SHALLOW BAY QUARRY

STATEMENT OF

ENVIRONMENTAL EFFECTS

Ironhide Enterprises Pty Ltd

QUARRY PLAN NSW
ENVIRONMENTAL ASSESSMENT SERVICES

REVISION REGISTER

VERSION	DATE	REVISION REASON	MAIN CHANGES
Final	12-5-2025	Final version for submission with a Development Application	N/A

CONTENTS

STATEMENT OF ENVIRONMENTAL EFFECTS

Prepared under Part 4 of the Environmental Planning and Assessment Act 1979

DEVELOPMENT

Title:	Shallow Bay Quarry
Description:	Extractive Industry, Quarry
Address:	465 Shallow Bay Rd, Shallow Bay 2428
Development Lot:	Lot 542, deposited plan 531809

APPLICANT

Company:	Ironhide Enterprises Pty Ltd ABN 54 612 616 341
Address:	PO Box 142 BULAHDELAH NSW 2423

PREPARED BY

Name and Position:	Matthew Goodwin, Principal Consultant, Quarry Plan NSW
Qualifications:	Bachelor of Land Management, Sydney University. Graduate Diploma of Urban & Regional Planning, University of New England.
Address:	PO Box 58, Walcha NSW 2354

DECLARATION

I have prepared the contents of this document and to the best of my knowledge:

- It has been prepared in accordance with the requirements of Part 4 of the Environmental Planning and Assessment Act 1979;
- It contains all available information that is relevant to the environmental assessment of the Development; and
- It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Matthew Goodwin, 12 May 2025

1 INTRODUCTION

1.1 LOCATION

The project is located within lot 542 deposited plan 531809 at 465 Shallow Bay Road, about 10.5km south west of Forster as shown in Figure 1.1. Access to the site is via the Shallow Bay Road then an existing private all weather gravel track about 620 metres long to the south west of the road through lot 542.

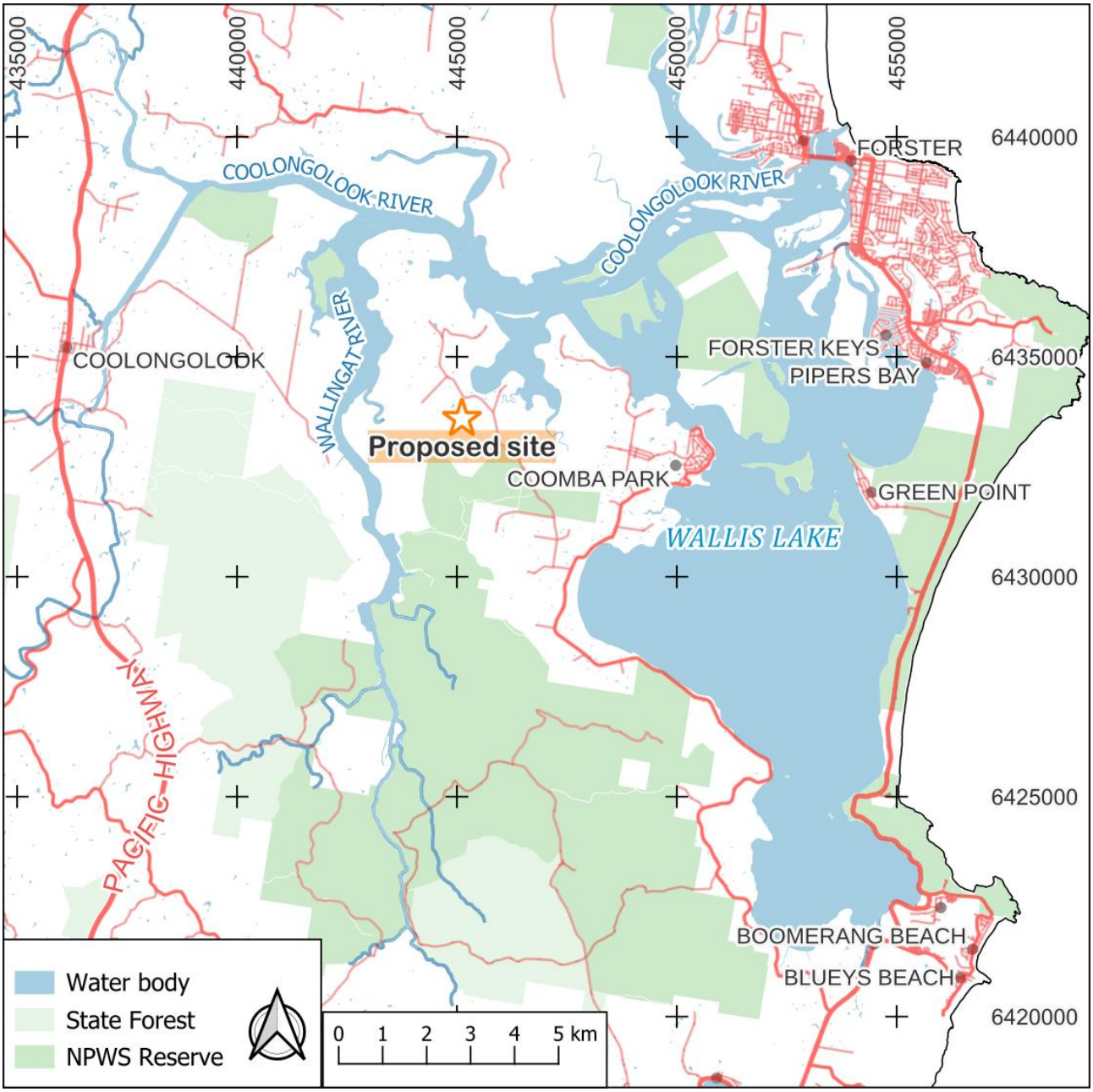


Figure 1.1 – Project location.

1.2 LANDOWNER

Ironhide Enterprises Pty Ltd.

1.3 PROJECT ELEMENTS

The project involves the establishment of a hard rock quarry and associated facilities on the site. Major project elements include:

- Establishment earthworks for the quarry site, including pre-stripping soil and removing some remnant native vegetation.
- Upgrading an existing property access track and extending it to the quarry site.
- Quarry operations, including excavating, crushing and screening rock.
- Business identification sign.
- Closure and rehabilitation of quarry site.

Project plans are provided separately as A3 pdf files and as figures within this SEE.

1.4 REPORT PURPOSE

Quarry Plan NSW was engaged by Ironhide Enterprises Pty Ltd to prepare an SEE and facilitate specialist assessments to support a development application for the project under Part 4 of the Environmental Planning and Assessment Act 1979. The SEE and assessments have been prepared in accordance with the requirements of Section 4.15 of the Act and provide:

- Details on the project, including need and alternatives considered.
- Assessment of potential key environmental impacts of the project.
- The company's commitments to measures to minimise and manage potential environmental impacts.

2 THE SITE

The development lot has an area of about 192.5 hectares as shown in Figure 2.1. The proposed quarry site is located about 600 metres south west of the Shallow Bay Road.

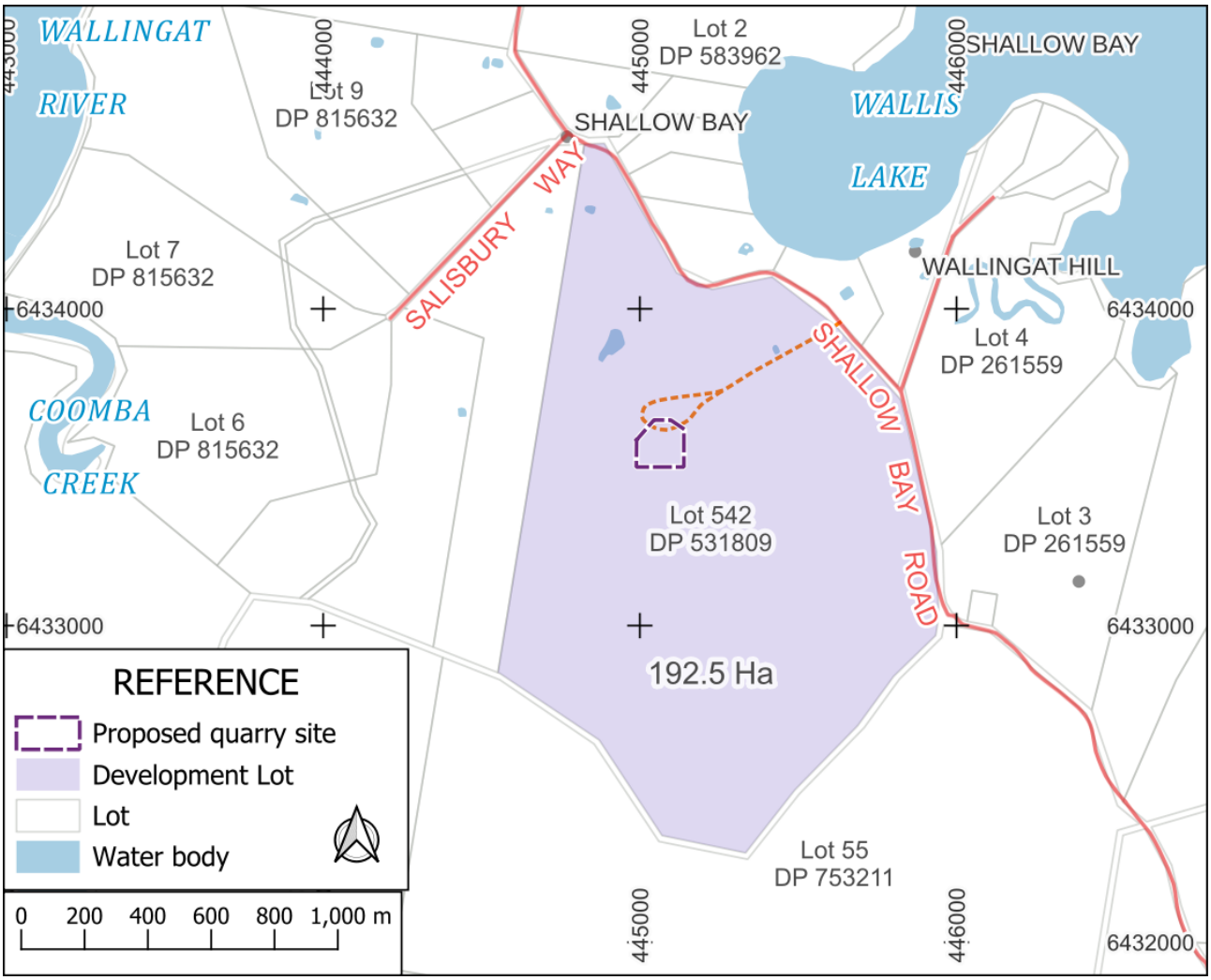


Figure 2.1 – Development lot.

Plate 2.1 – Oblique aerial drone view of proposed quarry site from North, Jan 2025.

2.1 LAND USE CONTEXT

Current land uses within a 1,000 metre radius of the quarry site are dominated by agriculture (cattle grazing), dwellings and national park, as shown in Figure 2.2. Land comprising the proposed site is zoned "RU2 Rural Landscape" under the Great Lakes Local Environmental Plan 2014 (Figure 2.3).

Ten rural dwellings have been identified on land within a 1,000 metre radius of the quarry site (Figure 2.3). The closest dwelling is 500 metres north west, marked as R1 in Figure 2.2 (73 Salisbury Way).

The nearest public land is the Shallow Bay Road located about 430m north of the quarry site at the closest point.

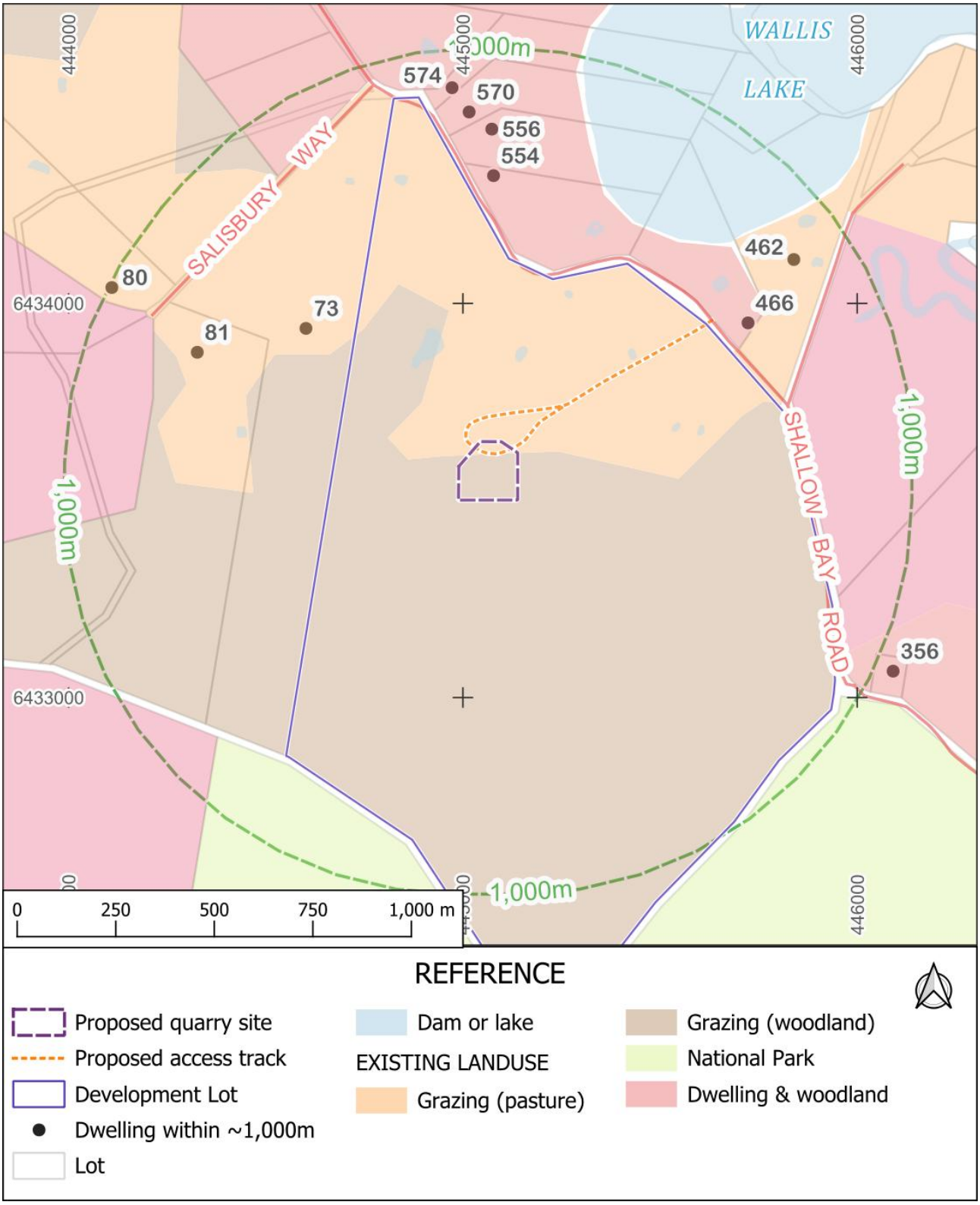


Figure 2.2 – Existing dominant land uses within 1km.

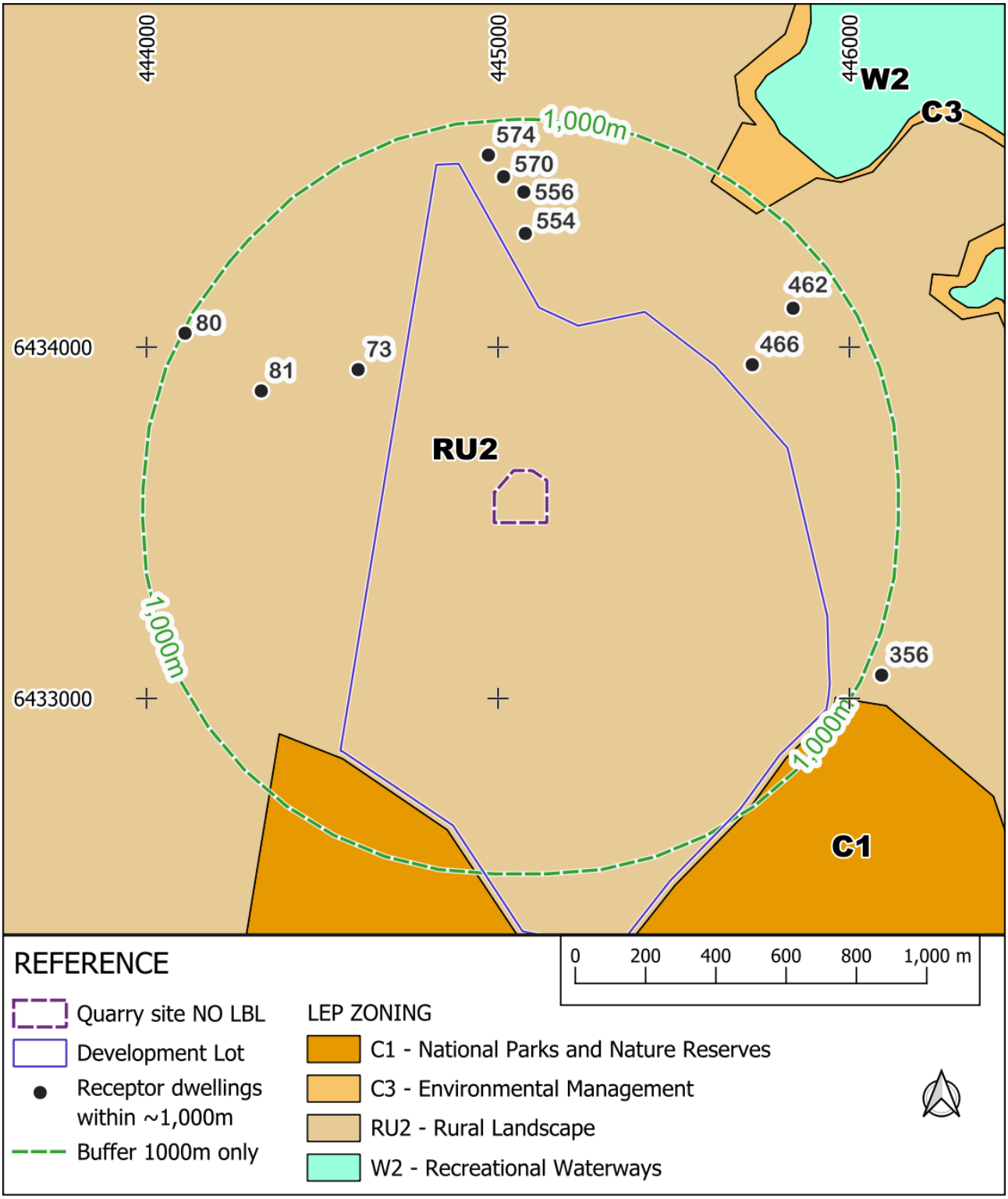


Figure 2.3 – Zoning & rural dwellings in vicinity of project site.

2.2 TERRAIN

The proposed quarry site is located the northern slope of a hill with a northerly aspect, overlooking an small undulating valley fringing the estuarine Wallis Lake. Local landform is dominated by coastal flats and undulating to moderately steep hills up to 150m AHD (Figure 2.5).

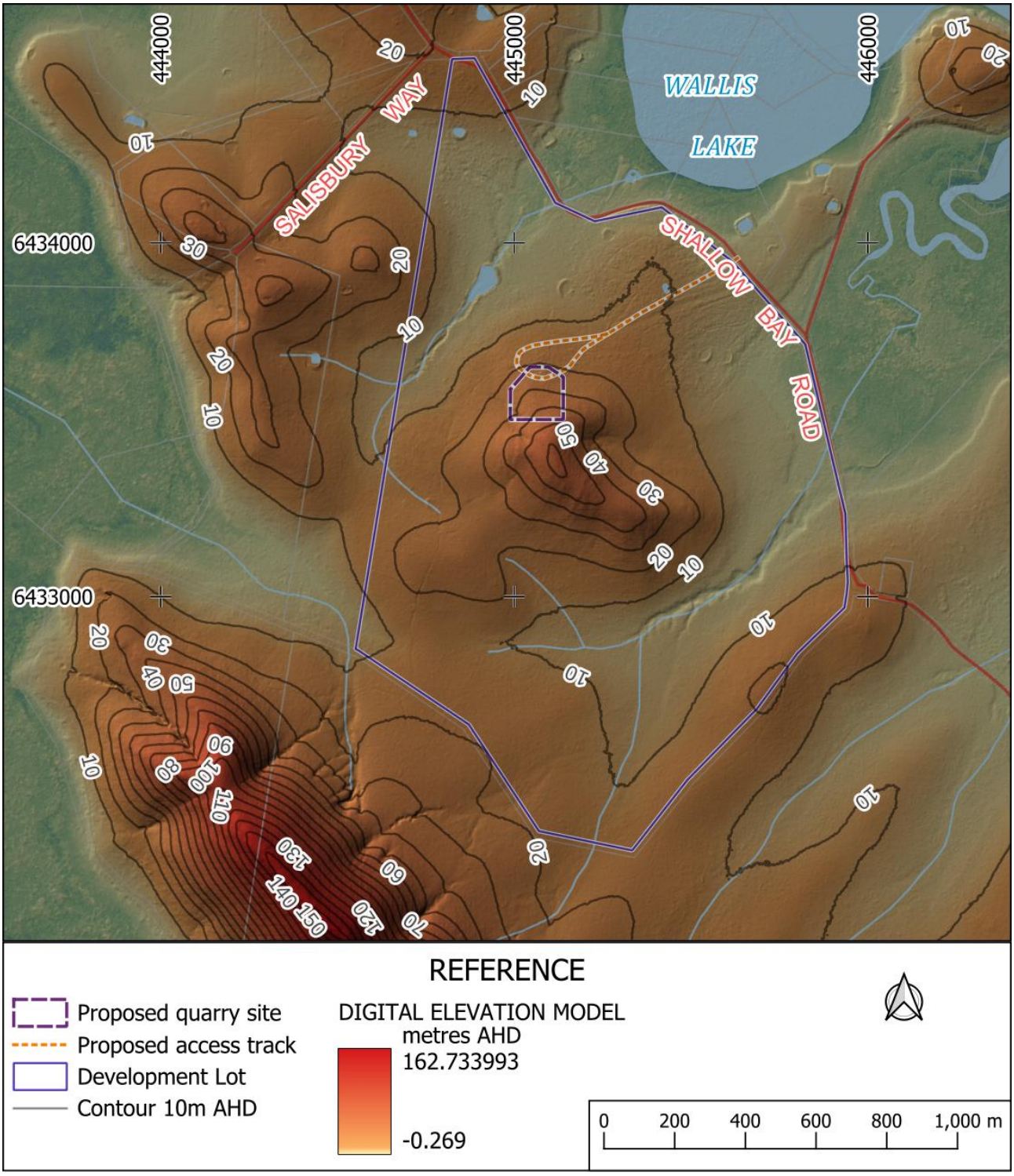


Figure 2.5 – Terrain within project vicinity.

