road rises up from Quarry Road for approximately 30 metres then levels out, then goes into a depression and then rises again to the main sand washing plant. Runoff from this section of the haul road drains into the main silt dam.

Once the new entrance to the quarry has been approved and constructed a wombat crossing will be constructed across the present quarry entrance. This entry-exit will only be used in emergencies.

2.9 Supporting Surface Infrastructure

2.9.1 Access

Access to the site is via Quarry Road, which is accessed from Alexandrina Road. Since the previous approval, the site access point has been relocated approximately 500 metres east along Quarry Road, in accordance with the outcomes of stakeholder consultation described in Section 3 of this document.

The relocated access utilises a sealed section of Quarry Road, providing improved all-weather access to the site. The current site entry is located at 9–119 Quarry Road, Tooperang SA 5255 (coordinates: -35.396870, 138.759644).

2.9.2 Accommodation and Offices

The office facility and lunchroom is located near the new sand washing plant. There is also a transport office located in the old quarry.

The carpark is located east of the office near the main sand washing plant.

2.9.3 Public Roads, Services and Utilities used by the Operation

On any given day the truck movements could be between two to twenty four. This is made up of Trucks and Semi-trailers. The number of trucks required will vary depending on product requirements and cartage distance.

The access road to the site is via Quarry Road, Deep Creek Road and Bull Creek Road. Quarry Road and Deep Creek Road are unsealed Council roads which are maintained to the property boundary by the District Council of Alexandrina.

The only services to the site are mains power and landline telephone. Mobile telephones are used for communications.

UHF radios are used for communication between the earthmoving equipment and trucks.

The site has two diesel fuel tanks. Oil and other maintenance components are also stored on site, some in the storage sheds and others in the open.

Water used on the site is drawn from a metered well which is located southwest of the main sand washing plant. The meter is quarterly read by the operator. The water allocation covers surface water and water from the well.

2.9.4 Visual Screening and Site Security

The configuration of this operation means that screening the open cut area from distant views is not possible, however new screening measures have been undertaken to screen the operation from nearby residents on Quarry Road.

Reducing the visual impact is an ongoing program and will continue as need arises as the open cut area expands across the landscape. Future expansion of the quarry will see areas undergoing rehabilitation when it is practical to rehabilitate worked out areas.

The site is fenced with a locked gate at the entrance on Quarry Road and has additional security with sensors and cameras. The property is also used by the landowner for primary production purposes, mainly cattle grazing.

2.10 Water Use

Water is obtained from rainfall runoff which collects into dams and depressions and from the metered well located on EML 5331. All used water is recycled into holding dams on EML 5331. Approximately 400,000 litres are used and recycled each week. Approximately 100,000 litres of additional water will be required for the expansion of this operation for dust suppression on internal roads which will be sourced from a well that is covered by a licence. Licence Number 11953.

3. RESULTS OF CONSULTATION

The entry point from Quarry Road onto Alexandrina Road needs to be upgraded to a standard that will accommodate B-Double Trucks. Council to negotiate with other Government Agencies.

A new internal access road will be constructed over a dry silt dam, around established vegetation in the north-eastern corner of EML 5331. This internal access road will run parallel to Quarry Road. There is no native vegetation growing on the road shoulders where the proposed new road enters Quarry Road.

Concurrent mining operations are proposed both in a north-westerly direction (from ML 5331), shown as stages 1-5 on Figure 9, whilst mining concurrently in stages 6-9. Sand resource in the areas shown as stages 6-9 contain a higher silt and clay fraction, confirmed by drilling results, which can be problematic for sand washing operations and sedimentation dam loading. Coarser, more suitable, and commercially viable sand exists within stages 1-5 which the quarry operator proposes to blend with the more clay-rich resource in stages 6-9 to produce a suitable material for processing. The proposed temporary concurrent mining was discussed with the immediate community impacted by the proposed mining operation in stages 1-5 with outcomes provided to DEM. The quarry operator will continue to consult with the community and have provided contact details to enable the community to contact the Quarry Manager directly for any reason.

Strategies proposed to manage potential impacts are incorporated into the exiting operational procedures and PEPR. Environmental outcomes including air quality, noise, public safety, traffic etc., detailed in Section 4 shall be maintained.

4. Environmental Outcomes

4.1 Air Quality

Control and Management Strategies:

The Tenement Holder will carry out progressive rehabilitation and stabilization of disturbed areas throughout the life of the mine to control dust emissions generated by wind erosion.

Plan the stripping of topsoil and overburden to take advantage of favourable weather conditions. Seed topsoil stockpiles.

Check visually at regular intervals on total fire ban days with dry winds and weather conditions to demonstrate a low level of visible dust leaving the site.

Establish access roads with a hard gravel surface.

Water trucks will be used to suppress dust when the product is being mined and hauled from site. Road trucks will be tarped before leaving the site.

Criteria: Mine records demonstrate that all dust related complaints are acknowledged within 48 hours and closed out within 7 days to the satisfaction of the complainant or as agreed with the Regulator.

If complaints are not resolved the operator will conduct dust monitoring to demonstrate dust emissions comply with outcome achievement values.

Proposed Outcome (s): The Tenement Holder must ensure that there are no public health and public nuisance impacts from air emissions and dust generated by

mining operations.

4.1.2 Noise

Control and Management Strategies:

The generator running the main plant is housed in a sound proof shed.

Keep haul road grades to a minimum where possible at all times. Keep haul roads well maintained. This will reduce vibration and noise.

The equipment will be fitted with appropriate manufacturer's recommended silencing equipment for exhaust systems.

Equipment will be maintained to ensure that there are no loose components that could initiate noise.

The screening mound planted with native vegetation running parallel to Quarry Road on the northern side of EML 5331 should significantly reduce any noise emanating from the operation.

Criteria: Mine records demonstrate that all noise related complaints are acknowledged within 48 hours and closed out within 7 days to the satisfaction of the complainant or as agreed with the Regulator.

If complaints are not resolved noise monitoring will be conducted in accordance with Part 3 of the Environmental Protection (Noise) Policy 2007 to demonstrate noise emissions comply with Part 5 – Indicative noise levels of 57dbA during the day and 50dbA during night.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease,
ensure that there are no public nuisance impacts from noise emanating from the land.

4.1.3 Public Safety

Control and Management Strategies:

All operators understand the danger of large trucks entering public roads and drivers will obey all applicable road rules.

The site is well fenced on the perimeter of the tenement boundaries with additional internal fencing.

The access gate off Quarry Road is locked outside operating hours.

Criteria: All public injuries and/or deaths resulting from unauthorized access to the mine site are recorded and investigated by a suitably qualified third party within 14 days (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the public injuries and/or deaths could not have been reasonably prevented by the Tenement Holder.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease,
ensure that unauthorized entry to the site does not result in public injuries and or deaths that could have been reasonably prevented.

4.1.4 Traffic

Control and Management Strategies:

It is envisaged that drag out will not be a problem when the internal haul road is extended.

All operators understand the dangers of large trucks entering public roads and drivers will obey all applicable road rules.

The access gate to the tenement will be locked outside operating hours.

Criteria: Noise;

Continuous site entry and exit records show heavy vehicle entry to and exit from the site 6.00am to 8.00pm Monday – Saturday. Heavy vehicle entry to and exit from the mine to be no more than 15 between 6.00am to 7.30am Monday – Saturday.

Dust;

Records will show all product trucks leaving the site are covered.

Dragout;

Daily inspection will confirm the following:

- Road markings are visible;
- No interference with drainage;
- Dragout not to exceed 10m² on road curves or >20m length of edge line.

If an exceedance of any above parameters road will be cleaned by Tenement Holder.

All traffic accidents involving the public at mine access points are recorded in mine log book. All incidents will be investigated by a suitable qualified independent third party within one calendar month (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the incident could not have been reasonably prevented by the Tenement Holder.

Proposed Outcome (s): 1. The Tenement Holder must, in construction and operation, ensure that no public impacts off the Land are caused by, noise, dust and/or dragout to and from the Land associated with mine related traffic.

2. The Tenement Holder must, in constructing and operating this Mineral Lease, ensure that there are no traffic accidents involving the public at mine access points that could have been reasonably prevented by the Tenement Holder.

4.1.5 Aboriginal and European Heritage Control and Management Strategies:

It is understood by employees operating on the site that under section 23 of the Aboriginal Heritage Act 1988 it is an offence to damage, disturb or interfere with any Aboriginal sites, objects and remains whether these have been entered on the Register of Aboriginal and objects or not.

During stripping of the topsoil, subsoil and mining care will be taken to inspect the materials for any evidence of Aboriginal objects or remains. If objects are exposed, work will cease and the Chief Inspector of Mines and the Department of Environment and Heritage and other appropriate authorities will be notified.

Criteria: Production records and Mine Logbook will demonstrate that upon discovery within the Leases of any possible:
 -Aboriginal sites;
 -Objects;
 -Remains;
 -European sites of significance;
 that work ceased until the relevant authorities were notified and work recommenced only once authorization was received.

Proposed Outcome (s): The Tenement Holder must, in construction and operation, ensure that there is no disturbance to Aboriginal or European heritage sites, objects or remains unless prior approval under the relevant legislation is obtained.

4.1.6 Native Vegetation

Control and Management Strategies:

The operator in consultation with the landowner has planted more than 1,000 trees and shrubs on the screening mound which runs parallel to Quarry Road and in and around the present operation. Habitat offsets are already established by rehabilitating progressively once a portion of the quarry has been exhausted and it is practical to commence. Future clearing of vegetation within the mine area will be some 10 to 15 years away and will comply with SEB requirements under the Native Vegetation Act 1991 (SA) and Regulation 14 of Division 5 of the Native Vegetation Regulations 2017 (SA).

Scattered Trees Within The Mine Area Summary table of trees to be removed

Tree No.	Easting	Northing	Replacement area required in hectares	Payment to NV Fund through DSD
1	295308	6881137	0.072	\$503.14
2	295327	6081057	0.005	\$ 34.83
3	295336	6081005	0.091	\$635.33
4	295358	6080967	0.097	\$677.82
5	295362	6080936	0.097	\$677.82
6	295351	6080900	0.098	\$684.55
7	295599	6080598	0.16	\$1,117.23
8	295673	6080602	0.064	\$447.01
9	295779	6080426	0.064	\$447.01
10	295794	6080600	0.039	\$272.30
11	295861	6080620	0.103	\$719.57
12	295985	6080555	0.097	\$677.82

Native vegetation clearance of 0.1495 ha and 4 scattered trees was required and approved for construction of the internal access road linking the site to the council-asphalted section of Quarry Road. Clearance was assessed by a NVC Accredited Consultant (Ecological Associates Pty Ltd) and approved under Regulation 14 of Division 5 of the *Native Vegetation Regulations 2017* (SA). The SEB obligation was discharged by payment into the Native Vegetation Fund. Payment amount (including administration fee): \$ 13,303.61. No further clearance will be required for this road. The internal access road does not facilitate any additional mining activities or native vegetation clearance beyond existing approvals.

Clearance Area(s) Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1	6	1	0.04	0.1	41.26	0.0445	1.84	1			2.02	\$1,930.50	\$106.18
A	2	9	1	0.04	0	30.53	0.105	3.21	1			3.53	3,328.45	183.06
Total							0.1495	5.05				5.55	\$5,258.95	\$289.24

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB payment	Admin Fee	Total SEB Payment
1	1	1.8	0	0.6	1	0.66			\$662.17
2	1	1.8	0	2.23	1	2.45			\$2,458.06
3	1	1.8	0	2.26	1	2.49			\$2,498.19
4	1	1.8	0	1.94	1	2.13			\$2,137.01
Total	4			7.03		7.73	\$7,351.11	\$404.31	\$7,755.43

Totals summary table

Economies of Scale Factor	0.5	SEB Uplift Factor	1.10
Rainfall (mm) Factor	524		
SEB Points of Gain/ha Factor	7	Management Cost (\$/ha)	\$25,408.00

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	12.08	13.28	\$12,610.06	\$693.55	\$13,303.61

Criteria: Annual site survey and photographic evidence demonstrates native vegetation on the tenement is being managed in accordance with the approved SEB conditions and the outcomes of the vegetation assessment undertaken for the site.

Compliance with native vegetation clearance approval for the internal access road is demonstrated by reference to the assessment at Page 54 of this document: *Native Vegetation Clearance, Tooperang Sand Quarry, Internal Road Construction, Clearance under the Native Vegetation Regulations 2017*, 12 March 2026, prepared by Renate Faast and Marcus Cooling, Ecological Associates Pty Ltd (Report Ref. GY001-1).

Proposed Outcome (s): The Tenement Holder must, in construction and operation, ensure no loss abundance or diversity of native vegetation on or off the Land through clearance, dust/contaminant deposition, fire or other damage unless prior approval under the relevant legislation is obtained.

4.1.7 Weeds, Pests and Pathogens Control and Management Strategies:

The Leases will be operating in such a manner that will minimise the spread of weeds and plant pathogens and ensure that all employees on the site are fully aware of the requirements.

Implement vehicle and equipment wash down procedure to site. This will minimise risk of weed infestation.

Maintain well defined access tracks, thus minimising the spread of weeds.

All vehicles, including visitors, confined to access tracks which being more compact are less susceptible to weed germination. Tracks will be monitored for weed introduction, if found, they will be eradicated by spraying.

The landowner will be responsible for managing the weeds and controlling the pests on the site.

Stockpiled topsoil will be sprayed and kept free from declared weeds. Use and adjust spray equipment to produce larger spray droplets that do not drift easily. Consult the neighbours before spraying as this can prevent misunderstanding and unnecessary conflict.

During the site inspection no feral animals were seen, however pests will be controlled in the same manner as the surrounding grazing land.

Criteria: Records of annual inspections (in Spring) by the Tenement Holder will demonstrate no introduction of new weeds or pests and no increased abundance of existing weeds and/or pests.

Proposed Outcome (s): The Tenement Holder must, in construction and operation ensure no introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or pest species in the Land compared to adjoining land.

4.1.8 Soil

Control and Management Strategies:

Stripping of the topsoil and subsoil will be carried out using a Bulldozer or an Excavator. The topsoil stockpiles will be sown to permanent pasture prior to the onset of "reliable" rainfall. This will minimise wind and water erosion occurring.

Stockpiled topsoil will be sprayed and kept free of declared weeds.

To ensure that the spreading of the topsoil is at the same depth as it was stripped.

Spreading of the topsoil will only be carried out in conjunction with rehabilitating final batters or worked out areas prior to the autumn rains so that areas can be seeded and fertilized, thus minimising soil erosion.

Ensure that appropriate clean up measures are taken from any accidental spillage. The fuel storage tanks will be bunded on all sides and hold 20% above volume stored.

Criteria: Annual photographic monitoring and records kept by the operator will demonstrate that the soil management has been carried out as per control strategies.

Proposed Outcome (s): The Tenement Holder must, constructing and operating the Lease ensure that the existing (pre-mining) soil quality and quantity is maintained.

4.1.9 Waste

Control and Management Strategies:

Waste from servicing of equipment, such as oil, filters and other wear parts will be collected in containers and taken away by a service truck or collected in containers and disposed through an approved disposal facility.

Ensure that appropriate clean up measures are taken for any accidental spillage.

Keep access to the site locked outside working hours to minimise outsiders dumping waste materials.

Criteria: Keep records of any incidents (i.e., spillage) and receipts of waste disposal to show that collected waste was managed as specified by the Environmental Protection Authority requirements.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease,
ensure that all commercial or industrial waste is disposed of in accordance with relevant legislation.

4.1.10 Groundwater

Control and Management Strategies:

The water table in the well on EML 5331 was measured at 66m AHD so mining will be 2 metres above this level. The water table rises to the southwest 20 metres in 400 metres.

Water is drawn from a metered well in EML 5331, south of the main sand washing plant.

The operator must ensure that all refuelling occurs within a bunded area in accordance with Environment Protection Authority requirements.

The operator must ensure that no mining within 2 metres of the highest seasonal groundwater table.

Criteria: Quarterly inspections and measurements of the pit floor and well by the operator will confirm that they are operating 2 metres above the highest seasonal groundwater table and that there is no adverse impact to the quality of groundwater.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease
 ensure that there is no adverse impact to the quality and quantity of groundwater caused by mining operations to existing users and water dependent ecosystems.

4.1.11 Surface Water

Control and Management Strategies:

Existing surface drainage patterns will be altered to allow natural movements of surface water captured within the quarry to percolate through the floor.

The topography of the operation means that the internal runoff will be retained easily in both the new and old workings. If an above rainfall event occurs, it would be impossible to exceed the holding capacity of the workings.

All unopened areas will be retained in current contour formation with vegetation cover.

A small mound will be created near the quarry entrance to capture water runoff and divert the water into the silt retention dam on the northern side of the access road.

The site drainage from the excavations, where possible, will be retained within the Leases.

Maintain internal drainage within the mine site area. A small earth mound (wombat crossing) will be constructed at the quarry entrance. This will stop any discharge of surface water leaving the site.

Criteria: Following rainfall of 50mm or greater photographic records will be taken by the operator to demonstrate that all surface water runoff is retained within the sediment basins or the pit.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease,
 ensure that no water contaminated as a result of mining operations leaves the mine.

4.1.12 Mine Closure

Outcome	Criteria	Control Strategies
Integrate and Harmonize final Landforms and vegetation with the surrounding topography.	Plans, aerial and ground photos and inspections show evidence of achieving final gradients of 18 degrees which blend with surrounding area and are satisfactory to the landowner.	Stay within approved design parameters with gradients no greater than 18 degrees.

Outcome	Criteria	Control Strategies
<p>The risk to health and safety of the public, native fauna and livestock are as low as reasonably practical.</p>	<p>Plans, aerial and ground photos and inspections show evidence of achieving final slope angle of 18 degrees with no likelihood of entrapment for the public, fauna or livestock.</p>	<p>No entrapment areas will be created on the steep faces on the perimeter of the workings.</p> <p>The perimeter of the mine will be backfilled in layers. This will minimise slumping.</p> <p>Annual inspection by the operator and consultation with the landowner.</p>
<p>Ensure the site is ecologically stable.</p>	<p>Photographic records will show all final landforms to have pasture, and or cropping that is suitable for grazing.</p> <p>Inspections will be carried out in summer and autumn for a maximum of two years from final rehabilitation to show that declared weeds are controlled and the land is managed to pre-mining or better.</p>	<p>Records and photos show rehabilitation is progressive and the land returned for farming as early as possible.</p>
<p>The site is physically stable</p>	<p>Photos and visual inspections show that the land is stable achieving final gradients of 18 degrees with no evidence of slumping or erosion.</p>	<p>Measure the slope angles to ensure they meet the design.</p> <p>Compaction to be carried out when backfilling the batters with overburden.</p> <p>A 0.5 metre high bund wall will be constructed on the perimeter of the top slope to stop water from draining over the face thus minimising erosion.</p> <p>Subsoil and topsoil will be spread over the completed constructed slopes.</p> <p>Permanent pasture with a cover crop will be sown after the first break in the season, thus minimising soil erosion.</p>

Outcome	Criteria	Control Strategies
No compromise of the quality and quantity of ground and or surface water to existing users and water dependent ecosystems.	Records and inspection will show two internal retention dams constructed with enough holding capacity to retain all runoff.	The internal retention dams will be designed and constructed with enough holding capacity to retain any runoff from the whole rehabilitated quarry.
No industrial or commercial waste left on site.	Inspection of the site by the quarry operator/landowner shows that all structures, fixed plant, if applicable, and consumables are removed before mine closure.	Records kept by the operator demonstrate all industrial and domestic waste has been disposed of in accordance with the South Australian Environmental Protection Act.
Where practical, pre-mining land use is re-established.	Photographic records will show all final landforms to have pasture, and or cropping that is suitable for grazing.	By compacting and backfilling the quarry slopes to 18 degrees, shallow ripping floor areas, covering with topsoil and sowing to permanent pasture.

