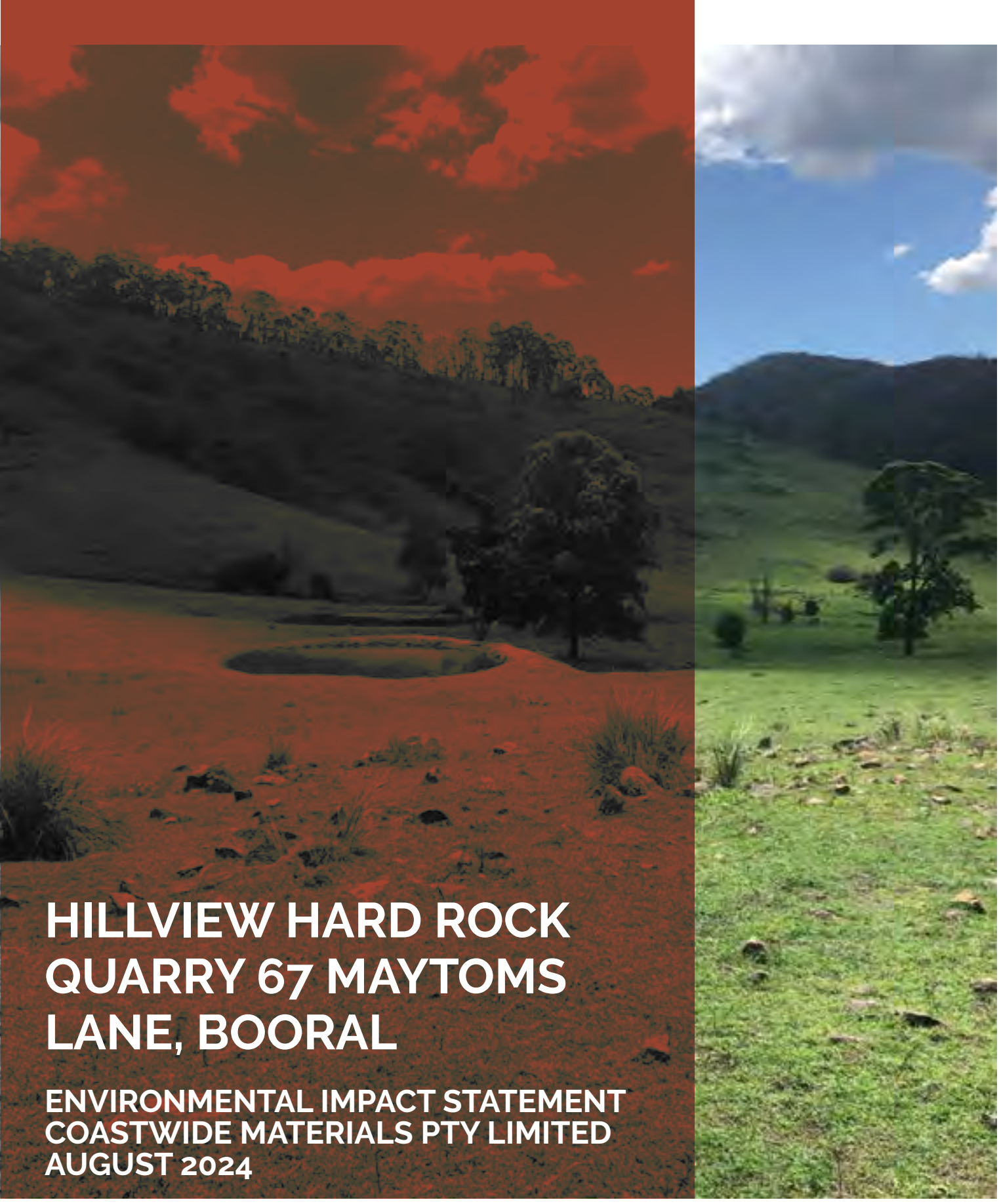

HILLVIEW HARD ROCK QUARRY 67 MAYTOMS LANE, BOORAL

ENVIRONMENTAL IMPACT STATEMENT
COASTWIDE MATERIALS PTY LIMITED
AUGUST 2024

adw johnson

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DOCUMENT CONTROL SHEET					
Issue ID.	Amendment	Date of Issue	Prepared By	Reviewed By	Project Ref
A	Draft	23.08.2024	Brooke Sauer	Adam Crampton	240012
B	REAP Review	03.03.2025	Brooke Sauer	Darren Holloway (REAP)	240012
C	Final	05.03.2025	Brooke Sauer	Brooke Sauer	240012

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Acknowledgement of Country

We, ADW Johnson, acknowledge the Traditional Custodians of the land where we live and work, the country of Awabakal, Darkinjung & the Eora Nation.

We recognise their continuous connection to the land and waters of our beautiful regions. We pay our respects to Aboriginal and Torres Strait Islanders Elders past, present and emerging.

EIS Declaration

PROJECT DETAILS

Project Name: Hillview Hard Rock Quarry
Application Number: SSD-70557215
Address: 67 Maytoms Lane, Booral NSW

APPLICANT DETAILS

Applicant Name: Coastwide Materials Pty Limited
Applicant Address: 1642 The Bucketts Way Allworth, NSW, 2425

DETAILS OF PERSON WHOM THIS EIS WAS PREPARED

Name: Brooke Sauer
Address: 5 Pioneer Avenue, Tuggerah NSW 2259
Professional Qualifications: Registered Planner (RPIA)+Registered Environmental Assessment Practitioner (REAP)
Bachelor Environmental Science and Management

Signature: 

Date: 05.03.2025

DECLARATION BY REGISTERED ENVIRONMENTAL ASSESSMENT PRACTITIONER

Name: Darren Holloway
Registration Number: 8653
Organisation Registered with: Planning Institute of Australia
Declaration: The undersigned declares that this EIS:

- *Has been prepared in accordance with the Environmental Planning and Assessment Regulation 2021;*
- *Contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates;*
- *Does not contain information that is false or misleading;*
- *Address the Planning Secretary's environmental assessment requirements (SEARs) for the project;*
- *Identifies and addresses the relevant statutory requirements for the project including and relevant matters for consideration in environmental planning instruments;*
- *Has been prepared having regard to the Departments State Significant Development Guidelines – Preparing an Environmental Impact Statement;*
- *Contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development;*
- *Contains a consolidated description of the project in a single chapter of the EIS;*
- *Contains an accurate summary of the findings of any community engagement; and*
- *Contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole.*

Signature:

Date: 05.03.2025

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GLOSSARY + ABBREVIATIONS	
CWM	Coastwide Materials Pty Limited
EIS	Environmental Impact Statement
SSD	State Significant Development
EP&A Act	Environmental Planning & Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
SEARs	Secretary's Environmental Impact Assessment Requirements
ROM	Run of Mine
GLLEP	Great Lakes Local Environmental Plan 2014
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
SEPP	State Environmental Planning Policy
TECs	Threatened Ecological Communities
BC Act	NSW Biodiversity Conservation Act 2016
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
MNES	Matter of National Environmental Significance
DCCEEW	Department of Climate Change, Energy, the Environment and Water
PTNL	Project Trigger Noise Level
WMS	Water Management System
LDP	Licenced Discharge Point
WSP	Water Sharing Plan
WWMS	Wastewater Management System
LSC	Land and Soil Capability
BSAL	Biophysical Strategic Agricultural Land
MGBs	Mobile Garbage Bins
POEO Act	Protection of the Environment Operations Act 1997
GLDCP	Great Lakes Development Control Plan 2014
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
DPHI	Department of Planning, Housing and Infrastructure
RL	Relative Level
AHD	Australian Height Datum
LGA	Local Government Area
PAFV	Polishing Aggregate Friction Value
TfNSW	Transport for NSW
HRP	Hunter Regional Plan
LSPS	Mid Coast Local Strategic Planning Statement
BDAR	Biodiversity Development Assessment Report
CSP	Mid Coast Community Strategic Plan
RED	Mid Coast Regional Economic Development Strategy
REDS	Mid Coast Regional Economic Development Strategies
ADWJ	ADW Johnson
Air NEPM	National Environment Protection Measure for Ambient Air
TPA	Tonnes Per Annum

DoE	Department of Environment
EPLs	Environment Protection Licences
EPA	Environmental Protection Authority
BAM	Biodiversity Assessment Method
BCD	Biodiversity Conservation Division
BOS	Biodiversity Offsets Scheme
DPI	NSW Department of Primary Industries
PSC	Port Stephens Council
LDP	Licenced Discharge Point
WBM	Water Balance Model
LAA	Land Application Area
ACHAR	Aboriginal Cultural Heritage Assessment Report
ASS	Acid Sulfate Soils
ESP	Exchangeable Sodium Percentage
BSAL	Biophysical Strategic Agricultural Land
FFMP	Flora and Fauna Management Plan
AQMP	Air Quality Management Plan
ESCP	Erosion and Sediment Control Plan
EMP	Environmental Management Plan
VAC	Visual Absorption Capacity
NPVs	Net Present Values
LEA	Local Effects Analysis
PFLUs	Preliminary Final Land Uses
ESD	Ecologically Sustainable Development

Executive Summary

PURPOSE OF THIS REPORT

ADW Johnson Pty Limited (ADW Johnson) has been commissioned by Coastwide Materials Pty Limited (CWM) to prepare an Environmental Impact Statement (EIS) for a State Significant Development (SSD), being a Hard Rock Quarry at 67 Maytoms Lane, Booral.

The purpose of the EIS is to describe the proposed development and consider its impacts to aid in community understanding of the project and to allow the development application to be assessed and determined.

The EIS has been prepared in accordance with the requirements of Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act), Part 8, Division 5 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) and the *State Significant Development Guidelines 2022* (including the requirements for an EIS as set out in Appendix B of that document).

This EIS addresses the requirements of the Secretary's Environmental Impact Assessment Requirements (SEARs) which were issued on 3rd June 2024 (SSD-70557215), and are provided as **Appendix A.** These SEARs supersede those previously issued for the project on 10th March 2017 as SSD-8239, which were extended a number of times, before expiring on 27th April 2024.

OVERVIEW OF THE PROJECT

The proposal is for a Hard Rock Quarry for the extraction of Rhyolite. Rhyolite has various uses and is sought after as a component for the creation of aggregate, building materials and road base. Proposed extraction rates and volumes are up to 45 million tonnes in total, with up to 1.5 million tonnes/annum (TPA) over a 30-year period.

The total area of the subject site is approximately 400.3ha; with the total quarry disturbance footprint occupying approximately 48ha.

The proposal includes:

- Construction of an intersection at the junction of The Bucketts Way and Maytoms Lane to facilitate safe site access and egress for vehicles;
- Earthworks, clearing of vegetation and a creek crossing over Double Creek for the construction of a haul road to the processing pad and extraction areas;
- Minor culvert crossings along the haul road route;
- Clearing of vegetation and overburden removal, then excavation to RL 95m for the creation of the processing pad;
- Site preparation works and installation of infrastructure and supporting services to facilitate operations at the site, including: site office, tertiary and secondary crushers, sand wash plant, on-site dams, stockpiles, car parking area, and an onsite sewage managment system;
- Staged progression of the quarrying works, with seven stages in total as shown in **Figure 1** overleaf;
- Extraction and processing of up to 1.5 million tonnes/annum, for 30-years;
- Transport of materials along The Bucketts Way to the intersection with the Pacific Highway, then along the Pacific Highway;
- Rehabilitation works within the quarry pit, and retention of the haul road infrastructure, in accordance with the Rehabilitation Strategy.

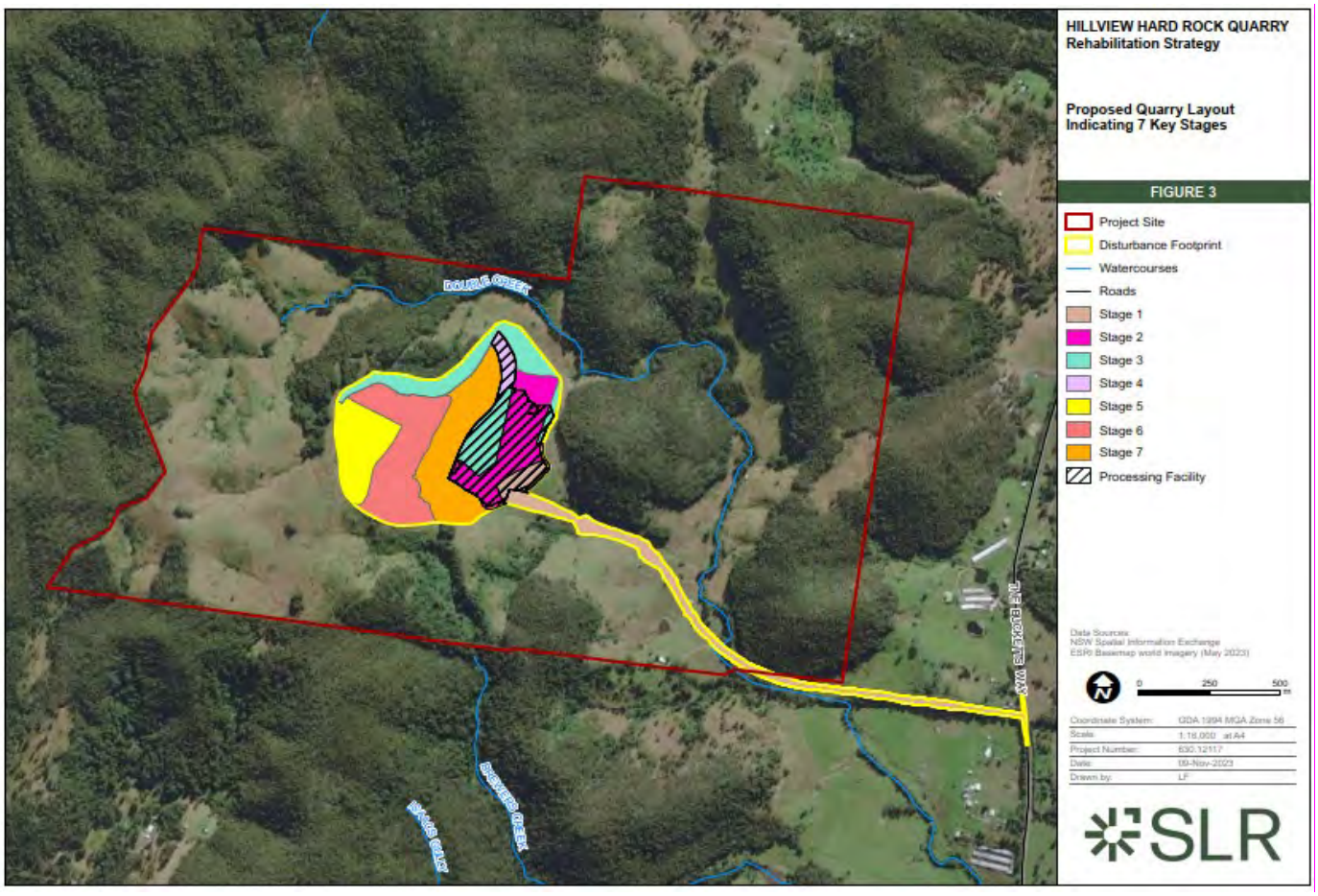

Figure 1: Project Site, Proposed Disturbance Footprint and Staging
(Source: SLR Rehabilitation Strategy 2024)

During the initial years of the quarry; it is not expected that extraction amounts will reach 1.5 million tonnes/annum, with site establishment works to be completed prior to the main extraction activities commencing. These establishment works will include the new intersection of The Bucketts Way and Maytoms Lane; construction of the main access to the processing pad; creation of the processing pad; and installation of other infrastructure including site offices and facilities, weighbridge, and processing machinery. These construction stages will result in the winning of material; with a portion to be used in site establishment activities and the remainder to be exported from the site. **Table 1** provides a summary of the main elements of the project.

Table 1: Summary of Proposal

Project Element	Summary of Project	
Proposed Development	Hard Rock Quarry	
Extraction Method	Traditional drill and blasting over extraction area of 48ha	
Resource	Quarry extraction of Rhyolitic Tuff from RL 205m AHD down to final RL 95m AHD	
Disturbance Areas	Total disturbance area	48ha
	Stage 1 disturbance area	9.5ha
	Stage 2 disturbance area	2.4ha
	Stage 3 disturbance area	10.6ha
	Stage 4 disturbance area	1.1ha
	Stage 5 disturbance area	5.4ha
	Stage 6 disturbance area	9.6ha
	Stage 7 disturbance area	9.4ha
Annual Production	Up to 1.5 million tonnes	
Quarry Life	30 years	

Management of Mining Waste	Managed and minimised by retaining resources that have value for reuse on-site, or collected by an appropriately licensed contractor and transported to appropriately licensed facility for recycling or disposal.	
General Infrastructure	Access roads including intersection works, electricity supply, on-site sewer management, weighbridge and site office.	
Product Transport	Transport by truck with average of 272 movements (136 in and 136 out) a day.	
Water Management	An array of water storages are proposed to contain and control runoff at the project – including sediment dams, water storage dams and pit sump.	
Operational Workforce	30 full time employees, anticipated to comprise quarry manager, supervisors, drivers, weighbridge operator and administration clerk.	
Hours of Operation	Extraction and processing operations	Monday to Saturday 6:00am to 10:00pm
	Internal product transfers to stockpiles	Monday to Saturday 6:00am to 12:00am (midnight)
	Haulage from and to the development site	Monday to Saturday 7:00am to 6:00pm
	Blasting activities	Monday to Friday 9:00am to 4:00pm
	Maintenance activities	24 hours 7 days a week
Site Rehabilitation	Progressive	
Capital Investment Value	$39,000,000 excl GST	

The extraction area has been located to avoid the more sensitive areas of the site, and the only area where the works intersect with Double Creek is where the proposed access road crosses this water course. Avoidance measures have been incorporated into the design and layout of the proposal. The pit shell has been specifically designed to avoid areas of high biodiversity value such as larger patches of forest with high vegetation integrity. In particular, a small gully containing rainforest vegetation (PCT 3436) has been avoided and will be retained on-site. The pavement width of the haul road has also been reduced from 14m down to 10m, reducing the amount of vegetation clearing required to facilitated access for the quarry.

The processing pad will be constructed to a final RL of 95m AHD and will accommodate the main operations of the proposal including siting of the site office, tertiary and secondary crushers, sand wash plant, on-site dams, stockpiles and car parking area. The site office will comprise demountable buildings, which are considered appropriate given the office building will not be visible from the public domain.

A 10m wide internal haul road will be constructed which will facilitate access to areas of the site for extraction as well as for the Run of Mine (ROM) pad which will allow extracted material to be put through the primary crusher located at RL 105m AHD and then conveyed down to the processing pad (RL 95m AHD) where material will pass through secondary and tertiary crushers and be stockpiled before being transported offsite.

To mitigate acoustic impacts associated with blasting required for the proposal; the proposed staging has been designed such that once preparation works have been completed for the propsoed development, hard rock extraction will generally take place in a south-easterly direction below the highest RL of the extraction area. This design measure is aimed at mitigating acoustic impacts to dwellings closest to the site, located adjacent The Bucketts Way, east of the site. The staging has been specifically designed with acoustic and visual mitigation measures in mind. In effect, the operations will commence at the eastern extent of the pit (processing pad), from which a haul road will circle around to to the western extent, with extraction activities then being carried out so as to progress in an easterly direction, back toward the processing pad. This design ensures that operations, and therefore noise, dust, and visual impacts are screened by the working face of the extraction area. Staging details are discussed at **Section 3.3**.

THE SITE

The subject site is approximately 400.3ha in area, comprising eight lots being, Lot 60 DP 1094397, Lot 1 DP 159902, Lot 62 DP 95029, Lot 63 DP 95029, Lot 2 DP 1166923, Lot 3 DP 1166923, Lot 4 DP 1166923, and Lot 64 DP 95030.

The subject site has been partially modified and disturbed as a result of past clearing and agricultural activities and as such substantial areas of the site are largely cleared of vegetation. Small portions of the site are identified on the Biodiversity Values Map and identified as flood prone land.

These areas of the site generally follow Double Creek which traverses the site in a south-easterly direction, and well clear of the actual quarry pit. The majority of the site is identified as bushfire prone land with associated buffer area.

PLANNING CONTEXT

The proposed development is an '*extractive industry'* per the definition in the *Great Lakes Local Environmental Plan* (LEP) 2014 and triggers State Significant Development (SSD) under Schedule 1, *Section 7 – Extractive Industries* of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Schedule 1 Clause 7 of the SEPP states that development which extracts more than 500,000 tonnes of extractive materials per year or extracts a total resource of more than 5 million tonnes is SSD. The proposal seeks to extract up to 1.5 million tonnes of material each year and a total extractive amount over the life of the quarry of up to 45 million tonnes, and so is declared to be SSD.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Biodiversity

A total of 282 plant species were recorded, comprising 213 native species and 69 exotic species. No threatened plant species listed under the *NSW Biodiversity Conservation Act 2016* (BC Act) or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were detected. Two Threatened Ecological Communities (TECs) listed under the BC Act have been identified within or adjacent to the site, being - *River Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*, and the *Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions.* Five threatened fauna species were detected, as follows: Little Lorikeet (*Glossopsitta pusilla*); Varied Sittella (*Daphoenositta chrysoptera*); Eastern False Pipistrelle (Falsistrellus tasmaniensis); Squirrel Glider (*Petaurus norfolcensis*) and Koala (*Phascolarctos cinereus*). One Matter of National Environmental Significance (MNES), the Koala, listed as 'Endangered' under the EPBC Act, was recorded on site. No other listed threatened species were recorded.

A migratory species, Latham's Snipe (Gallinago hardwickii), listed under the EPBC Act was detected during the assessment. Additionally, the Black-faced Monarch (Monarcha melanopsis) has previously been recorded within the site. The habitats to be removed for the Koala and other listed threatened species that could potentially occur are not considered to be important to the long-term survival of these species, given the lack of evidence for these species and the retention of similar habitat across the periphery of the site. The proposed development is therefore not considered likely to have a significant impact on EPBC Act listed threatened or migratory species. One TEC, *Subtropical coastal floodplain forest*, listed under the EPBC Act, was recorded in a narrow belt along Maytoms Lane. No other EPBC Act matters are considered relevant to this assessment. Overall, the proposed quarry is not likely to have a significant impact on any MNES listed under the EPBC Act. However, given the presence of the Koala and likely presence of the Grey-headed Flying Fox (*Pteropus poliocephalus*), listed as 'Vulnerable' under the EPBC Act, a referral has been submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Avoidance measures have been incorporated into the design and layout of the proposed quarry. The pit shell has been specifically designed to avoid areas of high biodiversity value such as larger patches of forest with high vegetation integrity. In particular, a small gully containing rainforest vegetation (PCT 3436) has been avoided and will be retained on-site. The residual impacts of the proposed development (after application of impact avoidance and mitigation measures) consist of the permanent removal of 10.59ha of native vegetation.

A total of 250 ecosystem credits and species credits for 11 candidate species has been determined to be required for the proposed development.

Noise and Blasting

Construction noise management level noise goals have the potential to be intermittently exceeded throughout development of the site at some residential receivers. As such, the proposed construction works shall require noise management by investigation and application of all feasible and reasonable noise mitigation work practices, to minimise impact on surrounding receivers.

A review of operational noise modelling under enhanced meteorological conditions indicates that the proposed operations will generate offsite noise levels below the project trigger noise level (PTNL) at all receivers, during the day period, however; control measures and operational restrictions on mechanical plant items have been provided to result in operational compliance for both evening and night periods. Site activities may well be audible at some locations given the characteristics of the receiving environment. It is thus recommended that measures be implemented to ensure timely and effective response to any concerns raised by adjacent sensitive receivers.

Airblast overpressure levels are expected to be below the ANZECC guidance values at all receivers. The limiting charge size has been specified in the body of the Acoustic Assessment to result in the airblast overpressure remaining below the 115dB annoyance threshold at modelled receivers. The result of the assessment indicates that, based on the observed separation distances, ground vibration levels are unlikely to exceed the criteria for human annoyance at sensitive receivers adjacent to the blast site.

Air Quality

Worst case scenario modelling for the proposed development indicated that the construction and operation of the proposed quarry will result in incremental increases in particulate matter and dust deposition at surrounding sensitive receivers. These increases were predicted to result in exceedances of the NSW EPA assessment criteria for the PM10 dust component, 24 hour averaging period and for both the construction and operation scenarios, and whilst conducting a 'cumulative assessment'.

A 'Level 2' analysis including the assessment of cumulative air quality impacts for PM10 (24 hour averaging period) indicates that quarry operations will be primarily below NSW EPA guidelines. Any exceedances that may occur will be: either at or slightly exceeding the guideline for PM10 24 hour averaging period (50.0ug/m^3); at a limited number of receivers in the vicinity of the quarry; and likely attributed to elevated background concentrations rather than significant incremental contribution from the proposed quarry development.

It should also be noted that the exceedances were obtained whilst incorporating many conservative assumptions into the modelling including machinery operating for 100% of the time, which is unlikely to happen in practice. Based on this assumption and other considerations incorporated into the conservative modelling approach adopted, the exceedances are unlikely to occur on a regular basis. Additional dust mitigation measures at the quarry operations, if implemented by the site owner, should further reduce the likelihood of dust exceedances at sensitive receivers in the vicinity.

Hillview Quarry is expected to generate approximately 299,123t of CO^2e GHG emissions over the life of the development. Operating onsite equipment is the primary source of GHG emissions, and from Scope 1, 'direct' emissions (and primarily from the operational period of the quarry). This total GHG amount is also based on conservative assumptions, and maximum operating conditions over the expected life of the quarry. Reduction of emissions from machinery and transportation will result in a net reduction of GHG emissions and economic savings due to reduced fuel use.

Water

Site Water Balance: The on-site Water Management System (WMS) is predicted to interact with groundwater inflows, which are expected to gradually increase; likely peaking when the final landform is established. A Licenced Discharge Point (LDP) will be established at the Farm Dam when an EPL is issued for the proposed development, and on-site water storages will require ongoing management through implementation of a set of Dam Operating Rules. Site water balance for the proposed development was assessed for all climate conditions. Under a year of average climate conditions, 12.6ML of treated water will be release off-site, 100L of water will need to be imported to meet operational demands, and discharge will occur at an average of 0.03ML/year. Under a year of extreme dry conditions, 0ML would be release offsite, 100L imported and no discharge is to occur. Under a year of extreme wet conditions, 12.6ML would be released, 0L would be imported and discharge will occur at a maximum of 1.52ML in any stage.

Water Licensing and Water Sharing Plans: The development site is within the catchment for the Water Sharing Plan (WSP) for the Karuah River Water Source 2003. The proposed development can capture up to 44.03ML of water under harvestable rights to be used for any purpose. A total of 3,360ML/yr is estimated to be required for water extraction under the WSP, indicating there may be capacity for water allocation to supplement the proposed development. The proponents WAL (number 44439) is for 100 units from the New England Fold Belt Coast Groundwater Source. Based on calibrated inflow predictions, the WAL will be adequate until Stage 6 of the proposed development, to cover groundwater inflows to the quarry pit.

A further water allocation is likely to be required at this stage, and as such, the proponent would be required to obtain an additional Water Access Licence for up to approximately 260ML/a to cover transient inflows at the start of both Stages 6 and 7.

Water Supply: Water used during the construction phase will be accessed from existing farm dams within the site as permitted under harvestable rights, brought to site in water tankers and sourced from site water storages as they are developed. Construction water requirements for the proposed development are estimated between 0.4ML/day to 1 ML/day. Operational water requirements for the proposed development have been estimated at 1 to 1.5ML/day. The details for provision of potable water, grey water and wastewater infrastructure would be confirmed during the detailed design phase. Water use approval is not required for State Significant Developments under Section 4.41 (1)(g) of the EP&A Act.

Flooding: The site is unaffected by flood water up to and including the 1% AEP flood. The proposed development does not affect the flood behaviour along Double Creek, and there will be no increase in peak flows, velocities or depths either upstream or downstream of the site. The proposed Maytoms Lane crossing will not increase afflux, overland and in-stream velocities or flood hazard. The proposed changes to the topography of the site will reduce the contributing catchment area and peak discharge downstream of the site will reduce. Additionally, the Maytoms Lane crossing will not impede on flow downstream. The proposed development has been designed to minimise risk to occupants from flooding events, including the risk of extreme events along Double Creek inundating the access road. The run-on rate from direct rainfall is low. The site would be unaffected by a 1% AEP (1 in 100), with the conveyance of Double Creek sufficient to convey the floodwaters downstream with very little surcharge of the overbanks.

Quality and Quantity of Surface and Ground Water: The primary risk to surface water associated with the proposed development is ground disturbance, with a high potential for sediment laden water. However, through the implementation of erosion and sediment control measures, and a Water Management Plan, the potential environmental impact to surface water is considered very low and manageable.

Potential changes to groundwater levels, flow, and surface water-groundwater interactions are likely to occur during operation of the proposed development. The quarry is predicted to act as a regional sink in the water table, and therefore offsite migration of concentrations within the quarry footprint is generally considered low risk to groundwater. However, any contamination of groundwater outside of the groundwater drawdown radius (i.e., in vicinity of haul road) could migrate through the subsurface to downgradient water receptors. Where quality impacts exist, they are anticipated to be minor due to the short-term (temporary) nature of quality impacts in the water environment where attenuation is anticipated. Post-closure, quality impacts are expected to be less than that during operation as all the activities and materials that pose a water quality risk will be removed from the site.

Aquifers: The proposed development is not likely to have a significant impact on groundwater levels or flow in the alluvial floodplain deposits aquifer associated with the Karuah River. This is supported conceptually, since the dewatered area is predicted to contribute a relatively limited volume of groundwater throughflow to the alluvial floodplain deposits, in comparison to the contribution of other groundwater recharge process across the catchment.

Water Management: Without incorporation of suitable mitigation measures into the proposed development, the construction and operation of the proposed quarry including road access, have potential to impact on downstream watercourses and waterbodies. As the footprint of the extraction area increases more rainfall is captured and this additional rainfall needs to be appropriately managed. There is also a complementary increase in water demand for use in dust suppression and for processing of quarry products. The WMS for the proposed development will include water infrastructure to capture, store, treat and discharge surface water.

A Wastewater Management System (WWMS) for the development is proposed to the north of the office building, with the site suitable for a wide range of onsite wastewater management options. The treatment system is to have a minimum treatment capacity of 1,200L/day.

Heritage

The results of the assessment and survey are consistent with the predictive model and there is little to no potential for in situ cultural materials to be present in the crest and slopes within the project area, whereas, there is potential for cultural materials to be present along the 4th order creek (identified PAD).

Two test pits were therefore conducted within PAD1. No archaeological sites were identified. Soil horizon A and top of horizon B contained significant evidence of past land uses with the complete mixing of the A horizon with the clays of the B horizon. Very few rocks were present and there is no evidence of stratigraphy and the evidence indicates the PAD area has been subject to high intensity impacts and as such the PAD is identified as a highly disturbed deposit with little to no likelihood of in situ deposits. Due to the highly disturbed nature of the area, the area subject to test excavation cannot be reassessed or compared to other assessments.

Traffic and Transport

The proposed development results in a small increase to the surrounding traffic network volumes and will not have an adverse impact on major traffic flows when considered in isolation. There is the potential for passing background traffic growth along the Pacific Highway to make the right turn out onto the Pacific Highway from The Buckets Way difficult for traffic of the proposed development at peak times, but there is an alternative route that has been proposed to ameliorate any externalised impacts of the subject development upon this intersection in the future.