3 PROJECT DESCRIPTION

3.1 OVERVIEW

The project comprises a hard rock quarry with a:

- Maximum annual extraction rate of 30,000 tonnes.
- Maximum daily processing rate for crushing and screening operations of 150 tonnes.
- Maximum quarry disturbance area of 1.99 hectares.
- Maximum 900 loads of quarry product transported per year, averaging 3.5 per weekday.
- Estimated mudstone and sandstone resource of about 726,000 tonnes.
- Maximum depth of 33m below ground level, with an average of 18m.

The primary purpose of the project is to supply quarry products for use as fill, as well as for road construction and maintenance. Detailed plans showing the local context, existing site features and proposed project elements are provided separately.

Primary project activities include:

- Site establishment, including:
  - Pre-stripping and stockpiling soil.
  - Erecting business identification, administrative and safety signage.
- Quarry operations, including excavating rock, crushing and screening.
- Transport of quarry products from site to customers.
- Closure and rehabilitation of the quarry.

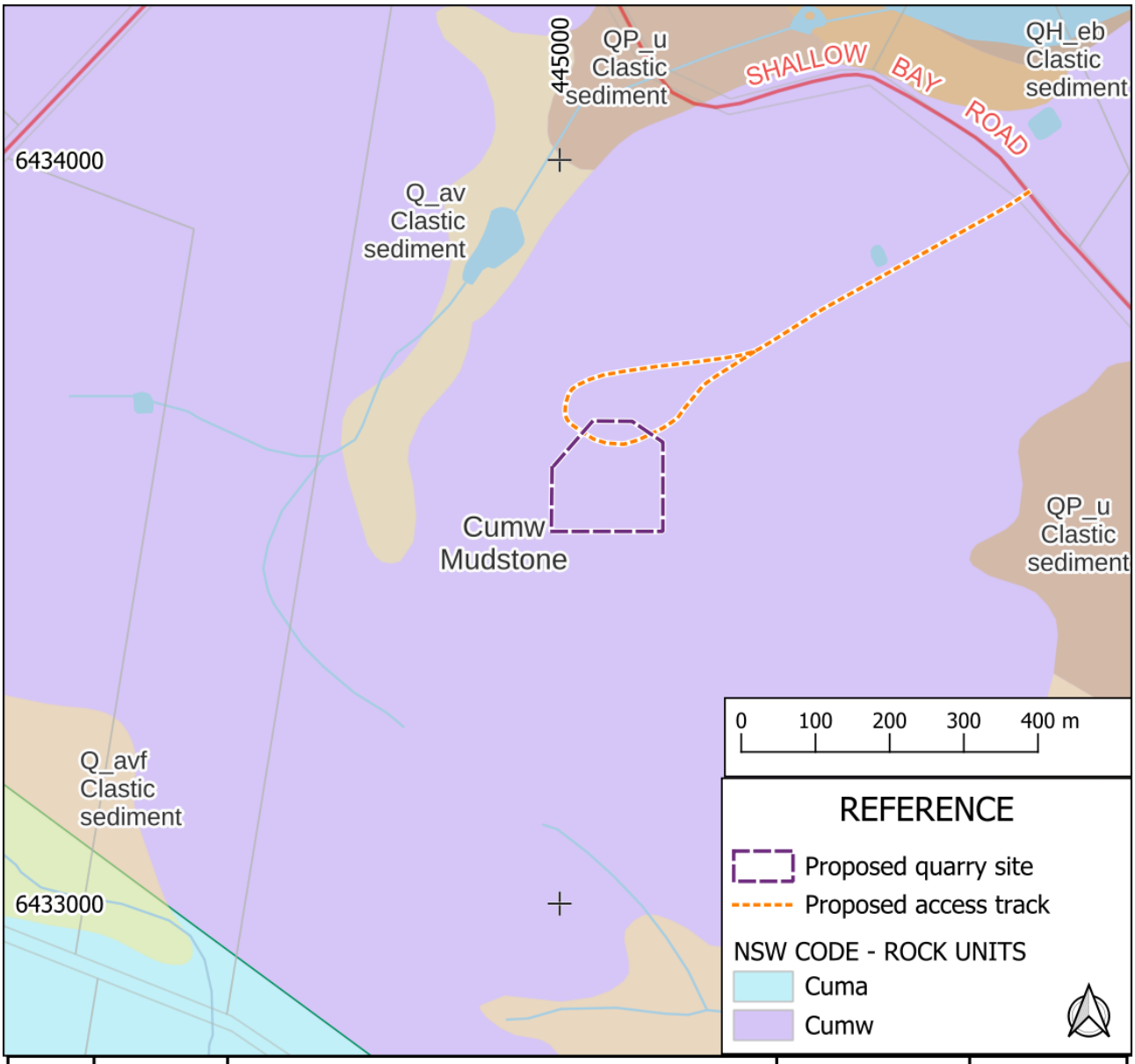
3.2 RESOURCE

3.2.1 Geology

The proposed quarry void will be excavated in the Wallanbah Formation, a rock formation dominated by "*Interbedded mudstone and structureless lithic sandstone.*" [1] as shown in Figure 3.1 and Plate 3.1. The formation was deposited in a shallow marine environment during the later Carboniferous (Mississippian) period about 350 million years ago.

The hard rock resource was initially identified after sustained attempts to excavate a pad for an agricultural shed were prevented by extensive and shallow hard rock. About 0.1 to 0.5m of skeletal soil overlying minimally weathered mudstone and sandstone is exposed within the existing excavation (Plate 3.1 and Figure 3.2). Preliminary testing indicates that the rock will be suitable for road base and fill, after processing by appropriate crushing and screening.

[1] NSW Seamless Geology dataset, version 2.1 [Digital Dataset]. Geological Survey of NSW, Dept. of Regional NSW.



NSW CODE	UNIT NAME	DESCRIPTION	DEPOSITIONAL ENVIRONMENT	AGE - MEDIAL
Cuma	Boolambayte Formation	Interbedded mudstone and structureless, lithic sandstone. Thick massive lithic sandstone, with an upper part of both lithic sandstone and mudstone with interbedded calcarenite, brown lithic sandstone and boulder conglomerate at base.	Shallow Marine - siliciclastic	Middle Mississippian
Cumw	Wallanbah Formation	Interbedded mudstone and structureless lithic sandstone, thick massive lithic sandstone and an upper part of both lithic sandstone and mudstone with three calcarenite members and a crinoidal conglomerate.	Shallow Marine - outer shelf	Early Mississippian

Figure 3.1 – Geological map.

Plate 3.1 – Dipping interbedded mudstone & sandstone, proposed quarry site, Nov 2024 (0.5m quadrat).

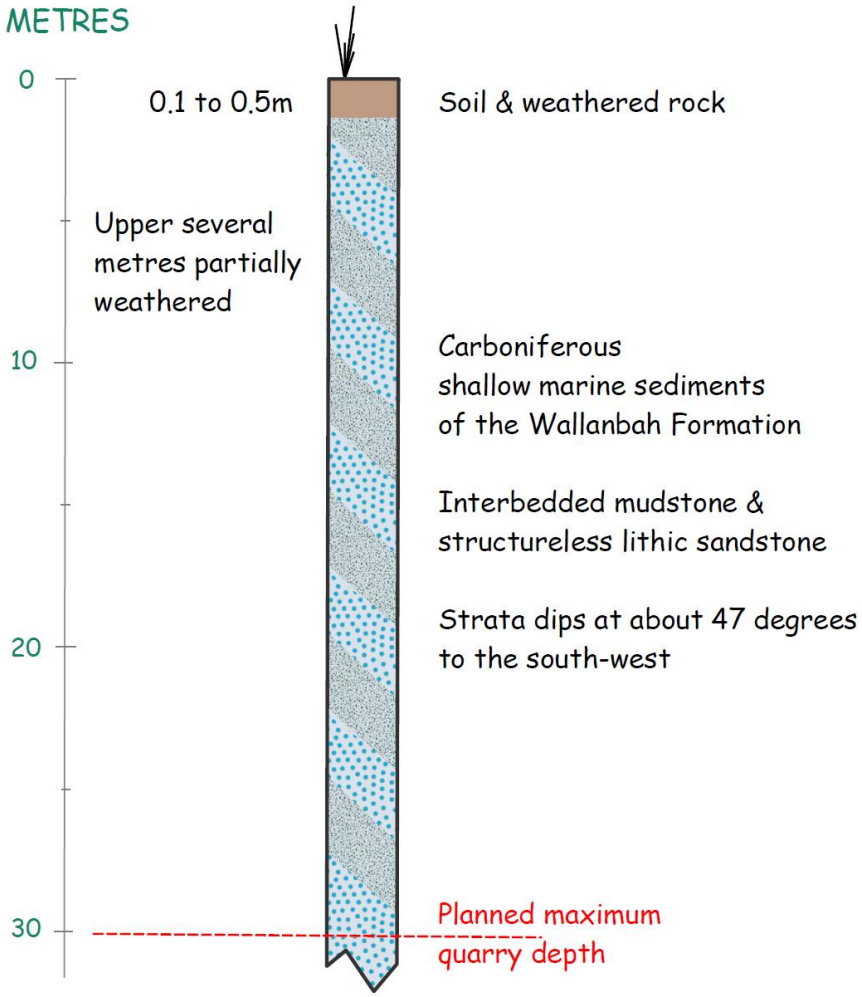


Figure 3.2 – Generalised geological profile.

3.2.2 Resource model

The proposed quarry site has an estimated resource of 726,000 tonnes of hard rock based on the following concepts:

- Final void surface area of about 1.51 hectares over a sloping site.
- Maximum depth below natural ground level of 33m, with a mean of 18m.
- Estimated in ground density of the mudstone/sandstone is about 2.7 tonnes per cubic metre.
- Completed quarry void volume of about 272,789 bank cubic metres (BCM),
- Average soil depth about 0.2m, hence about 4,000 BCM that will be pre-stripped and stockpiled.
- Expected yield of about 268,789 BCM of rock suitable for commercial use, which equates to 725,730 tonnes at the modelled density.

3.2.3 Demand

There is no cost-effective source of quarry products within the vicinity of the southern and western Wallis Lake area, as the nearest existing quarries are up to 80km (one way) via road, hence freight costs can be greater than the cost of materials. Preliminary discussions with potential customers indicate that there is sufficient local demand for the types and quality of quarry products planned to be produced.

3.2.4 Project life

Project life depends upon the actual demand for quarry products, which is expected to vary from year to year in response to factors such as economic conditions, building activity, infrastructure projects and competition from other suppliers. Overall, the applicant expects that either of the following scenarios is the most likely result with regard for the estimated 726,000 tonne resource:

- Average demand of about 20,000 tonnes per annum, providing a project life of about 40 years.
- Peak demand of about 30,000 tonnes per annum, with a project life of about 25 years.

3.3 CONSTRUCTION

Project construction and establishment is expected to take up to 3 months and involve the following elements:

- Stripping available topsoil and using it to establish a compacted earth bund/berm about 1m high around the upslope site perimeter.
- Stockpiling the remaining stripped soil in two stockpiles along the downslope, northern and north western edges, of the site. The stockpiles will be up to about 3m high.
- Converting an existing excavation within the site to create an initial sump for retention of onsite dirty stormwater flows.
- Establishment of the water management system outlined in Section 3.6.1.
- Erecting business identification, administrative and safety signage.

3.4 OPERATION

3.4.1 Extraction rate

Extraction rates are expected to vary in response to demand, with an expected average of 20,000 tonnes and maximum of 30,000 tonnes of material per annum.

3.4.2 Quarry void

Quarry walls for the project will be benched every 10m vertically (or near vertical) with a 5m wide horizontal bench. Bench heights and widths will only be changed after consideration of all relevant factors, including geotechnical issues (rock stability), safety and productivity. The proposed maximum depth is about 33 metres below natural ground level in the south western corner; hence three benches are proposed for the highest sections of the quarry wall.

3.4.3 Quarry activities

3.4.3.1 Drilling

The rock being quarried is comparatively strong and needs to be blasted and fractured with explosives placed in drill holes to enable its excavation with earth moving equipment.

Blast drilling at this site is expected to involve holes about 89mm in diameter and 10m deep distributed on a grid pattern of 3 by 3 metres, or a similar arrangement.

The maximum expected blasting frequency is once per year, if peak production levels are reached. Blast drilling will take place for approximately a week prior to each blast.

3.4.3.2 Crushing and screening

It is planned to engage contractors to crush and screen the excavated rock using a mobile jaw crusher located close to the extraction area.

A simplified operating schematic is provided in Figure 3.3, which involves an excavator feeding raw rock into a mobile (tracked) processing plant that crushes and screens the rock to produce two sizes of material that exit the machine via conveyor belts. The conveyor belts create temporary conical mounds that are periodically moved with a front-end loader to designated, longer term, stockpiles on an ongoing basis during processing operations.

Adjustments will be made to the crusher and screens periodically to produce various sizes and types of quarry products in response to customer demand.

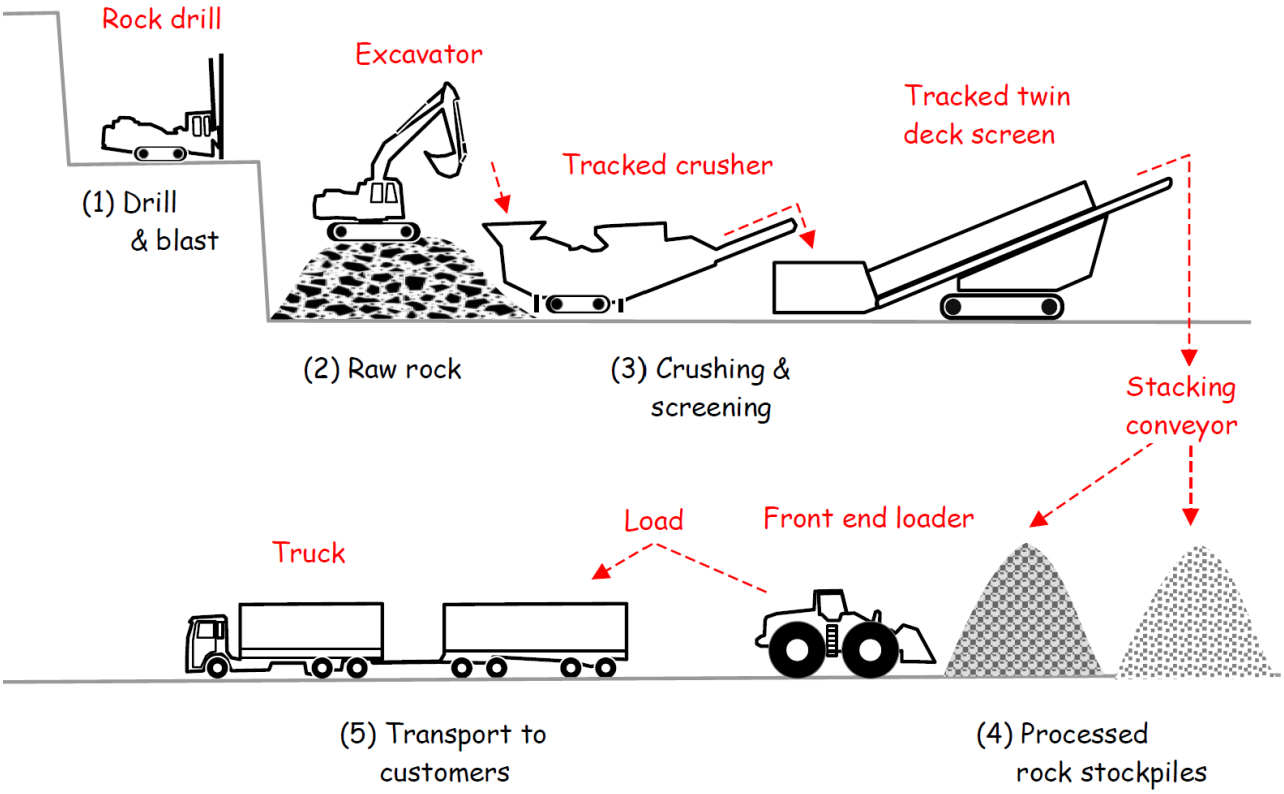


Figure 3.3 – Simplified operating schematic.

The proposed peak production level of 30,000 tonnes per year will involve the crushing and screening of quarry product. Plant used will vary depend on the various factors, primarily the required end product.

3.4.3.3 Stockpiles

Quarry products will be stockpiled within designated areas within the quarry site. The stockpiles will be segregated for quality control purposes, to avoid mixing and contamination of product sizes and blends.

3.4.4 Imported material

No rock will be imported from offsite for commercial processing or stockpiling.

3.4.5 Operating hours

The proposed operating hours detailed in Table 3.1 are less than many similar quarries operating elsewhere in regional NSW. Staff may enter or leave the site at other times, such as to commence or cease operations, but excavation, crushing, loading or shipping would not occur outside the specified operating hours.

Table 3.1 – Proposed operating hours.

ACTIVITY	WEEKDAYS	WEEKENDS & PUBLIC HOLIDAYS
Extraction, crushing, screening	7:00AM to 6:00PM	No work
Loading trucks & shipping		No work
Maintenance		No work
Light maintenance & security.	All hours	

"Light maintenance" includes refuelling equipment, oil & filter changes undertaken without the use of tools likely to create significant noise, such as jack picks, pneumatic impact wrenches or metal grinders. The opportunity to undertake light maintenance outside "standard" operating hours significantly reduces the frequency of bottlenecks in excavation, processing and haulage systems, hence allows the quarry to operate in a more practical and cost-effective manner.

3.4.6 Workforce

The initial operational workforce expected to include a quarry manager and up to 3 positions for plant operators/truck drivers.

3.4.7 Plant and equipment

Various items of plant and equipment will be used for project construction and initial operations, as detailed in Table 3.2. The type and number of items will change in response to operational requirements such as required production levels and product types.

A single tracked mobile jaw crusher with recirculating screens and a twin deck screen will be used during the initial stages of the project. Mobile processing equipment provides flexibility in plant location and also facilitates the replacement or adjustment of elements of the processing system. Additional crushing and screening plant may be added at later stage of the project.

Table 3.2 – Proposed quarry plant & equipment.

ITEM	ESTIMATE	MODEL	PURPOSE
Excavators	1	Komatsu PC270-8	Stripping soil, excavating rock and feeding processing plant
	1	Kobelco SK140-7	Sporadic use to tidy spillage from processing plant vicinity. Smaller backup unit for Komatsu excavator in the event of breakdown or maintenance.
Jaw crusher & recirculating screens	1	Terex 114 with Cat C9 Acert engine	Jaw crusher for crushing excavated rock
Twin deck screen	1	TBD	Screening crushed rock and fines
Front end loader	1	Komatsu 420	Loading haul trucks and managing stockpiles
Rotary stacker conveyor	1	TBD	Move processed material from quarry floor to stockpile area
Haul trucks	Variable	Mix of 12T rigid & 36T super dogs	Transporting quarry products to customers and moving quarry materials around site.
Water cart	1	Caterpillar CT600 C15 Acert engine	12 kilolitre spray tank for dust suppression on haul roads.
Water pumps	2	TBD	Pumps to reticulate water to the holding tank, one from the sump and the other from a farm dam.
Light vehicles	2	TBD	Transport staff, tools & maintenance items

3.4.8 Disturbance areas & domains

The proposed quarry site of about 1.99 Ha will ultimately include various operational domains outlined in Table 3.3 and Figure 3.4. Over the life of the quarry, the location and extent of domains will be adjusted to address operational, productivity and safety considerations associated with ongoing extraction activity.

Table 3.3 – Domains & proposed disturbance areas.

DOMAINS	AREA (m^2)	NOTE
Quarry void, crushing & screening area	19,882	After establishment excavation is complete, all quarry operation domains will be located within the quarry void. Locations & extent of each domain will vary over time, primarily in response to operational needs and safety considerations.
Product stockpiles		
Soil stockpile		
Bunds		
Access track	Existing	

DOMAINS	AREA (m^2)	NOTE
		Existing all weather private access track about 5m wide will be used within the development lot. No upgrade earthworks are required to enable quarry related traffic.
All	**19,882**	

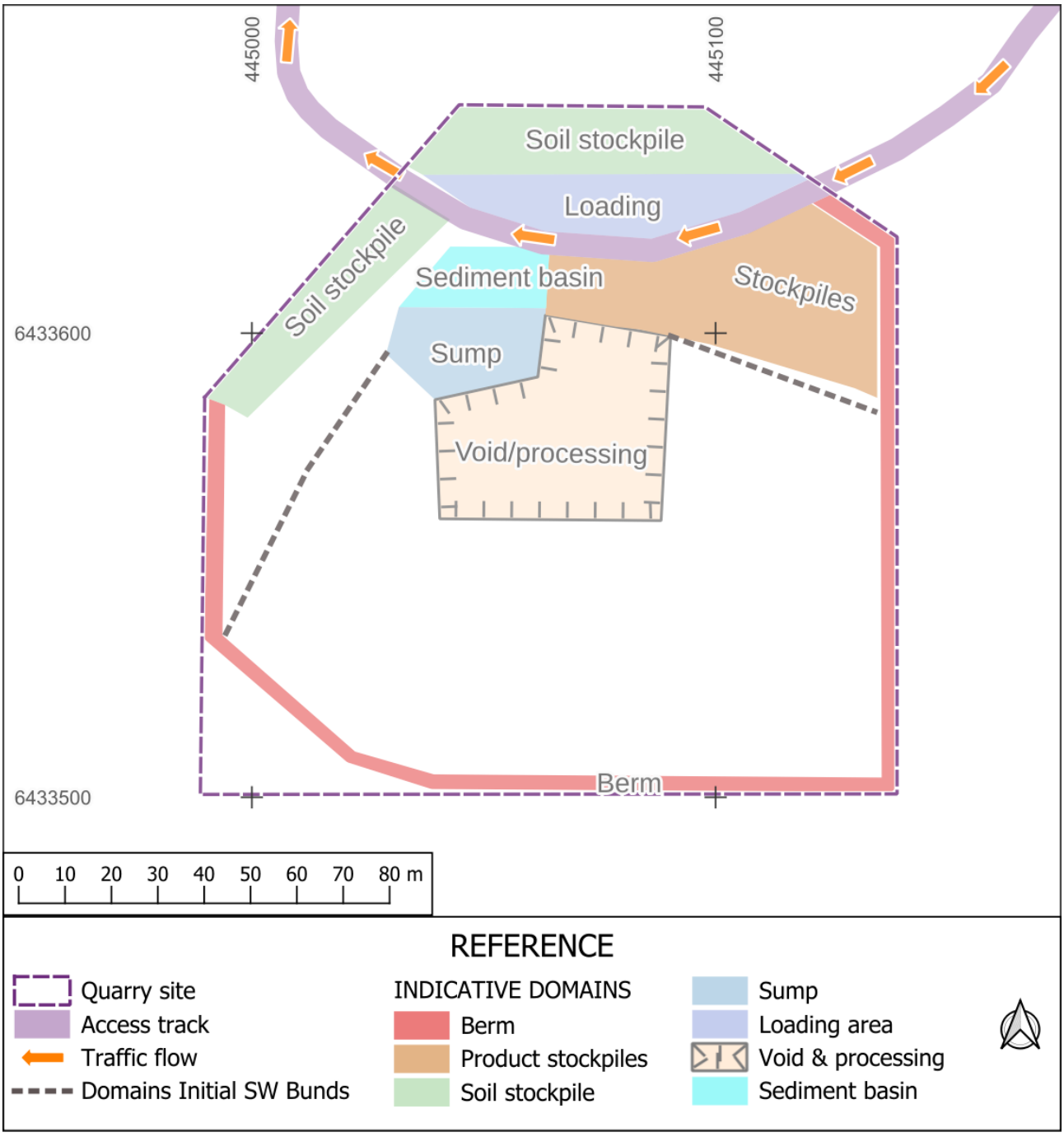


Figure 3.4 – Indicative initial operational domains.