4.1.13 Visual Amenity

Control and Management Strategies:

Monitor the native planting on the screening mound running parallel to Quarry Road. If plant loss occurs it will be replanted, thus retaining dense vegetation.

It is impossible to screen the upper section of the quarrying activities due to the elevation. It is proposed to carry out progressive rehabilitation on the upper western slope, although this rehabilitation will only be of a temporary measure for some years. Refer to Existing Conditions Plan, Drawing Number 1, Drawing 2974MN01.

The visual impact of the operation will improve by changing the direction of the operation in a south-easterly direction behind the existing workings which are being progressively rehabilitated, facing north. Concurrent mining within stages 1-5 and 6-9 will open a wider working area due to working two stages together. However, should the quality of the sand resource improve in stages 6-9, to such a degree that additional concurrent mining in stages 1-5 not be necessary, stage 1-5 mining shall cease. If the cessation of mining in stage 1-5 occurs, slopes will be made safe and trimmed in accordance with the existing PEPR, together with the placement temporary rehabilitation soils and revegetation. Final mining of the remainder of resource in stages 1-5 will be undertaken at an appropriate time in accordance with the existing PEPR staging.

Progressive rehabilitation carried out where possible and sown to permanent pasture.

Criteria: Annual photo monitoring will be undertaken by the operator from two vantage points on Bull Creek Road GPS location S35°23'39E and 138°41'51' and Deep Creek Road S35°23'51E and 138°41'48.

Proposed Outcome (s): The Tenement Holder must, in construction, operation and post mine completion, ensure that the form, contrasting aspect and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.

4.1.14 Protection of Third Party Property

Control and Management Strategies:

Maintain a four meter wide fire break on the perimeter of the tenements where practicable. No welding or grinding other than in cleared pit floor areas.

No welding or grinding on windy days of high fire risk.

All the employees understand the risk of fire on site and are aware of any potential ignition source.

Criteria: All fires resulting in damage to third party property i.e., houses, outbuildings and power poles will be investigated by a suitably qualified third party within 14 days (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the fire could not have been reasonably prevented by the Tenement Holder.

Proposed Outcome (s): The Tenement Holder must, in constructing and operating the Lease, ensure that there is no unauthorized damage (including that caused by fire) to adjacent public or private property and infrastructure.

5. OPERATOR COMPLIANCE MONITORING PLAN

Aspect	Outcome	Outcome Measurement Criteria	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
Air Quality	The Tenement Holder must ensure that there are no public health and public nuisance impacts from air emissions and dust generated by mining operations.	<p>Mine records demonstrate that all related complaints are acknowledged within 48 hours and closed out within 7 days to the satisfaction of the complainant or as agreed with the Regulator.</p> <p>If complaints are not resolved the operator will conduct dust monitoring to demonstrate dust emissions comply with outcome achievement values.</p>	<p>Complaints resolved within 7 days.</p> <p>Human Health: PM 10 dust concentration leaving the site is less NEPM Limit.</p> <p>Nuisance: Monthly averaged monitoring of dust deposition rates leaving the site show deposition rates do not exceed 4g/m²/month.</p>	<p>PM 10 concentration.</p> <p>Dust deposition.</p>	<p>Measurements will be collected on the perimeter of the Lease and comply with Australian standards.</p> <p>Measurement locations will be based on direction of sensitive receptor and climatic conditions.</p>	<p>Frequency of measurement should be as required by the regulator.</p> <p>By the Operator or Site Manager.</p>
Noise	The Tenement Holder must, in constructing and operating the Lease, ensure that there are no public nuisance impacts from noise emanating from the Land.	<p>Mine records demonstrate that all noise related complaints are acknowledged within 48 hours and closed out within 7 days to the satisfaction of the complainant or as agreed with the Regulator.</p> <p>If complaints are not resolved noise monitoring will be conducted in accordance with Part 3 of the Environmental protection (Noise) Policy 2007 to demonstrate noise emissions comply with Part 5 – Indicative noise levels of 57dbA during the day and 50dbA during the night.</p>	<p>Complaints resolved within 7 days.</p> <p>Indicative noise levels of 57dbA during the day and 50dbA during the night.</p>	Noise emanating from the tenements.	Measurements will be collected at the sensitive receptor	<p>Frequency of measurement should be as required by the regulator.</p> <p>By the Operator.</p>

Aspect	Outcome	Outcome Measurement Criteria	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
Public Safety	The Tenement Holder must, in constructing and operating the Lease, ensure that unauthorized entry to the site does not result in public injuries and or deaths that could have been reasonably prevented.	All public injuries and/or deaths resulting from unauthorized access to the mine site are recorded and investigated by a suitably qualified third party within 14 days (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the public injuries and/or deaths could not have been reasonably prevented by the Tenement Holder.	All public injuries and/or deaths resulting from unauthorized access to the mine site are recorded and investigated by a suitably qualified third party within 14 days to show incident could not have been reasonably prevented by the tenement holder.	Tenement holders liability in regard to public injury or death.	Within the tenement	As required. Records and engagement of suitably qualified third party is the responsibility of the operator.
Traffic	1. The Tenement Holder must, in construction and operation, ensure that no public impacts off the Land are caused by, noise, dust and/or dragout to and from the land associated with mine related traffic.	Noise; 1. Continuous site entry and exit records show heavy vehicle entry to and from the site 6.00am to 8.00pm Monday – Saturday. Heavy vehicles entry to and exit from the mine to be no more than 15 between 6.00am to 7.30am Monday – Saturday.	Traffic movements as per measurement criteria.	Hours associated with traffic movements.	Site entrance/exit.	As required. By the Operator.
		Dust; Records will show all product trucks leaving the site are covered.	All trucks leaving the site are covered.	Covering of truck loads.	Truck load area.	Post truck loading. Operational staff.

Aspect	Outcome	Outcome Criteria	Measurement	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
		<p>Dragout; Daily inspections will confirm that road markings are visible, no interference with drainage and dragout not to exceed 10m2 on road curves or 20m length of edge line. If an exceedance of any above parameters road will be cleaned by the Tenement Holder.</p>		Road markings are visible, no interference with drainage and dragout not to exceed 10m2 on road curves or 20m length of edge line.	Visibility of road markings and amount of sediment build up on road surface.	Strathalbyn – Goolwa Road.	As required. By the Operator.
	<p>2. The Tenement Holder must, in constructing and operating this Mineral Lease, ensure that there are no traffic accidents involving the public at mine access points that could have been reasonably prevented by the Tenement Holder.</p>	<p>All traffic accidents involving the public at the mine access points are recorded in mine log book. All incidents will be investigated by a suitably qualified independent third party within one calendar month (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the incident could not have been reasonably prevented by the Tenement Holder.</p>		All traffic accidents involving the public at the mine access points are recorded and investigated by a suitably qualified third party within one calendar month to show that incident could not have been reasonably prevented by the Tenement Holder.	Tenement holders liability in regard to public injury or death.	Traffic movements entering a public road from the quarry.	As required. By the Operator

Aspect	Outcome	Outcome Criteria	Measurement	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement & Responsible Persons
Aboriginal and European Heritage	The Tenement Holder must, in construction and operation, ensure that there is no disturbance to Aboriginal or European heritage sites, objects or remains unless prior approval under the relevant legislation is obtained.	Production records and Mine Logbook will demonstrate that upon discovery within the Leases of any possible Aboriginal sites, objects, remains and European sites of significance that work ceased until the relevant authorities were notified and work recommenced only once authorization was received.		No disturbance to Aboriginal or European artifacts on the site. If any objects are found during the mining, mining will cease.	Production records to show that work ceased upon discovery and only recommenced when authorized.	Tenement.	As required. By the Operator.
Native Vegetation	The Tenement Holder must, in construction and operation, ensure no loss of abundance or diversity of native vegetation on or off the Land through clearance, dust/contaminant deposition, fire or other damage unless prior approval under the relevant legislation is obtained.	Annual site survey and photographic evidence demonstrates native vegetation on the tenement is being managed in accordance with the approved SEB conditions and the outcomes of the vegetation assessment undertaken for the site. Compliance with native vegetation clearance approval for the internal access road is demonstrated by reference to the assessment at Page 54 of this document: Native Vegetation Clearance, Tooperang Sand Quarry, Internal Road Construction, Clearance under the Native Vegetation Regulations 2017, 12 March 2026, prepared by Renate Faast and Marcus Cooling, Ecological Associates Pty Ltd (Report Ref. GY001-1).		Native vegetation to be cleared within the mine area is covered under the SEB. Refer to Working Plan, Drawing Number 5, Drawing 2974MN01. Native vegetation clearance associated with the internal access road (0.1495 ha, 4 scattered trees) is separately approved under Regulation 14 of Division 5 of the Native Vegetation Regulations 2017 (SA), with the SEB obligation discharged by payment into the Native Vegetation Fund. Refer to Page 41 of this document (Report Ref. GY001-1).	Annual site survey and photographic record demonstrating the condition and extent of native vegetation on the tenement.	Tenement area	Annually By the Operator.

Aspect	Outcome	Outcome Criteria	Measurement	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
Weeds, Pests and Pathogens	The Tenement Holder must, in construction and operation, ensure no introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or plant species in the Land compared to adjoining land.	Records of annual inspections (in Spring) by the Tenement Holder will demonstrate no introduction of new weeds or pests and no increased abundance of existing weeds and/or pests.		No introduction or increase in existing weeds, pests or plant pathogens on the Lease when compared with adjoining land.	Change in weeds and pests as compared to adjoining land.	Lease area and adjoining land.	Spring. By the Tenement Holder/Landowner.
Soil	The Tenement Holder must, in constructing and operating the Lease, ensure that the existing (pre-mining) soil quality and quantity is maintained.	Annual photographic monitoring and records kept by the operator will demonstrate that the soil management has been carried out as per control strategies.		Soil management has been carried out as per control strategies. All topsoil on the Leases, stripped ahead of mining, stockpiled and vegetated to prevent erosion and maintain productivity.	Plant growth of permanent pasture sown on the topsoil and subsoil mounds.	Site stockpiles of topsoil and subsoil as shown on Working Plan, Drawing Number 5, Drawing 2974MN01.	Month after sowing, then annually. By the Operator.

Waste	The Tenement Holder must, in constructing and operating the Lease ensure that all commercial or industrial waste is disposed of in accordance with relevant legislation.	Keep records of any incidents (i.e., spillage) and receipts of waste disposal to show that collected waste was managed as specified by the Environment Protection Authority requirements.	All waste disposed of at EPA licensed facility.	Records and disposal receipts to prove proper disposal.	Tenement.	As required. By the Operator.
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Aspect	Outcome	Outcome Measurement Criteria	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
Ground water	The Tenement Holder must, in constructing and operating the Lease ensure that there is no adverse impact to the quality and quantity of groundwater caused by mining operations to existing users and water dependent ecosystems.	Quarterly inspections and measurements of the pit floor and well (no. 6627-11156) by the operator will confirm that they are operating 2 metres above the highest seasonal groundwater table.	No mining is carried out within 2 metres of the groundwater table.	Standing groundwater level and pit floor.	The lowest part of the quarry floor and well (6627-11156)	Quarterly. By the Operator.
Surface Water	The Tenement Holder must, in constructing and operating the Lease, ensure that no water contaminated as a result of mining operations leaves the mine	Following rainfall of 50mm or greater photographic records will be taken by the operator to demonstrate that all surface water runoff is retained within the sediment basins or the pit.	All surface water runoff is retained in either the pit or sediment basins.	Success of water retention infrastructure.	Sediment basins and pit.	Following rainfall of 50mm or greater. By the Operator.

<p>Visual Amenity</p>	<p>The Tenement Holder must, in 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.</p>	<p>Annual photo monitoring will be undertaken by the operator from two vantage points on Bull Creek Road GPS location S35°23'39E and 138°41'51' and Deep Creek Road S35°23'51E and 138°41'48.</p>	<p>Photo monitoring will show over time that the form, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.</p>	<p>Form, contrasting aspects and reflective aspects of mining operations.</p>	<p>Bull Creek Road GPS location S35°23'39E and 138°41'51' and Deep Creek Road S35°23'51E and 138°41'48.</p>	<p>Annually. By the Operator.</p>
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Aspect	Outcome	Outcome Criteria	Measurement	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
Protection of Third Party Property	The tenement Holder must, in constructing and operating the Lease, ensure that there is no unauthorized damage (including that caused by fire) to adjacent public or private property and infrastructure.	All fires resulting in damage to third party property i.e., houses, outbuildings and power poles will be investigated by a suitably qualified third party within 14 days (or other time as agreed with DSD Mining Regulation) and the results of the investigation show that the fire could not have been reasonably prevented by the Tenement Holder.		All fires resulting in damage to third party property are investigated by a suitably qualified third party within 14 days to show that the fire could not have been reasonably prevented by the Tenement Holder.	Tenement holders liability in regard to a fire.	Tenement.	As required. By the Operator.
Mine Closure	Integrate and harmonize final landforms and vegetation with the surrounding topography.	Plans, aerial and ground photos and inspections show evidence of achieving final slope angle of 18 degrees which blend with surrounding area and are satisfactory to the landowner.		Achievement of final slope angles of 18 degrees which blend with surrounding area and are satisfactory to the landowner.	Slope angle and vegetation	At the perimeter of the quarry upper and lower levels.	Monitored half yearly for a period of two years after closure. By the Operator and Tenement Holder.
	The risk to health and safety of the public, native fauna and livestock are as low as reasonably practical.	Plans, aerial and ground photos and inspections show evidence of achieving final slope angle of 18 degrees with no likelihood of entrapment for the public, fauna or livestock.		Achievement of final slope angle of 18 degrees.	Slope angle.	The perimeter of the workings around the upper slopes. Access ramp into the pit.	Annual site inspections for a period of two years after closure. By the Operator and Tenement Holder.

	Ensure the site is ecologically stable.	Inspections will be carried out in summer and autumn for a maximum of two years from final rehabilitation to show that weeds are controlled, and the land is managed to achieve cropping or grazing levels of pre-mining or better.	2 year Post mine completion final rehabilitation to show that weeds are controlled and the land is managed to achieve cropping or grazing levels of pre-mining or better.	Ecological stability of final landforms.	Areas of rehabilitation.	Biannually (Summer and autumn). By the Landowner.
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Aspect	Outcome	Outcome Criteria	Measurement	Outcome Achievement	What is to be Measured	Location of Measurement	Frequency of Measurement and Responsible Persons
	The site is physically stable.	Photos and visual inspections show final rehabilitation is stable achieving final gradients of 18 degrees with no evidence of slumping or erosion.		Achievement of final gradients of 18 degrees.	Slope angle.	The perimeter of the workings around the upper slopes. Access ramp into the pit.	Biannually (Summer and autumn). By the Landowner.
	No compromise of the quality and quantity of ground or surface water to existing users and water dependent ecosystems.	Records and inspection will show two internal retention dams constructed with enough holding capacity to retain all runoff.		Records show all surface water is retained on site.	Success of surface water infrastructure on site.	Internal retention dams.	Quarterly inspections for a period of two years after closure. By the Operator and Tenement Holder.
	No industrial or commercial waste left on site.	Inspection of the site by the quarry operator/landowner shows that all structures, fixed plant, if applicable, and consumables are removed before mine closure.		All structures, fixed plant, if applicable, and consumables are removed before mine closure.	Presence of industrial or commercial waste.	Tenement.	At mine completion. By Operator and Landowner.
	Where practical, pre-mining land use is re-established.	Photographic records will show all final landforms to have pasture, and or cropping that is suitable for grazing. Inspections will be carried out in summer and autumn for a maximum of two years from final rehabilitation to show that weeds are controlled and the land is managed to achieve cropping or grazing levels of pre-mining or better.		2 Years Post mine completion final rehabilitation to show that weeds are controlled and the land is managed to achieve cropping or grazing levels of pre-mining or better.	Success of final rehabilitation.	Areas of rehabilitation.	Biannually (Summer and autumn). By the Operator and Landowner.

6. OPERATOR CAPABILITY

Visy Sand Quarry Pty Ltd (Visy Sand Quarry) is the sand quarry operator providing feedstock for its glass manufacturing facility and for construction materials. The operator continues to demonstrate its capacity operating the site in an environmental conscious manner, similar to the predecessor Tooperang Quarry Pty Ltd. Visy Sand Quarry will continue to operate in accordance with the PEPR including planting native vegetation and carrying out progressive rehabilitation as Visy Sand Quarry acknowledges that the visual impact needs to be reduced.

7. LEASE CONDITIONS

Mining Lease 5331

Second Schedule (special conditions)

1. Rehabilitation shall be progressive and to the satisfaction of an Inspector of Mines. Refer to 4.1.2 Mine Closure.
2. Excess waters shall be managed in accordance with Engineering and Water Supply Department requirements.
Refer to 4.1.11 Surface Water.

Mining Lease 5864

Second Schedule

1. Rehabilitation should be progressive and must be to the satisfaction of the Inspector of Mines.
Refer to 4.1.12 Mine Closure.
2. Excess waters shall be managed in accordance with Engineering and Water Supply Department requirements.
Refer to 4.1.11 Surface Water.

Progressive Rehabilitation

1. The Tenement Holder must undertake rehabilitation of mining operations in accordance with an integrated Mining and Rehabilitation plan as approved in the PEPR.
2. Rehabilitation should be progressive and must be to the satisfaction of an Inspector of Mines.
This has been addressed in 2.3.2 Sequence of Mining and Rehabilitation Operations and 4.1.12 Mine Closure.

This has been addressed in Section 5 (Operation Compliance Monitoring Plan) of the PEPR.

8. PLANS

Existing Conditions Plan, **Drawing Number 1**, Drawing 2974MN01.

Existing Conditions Plan "Enlargement" of the Operation, **Drawing Number 2**, Drawing 2974MN01.

Existing Conditions Plan "Cross Sections" of the Operation, **Drawing Number 3**, Drawing 2974MN01.

Proposed New Access Road Plan, **Drawing Number 4**, Drawing 2974MN01.

Working Plan, **Drawing Number 5**, Drawing 2974MN01. This plan shows working and future development of the operation and stage of mining, reserves and probable reserves.

Working And Conceptual Surface Plan, **Drawing Number 6**, Drawing 2974MN01. Conceptual Closure Plan, **Drawing Number 7**, Drawing 2974MN01.

Conceptual Closure Cross Sections, **Drawing Number 8**, Drawing 2974MN01.

Indicative PEPR Staging Plan, **Drawing Number 9**, Figure 9.

9. REFERENCES

- Mining Act 1971.
- Ministerial Determination 002 and 003.
- Aboriginal Heritage Act 1988.
- Environmental Protection Act 1988.
- Natural Resources Management Act 2004.

10. DECLARATION

I submit this document as per the Program for Environmental Protection and Rehabilitation for the above mentioned operations and accept that it is my responsibility to undertake progressive rehabilitation.

Tenement Holder or the person authorized to represent the Tenement Holder have taken reasonable steps to review the information or material provided within this PEPR and can ensure its accuracy.