There is adequate room on-site to provide informal parking facilities for both staff and heavy vehicles traffic. The largest vehicle that will travel to the site is a 19m length Articulated Vehicle. The proposed internal access road, including Maytoms Lane allows for an 8m wide road, inclusive of 1m wide unsealed road shoulders on both sides of the road. This design is adequate to allow two-way passing of heavy vehicles. All heavy vehicles will predominantly arrive from the south and travel from the development to the south towards Sydney, the Hunter and Central Coast. The exception to this is occasionally, vehicles will arrive from the south and depart to the north to travel to Stroud, but this will be a very rare occasion and generally will only be one or two vehicles in any given day.

The intersection of The Bucketts Way/Maytoms Lane has been assessed, and it is recommended that the future layout include a short deceleration left turn lane into Maytoms Lane and a basic right turn (BAL) treatment. Based upon AUSTROAD turn warrants, the minimum requirements to be provided are basic right and left turn treatments. As such, these recommended road treatments exceed requirements outlined in Austroads and is recommended due to the associated higher levels of heavy vehicle traffic associated with the proposed development.

The overall intersection geometry in terms of safety with reference to sight lines is acceptable and it is recommended that regular understorey trimming of trees located within the road reserve occurs to ensure unobstructed sight lines are provided. The existing 85th percentile road speeds of 100km/h, which requires 248m of sight distance, which is achievable.

Land Resources

Land within the Land and Soil Capability (LSC) assessment area classification range from LSC Class 4 to LSC Class 8. At least 73% (33ha) of the site is classified as LSC Class 7 and LSC Class 8. With the remainder of the site classified as LSC Class 4 (4%) to LSC Class 5 (23%).

A Biophysical Strategic Agricultural Land (BSAL) assessment found the entire LSC assessment area is non-BSAL and was verified as non-BSAL due to slope more than 10% and the remaining BSAL soils do not have a contiguous area of greater or equal to 20 hectares. The LSC assessment area is suited to grazing and improved pastures. It is not considered highly productive agricultural land as defined in *The Land and Soil Capability Assessment Scheme; Second Approximation* (OEH 2012).

Waste Management

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) wastes. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

The proposed quarry will generate only small quantities of waste. Where possible these waste materials will be recycled. Waste materials that cannot be recycled will be removed by suitably licenced contractors and disposed of at a licenced landfill.

240L Mobile Garbage Bins (MGBs) are recommended for the storage of general waste and comingled recycling based on the waste generation expectations. 240L bins provide suitable capacity and are easily manoeuvred for collection purposes.

Considering the scale of the proposed development and the number of bins required to manage waste, a weekly collection is proposed as a minimum for servicing the above waste streams. Additional bins or increased servicing frequency may be applicable upon commencement of operations.

A range of specialist wastes unsuitable for disposal in general waste bins may be generated as a result of typical operation of this development. Materials such as paints, cleaning chemicals, batteries, e-waste, and lightbulbs will be stored temporarily before appropriate disposal by a suitably qualified waste contractor.

Waste on site is to be managed in accordance with the requirements outlined throughout the *Protection of the Environment Operations Act 1997* (POEO Act), including the correct transportation of wastes to a licensed facility (Section 143) and the disposal of waste without causing harm to environment (Section 115). Waste management strategies related to site operations have been established according to the *Great Lakes Development Control Plan 2014* (GLDCP) and NSW EPA Guidelines.

Hazards

Bushfire: The predominant vegetation formation around the proposed development is grassland and the office and weighbridge structures will be more than 100m from any areas of forest vegetation. The office building will be at least 119m from any forest vegetation to the east. Land with a radius of not less than 50m of each of those structures is to be established and maintained as an Asset Protection Zone (APZ), and the assessed Bushfire Attack Level (BAL) will be BAL-LOW. While no construction requirements apply for BAL-LOW, construction materials will be non-combustible. In conjunction with the management of areas within the site as an APZ, the existing and proposed future conditions on the site are such that any potential bushfire hazard vegetation within the development area will gradually be reduced as the quarry progresses through the stages of the proposed development. The management and use of the site will be subject to a separate Bushfire Management Plan (BMP).

Hazardous and Offensive Development: The maximum quantities of dangerous goods to be stored on site for the proposed development do not exceed the screening thresholds for storage quantity screening. Explosives will be transported to site for use, but not stored on site. The cumulative annual peak weekly movements of vehicles delivering dangerous goods to the site do not exceed the transport screening thresholds. As such, the proposed development is not considered to be 'potentially hazardous development', and further addition of a preliminary hazard assessment is not required.
The proposed development is however considered to be a 'potentially offensive development' in line with Schedule 1 of the POEO Act, as it requires a licence under pollution control legislation. If a development cannot obtain the necessary pollution control licences or other permits, then it may be classified as 'offensive' and may not be permissible in most zonings.

Visual

The existing landscape character within and surrounding the site will have a relatively high capability to absorb change. The proposed development would not result in the introduction of prominent elements to the surrounding landscape character. The proposed quarry will not form a significant visual element within the viewshed and will not be visible from most key view locations, including areas of rural dwellings, local road corridors and The Buckets Way. Potential views towards the proposed development from dwellings with potential visibility are likely to be partially screened and/or filtered by sloping hillsides with existing dense mature tree cover. The proposed quarry will result in a low to moderate visual effect and is deemed to be acceptable.

Social and Economic

Social

The proposed development and operation of Hillview Quarry is likely to have different effects on the populations of the various social localities assessed. At the broader community levels, the project is likely to have positive impacts, although these may not be material in scale. Communities nearer to the quarry site would be more exposed to its operational effects and may experience these as material impacts.

There are a number of impacts of concern to stakeholders relating to proposed operations. Overall, the likelihood of traffic and transport impacts of quarry-related truck movements on The Bucketts Way was the most commonly identified concern. The Traffic and Parking Impact Assessment for the development addresses current and likely impacts. These impacts can be mitigated to some extent by management actions.

The development would also be the subject of heavy vehicle road use contributions that can be applied to managing effects on The Bucketts Way in particular. With respect to other effects, technical assessments of these also include recommendations for the avoidance, minimisation and mitigation of impacts. In most instances, these impacts can be managed to accepted industry standards.

The development would create employment and potentially some business opportunities in the local and regional areas. Overall, these would be positive for directly engaged parties, and indirectly positive on local communities and economies, based on the additional activities that incomes would support. The Applicant has also indicated its intention to directly support the local community through direct contributions to appropriate organisations and activities.

Assessment of the social impacts of the proposed development requires consideration of the differential effects on the local and broader communities. This necessitates consideration of the exposure to, and materiality of effects, and relative 'weighting' of these. It is submitted that the most substantial issue for local and immediate regional stakeholders relates to traffic and transport effects on The Bucketts Way. If the effects of the additional use relating to the quarry can be managed, it is possible that, on balance, the overall social effects of the development would be positive.

Economic

The overall assessment is that the proposed quarry would be likely to have a positive economic impact. The broad-based positive effect of a continued supply of construction materials is a matter acknowledged in the *Hunter Regional Plan 2041*. Sufficient supply is crucial to allow the construction of the additional housing and infrastructure required to support future population growth.

From the State's perspective, in aggregate terms, beneficial outcomes are unlikely to be material in terms of their scale. However, they do represent additional direct industrial activity and stimulus for the commercial activity required to support it. This is also the case for additional employment, with its beneficial socioeconomic onflows. Furthermore, the potential use of the quarry's output in the development of public infrastructure, such as roadworks etc., which generally benefit subsequent users of that infrastructure.

Rehabilitation

The primary rehabilitation goal is to create a safe, stable and non-polluting post extraction landform that facilitates the achievement of the identified post mining land uses and is commensurate with site constraints. Preliminary final land use domains have been defined as land management units characterised by similar post mining land use objectives.

Rehabilitation planning will be undertaken to ensure the total area of disturbance is minimised as far as practicable at any one time. This will reduce the potential for dust generation, erosion and sediment runoff or visual disruption caused by the site. Rehabilitation of the site will be undertaken to achieve a stable non-polluting landform that is compatible with the surrounding landscape both visually and functionally. The resultant landscape will be constructed in accordance with the detailed final landform designs, proposed final landform and the recommendations of relevant assessments and studies. Achievement of the agreed post mining land use will be reached through a series of conceptual rehabilitation phases.

CONCLUSION

In addressing the requirements of the SEARs, the proposed Hillview Hard Rock Quarry has been demonstrated to be consistent with the objectives of the EP&A Act and is justified by the technical findings of the environmental, social and economic assessments prepared as part of this EIS.

The proposed '*Extractive Industry*' is permissible under the sites current *RU2 Rural Landscape* zoning; is strategically located behind the natural ridgelines of the site and positioned on largely cleared areas; and is well situated in relation to existing road infrastructure in order to be able to efficiently service both local and regional demands for the extracted Rhyolite.

This EIS demonstrates that the proposed quarry will not result in any significant impacts during construction or operation, nor any significant residual impacts following the closing and rehabilitation of the quarry. Any potential impacts which have been identified, have also been shown to be manageable, mitigated or offset to ensure that the proposed quarry can operate without significant impacts to the receiving environment. The proposal is therefore considered to be justified, in that it meets the objectives of Ecologically Sustainable Development and other objectives under Section 1.3 of the EP&A Act; in addition to providing positive economic benefits and limited social impacts.

SECTION 1
INTRODUCTION

1. Introduction

This EIS has been prepared in accordance with the Department of Planning, Housing and Infrastructure's guideline *'State significant development guidelines – preparing an environmental impact statement'* (July 2022) and is submitted to the Department of Planning, Housing and Infrastructure (DPHI) pursuant to Division 4.7 of the EP&A Act. The EIS supports an SSD for a Hard Rock Quarry at 67 Maytoms Lane Booral.

1.1 APPLICANTS DETAILS

Applicant:	Coastwide Materials Pty Ltd
Development:	Hillview Hard Rock Quarry
Site Description:	67 Maytoms Lane, Booral NSW Lot 60 DP 1094397, Lot 1 DP 159902, Lot 62 DP 95029, Lot 63 DP 95029, Lot 2 DP 1166923, Lot 3 DP 1166923, Lot 4 DP 1166923 and Lot 64 DP 95030.
Owner:	Michael Tripolone
Development Cost:	$39,000,000 excl GST

1.2 THE PROJECT

1.2.1 Brief Description of the Project

The proposal comprises the following works:

- Construction of a new intersection at The Bucketts Way and Maytoms Lane, and accessway to the quarry site;
- Earthworks to create a processing pad at Relative Level (RL) 95m Australian Height Datum (AHD);
- Installation of site office and associated on-site sewage system and construction of formalised unsealed car parking;
- Construction of haul road and progressive hard rock extraction from a highest point of RL 205m AHD down to RL 95m AHD, consistent with the processing pad;
- Rehabilitation of the site incorporating appropriate topography to facilitate drainage lines as well as vegetation replanting.

The proposal is classified as State Significant Development pursuant to Chapter 2 of *State Environmental Planning Policy 2021*. Schedule 1 of the SEPP sets out the triggers for extractive industries as SSD, being:

- More than 500,000 tonnes of extractive materials per year;
- Extracts from a total resource (the subject of the development application) of more than 5 million tonnes; or
- Extracts from an environmentally sensitive area of State significance.

The proposal seeks an annual extraction of 1.5 million tonnes and a total extraction for the life of the proposal of up to 45 million tonnes. Therefore, the proposal triggers SSD.

1.2.2 Objectives of the Development

The objectives of the proposed Hillview Hard Rock Quarry are:

- Provide high quality Rhyolite resource to meet demand throughout the Hunter region and across NSW due to its strategic logistical location. The proposal allows for responsible and sustainable use of a regionally significant resource;
- Provide employment for approximately 30 full time employees;
- Provide economic benefit to the State and local community through employment and the purchase of local goods and services;
- To meet the above objectives through extracting the resource via best practice environmental and social approaches.

1.2.3 The Site

The subject site is 67 Maytoms Lane Booral, located within the MidCoast Local Government Area (LGA). MidCoast LGA was formed on 12th May 2016 from the amalgamation of Gloucester Shire, Great Lakes and the City of Greater Taree Councils.

The site is located approximately 20km along The Bucketts Way north of the Pacific Highway. The town of Stroud is located approximately 10km north-east of the site. Raymond Terrace is the nearest larger centre which is located approximately 30km south-west of the site. The site in its regional context is located at **Figure 2**.

The entire site is owned by Michael Tripolone. **Table 2** provides detail regarding lots comprising the subject site and any easements or restrictions which apply to individual lots.

Table 2: Schedule of Lots

Lot	Deposited Plan	Size	Tenure	Easements / Restrictions
Lot 60	DP 1094397	165.02 ha	Freehold	Right of access 20 wide
Lot 1	DP 159902	37.06 ha	Freehold	Right of access 20.115 wide
Lot 62	DP 95029	89.43 ha	Freehold	Right of access 20.115 wide
Lot 63	DP 95029	45.63 ha	Freehold	Right of access 20.115 wide
Lot 2	DP 1166923	2.06 ha	Freehold	
Lot 3	DP1166923	9559 sqm	Freehold	
Lot 4	DP 1166923	7405 sqm	Freehold	Right of access 20.115 wide
Lot 64	DP 95030	59.42 ha	Freehold	Right of access 20.115 wide
		Total 400.3ha		

A copy of the Deposited Plans are provided at **Appendix X.**

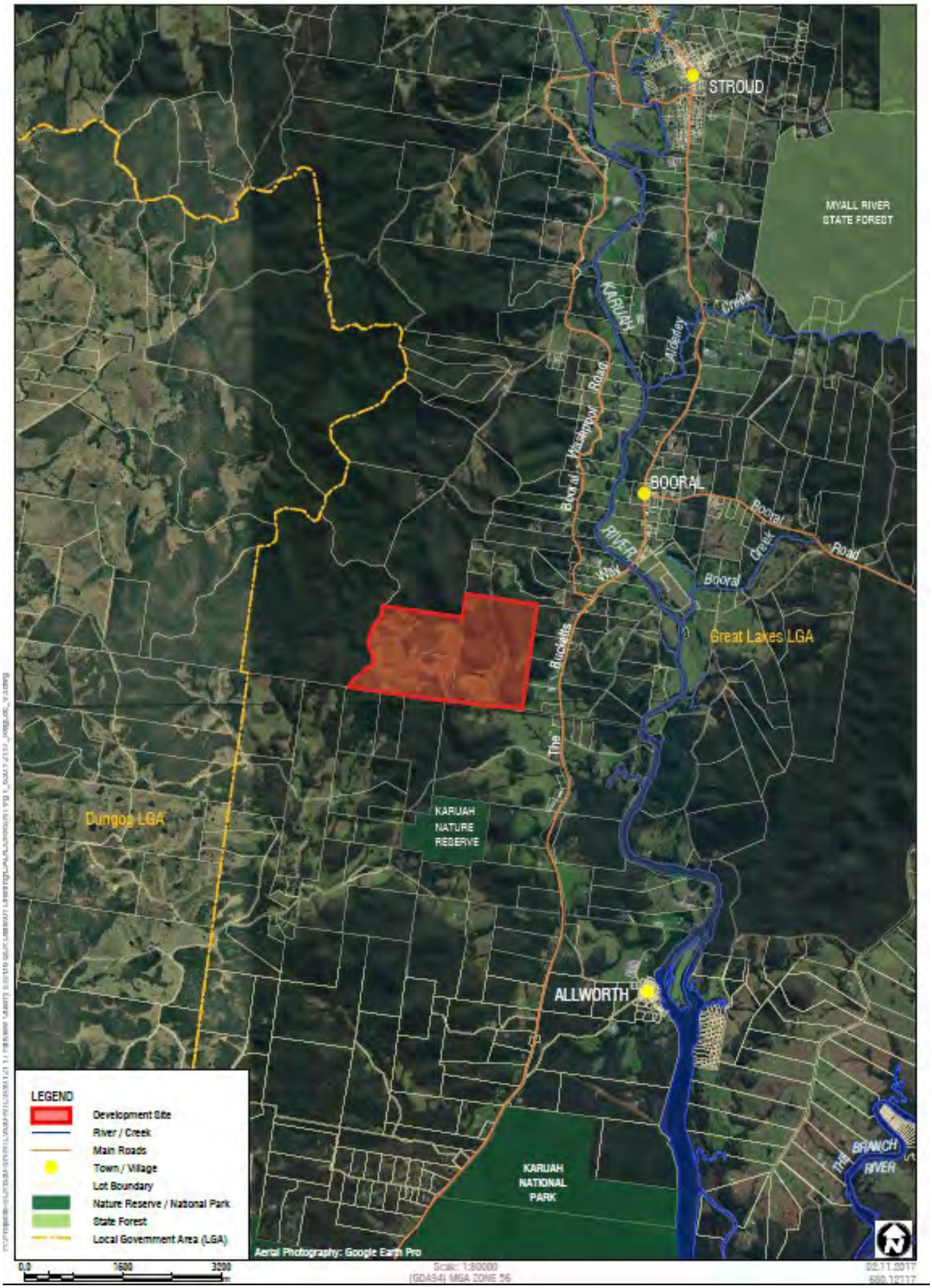

Figure 2: Locality Map Showing Regional Context
Source: SLR PEA 2017

1.2.4 Background to the Project

Initial testing identified the site as containing significant deposits of high-quality Rhyolite down to at a minimum RL 95m AHD. Rhyolite has various uses and is sought after as a component for the creation of aggregate, building materials and road base.

The quarry is essential for the guaranteed supply of construction materials for major/critical infrastructure projects of local, State and National significance. These projects are currently driving strong market demand and this demand is anticipated to remain strong well into the future.

The location of the extraction area within the site was determined based on various considerations, being:

- The majority of the extraction area being subject of previous logging meaning a reduced ecological impact;
- The presence of hard rock down to at least RL 80m AHD means the extraction area footprint can be reduced which confines impacts to a smaller area;
- The location of hard rock resources being located close to the surface meaning limited fuel burn and associated carbon emissions will be required for extraction as well as virtually no overburden;
- The proposed location of the quarry area means extraction can take place in a south-west to north-east direction meaning operations will not be visible to nearby dwellings.

Applying the above site characteristics and strategies resulted in the final location of the proposed extraction area to avoid, minimise and offset impacts of the proposal.

SEARs were originally issued for the proposal on 10th March 2017 (SSD-8239); at which point the development also included:

- Installation and operation of a concrete batching plant;
- Importing sand, cement and flay ash for use in the concrete batching plant, and
- Importing concrete waste for blending purposes.

As the proposal was further developed and assessments commenced; the scope was amended to remove the abovementioned components. Due to project delays, the SEARs were extended and notified between 2017 and 2022, with the SEARs last notified 27th April 2022. Due to ongoing delays, and the level of detailed assessment completed by specialist consultants; it was determined that the proposal would not be ready to be submitted to DPHI prior to the SEARs expiring on 27th April 2024.

Following discussions with DPHI's James McDonough (Team Leader – Resource Assessment), it was advised that a new scoping report would need to be submitted for assessment in order to obtain new SEARs. As such, a new scoping report was submitted, and new SEARs issued on 3rd June 2024 (SSD-70557215). A copy of the new SEARs are provided as **Appendix A.**

1.2.5 Key Strategies to Avoid, Minimise or Offset Impacts

The proposed layout of the quarry and associated infrastructure has undergone an iterative design process, taking into consideration engineering, surface water, traffic and transport, noise, air and biodiversity values. Avoidance of impacts on native vegetation, fauna habitats, watercourses and other biodiversity values have been taken into consideration in the design.

Avoidance measures to reduce the quantum of direct impacts on biodiversity values within the subject land include:

- Positioning of the proposed quarry footprint within the site to place the pit and ancillary works area largely within the cleared parts of the site (i.e. within exotic pasture grass with scattered paddock trees);
- Modifying the layout of the development footprint during the design phase to reduce the amount of clearing of native vegetation required. The majority of the development footprint lies within exotic grassland, which is considered to have less biodiversity value than the extant forest vegetation. Importantly, the pit shell layout was modified during the design process to inter alia, avoid a small patch of dry rainforest in the northern parts of the site. This patch, comprising 0.9ha of vegetation identified as *Hunter Valley Whalebone Dry Rainforest* (PCT 3076), now lies outside of the development footprint and will not be directly affected by vegetation clearing as part of the quarry development.

A 30m buffer has been allowed around the perimeter of the rainforest patch to manage potential indirect impacts. Additionally, the revised pit shell also allows for the retention of around 2.40ha of *Lower North White Mahogany-Spotted Gum Moist Forest* (PCT 3241), which lies around the rainforest patch;

- Reducing the width of the internal haul road from 14m to 10m in order to reduce the amount of clearing of native vegetation in order to facilitate access to areas of the site for extraction as well as for the ROM pad;
- Access to the subject land will be achieved by upgrade of an existing access track (as an alternative to construction along a new track alignment, which would involve substantial vegetation clearing) so that minimal clearing of native vegetation is required to allow construction of the haul road;
- Crossing of the haul road over Double Creek will be via a bridge and culvert structure (as opposed to at-grade crossing through the bed of the creek), which will avoid blocking of fish passage and minimise damage to riparian vegetation at this location.

In addition to the above; to mitigate impacts associated with the proposal (particularly required blasting); the proposed staging has been designed such that once preparation works have been completed for the proposal, hard rock extraction will generally take place in a south-easterly direction below the highest RL of the extraction area. This staging has been specifically designed with acoustic and visual mitigation measures in mind. In effect, the operations will commence at the eastern extent of the pit (processing pad), from which a haul road will circle around to the western extent, with extraction activities then being carried out so as to progress in an easterly direction, back toward the processing pad. This design ensures that operations, and therefore noise, dust, and visual impacts are screened by the working face of the extraction area, to dwellings closest to the site – located adjacent The Bucketts Way, east of the site.

SECTION 2
STRATEGIC CONTEXT

2. Strategic Context

2.1 JUSTIFICATION OF THE PROJECT

The resource to be extracted is a hard rock known as Rhyolitic Tuff, which has a variety of uses including road base material, construction aggregate, concrete batching aggregate, drainage works, fill, landscaping and various other uses. The proposed quarry will extract and deliver this valuable resource to the construction and infrastructure sectors in the Hunter region, Central Coast area and Sydney metropolitan area. The quarry is essential for the guaranteed supply of construction materials for major/critical infrastructure projects of local, State and National significance. These projects are currently driving strong market demand and this demand is anticipated to remain strong well in to the future.

The below provides a summary of the qualities and demand for the Rhyolite resource.

2.1.1 Resource Quality

The target resource for the proposed quarry is Rhyolite, aimed at satisfying the demand for road aggregates (amongst the resources many other uses), particularly given the number of road infrastructure projects within and planned for the region. This material improves grip and is often used in areas where the additional grip allows for increased road safety. The Rhyolite present at Hillview can potentially be used in a large range of engineering applications such as concrete and asphalt aggregates, manufactured sand, rail ballast, gabion and mattress rock for stabilisation, armour rock for riverbank and sea wall protection, specified road base, select fill, general fill, drainage aggregates, non-spec road base, crusher dust and rock for decorative landscape applications. Road base and crusher dust can also be used for rammed earth houses.

2.1.2 Polished Aggregate Frication Value

The Polishing Aggregate Friction Value (PAFV) is a laboratory test result for aggregates, identified through skid resistance testing. Transport for NSW (TfNSW) require the use of high PAFV aggregates in the construction of intersections and roundabouts. A PAFV of greater than 44 are required for sealing aggregates and greater than 48 for asphalt.

The PAFV test results, presented in the Geological Report provided as **Appendix V**, determined a PAFV value of 50. As such, all resource material tested may be suitable for use as both sealing and asphalt aggregates in road construction.

2.1.3 Resource Location, Supply and Demand

The Rhyolite resource on site is appropriate for a wide range of civil and construction uses, with a significant relevance to meeting the anticipated increased demand for road aggregate from infrastructure in the near future. Demand will be driven by both private developments and State and Federal funding of infrastructure projects within the region. In particular, aggregates such as the sites Rhyolite resource, have limited availability in the current market. The proposed quarry would therefore assist in increasing existing supplies and securing material for future demands in the local and boarder region.

The site is ideally located in terms of its proximity to both key local markets, infrastructure projects and existing road infrastructure such as the Pacific Highway. This strategic location provides for the efficient distribution of Rhyolite material locally and regionally; with the demand for Rhyolite resources steadily increasing throughout NSW.

With the growth of regions surrounding the site; materials critical to the construction of housing, buildings, roads and other supporting infrastructure becomes increasingly difficult to access and will require quarry products such as those to be produced by Hillview Hard Rock Quarry. The proposed quarry will therefore provide a new and alternative supply source to the market, thereby improving the security of available materials within NSW to meet the rising number of developments and infrastructure planned for the future.

2.1.4 Extraction Area Location

The location of the proposed quarry has previously been partially cleared for agricultural purposes and thereby reduces the amount of clearing required for the pit.

The shallow depth of the Rhyolite resource on site also reduces the amount of overburden removal required. While alternate areas of resource are present within the wider land owned by the proponent, the adopted resource area has been selected as it can be extracted with the lowest possible environmental impacts, whilst maintaining a viable extractive project.

2.2 KEY STRATEGIES

The proposal aligns with State, District and Local planning objectives as outlined below.

2.2.1 Hunter Regional Plan 2041

The *Hunter Regional Plan 2041* (HRP) sets out the NSW Government's strategic vision for the Hunter region. The plan aims to strengthen the region's economic resilience, maintain its well-established economic and employment bases, and build on its existing strengths to foster greater market and industry diversity. The plan also aims to protect its diverse terrestrial and aquatic ecological systems, conserve its heritage values and create thriving communities that enrich the quality of life and wellbeing of the residents.

The plan emphasises the need to manage different land uses in pursuit of complementary outcomes and attainment of its overriding goals. Sound management will encourage the Hunter to grow as a healthy, sustainable and thriving place for everyone.

The following objectives of the HRP specifically relate to the proposal:

- ***Objective 1, to diversify the Hunter's mining, energy and industrial capacity and ensuring the Hunter will be a leader in a 21st century industrial economy.***

The proposal will contribute to diversifying the Hunter's industrial capacity by directly promoting jobs in the area as well as ensuring projects and sub-industries which rely on hard rock, can be provided with a stable and readily available resource. The proposal responds well to the characteristics of the site and is appropriately located. The quarry will contribute to the regional economy of the Hunter, into the future.

- ***Objective 9, to sustain and balance productive rural landscapes and acknowledging NSW needs a reliable supply of construction materials to support continued growth including sand and gravel, crushed rock, recycled materials and secondary aggregates created from construction, demolition and excavation.***

The proposal will contribute to and assist with the supply of crushed rock to the construction industry within NSW. The resource will support the continued growth of the Hunter region and the future demand across the state. The location of the quarry is considered protected from encroachment by sensitive uses, thereby ensuring a compatible and sustainable use of the site and locality.

2.2.2 Mid Coast Local Strategic Planning Statement

The *Mid Coast Local Strategic Planning Statement* (LSPS) was designed to assist with guiding decisions on future planning to achieve the community's vision and values. The LSPS demonstrates how strong land use planning will provide the community with a balance between the opportunities for tourism and economic development, contrast with the protection of the environment and local identities. This balance is set within 10 planning priorities to achieve the vision of the strategy in an ongoing basis over the short, medium, and long terms. The statement also aligns with the directions and actions contained in the *Hunter Regional Plan*.

The following planning priorities of the LSPS specifically relate to the proposal:

Planning Priority 6 (P6): Protect and improve our environment

The Mid Coast contains extensive waterways, coastal landscapes, and diverse natural areas with high levels of biodiversity. The protection of these areas is a priority for the community.

This proposal is supported with a detailed Biodiversity Development Assessment Report (BDAR) that has ensured the ecological values of the land have been comprehensively analysed and any potential environmental impacts towards habitat loss, degradation, and fragmentation of the land, has been sufficiently addressed. The site has a 30-year lifespan to which significant rehabilitation is to be undertaken to restore the land and return environmental value to the site.

Planning Priority 8 (P8): Managing our land and water assets

Agriculture, aquaculture, forestry and mining are recognised as significant industries in the Mid Coast region. As per the LSPS, these industries account for approximately $478 million in exports, which is over 55% of the region's total exports. They make a Gross Value Added (GVA) contribution to the local economy of $388 million.

This priority outlines that quality agricultural land is to be protected and land use conflicts avoided, whilst providing flexibility to encourage rural tourism, industries and additional development opportunities.

The proposal is consistent with this planning priority, as the development will contribute to the mining industry ensuring the Mid Coast district continues to financially proposer. Due to the nature of the subject site, the proposal avoids land use conflict as there is no urban expansion within the locality, nor significant rural industries on or adjacent to the site. The site is accessed from The Bucketts Way, thereby promoting an additional industry within one of the core inter-regional transport connections to the rural division of the area.

2.2.3 Mid Coast Community Strategic Plan 2022-2032

The *Mid Coast Community Strategic Plan* (CSP) captures the ideas and priorities of the community and will guide decisions and activities over the coming years. These are directed into selective key values and strategic outcomes that shape the communities' interests and desired outcomes.

The following community outcomes and values of the CSP specifically relate to the proposal:

Community Outcome 2 – An Integrated and Considered Approach to Managing our Natural and Built Environments

"We value… our environment"

This outcome focuses on the enhancement and protection of the environment, whilst maintaining urban growth with appropriate management of resources. New development is to complement the existing natural, cultural and heritage assets whilst optimising opportunity to meet environmental, social, economic and development needs. Maintenance and rehabilitation are to be committed to.

Community Outcome 3 – A Thriving and Strong Economy

"We value… our thriving and growing economy"

This value outlines the need for a place where people want to live, work and play. Businesses are to be resilient and adaptable to change by utilising knowledge and expertise that supports innovation. The is strong advocation to identify opportunities for increased workforce participation.

In relation to the desired values, this proposal has arisen through an opportunity to deliver an additional service and resource to the construction and development industry within NSW. The CSP recognises 'construction' as one of the top three industries of the area, with healthcare/social assistance and retail trade also noted.
The proposed development will contribute to the locality through employment opportunities and providing local resources to local businesses. Environmental values have been strongly considered with detailed recommendations provided.

2.2.4 Mid Coast Regional Economic Development Strategy 2023

The *Mid Coast Regional Economic Development Strategy* (REDS) 2023, sets out the long-term economic vision for the Mid Coast LGA. The three elements of the strategy relate to:

- *Strengthen the region's infrastructure and services offering to attract and retain businesses, residents and visitors.*
- *Invest in workforce development and create opportunities for local businesses to invest and grow.*
- *Actively pursue opportunities to bring investment, businesses and skilled workers to the region.*

This strategy updates the *Mid Coast Regional Economic Development Strategies* (REDS) 2018. As per the 2018 REDS, the region was noted as having a comparative advantage on several industry sectors including, agriculture, forestry, fishing, tourism, healthcare, social services and mining. These diverse sectors contribute to the $4.3 billion economy of the Mid Coast region.

Since 2018, these specialisations remain key strengths with the exception of mining. However, despite this, the sub-sector specialisation of non-metallic mineral mining continues to make a significant economic contribution ($21 million in 2020).

The RED 2023 strategy highlights that there have been supply chain shortages in the construction industry and that there is opportunity for growth in this sub-sector. As such, the proposal responds to the strategy by contributing to this supply chain shortage through the provision of hard rock. Furthermore, the proposal will provide additional local jobs.