3.4.9 Bunds, berms & stockpiles

Various types of bunds, berms and stockpiles will be established and maintained, each typically serving multiple purposes. These features are summarised in Table 3.4, as well as being referenced elsewhere in the SEE, plans and associated documents. Figure 3.5 shows proposed layout of bunds and stockpiles once the quarry void has reached it maximum surface extent.

Table 3.4 – Bund & stockpile summary.

FEATURE	HEIGHT	PURPOSE	NOTES
Soil stockpile	≥ 3m	Visibility reduction, noise reduction, stormwater diversion, safety barrier & soil storage	Max slope 2:1 Horizontal:Vertical. Skeletal soil profile about 0.2m deep with be pre-stripped from site to form a stockpile of about 3,000m3 of soil & 1,000m3 of perimeter bund.
Perimeter bund	≥ 1m	Stormwater diversion, safety barrier & soil storage	Max slope 2:1 Horizontal:Vertical.
Traffic berms	~1m	Safety barrier	Location varies in response to operational needs of quarry. Eg. outer edge of vehicle access ramp and upper rim of sump. Not shown on plans due to ephemeral nature.
Design Guidelines: 'Health & Safety at Quarries Guide', November 2018, NSW Resources Regulator. Managing Urban Stormwater: Soils & Construction, Vol. 1, 4th Edition, March 2004 Landcom, 2004. Managing Urban Stormwater, Soils & Construction, Vol. 2E Mines and Quarries, DECC, 2008			

NAME	HEIGHT	LENGTH	VOLUME	AREA
Perimeter bund	1	~330	~1,000m3	1,100m2
Soil stockpile (A)	3	65	~2,000m3	1,000m2
Soil stockpile (B)	3	60	~1,000m3	740m2

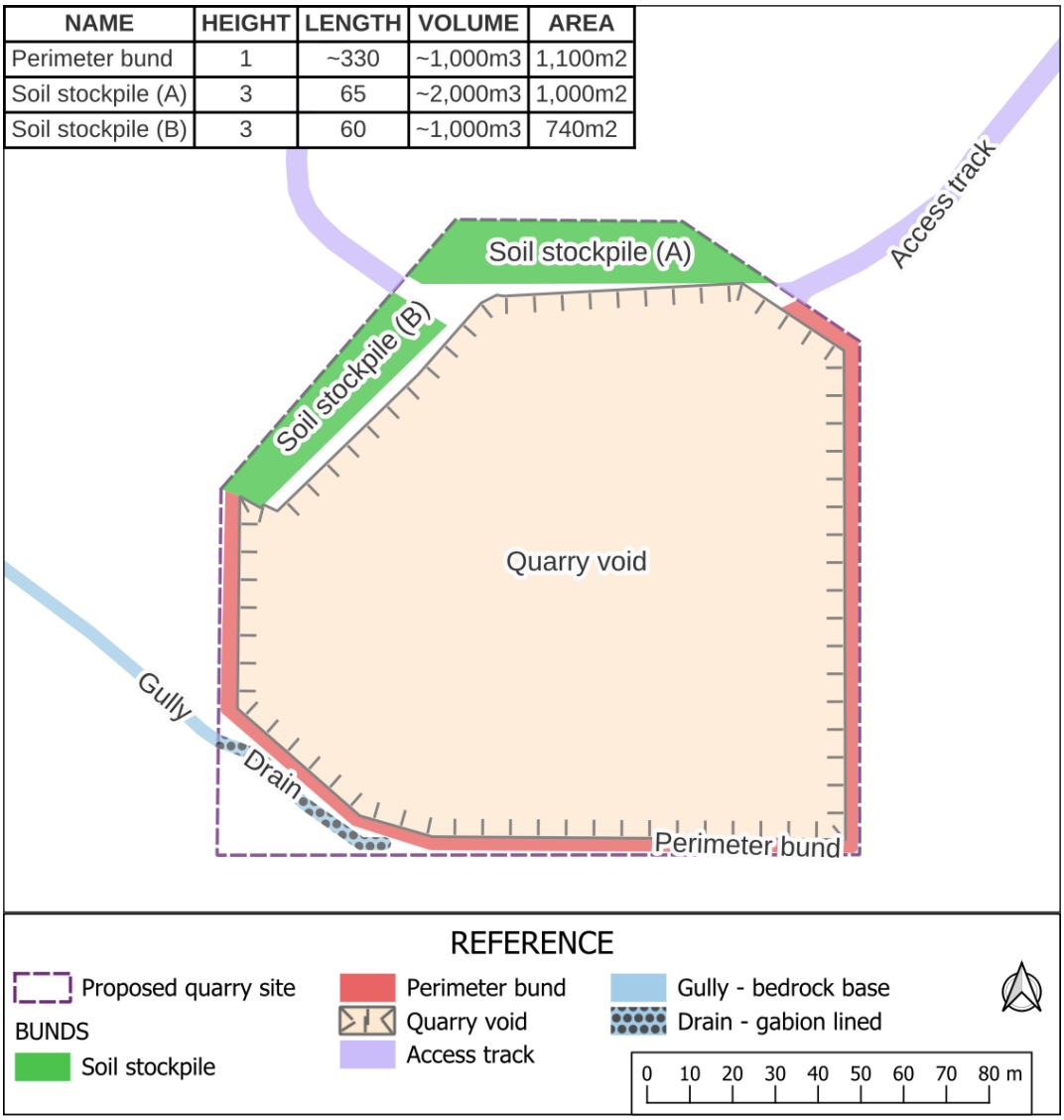


Figure 3.5 – Proposed bund & stockpile locations at maximum quarry extent.

3.5 ACCESS & TRAFFIC

Access to the site is provided via the Shallow Bay Road then an existing private all weather gravel track to the south west of the road (Plate 3.2).

3.5.1 Private access track

The existing all-weather gravelled private access track is about 600 metres long and 5m wide, with bed of rolled and compacted gravel from 0.3 to 1.0m thick. It was constructed in about 2023 to provide all weather access for earthmoving plant and trucks (Plate 3.2 and 3.3) associated with the landowner's earthmoving and civil construction business.

It is proposed to add a passing bay about 100m inside the development lot to facilitate vehicles passing by each other in a safe manner. The passing bay will be a minimum of 30m long, with a maximum width of 10m, including the existing access track (maximum additional disturbance area about ~75m^2).

Plate 3.2 – Oblique aerial drone image of driveway off Shallow Bay Road (view in easterly direction).

Plate 3.3 – Existing gravel access track, near property entrance.

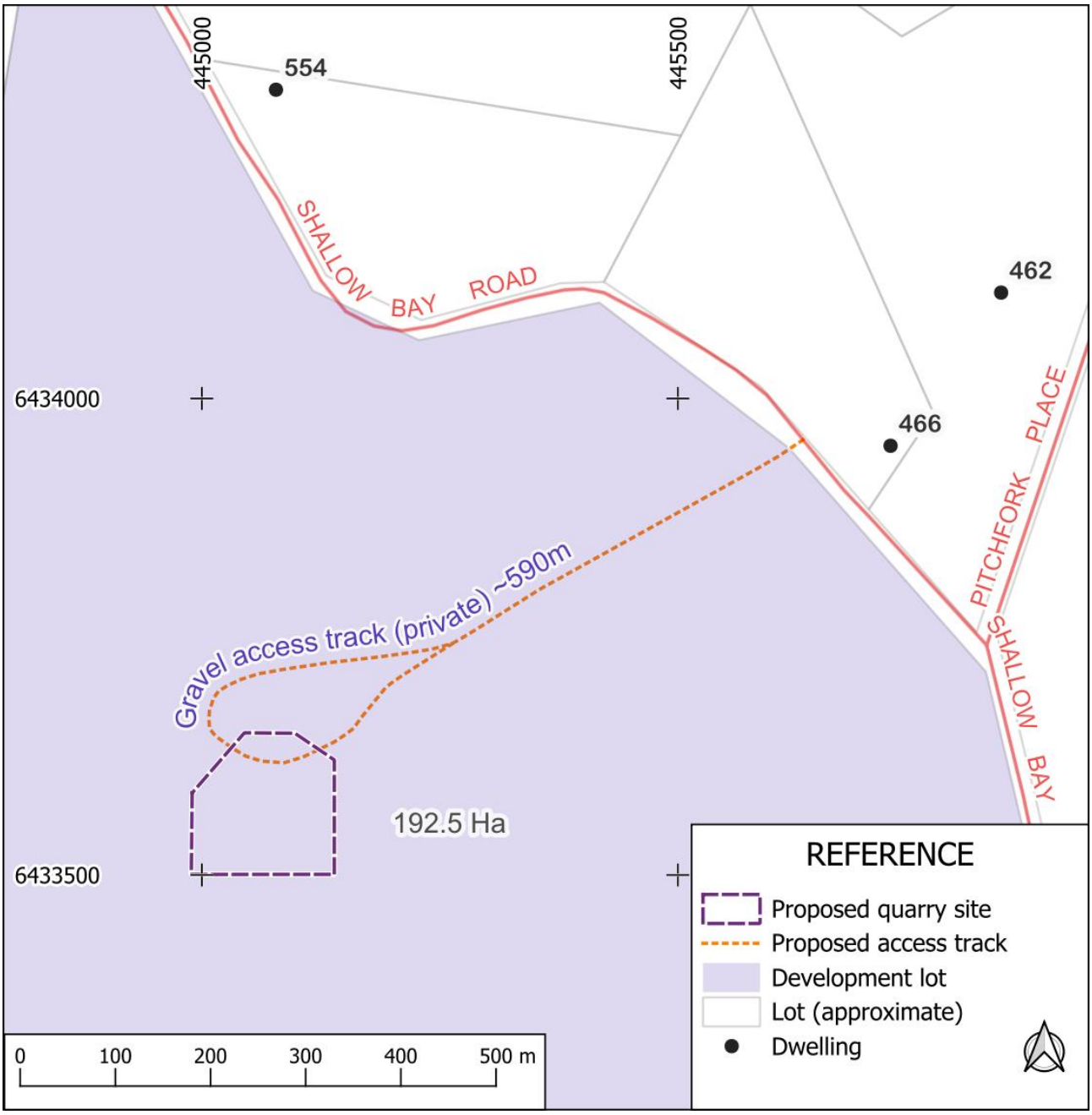


Figure 3.6 – Proposed quarry access from Shallow Bay Road.

3.5.2 Establishment traffic

No significant additional heavy traffic is expected in connection with the establishment of the project, as the applicant currently uses the property for storage and routine maintenance of earthmoving equipment associated with their earthmoving business.

3.5.3 Operational traffic

Operational traffic expected from the quarry will depend on demand for quarry products, which is expected to fluctuate from year to year. If maximum production occurs, then transport of 30,000 tonnes of quarry products by truck in a year will require an average of about 7 truck movements per day (Table 3.5).

Table 3.5 – Operational traffic estimates.

ANNUAL SCENARIO	TONNES PER YR	LIGHT VEHICLES PER YR	QUARRY PRODUCTS				
			ANNUAL TRUCK MOVEMENTS			TRUCK LOADS	
			12 T	36 T	TOTAL	PER YEAR	PER DAY
AVERAGE	20,000	354	300	1,012	**1,312**	**656**	**2.5**
MAXIMUM	30,000	434	400	1,400	**1,800**	**900**	**3.5**

Assumptions used to prepare Table 3.5 include:

- 260 working days per year (5 operating days per week for 52 weeks).
- Trucks will comprise a mix of 12 tonne rigid trucks and 36 tonne truck and super dog.
- 12 tonne rigid trucks will not be used for bulk transport campaigns.
- Trucks will only be loaded leaving the quarry site (ie no backloads).

3.6 SITE FACILITIES

3.6.1 Amenities

A site office and amenities building will be established within the quarry disturbance area. It will consist of a prefabricated ATCO style building with a roof area less than 30 square metres to be used for administration purposes and as a lunchroom. A prefabricated toilet will be used to provide ablution facilities, either within the office or as a separate structure.

3.6.2 Fuel storage

No fuel storage is proposed on site. Plant refuelling will be undertaken with self-bunded portable fuel tanks transported on utes or trailers.

3.6.3 Equipment maintenance

No dedicated maintenance building is proposed, but various forms of basic operational maintenance will be undertaken on the quarry site, including:

- Greasing, changing oil, fuel filters, oil filters and air filters on machinery.
- Repairing and replacing consumable parts, including crusher liners/wear plates, bucket teeth, cutting edges, screens, conveyor belts and tyres.

3.6.4 Waste management

Recyclable and non-recyclable materials will be separated and temporarily stored on site prior to regular removal by quarry staff to an approved waste disposal facility. The main waste streams expected are:

- Used oil, tyres and batteries
- Used steel and alloys
- Food and drink containers,
- Cardboard and packing materials.

Excavation and processing of rock will not generate any other waste, as all excavated material would be either sold as a quarry product or retained for use during rehabilitation.

3.6.5 Signage

A business identification sign about 3m by 3m will be erected at the quarry entrance off the Shallow Bay Road. Additional smaller signs will be erected and maintained at the entrance, access roads and on the quarry site regarding safety and administrative requirements.

3.7 BLASTING

Fresh rock being targeted for extraction is comparatively strong, hence will need to be blasted and fractured with explosives to enable excavation with earth moving equipment.

Safe and effective blasting requires holes to be drilled in the rock in a predetermined pattern with particular attention being applied to hole angles, depth and spacing. Each hole is then partially loaded with bulk explosive which is initiated with the aid of a primer explosive and detonators.

Detonation of each hole will be delayed in a planned sequence so that each is fired individually in close succession, typically less than 100 milliseconds apart. This is known as a “delayed firing” and is a standard practice in quarry operations that improves the efficiency of the blast (i.e. rock fragmentation) and also reduces environmental impacts such as noise, dust, ground vibration compared to historical techniques.

Blast designs will be varied based on location within the quarry, geological structures, product requirements and consideration of potentially sensitive areas (including amenities building, crushing equipment, etc). Design parameters are revised and applied on a blast-by-blast basis with regard for the previous factors, while ensuring compliance with relevant standards, legal requirements and productivity objectives.

3.7.1 Frequency

The maximum expected frequency of blasting is once per year, which will be sufficient to fragment about 30,000 tonnes of rock.

3.7.2 Scale

As noted previously in Section 3.4.3.1, blast drilling at this site is expected to involve holes about 89mm in diameter and 10m deep distributed on a grid pattern of 3 by 3 metres, or a similar arrangement. The surface area to be blasted is expected to be in the range of about 800 to 1,600 square metres per blast, involving about 10,000 to 12,000 bank cubic metres (BCM) of rock.

3.7.3 Storage

No on-site storage of explosives is proposed. All explosives will be delivered to the site for immediate, or following day, use. Delivery will be via a purpose-built truck, dangerous goods licensed, operated by a commercial explosive's supplier.

3.7.4 Licencing & standards

In NSW current explosives legislation and licensing requires that explosives can only be used in a quarry:

- By a person with a license specifically endorsed for quarry and/or open cut mine work.
- In accordance with Australian Standard 2187.2-2006 Storage & use of explosives - Part 2: Use of Explosives.

Various elements of explosives handling and use are administered by Safework NSW and the NSW Resources Regulator

3.7.5 Management practices

Standard management practices to facilitate safe use of explosives, as well as mitigating potential environmental impacts, are outlined in Table 3.6, below.

Table 3.6 – Blast management practices.

STANDARD PRACTICE	IMPACTS MITIGATED
Stemming – Inert materials are placed in the uppermost portion of drill holes. Explosives, other than detonators, are never initiated on, or near, ground level.	Noise, shockwave, flyrock, dust.
Delayed initiation firing - Detonation of drill holes is delayed in a planned sequence so that each hole is fired individually in close succession.	Noise, shockwave, dust, ground vibration
Powder factor - Ensuring that the amount of explosives used per cubic metre of rock excavated (powder factor), is as low as possible.	Ground vibration, flyrock, cost
Blast design – All blasts designed in advance with regard for: • Australian Standard 2187.2. • Industry standards, such as the 'Explosives Engineers' Guide 2020', published by Dyno Nobel. • The shotfirers experience. • Site conditions.	All
Use the lowest viable **maximum instantaneous charge** (MIC).	Noise, ground vibration
Profile management – Checking "front" row of drill holes for consistent burden and geological conditions for full depth of each hole. If not consistent, then the quantity and position of explosives in affected holes is adjusted appropriately (eg. deck charging and/or reducing MIC).	Flyrock, dust
Dust management – If significant dust arises and/or conditions are quite dry, then: • The blast site will be watered prior to blasting to reduce dust dispersal from drill cuttings and/or fragmented fine dry rock. • Only using aggregate to stem blast holes.	Dust
Blast exclusion zone – A shotfirer is legally obligated to ensure that people (workers, neighbours, public) have been cleared from a designated blast exclusion zone prior to initiating any explosives. Elements of the exclusion process include: • Appropriate signage. • Suitable prior notification to potentially affected people (staff, landholder, neighbour/s). • Road blocks on site access roads/tracks. • Physically checking for unauthorised people in exclusion zone immediately prior to blast.	Noise, shockwave, flyrock

3.7.6 Initial MIC

Blasting related noise and vibration has been evaluated within Sections 12 of a Construction and Operational Noise and Vibration Assessment prepared by RCA Australia dated April 2025 (CONVA) [Appendix C]. The CONVA recommends an initial Maximum Instantaneous Charge (MIC) of 44kg.

3.7.7 MIC Adjustment

After several blasts have been completed with electronic monitoring and logging of ground vibration and airblast, there will be an opportunity to compare modelled and observed data. Based on the monitoring data, the shotfirer will be able to adjust the MIC if necessary, in consultation with the Quarry Manager, provided ongoing compliance with ANZECC guidelines and Australian Standard 2187.2 is achieved.

3.8 WATER MANAGEMENT

Key objectives of the proposed water management system (WMS) for the proposed quarry are to:

- Prevent "clean" stormwater runoff from entering the quarry void;
- Ensure that there are no significant discharges of "dirty" surface water from the quarry void; and
- Maintain an adequate and reliable water supply for quarry operations.

Major WMS components are shown in Figure 3.11 include the quarry sump and Dam A, an existing agricultural dam that supplies drinking water for livestock. Additional WMS components are shown in Figure 3.8 and 3.9, with storage volumes and catchment are provided in Table 3.7.

Table 3.7 – Project water storages & catchments.

AREA	STAGE	CONFIGURATION	VOL.
Quarry site & sump Catchment 0.02 km^2	Establishment	Existing pit ~700m^2 modified to have 1,000m^3 (1mL) capacity for stormwater retention	1.0 mL
	1st blast	Excavation ~10,000m^3 BCM. Void configured for minimum 5,000m^3 (5mL) stormwater retention capacity.	5.0 mL
	2nd blast (~Year 2)	Excavation ~20,000m^3 BCM. Void configured for minimum 10,000m^3 (10mL) stormwater retention capacity.	10.0 mL
	3rd blast (~Year 3)	Excavated volume ~30,000m^3 BCM. Void will be configured for minimum 20,000m^3 (20mL) ongoing stormwater retention capacity.	20.0 mL
Dam A Catchment 0.5 km^2	Existing & future	5,000m^2 & 4m deep.	2.0 mL

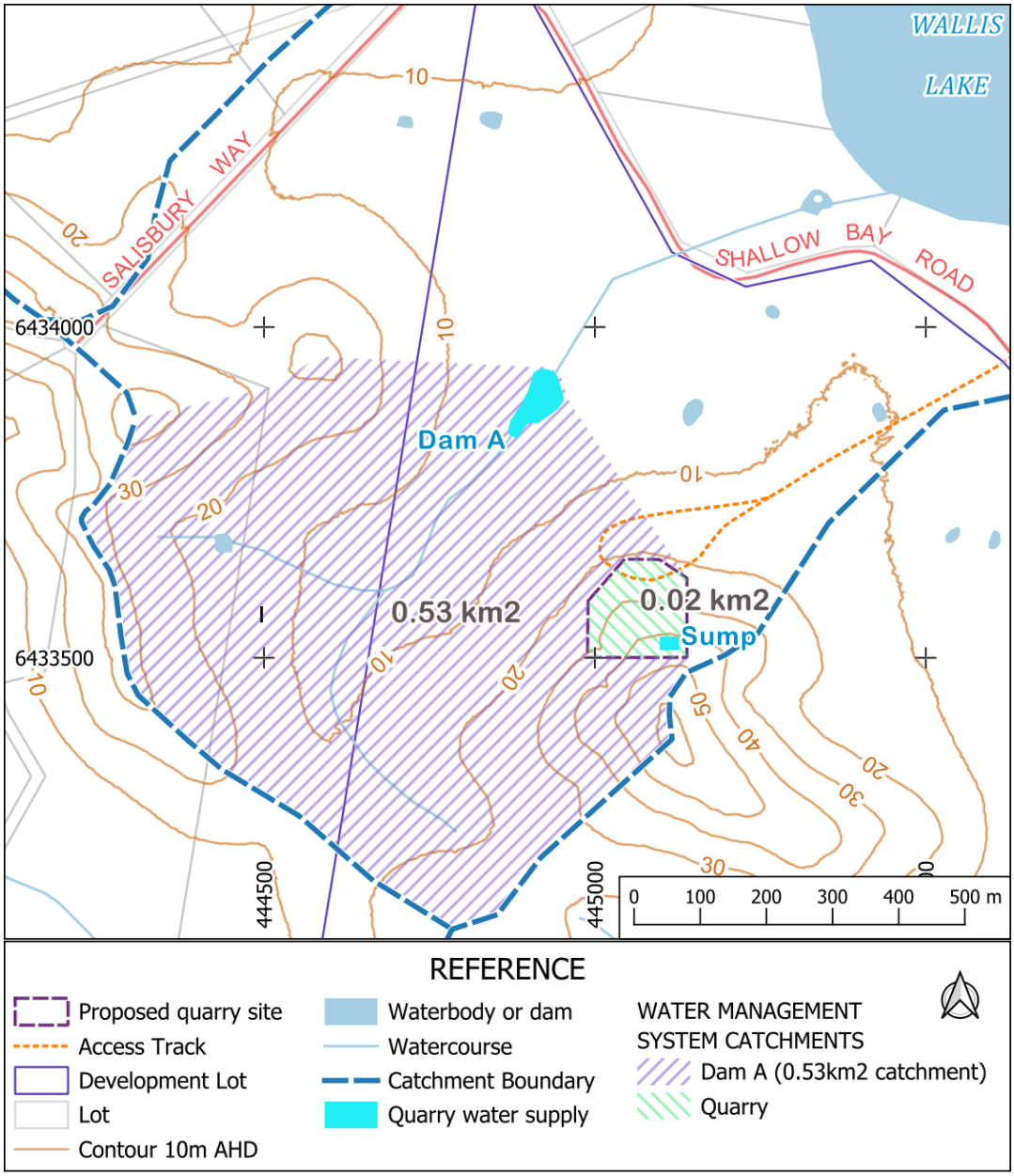


Figure 3.7 – Catchments & water supply sources.