Signed: 

Date: C, 9 / 0 5 / 2 0 2 2

Name Printed: MARK STEEN MEYER

EML's 5331, 5864 and 6449 June 2022

11. APPENDIX

List of Appendix:

Silica Sand Washing Plant. **NOT FOR PUBLICATION – STRICTLY CONFIDENTIAL.**

SEB calculations.

G. Scattered tree agreement:

SCATTERED TREES WITHIN THE PROPOSED NEW MINE AREA

TOOPER, ANG QI, JARRY (W, S. Meyer): *Eucalyptus fastidiosa* "PINK or HI, GUM"

Assessment based on 'Assessment of habitat value' spread sheet

Re: DSD (formally DMITRE)

SUMMARY A.B.L. OF PAYMENTS PER TREE REMOVAL

#	GPS Location Section 257 Hd Nangkita	Mine stage	Estimated timing for removal	Replacement area required in hectares	Plus 20% value for pink gums	Payment to NV Fund through DSD
1	S 35°23'31.7 E 138°44'46.4	4	After 2050	0.072	0.0864ha	\$503.14
2	S 35°23'34.1 S E 138°44'47.1	4	After 2050	0.005	0.006ha	\$34.83
3	S 35°23'35.7 E 138°44'47.3	4	After 2050	0.091	0.1092ha	\$635.33
4	S 35°23'37.3 E 138°44'48.2	4	After 2050	0.097	0.1164ha	\$ 77.82
5	S 35°23'38.5 E 138°44'48.5	4	After 2050	0.097	0.1164ha	\$677.82
6	S 35°23'39.4 E 138°44'47.9	4	After 2050	0.098	0.1176ha	\$684.55
7	S 35°23'49.1 E 138°44'57.4	4	After 2050	0.1160	0.1392ha	\$1,117.23
8	S 35°23'49.3 E 138°45'00.4	2	After 2030	0.064	0.0768ha	\$447.01
9	S 35°23'51.1 E 138°45'04.4	2	After 2030	0.064	0.0768ha	\$447.01
10	S 35°23'49.3 E 138°45'05.0	2	After 2035	0.039	0.0468ha	272.30
11	S 35°23'48.9 E 138°45'08.1	2	After 2040	0.103	0.1236ha	\$719.57
12	S 35°23'51.1 E 138°44'12.7	2	After 2045	0.097	0.1164ha	\$677.82
13/	Trees no longer	n/a	n/a	n/a	n/a	n/a
14	in situ	n/a	n/a	n/a	n/a	n/a
15	Removed bracken patch	n/a	n/a	n/a	n/a	n/a

Average cost per tree removed @ \$574.53 each

Land title reference

The site is situated on section 257 in the Hundred of Nangkita in the district of Tooperang. Certificate of Title: Volume 5412 Folio 618. The land owner is Warwick Steen Meyer of Chapel hill Road, Ashbourne SA 5157.

Property value

The site value as of 23/7/14 for the land is \$1,025,000.00 over a total of 166 hectares. This calculates at \$6,174.70 p/ha.

Site calculation

The area for SEB is 0.987 hectares (based on scattered tree assessment above).

Calculations are based on the following assumptions:

Replacement Value = 1:1.

Market Value of the land = \$6,174.70 p/ha

Management Costs = \$800 per ha

Calculation of replacement cost:

Area to be cleared = 0.987 hectares

Replacement area 1 x 0.987 @ \$6,174.70 p/ha = \$6,094.43

+ Management cost @ \$800 p/ha for cleared area 1ha = \$800

Total SEB \$6,894.43

(see above for individual tree payments)

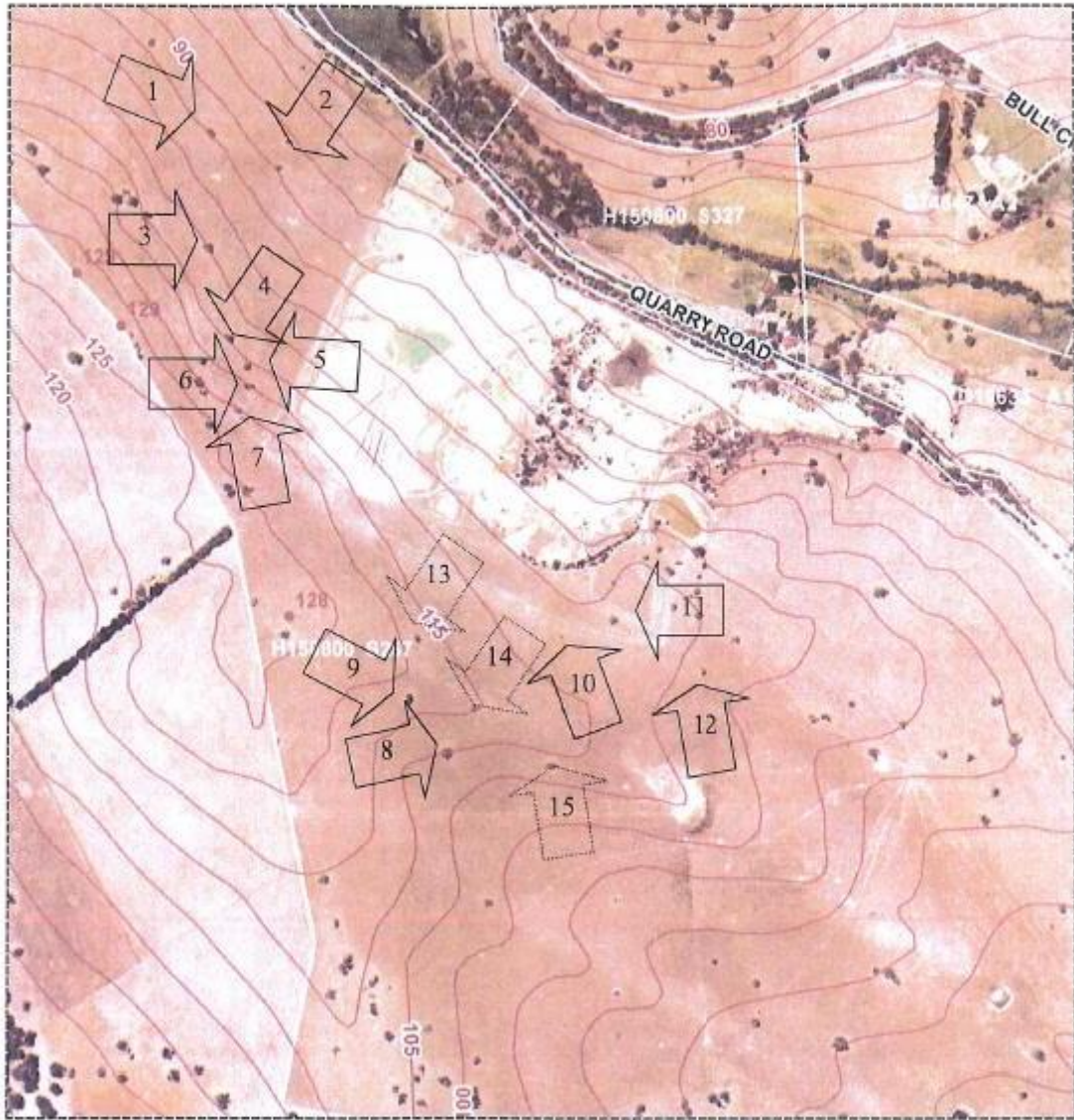
Assessment by

D. Keane (Botanical Consultant) Landscape Profile Pty Ltd

Ground Survey 10 January 2014 and assessment 23 July 2014

TREE LOCATIONS

(2008 aerial photography)

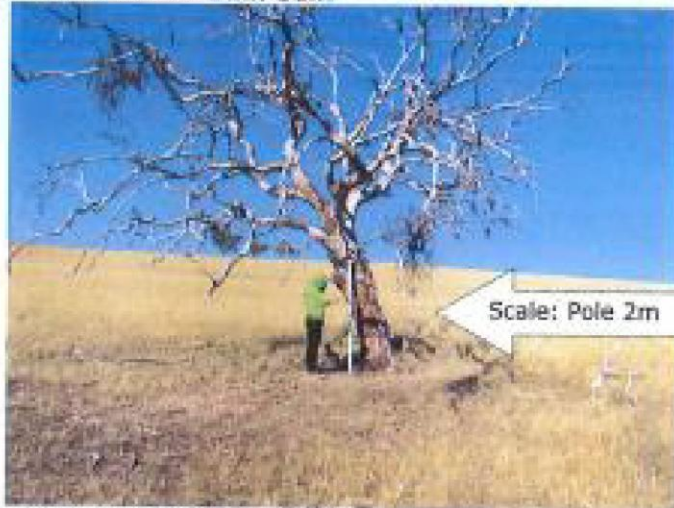


Positions 13 to 15 indicate locations where trees no longer exist (2008 latest map).

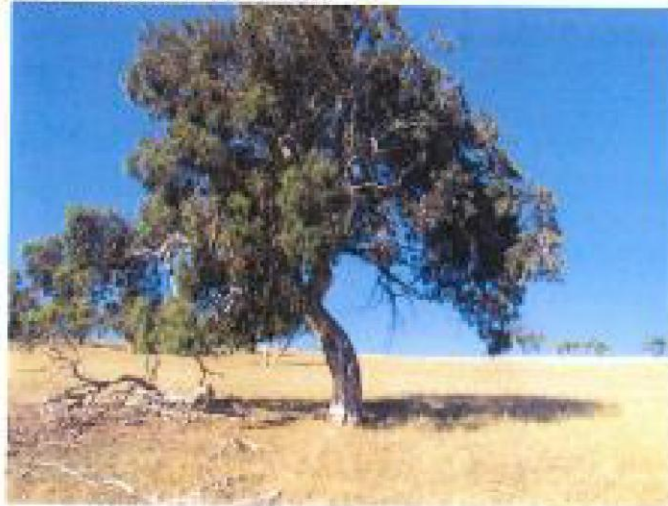
Tree 1. UGIL US; 'ci uloS:1Pink



Tn: *calyptus fasciculosa* "Pink Gum"



Tree 2: *calyptus fasciculosa* "Pink Gum"



Tree 4: *Eucalyptus fasciculosa* "Pink Gum"



Tree 5: *Eucalyptus fasciculosa* "Pink Gum"



Tree 6: *Eucalyptus fasciculosa* "Pink Gum"



Tree 7: *Eucalyptus fasciculosa* "Pink Gum"



Tree 8: *Eucalyptus fasciculosa* "Pink Gum"



Tree 9: *Eucalyptus radiata* "Pink Gum"

l' ;il,,O: i.J l'i'P i.J, F ul 'Pink Gum



Tt 1.'I □ Eucal,'1]tu5 ras.clru 5 -pfnk Gu- •



Tree 12: *Eucalyptus fasciculosa* "Pink Gum"



Native Vegetation Clearance

Tooperang Sand Quarry Internal Road Construction

Clearance under the *Native Vegetation Regulations 2017*

12 March 2026

Prepared by Renate Faast and Marcus Cooling



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Project GY001 - 1 Document Control

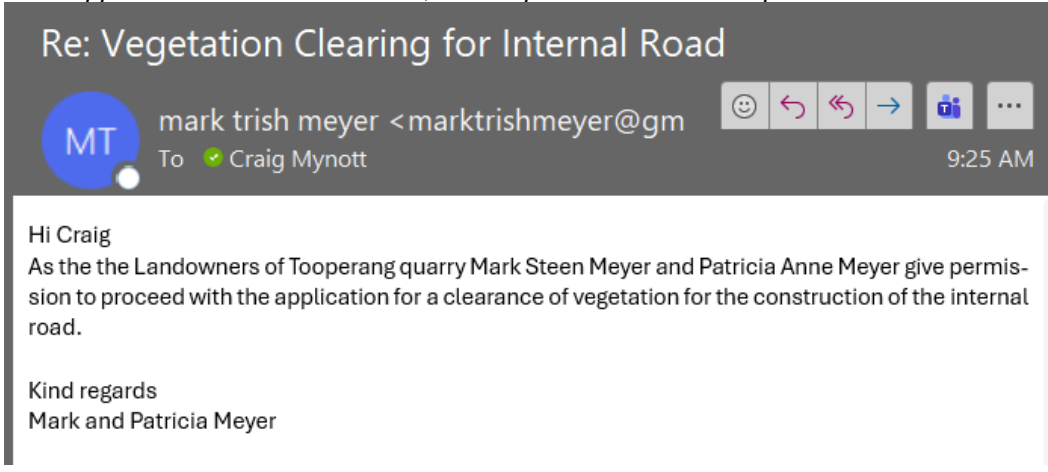
Report Ref.	Version	Issued	Issued to	Issued by
GY001 - 1	A	12 March 2026	Craig Mynott	Renate Faast

Report authors:

Renate Faast and Marcus Cooling

1. Application information

Application Details

Applicant:	Visy Recycling		
Key contact:	Craig Mynott Phone: 0421 056 582 Email: craig.mynott@visy.com.au		
Landowner:	<p><i>Land is under a lease agreement. Visy to provide details of landholder. If the applicant is not the landowner, written permission must be provided</i></p>  <p>The screenshot shows an email with the subject 'Re: Vegetation Clearing for Internal Road' from 'mark trish meyer <marktrishmeyer@gm>' to 'Craig Mynott'. The email content reads: 'Hi Craig As the the Landowners of Tooperang quarry Mark Steen Meyer and Patricia Anne Meyer give permission to proceed with the application for a clearance of vegetation for the construction of the internal road. Kind regards Mark and Patricia Meyer'.</p>		
Site Address:	Visy Sand Quarry 119 Quarry Rd Tooperang		
Local Government Area:	Alexandrina Council	Hundred:	Nangkita
Title ID:	CT/5412/618	Parcel ID	H150800 S257

Summary of proposed clearance

Purpose of clearance	Clearance required for the construction of an internal access road.
Native Vegetation Regulation	Regulation 12(31) – Mining operations at private mines or Regulation 12(28) – Operations <i>Native Vegetation Branch to advise, please</i>
Description of the vegetation under application	<p><u>Size, type and general condition:</u></p> <ul style="list-style-type: none"> - 0.0445 ha of <i>Eucalyptus fasciculosa</i> open woodland in moderate condition - 0.105 ha of <i>Acacia pycnantha</i> over <i>Phragmites australis</i> in poor condition - 3 large healthy <i>Eucalyptus leucoxylon</i> trees - 1 medium-sized healthy <i>Eucalyptus camaldulensis</i> tree
Total proposed clearance - area (ha) and number of trees	0.1495 ha and 4 scattered trees are proposed to be cleared.
Level of clearance	Level 3
Overlay (Planning and Design Code)	Native Vegetation Overlay

Map of proposed clearance area



Map data is compiled from a variety of sources and hence its accuracy is variable.

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Compiled: 6-Mar-2026
 Generated at: www.naturemaps.sa.gov.au
 Datum: Geocentric Datum of Australia, 2020
 Projection: Web Mercator (Auxiliary Sphere)



Mitigation hierarchy

Clearance of native vegetation has been avoided by siting the works over an existing track.
 The location of the entrance onto Quarry Road has been selected to avoid impacts on roadside vegetation.
 Vegetation clearance has been minimised by pruning overhanging limbs or retaining trees near the edge of the construction footprint, where possible.

SEB Offset proposal

Payment of **\$13,303.61** into the Fund

2. Purpose of clearance

2.1 Description

Clearance is required for the construction of an internal access road from Quarry Rd to the Visy Sand Quarry.

2.2 Background

The sand quarry operated by Visy Recycling is located on Quarry Rd at Tooperang, approximately 6 km north of Currency Creek on the Fleurieu Peninsula (Figure 1).

Visy Recycling has a requirement under their Program for Environment Protection and Rehabilitation (PEPR) and an agreement with the Alexandrina Council to remove heavy vehicles from Quarry Road by constructing an internal access road to the quarry.

The council asphalted Quarry Road from Alexandrina Highway partway down, and from that point onward it became the mine operator's responsibility to construct an internal road linking to the council-asphalted section.

2.3 General location map

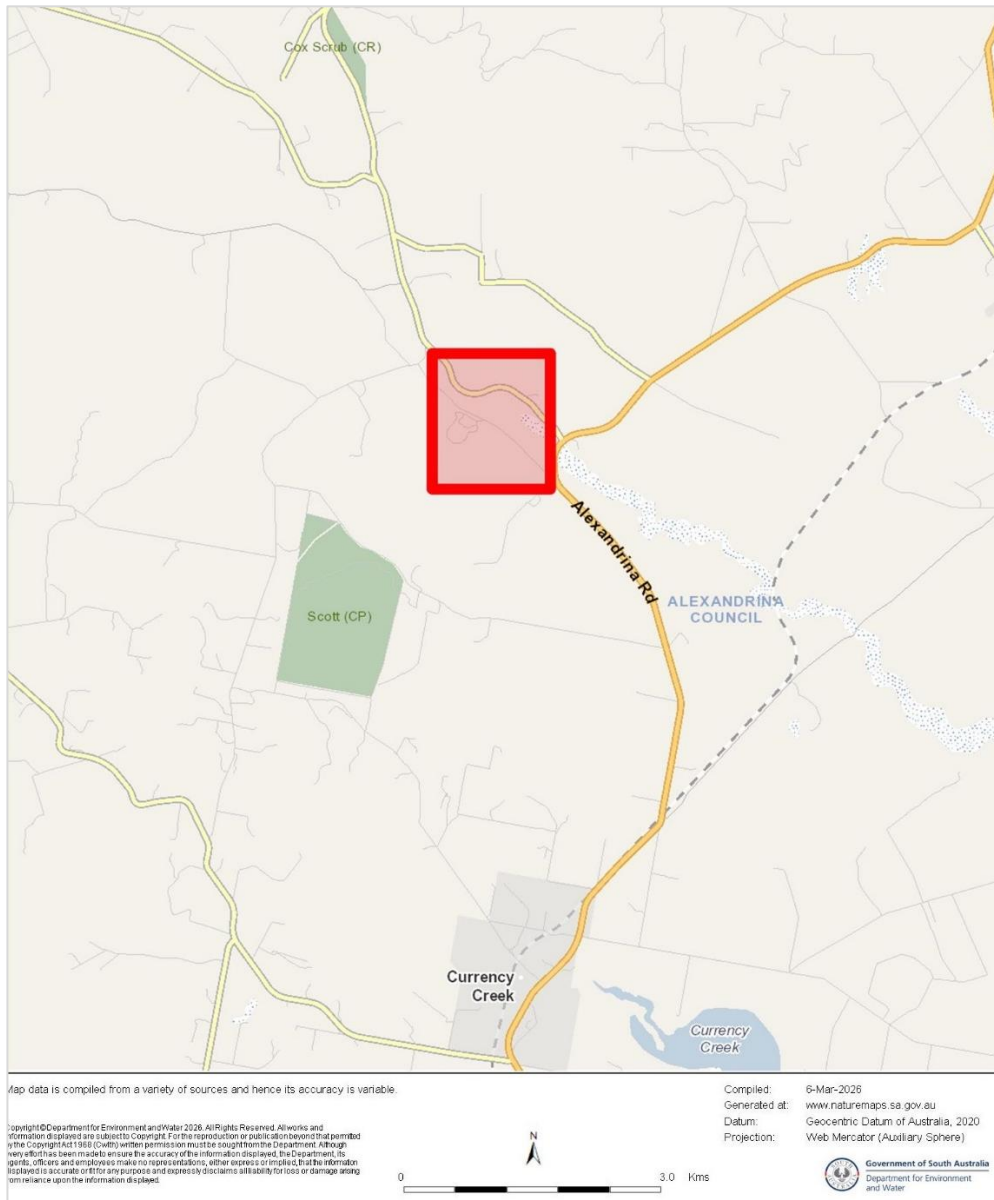


Figure 1. Location map showing project site bounded by red box.