2.2.5 Mid Coast Rural Strategy – 'The Way Forward' 2022

The *Mid Coast Rural Strategy* sets out a proposed framework for consistent land use planning principles to sustainably manage the use of lands and resources outside of our towns and villages. The strategy is designed to assist with the preparation of the upcoming *Mid Coast Local Environmental Plan* and *Development Control Plan* and the desired development across the rural landscape.

The *Mid Coast Rural Strategy* planning controls can influence:

- Opportunities to diversify agricultural production on rural lands;
- Protection of environmental lands and waterways;
- Tourism-related development opportunities on rural and environmental land;
- Housing and accommodation opportunities in rural and environmental areas;
- Subdivision and development opportunities in rural and environmental areas.

It is noted that in some areas the proposed changes are minimal, while in other areas there may be a wide range of changes proposed.

The changes may include:

- Land Zoning;
- Minimum lot size for subdivision;
- Maximum building height controls;
- New local clauses that provide clear and consistent assessment of subdivision and development in our rural, environmental and waterway zones.

In terms of the subject site; the land is currently zoned *RU2 Rural Landscape* under the *Great Lakes Local Environmental Plan (LEP) 2014*. The site is identified within the 'Mixed Coastal Landscape' – land that predominately tapers down to the coastal floodplains and wetlands. This landscape is also consistent with poor quality soil/land, in regards to primary production.

Furthermore, the draft *RU2 Rural Landscaping* zoning does not prohibit extractive industries rather, is consistent with the current permissibility of the land identified under the *Great Lakes LEP 2014*. In this regard the proposal is thereby considered consistent with the desired land use planning principles; being permissible within the current and draft zoning, whilst being land that is not identified as cleared rural productive soil/land.

2.3 KEY FEATURES OF THE SITE

2.3.1 Location and Land Uses

The site is located in Booral off The Bucketts Way, approximately 20km from the Pacific Highway intersection. The village of Stroud is located approximately 10km north-east of the site. Raymond Terrace is approximately 30km drive south-west of the site (see **Figure 2** above).

The long-standing and existing use of the site is traditional agricultural production, with stock grazing being the predominate use. The surrounding neighbourhood is characterised by a mix of land uses, including traditional agricultural production (primarily stock grazing), small-scale poultry operations and small rural/lifestyle holdings (see **Figure 3**). The Karuah Nature Reserve is located approximately 1.5km to the south.

The nearest populated areas are the relatively small villages of:

- Booral approximately 2km to the northeast;
- Allworth approximately 5km to the southeast; and
- Stroud approximately 10km to the north.

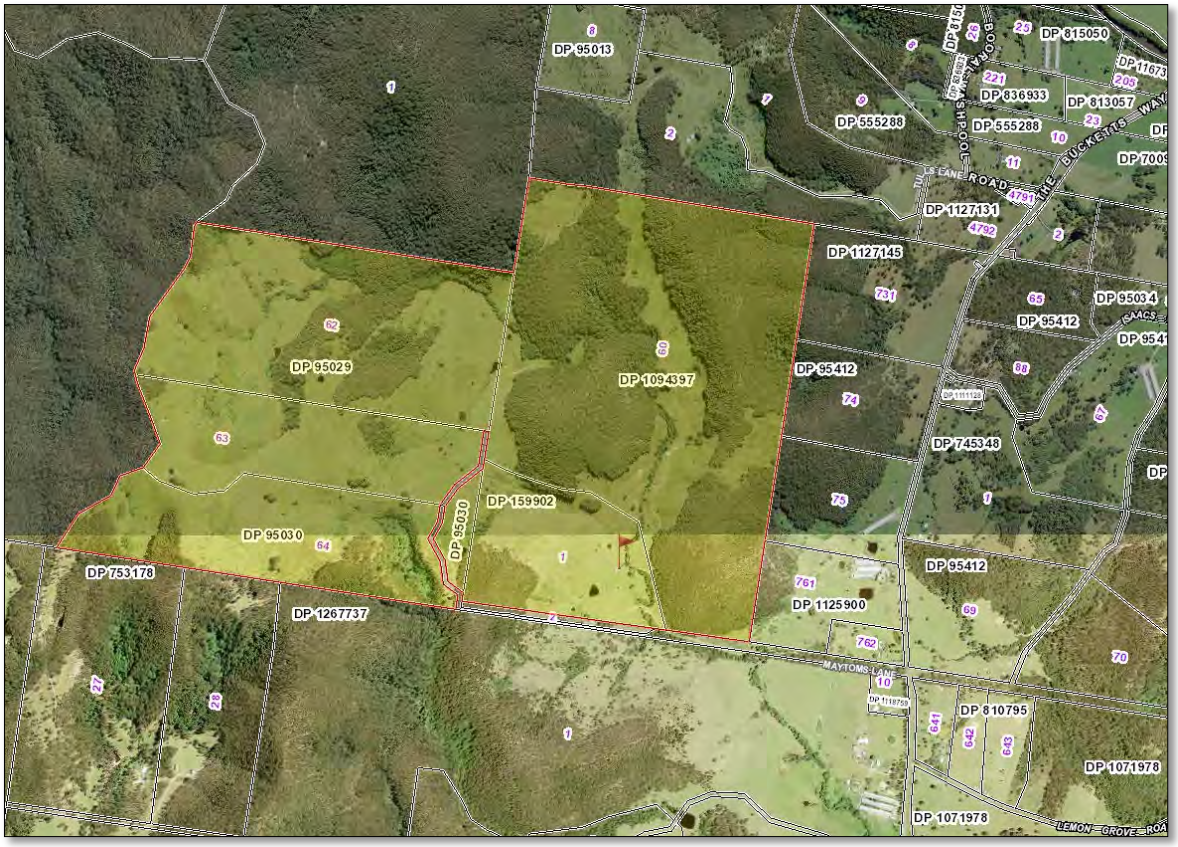

Figure 3: Aerial Image Showing Site Context
Source: Six Map

Photo 1: The Site looking North from Dwelling toward Location of Proposed Slot
(Source: ADWJ site visit 2022)

Photo 2: The Site looking West at the Location of the Proposed Processing Pad
(Source: ADWJ site visit 2022)

Photo 3: View looking North-East from RL 205m AHD (Approximate)
(Source: ADWJ site visit 2022)

2.3.2 Site Dimensions and Access

The site is irregular in shape and comprised of several lots with a total area of approximately 400.3ha. Access to the site is via Maytoms Lane which is currently an unsealed public road owned by Mid Coast Council.

2.3.3 Vegetation and Amenity

Extensive vegetation clearing has (evidently) occurred for agricultural development (grazing) and the majority of the site is cleared grassland. The remaining native vegetation comprises patches of forest and isolated paddock trees. Vegetated areas are predominantly located on hills within the eastern areas of the site with cleared former pasture areas principally within lower-lying valley areas and in the centre and western areas of the site.

The visual amenity of the general area is that of a river valley surrounded by undulating topography, with significant areas of remnant vegetation interspersed with land that has been cleared or partially cleared and being used for stock grazing, small-scale poultry operations and small rural/lifestyle holdings. While the site has been partially modified and disturbed as a result of past clearing and agricultural activities, there are some significant areas of undisturbed land and native vegetation within the site.

2.3.4 Watercourses and Topography

Double Creek traverses the site in a south-easterly direction draining into the Karuah River located on the eastern side of The Bucketts Way, approximately 2km from the site. Several other minor/intermittent drainage lines also traverse the site. Local topography is irregular and undulating. Elevations within the site range between approximately 30m and 200m AHD, with slopes ranging up to approximately 40 percent.

2.3.5 Geology

On-site geological investigations have identified that the site is underlain by a Rhyolitic Tuff composed of finely microcrystalline, coarse phenoclasts of feldspar and quartz, as well as other trace minerals.

The Rhyolitic Tuff is thought to have originated as an acid ash flow tuff comprised of quartz and feldspars dispersed through a welded matrix of vitric shards and some compressed pumice. The upper 28m (on average) of Rhyolitic Tuff is hematised, with the underlying material being free of haematite mineralisation. Geotechnical aspects of the stratum are suitable for use in concrete and road construction applications.

A copy of the Geological Report is provided as **Appendix V.**

2.3.6 Bushfire

Part of the site is identified as bushfire prone lands, including Category 1 vegetation and associated buffer.

2.4 CUMULATIVE IMPACTS

The potential for cumulative impacts has been assessed by the individual specialist consultants as part of the assessments prepared for this EIS. In this regard, cumulative impacts have been assessed and incorporated into the mitigation measures from the outset with no potential for significant cumulative impact identified:

Biodiversity

A consideration of the cumulative impacts of the proposed quarry on biodiversity values must take into account other similar projects (in terms of scale and nature). In this regard other development applications for quarries within the locality that are either under assessment, approved or under construction are:

- Brandy Hill Quarry (48.62ha of native vegetation removal);
- Deep Creek Quarry (29.02ha of native vegetation removal);
- Martins Creek Quarry (21ha of native vegetation removal.

Other existing quarries within the wider locality include:

- Seaham;
- Karuah East.

The proposed development will require the permanent removal of approximately 10.59ha of native vegetation, which constitutes habitat for a selection of threatened species that have either been recorded on site or are likely to occur based on the habitats present, including the Koala. Comparison of the impact in the context of the available native vegetation and habitat that exists within the surrounding locality is useful when considering cumulative impacts. A comparison of vegetation removal associated with the proposed development and existing vegetation in the region is provided below in **Table 3** below.

Table 3: Comparison of Vegetation Removal

Geographic Area Unit	Area Native Vegetation (ha)	% Area (Proposal
IBRA Subregion (Karuah Manning)	380493.28	0.0027
Dungog LGA#	132010.17	0.0080
MidCoast LGA	717251.23	0.0015
# The project site (and subject land) is located within the MidCoast LGA, although Dungog LGA lies just to the west and so is included as relevant for comparison		

The clearing associated with the proposed development represents less than 0.003% of the native vegetation within the subregion and approximately 0.008% of the native vegetation remaining within Dungog and 0.0015% of that within MidCoast LGA. With the other pending quarry developments added to the clearing total of the proposed quarry (as listed above), the proportion of native vegetation clearing associated with development of a similar scale and nature in the locality is still very low. On this basis, it can be surmised that the cumulative impact of the proposed quarry with other similar developments is minor in terms of the loss of a key biodiversity value, being native forest cover, at the landscape (or subregion) scale.

Other considerations for biodiversity cumulative impacts include:

- Impacts on threatened species – The removal of vegetation and hollow bearing trees associated with quarry developments in the locality will remove habitat for some threatened plant species and some fauna species.

Although the current proposal does not involve removal of threatened plant species, it will remove foraging habitat for the Koala, Grey-headed Fox and other mobile threatened fauna that could potentially utilise the site on occasion;

- Impacts on corridors – The collective loss of vegetation associated with all similar developments will reduce the width of forest canopy in specific areas, but is unlikely to sever or disconnect areas of important habitat for threatened species;
- Fragmentation – The collective loss of vegetation associated with the proposal and other quarry developments will increase the level of fragmentation of forest canopy in the landscape. This impact can be mitigated to some extent by the mitigation measures outlined in the BDAR, including progressive clearing (staged over 30 years), progressive rehabilitation and revegetation of cleared areas.

Noise and Blasting

The assessment of cumulative impacts is taken into account by virtue of the extant industrial noise being considered in the derivation process of the proposed developments amenity noise level and adjustments where required, using the result of the ambient sound level resultant from site monitoring. Cumulative road traffic noise is taken into account during the noise assessment by the comparison of the no-build and build options assessment as well as the relative increase criteria. As such, limited noise and blasting impacts have been identified, with the few exceedances noted as being able to be mitigated through the measures proposed.

Air Quality

The 2018 calendar year was adopted to conservatively represent the background level for dust emissions at the project site and its surrounding areas, and for the purpose of assessing cumulative air impacts. There are no other commercial operations in the surrounding vicinity (being within 4km of the site), that may generate significant dust emissions and affect the outcomes of the cumulative assessment.

Water

Surface Water

The Deep Creek Quarry development approved south of the site will have limited-to-negligible impacts upon flows, water quality, and downstream users.

The potential impacts of the proposed Hillview Quarry on the receiving environment are outlined below and are considered to be negligible:

- Flows: During operation, the proposed quarry footprint will result in changes to the catchment area of Double Creek. These changes are attributed to the management of runoff from the disturbed quarry area. The results of the flow analysis indicate a slight decrease in the volume of flows in Double Creek for the operational period of the proposed quarry, with up to an 8% predicted decrease in baseflows. Due to the catchment area of the quarry draining to Double Creek constituting approximately 12% of the total creek catchment, this decrease will not have a significant impact on environmental flows;
- Flooding: The flood assessment indicates negligible changes to velocities in Double Creek upstream and downstream of all proposed development associated with the quarry. The proposed quarry is considered likely to have negligible impact on watercourse flows and potential for scour;
- Water Quality: Water quality in downstream waterways is not anticipated to be adversely impacted as a result of the proposed quarry with the onsite water management proposed over the life of the development. As a result, the cumulative potential impacts on water quality in downstream watercourses is considered to be low;
- Downstream Users: Due to the large scale of the downstream catchment of the Karuah River, water quantity is not anticipated to be adversely affected by the proposed quarry in a local context.

Since the environmental assessments for both Deep Creek and Hillview Quarries identify negligible impacts to the receiving water environment, and the proposals constitute a small portion of the overall Karuah River catchment, it is considered that the potential for cumulative impact is negligible.

Ground Water

No additional below ground infrastructure exists in the near hydrogeological catchment. As such, there will be no cumulative impacts to ground water as a result of the proposed development.

Heritage

The cumulative impact to Aboriginal heritage in the area is limited given that: the net development footprint (i.e., the area of direct impact) is small and does not affect a high proportion of any particular landform present within the region; a comparable suite of landforms that are expected to/and do contain a similar archaeological resource occur in multiple contexts throughout the wider region; the project area has been subject to long term past land uses (impacts) that have resulted in a disturbed landscape and as a consequence of these disturbances the representative value of the archaeological resource is lessened; the placement of the development within this area (in particular within the disturbed context) ensures the cumulative impacts are focused in the areas of lower potential and therefore are kept to a minimum, and the identified PAD consists of a very small area and no archaeological sites were identified within the PAD during further investigation.

Traffic and Transport

The proposed development results in a low increase to the surrounding traffic network volume when assessed in isolation. Although when considered as part of a cumulative assessment with the Deep Creek Quarry, the combined impacts of both developments result in a LoS "D" for the intersection of The Bucketts Way/Pacific Highway. This results in an acceptable operation, although the intersection is approaching its operating capacity.

Land Resources and Rehabilitation

Potential rehabilitation interactions between the proposed quarry and other existing and proposed major developments have been considered, including other nearby mining projects, renewable energy projects and electricity transmission lines.

The site is suited to grazing and improved pastures. It is not considered highly productive agricultural land as defined in *The Land and Soil Capability Assessment Scheme*. A total of 282 plant species were identified within the site: 213 native species and 69 exotic species. No threatened plant species listed under the NSW *Biodiversity Conservation Act 2016*, or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* were detected. The two key rehabilitation domains proposed for the site are Native Ecosystems and Water Storage.

Two projects were identified using the NSW Planning Portal Tracker, as listed below:

- Bobs Farm Sand Mine Project, SSD-6395 (~8km northeast) – Proposal to establish and operate a sand quarry to extract up to 750,000 tonnes per annum for a period of up to 15 years. Construct sand processing and transport infrastructure, and rehabilitate the site to include forest and an artificial lake.

- Deep Creek Quarry, SSD-11591659 (~6km south) – Proposal for a new hard rock quarry in the Limeburners Creek area to extract up to 500,000 tonnes per annum of hard rock aggregate products. Construction of new intersection and access road, workshop, stockpiles, weigh bridge, power line and office.

The site is well suited to re-establishment of Native Ecosystems and grazing activities post quarrying activities and rehabilitation. No cumulative rehabilitation impacts are predicted to the subject site from these developments.

Waste Management

Cumulative waste impacts with other activities in the area are not anticipated as they will be managed through appropriate waste mitigation and management measures – in particular, the fact that waste will be reused or recycled where possible, or disposed of in a licensed manner, and therefore no long-term cumulative impact is expected.

Hazards

Bushfire

Whilst it could be considered that there is potential for cumulative impacts if all identified hazards were to ignite at once, it is considered that the proposed protection measures, (principally the management of areas within the site as an APZ), should provide adequate protection to life and property within the proposed quarry in the event of a bushfire occurring in the immediate locality.

Hazardous and Offensive Development

The cumulative annual and peak weekly movements of vehicles delivering dangerous goods to the site do not exceed the transport screening thresholds. As such, the development can be classified as not 'potentially hazardous' from a transport screening perspective.

Visual

A cumulative visual impact could result from the proposed quarry being constructed in conjunction with other existing or proposed developments which could be either associated or separate to it. Separate developments could occur or be located within a local context where visibility is dependent on a journey between each site or within the project viewshed. The proposed quarry is considered to have a very limited potential to increase the significance of cumulative visual impact which is largely due to visual screening surrounding the site from most view locations (dwellings and roads), as well as the location of the quarry relative to existing infrastructure within the broader viewshed.

Social and Economic

Stakeholder engagement produced some comment on the potential for cumulative impacts of the proposed quarry. This was in the context of other quarries already operating or approved to operate in the broader area surrounding the site. A small number of stakeholders identified potential operational effects of the quarry against the background of the existing quarries. These potential cumulative impacts mainly related to blasting activities at existing quarries and the additional blasting that would occur at Hillview Quarry. The relevant blasting impacts are potentially noise and vibration, overpressure and dust and other blasting emissions.

With respect to mitigation of potential cumulative impacts which have social impact implications; continuous implementation of the initiatives identified within the Mitigation Measures Table at **Appendix E**, will be necessary over the operational life of the quarry to ensure that effects are minimised to the extent possible.

2.5 HEALTH IMPACT ASSESSMENT

The potential health impacts associated with the proposed development have been considered as part of the Air Quality Impact Assessment and Noise and Vibration Impact Assessment provided at **Appendix G** and **Appendix H.**

Air

The levels of dust particles (as PM_{10}) predicted from the proposed development are unlikely to reach the guideline levels for health impacts as shown in the *National Environment Protection Measure for Ambient Air* (Air NEPM), both during the construction and operations.
This finding is based on the Air Quality Impact Assessments overall favorable results of the cumulative modelling for 24 hour averaging and annual averaging periods; and the limited number of exceedances at limited locations and using many conservative assumptions.

It is also noted that the Air NEPM is aiming to change the $PM_{2.5}$ criteria in 2025, to the following (lower) levels:

- 24 hour averaging period – 20 ug/m^3;
- Annual averaging period – 7 ug/m^3.

The levels of dust particles (as $PM_{2.5}$) predicted from the proposed development are unlikely to reach guideline levels for health impacts as shown in the Air NEPM, both during the construction and operations.

Noise

The site related noise exposure levels predicted from the proposed development for both the construction and operational phases, are unlikely to reach the permissible noise exposure limits of potential health impacts as per the relevant guideline, the *NSW Workplace Noise Exposure Standard* established by the NSW Work Health and Safety Regulation 85 $L_{Aeq,8hour}$ and 140 L_{Cpeak}. Therefore, it is assumed that by meeting the required site-specific criteria the project avoids noise related health impacts.

In addition to the above, the Noise and Vibration Impact Assessment has shown that predicted maximum noise levels are expected to achieve the night period criteria at the assessed sensitive receivers, therefore it is likely that there shall be no disruption to sleep patterns. Keeping noise levels within limits is likely to prevent adverse health effects associated with poor sleep quality.

2.6 AGREEMENTS WITH OTHER PARTIES

The applicant is not seeking to enter into any agreements with other parties to facilitate the approval of the proposed development.

2.7 ANALYSIS OF ALTERNATIVES INCLUDING NOT UNDERTAKING THE DEVELOPMENT

Clause 192 1(c) of the EPA Regulation 2021 requires that an EIS include '*an analysis of feasible alternatives to the carrying out of the development, activity or infrastructure, considering its objectives including the consequences of not carrying out the development, activity or infrastructure'*. The below provides such analysis.

2.7.1 Alternate Site

Given the unique beneficial properties of the target resource and its location, there are no feasible alternatives available to the proponent for the development of the proposed quarry. Design mitigations have been applied to target a specific portion of the resource to result in minimised impacts to the receiving environment and the local community when compared to the alternative of targeting the entire resource available.

2.7.2 Alternate Design

Initial designs included a larger development footprint for the quarry, extending further north-west into a patch of dry rainforest vegetation in the northern part of the site (see **Figure 4**). This patch, comprising 0.9ha of vegetation identified as *Hunter Valley Whalebone Dry Rainforest* (PCT 3076), now lies outside of the development footprint and will not be directly affected by vegetation clearing as part of the proposed quarry. A 30m buffer has been allowed around the perimeter of the rainforest patch to manage potential indirect impacts. Additionally, the revised pit shell also allows for the retention of around 2.40ha of *Lower North White Mahogany-Spotted Gum Moist Forest* (PCT 3241), which lies around the rainforest patch.

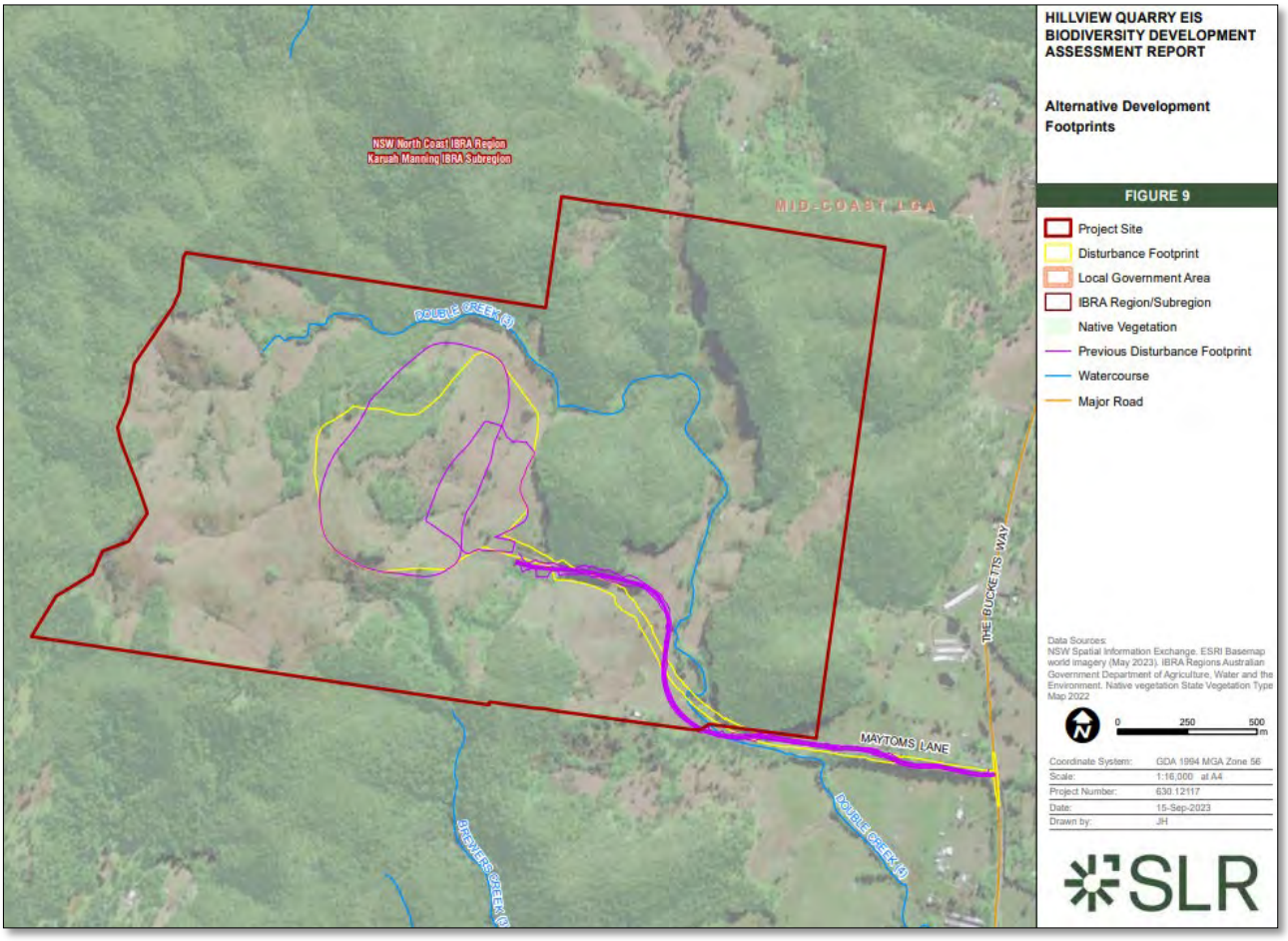

Figure 4: Alternative Development Footprint
(Source: SLR BDAR 2024)

The design was then later amended again, to reduce the internal haul road from 14m to 10m pavement width, to reduce the amount of native vegetation required to be cleared to provide this access. Within **Figure 5** below, the proposed limit of works is shown in a yellow dashed line, with the previous limit of works (based on a 14m wide pavement) shown as red. Trees previously identified for removal which will now be retained under the reduced haul road width are illustrated in pink, with a full copy of this Tree Removal Plan provided as part of the plans within **Appendix B.**

Based on this reduced footprint width, a number of trees previously identified for removal may now be retained under the proposed design. The appended specialist reports (including the BDAR) were prepared prior to the width of the haul road being reduced to 10m. As such, whilst the proposed plans within **Appendix B** illustrate a 10m width, the specialist reports take more conservative approach, assessing the previous 14m width.

Figure 5: Alternative Development Haul Road Footprint

2.7.3 'Do Nothing' Option

The target resource will be used both within the local area and throughout NSW. The extraction of the available Rhyolite will help to meet the volumes for a resource that is in high demand due to its unique properties and variety of uses.

The proposed quarry is ideally located in close proximity to the Pacific Highway, upon land with a favourable topography for shielding impacts during extraction, and contains land previously cleared for the provision of a viable development footprint. Should the proposed quarry not be approved, supply for the projected demands of resource material will need to be met elsewhere and may result in resources being identified and extracted from alternate sites with greater impacts to the receiving environment. Similarly; should these alternate sites be located further from state-wide infrastructure such as the Pacific Highway, then the cost of transporting the resource and subsequently the cost of the resource itself may increase, leading to an increase in the cost of infrastructure projects themselves.

SECTION 3
PROJECT DESCRIPTION

3. Project Description

3.1 PROPOSED OVERVIEW

The proposal is for a Hard Rock Quarry for the extraction of Rhyolite. Rhyolite has various uses and is sought after as a component for the creation of aggregate, building materials and road base. The total area of the subject site is approximately 400.3ha; however, the total quarry footprint is considerably smaller comprising approximately 48ha.

Broadly, the proposal will require some clearing of vegetation to gain access to the processing pad and extraction areas, site preparation works and installation of infrastructure and supporting services to facilitate operations at the site. Road upgrades to Maytoms Lane and The Bucketts Way will also be required to cater for vehicle movements.

The project will be undertaken over seven key stages during which approximately 45 million tonnes of resource material is proposed to be extracted at a rate of up to 1.5 million tonnes per annum (tpa) over 30 years. During the initial years of operation, it is not expected that extraction amounts will reach 1.5 million, as there are site establishment works to be completed prior to the main extraction activities commencing. These establishment works will include the new intersection of The Bucketts Way and Maytoms Lane; construction of the main access to the processing pad; creation of the processing pad; and installation of other infrastructure including site offices and facilities, weigh bridge, and processing machinery. Some of these processes will result in the winning of material, however some of this material will also be used in site establishment activities. **Table 4** provides a summary of the main elements of the proposal.

Table 4: Summary of Proposal

Project Element	Summary of Project	
Proposed Development	Hard Rock Quarry	
Extraction Method	Traditional drill and blasting over extraction are of 48ha	
Resource	Quarry extraction of Rhyolitic Tuff from RL 205m AHD down to final RL 95m AHD	
Disturbance Areas	Total disturbance area	48ha
	Stage 1 disturbance area	9.5ha
	Stage 2 disturbance area	2.4ha
	Stage 3 disturbance area	10.6ha
	Stage 4 disturbance area	1.1ha
	Stage 5 disturbance area	5.4ha
	Stage 6 disturbance area	9.6ha
	Stage 7 disturbance area	9.4ha
Annual Production	Up to 1.5 million tonnes	
Quarry Life	30 years	
Management of Mining Waste	Managed and minimised by retaining resources that have value for reuse on-site, or collected by an appropriately licensed contractor and transported to appropriately licensed facility for recycling or disposal.	
General Infrastructure	Access roads including intersection works, electricity supply, on-site sewer management, weighbridge and site office.	
Product Transport	Transport by truck with average of 272 movements (136 in and 136 out) a day.	
Water Management	An array of water storages are proposed to contain and control runoff at the project – including sediment dams, water storage dams and pit sump.	
Operational Workforce	30 full time employees, anticipated to comprise quarry manager, supervisors, drivers, weighbridge operator and administration clerk.	

Project Element	Summary of Project	
Hours of Operation	Extraction and processing operations	Monday to Saturday 6:00am to 10:00pm
	Internal product transfers to stockpiles	Monday to Saturday 6:00am to 12:00am (midnight)
	Haulage from and to the development site	Monday to Saturday 7:00am to 6:00pm
	Blasting activities	Monday to Friday 9:00am to 4:00pm
	Maintenance activities	24 hours 7 days a week
Site Rehabilitation	Progressive	
Capital Investment Value	$39,000,000 excl GST	

3.2 DETAILED DESCRIPTION

3.2.1 Project Area

The subject site is approximately 400.3ha comprising eight lots being, Lot 60 DP 1094397, Lot 1 DP 159902, Lot 62 DP 95029, Lot 63 DP 95029, Lot 2 DP 1166923, Lot 3 DP 1166923, Lot 4 DP 1166923, and Lot 64 DP 95030.

The total area of disturbance at the site will be approximately 48ha and comprises the constructed accessway to the site from Maytoms Lane, processing pad, haul road and ROM area, and access to areas for material extraction during later stages of the development. The proposed quarry layout within the subject site is shown in **Figure 6**. A breakdown of disturbance areas by stage is at **Table 4.**

Small portions of the site are identified on the Biodiversity Values Map and identified as flood prone land. These areas of the site generally follow Double Creek which travels south through the site where the development is proposed. Much of the site is identified as bushfire prone land with associated buffer area. The extraction area has been located to avoid these more sensitive areas of the site, and the only area where the works intersect with Double Creek is where the proposed access road crosses this water course. Similarly, other areas mapped as having biodiversity values or identified as flood affected land will principally be affected by the proposal only in terms of access to the processing pad where the crossing over Deep Creek is required.

3.2.2 Physical Layout and Design

The subject site has been partially modified and disturbed as a result of past clearing and agricultural activities and as such substantial areas of the site are largely cleared of vegetation. The design and layout of the propsoal will comprise an accessway from Maytoms Lane through the site to the processing pad. An intersection upgrade is proposed for Maytoms Lane and The Bucketts Way which will include a deceleration lane to turn right into the site and widening of The Bucketts Way to allow for overtaking.

The processing pad will be constructed to a final RL of 95m AHD and will accommodate the main operations of the proposal including the site office, tertiary and secondary crushers, sand wash plant, on-site dams, stockpiles and car parking area. The site office will comprise demountable buildings which is considered appropriate given the office building will not be visible from the public domain.