3.8.1 Dirty water

The proposed "dirty" Water Management System for the project primarily consists of sump within the quarry void (Figure 3.7 & Plan 5) that receives all surface water flows from the quarry excavation footprint. Sump location and size will be periodically altered during the operating life of the quarry to meet operational needs, typically within the deepest part of the quarry.

Topsoil stockpiles will be temporarily considered as part of dirty water catchment until stabilised for duration of the project. Controls for the temporary disturbance of the stockpile area include diversion of clean water surrounding the stockpile area using temporary measures, such as sediment fence, sandbags or minor earthworks as outlined in the Erosion and Sediment Control Plan (Appendix F).

3.8.2 Clean water

External overland stormwater flows will be directed away from the quarry excavation using berms (compacted earth banks) a minimum of 1m high upslope of the quarry void as shown in the Erosion and Sediment Control Plan (Appendix F). This will prevent "clean" water from entering the quarry void.

3.8.3 Water supply

The proposed water supply system for the project consists of the following elements:

- Quarry sump (primary supply).
- A farm dam (secondary supply) – "Dam A" in Figure 3.8, about 250m north of the quarry site.
- Pipelines and "on demand" pumps (Figures 3.8 & 3.9).

A failsafe water supply system is likely to be installed to maintain a temporary water supply in the event of pump maintenance or failure. This will consist of a header tank with a volume of 22,500 litres and is expected to be constructed from plastic. Initially a pump will be used to distribute water from the header tank, but it may become feasible to rely on gravity distribution when the quarry becomes deeper.

The primary purpose of the water supply system will be to enable dust suppression on haul and access roads with a water cart during dry conditions. Water will also be used for misting dust suppression systems on the crushing and screening plant, when required.

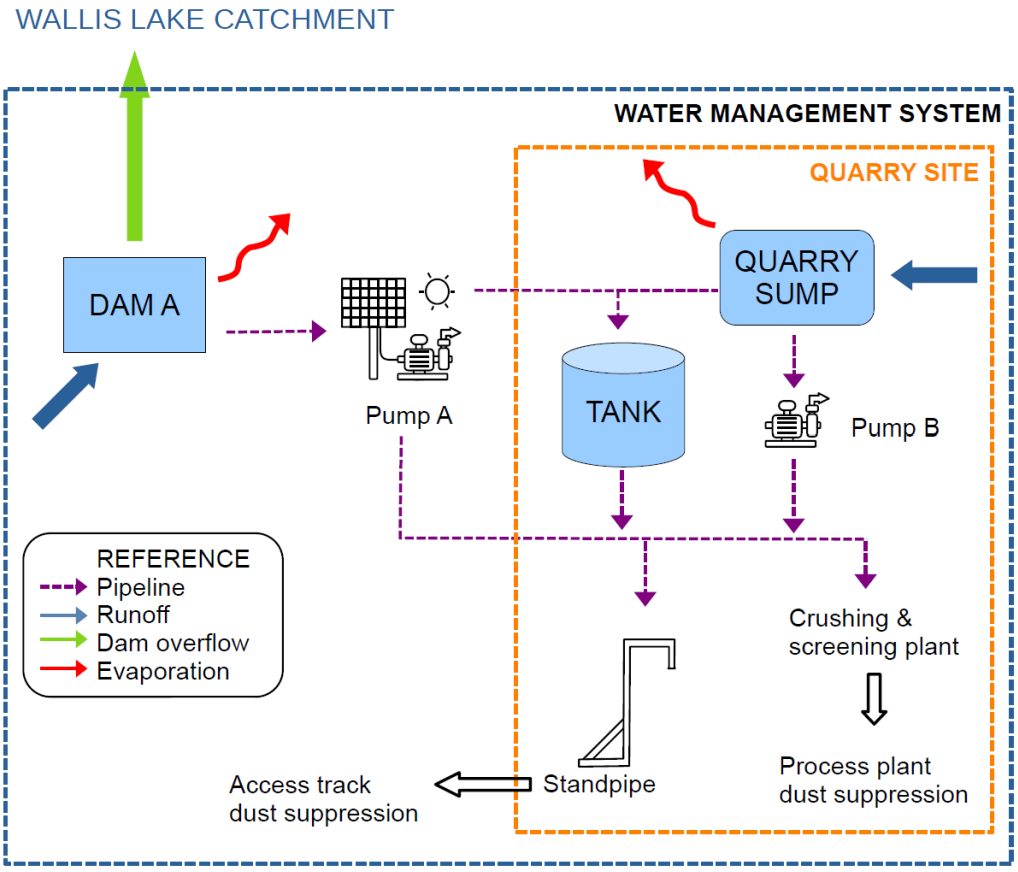


Figure 3.8 – Schematic diagram of proposed water management system.

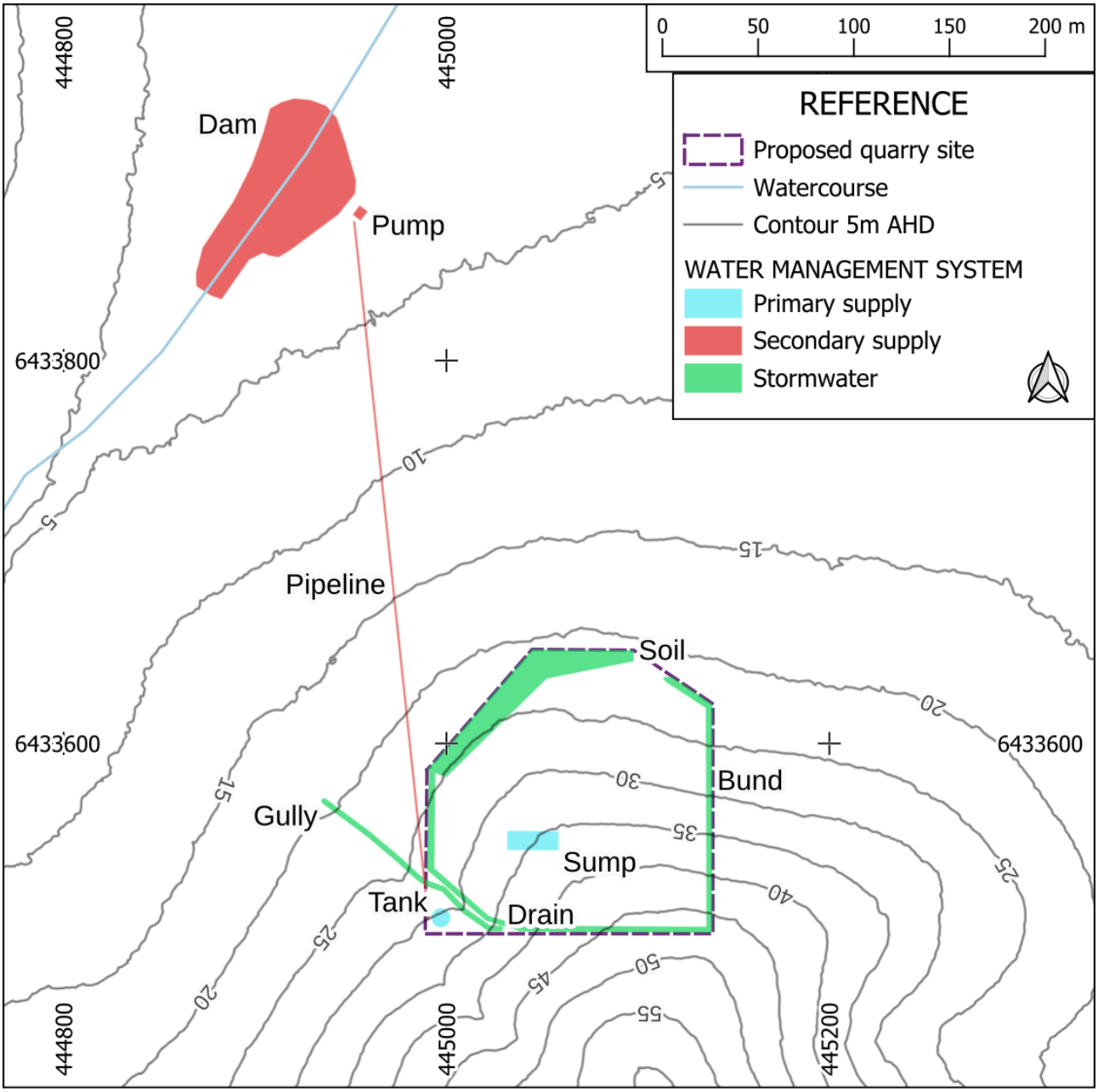


Figure 3.9 – Water management system components.

3.9 REHABILITATION

3.9.1 Future land use

Future land use for the project site after completion of quarry operations and site rehabilitation will primarily depend upon the landowner's requirements. The current expectation is that the site will be returned to a grazing land use.

No significant contamination issues are likely, or expected, given that the rock being excavated is relatively inert and no disturbance to acid sulfate soils is proposed as a result of the project.

3.9.2 Principles

The rehabilitation plan, and any potential variations, will be guided by various principles, including;

- Ensuring a safe and stable landform suitable for the planned future land use (grazing).
- Restoring a minimum veneer of 0.2m of soil/weathered rock to the quarry floor. This material will be primarily recovered from the pre-stripped soil stockpiles.
- The soil veneer will be left with a rough surface texture to facilitate seed retention and water infiltration, thereby facilitating plant establishment and retention.
- Establishing suitable ground cover on the quarry floor.
- Managing grazing on the vulnerable rehabilitation areas using stock exclusion fencing, if required.
- Retaining the vertical walls of the quarry.
- Retaining stormwater diversion bunds on the quarry perimeter. These will be fenced to exclude livestock access for grazing or to the fall hazard posed by vertical or near vertical quarry faces.
- Establishing endemic shrub and tree species on quarry benches.

3.9.3 Rehabilitation species

Quarry walls and benches are unable to be returned a grazing landuse, hence will be rehabilitated to become part of the ecosystem by establishing endemic native tree and shrubs. This will also reduce the visibility of the former quarry within the local landscape.

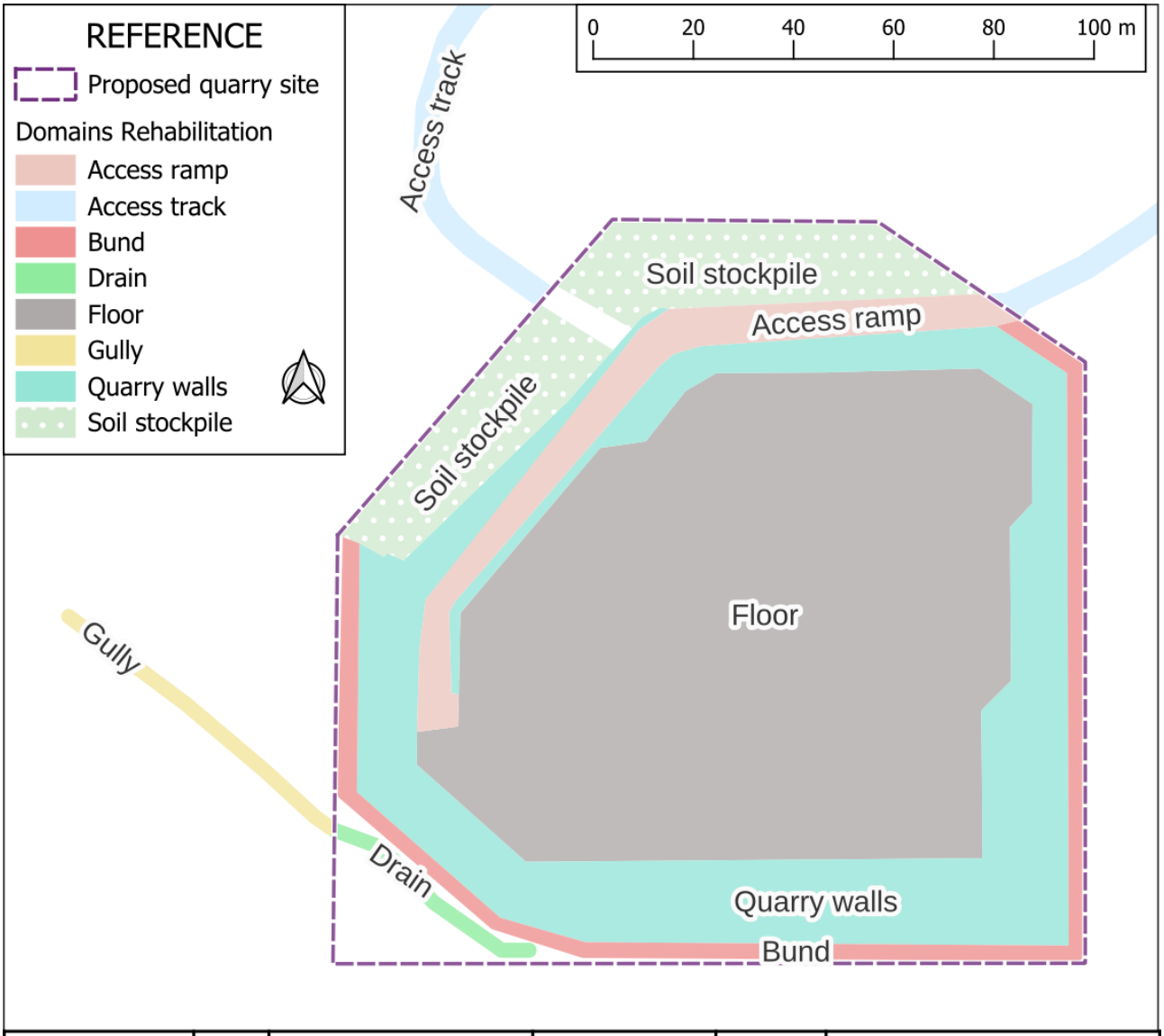
Endemic species are adapted to local soil and climate, including significant climatic events such as drought. An Ecological Assessment identified the following endemic trees and shrubs as presently dominating the plant community in the of the site (Appendix B, Section 4.2):

- *Corymbia maculata,*
- *Eucalyptus propinqua*,
- *Allocasuarina torulosa*,
- *Eucalyptus siderophloia.*
- *Eucalyptus m*oluccana,
- *Eucalyptus tereticornis*
- *Eucalyptus microcorys*.
- *Breynia oblongifolia,*
- *Polyscias sambucifolia,*
- *Exocarpos cupressiformis,*
- *Glochidion ferdinandi,*
- *Leucopogon juniperinus*

A mixture of at least five species will be chosen from the species list above and established from seed or tubestock onto the rehabilitated quarry site following the completion of earthworks. Where feasible, sowing or planting will be undertaken during warmer months in conjunction with rainfall events, to maximise germination and/or survival rates.

The final ranges of species selected will have regard for:

- Seed and tubestock availability, with a preference for local sources.
- Species from the *Eucalyptus* genus are comparitively hardy and generally resistant to grazing by livestock and native fauna.



Name med	Max slope	Revegetation	Landuse	Area	Actions
Access ramp	1:10	Improved pasture	Grazing	0.108 Ha	Apply 0.2m veneer soil, seed.
Access track	N/A	Nil	Ongoing access	0.463 Ha	Retain, maintain.
Drain	1:2	Endemic trees & shrubs	Grazing	0.015 Ha	Retain, maintain, gabion lined.
Gully	N/A	Nil	Grazing	0.021 Ha	No work expected.
Bund	1:2	Endemic trees & shrubs	Grazing	0.116 Ha	Seed, exclusion fence.
Floor	1:3	Improved pasture	Grazing	1.005 Ha	Apply 0.2m veneer soil, seed.
Soil stockpile (A)	1:3	Improved pasture	Grazing	0.119 Ha	Soil used for rehab works, rip & seed former SP
Soil stockpile (B)	1:3	Improved pasture	Grazing	0.094 Ha	Soil used for rehab works, rip & seed former SP
Quarry walls	1:1	Endemic trees & shrubs	Ecosystem	0.505 Ha	Seeding, exclusion fence.

Figure 3.10 – Indicative rehabilitation domains, landuse goals & actions.

3.9.4 Objectives

Proposed project rehabilitation objectives are detailed in Table 3.7 below.

Table 3.7 – Rehabilitation objectives.

ELEMENT	REHABILITATION OBJECTIVE
Waste & machinery	1. All machinery removed. 2. All recycling and waste removed for appropriate disposal. 3. No evidence of significant fuel or oil spills.
Quarry void	4. A minimum veneer of 0.2m of "soil" applied to the quarry benches, floor and access ramp. 5. No evidence of significant quarry related erosion on site or adjoining areas. 6. Quarry product stockpiles removed. 7. Soil compacted by quarry related activities is contour ripped to facilitate plant regrowth.
Access track	8. Where ongoing use is not required by land owner, removal of gravelled access tracks and rehabilitation with soil, consistent to landowner's requirements.
Ecosystem establishment	9. No significant weed species present on former quarry site. 10. Significant endemic shrub and tree regrowth on rehabilitated quarry walls and floor.

3.10 DEVELOPMENT COST

The estimated development cost (EDC) for project construction is $170,000 excluding GST (187,000 GST inclusive) which comprises;

- $90,000 for Development Application related documentation, including Statement of Environmental Effects, plans and specialist environmental assessments.
- $40,000 for construction earthworks including pre-stripping and stockpiling soil.
- $20,000 for construction of water management system tank, pumps and piping.
- $5,000 for purchasing and erecting business identification, administrative and safety signage.
- $15,000 for miscellaneous construction related costs.

The following matters have been excluded from the EDC on this basis they are not construction related costs:

- Operational use of tracked crusher/screens, excavator and other mobile plant that will be transported to the site used by a contractor or leased from a third party.
- Existing mobile plant owned by proponent used in conjunction with their earthmoving business.

3.11 ALTERNATIVES

3.11.1 Alternative sites

A review process was undertaken to identify areas within a 30km radius that may be suitable for development as a quarry, by compiling publicly available mapping from various NSW Government agencies and assessing it with regard for various constraint criteria listed in Table 3.8.

Plans showing the extent of various environmental constraints (Figure 3.11), as well as administrative and infrastructure constraints (Figure 3.12) are provided. Constraints from Table 3.8 are represented by translucent shading various colours and patterns for the respective constraints. Areas with no shading represent the least constrained land based on the evaluation criteria.

Table 3.8 – Evaluation criteria for alternative sites.

CATEGORY	CRITERIA	CONSTRAINT
ENVIRONMENT	Minimal native vegetation	Potential impacts on native flora & fauna prevented by avoiding sites with significant native vegetation.
	Suitable rock	Various sites are unsuitable for a quarry as they comprise unsuitable materials, such as unconsolidated alluvium, substantially weathered rock and/or soil.
	National Parks, Nature Reserves & State Forests	Commercial extractive industries are prohibited in National Parks and Nature Reserves. Commercial "gravel" extraction in State Forests tends to be impractical on a commercial and environmental basis.
ADMINISTRATIVE	Incompatible zoning	Most zones prohibit new extractive industries. Primary production zones (eg RU1 or RU2) usually permit them with development consent.
	More than 500m from unrelated dwellings	Maintaining a buffer for dwellings and sensitive urban zones facilitates management & mitigation of noise, dust, blasting, aesthetic and related matters. Reduces resident concerns regarding potential and actual impacts.
	More than 500m from residential & commercial zones	
INFRASTRUCTURE	More than 500m from highway	Maintaining a buffer from significant public infrastructure facilitates management & mitigation of blasting activities, public safety and avoidance of impacts on public infrastructure.
	More than 500m from electricity transmission line	

The constraint mapping process enabled the identification of five alternative areas least affected by constraints, as marked as A to E in Figure 3.11 and 3.12. Further analysis of those areas shows;

- All sites – Effectively isolated from the public road network by existing dwellings and/or significant areas of native vegetation. Establishing a viable access track to each site would require new or upgraded access tracks, potential land acquisitions and/or indirect (extended) access routes to avoid sensitive areas (dwellings & native vegetation).

- Area A – A slight ridge with a comparitively minor rock volume that is unlikely to have sufficient rock to be viable.

Comparison of the alternatives with the proposed project shows that it is substantially less constrained by vegetation or dwelling buffers, with minimal additional constraints based on matters listed in Table 3.8. Ultimately the proposed Shallow Bay quarry site is regarded as substantially superior to area A, B, C, D or E. It is also closer to the target market which comprises the Forster-Tuncurry vicinity.

The number and extent of alternative sites is expected to decline further in the short term, based on proposed rezoning and landuse restrictions with the draft MidCoast Local Environmental Plan as publicly exhibited in April 2024.