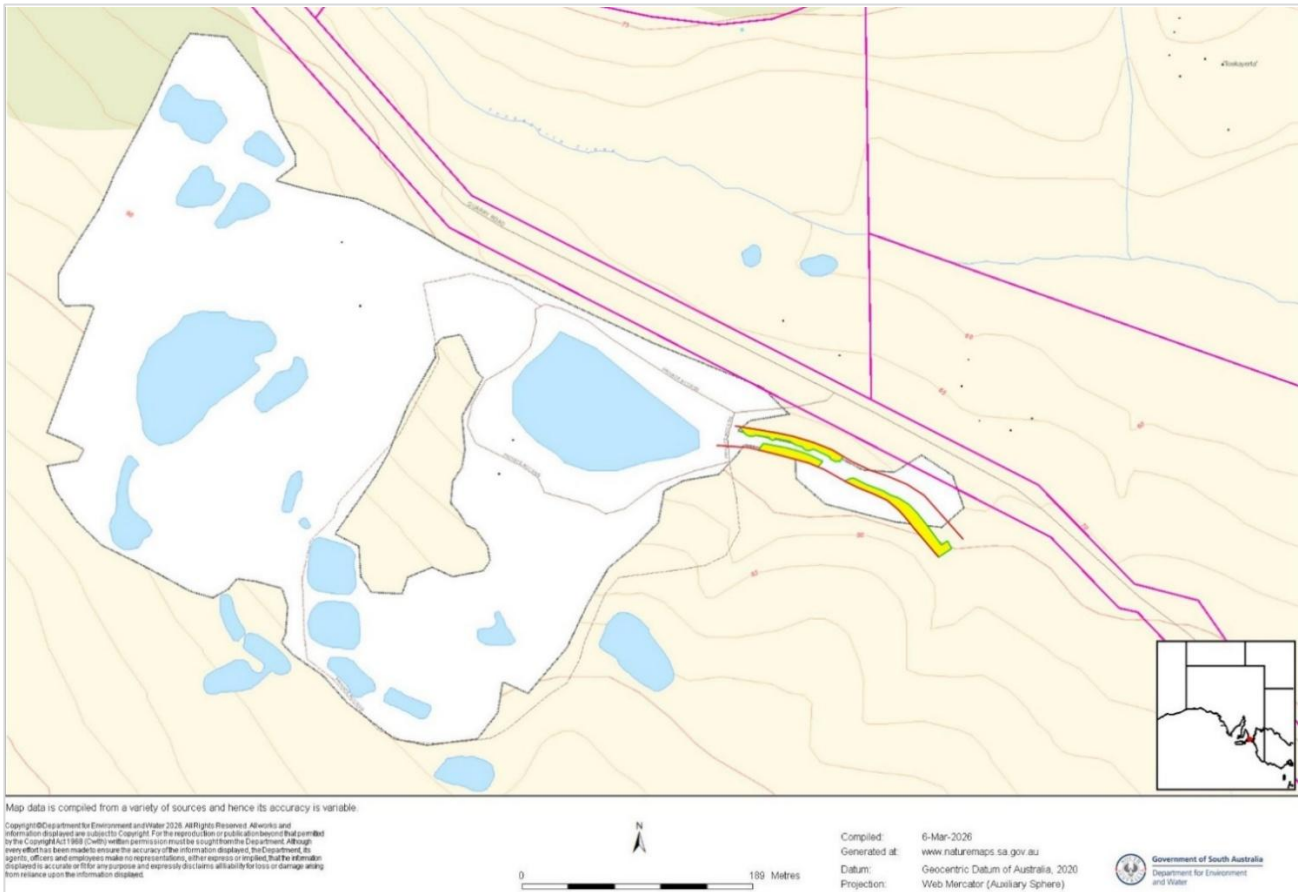


Figure 2. Site Map showing property boundary (pink line) and native vegetation impacted by the works (shaded yellow)

2.4 Details of the proposal

The new 620 m long internal road will commence at an existing internal road near the quarry entrance and connect into Quarry Rd approximately 380 m southeast of the entrance (Appendix 3).

A total width of 15 m is required to allow for the movement of large B-Double trucks and other heavy vehicles, with an appropriate batter on either side of the new road.

Native vegetation will be impacted along the first 180 m at the western end of the route where an existing 5-6 m wide track will be widened to 15 m (Figure 2). The remainder of the route traverses eastwards through a paddock and the roadside verge. No native vegetation is present along the remainder of the route.

Preliminary design plans are provided in Appendix 3. Note that there have been minor changes to the construction footprint since these plans were prepared, and the updated clearance areas provided in this report are based on information provided during a site visit with Visy staff and contractors.

2.5 Approvals required or obtained

The site is subject to the:

- *Native Vegetation Act 1991*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) which protects impacts on Matters of National Environmental Significance – MNES)

2.6 Native Vegetation Regulation

Vegetation clearance in this project is permitted under:

Regulation 12(31) – Mining operations at private mines

"To allow the clearance of native vegetation at private mine sites where mining operations have not ceased for more than a 12 month period any time after 21 November 1984."

Or

Regulation 12(28) – Operations

"To allow the clearance of native vegetation for operations authorised under a Mining Act or the Petroleum and Geothermal Energy Act 2000."

Native Vegetation Branch to advise, please.

2.7 Development Application information (if applicable)

N/A

3. Method

3.1 Review of Flora and Fauna Records

Existing records of threatened flora and fauna were reviewed for a 5 km search radius centred on the site using:

- NatureMaps (3rd March 2026)
- Atlas of Living Australia (3rd March 2026).
- EPBC Protected Matters Search Tool (3rd March 2026)

Records with a locational reliability greater than 1km or occurring prior to 1995 in the NatureMaps and Atlas of Living Australia were excluded, along with records of exclusively marine species. For EPBC Protected Matters, species were only included if they are known to occur, or their habitat is known to occur, in the search area.

National Conservation Ratings are in accordance with the most recent EPBC Act Listing Status available in the Species Profile and Threats Database.

State Conservation Ratings are in accordance with the National Parks and Wildlife Act 1972.

Regional conservation ratings were obtained from "Gillam, S. and Urban, R. (2014) Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region. Department of Environment, Water and Natural Resources, South Australia."

3.2 Flora and Fauna assessment

The field survey was undertaken on 5th March 2026. The location and extent of the works was identified through a site visit with Visy staff.

Vegetation associations were mapped by a search throughout the site to identify plant communities and assemblages based on overstorey and understorey composition and structure. Bushland Assessments were completed for each plant association as prescribed by the NVC's Bushland Assessment Manual (September 2024). This included recording the plant species present, the vegetation structure, and fauna habitat values. Scattered trees were assessed according to the NVC Scattered Tree Assessment Manual (September 2024), with each tree inspected, photographed and the location recorded.

Shapefiles were created for vegetation associations along with waypoints for photographs and other points of interest.

The suitability of the vegetation for rare and threatened fauna was assessed based on the known distribution and occurrence of species, their habitat requirements and the quality of habitat available at the site. The potential use of scattered trees by Nationally, State and Regionally-threatened fauna was assessed according to the list of 'Wildlife that use scattered trees' provided in Appendix 8 of the NVC Scattered Tree Assessment Manual.

Fauna observed opportunistically during the vegetation survey were recorded, along with the presence (or absence) of signs such as diggings, scats and termite mounds.

4. Assessment Outcomes

4.1 Vegetation Assessment

General description of the vegetation, the site and matters of significance

The site is within the Alexandrina District Council of the Hills and Fleurieu Region. The survey area is in the Sandergrove IBRA Association which has a native vegetation remnancy 11%, with 26% of vegetation formally protected. The IBRA Association is in the Fleurieu Subregion which has native vegetation remnancy of 12%, with 24% protected.

The project site lies on the western flank of the Finniss Land System, encompassing the gentle slopes and flats adjacent to the lower Finniss River and the Finniss Estuary. The Finniss Land System is a piedmont deposit of fluvio-glacial sediments, dissected by the action of two main watercourses, Finniss River and Giles Creek, as they flowed out of the Mount Lofty Ranges into the lake system. This process resulted in the deposition of alluvial sediments as flood plains and outwash fans. The adjacent sand quarry is within the undulating to rolling low hills of the Mount Compass Land System, formed on sandy glacial sediments of bleached siliceous sand and highly leached sands. These were deposited under glacial and fluvio-glacial conditions during the Permian period.

The project site lies at an elevation of approximately 75 m AHD, on the southern slope of Tookayerta Creek which

flows southeast into Clayton Bay. Soils at the site consist of strongly leached sand or sandy loam over acid clay. The route of the proposed new road encompasses ~180 m of a 5-6 m wide existing track which has been built up onto the slope, creating a moderate to steep embankment on the northern side. On the southern side of the track, a steep-sided dry dam captures storm water run-off and sediments from the quarry.

The site lies within a highly modified landscape, abutting the Visy sand quarry to the west and surrounded by rural residential and livestock grazing land. The proportion of native vegetation within a 5 km radius of the proposed works is 15%, comprising mostly *Eucalyptus fasciculosa* +/- *E. leucoxylon* low woodland, and *Eucalyptus baxteri* woodland, with *Leptospermum continentale* shrubland and sedgeland occupying swamps and perched swamps above watercourses.

Four Heritage Agreement properties (ranging in size from 3 to 33 Ha) are situated from 2.0 – 4.2 km to the southwest and northwest of the site. There is a small Significant Environmental Benefit offset area (2005_3007, 1.2 Ha) along the Tookayerta Creek approximately 600 m east of the site, and a larger one (1998_2082, 20 Ha) ~ 4 km to the northeast.

Mean annual rainfall at the site is 524 mm from 1976 to 2005 (Naturemaps).

Two vegetation communities will be impacted by the proposed works (Table 1; Figure 3).

Table 1. Plant associations at study site.

Vegetation	Location
A1 - <i>Eucalyptus fasciculosa</i> woodland over <i>Acacia pycnantha</i> with planted trees and shrubs	- Between Quarry Rd and existing track at western end of route
A2 - <i>Acacia pycnantha</i> over <i>Phragmites australis</i> or pasture grasses	- Dry dam south of the existing track.

Native vegetation at the survey site comprises a small area of *Eucalyptus fasciculosa* (Pink Gum) woodland between Quarry Rd and the existing track at the western end of the proposed route. The dry dam on the southern side of the track supports a *Phragmites australis* sedgeland with *Acacia pycnantha* shrubs growing on the embankments and drier slopes.

Four scattered native trees (one *E. camaldulensis* (River Red Gum) and three *E. leucoxylon* (SA Blue Gum)) are present at the western and eastern ends of the proposed route.

The remaining vegetation within the survey area is highly degraded and comprised almost entirely of introduced species including pasture grasses, forbs and shrubs. Very sparsely scattered native grasses and regenerating *Acacia pycnantha* make up less than 5% of the ground cover.

Non-local tree species (e.g. *E. saligna* (SA Blue Gum), *E. cladocalyx* (Sugar Gum), *E. platypus* (Round-leaved Moort), *E. maculata* (Spotted Gum), *Casuarina glauca* (Swamp Oak)) have been planted along parts of the track edge and within vegetation associations A1 and A2.

The site supports a low diversity of native plant species with 12 taxa identified across the vegetation associations and scattered trees (Appendix 2).

No Nationally-threatened plant species were recorded. The State Rare *Eucalyptus fasciculosa* is present in both vegetation associations.

Bushland Assessment and Scattered Tree Scoresheets, and shapefiles are provided as separate attachments.

Details of the vegetation associates/scattered trees proposed to be impacted

Vegetation Association	Vegetation Association A1; <i>Eucalyptus fasciculosa</i> woodland over <i>Acacia pycnantha</i> with planted trees and shrubs
------------------------	--



Photo 134846 facing east at wpt 1516 (Latitude: -35.394137; Longitude: 138.754595), along northern side of existing track

General description	<p>Vegetation association A1 is present between Quarry Rd and the existing track at the western end of the proposed route. It is characterised by a tall remnant overstorey of <i>Eucalyptus fasciculosa</i> (Pink Gum) over a sparse native shrub layer dominated by <i>Acacia pycnantha</i> (Golden Wattle). The area has been planted with additional canopy and mid-story species comprising non-local eucalypts (e.g. <i>E. maculata</i> (Spotted Gum), <i>E. saligna</i> (Sydney Blue Gum)), <i>Callistemon</i> spp. and <i>Callitris gracilis</i> (Southern Cypress Pine). One plant of the State Rare <i>Acacia imbricata</i>, which is endemic to the Eyre Peninsula, has been planted near the edge of the track. Native groundlayer species are very sparse and include <i>Styphelia humifusa</i> (Cranberry Heath), <i>Dianella brevicaulis</i> (Short-stem Flax-lily), the vine <i>Billardiera cymosa</i> (Sweet Apple-berry) and <i>Rytidosperma setaceum</i> (Small-flower Wallaby-grass).</p> <p>Weed invasion is low, represented mostly by pasture grasses such as <i>Avena</i> sp. (Wild oats), <i>Ehrharta longiflora</i> (Annual Veldt Grass), <i>Vulpia</i> sp. (Fescue) and <i>Trifolium angustifolium</i> (Narrow-leaf Clover), with a few scattered seedlings of the SA Declared <i>Pittosporum undulatum</i> (Sweet Pittosporum) and <i>Rosa canina</i> (Dog Rose). Seedlings of <i>Acacia longifolia</i> spp. <i>longifolia</i> (Sallow Wattle) and <i>Senecio pterophorus</i> (African Daisy) are also present.</p> <p>Vegetation association A1 is in moderate condition with a very low diversity of native species and moderate structural diversity. Fallen timber and leaf litter provide some habitat value for fauna, but the trees lack hollows.</p> <p>The proposed works will require removal of understory and some mature trees growing close to the track edge but will be limited to canopy pruning where possible.</p>
---------------------	---

Threatened species or community	<p><u>Nationally- and State-listed vegetation community:</u> None</p> <p><u>Nationally- and State-threatened flora observed:</u></p> <ul style="list-style-type: none"> - <i>Eucalyptus fasciculosa</i> (SA Rare) <p><u>Nationally-threatened fauna</u> that might utilise this vegetation community:</p> <ul style="list-style-type: none"> - Blue-winged Parrot (Vulnerable) - Diamond Firetail (Vulnerable) - Southern Whiteface (Vulnerable) <p><u>State-threatened fauna</u> that might utilise this vegetation community:</p> <ul style="list-style-type: none"> - Little Lorikeet (Endangered) - Black-chinned Honeyeater (Vulnerable) - Flame Robin (Vulnerable) - Heath Goanna (Vulnerable) - Little Eagle (Vulnerable) - Yellow-tailed Black Cockatoo (Vulnerable) - Black Falcon (Rare) - Eastern Shrike-tit (Rare) - Elegant Parrot (Rare) - Jacky Winter (Rare) - Olive-backed Oriole (Rare) - Painted Buttonquail (Rare) - Restless Flycatcher (Rare) - Scarlet Robin (Rare) - White-winged Chough (Rare) 				
Landscape context score	1.13	Vegetation Condition Score	32.03	Conservation significance score	1.14
Unit biodiversity Score	41.26	Area (ha)	0.0445	Total biodiversity Score	1.84



Photo 145803 facing northwest at wpt 1523 (Latitude: -35.395002; Longitude: 138.755879), at eastern end of dry dam



Photo 150828 facing east at wpt 1524 (Latitude: -35.39457; Longitude: 138.755431), along southern side of existing track

General description	<p>Vegetation association A2 occurs within and around the dry dam to the south of the existing track. Dense stands of <i>Phragmites australis</i> (Common Reed) grow in the low-lying sporadically inundated areas, with <i>Acacia pycnantha</i> and *<i>Acacia longifolia ssp. longifolia</i> over pasture grasses occupying the fringing slopes and drier ground.</p> <p>Other native species are sparse and include <i>Juncus pallidus</i> (Pale Rush), <i>Senecio phelleus</i> (Woodland Groundsel), <i>Epilobium hirtigerum</i> (Hairy Willow-herb) and <i>Billardiera cymosa</i>. One <i>Eucalyptus fasciculosa</i> and one *<i>E. platypus</i> (Platypus Gum) are present at the edge of the track.</p> <p>Outside the stands of <i>Phragmites australis</i>, the understory is dominated by introduced grasses, shrubs and forbs including <i>Avena sp.</i>, <i>Dittrichia graveolens</i> (Stinkweed) and <i>Lavandula stoechas</i> (Topped Lavender). The SA Declared weeds <i>Rosa canina</i> and <i>Pittosporum undulatum</i> are also present.</p> <p>Vegetation association A2 is in poor condition with a low diversity of native species and high levels of weed invasion.</p> <p>The dam is not a reliable source of water for aquatic bird species, and the plant community is unlikely to support threatened fauna.</p>				
Threatened species or community	<p><u>Nationally- and State-listed vegetation community:</u> None</p> <p><u>Nationally- and State-threatened flora observed:</u></p> <p>- <i>Eucalyptus fasciculosa</i> (SA Rare)</p> <p><u>Nationally- and State-threatened flora that might utilise this vegetation community:</u></p> <p>- None</p>				
Landscape context score	1.16	Vegetation Condition Score	25.31	Conservation significance score	1..04
Unit biodiversity Score	30.53	Area (ha)	0.105	Total biodiversity Score	3.21

Scattered trees


Tree ID – Tree 1	
Tree spp. <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> River Red Gum	
Number of trees – 1	
Height (m) – 8	
Hollows – None	
Diameter (cm) – 30	
Canopy dieback (%) – 0	
Total Biodiversity Score – 0.6	

Photo 132911 facing east at Wpt 1515 (Latitude: -35.394109; Longitude:138.754101)

This medium-sized *Eucalyptus camaldulensis* (River Red Gum) is located at the western end of the proposed route, growing over an understory of *Dittrichia graveolens*.

Tree 1 is in very good condition with minimal dieback.

It contains no hollows but potentially provides food, perching and/or nesting resources for the Nationally Vulnerable Blue-winged Parrot, Diamond Firetail and Southern Whiteface, the State Endangered Little Lorikeet, the State Vulnerable Black-chinned Honeyeater, Flame Robin, Little Eagle and Yellow-tailed Black Cockatoo and the State Rare Black Falcon, Eastern Shriketit, Elegant Parrot, Jacky Winter, Olive-backed Oriole, Restless Flycatcher and Scarlet Robin. Fourteen species of regional conservation significance may also be supported by the tree (section 4.2).

Tree 1 is within the footprint of the proposed new roadway and will be removed.

Loss Factor = 1.

Tree ID – Tree 2
Tree spp. <i>Eucalyptus leucoxylon ssp. leucoxylon</i> SA Blue Gum
Number of trees – 1
Height (m) – 13
Hollows – None
Diameter (cm) – 48
Canopy dieback (%) – 0
Total Biodiversity Score – 2.23



*Photo 142445 facing northeast at Wpt 1520
(Latitude: -35.394888; Longitude: 138.756089)*

This large SA Blue Gum is located next to the fenceline at the eastern end of the proposed route. The understory is comprised almost exclusively of introduced pasture grasses and forbs such as *Sixalix atropurpurea* (Pincushion), *Rosa canina*, *Trifolium angustifolia* and *Lavandula stoechas*.

Tree 2 is in very good condition with minimal dieback.