An internal haul road (10m wide pavement) will be constructed which will facilitate access to areas of the site for extraction as well as for the ROM pad which will allow extracted material to be put through the primary crusher located at RL 105m AHD and then conveyed down to the processing pad (RL 95m AHD) where material will pass through secondary and tertiary crushers and be stockpiled before being transported offsite.

To mitigate acoustic impacts associated with blasting required for the proposal, the proposed staging design means that once preparation works have been completed, hard rock extraction will genreally take place in a south-easterly direction below the highest RL of the extraction area which will reduce acoustic impacts to dwellings closest to the site (located adjacent The Bucketts Way, east of the site). The staging has been specifically designed with acoustic and visual mitigation measures in mind.

In effect, the operations will commence at the eastern extent of the pit (processing pad), from which a haul road will circle around to the western extent, with extraction activities then being carried out so as to progress in an easterly direction, back toward the processing pad. This design ensures that operations, and therefore noise, dust, and visual impacts are screened by the working face of the extraction area. Staging details are discussed at **Section 3.3.**

It is not envisioned that the extent of the developable area will need to be amended as all accessways and areas of excavation have been determined through detailed analysis. Similarly the proposed direction of excavation will not be amened as this approach is required to ensure no adverse acoustic impacts on neighbours will be felt.

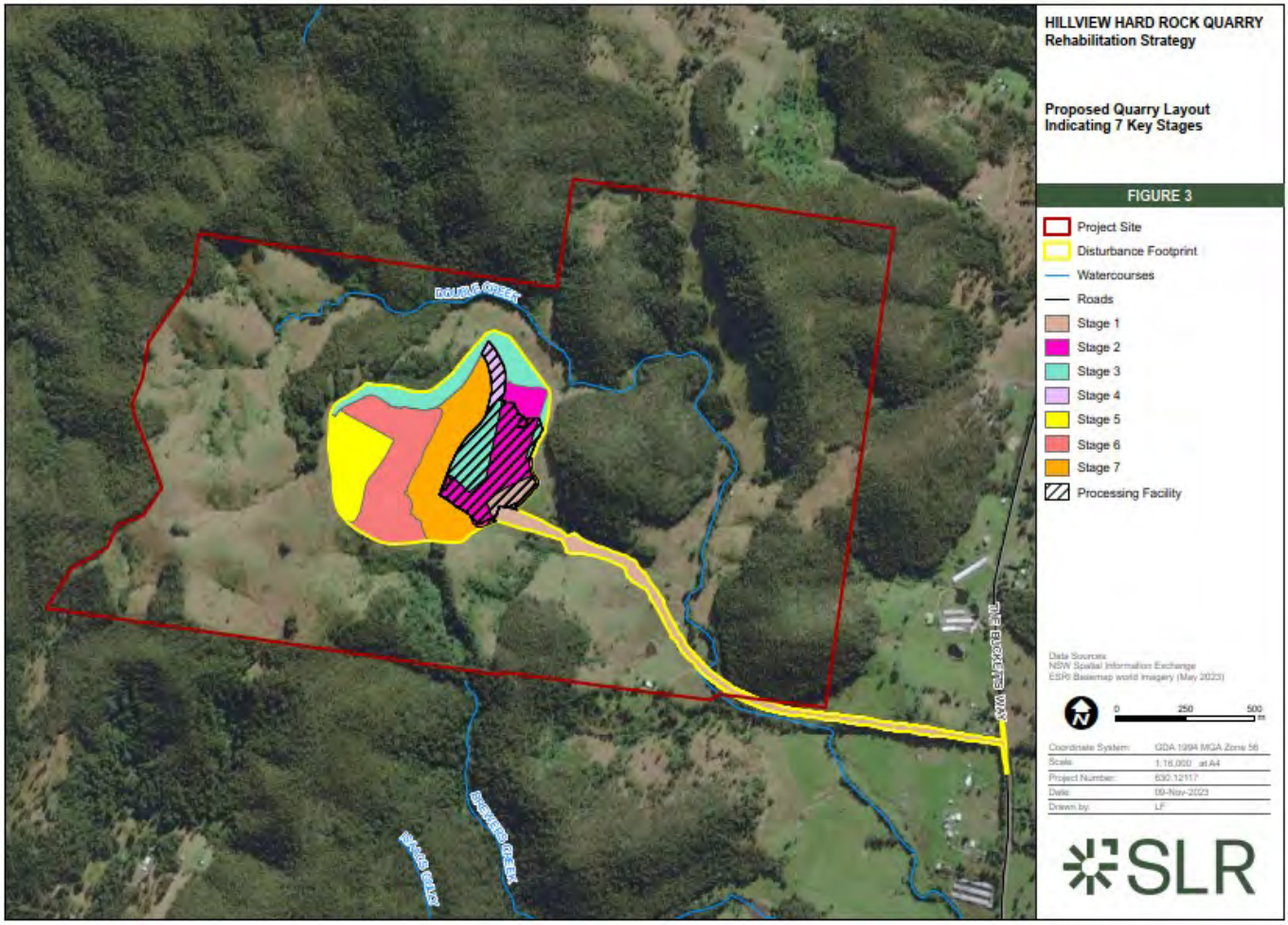

Figure 6: Proposed Quarry Layout
(Source: SLR Rehabilitation Strategy 2024)

3.2.3 Uses and Activities

The use is an '*Extractive Industry*' per the definition in the *Great Lakes Local Environmental Plan 2014* (GLLEP) and triggers State Significant Development per the triggers in Schedule 1, *Section 7 – Extractive Industries* of the Planning Systems SEPP as the proposal will extract more than 500,000 tonnes of extractive materials per year.

Construction will involve the erection of temporary buildings and facilities, including light and heavy vehicle access and parking areas, equipment storage compounds, diesel generators, diesel compressors, services and amenities.

It is anticipated the construction program will include:

- Site preparation including erosion and sediment control works;
- Road upgrade works to Maytoms Lane and The Bucketts Way;
- Establishment of internal access roads, including creek crossing;
- Installation and / or upgrades to required infrastructure;
- Establishment of ancillary site infrastructure, amenities and surface water management infrastructure;
- Rehabilitation and revegetation works.

3.2.3.1 Extraction and Processing

After the site is made ready for extraction activities, these will commence from a highest point of RL 206m Australian AHD down to RL 95m AHD. Up to 1.5m tpa is proposed to be extracted; however, in the initial years after construction commences this may be significantly less.

The quarry process will involve traditional drill and blasting techniques to produce rock fragments suitable for haulage to the crushing and screening plant. The quarry will have one working face that will advance generally in a north-west to south-east direction in 15m bench heights. Extraction will be carried out by mobile plant and equipment, including excavators and dump trucks, with the extracted material hauled from the pit to raw product stockpiles at the processing area.

The processing area will include raw material stockpiles and a crushing and screening plant for rock size reduction. The raw material extracted will not be washed and therefore the proposed development does not include a wash plant. The processed rock will be hauled in dump trucks to end product stockpiles in the product storage area.

The proposal will have positive contributions to the local and State economy by employing approximately 30 staff and contributing to the supply of Rhyolite Tuff which is used for aggregate, road base and landscaping.

The following sections explain the activities and works required for the construction and operation of the proposed quarry.

3.2.3.2 Hours of Operation

Operating hours have been separated into four key categories described below and with greater detail provided at **Table 5.**

- Extraction and processing, comprising quarrying and crushing of materials on-site;
- Haulage, comprising moving of materials to and from the development site;
- Blasting;
- Maintenance, comprising general maintenance and repair of equipment.

Table 5: Proposed Hours of Operation

Operation	Days	Hours
Extraction and Processing	Monday to Saturday	6:00am – 10:00pm
	Sunday/Public Holidays	No extraction/processing
Internal product transfers	Monday to Saturday	6:00am to 12:00am (midnight)
	Sunday/Public Holidays	No internal product transfers to stockpiles
Haulage	Monday to Saturday	7:00am – 6:00pm
	Sunday/Public Holidays	No haulage
Blasting	Monday to Friday	9:00am – 4:00pm
	Saturday	No blasting
	Sunday/Public Holidays	No blasting
Maintenance	Monday to Friday	9:00am – 4:00pm

3.2.3.3 Supporting Infrastructure

Various items of ancillary infrastructure will be installed and operated to support the quarry, including:

- Two weighbridges;
- Crushing and screening plant for processing extracted hard rock material;
- Pugmill and pre-coat plant for road base products;
- Workshop;
- Site office and amenities;
- Parking areas;
- Product storage areas.

3.2.3.4 Access and Traffic

At full production, the quarry is expected to generate a number of light and heavy vehicle movements on a daily basis which are primarily expected to travel south towards the Central Coast and Sydney. On this basis, the primary transport route will comprise Maytoms Lane, The Bucketts Way and the Pacific Highway.

Upgrades to the intersection at Maytoms Lane and The Bucketts Way will comprise construction of a short deceleration lane for vehicles travelling south along The Bucketts Way turning right into the site, and construction of a standard right turn out of the site. To ensure adequate sightline distances, several trees are proposed to be removed or trimmed.

Full details regarding access and traffic are discussed at **Section 6.7.**

3.2.3.4 Site Servicing

Power

The provision of electricity on-site will be achieved by way of diesel generators and solar panels on the roof of site offices.

Water Supply

Water needs for the operational requirements of the proposal will be met by way of capture and reuse of runoff onsite. On-site potable water requirements will be met via rainwater collection tanks from the roofs of the site office and workshop. Where required, potable water will be brought in from off-site. The proponent has also acquired an aquifer Water Access Licence (number 44439) for 100 units from the New England Fold Belt Coast Groundwater Source. This is not currently linked to any bores. Further detail on water supply is contained within the Ground Water and Surface Water Assessments at **Appendix I** and **Appendix J.**

Sewage

An aerated on-site sewage management system will be installed and operated to treat and dispose of the relatively low volume of sewage to be generated by staff amenities. A Wastewater Management Report has been prepared for the system and is provided at **Appendix O.**

3.2.3.5 Rehabilitation

Rehabilitation of the site will take place progressively over each stage of the development. The objective of rehabilitating the site will be to return a majority of the excavated area to a revegetated state while leaving provision for an alternative ongoing use at the site. Given the timeframe for the extractive industry use at the site, a future post-quarry use is not yet known; however, it is envisaged that a use which is already permitted in the zone will be explored and will be subject to a future DA. A Rehabilitation Strategy has been prepared for the site and is provided at **Appendix U.**

3.3 TIMING AND STAGING

The development is proposed to take place over seven stages as described below, and illustrated within the plans provided as **Appendix B.**

3.3.1 Stage 1 (between years 0-5 of project)

Stage 1 will broadly comprise commencing construction of the haul road from Maytoms Lane to the processing pad.

During this stage, the 10m wide haul road will be pegged out and cleared as much as possible to expose underlying hard rock. A face will be created on the north side of the spur road with clearing to take place along the eastern underside to facilitate commencement of the processing pad where mobile plant will initially be set up. The ultimate level of the processing pad will be RL 95m.

The following plant equipment will be utilised for Stage 1:

- D10 Dozer CAT;
- Komatsu PC450 45 tonne Excavator;
- Blast Drill (Premier);
- PC360 Excavator;
- HW 400 Haul Truck;
- HM 400 Water Cart;
- Lippmann L620R mobile jaw crusher;
- Lippmann L620R Scalping Screen;
- Lippmann 400c Cone Crusher;
- Up to four stockpile conveyors;
- Cat 14m Grader.

Stage 1 will result in a land disturbance area of 9.5ha. Stage 1 will not comprise any rehabilitation works.

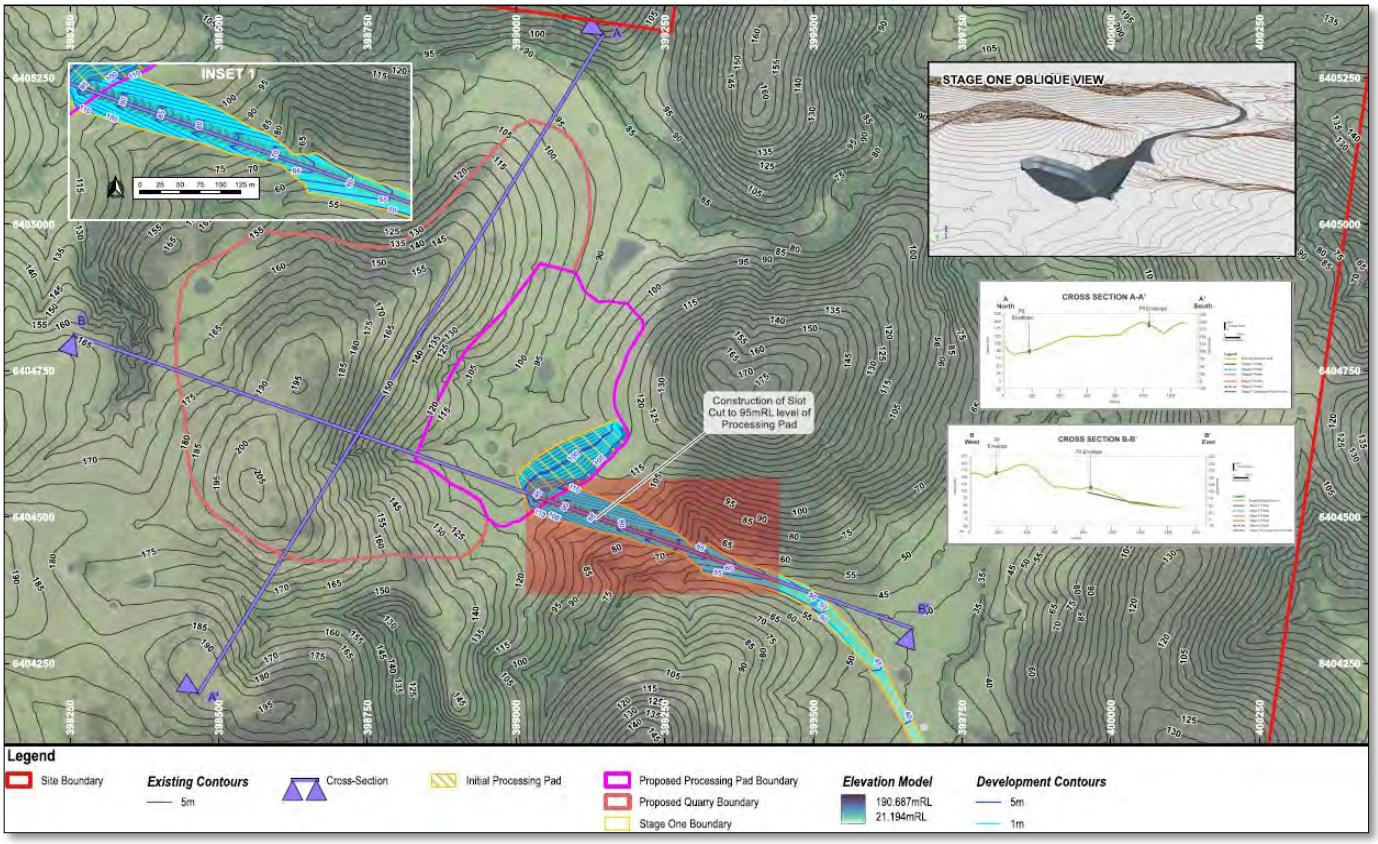

Figure 7: Stage 1 Plan
(Source: VGT Quarry Plans 2024)

3.3.2 Stage 2 (between years 0-5 of project)

Stage 2 will broadly comprise increasing the size of the processing pad, continuing the slot and haul road southward, and upgrades to Maytoms Lane and intersection with The Bucketts Way.

Blasting and drilling will be required to advance the slots southwards to create up to three benches comprising 6m batter height, 85-degree batter angle and bench width of 6m. The size of the pad will be increased using D10 Dozer CATs down to a RL of 95m. Two weighbridges will be constructed during Stage 2 as well as other ancillary structures and uses required for the proposal including offices and maintenance shed. Construction of the intersection at Maytoms Lane and The Bucketts Way will be commenced by way of vegetation removal and expansion of the road envelope to accommodate the intersection.

The following plant equipment will be utilised for Stage 2:

- D10 Dozer CAT;

- Komatsu PC450 45 Tonne Excavator;
- Blast Drill (Premier);
- PC360 Excavator;
- HW 400 Haul Truck;
- HM 400 Water Cart;
- Lippmann L620R mobile jaw crusher;
- Lippmann L620R Scalping Screen;
- Lippmann 400c Cone Crusher;
- Up to four stockpile conveyors;
- Cat 14m Grader.

Stage 2 will result in a land disturbance area of 2.4ha. Stage 2 will not comprise any rehabilitation works.

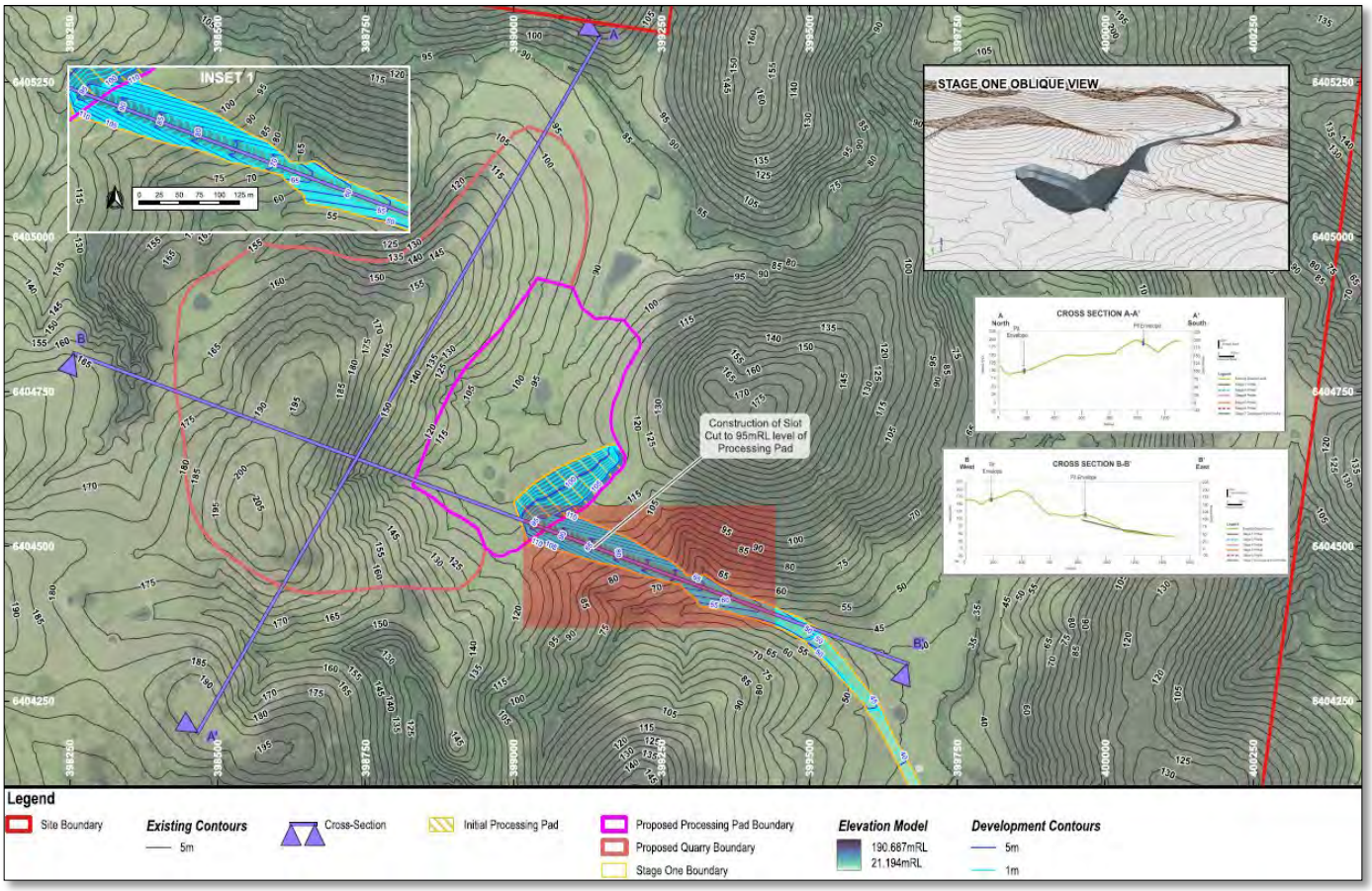

Figure 8: Stage 2 Plan
(Source: VGT Quarry Plans 2024)

3.3.3 Stage 3 (between years 0-5 of project)

Stage 3 will broadly comprise finalising the processing pad and road to Maytoms Lane, completion of Maytoms Lane upgrades and the intersection with The Bucketts Way, and commencing construction of the internal haul road to the new ROM pad to be located 10m above the processing pad.

Stage 3 will see the levelling of the main processing pad completed which will be constructed to an RL of 95m. The processing pad will accommodate the space required for the main processing area dam and sand processing plant dam; tertiary and secondary crushers; sand wash plant; site office; and, final product stockpiles which will be constructed or installed as part of Stage 3. The processing pad and internal haul road to the new ROM pad at RL105 metres will be completed as well as upgrades to The Bucketts Way intersection.

The following plant equipment will be utilised for Stage 3:

- D10 Dozer CAT;
- Komatsu PC450 45 Tonne Excavator;

- Blast Drill (Premier);
- PC360 Excavator;
- HW 400 Haul Truck;
- HM 400 Water Cart;
- Lippmann 1300j mobile jaw crusher;
- Lippmann L620R Scalping Screen;
- Lippmann 400c Cone Crusher;
- Up to four stockpile conveyors;
- Cat 14m Grader;
- Sand Processing Plant.

Stage 3 will result in a land disturbance area of 10.6ha. Rehabilitation during Stage 3 will comprise a total of 0.55ha.

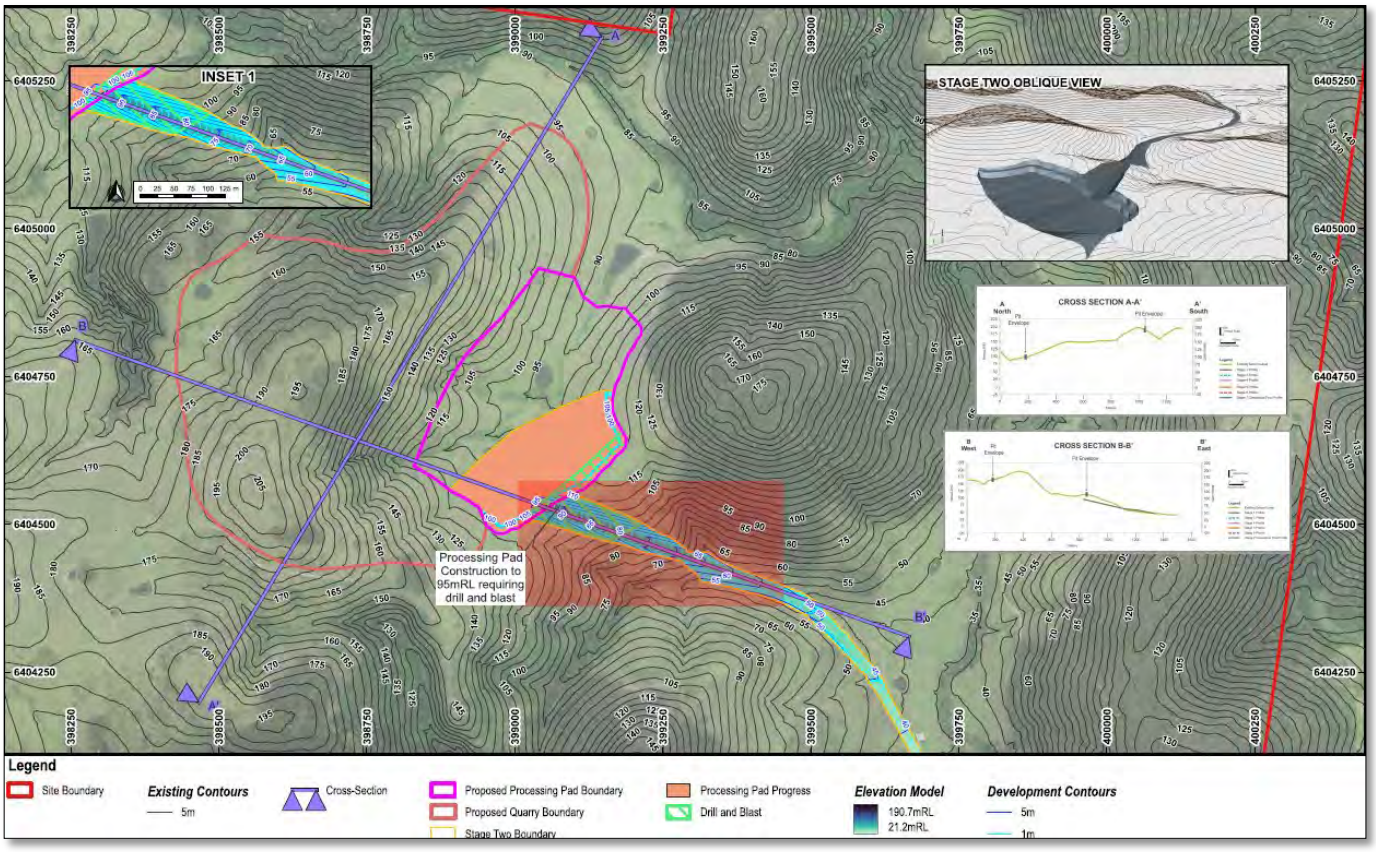

Figure 9: Stage 3 Plan
(Source: VGT Quarry Plans 2024)

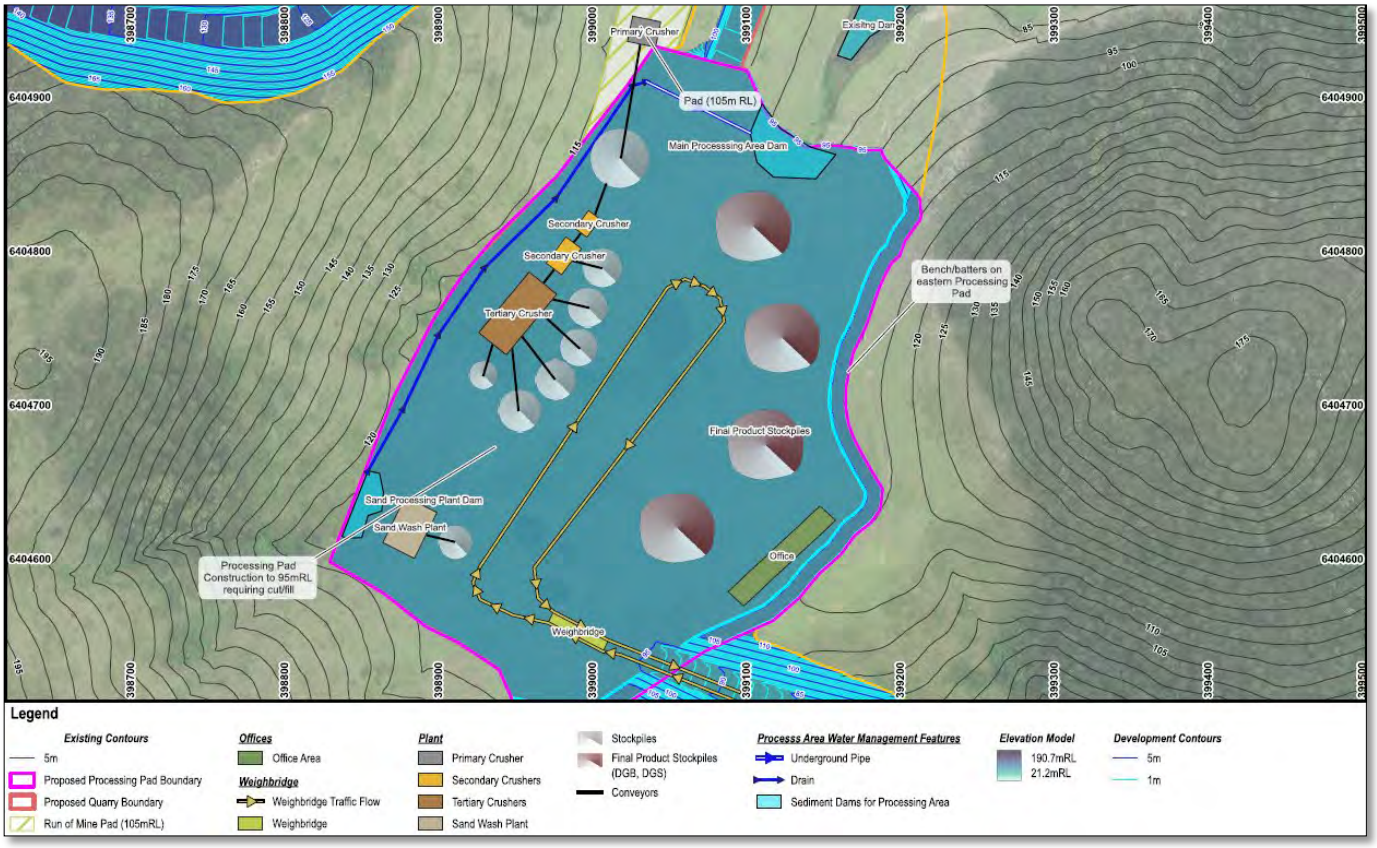

Figure 10: Stage 3 Plan – Processing Pad
(Source: VGT Quarry Plans 2024)

3.3.4 Stage 4 (between years 0-5 of project)

Stage 4 will broadly comprise continued construction of the haul road and ROM pad.

Construction of the internal haul road which commenced in Stage 3 will continue to facilitate access to parts of the site which will comprise extraction areas associated with Stage 5, Stage 6 and Stage 7 as well as the ROM pad.

The ROM pad will be constructed at RL105m (10m above main pad area at RL95m). The ROM will allow extracted material to be crushed with a primary crusher at the ROM pad, before being conveyed to the main processing pad where materials will undergo secondary and tertiary crushing processes. Approximately 339,000m³ tonnes of material will be bulldozed, drilled and blasted, loaded and hauled to create the ROM pad.

The following plant equipment will be utilised for Stage 4:

- D10 Dozer CAT;
- Komatsu PC450 45 Tonne Excavator;
- Blast Drill (Premier);
- PC360 Excavator;
- 2 x HW 400 Haul Truck;
- HM 400 Water Cart;
- Lippmann 1300j mobile jaw crusher;
- Lippmann L620R Scalping Screen;
- Lippmann 400c Cone Crusher;
- Up to four stockpile conveyors;
- Cat 14m Grader;
- Sand Processing Plant.

Stage 4 will result in a land disturbance area of 1.1ha. Rehabilitation during Stage 4 will comprise a total of 0.55ha.