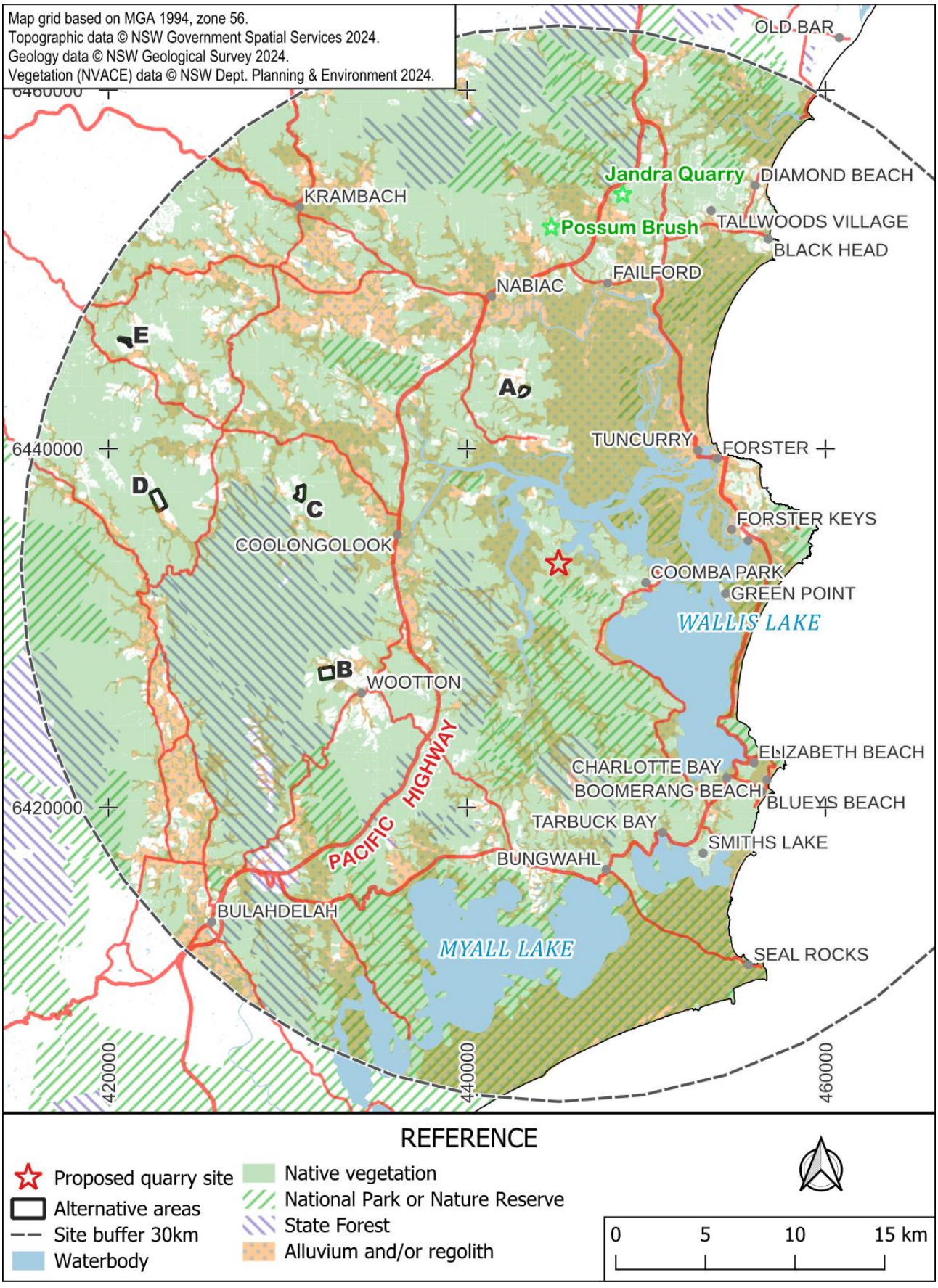


Figure 3.11 – Environmental constraints.

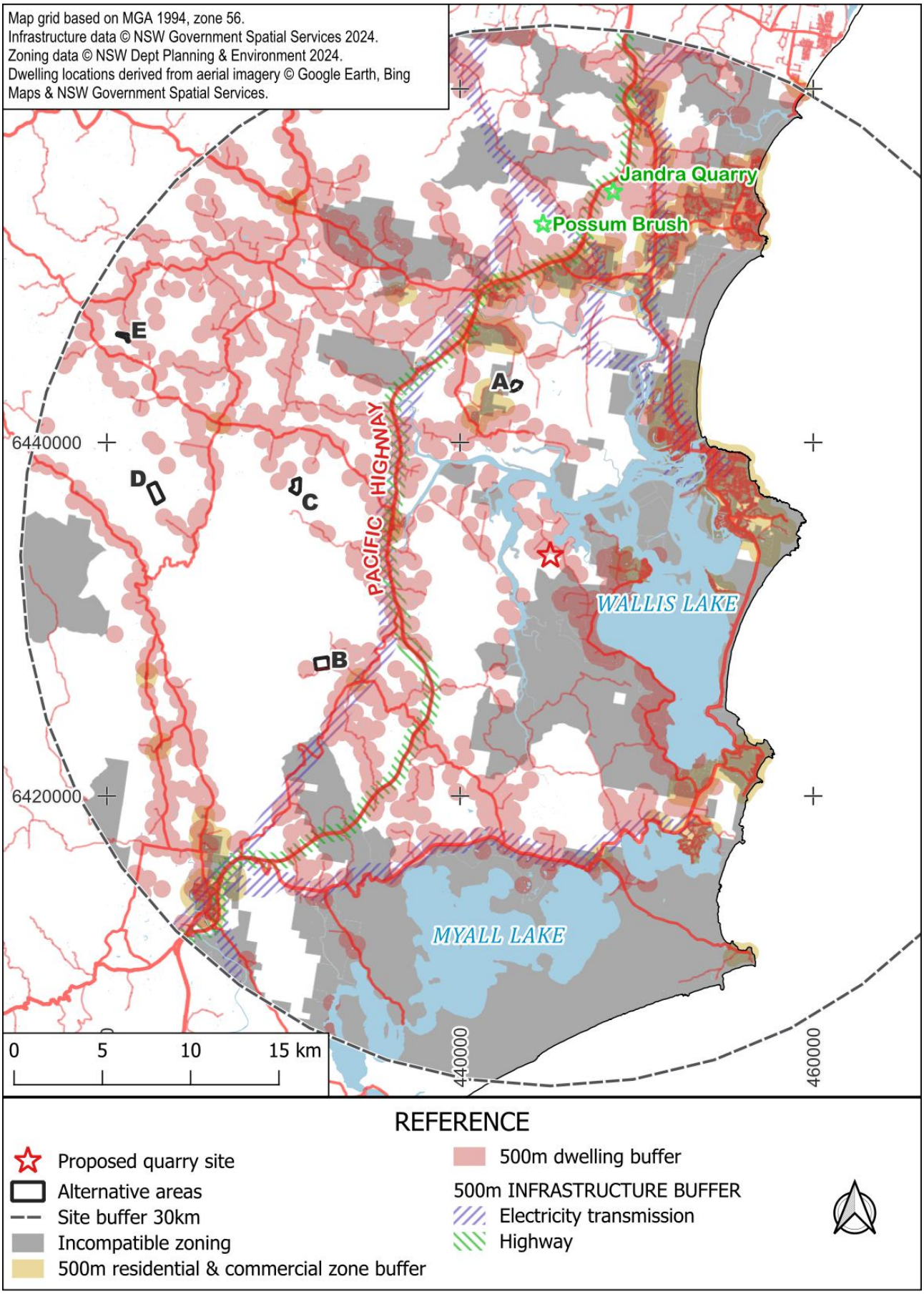


Figure 3.12 – Administrative & infrastructure constraints.

3.11.2 Do nothing

Applying the "do nothing" option has various opportunity costs, including:

- The existing hard rock resource on the site would not be used.
- Economic benefits from the proposal will not eventuate, including capital investment and operational expenditure such as equipment maintenance and labour.
- Increasing demand for quarry products will need to be met by existing quarries or new quarries located in areas with less suitable resources and/or greater environmental impacts.
- Losing an opportunity to establish a quarry on a site with minimal environmental, administrative, infrastructure and access constraints compared to alternatives within a 30km radius.
- Significant additional transportation costs for the community, as well as substantial and unnecessary greenhouse gas emissions generated by the continued sourcing of quarry products from more distant quarries.

4 LEGISLATIVE CONTEXT

4.1 EPAA 1979

Planning approval (development consent) is required for certain types of development under the provisions of the Environmental Planning and Assessment Act 1979 (EPAA 1979) and the Great Lakes Local Environmental Plan 2014 (LEP). The proposed quarry is defined as an "extractive industry" by the LEP.

The proposed site is within a "RU2 Rural Landscape" zone under the LEP where "extractive industries" are a permissible land use with development consent from Council.

4.1.1 Designated development

The Environmental Planning and Assessment Regulation 2021 (Sch. 3, Part 2, Sect. 26) sets various thresholds at which an extractive industry such as a quarry, becomes "*designated development*". Potentially relevant thresholds in this context include;

- More than 2 hectares of disturbance.
- Less than 500 metres from an existing quarry that has operated in the last 5 years.
- Extraction rate greater than 30,000 cubic metres per year.
- Within 40 metres of a natural waterbody.
- Within 100 metres of a wetland.
- An area of contaminated soil or acid sulfate soil.
- Land that slopes at more than 18 degrees to the horizontal.
- Blasting within 1,000 metres of a residential zone or within 500 metres of a dwelling not associated with the development.

The proposed development does not exceed any designated development thresholds.

4.1.2 Integrated development

No integrated development approvals are sought under section 4.46 of the Environmental Planning and Assessment Act 1979.

4.1.3 Bush Fire Prone Land

Sub-section 4.14 of the Environmental Planning and Assessment Act 1979 provides that development consent cannot be granted for any purpose on bush fire prone land unless the consent authority;

> (a) is satisfied that the development conforms to the specifications and requirements of the version (as prescribed by the regulations) of the document entitled *Planning for Bush Fire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development (***the relevant specifications and requirements***), or

The Planning for Bushfire Protection 2019 document make no reference to extractive industry, or quarries, hence has no mandatory requirements relevant to this proposal. It does contain the following reference to mining;

> Where mining and associated activities are carried out on BFPL, consideration should be given to any hazards and risks associated with bush fire. It may be necessary to implement measures to control and manage any identified hazards and risks.

Part of the project site and access track have been mapped as bushfire prone, hence mitigation measures have been proposed in Section 5.14 that are appropriate for the context and nature of the project. The proposed development complies with the intent of the Planning for Bushfire Protection 2019 document and the risks arising from bush or grass fires can be managed to avoid any significant risk to the safety of quarry staff, quarry visitors, the public and emergency responders.

4.1.4 Environmental planning instruments

4.1.4.1 SEPP (Resources & Energy) 2021

State Environmental Planning Policy (Resources and Energy) 2021 (Resources SEPP) specifies various "matters for consideration" by the consent authority for a development application for an "extractive industry", including quarries, in Part 2.3. A summary and review of clauses from Part 2.3 that are relevant to this proposal is provided in Table 4.1 below.

Table 4.1 – Review of Resources SEPP, Part 2.3 clauses.

RESOURCES SEPP	RESPONSE
Clause 2.16	Irrelevant. Clause only applies to mines, not extractive industries.
Clause 2.17 requires the consent authority to consider the compatibility of the proposed extractive industry with existing, approved and likely preferred land uses in the vicinity, amongst other things	The proposal is broadly compatible with such uses as the proposed quarry is: • Within an appropriate zone. • More than 500 metres from the nearest unrelated dwellings. • Able to be operated concurrently with grazing land use on and surrounding the site, as well as existing rural dwellings.
Clause 2.18	Irrelevant. Clause only applies to State Significant Development.
Clause 2.19	Irrelevant. Clause only applies to a proposal in the vicinity of an existing extractive industry or on land identified as the location of locally, regionally or state significant resources of extractive materials.
Clause 2.20 requires that the consent authority "*must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner*".	The proponent expects that Council will apply relevant conditions appropriate for the nature, scale and setting of the proposal.
Clause 2.21 requires that the consent authority "*must consider the efficiency or otherwise of the development in terms of resource recovery*".	The quarry will extract gravel in an orderly manner subject to demand, which is typical of rural quarries.
Clause 2.22 requires that the consent authority refer the Development Application to the "*Roads and Traffic Authority*" within 7 days of receiving the application and to consider the imposition of conditions of consent regarding truck movements and transport of material on public roads.	The proponent expects that Council will undertake the required referral.
Clause 2.23 requires that the consent authority "*must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development".*	Rehabilitation objectives and indicative measures are provided in Section 3.9 of this SEE.

An extractive industry is not a mine, hence Resources SEPP provisions relating to mines do not apply (see relevant LEP definitions for "extractive industry" and "mine").

4.1.4.2 SEPP (Biodiversity & Conservation) 2021

State Environmental Planning Policy (Biodiversity & Conservation) 2021 has various koala habitat protection provisions which have been considered in Section 8 of the associated Ecological Assessment by Leaf ERC dated April 2025 [Appendix B].

4.1.4.3 SEPP (Resilience & Hazards) 2021

Hazardous or offensive industry - State Environmental Planning Policy (Resilience & Hazards) 2021 [SEPP R&H 2021] effectively defines a "*hazardous industry*" as one which when all location, technical, operational and organisational safeguards are employed, continues to pose a significant risk to surrounding land users. SEPP R&H 2021 also effectively delineates an "*offensive industry*" as one which, even when controls are used, has emissions which result in a significant level of offence, such as air quality impacts or noise emissions.

A project cannot be considered either "*hazardous*" or "*offensive*" until it has been assessed via the "*preliminary hazard analysis*" process required by clause 3.11 of SEPP R&H 2021, consistent with any relevant guidelines. A Preliminary Hazard Analysis (PHA) is required if a proposed project or site is classified as potentially hazardous or offensive, under the Hazardous and Offensive Industry Guidelines, January 2011.

Under the guidelines, a preliminary risk screening for the Project is necessary to determine whether a PHA is relevant.

Dangerous goods - Preliminary screening involves identification and assessment of the storage of specific dangerous goods classes that have the potential for significant off-site effects.

There will be no storage of any dangerous goods on the site.

Preliminary risk screening conclusion - Preliminary screening concludes that under SEPP R&H 2021 the Project is not considered either `hazardous' or 'offensive'.

Contamination - Clause 4.6 of SEPP R&H 2021 imposes a requirement that a consent authority must not consent to the carrying out of any development unless "*it has considered whether the land is contaminated*". As noted in Section 5.1, a search was were made for evidence of potential contamination of the project site based on the land use history of the site and surrounding areas. No evidence indicative of potentially significant contamination within the proposed project area was observed.

4.1.4.4 Great Lakes LEP 2014

Under the Great Lakes Local Environmental Plan 2014, the project site is zoned RU2 Rural Landscape. The zone objectives are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To maintain the rural landscape character of the land.*
- *To provide for a range of compatible land uses, including extensive agriculture.*
- *To provide for rural tourism in association with the primary industry capability of the land which is based on the rural attributes of the land.*
- *To secure a future for agriculture in the area by minimising the fragmentation of rural land and loss of potential agricultural productivity.*

The proposed quarry is an "*extractive industry*" that is permissible with development consent in the zone and consistent with the primary production and rural landscape orientated zone objectives. Specific LEP clauses relevant to the proposal are listed in the Table below.

Table 4.1 – LEP clause review.

CLAUSE	COMMENT
7.1 Acid sulfate soil	The LEP Acid Sulfate Soils map shows the northern most edge of the project site as Class 5. Clause 7.1 specifies that development consent is required for the carrying out of; "*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land*." All of the proposed project site is located at 20 metres AHD or higher and no disturbance works are proposed below 10m AHD, hence Clause 7.1 is not relevant in this case.
7.2 Earthworks	The clause requires the consent authority to consider various factors related to environmental disturbance associated with earthworks, including appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.
7.5 Stormwater	The clause requires the consent authority to be satisfied that appropriate strategies and measures are applied to minimise the impacts of stormwater on adjoining properties, native bushland, groundwater, wetlands and receiving waters.

4.1.4.5 Draft MidCoast LEP

In April 2024 Council exhibited a draft MidCoast Local Environmental Plan which is a mandatory matter for consideration under the EPAA 1979. The public exhibition version of the draft LEP proposed a "C3 – Environmental Management" zone for the land which prohibits "industries" and has the following zone objectives;

- *To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.*
- *To provide for a limited range of development that does not have an adverse effect on those values.*
- *To conserve biological diversity and native vegetation corridors, and their scenic qualities.*
- *To ensure development considers and addresses natural hazards, risks and constraints.*

The proposed zoning and prohibited land uses represent a major policy change, including the initiation of a prohibition on future primary industries, such as quarries and forestry, seemingly regardless of the previous land use history for this lot and similar areas nearby. It has also generated major concern within the community regarding the magnitude of the proposed changes, the limited public awareness and the effectiveness of the community consultation process.

It would be quite unreasonable for Council to refuse the application in a context where;

- There are no alternative cost-effective sources of quarry products in the general vicinity.
- The development lot has been significantly cleared and all of it historically logged.
- The development lot does not have any significant "*special ecological, scientific, cultural or aesthetic values*" which warrant protection under the planned rezoning.

- The proposed LEP represents a major change to existing zoning and permissible landuses.
- The proposed LEP has not yet been enacted.
- The applicant has been preparing the Development Application for several months based on the existing zoning and its long-term business development planning.

4.1.4.6 Great Lakes region Development Control Plans

Various Great Lakes Region DCPs and provisions have been identified as relevant to the proposal, as noted in the table below.

Table 4.2 – Relevant Great Lakes Region DCPs.

DCP	COMMENT
4 Environmental Considerations	Provisions relating to ecological impacts, contaminated land and bushfire prone land will be addressed in DA documentation.
7 Industrial Development	No provisions relevant to this proposal.
11 Water Sensitive Design	DCP requirements primarily directed to residential development. An Erosion and Sediment Control Plan (Appendix F) has been provided consistent with sediment and erosion controls outlined in NSW Soils and Construction – Managing Urban Stormwater: • Volume 1 'the Blue Book' (Landcom, 2004), and; • Volume 2E 'Mines and Quarries' (DECC 2008).
14 Waste Management	DCP requirements primarily orientated to residential and commercial development. Section 5.12 of this document addresses waste streams and management strategies based on the Waste Avoidance and Resource Recovery Act 2001, the POEO Act, and the Waste Classification Guidelines (NSW EPA, 2014) and the principles of the waste management hierarchy.
15 Advertising & Signage	Section 15.3.4 has various requirements for signs in rural zones, including a single sign with maximum area of 5m^2 per road frontage.

4.1.4.7 Section 7.11 Contributions Plan

MidCoast Council staff have advised that Contributions would be payable for 'road haulage' under the Section 7 of the Great Lakes Wide Section 94 Contributions Plan adopted by Council on 28 October 2014 as the quarry product haulage routes would primarily rely on the local road network.

4.1.5 Voluntary planning agreement

Under the Environmental Planning and Assessment Act 1979 (Part 7 Division 7.1 Subdivision 2) the applicant and Council have the ability to enter into a voluntary planning agreement (VPA) which can be of benefit to the local community, road users, Council and the applicant.

The applicant submitted an outline of the proposed project to Council's planning staff in advance of a pre Development Application meeting held on 14 January 2025. As part of the project outline document, the applicant indicated they were prepared to enter into a voluntary planning agreement (VPA) with Council and sought feedback regarding;

> "*Whether Council is prepared to consider a Voluntary Planning Agreement (VPA) based on the development making available 1,000 tonnes of quarry product per year for Council road works (excluding freight) provided 50% of the material is used on the improvement and/or maintenance of Shallow Bay Road. The VPA would only apply whilst the quarry was operating commercially*".

At the time this SEE was prepared, the applicant had received no feedback from MidCoast Council regarding the VPA offer. Nevertheless, the applicant remains committed to entering into a suitable voluntary planning agreement with Council at the earliest opportunity if development consent is obtained.

4.2 BIODIVERSITY CONSERVATION ACT 2016

Biodiversity Conservation Act related matters have been assessed in the associated Ecological Assessment report by Leaf ERC [Appendix B].

4.3 WATER MANAGEMENT ACT 2000

Under the Water Management Act 2000, landholders are entitled to collect a portion of runoff from their property and store it in one or more dams up to a certain capacity that are located on minor streams. This entitlement is known as a 'harvestable right' and is determined from the total contiguous area of land ownership. In coastal draining catchments up to 10 per cent of the average annual regional rainfall runoff may be captured and used for any purpose[2] without requiring an approval or licence under the Act. The development lot has a "maximum harvestable right dam capacity" of 23.16 megalitres, based on an area of 193 hectares.

If the maximum harvestable right for a landholding is exceeded, then an appropriate license is required for the volume of surface water to be extracted in exceedance of the available harvestable right.

[2] Water NSW Harvestable Rights

4.4 OTHER STATE LEGISLATION

Additional relevant NSW legislation is outlined in Table 4.3.

Table 4.3 – Additional relevant NSW legislation summary.

LEGISLATION	KEY ELEMENTS	COMMENT
Biosecurity Act 2015	Land owner duty to manage biosecurity threats, such as weeds and pest animals, consistent with the act & regulation.	Operational relevance
National Parks and Wildlife Act 1974	Provisions to prevent the destruction of Aboriginal relics and the active protection and conservation of Aboriginal relics of high cultural significance. Also provides for the protection of native flora and fauna. Administered by the Department of Planning, Industry and Environment (DPIE) and.	Development Application & operational relevance
Protection of the Environment Operations Act 1997	Regulates air pollution, water pollution, noise pollution and waste management.	Enables Council to address adverse environmental impacts, such as noise and dust.
Work Health and Safety (Mines and Petroleum Sites) Act 2013	Contains provisions for work health and safety issues unique to mine sites, including a quarry. At quarry sites this act is administered by the NSW Resources Regulator.	Operational relevance
Work Health and Safety Act 2011	Applies to all workplaces in NSW, including quarries. At quarry sites this act is primarily administered by NSW Resources Regulator.	Operational relevance

4.5 EPBC ACT 1999

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is administered by the Commonwealth Department of the Environment and Energy (DEE) and provides a legal framework to protect and manage "matters of national environmental significance" (MNES).

EPBC Act related matters have been assessed in Section 7 of the attached Ecological Assessment prepared by Leaf ERC [Appendix B].

5 IMPACT ASSESSMENT

5.1 CONTAMINATION

Indicators of potential contamination issues associated with grazing land uses commonly include:

- Rubbish, such as tyres, lead batteries, wire, glass, car bodies, asbestos building materials, herbicide and pesticide containers.
- Cattle dips (eg. contamination from arsenic, organophosphates, etc).
- Cropping (ge. herbicide & pesticide containers).
- Fuel tanks/workshops (eg. oil and diesel spills).