It contains no hollows but potentially provides food, perching and/or nesting resources for the Nationally Vulnerable Blue-winged Parrot, Diamond Firetail and Southern Whiteface, the State Endangered Little Lorikeet, the State Vulnerable Black-chinned Honeyeater, Flame Robin, Little Eagle and Yellow-tailed Black Cockatoo and the State Rare Black Falcon, Eastern Shriketit, Elegant Parrot, Jacky Winter, Olive-backed Oriole, Restless Flycatcher and Scarlet Robin. Fourteen species of regional conservation significance may also be supported by the tree (section 4.2).

Tree 2 is within the footprint of the proposed new roadway and will be removed.

Loss Factor = 1.

Tree ID – Tree 3
Tree spp. <i>Eucalyptus leucoxylon ssp. leucoxylon</i> SA Blue Gum
Number of trees – 1
Height (m) – 11
Hollows – None
Diameter (cm) – 60
Canopy dieback (%) – 5
Total Biodiversity Score – 2.26

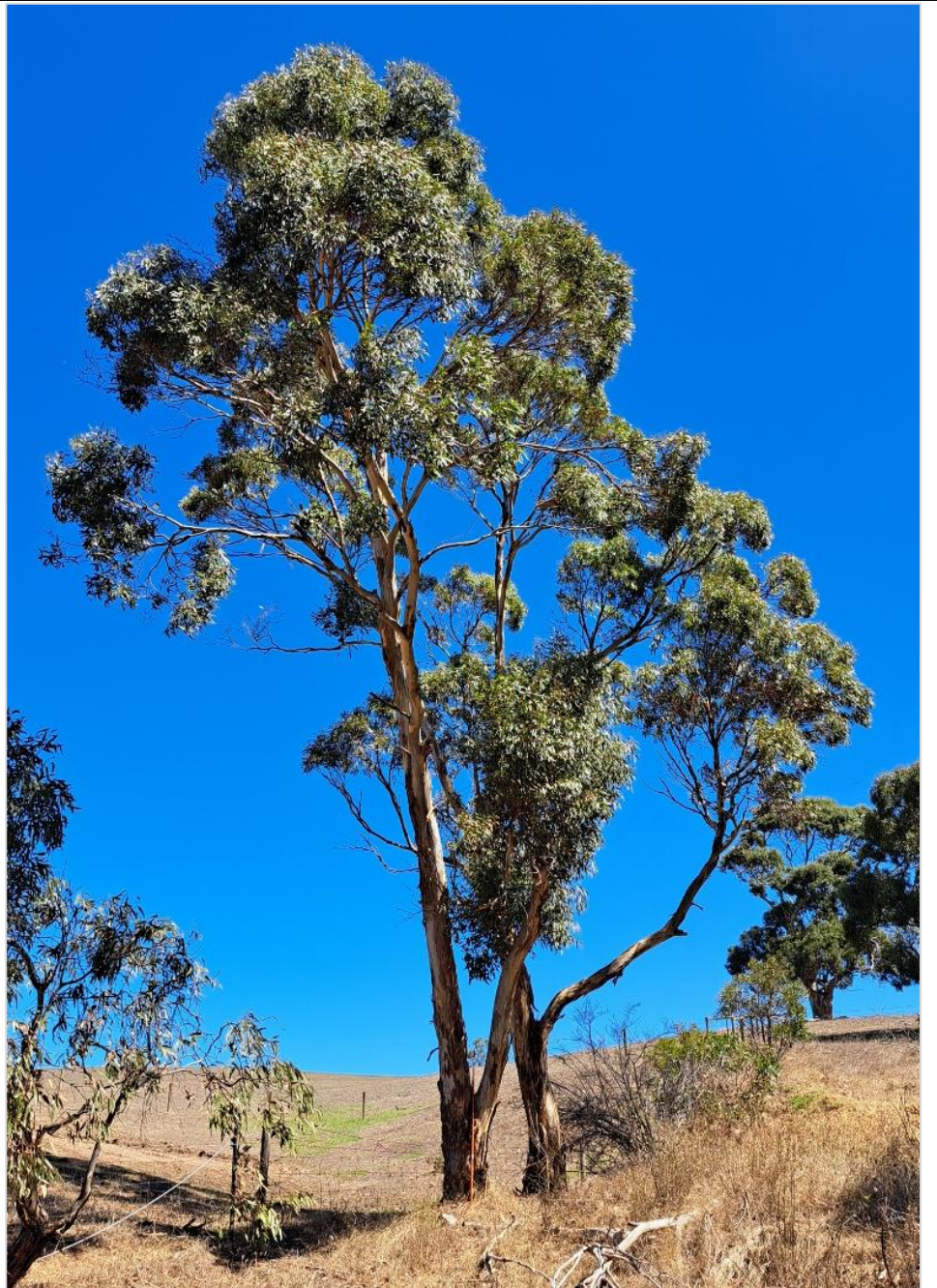


Photo 143255 facing south at Wpt 1521. (Latitude: -35.394889; Longitude: 138.756071)

This large SA Blue Gum is located next to the fenceline at the eastern end of the proposed route. The understory is comprised almost exclusively of introduced pasture grasses and forbs such as *Sixalix atropurpurea*, *Rosa canina*, *Trifolium angustifolia* and *Lavandula stoechas*.

Tree 3 is in very good condition with minimal dieback.

It contains no hollows but potentially provides food, perching and/or nesting resources for the Nationally Vulnerable Blue-winged Parrot, Diamond Firetail and Southern Whiteface, the State Endangered Little Lorikeet, the State Vulnerable Black-chinned Honeyeater, Flame Robin, Little Eagle and Yellow-tailed Black Cockatoo and the State Rare Black Falcon, Eastern Shrike-tit, Elegant Parrot, Jacky Winter, Olive-backed Oriole, Restless Flycatcher and Scarlet Robin. Fourteen species of regional conservation significance may also be supported by the tree (section 4.2).

Tree 3 is within the footprint of the proposed new roadway and will be removed.

Loss Factor = 1.

Tree ID – Tree 4
Tree spp. <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> SA Blue Gum
Number of trees – 1
Height (m) – 13
Hollows – None
Diameter (cm) – 37
Canopy dieback (%) – 0
Total Biodiversity Score – 1.94



Photo 143644 facing south at Wpt 1522. (Latitude: -35.394781; Longitude:138.755964)

This large SA Blue Gum is located at the bottom of the embankment near the eastern end of the proposed route. The understory is comprised almost exclusively of introduced pasture grasses and forbs such as *Sixalix atropurpurea*, *Rosa canina*, *Trifolium angustifolia* and *Lavandula stoechas*.

Tree 4 is in very good condition with minimal dieback.

It contains no hollows but potentially provides food, perching and/or nesting resources for the Nationally Vulnerable Blue-winged Parrot, Diamond Firetail and Southern Whiteface, the State Endangered Little Lorikeet, the State Vulnerable Black-chinned Honeyeater, Flame Robin, Little Eagle and Yellow-tailed Black Cockatoo and the State Rare Black Falcon, Eastern Shrike-tit, Elegant Parrot, Jacky Winter, Olive-backed Oriole, Restless Flycatcher and Scarlet Robin. Fourteen species of regional conservation significance may also be supported by the tree (section 4.2).

Tree 4 is within the footprint of the proposed new roadway and will be removed.

Loss Factor = 1.

Site map showing areas of proposed impact



Photo log

Photo	Direction	Plant Association or Scattered Tree	Waypoint
132911	East	Tree 1	1515
134846	East	Vegetation Association A1	1516
142445	Northeast	Tree 2	1520
143255	South	Tree 3	1521
143644	Southeast	Tree 4	1522
145803	Northwest	Vegetation Association A2	1523
150828	East	Vegetation Association A2	1524

4.2 Threatened Species assessment

Vegetation communities of conservation significance

Nationally-threatened Ecological Communities

No Nationally-threatened Ecological Communities will be impacted by the proposed works.

Flora of conservation significance

Nationally-threatened flora

No flora species of conservation significance at the national or state level were detected during the survey.

State-threatened flora

One State Rare species is present in Vegetation Associations A1 and A2:

- *Eucalyptus fasciculosa* (Pink Gum)

Fauna of conservation significance

Nationally-threatened fauna

Three Nationally-threatened species known to occur within 5 km of the survey area may find suitable habitat in Vegetation Association A1 and/or the scattered trees:

- Blue-winged Parrot (Vulnerable)
- Diamond Firetail (Vulnerable)
- Southern Whiteface (Vulnerable)

State-threatened fauna

A further fifteen species of conservation significance at the state level might utilise Vegetation Association A1 or scattered trees at the site:

- Little Lorikeet (Endangered)
- Black-chinned Honeyeater (Vulnerable)
- Flame Robin (Vulnerable)
- Heath Goanna (Vulnerable)
- Little Eagle (Vulnerable)
- Yellow-tailed Black Cockatoo (Vulnerable)
- Black Falcon (Rare)
- Eastern Shrike-tit (Rare)
- Elegant Parrot (Rare)
- Jacky Winter (Rare)
- Olive-backed Oriole (Rare)
- Painted Buttonquail (Rare)
- Restless Flycatcher (Rare)
- Scarlet Robin (Rare)
- White-winged Chough (Rare)

Regionally-threatened fauna

Fourteen bird species listed as near-threatened in the Mount Lofty Ranges region may use the scattered trees.

The likelihood of habitat use for threatened species recorded within 5 km of the site is assessed in **Error! Reference source not found.**

Species observed on site, or recorded within 5 km of the application area since 1995, or the vegetation is considered to provide suitable habitat

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
BIRDS							
<i>Aphelocephala leucopsis</i> Southern Whiteface	VU		EN	3	2002	Small sedentary bird found in a wide range of open woodlands and shrublands, usually dominated by acacias or eucalypts, with an understorey of grasses and/or shrubs. Foraging almost exclusively on the ground, it favours habitat with low tree densities and an herbaceous understorey with litter cover. Feeds on insects, spiders, and seeds. Uses scattered trees for perching and nests in hollows.	Possible. Suitable habitat is available in Association A1 and in scattered trees. There is one record within the search area.
<i>Corcorax melanorhamphos</i> White-winged Cough		R	RA	2	2017	Open forest and woodlands, often preferring wetter areas with plentiful leaf-litter for feeding, and available mud for nest building. Habitat in SA includes <i>Eucalyptus leucoxylon</i> , <i>E. fasciculosa</i> , <i>E. camaldulensis</i> woodlands and pine forests	Likely. Suitable habitat is available in association A1. There are a few records near Scott CP
<i>Coturnix ypsilophora</i> Swamp/ Brown Quail		V	RA	3	2013	Agricultural areas, wetlands, wetter grasslands and sedgeland, amongst bracken and occasionally along roadsides. Usually over damp or swampy ground.	Unlikely. Vegetation at the site is not preferred habitat. There is one record for the species, in Scott CP.
<i>Falco subniger</i> Black Falcon		R	RA	2,3	2017	Found in open woodlands and shrublands in semi-arid and arid regions but occasionally seen in open woodlands near the coast. Also occurs near wetlands and watercourses where surface water attracts prey. Uses scattered trees for perching and nesting.	Possible. Suitable habitat is available in Association A1 and in scattered trees. There are a few records across the search area.
<i>Falcunculus frontatus frontatus</i> Eastern Shrike-tit		R	EN	2,3	2025	Occurs in open eucalypt forests and woodlands. Sometimes seen in parks and gardens, and on farms with scattered trees. Forages for invertebrates in the canopy of trees (including scattered trees).	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the southern part of the search area.
<i>Gallinago hardwickii</i> Latham's Snipe	VU	R	EN	2,3,5	2026	Migratory bird with non-breeding habitat in Australia. Found in shallow freshwater wetlands with bare mud or shallow water for feeding and nearby cover vegetation (e.g. tussock grasslands, sedges, lignum, reeds and rushes, tea-tree scrub, woodlands and sclerophyll forests). They shelter during the day in small wetlands, saltmarshes, as well as creek edges, where there is adequate shallow flooded or inundated substrate.	Unlikely. The vegetation in Association A2 lacks shallow water and mudflats. There are several records across the search area.
<i>Hieraetus morphinoides</i> Little Eagle		V	EN	2,3	2019	A widespread species found in open eucalypt forest or woodland, tree-lined watercourses, mallee and sheoak or acacia woodlands, occasionally in pine plantations. Nests in mature living trees. Open habitats used: grassland, crops and sedge-covered floodplains. Uses scattered trees for perching.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the southern part of the search area.

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Hylacola pyrrhopygia parkeri</i> Chestnut-rumped Heathwren (Mount Lofty Ranges)	EN	E	EN	5	1979	Sedentary bird which occurs in eucalypt forest, woodland and mallee, often in rocky areas. Feeds on insects mainly on the ground beneath dense, low vegetation.	Unlikely. Association A1 lacks the dense understory preferred by this species. There are no recent records within 5 km of the study area.
<i>Lewin pectoralis pectoralis</i> Lewin's Rail		V	EN	3	2019	Found in densely vegetated wetlands, including swamps, lakes, small pools, inundated depressions, saltmarshes, estuaries and farm dams. May inhabit sewage farms, saltworks and agricultural country.	Unlikely. Vegetation in association A2 is sporadically inundated and unlikely to provide important habitat. There are several records nearby.
<i>Melanodryas cucullata cucullata</i> Hooded Robin	EN	R	CR	2,3,5	2012	<i>Eucalyptus</i> woodland and mallee and <i>Acacia</i> shrubland, preferring large remnants at least 10 Ha in size. Widespread, patchy distribution mainly on eastern and northern slopes of Mt Lofty Ranges and Adelaide plains. Critical habitat is structurally diverse featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging.	Unlikely. Vegetation under application is part of a small remnant roadside patch and lacks the understory features preferred by this species. Although there are numerous records across southern part of search area, few have been observed since 2003.
<i>Melithreptus gularis gularis</i> Black-chinned Honeyeater		V	CR	3	2003	Forages in the outer canopy of eucalypts for nectar and honeydew. Favoured habitats incorporate a mixture of mature and regenerating woodland eucalypts, although adjacent scattered paddock trees are also used. Occasionally seen in gardens and street trees. Uses scattered trees for perching and foraging.	Possible. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the southern part of the search area.
<i>Microeca fascinans fascinans</i> Jacky Winter		R	CR	2,3	2019	Sedentary bird, preferring open Eucalypt and mallee woodland usually with an open shrub layer featuring bare ground and fallen timber. Often seen in farmland and parks. Snatches flying insects from low perches. Uses scattered trees for perching.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the southern part of the search area.
<i>Myiagra inquieta</i> Restless Flycatcher		R	CR	2,3	2021	Found across Australia in open forests and woodlands with sparse shrubby understorey, and bare ground-layer or sparse ground-cover of grass. In river red gums near water, coastal scrubs, semi-arid shrublands and farmland. It feeds on insects and builds its nest in the fork of a tree, often near water.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the southern part of the search area.
<i>Neophema chrysostoma</i> Blue-winged Parrot	VU	V	VU	2,5	2024	Inhabits a variety of open habitats in coastal, sub-coastal and inland areas. Tends to favour grasslands and grassy woodlands. After breeding in Tasmania, the species moves to the mainland into more open and drier habitats often in natural grasslands or farmland, which may have sparsely scattered trees. Mainly forage on ground on seeds of grasses and herbaceous plants. Uses scattered trees for perching and hollows.	Possible. May use Association A1 and scattered trees. The only recent records for the species are in Scott CP.

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Neophema elegans elegans</i> Elegant Parrot		R	RA	2,3	2026	Open habitats including mallee & woodlands (for breeding), grasslands, shrublands and farmland (feeding). It feeds primarily on the ground on seeds of grasses or low-growing shrubs. Uses scattered trees for perching and nesting in hollows.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the search area.
<i>Oriolus sagittatus sagittatus</i> Olive-backed Oriole		R	RA	3	2001	Mainly found in open eucalypt forests and woodlands with an understorey varying from grassy ground-cover with a sparse or open shrub layer, to dense moist understorey, often in riparian associations. Often seen at the edges of forest clearings. Feeds on insects, nectar, fruit. Use scattered trees for perching and feeding.	Possible. Suitable habitat is available in Association A1 and in scattered trees. There is one record for the species within 5 km of the site.
<i>Parvipsitta pusilla</i> Little Lorikeet		EN	CR	3	2003	Mainly inhabits dry, open sclerophyll forests and woodlands, usually dominated by tall eucalypts, where it forages in the canopy of flowering trees. May also feed in flowering paperbarks, mistletoes or grass-trees when the eucalypts are not in flower. Uses scattered trees for perching and foraging, and nest in hollows.	Possible. Suitable habitat is available in Association A1 and in scattered trees. There is one record for the species, in Scott CP.
<i>Petroica boodang boodang</i> Scarlet Robin		R	VU	2,3	2025	Sedentary territorial bird, observed in eucalypt forest, mallee and woodlands with an open understorey of shrubs and/or grasses. Lives in both mature and regrowth vegetation with abundant logs and fallen timber. Uses scattered trees for perching.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the search area.
<i>Petroica phoenicea</i> Flame Robin		V	CR	2,3	2019	Found in eucalypt forests and woodlands. Prefers areas with open understories, including in grassy habitats such as paddocks and parklands, with or without sparsely scattered trees. Forage from low perches, from which they pounce onto small invertebrates. Uses scattered trees for perching.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are a few records across the search area.
<i>Stagonopleura bella samueli</i> Beautiful Firetail (MLR, KI)	EN	R	CR	5	-	Small sedentary bird found in dense heath to thick forests especially near sheoaks and tea-trees, coastal and sub-coastal heaths, and heathy woodlands. Access to water and dense shrubs for nesting are considered essential habitat requirements.	Unlikely. Habitat available at the site is not suitable for the species. There are no records within the search area.
<i>Stagonopleura guttata</i> Diamond Firetail	VU	V	VU	2,3,5	2022	Sedentary small finch which inhabits <i>Eucalyptus</i> , <i>Acacia</i> or <i>Allocasuarina</i> woodlands, open forests and other lightly timbered habitats. Prefers areas with relatively low tree density, few large logs, and little litter cover but high grass cover. Feeds on the ground on seeds and insects. Uses scattered trees for perching and nesting.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are a several records across the southern part of the search area.
<i>Stipiturus malachurus intermedius</i> Southern Emu-wren (Fleurieu Peninsula)	EN	E	CR	3,5	2012	Generally occurs in two habitat types. Preferred swamp habitat comprises peat-bog vegetation dominated by <i>Leptospermum continentale</i> (Prickly Tea-tree), <i>L. lanigerum</i> (Silky Tea-tree), sedges and ferns. Preferred dry-heath habitat includes shrubland with species such as <i>Allocasuarina</i> , <i>Hakea rostrata</i> , and <i>Xanthorrhoea semiplana</i> , or sometimes low open <i>Eucalyptus obliqua</i> or <i>E. baxteri</i> forest with a heath understorey.	Unlikely. Habitat available at the site is not suitable for the species.