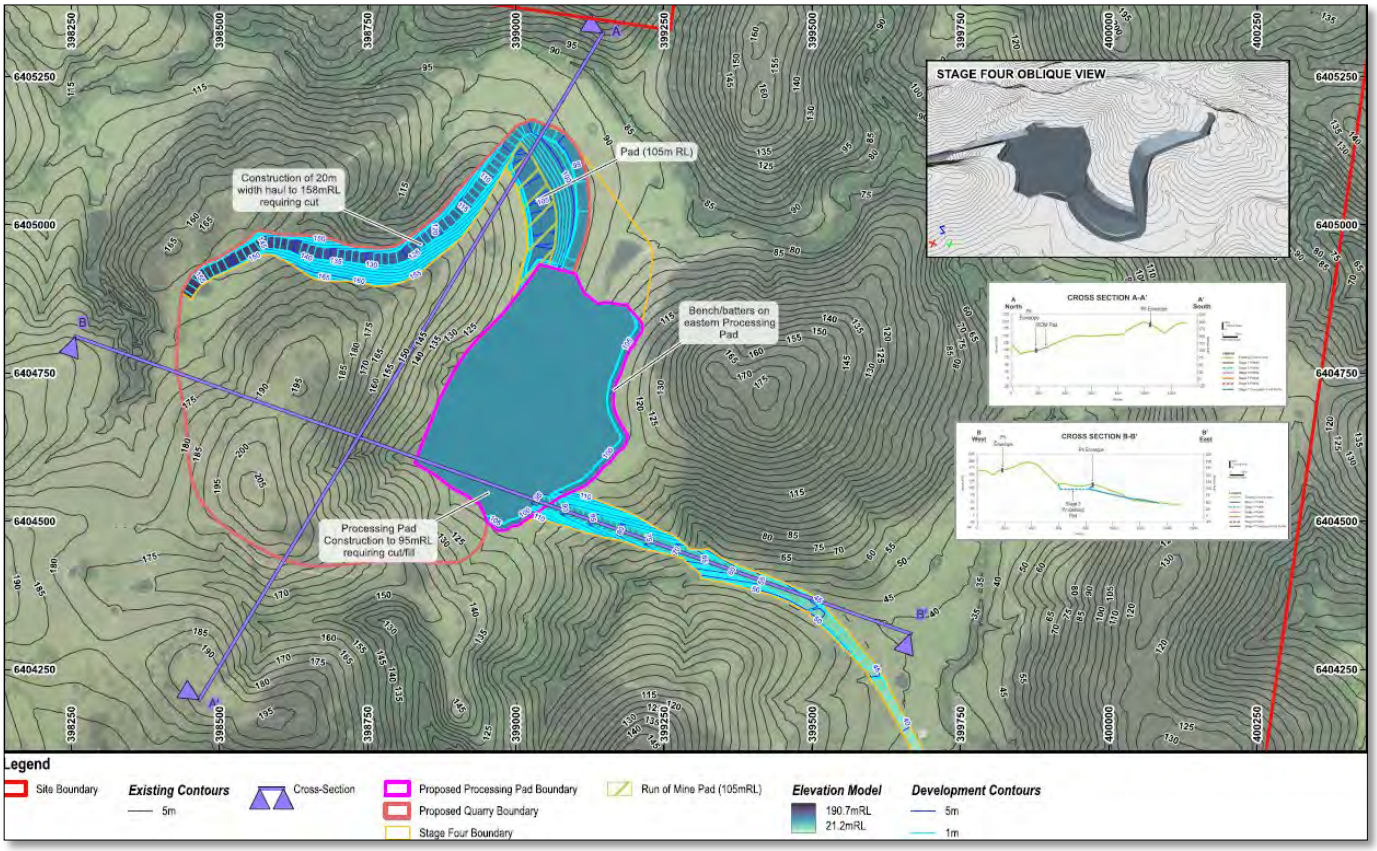

Figure 11: Stage 4 Plan
(Source: VGT Quarry Plans 2024)

3.3.5 Stage 5 (between years 5-10 of project)

Stage 5 will involve extraction and processing of material.

Material will be extracted from Stage 5 which will start from RL 206m as the highest point of the proposal before excavation commences downward in a north-westerly direction. Initial dozer and track drilling at RL 206m will be most audible to residents adjacent to The Bucketts Way; however, as extraction continues in a north-westerly direction noise will be less audible as the rock face for Stage 5 will be higher at the eastern end which will limit noise reaching residences adjacent The Bucketts Way.

The following equipment will be utilised for Stage 5 **in the quarry**:

- D10 Dozer CAT (RL 206m);
- Komatsu PC450 45 Tonne Excavator (RL 196m);
- Blast Drill (Premier) (RL 205m);
- PC360 Excavator (RL 196m);
- 2 x HW 400 Haul Truck (RL 186m);
- HM 400 Water Cart (RL 158m).

The following equipment will be utilised for Stage 5 for **processing**:

- HM 400 Water Cart;
- Lippmann 1300j mobile jaw crusher;
- Lippmann L620R Scalping Screen;
- Lippmann 400c Cone Crusher;
- Up to four stockpile conveyors;
- Cat 14m Grader;
- Sand Processing Plant.

Stage 5 will result in a land disturbance area of 5.4ha. Rehabilitation during Stage 5 will comprise a total of 0.55ha.

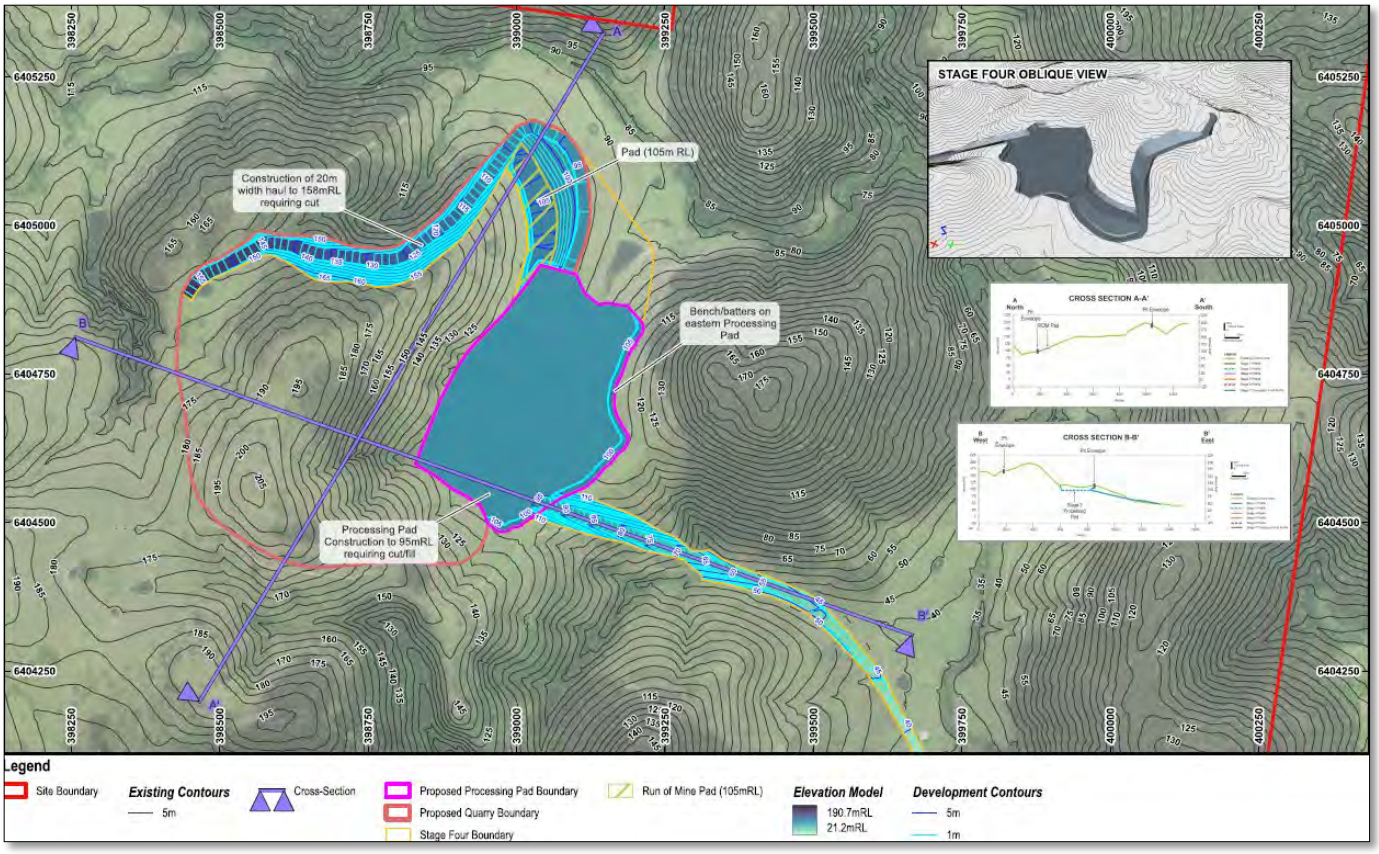

Figure 12: Stage 5 Plan
(Source: VGT Quarry Plans 2024)

3.3.6 Stage 6 (between years 10-25 of project)

Extraction will continue down the eastern face and when the amount of excavation necessitates lowering of the area, the majority of the drill and blast, load and haul will be maintained behind the eastern face which will continue to limit acoustic impacts to residents adjacent The Bucketts Way.

The following equipment will be utilised for Stage 6 **in the quarry**:

- D10 Dozer CAT (RL 158m);
- Komatsu PC450 45 Tonne Excavator (RL 148m);
- Blast Drill (Premier) (RL 158m);
- PC360 Excavator (RL 148m);
- 2 x HW 400 Haul Truck (RL 138m);
- HM 400 Water Cart (RL 126m).

Stage 6 will result in a land disturbance area of 9.6ha. Rehabilitation during Stage 6 will comprise a total of 1.14ha.

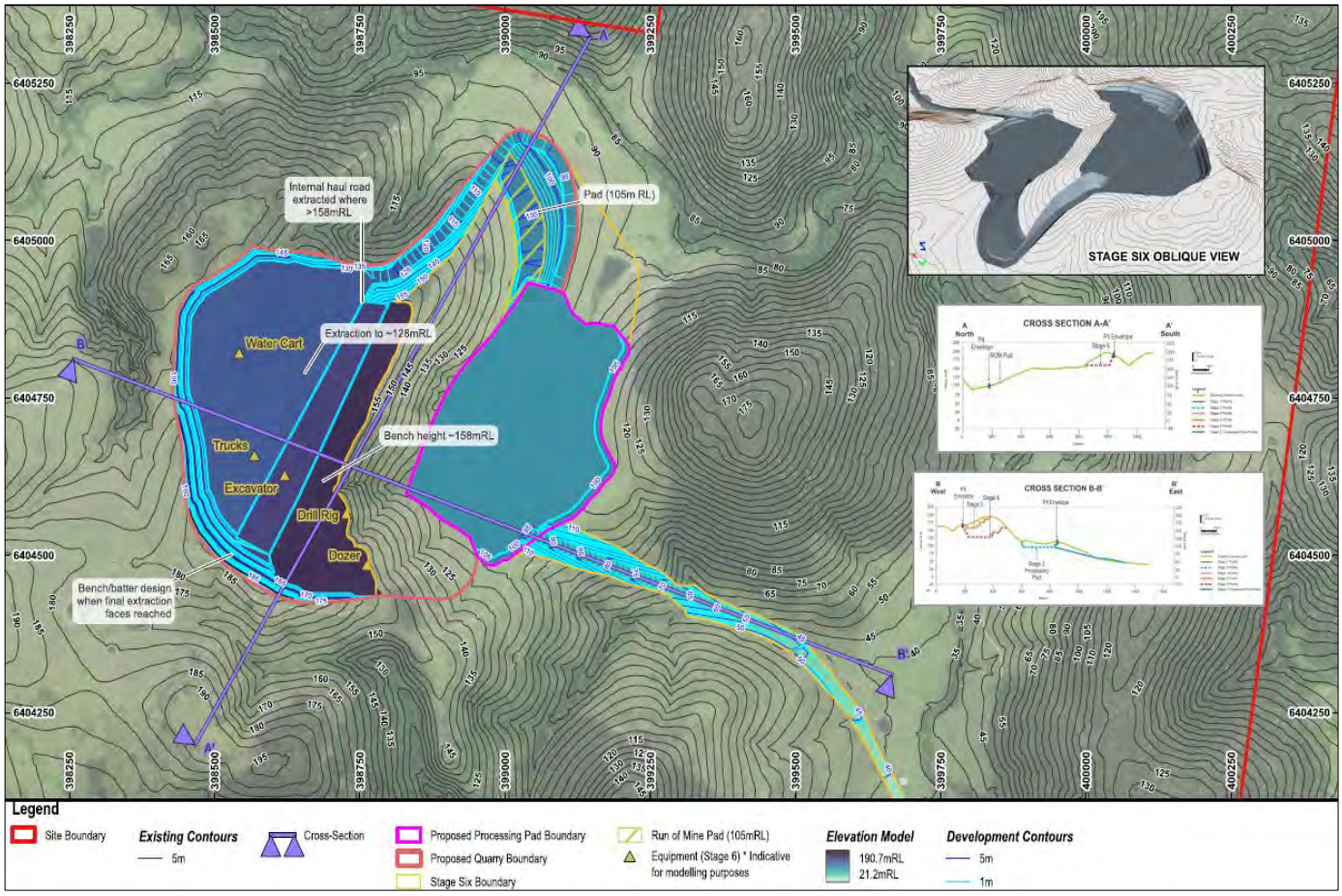

Figure 13: Stage 6 Plan
(Source: VGT Quarry Plans 2024)

3.3.7 Stage 7 (between years 25-30 of project)

Extraction will continue ultimately down to RL 95m (final landform) which is the same level as the processing pad constructed as part of Stage 3. Consistent with Stage 5 and Stage 6, as the excavation area is lowered, the noise associated with the drill and blast, load and haul will be maintained behind the eastern face which will limit acoustic impacts to residents adjacent The Bucketts Way.

When excavation works are finalised at the end of the life of the project, the final landform design will be a self-draining void with a 100H:1V gradient from the southwest to the northwest toward the main pond. Detail of the proposed final bench and battering designs will be 5m wide flat benches and 15m high batters with a slope of 0.5H:1V (63°)

Rehabilitation during Stage 7 will comprise a total of 1.68ha.

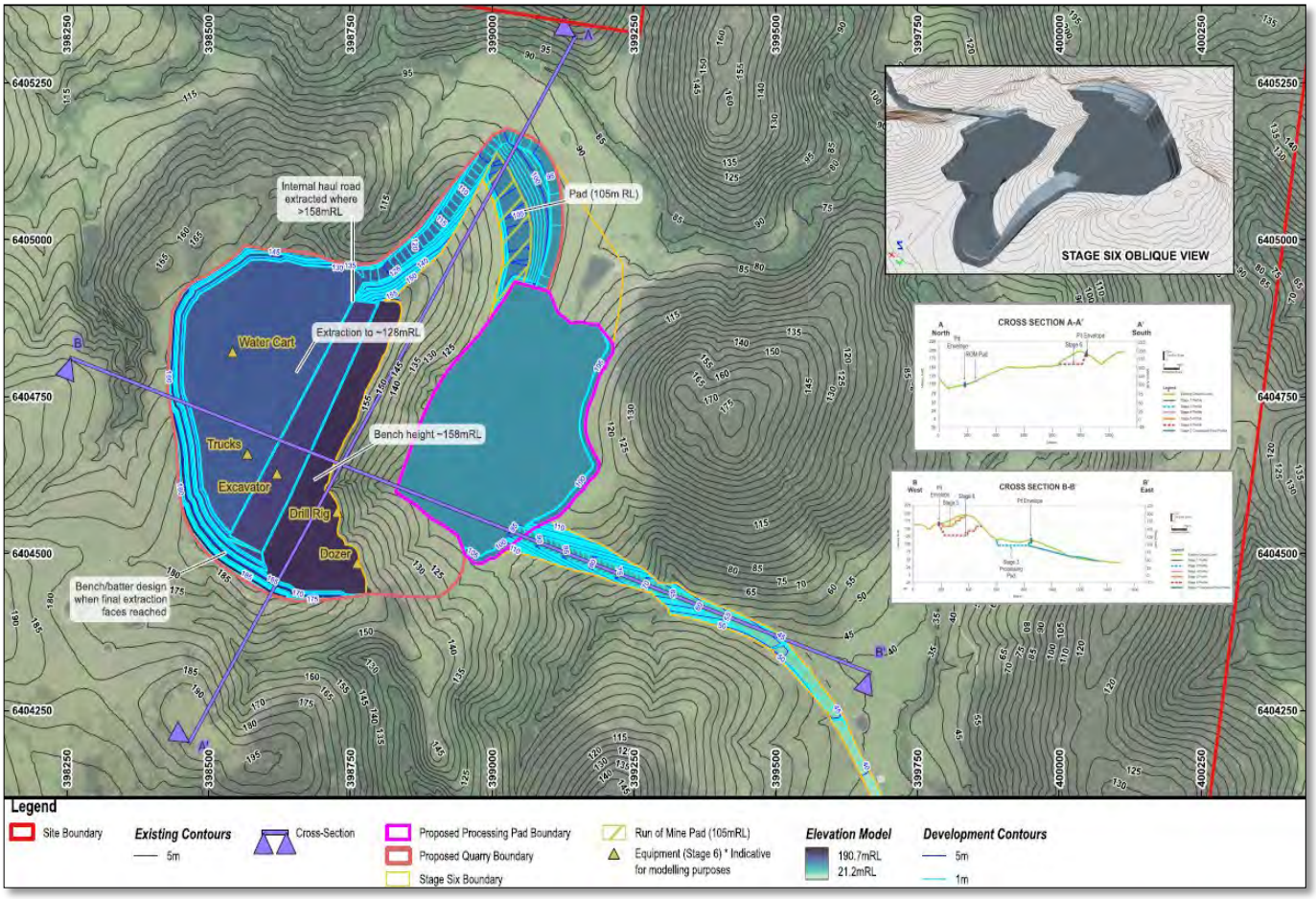

Figure 14: Stage 7 Plan
(Source: VGT Quarry Plans 2024)

SECTION 4
STATUTORY CONTEXT

4. Statutory Context

The application has been prepared pursuant to Part 4 of the EPA Act. This EIS is prepared pursuant to Section 4.12(8) of the EPA Act and development consent under Section 4.15 of the EPA Act.

The following Acts and environmental planning instruments are relevant to the proposal:

- *Environmental Protection and Biodiversity Conservation Act 1999;*
- *Environmental Planning and Assessment Act 1979;*
- *Protection of the Environment Operations Act 1997;*
- *Biodiversity Conservation Act 2016;*
- *Biosecurity Act 2015;*
- *Water Management Act 2000* and *Water Act 1912;*
- *Roads Act 1993;*
- *Local Government Act 1993;*
- Contaminated Land Management Act 1997;
- Heritage Act 1977;
- National Parks and Wildlife Act 1979;
- Fisheries Management Act 1994;
- Rural Fires Act 1997;
- *State Environmental Planning Policy (Planning Systems) 2021;*
- *State Environmental Planning Policy (Resources and Energy) 2021;*
- *State Environmental Planning Policy (Transport and Infrastructure) 2021;*
- *State Environmental Planning Policy (Resilience and Hazards) 2021;*
- *Great Lakes Local Environmental Plan 2014;*
- *Great Lakes Development Control Plan 2013;*
- *Developer Contributions Plan.*

All applicable legislation is discussed below and addressed in detail throughout this EIS. A Statutory Compliance Table identifying all relevant legislation and applicable EIS reference location, is provided as **Appendix C.**

4.1 STATUTORY REQUIREMENTS OF THE PROPOSAL

Table 6: Categories to be Used to Identify the Statutory Requirements for a Project

Category	Action Required
Power to grant approval	Section 2.6 of *State Environmental Planning Policy (Planning Systems) 2021* states development specified in Schedule 1 of the SEPP is classified as SSD. The development is specified under Clause 7 of Schedule 1 of the SEPP, being: ***7 Extractive industries*** *(1) Development for the purpose of extractive industry that—* *(a) extracts more than 500,000 tonnes of extractive materials per year, or* *(b) extracts from a total resource (the subject of the development application) of more than 5 million tonnes, or* *(c) extracts from an environmentally sensitive area of State significance.* The proposed Hard Rock Quarry seeks to extract 1.5 million tonnes of extractive materials per year, and a total resource amount of 45 million tonnes. As such, the proposal is declared State Significant Development.
Permissibility	The site is zoned *RU2 Rural Landscape* under the *Great Lakes LEP 2014.* Development for the purpose of *extractive industries* is permissible with consent in the zone.

Category	Action Required
Other approvals	Other approvals required for the proposal include: • EPBC Act approval from the Australian Government Environment Minister; • Section 68 of the *Local Government Act 1993 to* 'operate a system of sewage management (within the meaning of section 68A); • Consent from the roads authority (Council) under Section 138 of the *Roads Act 1993* for works in the road reserve; • Environmental Protection Licence from the Environmental Protection Authority under Chapter 3 of the *Protection of the Environment Operations Act 1997;* • Water Access Licence from Water NSW under section 61(1)(c) of the Water Management Act 2000; • Aquifer interference approval from Water NSW under Section 91 of the Water Management Act 2000.
Pre-condition to exercising the power to grant approval	• EPBC Act 1999 – Matters of National Environmental Significance; • PoEO Act 1997 – Clause 48 and Schedule 1 (19); • SEPP (R&E) 2021 – Clause 2.17.
Mandatory matters for consideration	• EP&A Act 1979 – Section 1.3, 4.12, 4.15, 7.11; • Biodiversity Conservation Act 2016; • Contaminated Land Management Act 1997; • Heritage Act 1977; • National Parks and Wildlife Act 1979; • Fisheries Management Act 1994; • Rural Fires Act 1997; • State Environmental Planning Policy (Resources and Energy) 2021; • State Environmental Planning Policy (Transport and Infrastructure) 2021; • State Environmental Planning Policy (Resilience and Hazards) 2021; • Great Lakes Local Environmental Plan 2014.

4.2 ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

Under the Commonwealth EPBC Act, assessment and approval is required for actions that are likely to have a significant impact on MNES. When a person proposes to take an action**,** they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Department of Environment (DoE).

The BDAR provided as **Appendix F** includes a preliminary assessment of impacts on EPBC Act matters. Considering the nature and duration of the potential impacts, the presence or likely occurrence of threatened and migratory species on the site and the nature and condition of the habitats for the Threatened Ecological Communities (TEC) present on the site, the proposed development is not likely to have a significant impact on: listed threatened species; listed migratory species and listed threatened ecological communities. Notwithstanding this assessment, referral of the development application to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) has been made. The action was deemed a controlled action, and the application is now being assessed under the bilateral agreement (between NSW Government and DCCEEW).

4.3 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The relevant objectives under Section 1.3 of the EP&A Act include:

- *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
- *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- *to promote the orderly and economic use and development of land,*
- *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*

- *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- *to provide increased opportunity for community participation in environmental planning and assessment.*

The proposed quarry will provide for the timely provision of Rhyolite resources to meet current and future demands. Environmental management measures are proposed to minimise impacts and reduce the potential for impacts on other natural resources that are not the target of the proposed quarry operations (e.g. soil and water).

The proposed quarry will have minimal impact on other land uses in the vicinity and will supply construction materials to other developments locally and regionally. The proposed quarry will thereby contribute to the local and regional economy.

The provision of the proposed quarry within the disturbed portion of the site, as opposed to the vegetated land within the remaining portions, is a direct application of ecologically sustainable development principles. These principles are discussed further within **Section 7.9.**

Community consultation has occurred as part of the preparation of this EIS, providing the community with an opportunity to be involved in the planning and assessment process. Further submissions can also be made following lodgment of the application.

Section 4.15 of the EP&A Act identifies matters for the consent authority to consider when determining a development application. A checklist of these matters and where they have been addressed in this EIS is provided within the Statutory Compliance Table at **Appendix C.**

4.4 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Environment Protection Licences (EPLs) are required to be obtained under Chapter 3 to carry out certain work or conduct certain polluting activities that may relate to management of waste, air quality emissions, noise emissions and quality of water. The proposed quarry will require an EPL under *Schedule 1, 19 – Extractive activities*, as the development involves the extraction and processing of more than 30,000 tonnes of extractive material per year. As such, an EPL will need to be obtained from the Environmental Protection Authority (EPA) following development consent; with licence conditions to be complied with during all activities and operations.

4.5 BIODIVERSITY CONSERVATION ACT 2016

Pursuant to section 7.9 of the Biodiversity Conservation Act 2016 (BC Act), SSD applications require the application of the Biodiversity Assessment Method (BAM), established under section 6.7, which is utilised to prepare a Biodiversity Development Assessment Report (BDAR), unless advised otherwise by the Chief Executive of the Biodiversity Conservation Division (BCD) and the Secretary of the Department of Planning, Industry and Environment (DPIE).

SSD projects automatically trigger the Biodiversity Offsets Scheme (BOS), unless advised otherwise by the Chief Executive of the BCD and the Secretary of DPIE. A BDAR has been prepared in accordance with the BAM and is provided at **Appendix F.** No threatened plant species listed under the NSW BC Act or were detected.

4.6 BIOSECUIRTY ACT 2015

The primary object of the Biosecurity Act 2015 is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

As noted within the BDAR provided as **Appendix F**, several weed species, including High Threat Weeds, were identified within the subject land. Accordingly, measures to prevent the spread of weeds will include the following hygiene procedures:

- Induction materials containing detailed information pertaining to the identification of high threat weeds, prepared by a suitably trained ecologist or bush regenerator. These materials will be provided to contractors who will carry out construction works within the subject land;

- All vehicles, equipment, footwear and clothing to be clean and free of weed propagules prior to entering the subject land;
- Any weeds that are removed during the construction phase are to be disposed of via an appropriate waste facility.

4.7 WATER MANAGEMENT ACT 2000 AND WATER ACT 1912

By the operation of Section 4.41 of the EP&A Act, the proposed development will not require a water use approval under Section 89 of the WM Act, a water management approval under Section 90 or a controlled activity approval under Section 91. However, an aquifer interference approval under Section 91 of the WM Act will be required.

The site is located in lands managed under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009 and the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016, administered under the Water Management Act 2000, and it therefore does not require a license under the Water Act 1912.

4.8 ROAD ACT 1993

The proposed development includes the upgrade of Maytoms Lane and the Maytoms Lane – Bucketts Way intersection and, as such, requires consent under Section 138 of the Roads Act 1993 from the appropriate road's authority. The Roads Act 1993 specifies that a local council is generally the roads authority for all roads within its LGA except freeways. As such, a Section 138 roads act approval will be required from Mid Coast Council.

4.9 LOCAL GOVERNMENT ACT 1993

In accordance with Section 68 of the LG Act, an approval to operate a system of sewer management will be required from Mid Coast Council for the proposed onsite sewer management system.

4.10 CONTAMINATED LAND MANAGEMENT ACT 1997

Section 60 of the CLM Act imposes a duty on landowners to notify DPIE, and potentially investigate and remediate land if contamination is above EPA guideline levels.

A contaminated land search and a search of the POEO public register was conducted as part of this EIS which indicated no contamination or notices on the subject site. As such, the subject site has not been declared as significantly contaminated under the CLM Act.

However, should contaminants be unearthed on the site during construction works, an assessment would be carried out to determine if notification of the contamination under Section 60 of the CLM Act to the NSW EPA is required. All remediation, if required, would be carried out in accordance with the CLM Act.

4.11 HERITAGE ACT 1977

An excavation permit is required to disturb or excavate any land where it is known or there is reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. A permit is also required to disturb or excavate any land on which the person has discovered or exposed a relic.

There are no items of State or Local heritage significance located within the site, and as such an excavation permit under Section 139 (to disturb or excavate any land containing or likely to contain a relic) of the Heritage Act 1977 would not be required. Regardless, pursuant to section 4.41 of the EP&A Act, an approval under Part 4, or an excavation permit under Section 139 of the Heritage Act 1977 is not required for SSD as part of the application process.

4.12 NATIONAL PARKS AND WILDLIFE ACT 1979

A search of the Aboriginal Heritage Information Management System (AHIMS) database found no identified Aboriginal sites or places within 2km of the subject site – as detailed within the Aboriginal Heritage Impact Assessment provided as **Appendix K**.

Furthermore, an AHIP for disturbing an Aboriginal item or place is not required if the proposed development is permitted as SSD under the EP&A Act. This EIS contains sufficient information towards the permissibility of the proposed SSD with regards to Aboriginal Heritage as part of the application process which is provide in Section 6.6 and **Appendix K**.

As proposed within the mitigation measures detailed in **Appendix E**, the persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance.

4.13 FISHERIES MANAGEMENT ACT 1994

Under Section 201 of the FM Act a person must not carry out dredging work or reclamation work in fish habitat except under the authority of a permit issued by the Minister. For the purposes of the FM Act, dredging work includes excavating water land (defined as land submerged by water under the FM Act) or any work that involves moving material on water land or removing material from water land including the removal of snags.

Although Double Creek is identified as a Key Fish Habitat by the NSW Department of Primary Industries (DPI) under Section 4.4.1 of the EP&A Act, an approval under Section 201 is not required for an SSD project. Nonetheless, the potential aquatic ecological impacts have been considered.

4.14 RURAL FIRES ACT 1997

Section 100B of the Rural Fires Act 1997 relates to development within bushfire prone land. This requirement does not apply to SSD (Section 4.41 of the EP&A Act) and the development does not involve subdivision of residential land or any special fire protection purposes. Bushfire risks and hazards have been addressed in **Section 6.10** and the Bushfire Assessment provided as **Appendix Q**.

4.15 STATE ENVIRONMENTAL PLANNING POLICY (PLANNING SYSTEMS) 2021

Section 2.6 of the Planning Systems SEPP states development specified in Schedule 1 is classified as SSD.

The development is specified under Clause 7 of Schedule 1 of the SEPP, being:

> *7 Extractive industries*
> *(1) Development for the purpose of extractive industry that—*
> *(a) extracts more than 500,000 tonnes of extractive materials per year, or*
> *(b) extracts from a total resource (the subject of the development application) of more than 5 million tonnes, or*
> *(c) extracts from an environmentally sensitive area of State significance.*

The proposed Hard Rock Quarry seeks to extract 1.5 million tonnes of extractive materials per year, and a total resource amount of 45 million tonnes. As such, the proposal is declared State Significant Development.

4.16 STATE ENVIRONMENTAL PLANNING POLICY (RESOURCES AND ENERGY) 2021

Chapter 2 – Mining, Petroleum Production and Extractive Industries applies to the proposed development.

Section 2.9 Development permissible with consent – enables quarries to be permissible with consent on any land to which agriculture or industry may be carried out. The proposed quarry is therefore permissible with consent as both agriculture and industry are permissible with consent within the sites RU2 Rural Landscape zoning under the Great Lakes Local Environmental Plan 2014.

Section 2.17 Compatibility of proposed mine, petroleum production or extractive industry with other land uses – requires the Consent Authority to consider the compatibility of the quarry with surrounding land use. This EIS assesses the potential for impacts to adjoining land uses, specifically within Section 6 – Assessment of Impacts and within each of the appended specialist reports. The location of the quarry is considered protected from encroachment by sensitive uses, thereby ensuring a compatible and sustainable use of the site and locality. Due to the nature of the subject site, the proposal avoids land use conflict as there is no expanding urban expansion within the locality, nor significant rural industries on or adjacent to the site.

Section 2.20 Natural resource management and environmental management – requires the consent authority to consider the potential impacts on water, threatened species and biodiversity and greenhouse gas emissions.

Specialist reports have been prepared addressing the potential impacts on water, threatened species and biodiversity and greenhouse gas emissions, including:

- Ground Water and Surface Water Assessments provided as **Appendix I** and **Appendix J;**
- BDAR provided as **Appendix F;**
- Air Quality Impact Assessment provided as **Appendix H.**

All potential impacts on water, threatened species and biodiversity, and greenhouse gas emissions have been avoided or successfully managed through the proposed mitigation measures.

Section 2.21 Resource recovery – requires the consent authority to consider matters relating to efficiency and minimising waste. A Waste Management Plan has been prepared and is provided as **Appendix N.**

The Waste Management Plan has informed the development design and assists in the delivery of better practice waste management, promoting sustainable outcomes at the construction and operational phases of the development.