Field observations on 21 February 2025 of all the proposed project disturbance and utilisation areas did not disclose any evidence of potentially significant contamination, and none is expected given the known land use history of those areas.

5.1.1 Impact assessment

Potential contamination that could arise during construction and operation of the quarry include:

- Fuel, oil or chemical spills.
- Inappropriate disposal of wastes (eg batteries, oil, tyres).
- Residual fuels, oils or chemicals in soils

5.1.2 Mitigation measures

The proponent proposes to implement the following management strategies to avoid or reduce potential impacts on land resources:

- In the event that there is a significant diesel fuel or oil spill (more than 100 litres), the following actions will be taken:
    - All potential ignition sources will be removed to reduce the potential for fire.
    - Access will be restricted to authorised personnel only.
    - If there is potential for diesel to flow into an open waterbody or watercourse, the spill area will be bunded to isolate the diesel spill.
    - Contaminated soil will be recovered and either:
        - Retained on the quarry site for natural attenuation (break down by natural micro-organisms), if the volume of contaminated soil is less than 2 cubic metres, or;
        - Disposed of at an authorised waste depot, if more than 2 cubic metres.
- Fuels and lubricants will be stored and, where practicable, used within containment/hardstand areas designed to prevent release of spilt substances to the surrounding environment.
- Personnel will be trained in spill containment and response procedures.
- Appropriate spill response materials will be kept on site.
- Applying appropriate maintenance schedules for plant and equipment to detect and repair leaks.

5.2 LAND CAPABILITY

The land is mapped as land soil and capability Class 5 "Moderate to low capability" under the NSW Land and Capability Mapping program, as shown in Figure 5.2.1. This mapping is intended to provide regional scale information regarding broad scale agricultural use. Class 5 land has severe limitations for high impact land management uses such as cropping. This land is generally more suitable for grazing with some limitations, or very occasional cultivation for pasture establishment.

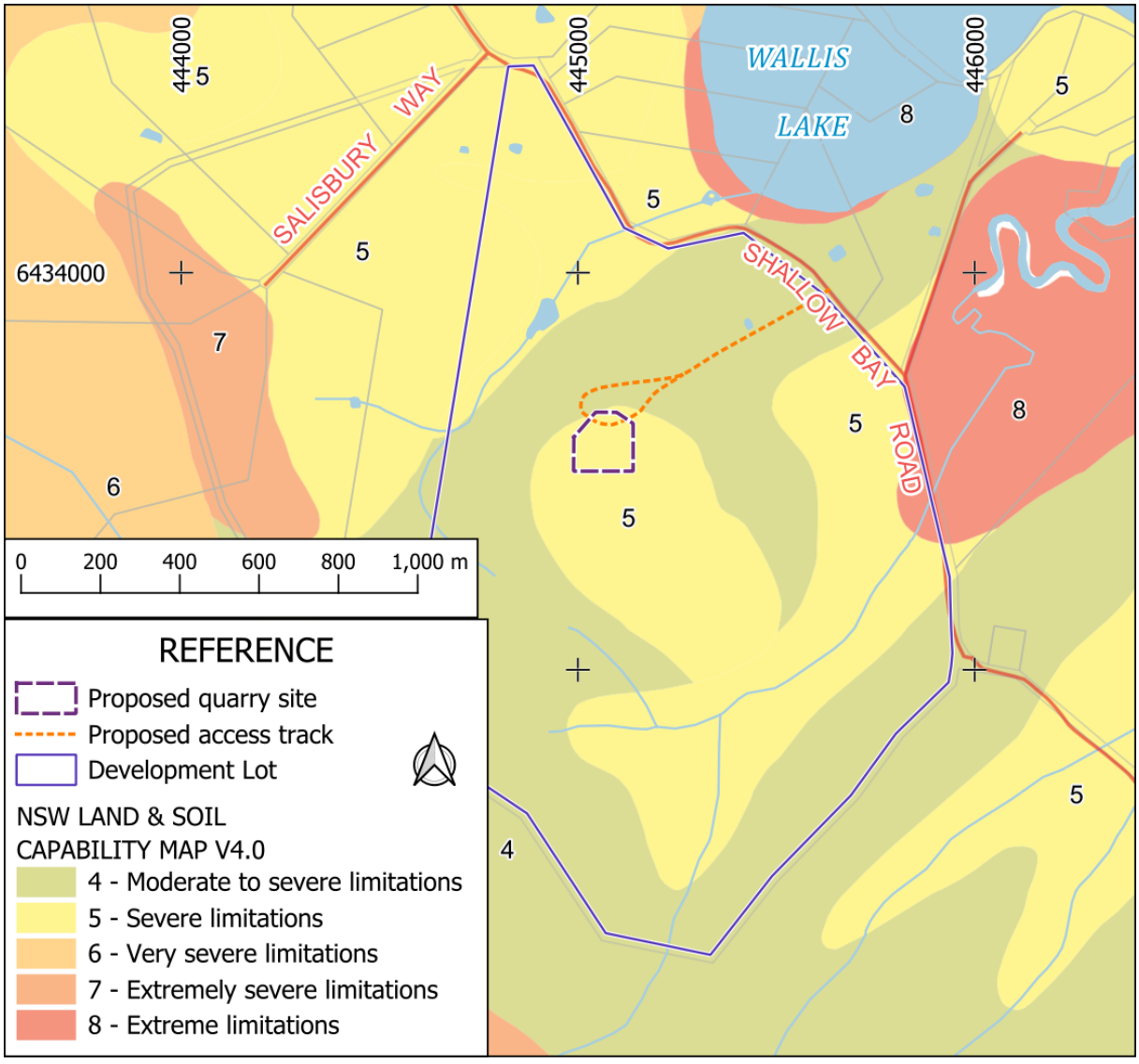


Figure 5.2.1 – Land & soil capability mapping.

5.2.1 Impact assessment

After rehabilitation, the most significant change proposed is that about 2 hectares of land will be effectively altered from LSC class 5 to class 6. Class 6 land is generally only suitable for grazing with limitations. The project lot has an area of 193 hectares, hence the reduction of usable land is about 1% of the development lot. Given the relatively small area involved, this is not regarded as a significant adverse impact to future agricultural land uses

The access track will be able to be readily rehabilitated to its former LSC Classes 4 and 5, if it is not retained by the landowner for ongoing use.

5.2.2 Mitigation measures

The following management and mitigation strategies will be implemented to reduce potential adverse impacts on land capability:

- Topsoil will be pre-stripped and stockpiled for use in rehabilitation activities.
- The quarry will be rehabilitated once quarrying is complete, as outlined previously in Section 3.9
- Regular reviews of quarry wall stability and conditions will be undertaken once the void is more than 5m below ground level.

5.3 EROSION & SEDIMENT CONTROL

Digital terrain data from NSW Spatial Services shows geomorphology along an intermittent watercourse to the north-east and north of the project site that is consistent with gully erosion (Figure 5.3.1). There is currently extensive ground cover, shrub and tree vegetation coverage along the gully areas, suggesting that the most active period of erosion was historical. The project site also intersects an area of significant slope marked as "(A)" in Figure 5.3.1. No evidence of any significant recent rill or sheet erosion was observed during recent site inspections of this area.

Watercourses shown in Figure 5.3.1 are intermittent, only flowing after sufficient rainfall to create significant overland flows.

Design considerations for stormwater and sediment control structures for mine and quarry sites in NSW are provided in sections 5 and 6 of Volume 1 of Managing Urban Stormwater: Soils and Construction, 4th Edition, March 2004 (Landcom, 2004) (commonly known as the "Blue Book"). Additional measures are outlined in Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries (DECC, 2008).

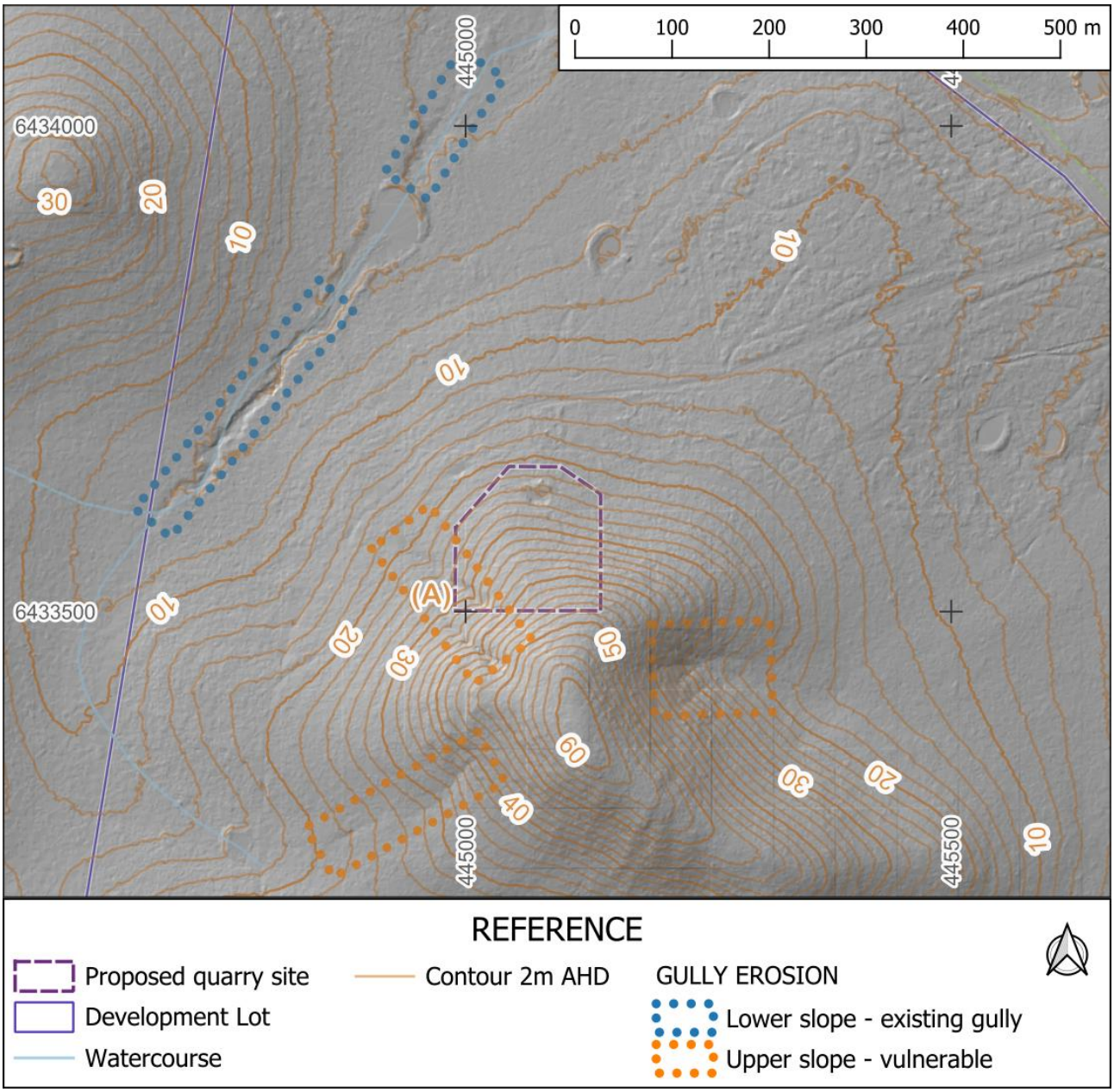


Figure 5.3.1 – Erosion risk areas.

5.3.1 Impact assessment

Mudstone and sandstone exposed on the site shows no indications of any significant deleterious contaminants such as soluble salts (black powder residues or white crusts) or metalliferous sulphide minerals (eg, no iron oxide stains on rock exposures or macroscopic sulphide mineralisation in unweathered rock). In the above context, water management will need to be directed to minimising erosion and the entrainment of sediment or 'total suspended solids' (TSS) in runoff from the site, while also avoiding contamination with hydrocarbons (fuel or oil) used in conjunction with quarry operations.

The main project activities that have potential to have adverse impacts on erosion and sediment control include:

- Lack of appropriate erosion and sediment management controls, or inadequate maintenance of controls.
- Offsite vegetation disturbance by earthmoving activity or vehicle movements off designated tracks.
- Unplanned concentration of stormwater flows along significant slopes, bunds and/or drains.
- Significant spill of fuel or oil.

5.3.2 Erosion & Sediment Control Plan

An Erosion and Sediment Control Plan has been prepared by Rubicon Enviro Pty Ltd (Appendix F) consistent with controls designed in accordance with the NSW Soils and Construction – Managing Urban Stormwater Volume 1 'the Blue Book' (Landcom, 2004) and Volume 2E 'Mines and Quarries' (DECC 2008). Key objectives of the ESCP include ensuring that water discharges from site are compliant with "Blue book" requirements and relevant NSW EPA Water Quality Criteria as noted in Section 2 of that plan, and reproduced in Table 5.3.1 below.

Table 5.3.1 – Discharge water quality criteria (ESCP Table 9).

VARIABLE	CRITERIA	SAMPLING	ANALYTICAL METHOD
pH	6.5 to 8.5	Grab	Field analysis
Total Suspended Solids	<50mg/L	Grab	Field analysis for NTU (nephelometric turbidity units), if results about 50mg/L then laboratory analysis also required.
Oil & Grease	<10mg/L & no visible trace	Grab	Field observation

The ESCP provides a calculation for minimum water and sediment storage volume based on "Blue Book" guidelines of 702 cubic metres. During the construction phase a sump and sediment pond will be created with a minimum volume of 1,000 cubic metres within an existing excavation area on the project site.

Within the first 3 years of quarry operation the excavation is planned to have a volume exceeding 20,000 cubic metres below ground level, hence all stormwater flows will then be directed to, and stored in, a sump within the void. If the sump volume is exceeded, then overflow will be retained within the surrounding excavated hard rock void.

Given the above circumstances it is expected that stormwater retention can be readily managed in accordance with "Blue Book" guidelines.

5.3.3 Mitigation measures

Key stormwater mitigation strategies include:

- Compacted earth bunds will be used to prevent external stormwater flows from entering the quarry void base (see Plans 5, 6 & 7).
- The portion of the quarry site marked as vulnerable to gully erosion in Figure 5.3.1, will be managed by creating a gabion lined drain transitioning to an existing gully with a bedrock base (see Plans 5, 6 & 7).
- Retaining "dirty" stormwater within the quarry site and using that for crushing, screening and dust suppression.

The Erosion and Sediment Control Plan also details actions to be taken in regard to site dewatering in general and specific measures for the construction and maintenance of sediment basins, including steps to be taken to ensure suitable water quality prior to any discharge.

5.4 SURFACE WATER

The project site is located on a ridge within an unnamed intermittent stream catchment that drains into the Wallis Lake, as shown in Figure 5.3. Although there are no perennial natural surface waterbodies upslope of the lake, there are several man-made farm dams within the development lot. The dams are used as a drinking water source for domestic livestock.

Existing slopes on the quarry site are generally between 5° and 12° while the access track has slopes from 1° to 7°. Both the site and access track are readily drained of surface water during storm events.

This section primarily deals with water use and management, while Section 5.3 deals with the erosion and sediment control, including "dirty" stormwater.

5.4.1 Existing

5.4.1.1 Rainfall & evaporation

Rainfall and pan evaporation data for a point near Shallow Bay (latitude -32.25 longitude 152.40) was obtained from the SILO database operated by the Queensland Department of Environment and Science [3] which provides data for all of Australia based on historical observations, primarily from the Australian Bureau of Meteorology (BOM).

Average annual rainfall and evaporation figures are provided in Table 5.4.1, along with a graph of average monthly rainfall and evaporation in Figure 5.4.1. There is a moisture surplus in average monthly rainfall during autumn and winter months, while there is a deficit during spring and summer months. Over the last 25 years, average and median annual rainfall has been about 100mm higher than evaporation.

[3] SILO database at https://www.longpaddock.qld.gov.au/silo/

Table 5.4.1 – Annual rainfall & evaporation 2000 to 2024 (SILO data).

STATISTIC	RAINFALL (mm)	EVAPORATION (mm)
Minimum	539	1,073
Maximum	1,985	1,293
Average	1,290	1,173
Median	1,275	1,168

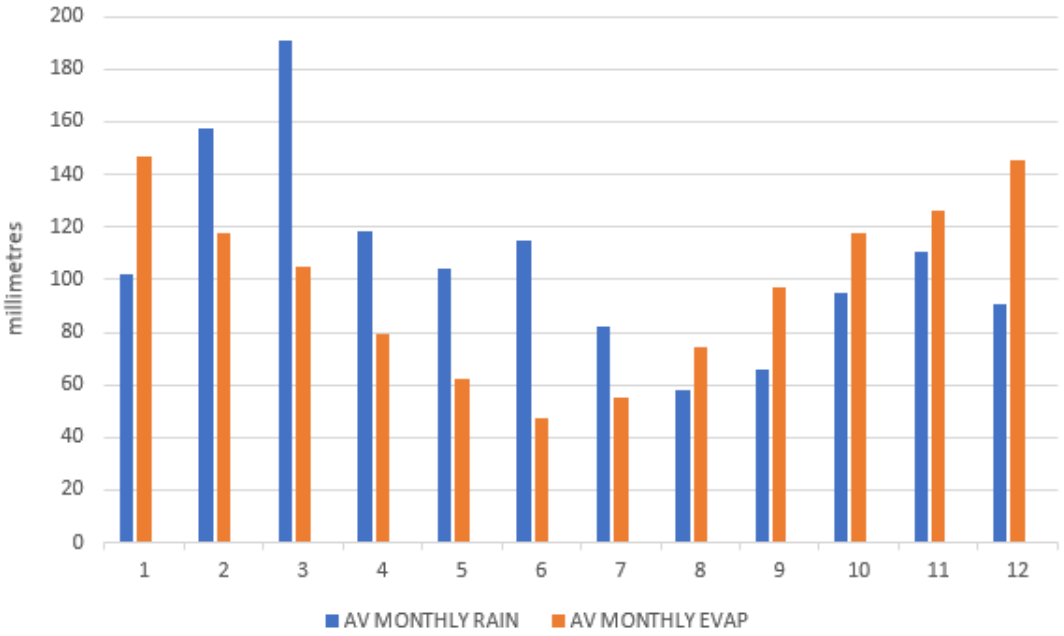


Figure 5.4.1 – Average monthly rainfall & evaporation, 2000 to 2024 (SILO data).

5.4.1.2 Runoff - AWBM

The volume of surface water runoff in the proposed quarry water management system (WMS) has been estimated using the Australian Water Balance Model (AWBM) and incorporated into the site water balance. The AWBM was developed in the early 1990s (Boughton, 1993) and is one of the most widely used rainfall–runoff models in Australia, including for quarry and mining projects.

The AWBM is a partial area saturation overland flow model that requires the assessment of nine parameters, as summarised in Table 5.4.2. The parameters are typically determined for a gauged catchment through a process of calibration, where recorded streamflow is compared to calculated streamflow. They are adjusted to produce the best match between the means and standard deviations of the daily streamflow, to match the difference in peak flow discharge (eg Boughton 2009).

Table 5.4.2 – AWBM parameters.

PARAMETER	DESCRIPTION
A1, A2, A3	Partial areas represented by surface storages
C1, C2, C3	Surface storage capacities
K_s	Daily surface flow recession constant
BFI	Baseflow index
K_{base}	Daily baseflow recession constant

AWBM parameters were calibrated using "Rainfall Runoff Library" (RRL) software version 1.0.5, published by eWater. The RRL software uses local historical flow data, evapotranspiration and rainfall data for a concurrent period to carry out the calibration. Flow gauge data from the Wang Wauk River gauge at Willina (209006) [4] was used for the period 2000 to 2024 (25 years). The gauge is about 15 km north west of the project site, with a total catchment area of 150km^2 and a similar biophysical context to the proposed quarry site. SILO daily rainfall and evapotranspiration point data was also used[5] for the vicinity of the gauge site. Calibrated AWBM parameters from this data were:

- BFI 0, KBase 0.803, KSurf 0
- C1 25.39mm, C 259.27mm, C3 510.55mm (average capacity 340.20 mm)
- A1 0.134, A2 0.433,

Runoff values were calculated using the AWBM and calibration figures derived from the process described above, as shown in Table 5.4.3. These values are regarded as indicative for the proposed quarry site, given the proximity and broadly similar biophysical context of the catchment.

Table 5.4.3 – AWBM annual runoff values 2003 to 2022.

CALCULATED RUNOFF ANNUAL ML PER KM^2	
Minimum	15.8
Maximum	1,084.5

CALCULATED RUNOFF ANNUAL ML PER KM^2	
Average	255.2
Median	203.1

[4] Water NSW https://realtimedata.waternsw.com.au/water.stm
[5] Scientific Information for Landowners (SILO) at https://www.longpaddock.qld.gov.au/silo/

5.4.2 Impact assessment

During the construction phase of the project, an existing farm dam on the development lot will be used to supply any water required for construction activities (e.g. dust suppression). If this supply is insufficient, then a licensed water carrier would be contracted to supply any additional water required.

After establishment, water will be primarily sourced from a sump in the quarry floor. If that supply is insufficient, then a farm dam (Dam A) will be used as a secondary supply with the agreement of the landowner. As noted previously in Section 4.3, the development lot has a maximum harvestable surface water right of 23.16 megalitres under the Water Management Act 2000.

Estimated water demand is provided in Table 5.4.4, with dust suppression the main operational activity consuming water on a regular basis.

Table 5.4.4 – Estimated average water demand.

AREA	ASSUMPTIONS	VOLUME
Processing plant	• Process plant water will not be required during processing of damp materials. • Estimated 30 days per year requiring process water, with a maximum daily consumption of 20 kL per day. • Misting jets on crushing & screening plants.	0.6 mL
Access tracks	• During adverse weather conditions water will be sprayed on haul roads within the quarry void and quarry access track to prevent significant adverse dust. • Primary spraying trigger will be observable dust being carried towards any dwelling not related to the quarry operation, or the Quarry Manager's expectation that these circumstances are likely to develop. • Estimated 200 runs per year at ~14 kL per truck load.	2.8 mL
	TOTAL	**3.4 mL**

Estimated average annual water transfers for the project related water storages are summarised in Table 5.4.5, based on estimated average annual runoff of 255 ML per square kilometre (Table 5.4.3) and the "dam" catchments and storage capacities noted in Table 3.7.

Table 5.4.5 – Average annual water transfers (ML per year).