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Turnix varius varius</i> (Painted Buttonquail)		R	VU	2,3	2023	Small ground-dwelling bird found in woodland and forest, shrublands & heathlands and coastal vegetation, usually with a closed canopy and some shrubby understory and deep ground leaf litter. Feeds in the litter, on seeds, fruit, leaves and insects, creating distinctive circular depressions.	Possible. Suitable habitat is available in Association A1. There are a few recent records across the southern part of the search area.
<i>Zanda funerea whiteae</i> Yellow-tailed Black Cockatoo		V	VU	3	2020	Forests, woodlands, urban areas, particularly eucalypts and pines. Feeds on seeds of native and introduced trees, particularly she-oaks, eucalypts, acacias, banksias, hakeas and pines as well as insect larvae extracted from <i>Xanthorrhoea</i> , eucalypts and acacias. Uses scattered trees for perching, feeding and nesting in hollows.	Highly Likely. Suitable habitat is available in Association A1 and in scattered trees. There are numerous records across the search area.
<i>Zapornia tabuensis</i> Spotless Crane		R	EN	3	2020	Prefers permanent or ephemeral swamp, marsh and wetland habitats, usually with continuous blocks of tall emergent reeds, rushes, sedges or other vegetation. Also observed in agricultural and suburban areas. Usually forages on mud or in shallow water, either in the open or beside concealing vegetation, at margins of wetlands.	Unlikely. The vegetation in Association A2 lacks shallow water and mudflats. There are several records across the search area, most recently near Black Swamp at the eastern end of Tookayerta Creek.
<i>Zoothera lunulata halmaturina</i> South Australian Bassian Thrush	EN	R	EN	2	2023	Secretive, sedentary bird, usually found in damp, densely forested areas and gullies often with a thick overhead canopy, and dense leaf-litter below. It feeds on the ground, scratching under the leaf-litter for small invertebrates.	Unlikely. Habitat at the site lacks the dense understorey preferred by this species. Only recorded from Scott CP.
MAMMALS							
<i>Isoodon obesulus obesulus</i> (Southern Brown Bandicoot)	EN	V	EN	2, 5	1992	Prefers dense undergrowth, including wetland fringes and heathland as well as native bushland and areas with exotic shrubby species such as blackberry.	Unlikely. Habitat at the site lacks the dense understorey preferred by this species. No recent records.
<i>Rattus lutreolus</i> Swamp Rat		R	RA	2,3	2024	Found in a wide variety of habitats with dense undergrowth, including forests, woodlands, coastal heath, sedgelands and grassland areas. Feeds on grass seeds and the stems of grasses and sedges.	Unlikely. Habitat at the site lacks the dense understorey preferred by this species, and no characteristic diggings were noted at the site.
REPTILES							
<i>Varanus rosenbergi</i> (Heath Goanna)		V	CR	3	2017	Sandy heathland, open woodland or sclerophyll forest. Nests in termite mounds, making them a critical habitat component. Shelters in hollow logs, rock crevices and in burrows.	Possible. Suitable habitat is available in Association A1, but no termite mounds were noted. There are a few records for the species around Scott CP.

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Fauna species listed as Near-threatened in AMLR that regularly use scattered trees in South Australia							
<i>Acanthagenys rufogularis</i> Spiny-cheeked Honeyeater			NT	2	2025	Found in dry woodlands, mallee and acacia scrub. Sometimes seen in parks and gardens, and on agricultural land with scattered remnant trees. Forage and perch in scattered trees.	Highly Likely. Several records nearby.
<i>Acanthiza chrysorrhoa</i> Yellow-rumped Thornbill			NT	2	2025	Open forest and woodland, grasslands and shrubland. Feeds on insects and lerps. Uses scattered trees for feeding, perching & nesting.	Highly Likely. Numerous records nearby.
<i>Acanthiza nana</i> Yellow Thornbill			NT	2	2024	Occur in a variety of temperate and semi-arid habitats including shrublands, forests and thickets. Prefers vegetation dominated by casuarinas or eucalypts and uses scattered trees for feeding and perching.	Highly Likely. Numerous records nearby.
<i>Chalcites basalis</i> Horsfield's Bronze Cuckoo			NT	2	2025	Found in many wooded habitats with a range of under-stories from grasses to shrubs or heath. Uses scattered trees for perching.	Highly Likely. Numerous records nearby.
<i>Melithreptus brevirostris</i> Brown-headed Honeyeater			NT	2	2025	Open eucalypt forests and woodlands, usually near water. Feeds mainly on insects, but also takes nectar. Uses scattered trees for perching and foraging.	Highly Likely. Numerous records nearby.
<i>Melithreptus lunatus</i> White-naped Honeyeater			NT	2	2025	Open forests and woodlands, mainly in the temperate zone. Found in urban gardens. Feeds on nectar, manna and insects and their products (e.g. honeydew and lerp). Uses scattered trees for perching and foraging.	Highly Likely. Numerous records nearby.
<i>Ninox novaeseelandiae</i> Southern Boobook			NT	2	2007	Occurs within a variety of habitats, including forests, woodlands, gardens and parks. Uses scattered trees for perching and nests in hollows.	Likely. Suitable habitat is present and there are a few records nearby.
<i>Pachycephala rufiventris</i> Rufous Whistler			NT	2	2025	Found in forests, woodlands and shrublands as well as in gardens and farmland with some trees. Uses scattered trees for foraging and perching.	Highly Likely. Numerous records nearby.
<i>Pardalotus punctatus</i> Spotted Pardalote			NT	2	2025	Found mostly in eucalypt forests & woodlands. Forages on foliage of trees for insects, especially psyllids and their sugary exudates (lerps). They also use scattered trees for foraging and perching, and sometimes nest in hollows.	Highly Likely. Numerous records nearby.
<i>Parvipsitta porphyrocephala</i> Purple-crowned Lorikeet			NT	2	2021	A locally nomadic species, often found in dry sclerophyll forest and town parks and gardens, especially where Eucalyptus trees are flowering. The nest is a small unlined hollow in a eucalypt. Uses scattered trees for foraging, perching and nesting.	Highly Likely. Numerous records nearby.
<i>Petrochelidon nigricans</i> Tree Martin			NT	2	2025	Small swallow-like insectivores found in the air above a range of habitats ranging from open grassed areas to forests, especially near wetlands. The nest is typically in a hole in a tree branch, often a Eucalypt. Uses scattered trees for perching and nesting.	Highly Likely. Numerous records nearby.
<i>Psephotus haematonotus</i> Red-rumped Parrot			NT	2	2025	Generally found near water, in open grassy woodlands, farmland with remnant trees, as well as suburban parks and gardens. Feeds on the ground, preferring seeds and leaves of grasses. Uses scattered trees for perching and nesting in hollows.	Highly Likely. Numerous records nearby.

Species Common Name	EPBC Act	NP&W Act	AMLR rating	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Rhipidura leucophrys</i> Willie Wagtail			NT	2	2025	A widespread species living in most habitats apart from thick forest. Uses scattered trees for perching, foraging and nesting.	Highly Likely. Numerous records nearby.
<i>Todiramphus sanctus</i> Sacred Kingfisher			NT	2	2025	Inhabits tall open eucalypt forest, woodlands, mangroves and paperbark forests. Feeds on crustaceans, reptiles, insects and fish. Uses scattered trees for perching and nests in hollows.	Highly Likely. Numerous records nearby.

Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others
 EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable; NP&W Act; E= Endangered, V = Vulnerable, R= Rare
 Regional Status Codes: CR = Critically endangered; EN = Endangered; VU = Vulnerable; RA = rare; NT = Near threatened

Criteria for the likelihood of occurrence of species within the Study area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provide limited habitat or feeding resources for the species. Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provide no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

4.3 Cumulative impact

When exercising a power or making a decision under Division 5 of the Regulations, the NVC must consider the potential cumulative impact, both direct and indirect, that is reasonably likely to result from a proposed clearance activity.

Clearance directly required for the application

Impacts directly related to the application involve the clearance of four scattered trees and 0.1495 hectares of native vegetation across two vegetation associations.

Subsequent clearance that will be permitted or required

No subsequent clearance will be required. The new road will not facilitate any additional mining activities or clearance beyond existing approvals.

Indirect impacts

The site contains several species of SA Declared and Environmental weeds. Soil disturbance and the movement of vehicles and machinery increases the risk of further spread and establishment of weeds across the site. Nearby vegetation may be impacted by increased dust created during the construction phase of the project and through the movement of heavy vehicles along the new road.

Future stages

There are no plans for future stages of the project.

4.4 Address the Mitigation Hierarchy

When exercising a power or making a decision under Division 5 of the Regulations, the NVC must have regard to the mitigation hierarchy. The NVC will also consider, with the aim to minimise, impacts on biological diversity, soil, water and other natural resources, threatened species or ecological communities under the EPBC Act or listed species under the NP&W Act.

a) Avoidance – outline measures taken to avoid clearance of native vegetation

Clearance of native vegetation has been avoided by locating the works within an existing track and in an adjacent cleared paddock. The entrance onto Quarry Road has been sited to avoid impacts on roadside vegetation.

b) Minimisation – if clearance cannot be avoided, outline measures taken to minimise the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).

Vegetation clearance has been minimised by pruning overhanging limbs or retaining trees near the edge of the construction footprint, where possible.

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimised, such as allowing for the re-establishment of the vegetation.

The new internal road surface will be permanently cleared and cannot be rehabilitated. (we will endeavor to revegetate the batters with local plant species to reduce weed invasion)

d) Offset – any adverse impact on native vegetation that cannot be avoided or further minimised should be offset by the achievement of a significant environmental benefit that outweighs that impact.

Impacts will be offset by payment to the Native Vegetation Fund.

4.5 Principles of Clearance (Schedule 1, Native Vegetation Act 1991)

The NVC will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The NVC will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act 2016*.

Principle of clearance	Considerations														
Principle 1a - it comprises a high level of diversity of plant species	<u>Relevant information</u> <table border="1"> <thead> <tr> <th>Vegetation Association</th> <th>No. Native</th> <th>No. Introduced</th> <th>Plant Diversity Score</th> </tr> </thead> <tbody> <tr> <td>A1</td> <td>7</td> <td>8</td> <td>6</td> </tr> <tr> <td>A2</td> <td>8</td> <td>15</td> <td>9</td> </tr> </tbody> </table>	Vegetation Association	No. Native	No. Introduced	Plant Diversity Score	A1	7	8	6	A2	8	15	9		
	Vegetation Association	No. Native	No. Introduced	Plant Diversity Score											
	A1	7	8	6											
A2	8	15	9												
<u>Assessment against the principles</u> Seriously at Variance - None At Variance – None															
<u>Moderating factors that may be considered by the NVC</u> – Not applicable															
Principle 1b - significance as a habitat for wildlife	<u>Relevant information</u> Three Nationally-threatened species known to occur within 5 km of the survey area may use Vegetation Association A1 and/or the scattered trees: <ul style="list-style-type: none"> - Blue-winged Parrot (Vulnerable) - Diamond Firetail (Vulnerable) - Southern Whiteface (Vulnerable) Fifteen State-listed species may use vegetation association A1 and/or the scattered trees: <ul style="list-style-type: none"> - Little Lorikeet (Endangered) - Black-chinned Honeyeater (Vulnerable) - Flame Robin (Vulnerable) - Heath Goanna (Vulnerable) - Little Eagle (Vulnerable) - Yellow-tailed Black Cockatoo (Vulnerable) - Black Falcon (Rare) - Eastern Shrike-tit (Rare) - Elegant Parrot (Rare) - Jacky Winter (Rare) - Olive-backed Oriole (Rare) - Painted Buttonquail (Rare) - Restless Flycatcher (Rare) - Scarlet Robin (Rare) - White-winged Chough (Rare) Fourteen bird species listed as near-threatened in the Mount Lofty Ranges region may use the scattered trees.														
	<table border="1"> <thead> <tr> <th>Vegetation Association</th> <th>Threatened Fauna Score</th> <th>Unit biodiversity Score</th> </tr> </thead> <tbody> <tr> <td>A1</td> <td>0.1</td> <td>41.26</td> </tr> <tr> <td>A2</td> <td>0</td> <td>30.53</td> </tr> </tbody> </table>	Vegetation Association	Threatened Fauna Score	Unit biodiversity Score	A1	0.1	41.26	A2	0	30.53					
	Vegetation Association	Threatened Fauna Score	Unit biodiversity Score												
A1	0.1	41.26													
A2	0	30.53													
<table border="1"> <thead> <tr> <th>Scattered Tree</th> <th>Threatened fauna habitat score</th> <th>Total biodiversity Score</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.8</td> <td>0.6</td> </tr> <tr> <td>2</td> <td>1.8</td> <td>2.23</td> </tr> <tr> <td>3</td> <td>1.8</td> <td>2.26</td> </tr> <tr> <td>4</td> <td>1.8</td> <td>1.94</td> </tr> </tbody> </table>	Scattered Tree	Threatened fauna habitat score	Total biodiversity Score	1	1.8	0.6	2	1.8	2.23	3	1.8	2.26	4	1.8	1.94
Scattered Tree	Threatened fauna habitat score	Total biodiversity Score													
1	1.8	0.6													
2	1.8	2.23													
3	1.8	2.26													
4	1.8	1.94													

	<p><u>Assessment against the principles</u></p> <p>Seriously at Variance Vegetation Associations (Threatened fauna score ≥ 0.05 / Unit Biodiversity Score >50): - A1 Scattered Trees (Threatened fauna habitat score ≥ 1.2 / Total Biodiversity Score >7): - Trees 1,2,3 and 4 At Variance (Threatened Fauna Score of <0.05): None</p> <p><u>Moderating factors that may be considered by the NVC</u> Removal of vegetation is unlikely to have an impact of the population viability of the Diamond Firetail as the habitat available is in poor to moderate condition and has low native grass cover. There are few records of the Southern Whiteface and the Blue-winged Parrot across the search area. No hollow-bearing trees were noted within the survey area. The vegetation under application is not connected to large tracts of native vegetation, and dispersal from nearby reserves such as Scott CP is considered to be minimal for most species.</p>								
<p>Principle 1c - plants of a rare, vulnerable or endangered species</p>	<p><u>Relevant information</u> No Nationally- threatened plant species were recorded. One State Rare species (<i>Eucalyptus fasciculosa</i>) is present in Associations A1 and A2.</p> <table border="1" data-bbox="411 824 1043 954"> <thead> <tr> <th>Vegetation Association</th> <th>Threatened Flora Score</th> </tr> </thead> <tbody> <tr> <td>A1</td> <td>0.04</td> </tr> <tr> <td>A2</td> <td>0.04</td> </tr> <tr> <td>Trees 1-4</td> <td>0</td> </tr> </tbody> </table> <p><u>Assessment against the principles</u> Seriously at Variance : None At Variance: - Associations A1 and A2</p> <p><u>Moderating factors that may be considered by the NVC</u> <i>Eucalyptus fasciculosa</i> is a dominant component in nearby roadside vegetation and reserves, and the proposed works are unlikely to have a long-term impact on local populations of this species.</p>	Vegetation Association	Threatened Flora Score	A1	0.04	A2	0.04	Trees 1-4	0
Vegetation Association	Threatened Flora Score								
A1	0.04								
A2	0.04								
Trees 1-4	0								
<p>Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:</p>	<p><u>Relevant information</u> The vegetation associations are not part of a rare or threatened plant community. Threatened Community Score: – 1 for all vegetation associations</p> <p><u>Assessment against the principles</u> Seriously at Variance - None</p> <p><u>Moderating factors that may be considered by the NVC</u> – Not applicable</p>								
<p>Principle 1e - it is significant as a remnant of vegetation in an area which has been extensively cleared.</p>	<p><u>Relevant information</u> Sandergrove IBRA Association percent vegetation remnancy - 11% Fleurieu IBRA Subregion percent vegetation remnancy – 12%</p> <p>Total Biodiversity Score – 12.08</p> <p><u>Assessment against the principles</u> Seriously at Variance: No At Variance (Remnancy $>10 - 30\%$ and Total Biodiversity Score of 5-500): Yes</p> <p><u>Moderating factors that may be considered by the NVC</u></p>								

Principle 1f - it is growing in, or in association with, a wetland environment.	<u>Relevant information</u> Vegetation Association A2 is growing within a dam that receives stormwater during rain events. This plant community supports <i>Phragmites australis</i> but is infrequently inundated and is in very poor condition. It is not connected to other wetland communities.
	<u>Assessment against the principles</u> Seriously at Variance : None At Variance – Vegetation Association A2
	<u>Moderating factors that may be considered by the NVC</u>
Principle 1g - it contributes significantly to the amenity of the area in which it is growing or is situated.	<u>Relevant information</u> The vegetation is located on private property and does not contribute to the amenity of the area.
	N/A
	<u>Moderating factors that may be considered by the NVC</u>

Principles of Clearance (h-m) will be considered by comments provided by the local NRM Board or relevant Minister. The Data Report should contain information on these principles where relevant and where sufficient information or expertise is available.

4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	4
	Area (ha)	0.1495
	Total biodiversity Score	12.08
Seriously at variance with principle 1(b), 1(c) or 1 (d)	1 (b)	
Risk assessment outcome	Level 3	

4.7 NVC Guidelines

Provide any other information that demonstrates that the clearance complies with any relevant NVC guidelines related to the activity.

Not applicable

5. Clearance summary

Clearance Area(s) Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1	6	1	0.04	0.1	41.26	0.0445	1.84	1			2.02	\$1,930.50	\$106.18
A	2	9	1	0.04	0	30.53	0.105	3.21	1			3.53	3,328.45	183.06
						Total	0.1495	5.05				5.55	\$5,258.95	\$289.24

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB payment	Admin Fee	Total SEB Payment
1	1	1.8	0	0.6	1	0.66			\$662.17
2	1	1.8	0	2.23	1	2.45			\$2,458.06
3	1	1.8	0	2.26	1	2.49			\$2,498.19
4	1	1.8	0	1.94	1	2.13			\$2,137.01
Total	4			7.03		7.73	\$7,351.11	\$404.31	\$7,755.43

Totals summary table

Economies of Scale Factor	0.5
Rainfall (mm) Factor	524
SEB Points of Gain/ha Factor	7

SEB Uplift Factor	1.10
-------------------	------

Management Cost (\$/ha)	\$25,408.00
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	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	12.08	13.28	\$12,610.06	\$693.55	\$13,303.61

6. Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the Regulations. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that a SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

ACHIEVING A SEB

Indicate how the SEB will be achieved by ticking the appropriate box and providing the associated information:

✓ Pay into the Native Vegetation Fund.