Section 2.22 Transport – requires the consent authority to consider measures relating to transport of materials on public roads, including the provision of the development application to the road's authority (Council and/or TfNSW). A Traffic and Parking Impact Assessment has been prepared and is provided as **Appendix L,** to assist in any referral to TfNSW.

Section 2.23 Rehabilitation – requires the consent authority to consider conditions relating to rehabilitation of the quarry. As such, a Rehabilitation Strategy has been prepared and is provided at **Appendix U.** Rehabilitation of the site will take place progressively over each stage of the development. The objective of rehabilitating the site will be to return a majority of the excavated area to a revegetated state while leaving provision for an alternative ongoing use at the site. Given the timeframe for the extractive industry use at the site a future post-quarry use is not yet known; however, it is envisaged that a use which is already permitted in the zone will be explored and will be subject to a future DA.

4.17 STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT AND INFRASTRUCTURE) 2021

A Traffic and Parking Impact Assessment has been prepared and is provided at **Appendix L.** The proposed development does not qualify as a traffic generating development with relevant size and/or capacity under *Section 2.122 -Traffic Generating Development*, as extractive industry is typically not considered to be the same class of development as "industry".

4.18 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021

In accordance with *Chapter 3 – Hazardous and Offensive Development*, the proposed development may be categori**s**ed as hazardous and/or offensive development, and as such a SEPP(R&H) Screening Assessment has been prepared and is provided as **Appendix P**. The proposed development was found to not be a 'potentially hazardous industry'.

The proposed development was however found to be a 'potentially offensive industry' under Schedule 1 of the POEO Act, which requires a license under pollution control legislation.

4.19 GREAT LAKES LOCAL ENVIRONMENTAL PLAN 2014

4.19.1 Clause 2.3 – Zone Objectives and Land Use Table

The site is subject to the provisions of the *Great Lakes Local Environmental Plan (LEP)* 2014 and is zoned *RU2 Rural Landscape.* The definition for the proposed land use is *extractive industries*, which is permitted with consent within the RU2 zone. Under the Draft Mid Coast LEP, the site retains its RU2 zoning, with the permissibility of extractive industries also consistent with the current permissibility of the land identified under the *Great Lakes LEP 2014*.

Clause 2.3 of the LEP stipulates that the consent authority must have regard to the objectives for a development in a zone when determining a development application in respect of land within the zone.

The proposed development will be located within the RU2 zone where the following objectives apply:

- *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 will provide for the timely provision of Rhyolite resources to meet current and future demands. Environmental management measures are proposed to minimise impacts and reduce the potential for impacts on other natural resources that are not the target of the proposed quarry operations (e.g. soil and water).

The proposed quarry will have minimal impact on other land uses in the vicinity, providing a compatible land use that will supply construction materials to other developments locally and regionally. The proposed quarry has been specifically located and design to maintain the rural landscape character, particularly in relation to utilising the topography of the site in order to conserve the scenic landscape qualities of this rural zone.

Overall, the proposed quarry is considered to achieve the relevant objectives of the sites *RU2 Rural Landscape* zoning.

4.19.2 Clause 4.3 – Height of Buildings

The site is identified as being subject to a maximum building height of 8.5m. All future office buildings associated with the proposed operations of the quarry will be of demountable building form, and will not exceed 8.5m in height.

4.19.3 Clause 4.4 – Floor Space Ratio

The site is identified as being subject to a maximum floor space ratio of 0.4:1. All future office buildings associated with the proposed operations of the quarry will be of demountable building form, and will not exceed the maximum FSR for the site which equates to 160.12ha.

4.19.4 Clause 5.10 – Heritage Conservation

The site is not identified as containing a heritage item or as being located within a heritage conservation.

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared and is provided as **Appendix K.**

As no sites were identified during the survey and the identified highly disturbed landscape due to previous large scale clearing/logging, ploughing, grazing, dam and access road construction as well as significant erosion across the project area, there are no impacts on the archaeological record. The results of the assessment and survey are consistent with the predictive model and there is little to no potential for in situ cultural materials to be present in the crest and slopes within the project area, whereas, there is potential for cultural materials to be present along the 4th order creek (identified PAD).

Two (2) test pits were therefore conducted within PAD1. No archaeological sites were identified. Soil horizon A and top of horizon B contained significant evidence of past land uses with the complete mixing of the A horizon with the clays of the B horizon. Very few rocks were present and there is no evidence of stratigraphy and the evidence indicates the PAD area has been subject to high intensity impacts and as such the PAD is identified as a highly disturbed deposit with little to no likelihood of in situ deposits. Due to the highly disturbed nature of the area, the area subject to test excavation cannot be reassessed or compared to other assessments.

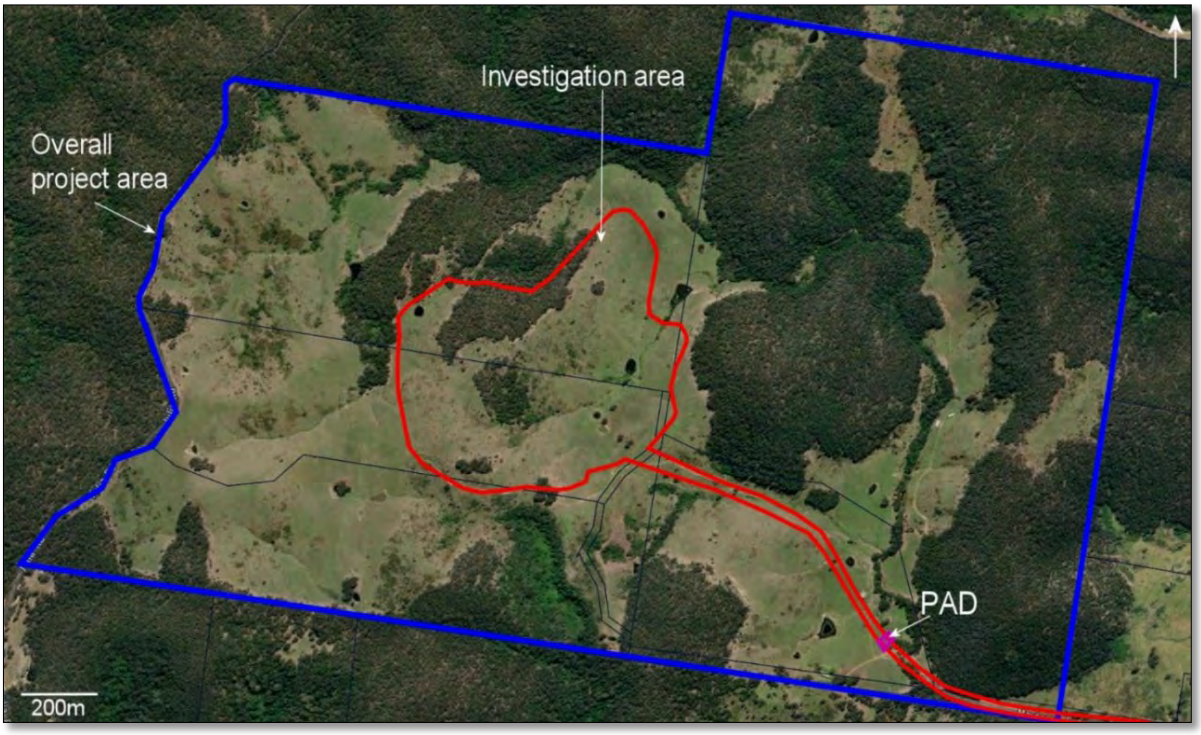

Figure 15: Location of PAD
Source: McCardle Cultural Heritage ACHAR 2024)

Heritage impacts and proposed mitigation measures are discussed further within **Section 6.6**

4.19.5 Clause 5.21 – Flood Planning

The site is identified as containing flood prone land within proximity of Double Creek, which traverses the site (see **Figure 16**).

A Flood Assessment has been prepared as part of the Surface Water Assessment provided at **Appendix J.** The site is unaffected by flood water up to and including the 1% AEP flood. The proposed development does not affect the flood behaviour along Double Creek, and there will be no increase in peak flows, velocities or depths either upstream or downstream of the site. The proposed Maytoms Lane crossing will not increase afflux, overland and in-stream velocities or flood hazard. The proposed changes to the topography of the site will reduce the contributing catchment area and peak discharge downstream of the site will reduce. Additionally, the Maytoms Lane crossing will not impede on flow downstream.

The proposed development has been designed to minimise risk to occupants from flooding events, including the risk of extreme events along Double Creek inundating the access road. The run-on rate from direct rainfall is low. The site would be unaffected by a 1% AEP (I in 100), with the conveyance of Double Creek sufficient to convey the floodwaters downstream with very little surcharge of the overbanks.

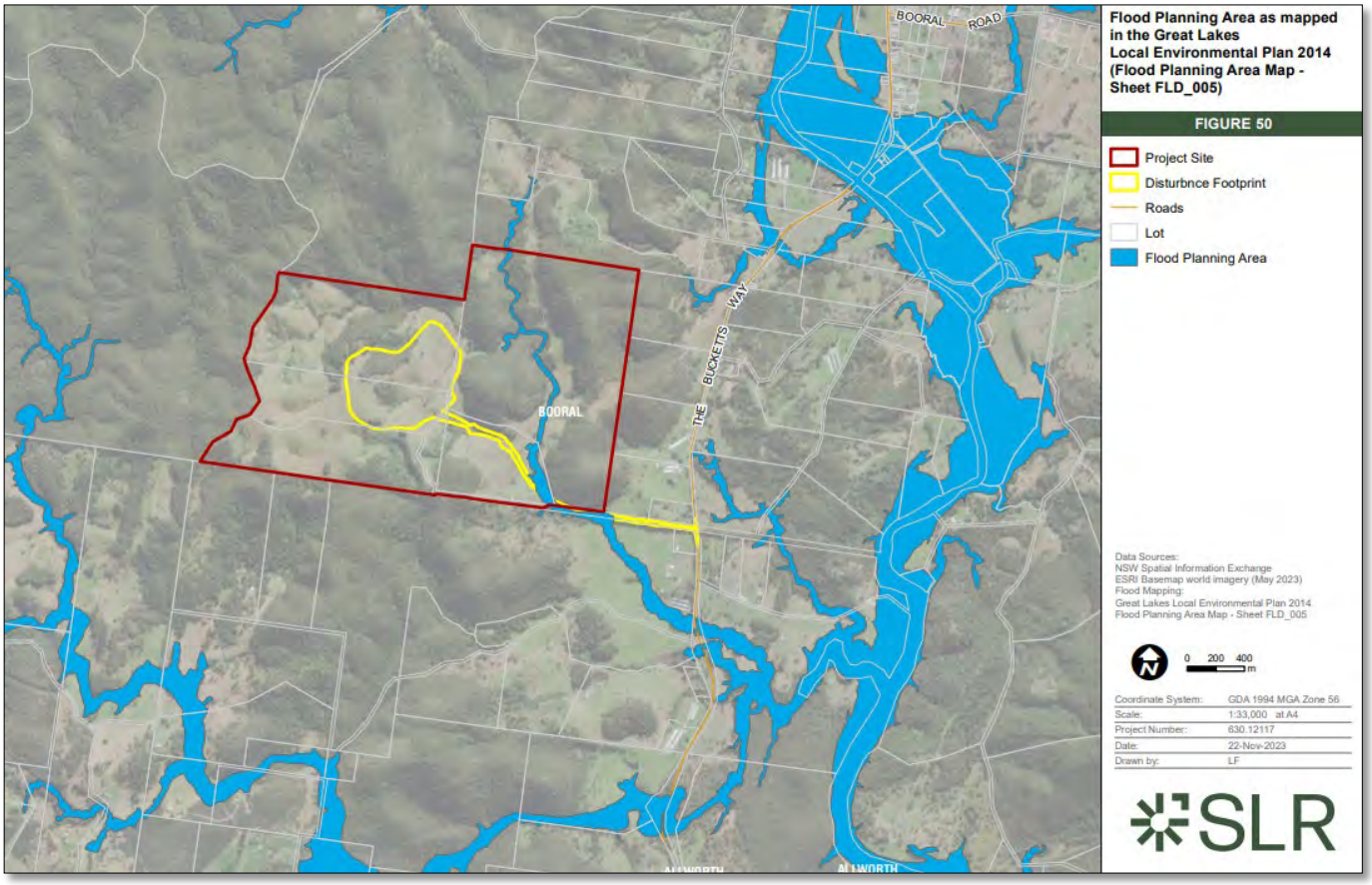

Figure 16: Flood Planning Area Mapping
(Source: SLR Surface Water Assessment 2024)

4.19.6 Clause 7.2 - Earthworks

The proposed quarry involves earthworks from construction through to operation and rehabilitation, including:

- Construction of new intersection at The Bucketts Way and Maytoms Lane, and accessway to the quarry site;
- Earthworks to create a processing pad at RL 95m AHD;
- Installation of site office and associated on-site sewage system and construction of formalised unsealed car parking;
- Construction of haulage road and progressive hard rock extraction from a highest point of RL 205m AHD down to RL 95m AHD, consistent with the processing pad;
- Rehabilitation of the site incorporating appropriate topography to facilitate drainage lines as well as vegetation replanting.

As detailed within this EIS and appended specialist reports; the proposed quarry and associated earthworks will not have a detrimental impact on environmental functions and processes, neighboring uses, and cultural or heritage items. Additionally, appropriate measures are proposed to mitigate the identified impacts of the development, as detailed within **Section 6** and **Appendix E** – including sediment and erosion control measures.

4.19.7 Clause 7.5 – Stormwater Management

As the footprint of the extraction area increases, more rainfall is captured and this additional rainfall needs to be appropriately managed. There is also a complementary increase in water demand for use in dust suppression and for processing of quarry products. The Water Management System (WMS) for the proposed development will include water infrastructure to capture, store, treat and discharge surface water. This will include a number of dams with various functions including: farm dam, infrastructure sup, pit sump, main dam, upper dam, sand dam, haul road table drain, and clean water diversions.

As detailed within this EIS and appended specialist reports; stormwater associated with the proposed quarry will not significantly impact the site or adjoining properties, native bushland, groundwater, wetlands or receiving waters. Appropriate measures are proposed to mitigate the identified impacts of the development, as detailed within **Section 6** and **Appendix E.**

4.19.8 Clause 7.7 – Riparian Lands and Watercourses

Double Creek traverses the site in a south-easterly direction draining in to the Karuah River located on the eastern side of The Bucketts Way approximately 2km from the site. Several other minor/intermittent drainage lines also traverse the site. The only area where the proposed works intersect with Double Creek is where the access road crosses this water course.

Disturbance activities associated with the proposed quarry have the potential to generate sediment that can be transported by wind and rainfall runoff. The level of erosion risk will vary with respect to the stage of the proposed quarry. Construction works will expose site soils and there is potential for erosion to mobilise sediments into receiving watercourses. Without appropriate controls there is potential for an increase in turbidity and nutrient loads in the receiving watercourses which may cause water quality and ecological impacts. With the implementation of standard erosion and sediment control measures in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004), the potential environmental impact is considered very low and manageable.

Surface water quality and associated mitigation measures are detailed within the Surface Waster Assessment at **Appendix J** and Mitigation Measures Tables at **Appendix E.**

4.19.9 Clause 7.21 – Essential Services

All essential services are available or will be made available as part of the proposed development, including:

- The supply of water – via exiting farm dams, bought to site in water tanks and sourced from site water storages as they are development;
- The supply of electricity – via generators;
- The disposal and manage of sewage – via the proposed on-site sewer management system;
- Stormwater drainage or on-site conservation – via existing farm dams and water storages as they are developed;
- Suitable vehicle access – via existing access track upgraded to a formal access road.

4.19.10 Remaining LEP Map Layers

The following is noted with respect to the remaining mapping layers under the LEP:

- The site is subject to a minimum lot size of 40ha;
- The site is not identified as containing acid sulfate soils;
- The site is not identified as a location of significant resources of minerals, petroleum or extractive materials on the mineral resources map.

Taking the above into consideration, the proposed development is consistent with all objectives and controls within the Great Lakes LEP 2014.

4.20 GREAT LAKES DEVELOPMENT CONTROL PLAN 2013

In accordance with Clause 2.10, Part 2.2 of the Planning Systems SEPP, development control plans do not apply to State Significant Development. As such, the Great Lakes DCP does not apply to the SSD.

4.21 DEVELOPER CONTRIBUTIONS

Laden trucks will travel between Maytoms Lane and the intersection of The Bucketts Way and the Pacific Highway at Twelve Mile Creek. Use of this section of The Bucketts Way will result in liability for payment of charges to both Mid-Coast Council and Port Stephens Council (PSC), with this part of the route lying partially within both LGAs, as follows:

- MCC: approximately 14.1km of The Bucketts Way between Maytoms Lane and approximately Captain Hills Creek Road;

- PSC: approximately 5.5km of The Bucketts Way between Captain Hills Creek Road and the intersection with the Pacific Highway at Twelve Mile Creek.

Federal funding has also been provided for the upgrading of The Bucketts Way, to the value of $25 million. The funding will cover upgrades of The Bucketts Way to prioritise sections of the route that have been identified in The Bucketts Way Route Access Strategy Upgrade Program, with upgrades to include reconstruction, widening and resealing.

SECTION 5
ENGAGEMENT

5. Engagement

Stakeholder engagement for the proposed quarry was undertaken with reference to Appendix A – 'Community engagement' of the DPHI Social Impact Assessment guideline, as it applies to the context of the project. Furthermore, the DPHI *Undertaking Engagement Guidelines* (July 2021) have also been used in designing and conducting, initial and subsequent engagement, and in proposing structures for ongoing engagement, should the project receive consent to operate.

The approach taken was to contact local stakeholders in stages. These were principally determined on the likelihood and consequence of impacts for different stakeholder groups. Based on the activities associated with the proposed quarry operation, proximity to the site was the main consideration in determining which stakeholders would be progressively advised in each stage.

Stakeholder engagement is discussed in detail within the Social Impact Assessment provided at **Appendix S**, and is summarised below:

5.1 KEY STAKEHOLDERS

The approach taken was to engage with local stakeholder groups in stages. These were principally determined on the likelihood and consequence of impacts for different stakeholder groups. Based on the activities associated with the proposed quarry operation, proximity to the site was the main consideration in determining which stakeholders would be progressively advised in each stage.

To ensure a conservative assessment of the communities (i.e. a larger area than might be practically affected), the following elements of the local community were notified:

- Properties within a 5km radius of the site;
- All identifiable properties on The Bucketts Way south of Maytoms Lane, extending to the intersection of The Bucketts Way and the Pacific Highway.

5.2 CONSULTATION UNDERTAKEN

5.2.1 Early/Initial Engagement

Adjoining landowners were approached in advance of contact with other stakeholders. A process of identifying the relevant landowners was conducted. This process involved determining ownership and address (where applicable), based initially on the cadastral descriptions of the relevant properties. The landowners were then approached by surface mail to the addresses determined through the process above.

It is noted that consequent to this initial engagement, material provided to these parties was also further distributed to some other residents in the Booral area by some of the initial recipients. This action was not discouraged, as it was considered as further facilitating the extent of engagement and was consistent with the intention that broader notification of the local community was planned for the next stage of the engagement process.

Notification of these stakeholders was undertaken by direct mail (letterbox drop) on 26th April 2023. One of the key aims of the material was to advise recipients of two planned onsite community 'drop-in' sessions in relation to the proposal.

In addition to delivery to private and commercial premises, certain business operators in Booral agreed to assist the notification process by posting the material publicly in their place of business and at the Stroud Post Office. It has also been advised by engaged stakeholders that the material and the notification of community drop-in sessions it included, had also been posted on a social media group for Booral residents.

5.2.2 Direct Stakeholder Engagement

The notification material advised recipients of two 'drop-in' style information sessions, held at the site, as follows:

- Saturday 6th May 2023, 9.00am to 11.00am;
- Thursday 11th May 2023, 4.00pm to 6.00pm.

The aim of these sessions was to allow personal interaction with notified stakeholders to discuss the preliminary project information provided in the notification, and to elicit stakeholders' views on the main issues to be addressed in the EIS and the SIA. During the sessions, attendees were encouraged to provide initial documentary submissions (by email or by completing a form provided at the sessions) on matters of concern to them. Attendees were also advised that, dependent on time constraints on lodgement, additional engagement activities were being considered. In addition to encouraging formal submissions, each of the four project team members attending the sessions prepared notes of their engagements with community members immediately after each session. The proprietor of Coastwide Materials (the proponent) was also in attendance at both sessions and also reported comments received from attendees. This material provided additional evidence in relation to the matters to be addressed in the context of their potential social impacts.

5.2.3 Subsequent Engagement

As a result of the engagement activities identified above, a list of engaged stakeholders who had provided contact information was developed. This allowed project updates to be provided directly to these stakeholders, and enquiries about the Project to be received and addressed. Other stakeholders who provided details subsequently were progressively added to this list. During the course of the engagement process, email contact details were provided by 37 stakeholders, noting that from the early stages of engagement, stakeholders were advised that this was the preferred means of communication. There were also a small number of telephone engagements with some stakeholders from among this group.

Other stakeholders were notified by direct mail (letterbox drop) on 26th March 2024, on the same basis as for the first letterbox drop (26th April 2023). Direct engagement with two stakeholders took place during this process. One further stakeholder contacted Aigis Group by phone on 28th March 2024. Email details were obtained and this stakeholder was added to the engaged stakeholder list. One new stakeholder also established contact via email on 21st April 2024 in response to this notification. A response was provided and the stakeholder was added to the email contact list for subsequent communications.

5.2.4 Engagement with Statutory Agencies

The SEARs include a list of statutory agencies to be notified of the proposed project. Each of the agencies was notified by email on 5th May 2023. Substantive responses that were received from agencies were assessed for their relevance to the SIA and also forwarded to project management for provision to the relevant technical consultants.

5.2.5 Later Stage Engagement

Occasional engagement with individual stakeholders was conducted generally by email correspondence. These contacts were mainly in relation to questions on the progress of the application. Other engagements involved specific requests for information and/or comments on the project.

The second stage of engagement was delayed until the EIS was at a stage of completion that allowed reliable information that was unlikely to materially change, to be provided to stakeholders. This also permitted an opportunity to advise stakeholders of the imminent post lodgement process, and the opportunity to consider and make submissions directly to DPHI on the EIS in its entirety.

It follows that, at the time of completion of the SIA for lodgement with the EIS, this part of the engagement process remained to be delivered. A report on this later stage of engagement will be prepared adjunct to the SIA. This report can be provided to DPHI at its request.

5.3 KEY STAKEHOLDER ISSUES

The key matters raised by the community during engagement included:

- Impacts on The Bucketts Way, including: quarry traffic volumes, existing disrepair of the road and potential further damage, road safety, function of the proposed intersection of Maytoms Land and The Bucketts Way, and effects on the intersection of The Bucketts Way and the Pacific Highway at Twelve Mile Creek;
- Health and amenity impacts of quarry operations, including air quality (e.g. dust, emissions), noise and vibration, blasting impacts and potential effects on water resources;

- Potential cumulative impacts of the proposed quarry in the context of other operating or approved quarries in the surrounding areas;
- Distribution of benefit, with the general view being that the quarry would result in no benefit for the local community;
- Potential effects on specific landholders in near proximity to the site;
- Effects of vegetation clearing for the quarry area and Maytoms Lane, potential loss of trees and effect on native animal habitats;
- Dissatisfaction with the consultation/engagement approach and its extent;
- Opposition to the proposed development on the above bases and on the general presumption that the proposed development is not consistent with immediate land uses in terms of impacts on amenity;
- Recognition that regional development of infrastructure and housing to meet population growth, and upkeep of existing infrastructure, requires access to quarried material;
- The project may create local employment and commercial opportunities (e.g. suppliers and contractors).

A Community Engagement Table is provided at **Appendix D** which identifies where the above key issues have been addressed in the EIS.

SECTION 6
ASSESSMENT OF IMPACTS

6. Assessment of Impacts

6.1 ENVIRONMENTAL RISK ASSESSMENT

This section of the EIS provides an assessment of the potential environmental risks associated with the proposed development and identifies key issues for further assessment. The purpose of the environmental risk assessment is to assign a semi-qualitative environmental risk to each of the identified environmental issues.

As such, this section considers:

- The potential environmental impacts associated with the proposed development, including (where relevant), the environmental performance criteria and development standards; and
- The nature and extent of environmental impacts likely to remain after the implementation of mitigation and control measures.

Table 7 provides the risk categories used to guide the identification and application of an appropriate risk rating. The risk category is determined by both likelihood of an impact occurring and the consequences if it did.

Each environmental issue was initially rated based on potential unmitigated or uncontrolled impacts. A residual risk rating was assigned based on consideration and implementation of proposed mitigation and control measures. A summary of the environmental risk analysis is provided in **Table 8.**

Table 7: Environmental Risk Assessment Categories

								Likelihood				
								Certain	Probable	Possible	Remote	Negative risk or probable positive risk
								Common	Has happened within Boral	Could happen and has happened in non-Boral projects	Not likely	Practically impossible or positively probable
Rating	Consequence - single impact and cumulative							Frequent Incidents	Regular incidents	Infrequent incidents	Unlikely to occur, very few recorded or known incidents	May occur in exceptional circumstances - almost no recorded incidents
	Economic		Social				Environmental	Within 3 months	Within 2 years	Within 5 years	Within 10 years	Negatively improbable or positively probable
	Impact to Annual Business	Business Disruption	Personal Injury	Occupational Health & Safety	Legal	Reputation	Environment	Every project	Every 2nd project	One project in five	One project in ten	Negatively or positively with frequency
1 - Catastrophic	> $5m	> 1 month	Multiple Fatalities	Exposure to a severe, adverse long-term health impact or life-threatening hazard	Litigation, heavy fines, criminal charge	Prolonged international media attention	Long term impairment habitats / ecosystem	1	2	5	7	11
2 - Major	$3m - $5m	1 week to 1 month	Single Fatality	Exposure to a hazard that results in surgery or permanent disablement	Major breach / major litigation	International media attention	Long term effects on ecosystem	3	4	8	12	16
3 - Moderate	$0.5m - $3m	1 day to 1 week	Serious / Disabling Injury	Exposure to a hazard that could cause injuries or health effects requiring treatment by a physician or hospitalisation	Serious breach of regulation - prosecution/ fine	National media attention	Serious medium term environmental effects	6	9	13	17	20
4 - Minor	$100k - $0.5m	12 hrs to 1 day	Lost Time Injury	Exposure to a hazard that could cause injuries or adverse health effects requiring treatment by a qualified person	Non-compliance breaches in regulation	Adverse local public attention	Minor effects to biophysical environment	10	14	18	21	23
5 - Insignificant/ Positive	<$100k or positive	< 12 hours or positive	First Aid	An injury or ailment that does not require medical treatment by a qualified professional.	Low level compliance issues	Minimal opposition or positive influence	Limited or no physical damage	15	19	22	24	25

Table 8: Environmental Risk Assessment

Issue	Potential Impact	Initial Rating	Control Measures	Residual Impacts	Final Risk Rating
Biodiversity	Loss of flora, fauna and overall biodiversity	10	Flora and Fauna Management Plan, Vegetation Management Plan, Rehabilitation Management Plan vegetation clearing protocols, biodiversity credits.	No significant impact to biodiversity. Development avoids areas of high biodiversity value such as larger patches of forest with high vegetation integrity.	24
Noise and Blasting	Exceedance of criteria	13	Restriction of certain activities to day hours only (i.e. prior to 6pm)	No exceedances predicted	21
Air Quality	Exceedance of criteria	13	Equipment sprays, water carts and transfer sprays. Air Quality Management Plan.	No exceedances predicted	21
Water Resources	Water pollution	13	Erosion and sediment control plan measures, permanent sediment basins and dams.	Remote possibility	21
Heritage	Damage to artifacts	12	Site inductions and unexpected finds procedures implemented	Remote possibility	21
Traffic and Transport	Reduced level of service	10	Routine truck scheduling.	Level of service remains acceptable.	14
Land Resources	Offsite pollution and land use conflicts	18	Erosion and Sediment Control Plan, Flora and Fauna Management Plan, Environmental Management Plan.	Remotely possible	24
Waste Management	Excessive generation and inappropriate disposal of waste	24	Waste Management Plan	Unlikely	25
Hazards – Bushfire	Burning stockpiles and mobile plant	21	Emergency Response Plan, no combustible materials accepted, facility close down procedure, water cart, firefighting systems, and fire extinguishers in mobile plant.	Remotely possible	24
Hazards – Hazardous or Offensive	Accidental detonation of explosives and other dangerous chemicals. Exceedance of noise and air quality criteria.	12	Explosives to be transported to site for use (not stored on site), appropriate dangerous goods storage and handling. Air and noise addressed above.		21

Visual	Moderate	24	Shield mobile equipment behind active edge of processing pad (where possible and retain vegetation around disturbance area.	Limited visibility	24

Sections 6.2 to 6.13 below provide an assessment of the key issues associated with the proposed development (as identified above and within the SEARs), addressing the potential impacts, cumulative impacts and mitigation measures for the project.

The potential for cumulative impacts has been assessed by the individual specialist consultants as part of the assessments prepared for this EIS. In this regard, cumulative impacts have been assessed and incorporated into the mitigation measures from the outset with no potential for significant cumulative impact identified.

A Mitigation Measures Table incorporating all mitigation measures for the proposed development is provided as **Appendix E.**

6.2 BIODIVERSITY

A Biodiversity Development Assessment Report has been prepared for the proposed development and is provided as **Appendix F.**

A total of 282 plant species were recorded, comprising 213 native species and 69 exotic species. No threatened plant species listed under the NSW Biodiversity Conservation Act 2016 (BC Act) or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were detected.

The native vegetation mapped across the site has been categorised into four distinct Plant Community Types (PCTs) as follows:

- PCT 3241 Lower North White Mahogany-Spotted Gum Moist Forest;
- PCT 3254 Northern Hinterland Tallowwood-Forest Oak Grassy Forest;
- PCT 3436 Hunter Coast Sandy Creekflat Low Paperbark Scrub;
- PCT 3074 Hunter Coast Lowland Grey Myrtle Wet Forest.

The remainder of the subject land is mapped as exotic grassland and has been used for grazing cattle over several decades. Two Threatened Ecological Communities (TECs) listed under the BC Act have been identified within or adjacent to the subject land as part of the preparation of this BDAR, as follows:

- River Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions ('River-flat Forest EEC'), which is listed under Schedule 2, Part 2 of the BC Act and occurs on the subject land as PCT 3436 and PCT 3074. A total of 1.81 ha of River-flat Forest EEC has been mapped within the subject land and will require removal to allow development of the Proposal;
- Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions ('Lower Hunter Dry Rainforest VEC'), which is listed under Schedule 2, Part 3 of the BC Act and occurs on the subject land as PCT 3436.

The patch of PCT 3436 is located north of the proposed pit expansion and therefore lies outside of the development footprint; consequently, the Proposal will not have any direct impacts on Lower Hunter Dry Rainforest VEC.

A total of 99 fauna species were detected within the subject land. These comprise one fish, nine amphibians, birds, one crustacean, 10 mammals and seven reptiles. Five threatened fauna species were detected, as follows:

- Little Lorikeet (Glossopsitta pusilla) - observed flying over the subject land (ecosystem credit species; Vulnerable BC Act);
- Varied Sittella (Daphoenositta chrysoptera) - observed foraging within the subject land (ecosystem credit species; Vulnerable BC Act);
- Eastern False Pipistrelle (Falsistrellus tasmaniensis) - detected via Anabat (ecosystem credit species; Vulnerable BC Act);

- Squirrel Glider (Petaurus norfolcensis) - detected during spotlighting surveys (species credit species; Vulnerable BC Act);
- Koala (Phascolarctos cinereus) - detected during spotlighting surveys (species credit species; Endangered BC Act and EPBC Act).