WATER MANAGEMENT ELEMENT		DAM A	QUARRY
INPUTS	Average catchment runoff	135	5.1
	TOTAL INPUTS	**135**	**5.1**
OUTPUTS	Existing retained water	2 (full)	1 (notional)
	Evaporation	6 (5,000m2 dam)	1 (sump)
	Dust suppression	4	4
	Uncontrolled discharges (dam overflows)	115	0
	TOTAL OUTPUTS	**123**	**1.1**

Comparing average water demand to measured runoff in the period from 2000 to 2024, indicates water deficits were unlikely for most of that period. Modelled runoff only fell below 100 megalitres per square kilometre during 2002 (62.9mL), 2010 (36.9mL), 2019 (15.8mL) and 2023 (46.7mL).

5.4.3 Mitigation measures

5.4.3.1 Dirty water

"Dirty" stormwater water from the quarry void catchment will be directed to a sump within the floor of the quarry void (Figure 3.4). The initial quarry blast will be about 10,000 BCM, hence the quarry void will substantially exceed the minimum required storage volume of 700 cubic metres shortly after first blast and commencement of excavation works.

5.4.3.2 Clean water

Perimeter bunds around the quarry void at least 1m high that will prevent "clean" overland stormwater flows from entering the quarry void. The perimeter bunds will have multiple purposes, including safety, screening and stormwater control.

5.4.3.3 Demand management

Strategies that will be used to minimise demand for water during adverse weather (eg drought conditions) include one or more of the following:

- Reducing the quarry access track speed limit from 20 to 10km/h.
- Ceasing some, or all, haulage activity until weather conditions improve.
- Where feasible, crushing and screening will be undertaken when there is water available from the quarry WMS.
- Regularly reviewing long term weather forecasts for predicted El Nino events and aiming to maximise stockpile volumes outside such occurrences.

In a worst-case scenario, import water may be sourced from commercial water carriers. This is most likely to occur during extended periods of significantly below average rainfall when the water sources and demand management strategies are unable to ensure sufficient supply for minimum operational requirements.

5.5 GROUNDWATER

The nearest groundwater bore is located about 1,250 metres north west of the quarry site, recorded as "GW078180" in the National Groundwater Information System (NGIS) [6] on 5 January 2025. The work summary held by Water NSW indicates that the bore is 41m deep, "salty" with 2 water bearing zones and a collar located at about 2m AHD.

The next closest registered groundwater bore is located about 4.7km to the east (GW079741). Not all bores are registered and compliant with the Water Management Act 2000, hence it is possible that there are additional bores in the area.

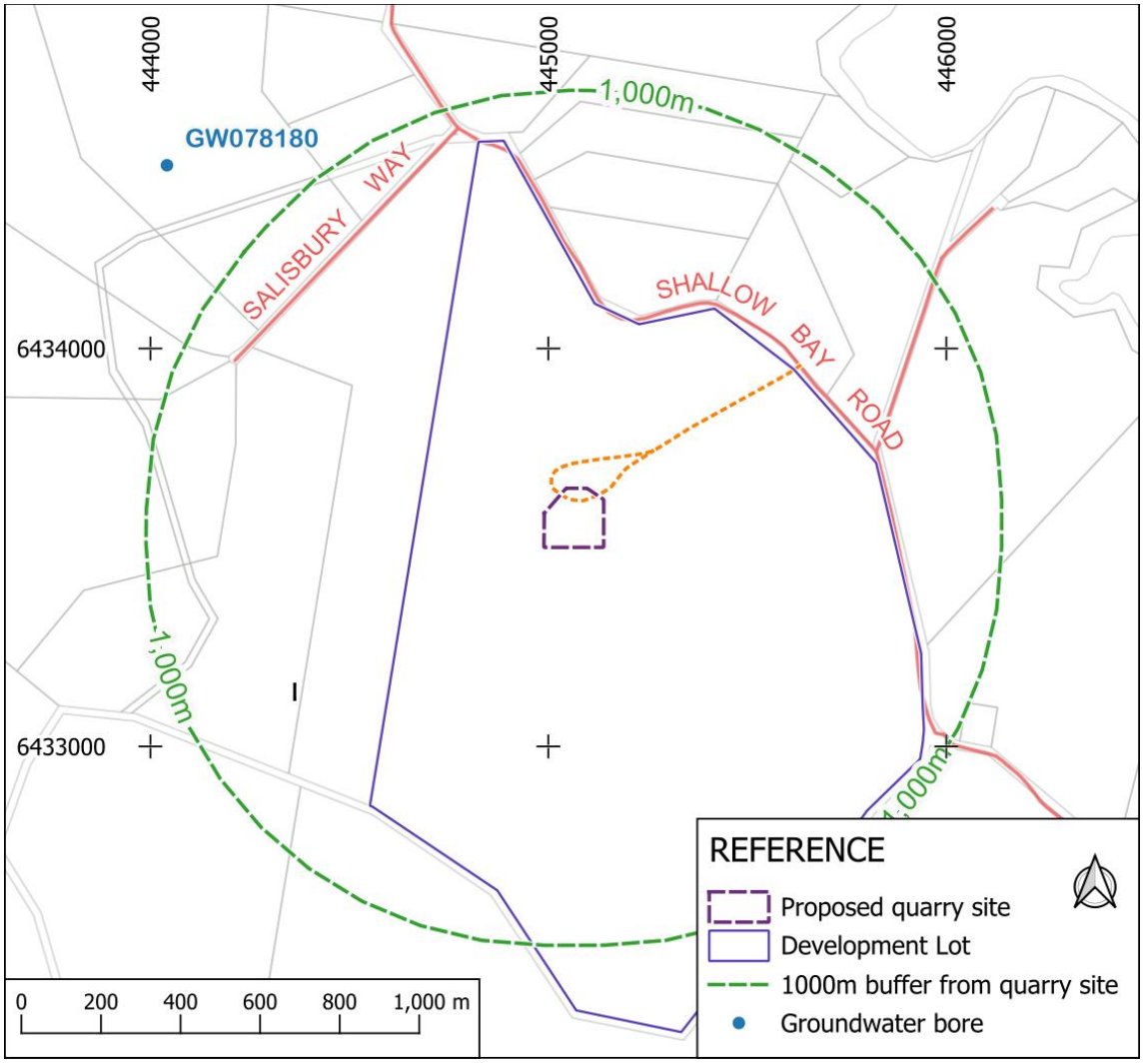


Figure 5.5 – Nearest bore in vicinity of proposed quarry site.

[6] National Groundwater Information System (NGIS), Commonwealth Bureau of Meteorology

5.5.1 Impact assessment

It is quite unlikely the proposed quarry will have any significant impact on water availability or quality at the nearest registered bore, given the distance involved, local geology (steeply dipping sedimentary rock) and that the bore collar is located about 8m below the maximum proposed quarry depth of 10m AHD. Furthermore, the first water bearing zone is recorded at 24m below ground level (ie -22m AHD) within the nearest bore (GW078180).

5.5.2 Mitigation measures

No specific groundwater impact mitigation measures are proposed.

5.6 NOISE & VIBRATION

Project related noise and vibration has been considered in a Construction and Operational Noise and Vibration Assessment prepared by RCA Australia dated April 2025 (CONVA) [Appendix C]. The existing acoustic environment is addressed in Section 4 of the CONVA.

5.6.1 Impact assessment

Assessment of construction and operational noise, as well as vibration, is considered in Sections 5 to 7 of the CONVA. Blasting related noise and vibration is considered within sections 11 and 12. The CONVA concludes with a summary of key findings as follows (Section 14.4):

> RCA were engaged by NT Quarries Pty Ltd to prepare a Construction and Operational Noise and Vibration Impact Assessment for the proposed Shallow Bay Quarry at 465 Shallow Bay Road, Shallow Bay. RCA found that there will be a 2 dB exceedance at one receiver during the construction phase when no blast drilling is taking place which is considered negligible. An exceedance of up to 8 dB at R1 is predicted during construction when blast drilling is taking place, however, no receivers are predicted to experience levels greater than the highly noise affected level. At the nearest receiver during the operational phase, an exceedance of 1 to 4 dB is predicted without and with the blast drilling respectively.

Section 10 of the CONVA also notes:

> Furthermore, the assessment is considered conservative as all plant is assumed to be operating simultaneously, and noise modelling considers earth bunding, but no additional shielding provided by stockpiles. As stockpiles accumulate, they will provide increased noise shielding.

Due to the comparitively small scale of the proposed operation and the limited number of proposed employees, all the plant will be unable to be operated simultaneously, hence the CONVA provides an assessment of a notional “worst case” situation, instead of an actual or expected scenario.

5.6.2 Mitigation measures

Section 13 of the CONVA notes the following mitigation measures to be applied by the proponent to reduce potential noise impacts:

- Establishing an initial quarry void with a minimum depth of 5m below natural ground level then locating the crushing and screening plant within that void to significantly reduce noise at residential receptors.
- Undertaking construction activities during standard construction hours only.
- Undertaking operations activities during "daytime" hours only.
- The quarry is to prepare an operational noise management plan which is part of the training for all staff.
- A maximum instantaneous charge (MIC) no greater than 44kg for initial blasting.

5.7 AIR QUALITY

Air quality considerations been reviewed in an Air Quality Impact Assessment prepared by Todoroski Air Sciences Pty Ltd dated 24 March 2025 [Appendix E]. Existing climate and ambient air quality in the area surrounding the project have been described in Section 4 of that report.

5.7.1 Impact assessment

Assessment of the expected impact of the project is provided in Sections 5 and 6 of the Air Quality Impact Assessment. In summary, the assessment was performed in accordance with the requirements of the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW document published by the NSW Environment Protection Authority in 2022. Based on atmospheric dispersion modelling, predictions were compared with the respective annual and short-term air quality criteria at identified sensitive receptor locations in the surrounding area.

The results of the assessment indicate that there will be minimal impact from particulate matter at receptor locations due to the project, also that there would be no potential for impacts from respirable crystalline silica (Section 6 of AQIA).

5.7.2 Mitigation measures

Mitigation measures related to dust control are detailed in a draft Environmental Management Plan for the project (Appendix E), with some of the more significant measures including;

- Restricting quarry traffic to a maximum speed of 20 km/h along the quarry access track within the development lot;
- Ceasing operations on excessively windy days and/or when gravel/quarry product is very dry;
- Actively suppressing dust with a water cart if operations are necessary during significantly adverse weather or ground conditions; and,
- Using inbuilt misting systems on the crushing and screening plant, to suppress dust, where available and appropriate (eg when blasted rock has minimal moisture content).

Some emission reduction methods will be ongoing, while others, such as water sprays on crushing and screening plant are only required dry climatic conditions and/or when operations involve rock that has a significant fine particle component.

Notably, applying a 20km per hour speed limit on unpaved roads on the quarry site is expected to make substantial reduction in controlled annual and peak 24 hour particulate matter emissions compared to an uncontrolled scenario.

5.8 BIODIVERSITY

Biodiversity related impacts have been assessed in the Ecological Assessment prepared by Leaf ERC dated April 2025 (EA) [Appendix B] including existing flora and fauna, as well as threatened species.

5.8.1 Impact assessment

Potential impacts of the project on biodiversity are considered in Section 5, 6, 7 and 8 of the EA. A threatened species "assessment of significance" is provided (Appendix B, Section 6) which notes:

> As stated above, the extent of habitat to be removed is approximately 0.8ha, which only represents approximately 0.6% of the available habitat present within the encompassing property. In addition, the Subject Site and encompassing property is connected to very large areas of potential habitat (over 6000ha) within Wallingat NP. As such the extent to be removed would not be considered significant in relation to the surrounding retained habitat.

5.8.2 Mitigation measures

Management recommendations to mitigate the potential biodiversity impacts of the project are listed in Section 9 of the EA, as reproduced below:

- Prior to works ensure the extent of vegetation clearing is clearly delineated to prevent potential impacts beyond the approved clearing limits.
- Ensure appropriate erosion and sediment controls are installed prior to vegetation clearing and topsoil stripping.
- The loss of potential habitat for arboreal fauna is to be augmented by the installation of nest boxes within suitable adjacent habitat. The number of nest boxes to be installed should be at a 1:1 ratio to the number of hollows removed.
- The two trees containing potential habitat are to be clearly marked with flagging tape or similar prior to vegetation clearing commencing.
- Vegetation clearing is to be undertaken using a 2-phase process. Phase 1 involves clearing of non-habitat vegetation leaving habitat/hollow bearing trees in-situ for a period of 24hrs to allow any resident fauna the opportunity to vacate the hollows. Phase 2 involves the removal of habitat following the completion of Phase 1. An Ecologist is to be present on site during Phase 2 in the event fauna are present and require translocation off site. Prior to removal trees containing hollows are to be knocked by machinery under the observation of the Ecologist to encourage any remaining fauna to vacate. Habitat trees are then to be lowered slowly where possible then inspected by the Ecologist once on the ground. Felled habitat trees must be left in situ for one night before being removed, mulched or stockpiled, to allow any displaced fauna not observed during the post felling inspection to safely escape under the cover of darkness.
- In the case of any injured fauna the Ecologist is to contact the local wildlife carer or veterinarian for treatment.
- Following vegetation clearing any forest mulch and stripped topsoil generated is to retained for use in any ongoing rehabilitation, including construction and revegetation of the perimeter bund.

5.9 TRAFFIC & TRANSPORT

Access from Shallow Bay Road to the project site is via an existing gravelled all weather driveway. Shallow Bay Road is effectively a dead-end road servicing less than 30 dwellings beyond the access driveway for this project.

Existing traffic volumes and circumstances related to the project are considered in detail within Section 2 and 3 of a Traffic Impact Assessment (TIA) prepared by StreetWise Road Safety & traffic Services Pty Ltd dated 3 April 2025 (Appendix E).

5.9.1 Impact assessment

Information regarding proposed vehicle access and traffic volumes is provided within Section 3.5 of this document while the TIA provides a detailed analysis of potential project related traffic impacts including road safety.

The TIA makes the following recommendations in Section 9:

> In summary, StreetWise Road Safety and Traffic Services recommend that the proposed development as being a suitable development based on the predicted traffic impacts. The additional vehicle trips to be generated by the development will not have a significant impact on the efficiency or safety of the local road network, and that the local roads and intersections have the capacity to cater for the additional trips generated by the development, with minimal upgrades required.
>
> Consideration should be given to the following:
>
> - Upgrade the intersection of Shallow Bay Road and Coomba Road to an Austroads Type BAR / BAL layout to ensure there is adequate width to allow southbound traffic on Coomba Road to pass any vehicles slowing, queuing or turning right into Shallow Bay Road. This is a pre-existing condition and there are no upgrades required as a result of this development proposal.
> - Undertaking an assessment of the full length of Coomba Road with a view to reducing the existing 80kmh speedzone or installing Curve Advisory Markers (CAMs) with recommended speed reductions where required. This is a pre-existing condition and there are no upgrades required as a result of this development proposal.
> - Install W5-22 Advanced Warning signage along the proposed haulage routes to ensure drivers are aware of increased heavy vehicles movements thus improving road safety.
> - The existing traffic volumes through the intersection of The Lakes Way and Coomba Road currently exceed the existing BASIC intersection layout. Consideration should be given to upgrading this intersection to a Channelised intersection (as per Austroads Guidelines). This is a pre-existing condition and there are no upgrades required as a result of this development proposal.

Of the four considerations reproduced above, only one arises directly from the proposed quarry development and the other three are "pre-existing conditions". In that context, the applicant will undertake the proposed installation of "W5-22 Advanced Warning" signage.

5.9.2 Voluntary planning agreement

As noted previously in Section 4.1.5, the applicant has also offered to enter into a Voluntary Planning Agreement with Council to make available 1,000 tonnes of quarry product per year for Council road works (excluding freight) provided 50% of the material is used on the improvement and/or maintenance of Shallow Bay Road. The VPA would only apply whilst the quarry was operating commercially.

Supplying 1,000 tonnes of quarry product per year to Council at no cost will thus facilitate local road maintenance and upgrade works, including those noted in the previous section that are the responsibility of Council.

Nevertheless, the applicant remains committed to entering into a suitable voluntary planning agreement with Council at the earliest opportunity if development consent is obtained.

5.9.3 Mitigation measures

Proposed operational traffic related mitigation measures include:

- Signposting and enforcing a 20km/h speed limit on the development site.
- Preparing and implementing a Driver Code of Conduct for the quarry to ensure all drivers of vehicles utilising the quarry are aware of their roles and responsibilities to ensure road safety as part of quarry operations.
- Installation of W5-22 Advanced Warning signage along the proposed haulage routes to ensure drivers are aware of increased heavy vehicle movements this improving road safety (as per TIA 3rd consideration, Section 9).

5.10 HERITAGE

A Preliminary Aboriginal Cultural Heritage Assessment (PACHA) was prepared by East Coast Heritage & Archaeology (April 2025) which considered whether Aboriginal objects were known or are likely to be present on the project area (Appendix A).

During field work, no items of potentially significant natural or European heritage were observed on the site or in the immediate vicinity.

Results of heritage register searches undertaken on 5 January 2025 are provided in Table 5.10.1 below.

Table 5.10.1 – Heritage register searches

REGISTER	ACCESS POINT	RESULT
Australian Heritage Database	Commonwealth Dept of Climate Change, Energy, the Environment & Water website	No items recorded on Shallow Bay Road.
NSW State Heritage Inventory	NSW Environment & Heritage website	No items recorded with a 2km radius of proposed project.
Great Lakes Local Environmental Plan 2014	NSW Environment & Heritage website	No items recorded with a 2km radius of proposed project.

5.10.1 Impact assessment

Based on the PACHA and heritage register searches it is unlikely that there will be any significant impacts on items of aboriginal, natural or European heritage.

5.10.2 Mitigation measures

The PACHA (Section 9) recommends the following four mitigation measures:

1. That the development remains within the proposed development area (Figure 2B), and that any further development south of the proposed area into the hill requires further assessment and consultation with Forster LALC.
2. That the consent authority advises the proponent that any consent does not give the approval to harm an Aboriginal object. Under the NPW Act 1974, all persons must ensure that harm does not occur to an Aboriginal object. If human skeletal remains are found during the activity, work must stop immediately, the area must be secured to prevent unauthorised access, and the NSW Police and OEH must be contacted. The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under S.89A of the NPW Act to notify OEH as soon as possible of the object's location. This requirement applies to all people and to all situations.
3. If Aboriginal objects of significance or unanticipated nature are found during activities within the development area, operations must stop until the appropriate management protocols have been followed, as provided, in the "Schedule of Protocols" attached to this report.
4. The proponent should develop a Cultural Education Program as part of a site induction for personnel involved in the construction activities in the project area. The proponent has a duty of care to ensure each worker knows individual responsibilities under the Act (National Parks and Wildlife Act 1974). The Local Aboriginal Land Council may be able to assist in the delivery of such induction.

5.11 VISUAL AMENITY

Landscape within the project vicinity is dominated by undulating to moderate hills transitioning to flats on the fringes of Wallis Lake. Extensive and quite dense stands of native vegetation up to about 25 metres high are interspersed with cleared areas up to about 40 Ha. Landscape views are predominantly rural, and estuarine in nature,

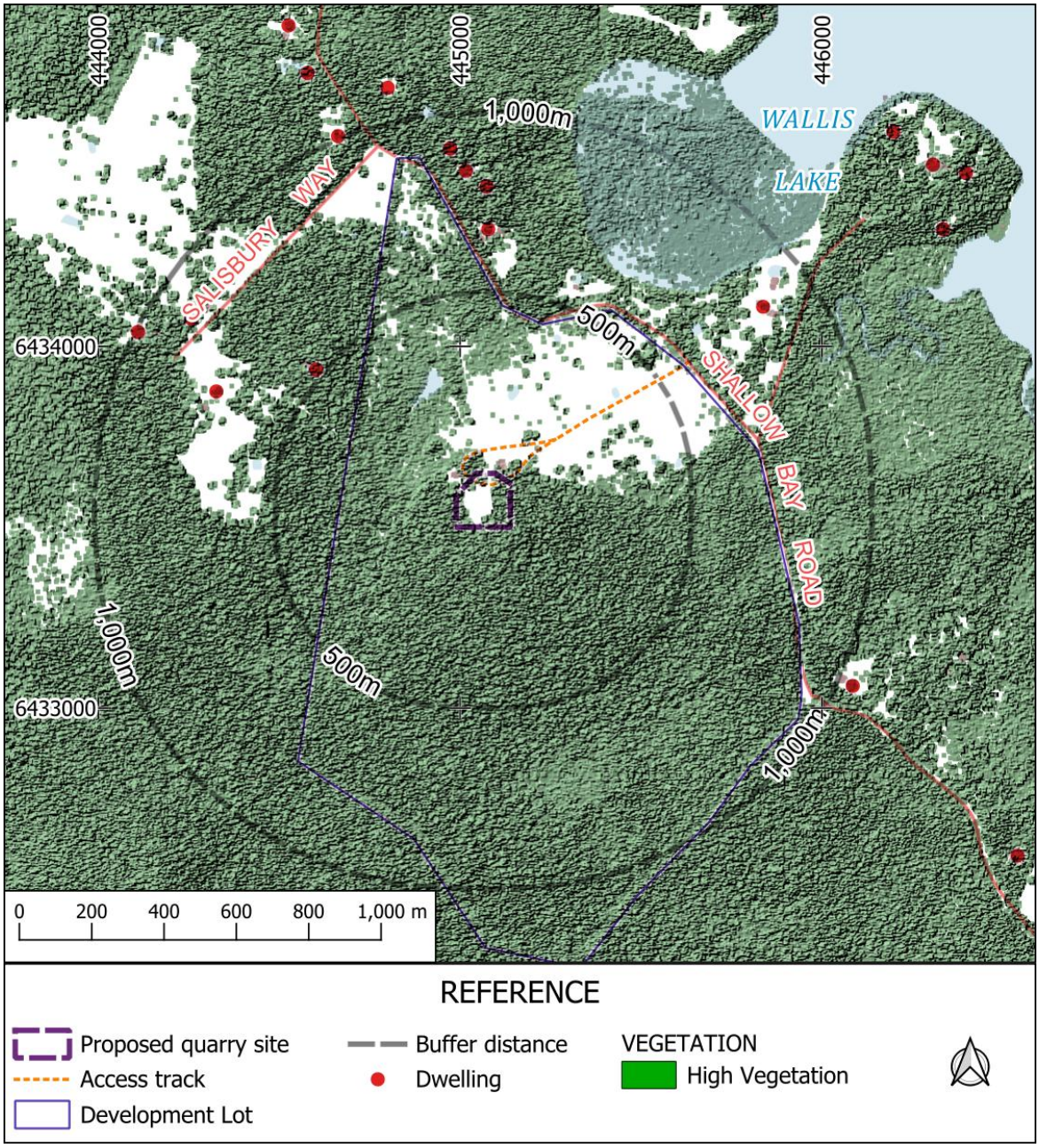


Figure 5.6 – High vegetation distribution & dwellings.