PAYMENT SEB

Payment amount required (including admin. fee): **\$13,303.61**

7. Appendices

Appendix 1. Bushland and Scattered Tree Vegetation Assessment Scoresheets associated with the proposed clearance (submitted in Excel format)

Appendix 2. Flora Species List

Appendix 3. Preliminary Concept Layout Plan

Appendix 2. Flora Species List

Native Species

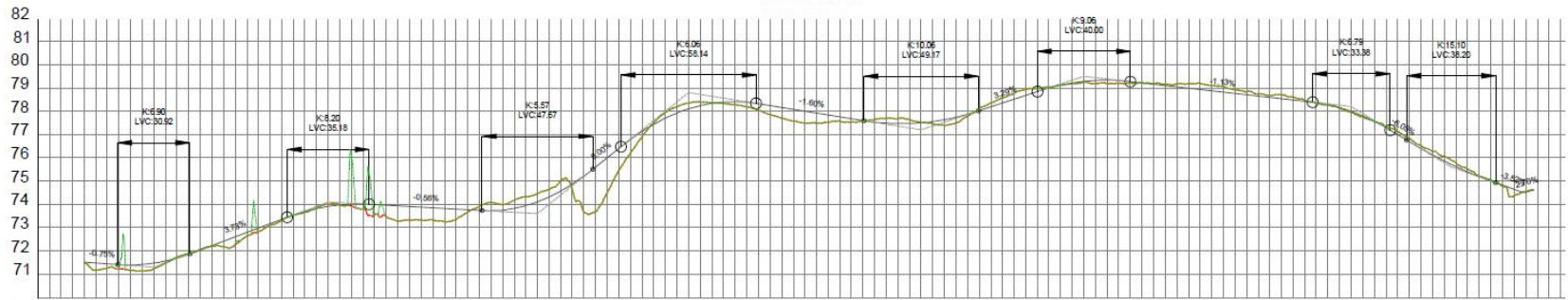
Species	Common Name	Conservation Status		Vegetation Association		Scattered Trees
		EPBC	SA	A1	A2	
<i>Acacia pycnantha</i>	Golden Wattle			+	+	
<i>Amyema sp.</i>	Mistletoe			+		
<i>Billardiera cymosa ssp.</i>	Sweet Apple-berry			+	+	
<i>Dianella brevicaulis</i>	Short-stem Flax-lily			+		
<i>Epilobium hirtigerum</i>	Hairy Willow-herb				+	
<i>Eucalyptus camaldulensis ssp. camaldulensis</i>	River Red Gum				+	+
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	+	+	
<i>Eucalyptus leucoxylon ssp. leucoxylon</i>	SA Blue Gum					+
<i>Juncus pallidus</i>	Pale Rush				+	
<i>Phragmites australis</i>	Common Reed				+	
<i>Rytidosperma setaceum</i>	Small-flower Wallaby-grass			+	+	
<i>Styphelia humifusa</i>	Cranberry Heath			+		

Introduced Species

Species	Common Name	SA Declared Weed	Vegetation Association	
			A1	A2
<i>Acacia longifolia ssp. longifolia</i>	Sallow Wattle		+	+
<i>Avena sp.</i>	Oat		+	+
<i>Cirsium vulgare</i>	Spear Thistle			+
<i>Disa bracteata</i>	South African Weed Orchid			+
<i>Dittrichia graveolens</i>	Stinkweed			+
<i>Ehrharta longiflora</i>	Annual Veldt Grass		+	+
<i>Eucalyptus platypus ssp. platypus</i>	Round-leaved Moort			+
<i>Lavandula stoechas ssp. stoechas</i>	Topped Lavender			+
<i>Pittosporum undulatum</i>	Sweet Pittosporum	Y	+	+
<i>Rosa canina</i>	Dog Rose	Y	+	+
<i>Schinus molle</i>	Pepper-tree			+
<i>Senecio phelleus</i>	Woodland Groundsel			+
<i>Senecio pterophorus</i>	African Daisy		+	+
<i>Sonchus asper</i>	Rough Sow-thistle			+
<i>Trifolium angustifolium</i>	Narrow-leaf Clover		+	+
<i>Vulpia sp.</i>	Fescue		+	+



GRAVEL ALIGNMENT



Chainage	-20	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620																	
Ground Levels		71.524	71.396	71.666	71.727	72.191	73.091	73.847	74.013	73.906	73.794	73.753	74.318	74.637	75.600	77.132	76.899	78.348	78.412	78.273	78.160	77.702	77.840	77.518	77.530	77.644	77.500	77.516	77.868	77.785	78.514	78.769	79.112	79.332	79.192	79.187	79.194	78.936	78.709	78.832	78.483	78.607	78.121	77.291	77.325	76.277	76.124	75.194	75.218	74.566
Design Centreline Level		71.524	71.396	71.695	71.727	72.420	73.197	73.817	74.013	73.906	73.794	73.753	74.318	74.637	75.600	77.132	76.899	78.348	78.412	78.273	78.160	77.702	77.840	77.518	77.530	77.644	77.500	77.516	77.868	77.785	78.514	78.769	79.112	79.332	79.192	79.187	79.194	78.936	78.709	78.832	78.483	78.607	78.121	77.291	77.325	76.277	76.124	75.194	75.218	74.523

REV	DESCRIPTION	DATE	BY

Legend:
 - - - EXISTING GROUND
 - - - UAV - EXISTING GROUND
 - - - DESIGN CENTERLINE LEVEL

Photography UAV- 2021-02-01
 Topography UAV- 2021-02-01
 Cadastre Esri/Google
 Other: Btg, Aerial Photo



PROJECT: Visy Tooperang
 CLIENT: Visy Recycling

Concept Layout Plan and Longitudinal Section

GROUNDWORK plus

SCALE: 1:2000

DRAWING NUMBER: 5009.DRG.0001

REVISION: 0

DATE: 15 March 2021
 PRINTED: 18 March 2021

DATUM: HORIZONTAL / VERTICAL ZONE

PT: + 61 7 3871 0411
 WWW.GF.GROUNDWORK.COM.AU

FILE NAME: C:\Users\ADMINISTRATOR\AppData\Local\Temp\Groundwork\5009.DRG_0001.dwg
 JOB REF: 5009

DRAWINGS



- D19633
- Rehabilitation Area
- Silt Dam
- Dam
- Mine Road
- Top of Bank Line
- Tree (to size)
- Fence

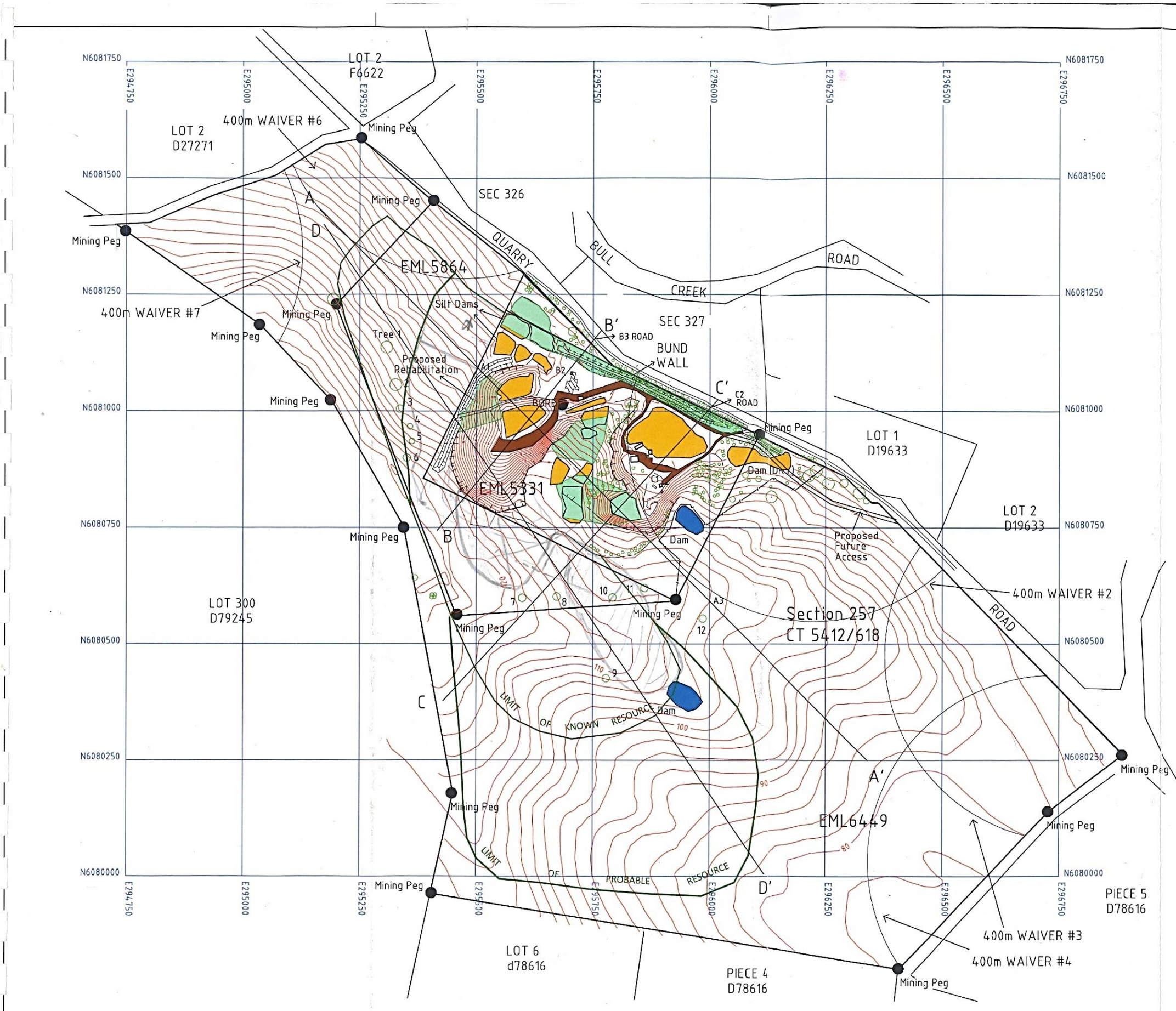
SHEET 1 OF 3

AUTHORITY FOR DATUM
 PSM 6627/2841
 E 293,691.332
 N 6,080,740.433
 Ht 112.446m AUSTRALIAN HEIGHT DATUM

Hundred of NANGKITA

Surveyed on 7/7/2015
 by Grantley Leith
 Extra survey 11/08/2015

Drawing Number 1



PRINT SIZE - A3

GDL Terrain Services
 30 COLLEGE ROAD, SOMERTON PARK, 5044
 PHONE (08) 7127 7089
 MOBILE 0427 926 207
 EMAIL grant@terrainservices.com.au

COUNCIL : ALEXANDRINA COUNCIL
 MAP SHEET :
 CT REFS :

PLAN DETAILS

0m 100 200 300 400m
 SCALE 1: 4000

LEVEL DATUM : AHD DATA FILE/S : 2974DAT.CSV
 LEVEL AUTHORITY : PSM6627/2841 EL112.446m INSTRUCTION : 2903
 CO-ORD DATUM : MGA94 GEOGRAPHIC GRID

NO.	REVISION	STAFF	CHECK	DATE
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1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15
0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015

Tooperang Quarry
 WARWICK STEEN MAYER
 EXISTING CONDITIONS PLAN
 EML5331, EML5864 & EML6449
 TOOPERANG

DRAWING 2974MN01
 DATE 23/12/2015
 SHEET 1 OF 3
 REV. 2.30



LEGEND

- Rehabilitation Area
- Silt Dam
- Dam
- Mine Road
- Top of Bank Line
- Tree (to size)
- WL WATER LEVEL

NORTH

SHEET 2 OF 3 ENLARGEMENT

AUTHORITY FOR DATUM
 PSM 6627/2841
 E 293,691.332
 N 6,080,740.433
 Ht 112.446m AUSTRALIAN HEIGHT DATUM

Hundred of NANGKITA

Surveyed on 7/7/2015
 by Grantley Leith
 Extra survey 11/08/2015

Section 257
 CT 5412/618

Drawing Number 2

PRINT SIZE - A3

GDL Terrain Services
 30 COLLEGE ROAD, SOMERTON PARK, 5044
 PHONE: (08) 7127 7089
 MOBILE: 0427 926 207
 EMAIL: grant@terrainservices.com.au

PLAN DETAILS
 COUNCIL: ALEXANDRINA COUNCIL
 MAP SHEET:
 CT REFS:

SCALE 1: 1250	
LEVEL DATUM: AHD	DATA FILE/S: 2974DAT.CSV
LEVEL AUTHORITY: PSM6627/2841 EL112.446m	INSTRUCTION: 2903
COORD DATUM: MGA94 GEOGRAPHIC GRID	

NO.	REVISION	STAFF	CHECK	DATE
2	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED.	GDL	EP	13/8/15
1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15
0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015

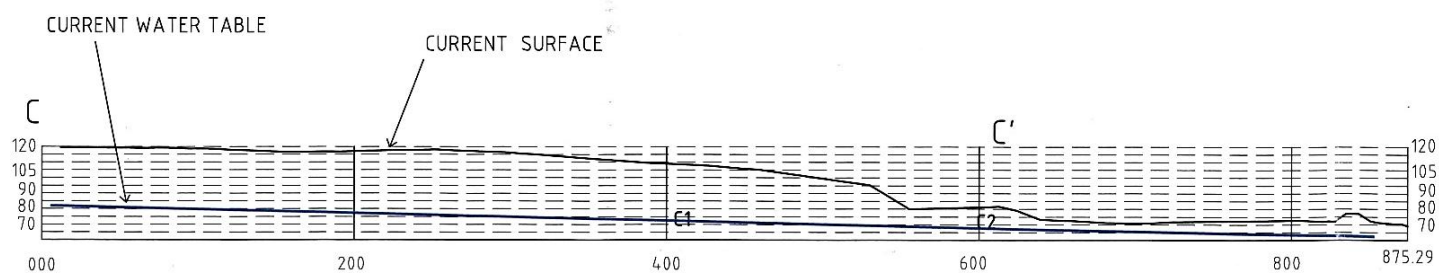
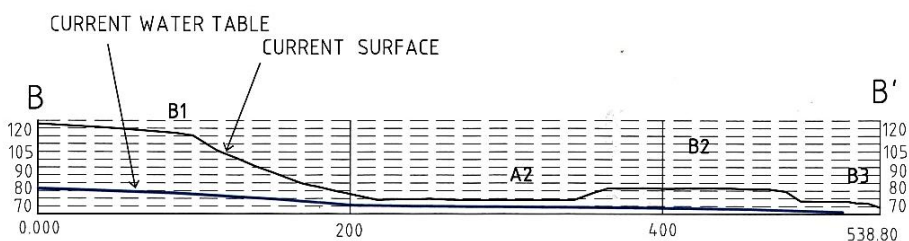
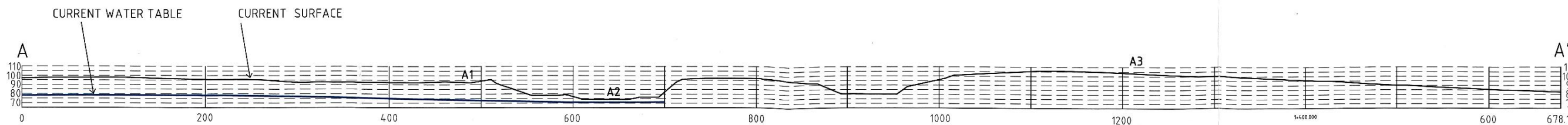
Tooperang Quarry

WARWICK STEEN MAYER
 EXISTING CONDITIONS PLAN
 EML5331, EML5864 & EML6449
 TOOPERANG

DRAWING 2974MIN01
DATE 23/12/2015
SHEET 2 OF 3
REV 2.30



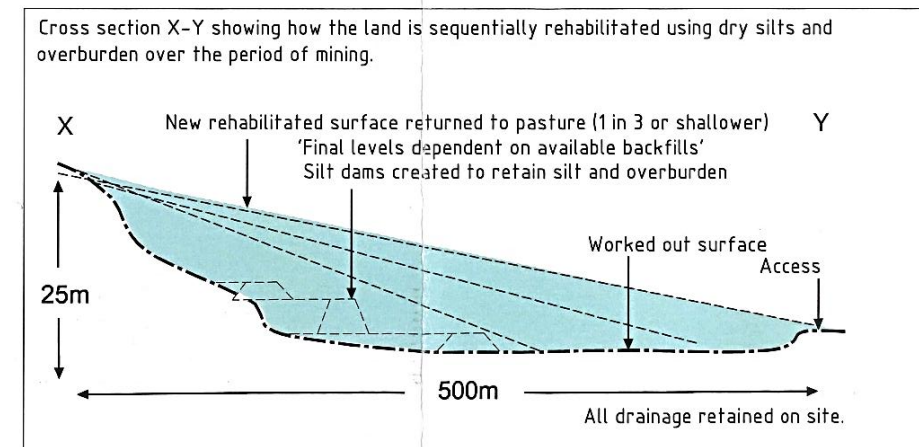
VERTICAL EXAGGERATION - 1X



SCHEMATIC REHABILITATION SECTION

NOT TO SCALE

Progressive Rehabilitation design method using dried silt and overburden:



SHEET 3 OF 3 INITIAL CROSS SECTIONS

Drawing Number 3

PRINT SIZE - A3

GDL Terrain Services
30 COLLAGE ROAD, SOMERTON PARK, 5044
PHONE (08) 7127 7089
MOBILE 0427 926 207
EMAIL grant@terrainservices.com.au

PLAN DETAILS
COUNCIL : ALEXANDRINA COUNCIL
MAP SHEET :
GT REFS :



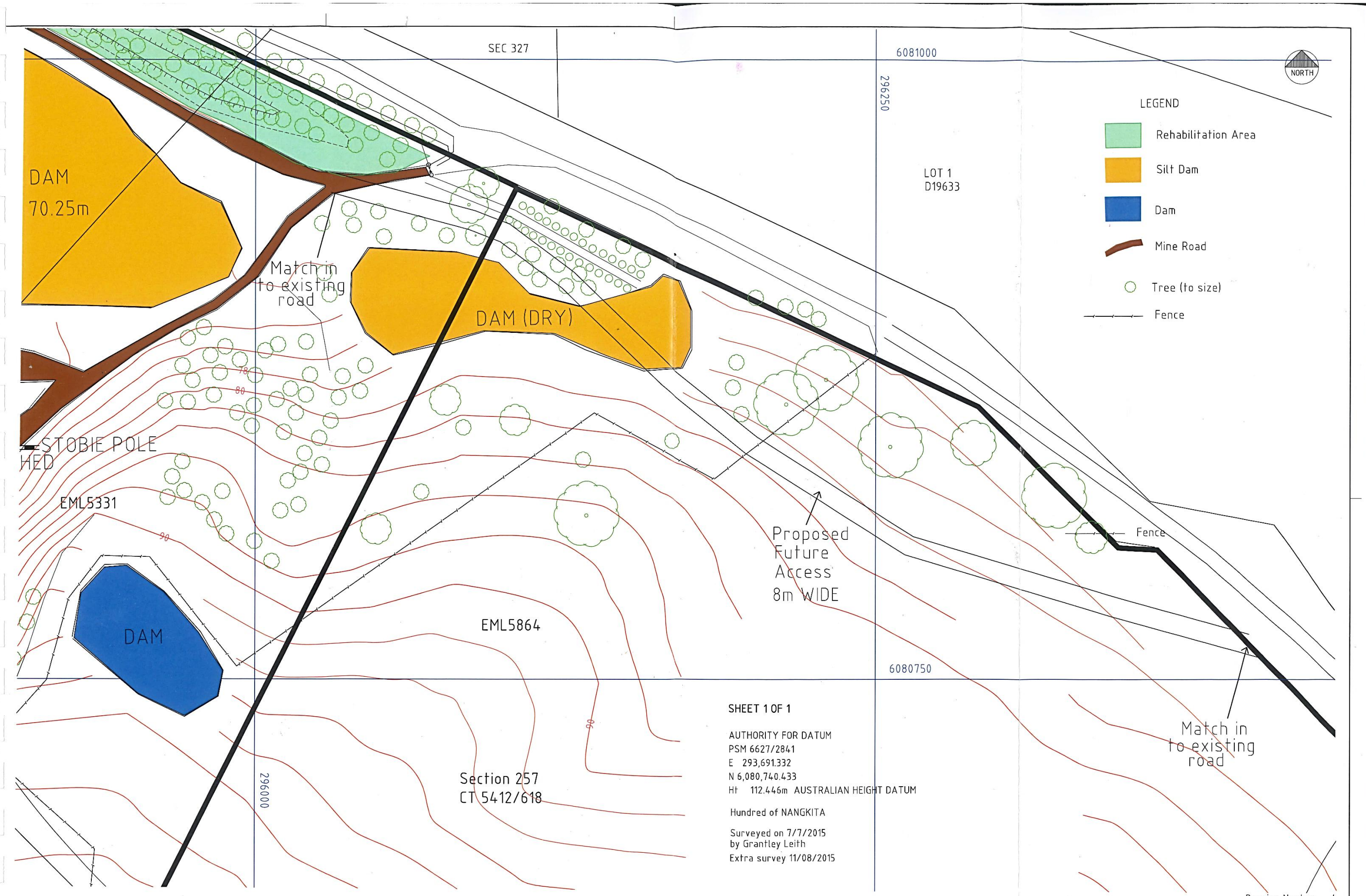
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1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15
0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015