Important habitat features for fauna species within the subject land include forest vegetation, aquatic habitat and habitat trees containing hollows.

One Matter of National Environmental Significance (MNES), the Koala, listed as 'Endangered' under the EPBC Act, was recorded on site. No other listed threatened species were recorded. A migratory species, Latham's Snipe (*Gallinago hardwickii*), listed under the EPBC Act was detected during the assessment. Additionally, the Black-faced Monarch (*Monarcha melanopsis*) has previously been recorded within the subject land. These species are likely to utilise the habitat within the subject land as part of a larger network of habitats within the region. No important wetlands or other such breeding habitat was identified. The subject land does, however, contain forest habitats that could be utilised periodically by a selection of mobile threatened birds and bats.

The habitats to be removed for the Koala and other listed threatened species that could potentially occur are not considered to be important to the long-term survival of these species, given the lack of evidence for these species and the retention of similar habitat across the periphery of the site. The Project is therefore not considered likely to have a significant impact on EPBC Act listed threatened or migratory species. One TEC, Subtropical coastal floodplain forest, listed under the EPBC Act, was recorded in a narrow belt along Maytoms Lane. No other EPBC Act matters are considered relevant to this assessment. Overall, the Project is not likely to have a significant impact on any MNES listed under the EPBC Act. However, given the presence of the Koala and likely presence of the Grey-headed Flying Fox (*Pteropus poliocephalus*), listed as 'Vulnerable' under the EPBC Act, a Referral is currently in preparation and will be submitted to the Department of Climate Change, Energy, the Environment and Water.

Avoidance measures have been incorporated into the design and layout of the proposed quarry. The pit shell has been specifically designed to avoid areas of high biodiversity value such as larger patches of forest with high vegetation integrity. In particular, a small gully containing rainforest vegetation (PCT 3436) has been avoided and will be retained on-site. The residual impacts of the Project (after application of impact avoidance and mitigation measures) consist of the permanent removal of 10.59 hectares (ha) of native vegetation, comprising:

- Lower North White Mahogany-Spotted Gum Moist Forest (8.1ha);
- Northern Hinterland Tallowwood-Forest Oak Grassy Forest (0.7ha);
- Hunter Coast Sandy Creekflat Low Paperbark Scrub (1.3ha);
- Hunter Coast Lowland Grey Myrtle Wet Forest (0.49ha).

The removal of native vegetation will also remove habitat for several threatened species which are species credit species that have either been recorded on site or assumed present:

- South-eastern Glossy Black-Cockatoo (Fauna);
- Red Helmet Orchid (Flora);
- Barking Owl (Fauna);
- Powerful Owl (Fauna);
- Squirrel Glider (Fauna);
- Brush-tailed Phascogale (Fauna);
- Koala (Fauna);
- Common Planigale (Fauna);
- Long-nosed Potoroo (Fauna);
- Masked Owl (Fauna);
- Sooty Owl (Fauna).

6.3 NOISE AND BLASTING

6.3.1 Construction Noise

Construction noise management level noise goals have the potential to be intermittently exceeded throughout development of the site at some residential receivers, as follows:

- Stage 1a – Access track formation: Predicted noise levels during initial access track formation works will achieve the ICNG criteria;
- Stage 1b – Construct initial processing area: Predicted noise levels during initial processing pad information works and commencement of blast drilling for the site access road slot will achieve the ICNG criteria;
- Stage 2a – Maytoms Land Road upgrade: Noise associated with upgrades to Maytoms Lane may exceed the 45dBA ICNG assessment criteria at approximately 10 receivers, R8-R14 and R21-R22;
- Stage 2b – Progressive excavation of access road slot: Predicted noise levels during progressive excavation of the site access road slot will achieve the ICNG criteria;
- Stage 3a – Formation of access and intersection upgrades: Predicted noise levels associated with intersection upgrade works will exceed the ICNG criteria at nine receiver locations, R7 to R13 and R21-R22.
- Stage 3b – Expansion of processing pad: Predicted noise levels are expected to achieve the ICNG criteria;
- Stage 3c – Development of the northern haul road: Predicted noise levels are expected to achieve the ICNG criteria.

Given the above, the proposed construction works shall require noise management by investigation and application of all feasible and reasonable noise mitigation work practices, to minimise impacts on surrounding receivers.

6.3.2 Operational Noise

A review of operational noise modelling under enhanced meteorological conditions indicates that the proposed operations will generate offsite noise levels below the project trigger noise level (PTNL) at all receivers, during the day period, however; exceedances were identified for evening and night periods as follows:

- Stage 4a – Northern haul road and RL105m RoM Pad development: Predicted noise levels are expected to achieve the day period PNTL, but development works associated with the RL105m RoM pad may result in exceedances of the evening and nigh period PNTL at receivers to the north of the site, R18 and R19. Further assessment indicates that exceedance of the evening and night period PNTL may be attributed to development activities at the RL105m RoM pad (specifically dozer operations). It is recommended that development activities at the RL 105m RoM pad be restricted to the day period only (7am to 6pm), with this control assessed to achieve evening and night period PNTL.
- Stage 4b – Northern haul road development and processing via RL105m RoM pad: Predicted noise levels are expected to achieve the day, evening and night PNTL at all receivers.
- Stage 5a – Development of Box Cut and Extraction at RL 206m: Predicted noise levels are expected to achieve the day period PNTL of 40 dBA at all adjacent sensitive receivers. Operations during this stage may exceed the evening and night period PNTL by up to 4 dBA at seven receivers adjacent to the site, R3, R6-R9 and R18-R19. Detailed assessment indicates that the exceedance of evening and night period PNTL is attributable to emissions from blast preparation (drilling and dozer) at exposed locations. Re-calculation indicates that the evening and night period PNTL can be achieved if blast preparation is restricted to the day period. That is, only extraction of blasted material, haulage to the RoM pad and processing occurring after 6pm.
- Stage 5b – Extraction at RL195m following initial quarry development: Predicted noise levels are expected to achieve the day period PNTL of 40 dBA at all adjacent sensitive receivers. Operations during this stage may exceed the evening and night period PNTL by up to 2 dBA at two receivers adjacent to the site, R18 and R19. Exceedances of the evening and night period PNTL is attributed to emissions from blast preparation (drilling and dozer) at exposed locations. The evening and night period PNTL can be achieved if blast preparation is restricted to the day period. That is, only extraction of blasted material, haulage to the RoM and processing occurring after 6pm.
- Stage 6 – Extraction from RL 158m to 126m and Progressive Final Landform works: Predicted noise levels are expected to achieve the day period PNTL of 40 dBA at all adjacent sensitive receivers. Operations during this stage may exceed the evening and night period PNTL by up to 3 dBA at two receivers adjacent to the site, namely R18 and R19. Detailed review indicates that exceedance of the evening and night period PNTL is attributable to emissions from blast preparation (drilling) and progressive final landforms works (dozer operations) at exposed locations. The evening and night period PNTL can be achieved if these activities are restricted to the day period. That is, only extraction of blasted material, haulage to the RoM and processing occurring after 6pm.
- Stage 7 – Extraction down to RL 95m and final landform: Predicted noise levels are expected to achieve the day period PNTL of 40 dBA at all adjacent sensitive receivers. Operations during this stage may exceed the evening and night period PNTL by up to 5 dBA at two receivers adjacent to the site, R18 and R19.

Detailed review indicates that the exceedance of the evening and night period PNTL is attributed to a combination of: emissions from blast preparation (drilling) and dozer activities associated with final landforms works at exposed locations; and operation of the processing plant once the RL 105m RoM pad has been mined through, and topographical protection previously provided by that terrain feature are no longer available. Review indicates that, even where drilling and dozer activities (final land management) at exposed locations are restricted to the day period, residual exceedances of the evening and night PNTL of up to 3 dBA associated with operation of the processing plant may be expected.

Given uncertainty relating to the design of the mine plan and details relating to the operation of processing plant and RoM area once mining of the RL 105m pad commences, it is recommended that specific amendments to the Noise Management Plan for the site be developed and implemented following commencement of Stage 7, but prior to mining through of the RL 105m RoM pad.

Given the above; control measures and operational restrictions on mechanical plant items have been provided to result in operational compliance for both evening and night periods. Specific mitigation and management measures have also been incorporated to addressed the exceedances specific to Stage 7.

6.3.3 Road Noise

Modelling indicates that existing year 2023 road traffic noise levels already exceed the RNP criteria at approximately 27% of assessed receivers identified along Bucketts Way between Maytoms Lane and the Pacific Motorway during the day period and 10% during the night period. The cumulative addition of forecast quarry traffic is expected to increase day period noise levels at these receivers by only up to 2 dBA, far below the relative increase criteria. The increase will result in some receivers which are currently experiencing levels below the RNP criteria to increase to a level above the RPN criteria. Under the 'with quarry traffic' scenario for year 2023, the number of receivers experiencing road noise above the RNP day period criteria is expected to increase to approximately 38% of the assessed receivers identified along Bucketts Way between Maytoms Lane and the Pacific Motorway during the day period and 17% during the night period.

Modelling indicates that year 2033, at the end of the 10-year planning horizon, road traffic noise levels are predicted to exceed the RNP criteria by approximately 33% of the assessed receivers identified along Bucketts Way between Maytoms Lane and the Pacific Motorway during the day period and 14% during the night period. The cumulative addition of forecast quarry traffic is expected to increase day period noise levels at these receivers by only up to 2dBA, far below the relative increase criteria. The increase will result in some receivers which are currently experiencing levels below the RNP criteria to increase to a level above the RPN criteria. Under the 'with quarry traffic' scenario for year 2033, the number of receivers experiencing road noise above the RNP day period criteria is expected to increase to approximately 44% of the assessed receivers identified along Bucketts Way between Maytoms Land and the Pacific Motorway during the day period and 19% during the night period.

6.3.4 Blasting

Based on the observed separation distances, air blast overpressure levels have potential to exceed the human annoyance criteria presented in the ANZEC guideline at the nearest sensitive receiver to the south (R3) where the largest anticipated MIC is used during development Stage 5 (blasting at the highest point in the project area).
Further analysis of average blast design indicates that reducing the MIC would allow airblast overpressure to remain below the 115dB annoyance threshold at this receiver. Airblast overpressure levels are expected to be below the ANZECC guidance values at all other near receivers.

Based on the observed separation distances, ground vibration levels are unlikely to exceed the criteria for human annoyance at sensitive receivers adjacent to the blast site.

6.4 AIR QUALITY

6.4.1 Particulate Matter

Worst case scenario modelling for the proposed development indicated that the construction and operation of the proposed quarry will result in incremental increases in particulate matter and dust deposition at surrounding sensitive receivers.

These increases were predicted to result in exceedances of the NSW EPA assessment criteria for the PM10 dust component, 24 hour averaging period and for both the construction and operation scenarios, and whilst conducting a 'cumulative assessment'.

Following a 'Level 2' Analysis:

- Two exceedances were identified for the construction component of the proposed development:
  - A concentration of 50.0 ug/m^3 at receptor R20, located approximately 2.3km to the north-northwest of the proposed quarry. This result is considered to be a marginal exceedance;
  - A concentration of 51.8 ug/m^3 at receptor R19 located approximately 1.0km to the northeast of the proposed quarry. This result is considered to be a slight exceedance;
- One was identified for the operational component of the proposed development: a concentration of 50.3 ug/m^3 at receptor R12 located approximately 1.4km to the southeast of the proposed quarry. This result is considered to be a marginal exceedance and due to the high background concentration (41.9 ug/m^3 which represents 84% of the criteria).

In summary, the 'Level 2' analysis including the assessment of cumulative air quality impacts for PM10 (24 hour averaging period) indicates that quarry operations will be primarily below NSW EPA guidelines. Any exceedances that may occur will be: either at or slightly exceeding the guideline for PM10 24 hour averaging period; at a limited number of receivers in the vicinity of the quarry; and likely attributed to elevated background concentrations rather than significant incremental contribution from the proposed quarry development.

It should also be noted that the exceedances were obtained whilst incorporating many conservation assumptions into the modelling including machinery operating for 100% of the time, which is unlikely to happen in practice. Based on this assumption and other considerations incorporated into the conservative modelling approach adopted, the exceedances are unlikely to occur on a regular basis. Additional dust mitigation measures at the quarry operations, if implemented by the site owner, should further reduce the likelihood of dust exceedances at sensitive receivers in the vicinity.

All other NSW EPA criteria for dust components were satisfied, for both the construction and operations components of the proposed development, and using conservative assumptions:

- $PM_{2.5}$ 24 hour averaging period;
- $PM_{2.5}$ annual hour averaging period;
- PM_{10} annual averaging period;
- TSP annual averaging period;
- Deposited dust annual averaging period.

6.4.2 Odour and Nitrogen Dioxide

Air emissions from blasting can contain nitrogen dioxide (NO_2) which has a pungent odour character. Odours generated from blasting operations (both during construction and operations) are unlikely to be at adverse level impacts at the nearest sensitive receptors, and are also unlikely to cause a complaint for the following reasons:

- The frequency of blasts (two per month);
- The duration of the blasts;
- The lateral distance between a blast and the nearest residences. The minimum distance between the blast and residences is 1km, which is considered by Advitech to be satisfactory for the reduction of odour emissions to acceptance level at the residences.

6.4.3 Other Air Emissions

Other air emissions that could be potentially generated from quarry operations are:

- Products of fuel combustion and emitted to air via machinery exhausts – volatile organic compounds, oxides of nitrogen, carbon monoxide, and sulfur dioxide;
- Leakages from equipment.

None of these emissions are likely to exceed the relevant NSW EPA assessment criteria at the nearest residences, due to the low air emission rates for those exhausts and the lateral distances between the exhausts and the nearest residences.

6.4.4 Greenhouse Gas

Total GHG emissions from construction for the project have been estimated to be 5745.0 CO^2e, with approximately 80% of total emissions being attributed to the haulage vehicles and machinery used on site (Scope 1). The Scope 1 GHG emissions also equate to approximately 2873t CO^2e per year, during the construction component. The propose development will not trigger compulsory reporting under the National Greenhouse and Energy Reporting (NGER) scheme 25 kilo tonnes of CO^2e per year or production or consumption of 100 terajoules of energy; for the construction component.

Total GHG emissions from operation of the proposed quarry have been estimated to be 293,390.3t CO^2e, with approximately 65% of total emissions being attributed to the haulage vehicles and machinery used on site (Scope 1). The Scope 1 GHG emissions also equate to approximately 9,780t CO^2e per year, for the operations component. The proposed development will not trigger the compulsory reporting under the NGER scheme 8.25 kilo tonnes of CO^2e per year or production or consumption of 100 terajoules of energy; for the operations component.

Hillview Quarry is expected to generate approximately 299,123t of CO^2e GHG emissions over the life of the development. Operating onsite equipment is the primary source of GHG emissions, and from Scope 1, 'direct' emissions (and primarily from the operational period of the quarry). This total GHG amount is also based on conservative assumptions, and maximum operating conditions over the expected life of the quarry.

Reduction of emissions from machinery and transportation will result in a net reduction of GHG emissions and economic savings due to reduced fuel use. Over 90% of GHG emissions associated with the development are generated from equipment on site. Thus, reductions in emissions and costs may be made by ensuring that the equipment is utilised at maximum efficiency (e.g. equipment and machinery should be serviced regularly) and that haulage vehicles are utilised to maximum efficiency (e.g. efficient haulage practices). Route planning is a low budget means of achieving immediate reductions in fuel consumption and thus GHG emissions. Longer term high-cost outlay measures include the consideration of alternative fuels for haulage vehicles.

6.5 WATER

A Groundwater Assessment, Surface Water Assessment, and an Onsite Wastewater Management Report have been prepared for the proposed development and are provided as **Appendices I, J and O.**

6.5.1 Site Water Balance

The on-site Water Management System (WMS) is predicted to interact with groundwater inflows. Groundwater inflows are defined as waters reporting to the WMS from aquifers internal to the quarry and external to the disturbance extent as induced by quarry operations. As the quarry extraction progresses, groundwater inflows are expected to gradually increase; likely peaking when the final landform is established.

The quarried product will require a constant water source for processing. Water used to meet processing needs would be recycled on-site to minimise demand for water inputs. Spraying of water by tanker or other means is a major water demand at quarries and is necessary to reduce the generation of dust. The rate of water application for dust suppression is dependent on the prevailing climatic conditions and rainfall.

A Licenced Discharge Point (LDP) will be established at the Farm Dam when an EPL is issued for the proposed development. The LDP has been included in the Water Balance Model (WBM) and is modelled as following a controlled release scheme of 8ML (the estimated existing Farm Dam capacity) every three days allowing for flocculation in the dam to occur to completion. This is modelled to occur when the Farm Dam reaches 80% capacity. The capacity of the Farm Dam is sufficient to meet the design criteria and therefore uncontrolled discharges are only expected during extreme storm events. If uncontrolled overflow occurs at any other water storage within the WMS, the overflow is to remain on site.

On-site water storages will require ongoing management to ensure ample capacity is available to capture rainfall runoff for which they were designed. This will be achieved by following a set of Dam Operating Rules.

Management will be centred around pumped transfers between water storages when particular storage levels are reached with the goal of conforming to the defined operating volumes for each water storage.

Site water balance for the proposed development was assessed for all climate conditions, which determined the following:

- Water Balance – Average Climate Conditions: indicates that in an average year, 12.6ML of treated water would be released off-site. The GoldSim analysis also indicates that in an average year 100L of water would need to be imported from groundwater bores to site in order to cover the dust suppression and processing demands when there is insufficient water available in site dams from rainfall runoff. Over a 123-year period, the site has an average overflow frequency of 0.12 occurrences per year (1 in 8.3 years), discharging an average of 0.03ML/Year.
- Water Balance – Extreme Dry Conditions: indicates that 0ML of treated water would be released off-site in the extreme dry year. The GoldSim analysis also indicates that 100L of water would need to be imported from groundwater bores to site in order to cover the dust suppression and processing demands when there is insufficient water available in site dams from rainfall runoff. Over this year, the site does not overflow within any of the five stages.
- Water Balance – Extreme Wet Conditions: indicates that in the extreme dry year, 12.6ML of treated water would be released off-site. The GoldSim analysis also indicates that in an average year 0L of water would need to be imported from groundwater bores to site in order to cover the dust suppression and processing demands when there is insufficient water available in site dams from rainfall runoff. Over this year, the site has an average overflow frequency of 2.32 occurrences per year (1 in 5.2 Months), discharging a maximum of 1.52 ML in any of the five stages.

6.5.2 Water Licensing and Water Sharing Plan

The development site is within the catchment for the Water Sharing Plan (WSP) for the Karuah River Water Source 2003. This WSP applies to the Karuah River and all its tributaries that enter the Karuah River downstream of the WaterNSW streamflow gauge at Booral (Station ID: 209003).

The proposed development can capture up to 44.03ML of water under harvestable rights to be used for any purpose. All sediment dams established at the site would serve as pollution control, and as such any water captured in these dams would not contribute towards the allowable 44.03ML. Clause 31.1 of the WSP for the Karuah River Water Source 2003 specifies that a total of 3,360ML/yr is estimated to be required for water extraction under the WSP, indicating there may be capacity for water allocation to supplement the proposed development.

The proponent holds a WAL for groundwater access. WAL 44439 permits up to 100 ML/yr of groundwater extraction from the New England Fold Best Coast Groundwater Source, a hard rock groundwater source defined under the WSP for the North Coast Fractured and Porous Rock Groundwater Sources 2016 – with approximately 40,000ML/a unassigned. It is understood that the WAL is not currently associated with any bores, however the proponent may install water supply bore(s) in future to meet water demands for the proposed development. Any flows out of dams used for operational purposes should be recorded, and an allocation purchased for flows exceeding the harvestable right total (44.03ML).

The proponents WAL (number 44439) is for 100 units from the New England Fold Belt Coast Groundwater Source. Based on calibrated inflow predictions, the WAL will be adequate until Stage 6 of the proposed development, to cover groundwater inflows to the quarry pit. A further water allocation is likely to be required at this stage, and as such, the proponent would be required to obtain an additional Water Access Licence for up to approximately 260 ML/a to cover transient inflows at the start of both Stages 6 and 7.

6.5.3 Water Supply

Water will be used during the construction phase earthworks for dust suppression. This water will be accessed from existing farm dams within the site as permitted under harvestable rights, brought to site in water tankers and sourced from site water storages as they are developed. Construction water requirements for the proposed development are estimated between 0.4ML/day to 1ML/day.

During operation of the quarry, water will be utilised for the following purposes:

- Potable water for site offices;
- Maintenance and cleaning of site plant and infrastructure;
- Dust suppression on site access roads.

Demands for non-potable water supply will be met by drawing water from the various on-site water storages. The demands may be augmented by methods including:

- Water tanks collecting roof water at site facilities;
- Supplementary water as required via water trucked to site and stored in a water tank.

Operational water requirements for the proposed development have been estimated at 1 to 1.5ML/day. The details for provision of potable water, grey water and wastewater infrastructure would be confirmed during the detailed design phase. Water use approval is not required for State Significant Developments under Section 4.41 (1)(g) of the EP&A Act.

Potable water demands will be very low, with water use limited to water used in the site office and workshop for drinking, washing, and showering. Water used for drinking will be imported to site in bottles or by tanker, and if trucked to site, stored in a water tank identified as solely for potable water supply. Supply needs for other staff amenities will be met via rainwater collection from the rooves of the site office and workshop. Water will be treated using a proprietary water treatment system prior to use.

The quarry will implement static water tanks for firefighting purposes. Water for firefighting will be stored in an elevated tank situated near the site workshop and office. This water will only be used for firefighting and not for potable water supply nor for general non-potable site water use.

The firefighting water tank will be sized to comply with firefighting requirements. The tank levels would be topped up as required from non-potable water supply sources. Fire water runoff from firefighting activities within the site processing area would report to and be contained in the Infrastructure Sump.

The volumes of sewage generated on site will be limited. A proprietary aerated wastewater treatment system will be installed and operated on site to treat and dispose of sewage generated by staff amenities. A septic tank that will direct effluent to a transpiration bed is being considered within the processing area extent. As the system will be within the processing area, any overflow from the system during heavy rainfall will be directed to the Infrastructure Sump which is intended to serve as a dirty water dam. Facilities will be established in accordance with the requirements of the MidCoast Council.

6.5.4 Flooding

The site is unaffected by flood water up to and including the 1% AEP flood. The proposed development does not affect the flood behaviour along Double Creek, and there will be no increase in peak flows, velocities or depths either upstream or downstream of the project site. The proposed Maytoms Lane crossing will not increase afflux, overland and in-stream velocities or flood hazard. The proposed changes to the topography of the site will reduce the contributing catchment area and peak discharge downstream of the site will reduce. Additionally, the Maytoms Lane crossing will not impede on flow downstream.

The proposed development has been designed to minimize risk to occupants from flooding events, including the risk of extreme events along Double Creek inundating the access road. The run-on rate from direct rainfall is low. The site would be unaffected by a 1% AEP (I in 100), with the conveyance of Double Creek sufficient to convey the floodwaters downstream with very little surcharge of the overbanks.

6.5.5 Quality and Quantity of Surface and Ground Water

Surface Water

Disturbance activities associated with the proposed development will present the potential to generate sediment that can be transported by wind and rainfall runoff which may pose a risk to surface water quality. The level of erosion risk will vary with respect to the stage of the proposed quarry.

The primary risk to surface water quality during construction is ground disturbance associated with site earthworks. Construction works will expose site soils and there is potential for erosion to mobilise sediments into receiving watercourses. Without appropriate controls there is potential for an increase in turbidity and nutrient loads in the receiving watercourses which may cause water quality and ecological impacts. With the implementation of standard erosion and sediment control measures in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) the potential environmental impact is considered very low and manageable.

During the quarrying of rock from the extraction area, there is a high potential for sediment laden water to be generated from access tracks, batters and stockpiles. This water will report to the base of the quarry extraction area where it can be stored. Although there is often very high capacity to store large volumes of water within the pit, it is often undesirable to store water for long periods of time since this can interfere with operations. Pit water is therefore pumped out to other site dams where it can be stored for on-site re-use, or during extended wet weather treated for planned discharge off-site. The proposed management strategy for the proposed development is for pit water to be collected in a small sump at the extraction area and pumped into the Main Dam. Storage in the Main Dam will be either:

- Beneficially re-used within site for dust suppression, and product processing; or
- Pumped in batches of 8ML to the Farm Dam, where it will be flocculated to improve water quality. When water quality complies with the site water quality requirements, the water will be released to the environment as a controlled release.

Environmental management of the site WMS will be in accordance with a Water Management Plan.

At the closure phase, surface infrastructure will be removed, and the site regraded to grades compatible with the target closure land-use. Topsoil will be replaced and the surface revegetated. Dams will remain for some time as revegetation progresses, then eventually will either be filled with locally sourced material or repurposed for alternative means. During this phase it is likely that there will be broadscale disturbance of site soils, and there is a risk of soil erosion until an effective vegetative cover is established to stabilise the surface. Potential impacts of erosion include reduced water quality in receiving watercourses, ecological impacts associated with increased sediment load, and a potential loss of future land productivity if topsoil is eroded.

Groundwater

The proposed quarry pit will intersect the groundwater table. Any excavation below the water table has the potential to influence the groundwater regime. Therefore, potential changes to groundwater levels, flow, and surface water-groundwater interactions are likely to occur during operation of the proposed development.

Within the vicinity of the proposed development, several ecosystems rely on the alluvial groundwater deposits to maintain their structure and function. No high priority Groundwater Dependent Ecosystems are mapped within the vicinity of the proposed development, though a number of potential GDEs are present. The current extent of groundwater dependency of these ecosystems is unknown but have been assessed as being reliant, at least partially, on groundwater flow for a conservative assessment unless there is strong evidence otherwise. The ecological significance to this habitat because of this groundwater baseflow impact is assessed in BDAR (provided as **Appendix F**) and could lead to a minor baseflow effect, which is not considered significant.

There is potential for infiltration and contamination of groundwater as a result of accidental spills (e.g., chemical and/ or fuel), disturbance of sediment, and/ or stormwater mismanagement during the operational phase of the proposed development. Any accidental spill that interacts with the neighbouring groundwater environment could result in a degradation of groundwater quality. The quarry is predicted to act as a regional sink in the water table, and therefore offsite migration of concentrations within the quarry footprint is generally considered low risk to groundwater. However, any contamination of groundwater outside of the groundwater drawdown radius (i.e., in vicinity of haul road) could migrate through the subsurface to downgradient water receptors. Where quality impacts exist, they are anticipated to be minor due to the short-term (temporary) nature of quality impacts in the water environment where attenuation is anticipated.

At the end of operation, the groundwater table will remain depressed and not be allowed to recover, remaining self-draining. Numerical modelling has shown that the long-term drawdown and inflow during the rehabilitation stage is the same as that at the end of quarrying (after 30 years) and therefore the pre-mitigation impacts of the rehabilitation phase will be the same as the worst case of the operation phase, albeit longer-term (permanent).

Post-closure, quality impacts are expected to be less than that during operation as all the activities and materials that pose a water quality risk will be removed from the site. Any groundwater inflow to the pit will be engineered to be self-draining and will not accumulate in quarry shell, which prevents the formation of a pit lake and evapoconcentration of salts within the pit lake and potential salinity increases and acid mine drainage issues.

6.5.6 Aquifers

The Myall Block Volcanic deposits is the predominant unit found across the site and during operation this formation will be the target material during quarrying. Excavation and direct dewatering of this deposit will occur causing a lowering of groundwater levels during operation of the quarry to maintain safe working conditions. Under the calibrated scenario, a maximum drawdown of up to 68m is predicted at the quarry face during Stage 7.

Dewatering in the upgradient catchment may result in a change to the groundwater flow paths discharging from the Myall Block Volcanics to these aquifers and reduce flow to the alluvial aquifer systems. However, the potential flow impact is anticipated to be exclusive to the local alluvial valley and alluvial high stand facies deposits which are situated close to the proposed development, with no long-term impact to regional alluvial aquifer flows and integrity expected.

The proposed development is not likely to have a significant impact on groundwater levels or flow in the alluvial floodplain deposits aquifer associated with the Karuah River. This is supported conceptually, since the dewatered area is predicted to contribute a relatively limited volume of groundwater throughflow to the alluvial floodplain deposits, in comparison to the contribution of other groundwater recharge process across the catchment.

6.5.7 Water Management

Water Management System

Without incorporation of suitable mitigation measures into the proposed project, the construction and operation of the proposed quarry including road access, have potential to impact on downstream watercourses and waterbodies. As the footprint of the extraction area increases more rainfall is captured and this additional rainfall needs to be appropriately managed. There is also a complementary increase in water demand for use in dust suppression and for processing of quarry products.

The Water Management System (WMS) for the proposed development will include water infrastructure to capture, store, treat and discharge surface water. This will include a number of dams with various functions including: farm dam, infrastructure sup, pit sump, main dam, upper dam, sand dam, haul road table drain, and clean water diversions.

The following stages have been examined for the WBM and requirements for site sediment control:

- Stage 1 – Commencement of haul road construction from Maytoms Lane to the processing pad. No on-site water storages active;
- Stage 2 – Initial development of the processing pad, continued development of the slot cut and commencement of the intersection and Maytoms Lane upgrade. The Infrastructure Sump, Sand Dam, and Main Dam are established;
- Stage 3 – Finalisation of the processing pad and the haul road to Maytoms Lane, and commencement of the internal haul road;
- Stage 4 – Continued internal haul road construction works and excavating the Run of Mine (ROM) pad to 105 mAHD;
- Stage 5 – Extraction commences at the top of the hill. The Upper Dam and Pit Sump storages are established. The Main Dam increases to maximum capacity of 20ML;
- Stage 6 – Extraction continues down the eastern face to 128 mAHD. The Upper Dam increases to maximum capacity of 8ML;
- Stage 7 – Extraction down to final landform elevation of 95 mAHD; self-draining void established at 100H:1V gradient towards the Main Dam. Main Dam and Infrastructure Sumps remain in place, with capacities increased to satisfy sediment deposition volumes according to the ‘Blue Book’. These water storages are expected to ‘silt up’ over the period of rehabilitation for the final landform.

Further detail on the proposed WMS is provided within Section 6 of the Surface Water Assessment provided at **Appendix J.**

Wastewater Management System

The site is generally suitable for a wide range of on-site wastewater management options. A daily water usage of 36L/EP/Day has been adopted based on information for factories and offices from the NSW Health guideline (2001).

The Land Application Area (LAA), which will be located on the north side of the office building, will have a footprint of 400m^2 with dimensions 25m(L) x 16m (W). The final depth of the area will be a minimum of 700mm which will be achieved through re-use of the in-situ category 3 soils. Access to the LAA will be suitably restricted from persons and vehicles and to prevent damage.