A review of recent aerial imagery identified 10 dwellings within about 1km of the proposed quarry site. Field observations indicate that these dwellings are not readily visible from the project site, as the viewsheds are substantially occluded by extensive stands of native trees and undergrowth as shown in Figure 5.6, as well as attached Plans 10 & 11. However, one distal dwelling is readily visible at 622 Shallow Bay Road, located more than 1,400 metres from the site (Plate 5.1).

Plate 5.1 – Dwelling visible from quarry site, Jan 2025.

5.11.1 Impact assessment

5.11.1.1 Receptors

The project site is located on a hill with a northerly aspect, hence quarry construction and operations will be visible from the dwelling at 622 Shallow Bay Road and its immediate surroundings. Overall, more than 1,400 metres of separation between the proposed quarry and receptor dwelling is expected to substantially moderate the aesthetic presence of the quarry from the vicinity of the dwelling.

5.11.1.2 Landscape character

Analysis of LiDAR point cloud data[7] indicates the operational quarry will be partially visible from some public places, with the most significant being the:

- Wallis Lake waterbody, including Shallow Bay, views from within an arc of less than 45 degrees to the north-east of the quarry.
- Shallow Bay Road, to the north of the quarry, some glimpses will be possible from the road corridor in areas with an overlook and limited vegetation.

Minimal to negligible quarry views will be possible from private agricultural land in the vicinity, mainly due to the density and abundance of native vegetation, as well as the undulating landform.

[7] 2012 NSW Spatial Services classified LiDAR point cloud data.

The magnitude of change to landscape aesthetics is regarded as minor although the sensitivity of the area is regarded as moderate, based on the coastal context, number of potential observers and the ability to see parts of the quarry in some circumstances from public places.

5.11.2 Mitigation measures

Although there is very limited visibility of the quarry site from private dwellings or public places, the project includes the following measures that will further reduce potential visibility of the quarry site (Figure 3.5):

- An earth bund wall that is a minimum of 3m high along most of the northern edge of the proposed quarry rim. This will also act as a soil stockpile for rehabilitation at the completion of operations.
- Growth of endemic trees and shrubs will be facilitated on the northern soil stockpile.
- Earth bund walls that are a minimum of 1m high along the north west and south west rim.

5.12 UTILITY INFRASTRUCTURE

The Essential Energy Network Information web site shows an above ground electricity line running semi-parallel to the Shallow Bay Road, as shown in Figure 5.12.1. An underground telecommunications cable is also likely near or within the road corridor.

5.12.1 Impact assessment

No construction or excavation activities are proposed in the vicinity of the telecommunications or electricity lines adjoining the Shallow Bay Road, hence it is very unlikely that the project will have any direct adverse impact on utility infrastructure.

The existing access track off the public road corridor does pass under an overhead power line. NSW ISSC 20 Guideline addresses activities near overhead powerlines8 and states various activities are permitted close by, provided that they do not interfere with the maintenance, replacement, upgrade or safe operation of the line, including (p.19):

> **7.1.5 Mobile plant and equipment operation**
> The operation of mobile plant and equipment having a height not exceeding 4.6 metres when fully extended including any load carried. The Workcover Code of Practice *Work near Overhead Powerlines* provides requirements for clearances to be maintained to overhead power lines during operation of plant and equipment.

5.12.2 Mitigation measures

No specific impact mitigation measures are proposed, but the proponent is aware of the *Workcover Code of Practice Work near Overhead Powerlines* and the need to ensure that plant and equipment is transported, and

[8] ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Electricity Infrastructure, NSW Industry Steering Committee, September 2012.

operated, in a manner that does not exceed the 4.6 metre height restriction in the vicinity of the overhead powerline.

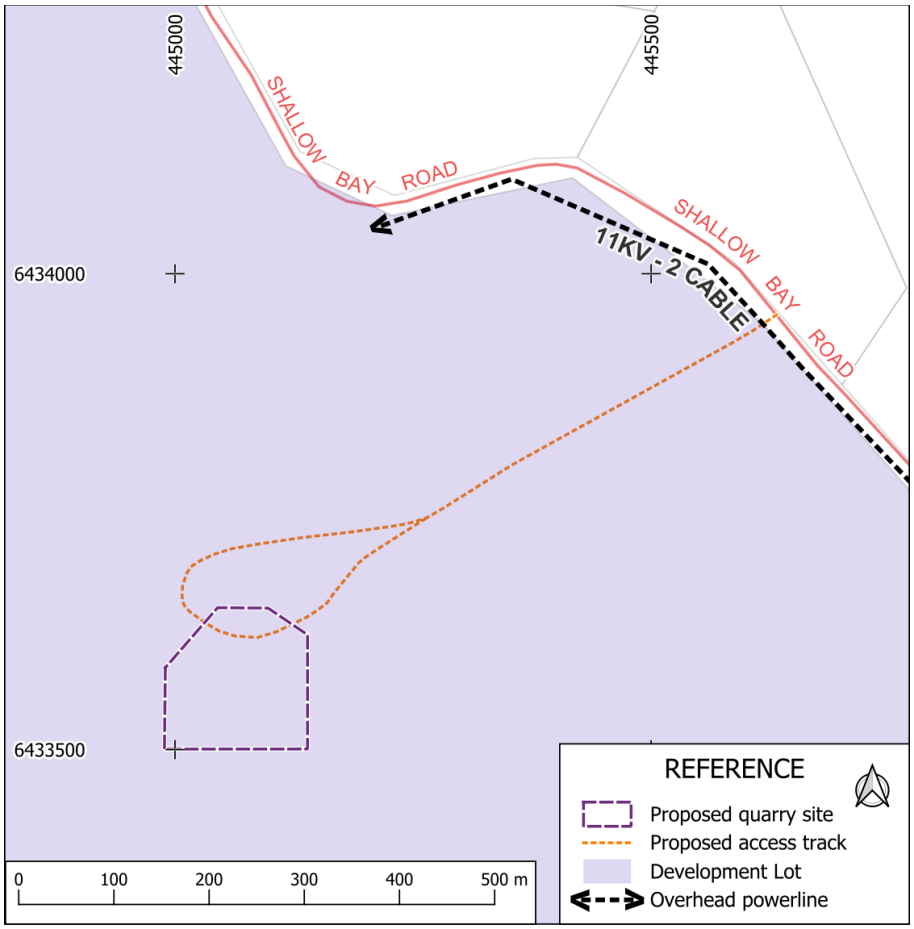


Figure 5.12.1 – Overhead power line.

5.13 WASTE MANAGEMENT

This section considers the potential for the project to generate waste streams and proposes measures to manage them, appropriate for the scale and nature of the waste involved. There are no significant existing waste management issues known on the project site.

5.13.1 Impact assessment

5.13.1.1 Ancillary waste

Expected waste streams include:

- Used oil, oil filters, air filters, grease cartridges, batteries and tyres resulting from equipment maintenance.
- Food packaging and drink containers.

- Sewage waste from on-site amenities. It is expected that a closed sewage system will be installed into amenities, and sewage water will be collected by a licences contractor for off-site disposal. An onsite sewage system may also be considered if a closed system is impractical.

5.13.1.2 Quarry waste

The project is based on the excavation and processing of hard rock to produce quarry products, mainly gravel and fill of various size ranges. Variable demand for particular quarry product sizes will be managed by maintaining stockpiles sufficient to meet forecast demand, where feasible. As particular stockpiles become depleted, crushing and screening equipment will be adjusted during subsequent production runs to replenish appropriate stockpiles. There will be no waste stream involving quarry products, as:

- All quarry outputs have a range of uses and markets, and;
- In the unlikely event that there is a significant excess of a particular product, it can be blended with other products or further crushed, or screened to create alternative product with higher current demand.

5.13.1.3 Imported material

No quarry products or recyclable materials will be imported from other sites to be used for blending or recycling related uses.

5.13.2 Mitigation measures

Waste streams will be managed in accordance with the Waste Avoidance and Resource Recovery Act 2001, the POEO Act, and the Waste Classification Guidelines (NSW EPA, 2014) and the principles of the waste management hierarchy. The project will aim to reduce, reuse and recycle its wastes by applying the mitigation strategies outlined in Table 5.4.

All non-recyclable waste generated will be managed by appropriately licensed waste contractors or taken directly to an appropriately licensed waste disposal facility. No on-site disposal of waste would occur.

Table 5.4 – Proposed waste management strategies.

WASTE TYPE	WASTE MANAGEMENT HEIRACHY		
	AVOID	REUSE/RECYCLE	DISPOSE
Plant & equipment related	Order appropriate quantities of materials	Provide recycling drums for used oil. Ensure regular recycling collection or disposal.	Non-recyclable items stored then disposed of in accordance with Waste Classification Guidelines.
Domestic	Order appropriate quantities of materials	Provide recycling bins Ensure regular recycling collection.	Non-recyclable items stored then disposed of in accordance with Waste Classification Guidelines.
Contaminated soil	Appropriate storage and decanting of fuel & chemicals to minimise risk of spills.	Use bioremediation to break down hydrocarbon contaminated soil where appropriate.	Dispose of untreatable contaminated soil in accordance with Waste Classification Guidelines.
Green waste	Minimise clearing	Grass & ground cover can be mixed with stored soil to improve carbon content and nutrient value for future rehabilitation.	Not required.
Sewage	N/A	N/A	Sewage waste removed and disposed of by an approved contractor.

5.14 HAZARDS & RISKS

All of the quarry site and access tracks are located on elevated land away from any flood plains or watercourses.

Bush fire prone land mapping data provided by the NSW Rural Fire Service (Figure 5.8) shows:

- 100% of the quarry site is Category 1, highest risk.
- About 90% of the access track is Category 3, medium risk.

Category 1 is the highest risk category and consists of vegetation with high fuel loads that is prone to the most intense bushfires, such as forest and woodlands. Category 3 comprises grasslands and similar vegetation.

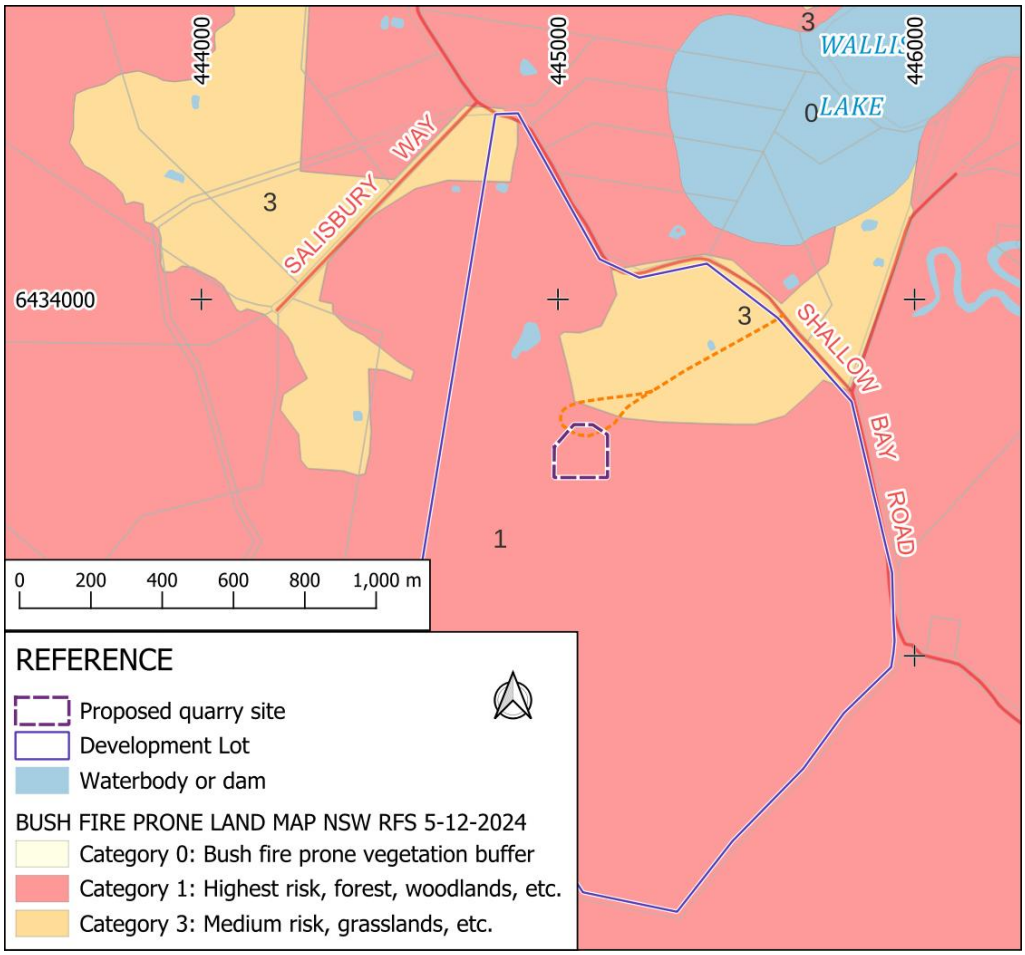


Figure 5.8 – Bushfire prone land mapping.

5.14.1 Impact assessment

5.14.1.1 Flood

Quarry related activity is unlikely to have any significant impact on the extent or duration of flooding in the surrounding landscape, given that the quarry site and access track are located on elevated land.

5.14.1.2 Bushfire

The project involves removing all soil and vegetation from most of the quarry site during early stages of the project, hence there will be minimal fuel available on the site. Any equipment repair activities involving welding or grinding have the potential to ignite a bush fire if undertaken in vegetated areas outside of the quarry excavation.

Overall, risks posed by bushfire on this site are relatively low, given that:

- Most soil and vegetation will be removed from the quarry site early in the project life.
- Smoke from any significant fire in the vicinity will be readily visible from a substantial distance (>1km in most situations).
- Ample warning and opportunity to evacuate the quarry area is expected in the event of a fire nearby.
- The proposal includes an onsite water supply system.

- The main flammable materials on the bare rock quarry floor would comprise rubber tyres, and conveyor belts.

5.14.2 Mitigation measures

5.14.2.1 Flood

No flood related mitigation measures are warranted or proposed.

5.14.2.2 Bushfire

Proposed mitigation measures to reduce bushfire risk include:

- Ensuring that all work with a significant fire ignition risk, such as grinding and welding, is only undertaken on cleared operational areas with suitable fire protection equipment (eg fire extinguishers) and/or when climatic conditions are suitable (eg minor wind & no fire bans).
- Managing fuel loads where appropriate, by grazing or slashing excessive vegetation in the vicinity of the quarry.
- Ceasing all quarry related operations and evacuating the site in the event of any bushfire within the vicinity that the Quarry Manager deems to be a potential hazard to people or equipment.

5.15 SOCIO-ECONOMIC

5.15.1 Impact assessment

5.15.1.1 Community consultation

Quarry proposals invariably generate concern for a proportion of people with landholdings in the vicinity of a new site. In some cases that concern can be the result of a lack of understanding of the scale and nature of quarry operations, as well as the operational restrictions and mitigation measures usually applied. In that context the applicant has personally contacted many of the landholders within a 1 kilometre radius recently to inform them of the proposal, as well as to encourage discussion and feedback.

5.15.1.2 Economic

No significant adverse economic impacts are expected if the development proceeds in a manner consistent with current NSW standards and development consent conditions appropriate for the context, scale and nature of the proposal.

Positive economic impacts expected in conjunction with the project, include:

- Employment for plant operators and truck drivers.
- All workers are likely to be residents of the local area.
- Significant local operational related expenditure is expected to include parts, fuel, maintenance services, wages, freight and light vehicles.
- Establishment of a cost-effective source of quarry products in the southern and western Wallis Lake area. The nearest existing quarries are up to 80km (one way) via road, hence freight costs can be greater than the cost of materials.

- Improved competition in the availability and pricing of quarry products.

5.15.1.3 Social & amenity

If the development proceeds with management strategies and mitigation measures consistent with current NSW standards, as well the context, scale and nature of the proposal, then no significant adverse social or amenity impacts are likely. Positive impacts include:

- Reduced costs for any construction work involving quarry products within the southern and western Wallis Lake area.
- Reduced truck movements of quarry products through the congested Forster and Tuncurry central business districts.
- Decrease in heavy truck haulage utilisation times and distances on local roads.

5.15.2 Mitigation measures

5.15.2.1 Community consultation

The Quarry Manager will be the single nominated contact point for all sales, complaints and queries regarding quarry operations. This will include publicising their phone number on the business identification sign at the entrance to the quarry, a website for the business and "yellow pages" phone directory listing.

The applicant is committed to applying the various mitigation measures proposed within the SEE and associated specialist assessments, as well as operating in a manner that addresses all reasonable community concerns. A single point of contact for community complaints and queries will facilitate direct and clear communication with community members.

5.15.2.2 Economic

No significant adverse economic impacts are expected, hence no mitigation measures are proposed.

5.15.2.3 Social & amenity

Various mitigation measures have been proposed within the SEE and associated specialist assessments that are expected to reduce the opportunity for any significant social or amenity impacts. Relevant measures include:

- Earth bund wall 3m above natural ground level along most of the northern edge of the proposed quarry void to reduce quarry visibility and noise transmission.
- A 20km/h site speed limit for quarry traffic to minimise dust and noise.
- Restricted operating hours.

6 PROJECT JUSTIFICATION

6.1 ENVIRONMENTAL

This SEE has documented project impacts, considering both potential positive and negative impacts, and identifies mitigation and management measures to protect the environment where required, as outlined in Sections 3 and 5.

The Project also incorporates measures and design features to ensure that impacts are managed and mitigated as far as practicable. With the implementation of the identified mitigation measures, the project is not expected to have a significant negative environmental impact.

6.2 PROJECT NEED

The project site is strategically located for the supply of gravel for earthworks and road construction in the Forster-Tuncurry area. It provides a significant opportunity for a substantial reduction in freight costs, fuel consumption and greenhouse gas emissions compared to existing local quarries, which are predominantly located at greater distances from the intended market catchment for this proposal.

6.3 BENEFITS

Significant benefits arising from the proposed project include:

- Medium term supply of quarry products.
- Employment for plant operators and truck drivers.
- A cost-effective and less greenhouse gas intensive source of quarry products for fill and road construction in the vicinity.
- Significant contributions to local, state and commonwealth government finances through payment of various taxes and levies.
- The proposed use provides an increased economic return from the land compared to other currently permissible land uses.

6.4 SITE SUITABILITY

The Project site is suitable for the project for the following reasons:

- Extractive industries are permissible with consent in the RU2 Rural Landscape zoning of the site.
- Operations can be conducted in a manner that has no significant adverse impacts on existing land uses, such as grazing or rural dwellings.
- The project site is more than 500 metres from the nearest dwelling.
- The project is located on land which has been heavily modified historically by land clearing activities and disturbances associated with agricultural activities.

6.5 PUBLIC INTEREST

The project is in the public interest as it will:

- Provide a supply of construction materials into the region to meet existing and growing demand for these materials.
- Provide an alternative source of construction materials that is expected to be more cost effective than most existing and more distant sources of similar products.
- Create new local employment opportunities for plant operators and truck drivers.
- Have direct economic benefits in the form of initial capital investment, plus recurring expenditure associated with wages and maintenance.
- Utilise and develop skilled employees/contractors, including plant operators, mechanics and a quarry manager.
- Be based on a design process undertaken with regard for appropriate control measures to avoid, minimise and manage potential impacts.
- Be able to be operated and managed in a manner that does not have any significant adverse impacts on the environment, community or public infrastructure.

7 REFERENCES

7.1 DOCUMENTS

NSW Government guidelines and reference documents used in the preparation of this SEE include:

- Guideline Landscape Character and Visual Impact Assessment EIA-N04, Transport for NSW, 2023.
- Hazardous and Offensive Development Application Guidelines Applying SEPP 33, NSW Planning, 2011.
- ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Electricity Infrastructure, NSW Industry Steering Committee, September 2012.
- Land and Soil Capability Assessment Scheme, 2nd approximation, NSW Office of Environment & Heritage, 2012.
- Living & Working in Rural Areas: Handbook for managing land use conflict issues, NSW DPI 2007.
- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, March 2004 (commonly known as the “Blue Book”). Landcom, 2004. Especially sections 5 and 6.
- Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries, DECC, 2008.
- Noise Policy for Industry, NSW Environment Protection Authority 2017.
- Threatened Species Test of Significance Guidelines, Office of Environment and Heritage 2018.
- Waste Classification Guidelines – Part 1: Classification of waste, NSW Environment Protection Authority, 2014.

7.2 DATABASES

Databases used in the preparation of this SEE and associated plans include:

- Heritage:
  - Aboriginal Heritage Inventory Management System, Heritage NSW.
  - Australian Heritage Database, Commonwealth Department of Climate Change, Energy, the Environment and Water.
  - State Heritage Inventory, NSW Environment & Heritage.
- Zoning, SEED data, NSW Department of Planning & Environment.
- Network Information Portal, Essential Energy.

7.3 MAPPING

NSW Government mapping data used in the preparation of this SEE and associated plans include:

- Cadastral and roads data, NSW Spatial Services.
- Elevation & terrain NSW Spatial Services via Elvis foundation elevation data.
- Geology, SEED data, Department of Regional New South Wales.
- Land & soil capability mapping, SEED data, NSW Department of Planning & Environment.
- Historical aerial imagery NSW, NSW Spatial Services.

8 ABBREVIATIONS

AHD	Australian Height Datum
BCM	Bank Cubic Metres
DCP	Development Control Plan
SEE	Statement of Environmental Effects
EPAA	Environmental Planning & Assessment Act 1979
km	kilometre
LCM	Loose Cubic Metres
LGA	Local Government Area
LEP	Local Environmental Plan
m	metres
NSW EPA	NSW Environment Protection Authority
NSW RFS	NSW Rural Fire Service
NTU	nephelometric turbidity units
RTK	Real Time Kinematic
TBD	To be determined

9 ATTACHMENTS

PLANS	
1.	Context - Existing Orthophoto
2.	Context - Existing Terrain
3.	Site - Existing Orthophoto
4.	Site - Existing Topography
5.	Site - Proposed Initial Void
6.	Site - Proposed Bench 3 Progress
7.	Site - Proposed Final Excavation
8.	Site - Proposed Excavation Profiles
9.	Site - Proposed Rehabilitation Domains
10.	Visibility – Topography & Vegetation
11.	Visibility – Profiles

APPENDIX	
A.	Preliminary Aboriginal Cultural Heritage Assessment
B.	Ecological Assessment
C.	Noise & Vibration Impact Assessment
D.	Air Quality Impact Assessment
E.	Traffic Impact Assessment
F.	Erosion & Sediment Control Plan
G.	Environmental Management Plan (Preliminary)
H.	Consultation letters