Tooperang Quarry
WARWICK STEEN MAYER
EXISTING CONDITIONS PLAN
EML5331, EML5864 & EML6449
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DRAWING	2974MN01
DATE	23/12/2015
SHEET	3 OF 3
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Section 257
 CT 5412/618

Drawing Number 4

PRINT SIZE - A3	GDL Terrain Services 30 COLLEGE ROAD, SOMERTON PARK, 5044 PHONE: (08) 7127 7089 MOBILE: 0427 926 207 EMAIL: grant@terrainservices.com.au	COUNCIL: ALEXANDRINA COUNCIL MAP SHEET: CT REFS:		SCALE 1: 1250 DATA FILE/S: 2974DAT.CSV INSTRUCTION: 2903		Tooperang Quarry WARWICK STEEN MAYER PROPOSED NEW ACCESS ROAD PLAN EML5331, EML5864 & EML6449 TOOPERANG		DRAWING 2974MND01
		LEVEL DATUM: AHD LEVEL AUTHORITY: PSM6627/2841 EL: 112.446m CO-ORD DATUM: MGA84 GEOGRAPHIC GRID		NO. REVISION		GDL EP 13/8/15 GDL GDI 24/07/15 GDL GDI 10/7/2015		DATE 23/12/2015
						2 EXTRA SURVEY DETAIL ADDED, PLAN UPDATED. 1 TOTAL SITE PLAN ADDED 0 ISSUED TO CLIENT FOR REVIEW		SHEET 1 OF 1



- D19633
- Rehabilitation Area
 - Silt Dam
 - Dam
 - Mine Road
 - Top of Bank Line
 - Tree (to size)
 - Fence

Refer to Figure 9 for revised staging of mining

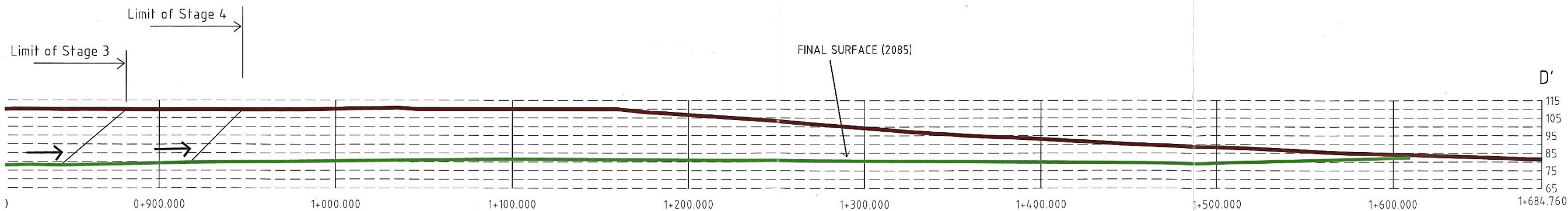
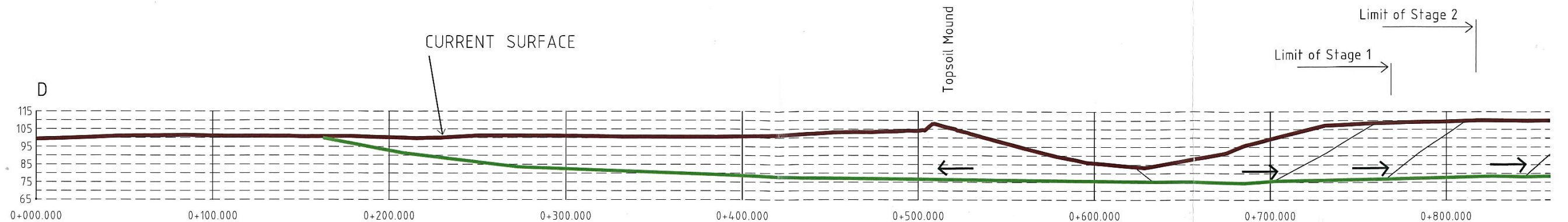
SHEET 1 OF 3

AUTHORITY FOR DATUM
 PSM 6627/2841
 E 293,691.332
 N 6,080,740.433
 Ht 112.446m AUSTRALIAN HEIGHT DATUM
 Hundred of NANGKITA

Drawing Number 5

PRINT SIZE - A3	GDL Terrain Services <small>30 COLLEGE ROAD, SOMERTON PARK, 5044 PHONE: (08) 7127 7089 MOBILE: 0427 926 207 EMAIL: grant@terrainservices.com.au</small>	COUNCIL: ALEXANDRINA COUNCIL MAP SHEET: CT REFS:	PLAN DETAILS ALEXANDRINA COUNCIL	<div style="text-align: center;"> <p>SCALE 1: 4000</p> </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">NO.</td> <td style="width: 65%;">REVISION</td> <td style="width: 10%;">STAFF</td> <td style="width: 10%;">CHECK</td> <td style="width: 10%;">DATE</td> </tr> <tr> <td>2</td> <td>EXTRA SURVEY DETAIL ADDED. PLAN UPDATED.</td> <td>GDL</td> <td>EP</td> <td>13/8/15</td> </tr> <tr> <td>1</td> <td>TOTAL SITE PLAN ADDED</td> <td>GDL</td> <td>GDL</td> <td>24/07/15</td> </tr> <tr> <td>0</td> <td>ISSUED TO CLIENT FOR REVIEW</td> <td>GDL</td> <td>GDL</td> <td>10/7/2015</td> </tr> </table>	NO.	REVISION	STAFF	CHECK	DATE	2	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED.	GDL	EP	13/8/15	1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15	0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Tooperang Quarry</td> <td style="font-size: 8px;">DRAWING 2974MN01</td> </tr> <tr> <td colspan="2" style="text-align: center;">WARWICK STEEN MAYER</td> <td style="font-size: 8px;">DATE 23/12/2015</td> </tr> <tr> <td colspan="2" style="text-align: center;">WORKING PLAN</td> <td style="font-size: 8px;">SHEET 1 OF 1</td> </tr> <tr> <td colspan="2" style="text-align: center;">EML5331, EML5864 & EML6449</td> <td style="font-size: 8px;">REV. 2.30</td> </tr> <tr> <td colspan="2" style="text-align: center;">TOOPERANG</td> <td></td> </tr> </table>	Tooperang Quarry		DRAWING 2974MN01	WARWICK STEEN MAYER		DATE 23/12/2015	WORKING PLAN		SHEET 1 OF 1	EML5331, EML5864 & EML6449		REV. 2.30	TOOPERANG		
NO.	REVISION	STAFF	CHECK	DATE																																					
2	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED.	GDL	EP	13/8/15																																					
1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15																																					
0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015																																					
Tooperang Quarry		DRAWING 2974MN01																																							
WARWICK STEEN MAYER		DATE 23/12/2015																																							
WORKING PLAN		SHEET 1 OF 1																																							
EML5331, EML5864 & EML6449		REV. 2.30																																							
TOOPERANG																																									

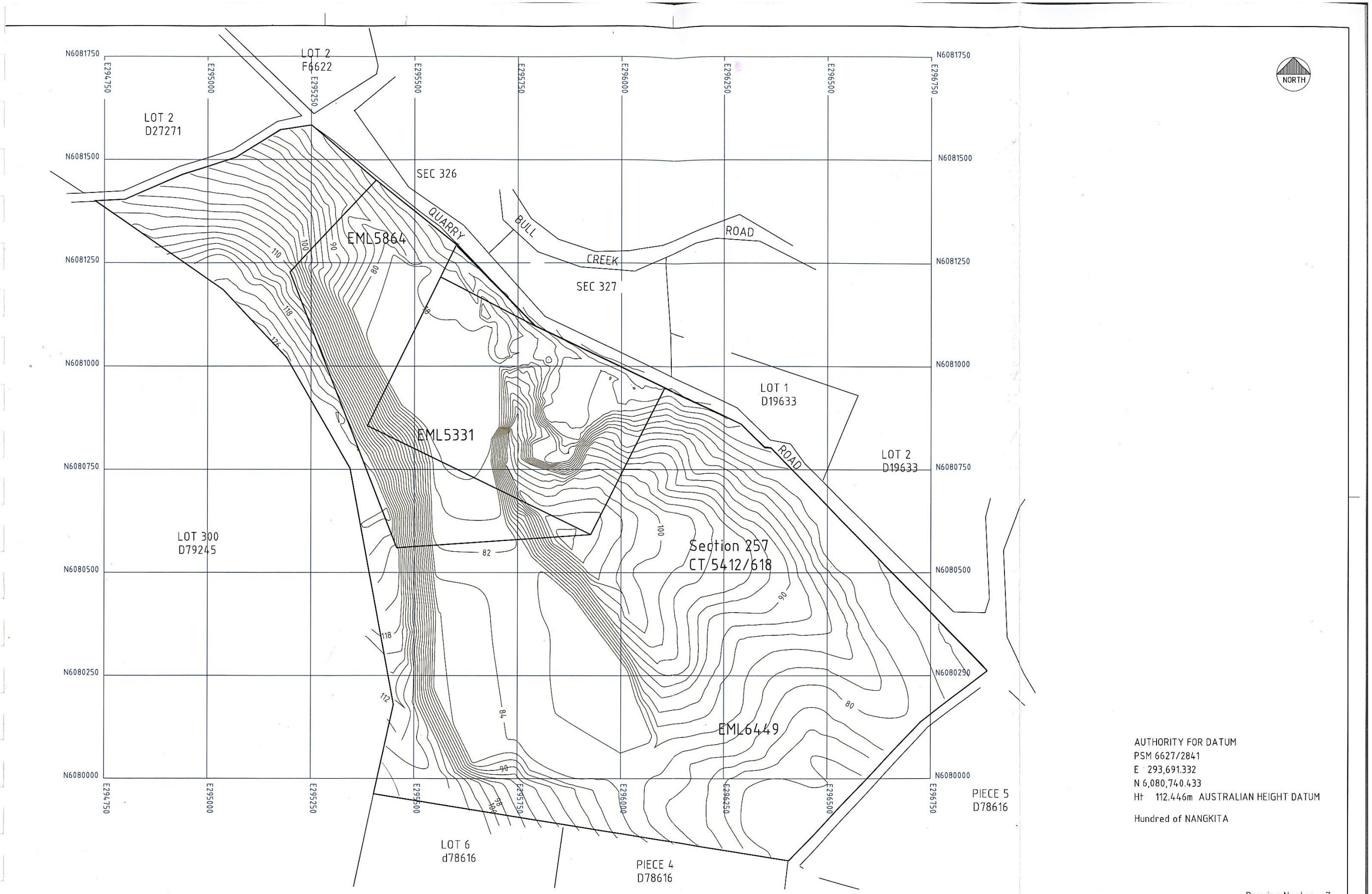
VERTICAL EXAGGERATION - 1X



Drawing Number 6

ORIGINAL SIZE A1

PRINT SIZE - A3	GDL Terrain Services 30 COLLEGE ROAD, SOMERTON PARK, 5044 PHONE (08) 7127 7089 MOBILE 0427 926 207 EMAIL grant@terrainservices.com.au	COUNCIL : ALEXANDRINA COUNCIL MAP SHEET : CT REFS :	SCALE 1:						Tooperang Quarry WARWICK STEEN MAYER WORKING AND CONCEPTUAL SURFACE PLAN EML5331, EML5864 & EML6449 TOOPERANG	DRAWING 2974MN01
			LEVEL DATUM : AHD LEVEL AUTHORITY : PSM6627/2841 EL112.446m CO-ORD DATUM : MGA94 GEOGRAPHIC GRID	DATA FILE/S : 2974DAT.CSV INSTRUCTION : 2903	NO. 2 1 0	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED. TOTAL SITE PLAN ADDED ISSUED TO CLIENT FOR REVIEW	GDL EP GDL GDL GDL GDL	13/8/15 24/07/15 10/7/2015		DATE SHEET REV.

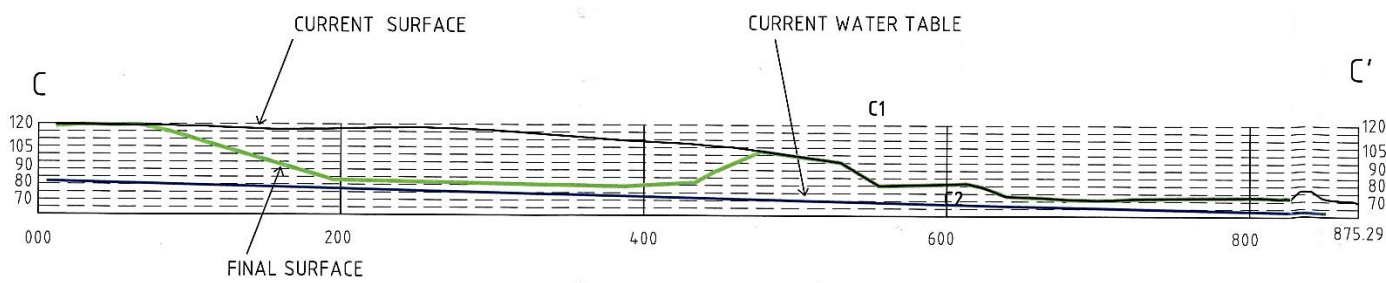
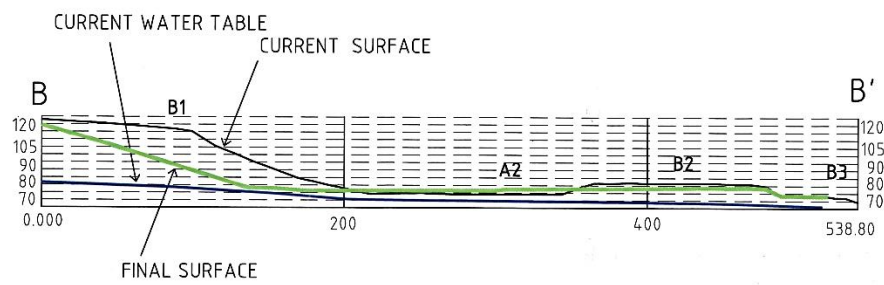
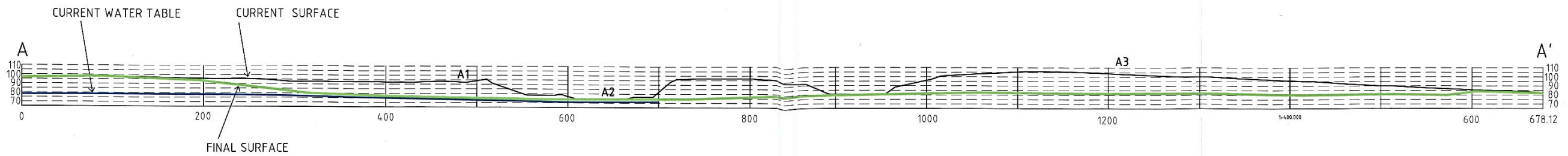


AUTHORITY FOR DATUM
 PSM 6627/2841
 E 293,691.332
 N 6,080,740.433
 Ht 112.446m AUSTRALIAN HEIGHT DATUM
 Hundred of NANGKITA

Drawing Number 7

PRINT SIZE - A3	GDL Terrain Services 30 COLLGE ROAD, SOMERTON PARK, 5044 PHONE (08) 7127 7089 MOBILE 0427 926 207 EMAIL grant@terrainservices.com.au	COUNCIL : ALEXANDRINA COUNCIL MAP SHEET : CT REFS :	PLAN DETAILS SCALE 1: 4000 0m 100 200 300 400m	LEVEL DATUM : AHD LEVEL AUTHORITY : PSM6627/2841 EL112.446m CO-ORD DATUM : MGA94 GEOGRAPHIC GRID	DATA FILE/S : 2974DAT.CSV INSTRUCTION : 2903	NO. 2 1 0	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED. TOTAL SITE PLAN ADDED ISSUED TO CLIENT FOR REVIEW	GDL EP GDL GDL GDL GDL	13/8/15 24/07/15 10/7/2015	DATE 23/12/2015 SHEET 1 OF 2 REV. 2.30	Drawing Number 7 Tooperang Quarry WARWICK STEEN MAYER CONCEPTUAL CLOSURE PLAN EML5331, EML5864 & EML6449 TOOPERANG

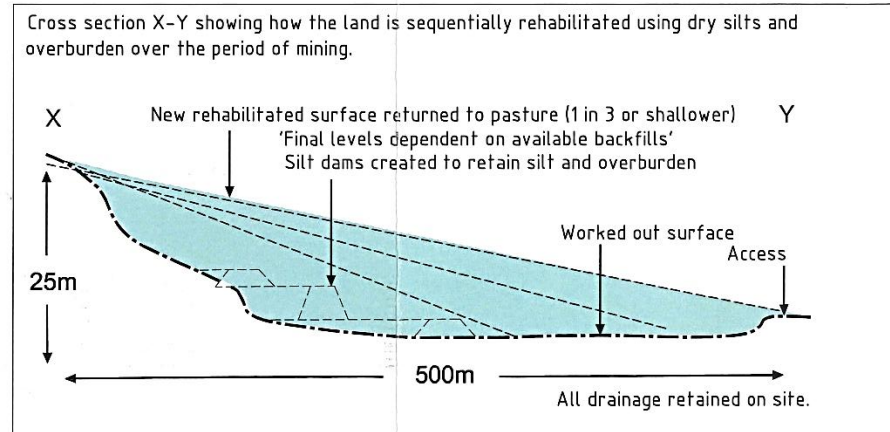
VERTICAL EXAGGERATION - 1X



SCHEMATIC REHABILITATION SECTION

NOT TO SCALE

Progressive Rehabilitation design method using dried silt and overburden:



FINAL SURFACE CROSS SECTIONS

Drawing Number 8

PRINT SIZE - A3

GDL Terrain Services
30 COLLEGE ROAD, SOMERTON PARK, 5044
PHONE (08) 7127 7089
MOBILE 0427 926 207
EMAIL grant@terrainservices.com.au

PLAN DETAILS
COUNCIL : ALEXANDRINA COUNCIL
MAP SHEET :
CT REFS :

SCALE 1:
LEVEL DATUM : AHD DATA FILE/S : 2974DAT.CSV
LEVEL AUTHORITY : PSM6627/2841 EL112.446m INSTRUCTION : 2908
CO-ORD DATUM : MGA94 GEOGRAPHIC GRID

NO.	REVISION	STAFF	CHECK	DATE
2	EXTRA SURVEY DETAIL ADDED. PLAN UPDATED.	GDL	EP	13/8/15
1	TOTAL SITE PLAN ADDED	GDL	GDL	24/07/15
0	ISSUED TO CLIENT FOR REVIEW	GDL	GDL	10/7/2015

Tooperang Quarry
WARWICK STEEN MAYER
CONCEPTUAL CLOSURE PLAN
EML5331, EML5864 & EML6449
TOOPERANG

DRAWING	DATE	SHEET	REV.
2974MN01	23/12/2015	2 OF 2	2.30