The treatment system is to have a minimum treatment capacity of 1,200L/Day. Further detail on the proposed Wastewater Management System (WWMS) is provided within the Wastewater Management Report at **Appendix O.**

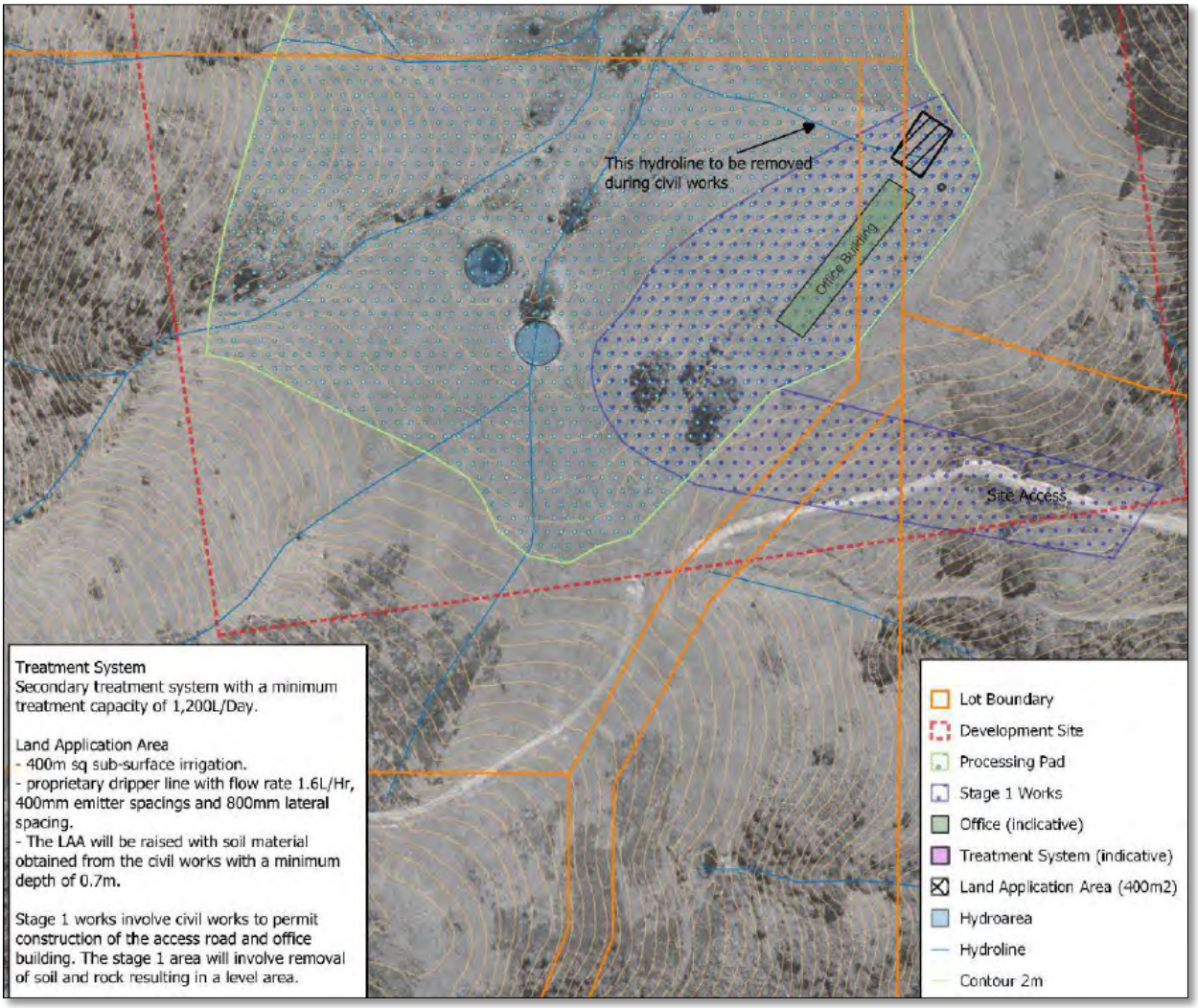

Figure 17: Proposed Land Application Area
(Source: Decentralised Water Wastewater Management Report 2024)

6.6 HERITAGE

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared for the proposed development and is provided as **Appendix K.**

As no sites were identified during the survey and the identified highly disturbed landscape due to previous large scale clearing/logging, ploughing, grazing, dam and access road construction as well as significant erosion across the project area, there are no impacts on the archaeological record. The exception to this is the identified PAD located along the eastern side of the 4th order creek. This is the location of the proposed access road.

The 4th order creek located in the south eastern part of the project area indicates that the south eastern portion of the project area may be considered reasonably resourced in terms of water availability during wet seasons or after continuous heavy rain when water was available and associated subsistence and medicinal resources. However, the southern side of the creek where the access road will cross is highly disturbed through the construction of the logging road. The northern side of the creek appears to remain relatively undisturbed and as such has been identified as a PAD.

The remainder of the project area consisting of steep to moderate slopes dissected by drainage depressions would have been unsuitable for camping due to the landform and distance from a fresh water supply. Additionally, the crest area is also a greater distance from water. These landforms would likely have been utilised for hunting and gathering activities that manifest in the archaeological record as a background of discarded artefacts and predicating where such artefact would be is impossible. In addition to this, such sites are expected to have been disturbed due to past land uses and significant erosion.

The results of the assessment and survey are consistent with the predictive model and there is little to no potential for in situ cultural materials to be present in the crest and slopes within the project area, whereas, there is potential for cultural materials to be present along the 4th order creek (identified PAD).

Two test pits were therefore conducted within PAD1. No archaeological sites were identified. Soil horizon A and top of horizon B contained significant evidence of past land uses with the complete mixing of the A horizon with the clays of the B horizon. Very few rocks were present and there is no evidence of stratigraphy and the evidence indicates the PAD area has been subject to high intensity impacts and as such the PAD is identified as a highly disturbed deposit with little to no likelihood of in situ deposits. Due to the highly disturbed nature of the area, the area subject to test excavation cannot be reassessed or compared to other assessments.

6.7 TRAFFIC AND TRANSPORT

A Traffic and Parking Impact Assessment has been prepared for the proposed development and is provided as **Appendix L.**

The proposed development is expected to generate 27 vehicle trips in the AM (14 in, 13 out) peak hour period (9:00am to 10:00am) and 42 vehicle trips in the PM (13 in, 29 out) peak hour period (2:45pm to 3:45pm). As a maximum average, the site is expected to generate 136 heavy vehicles per operating day resulting in 272 two-way (136 in, 136 out) vehicle trips by heavy vehicles per day, over an 11-hour operating day. All assessed intersections retain their existing level of service in future 2023 conditions, except for the AM and PM peak hour period at the intersection of Pacific Highway / The Bucketts Way, which has a change of LoS “B” for the right turn from The Bucketts Way to LoS “C”, representing an increase in average delay of 4 seconds, with LoS “C” and representing a satisfactory operation.

The proposed development results in a low increase to the surrounding traffic network volume when assessed in isolation. Although when considered as part of a cumulative assessment with the Deep Creek Quarry, currently the combined impacts of both developments result in a LoS “D” for the intersection of The Bucketts Way / Pacific Highway. This results in an acceptable operation, although the intersection is approaching its operating capacity.

Based upon background traffic growth to 2033, without development traffic the intersection of Pacific Highway / The Bucketts Way is expected to operate with worst turning movement of LoS “F” and LoS “C” during the AM and PM peak hour periods respectively. This worst turning movement relates to the right turn out of The Bucketts Way. LoS “F” indicates that the turn movement is failing and is above the capacity at which the intersection can handle, therefore requiring an infrastructure upgrade. In future 2033 conditions, with development traffic, the intersection of Pacific Highway / The Bucketts Way is operating with worst turn movement of LoS “F” and LoS “E” during the AM and PM peak hour period respectively. This indicates that the intersection requires an infrastructure upgrade to operate within an acceptable Level of Service as per existing base case 2033 growth conditions without development traffic.

Any intersection upgrade to Pacific Highway / The Bucketts Way in 2033 is largely influenced by background traffic growth, rather than the proposed development traffic when assessed in isolation. The next infrastructure upgrade for Pacific Highway / The Bucketts Way would come in the form of a roundabout or signalised intersection and a likely reduction in the sign posted speed limit. Although considering the major role that the Pacific Highway plays in traffic flow efficiency, any roundabout or signalised intersection may not be supported by TfNSW at this location. It is reiterated that there is no proposed upgrade to Pacific Highway / The Bucketts Way.

The proposed development results in a small increase to the surrounding traffic network volumes and will not have an adverse impact on major traffic flows when considered in isolation. There is the potential for passing background traffic growth along the Pacific Highway to make the right turn out onto the Pacific Highway from The Buckets Way difficult for traffic of the proposed development at peak times, but there is an alternative route that has been proposed to ameliorate any externalised impacts of the subject development upon this intersection in the future.

There is adequate room on-site to provide informal parking facilities for both staff and heavy vehicles traffic. If overnight parking is required for heavy vehicles, it is anticipated that these will be stored on-site near stockpile areas or on the side of the internal access road. This is common practice for this type of development and all parking for the site will be fully contained on-site.

The proposal is unlikely to require the provision of a disabled car parking space. In any event one disabled car parking space should be provided on-site to comply with typical BCA requirements. Council's DCP does not outline any bicycle or motorcycle requirements quarry developments and it is deemed inappropriate to provided bicycle facilities considering the site context, which has limited bicycle infrastructure.

The largest vehicle that will travel to the site is a 19m length Articulated Vehicle. The proposed internal access road, including Maytoms Lane allows for an 8m wide road, inclusive of 1m wide unsealed road shoulders on both sides of the road. This design is adequate to allow two-way passing of heavy vehicles. All heavy vehicles will predominantly arrive from the south and travel from the development to the south towards Sydney, the Hunter and Central Coast. The exception to this is occasionally, vehicles will arrive from the south and depart to the north to travel to Stroud, but this will be a very rare occasion and generally will only be one or two vehicles in any given day.

The intersection of The Bucketts Way / Maytoms Lane has been assessed, and it is recommended that the future layout include a short deceleration left turn lane into Maytoms Lane and a basic right turn (BAL) treatment. Based upon AUSTROAD turn warrants, the minimum requirements to be provided are basic right and left turn treatments. As such, these recommended road treatments exceed requirements outlined in AUSTROADs and is recommended due to the associated higher levels of heavy vehicle traffic associated with the proposed development.

The overall intersection geometry in terms of safety with reference to sight lines is acceptable and it is recommended that regular understorey trimming of trees located within the road reserve occurs to ensure unobstructed sight lines are provided. The existing 85th percentile road speeds of 100km/h, which requires 248m of sight distance, which is achievable.

Once a builder is engaged, the methodology of the build will be detailed within a Construction Program and associated Construction Traffic Management Plan, to be approved by Council. The construction of the development is likely to occur in stages, with the construction of Maytoms Lane and The Bucketts Way occurring first. The largest construction as part of the proposal will be the construction of Maytoms Lane and The Bucketts Way to provide access to the proposed development. Once this is complete it is expected that all staff and construction vehicles will park on-site and enter and exit the site in a forward direction. It is highly unlikely that heavy construction traffic in conjunction with staff traffic will exceed the assessed peak hour movements.

6.8 LAND RESOURCES

A Land Resources Assessment has been prepared for the proposed development and is provided as **Appendix M.**

The likelihood of acid sulfate soils (ASS) occurring within the site is very low due to its position away from the coast and potential acid sulfate landform type. ASS is mapped as occurring within the estuary of the Karuah River, but the mapped extent does not coincide with the subject site. Accordingly, the potential of encountering ASS from regolith material within the site is considered to be low since there are no known occurrences of ASS on lands proximal to the site.

Laboratory analysis of Exchangeable Sodium Percentage (ESP) values for the detailed sites identified non-sodic levels (<6% ESP) at 50% of the sites and sodic levels (6-14% ESP) at the remaining 50% which included most of the topsoil and subsoils at the sites. The Emmerson Aggregate Test (EAT) score ranged from 2 to 4 for most of the subsoils which indicates moderate to slight dispersity can occur. In addition to the soil erodibility class, the high slopes and presence of erosive surface flows over the survey area means that soil erosion risk is likely to be moderate to high. Soil erosion hazard can be classed as moderate to high based on a combination of high slope and soil erodibility. Control can be obtained with structural works, topsoiling and vegetative techniques and by phasing development.

6.8.1 LSC Assessment

Land within the LSC assessment area classification range from LSC Class 4 to LSC Class 8. At least 45% of the site is classified as LSC Class 8. With less than 30% classified as LSC Class 4 to LSC Class 5. The remainder of the site is classified as LSC Class 7.

Class 4 is associated with the Kandosols found on areas with a slope between 10% and 20% and covers 4% hectares within the LSC assessment area. LSC Class 4 is rated as having moderate capability land. Land has moderate to high limitations for high-impact land uses and will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology.

LSC Class 5 is associated with the Sodosols found on areas with a slope greater than or equal to 20% and covers 23% hectares within the LSC assessment area. LSC Class 5 is rated as having moderate–low capability land. Land has high limitations for high-impact land uses and will largely restrict land use to grazing, some horticulture (orchards), forestry and nature conservation. The limitations need to be carefully managed to prevent long-term degradation.

LSC Class 7 is rated as having very low capability land. Land has severe limitations that restrict most land uses and generally cannot be overcome. On-site and off-site impacts of land management practices can be extremely severe if limitations not managed. There should be minimal disturbance of native vegetation.

LSC Class 8 is rated as having extremely low capability land. Limitations are so severe that the land is incapable of sustaining any land use apart from nature conservation. There should be no disturbance of native vegetation.

The entire LSC assessment area is considered to have moderate to extremely low agricultural capability according to definitions given in The Land and Soil Capability Assessment Scheme: Second Approximation (OEH, 2012). The LSC assessment area is suited to grazing and improved pastures. It is not considered highly productive agricultural land.

6.8.2 BSAL Assessment

According to the *Interim protocol for site verification and mapping of biophysical strategic agricultural land* (the Interim Protocol) (OEH, 2013), the LSC assessment area cannot be considered biophysical strategic agricultural land (BSAL) due to failing Step 1 (slope gradient of more than 10%, with the remaining BSAL soils within the LSC assessment area do not have a contiguous area of greater or equal to 20ha).

6.8.3 Potential Impacts on Soils and Resources

Potential impacts of the project on soil resources are associated with permanent loss of land due to quarrying. Activities that may impact on soil physical and chemical properties and post-quarrying land use include the following:

- Excavation of soil to access the resource;
- Permanent storage of overburden;
- Temporary to long-term storage of soil in stockpiles;
- Compaction of soil by machinery; and
- Loss of soil through wind and water erosion.

These activities can reduce the capability of land and soils and also reduce its quality as agricultural land.

Topsoils are suitable for use in rehabilitation. Much of the subsoil in the future disturbance area has physical characteristics such as sodic properties or weak or massive structure that will need to be treated before it is used in rehabilitation. Possible limitations in topsoil or subsoil quality can be addressed during the soil stripping process. The stripping process constitutes a highly effective mechanism for achieving thorough mixing of amendments to the soil. Amendments of soil pH, exchangeable sodium or magnesium levels and the addition of immobile elements such as phosphorus can be undertaken during the stripping process.

6.8.4 Land Use Conflict Risk Assessment (LUCRA)

The risk of conflict between the proposed quarry and surrounding uses, namely dwelling houses and small-scale agricultural uses, is considered below.

Initial Risk Identification and Risk Ranking

Utilising the Department of Primary Industries (DPI) LUCRA Guideline, an Initial Risk Evaluation is provided at **Table 9**. Associated risk rankings and assessment of these have been informed by the DPI guideline as replicated at **Figure 18 and Figure 19.**

PROBABILITY	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Figure 18: Risk Ranking Matrix and Probability Table
(Source: DPI LUCRA Guidelines October 2011)

Level: 1	**Descriptor: Severe**
Description	• Severe and/or permanent damage to the environment • Irreversible • Severe impact on the community • Neighbours are in prolonged dispute and legal action involved
Example/ Implication	• Harm or death to animals, fish, birds or plants • Long term damage to soil or water • Odours so offensive some people are evacuated or leave voluntarily • Many public complaints and serious damage to Council's reputation • Contravenes Protection of the Environment & Operations Act and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act
Level: 2	**Descriptor: Major**
Description	• Serious and/or long-term impact to the environment • Long-term management implications • Serious impact on the community • Neighbours are in serious dispute
Example/ Implication	• Water, soil or air impacted, possibly in the long term • Harm to animals, fish or birds or plants • Public complaints. Neighbour disputes occur. Impacts pass quickly • Contravenes the conditions of Council's licences, permits and the POEO Act • Likely prosecution
Level:3	**Descriptor: Moderate**
Description	• Moderate and/or medium-term impact to the environment and community • Some ongoing management implications • Neighbour disputes occur
Example/ Implication	• Water, soil or air known to be affected, probably in the short term • No serious harm to animals, fish, birds or plants • Public largely unaware and few complaints to Council • May contravene the conditions of Council's Licences and the POEO Act • Unlikely to result in prosecution
Level: 4	**Descriptor: Minor**
Description	• Minor and/or short-term impact to the environment and community • Can be effectively managed as part of normal operations • Infrequent disputes between neighbours
Example/ Implication	• Theoretically could affect the environment or people but no impacts noticed • No complaints to Council • Does not affect the legal compliance status of Council
Level: 5	**Descriptor: Negligible**
Description	• Very minor impact to the environment and community • Can be effectively managed as part of normal operations • Neighbour disputes unlikely
Example/ Implication	• No measurable or identifiable impact on the environment • No measurable impact on the community or impact is generally acceptable

Figure 18: Measure of Consequences
(Source: DPI LUCRA Guidelines October 2011)

Table 9: Initial Risk Evaluation

Activity	Identified Potential Conflict	Risk Ranking
Vegetation removal	Vegetation removal along Maytoms Lane and Bucketts Way road reserve	B, 2: **Risk Ranking 21**
Hard Rock Extraction	Dust impacts / particulates	A, 2: **Risk Ranking 23**
	Potential for unsightly view from surrounding areas	C, 3: **Risk Ranking 13**
	Machinery noise	A, 3: **Risk Ranking 20**
	Soil erosion	B, 2: **Risk Ranking 21**
	Impacts on surface water and ground water	B, 2: **Risk Ranking 21**
Blasting	Noise impacts	A, 2: **Risk Ranking 23**
	Vibration impacts	B, 2: **Risk Ranking 21**
	Impacts on livestock	C, 3: **Risk Ranking 13**
Haulage	Noise impacts	C, 3: **Risk Ranking 13**
	Increased traffic travelling on the Bucketts Way	A, 2: **Risk Ranking 23**
	Increased traffic at Bucketts Way & Pacific Highway intersection	A, 2: **Risk Ranking 23**
Rehabilitation	Impacts on surface water and ground water	B, 2: **Risk Ranking 21**

Risk Reduction Controls

As identified in the table above, some of the activities have a risk ranking of greater than 10 and so a range of mitigation measures and risk reduction controls have been considered to reduce impacts to a point where risk rankings can be reduced to less than 10.

Table 10 outlines the Risk Reduction Management Strategies identified for the proposed development.

Table 10: Risk Reduction Management Table

Identified Potential Conflict	Management Strategy (Method of Control)	Revised Risk Ranking	Performance Target
Vegetation removal	• Biodiversity credits paid. • A Flora and Fauna Management Plan (FFMP) is to be implemented for retained vegetation within the site. • Implementation of vegetation clearing protocols.	D,3: **Risk Ranking 9**	Ongoing monitoring programme identifies no impacts to flora or fauna.
Hard rock excavation - Dust impacts / particulates	• An Air Quality Management Plan (AQMP) is to be prepared to ensure effective management and measurement of particulate emissions. • Dust monitoring near impacted sensitive receptors.	D,3: **Risk Ranking 9**	Nil to negligible impact on air quality – compliant with guidelines. No complaints to EPA, Council or Coastwide Materials.

Identified Potential Conflict	Management Strategy (Method of Control)	Revised Risk Ranking	Performance Target
Hard rock excavation – potential for unsightly view from surrounding areas	• Sheild mobile equipment behind the active edge of the processing pad (where possible). • Retain vegetation around disturbance area and along road frontages. • Maintain the site in a clean and tidy condition.	D,4: **Risk Ranking 5**	No complaints to Coastwide Materials Pty Limited, or Council.
Hard rock excavation – machinery noise	• Ensure plant/equipment is regularly maintained and repair or replace equipment that becomes noisy. • Turn off plant and equipment when not in use	B,5: **Risk Rating 7**	No complaints to EPA, Council or Coastwide Materials.
Hard rock excavation – soil erosion	• An Erosion and Sediment Control Plan (ESCP) will be prepared as part of the site Environmental Management Plan (EMP). • Develop and implement an EMP to sufficiently manage the risk of water quality impacts, including mobilisation of contaminants, accidental spills, disturbance of sediment and/or stormwater mismanagement during the construction/ operational and rehabilitation phase of the project.	C,4: **Risk Ranking 8**	Nil to negligible impact on water quality – compliant with guidelines. No complaints to EPA or Council.
Hard rock excavation – impacts on surface water and ground water		C,4: **Risk Ranking 8**	
Blasting – noise impacts	• Reduce the maximum instantaneous charge and use of appropriate delays. • Establish blast times in accordance with prevailing meteorological conditions. • Optimise blast design. • Orientate blasts away from receivers (where possible). • Notify neighbours of planned blasts and monitoring of overpressure and ground vibration of blasts as they occur.	C,5: **Risk Ranking 4**	No complaints to EPA, Council or Coastwide Materials.
Blasting – vibration impacts		D,5: **Risk Ranking 2**	
Blasting – impacts on livestock		E,5: **Risk Ranking 1**	
Haulage – noise impacts	• Plan traffic flow, parking, and loading/unloading areas to minimise reversing movements within the site. • Ensure plant/equipment is regularly maintained and repair or replace equipment that becomes noisy. • Turn off plant and equipment when not in use.	C,5: **Risk Ranking 4**	No complaints to EPA, Council or Coastwide Materials.

Identified Potential Conflict	Management Strategy (Method of Control)	Revised Risk Ranking	Performance Target
Haulage – increased traffic on the Bucketts Way	• Implement rout planning. • Make contributions payment to upgrade local road infrastructure.	C,5: **Risk Ranking 4**	No complaints to Council or TfNSW.
Haulage – increased traffic at Bucketts Way & Pacific Highway intersection		C,5: **Risk Ranking 4**	No complaints to Council or TfNSW.
Rehabilitation - Impacts on surface water and ground water	• An ESCP will be prepared as part of the site EMP • Develop and implement an EMP to sufficiently manage the risk of water quality impacts, including mobilization of contaminants, accidental spills, disturbance of sediment and/or stormwater mismanagement during the construction/ operational and rehabilitation phase of the project.	C,4: **Risk Ranking 8**	Nil to negligible impact on water quality – compliant with guidelines. No complaints to EPA or Council.

Performance Monitoring

The traditional approach to conflict is separation of uses; and whilst the proposed quarry is located ADD, there are some rural residences within close enough proximity to the proposal to cause conflict if construction and operation of the quarry is not appropriately monitored and managed. Due to the nature of the quarry land use under an EPA License, the management plans to be put in place, design of the quarry and environmental characteristics of the land, there is unlikely to be any significant impacts on the surrounding land uses.

The EMP for the proposed quarry will include appropriate sub-plans for Soil and Water Management and Stormwater and Erosion Control Management. These sub-plans will identify all reasonably foreseeable risks relating to water pollution, soil erosion and stormwater pollution associated with the project; describe how these risks will be managed and minimised during construction and include arrangements for managing pollution risks associated with contamination, spillage, soil erosion and stormwater management within the vicinity of the proposed quarry.

A FFMP will be developed following approval of the SSD application and prior to commencement that will incorporate all mitigation measures outlined in the BDAR, including timing, responsibility, and performance criteria. The FFMP will include a monitoring programme and allowance for adaptive management and response as a result of ongoing monitoring of threatened entities that could utilise the site, for which impacts are difficult to predict.

Vegetation Clearing Protocols will include:

- A Project Ecologist being present on site during all vegetation clearing operations;
- Areas of vegetation outside the development footprint being clearly demarcated with high visibility tape to prevent accidental clearing during the construction phase;
- Vegetation cleared in a way that will allow fauna species living in or near the clearing site enough time to move out of the area without additional human intervention. No clearing should occur during the early evening or at night, as this is when fauna species are most likely to be on the move and are more vulnerable to injury;
- Habitat links being maintained during clearing to allow fauna species to move safely from the site to adjacent areas;
- Clearing beginning in the area that is furthest from vegetation to be retained;
- The direction of clearing ensuring that fauna species are directed away from threats such as roads, developed areas or disturbed areas.

In addition to the above; reducing land use conflict will also be assisted by signage, education, and information.

Due to the nature of the subject site, the proposal avoids land use conflict as there is no urban expansion within the locality, nor significant rural industries on or adjacent to the site.

The terrain of the site provides topographical shielding for the proposed quarry from neighboring residence and in terms of the overall surrounding scenic landscape.

The proposed quarry will have minimal impact on other land uses in the vicinity, providing a compatible land use that will supply construction materials to other developments locally and regionally. The proposed quarry has been specifically located and design to maintain the rural landscape character, particularly in relation to utili**s**ing the topography of the site in order to conserve the scenic landscape qualities of this rural zone.

6.9 WASTE MANAGEMENT

A Waste Management Plan has been prepared for the proposed development and is provided at **Appendix N.**

Waste on site is to be managed in accordance with the requirements outlined throughout the POEO Act 1997, include the correct transportation of produced wastes to a licensed facility (Section 143) and the disposal of waste without causing harm to environment (Section 115).

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) wastes. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

Waste storage during construction operations will involve some stockpiling and separation of reusable material, as well as placement of skip bins for the separation of construction materials for recycling. A skip bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Skip bins may require alternative placement across construction operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

A waste storage area shall be designated by the demolition and construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons. Waste management principles, management measures and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

Operational waste management requirements for the site arise from the daily operating activities and general attendance by facility staff. Primarily, this refers to the daily administrative activities of site management which will be the main source of waste generation not associated with the proposed use. Furthermore, the proposed quarrying activities at the site will require various waste outputs which will require management onsite prior to being removed for recovery or disposal at an appropriately licenced facility. Waste management strategies related to site operations have been established according to the Great Lakes Development Control Plan 2014 and NSW EPA Guidelines.

Space should be allocated for the temporary storage and consolidation of bulk wastes unsuitable for general waste and recycling bins. Items such as pallets, crates and broken furniture are typical bulk wastes and, given appropriate management of the space, can be stored in a small area prior to being collected. The facilities management or site waste caretaker will be responsible for access to the bulk waste cage and will monitor and schedule collections for this waste stream. A private waste service provider will be engaged for the collection of bulk wastes.

A range of specialist wastes unsuitable for disposal in general waste bins may be generated as a result of typical operation of this development. Materials such as paints, cleaning chemicals, batteries, e-waste, and lightbulbs will be stored temporarily before appropriate disposal by a suitably qualified waste contractor. The site waste caretaker will be responsible for the management of specialist wastes and the scheduling of collections.

Total Bin Requirements for the proposed development are as follows:

- General Waste: 1 x 240L MGB;
- Recycling: 2 x 240L MGB.

240L MGB's are recommended for the storage of general waste and comingled recycling based on the waste generation expectations. 240L bins provide suitable capacity and are easily manoeuvred for collection purposes.

Considering the scale of the proposed development and the number of bins required to manage waste, a weekly collection is proposed as a minimum for servicing the above waste streams. Additional bins or increased servicing frequency may be applicable upon commencement of operations.

The site operator will be able to regularly observe bin fullness to ensure that bins are maintained and serviced frequently and organise additional collections as needed. This will also prevent overspill into waste management areas and ensure the area is kept tidy.

A dedicated Waste Management Area for the storage of bulk bins and skips is located to the north-west of the site, adjacent to loading areas and carparking. This area is up to 500sqm in size and is adequate to hold the expected waste volumes at the site, including the provision of safe handling and manoeuvring space around bins.

The site waste management area is large enough to accommodate the appropriate storage of waste management equipment and infrastructure, based on estimated site generation rates. The information provided are calculated assumptions and actual requirements will be dependent of the waste generated by the business once the construction has concluded and operation commences. All bins and associated storage areas will be appropriately screened to ensure they do not pose an amenity or odour risk to the public.

6.10 HAZARDS

6.10.1 Bushfire

A Bushfire Assessment has been prepared for the proposed development and is provided at **Appendix Q.**

The predominant vegetation formation around the proposed development is grassland and the office and weighbridge structures will be more than 100m from any areas of forest vegetation. The office building will be at least 119m from any forest vegetation to the east. Land with a radius of not less than 50m of each of those structures is to be established and maintained as an Asset Protection Zone (APZ), and the assessed BAL will be BAL-LOW.

While no construction requirements apply for BAL-LOW, construction materials will be non-combustible. In conjunction with the management of areas within the site as an APZ, the existing and proposed future conditions on the site are such that any potential bushfire hazard vegetation within the development area will gradually be reduced as the project progresses through the stages of the proposed development. The management and use of the site will be subject to a separate Bushfire Management Plan (BMP).

6.10.2 Hazardous and Offensive Development

A Hazardous and Offensive Development Screening Assessment has been prepared for the proposed development and is provided at **Appendix P.**

The maximum quantities of dangerous goods to be stored on site for the proposed development do not exceed the screening thresholds for storage quantity screening. Explosives will be transported to site for use, but not stored on site. The cumulative annual peak weekly movements of vehicles delivering dangerous goods to the site do not exceed the transport screening thresholds. As such, the proposed development is not considered to be 'potentially hazardous development', and further addition of a preliminary hazard assessment is not required.

The proposed development is however considered to be a 'potentially offensive development' in line with Schedule 1 of the PoEO Act, as it requires a licence under pollution control legislation.

If a development cannot obtain the necessary pollution control licences or other permits, then it may be classified as an 'offensive' and may not be permissible in most zonings.

6.11 VISUAL

A Visual Impact Assessment (VIA) has been prepared for the proposed development is provided at **Appendix R.**

The viewshed for the proposed quarry has been illustrated at 3km extending across the landscape away from the site. This distance has been selected due to the overall limited project scale within the landscape.

The visual absorption capacity (VAC) of the landscape surrounding the quarry generally exhibits a high VAC due to topographic features, undulating landform, ridgelines and tree cover within and surrounding the site.

The proposed hours of operation would require lighting installation for night time work. Lighting is proposed to include mobile lighting units powered from on-site power generation. Lighting would be installed to address the *Australian Standard AS4282: 1997 – Control of Obtrusive Effects of Outdoor Lighting.* Whilst night lighting may be visible through 'glow' rather than direct illumination, mitigation measures including shielding light illumination and appropriate directional light control (responding to reported issues from property owners) would assist in minimising potential impacts.

The overall landscape character sensitivity has been determined to be low to moderate; however, distinguishable characteristics of the landscape character area are unlikely to be significantly altered by the proposed quarry. Amendments to landform following extraction would be largely screened from view from most key view locations and are unlikely to result in significant residual visual effects. Existing landscape character within and surrounding the site will have a relatively high capability to absorb change. The quarry would not result in the introduction of prominent elements to the surrounding landscape character. The quarry will not form a significant visual element within the viewshed and will not be visible from most key view locations, including areas of rural dwellings, local road corridors and The Bucketts Way. Potential views toward the quarry from dwellings illustrated with potential visibility are likely to be partially screened and/or filtered by sloping hillsides with existing dense mature tree cover.

Overall, the VIA has determined the proposed quarry would be screened from most key view locations, including dwellings and from vehicles traveling along The Bucketts Way. Where potentially visible, the quarry is unlikely to form a significant visual element, with the quarry resulting in a low to moderate visual effect. The level of visual effect associated with the proposed quarry is deemed acceptable.

6.12 SOCIAL AND ECONOMIC

6.12.1 Social Impacts

A Social Impact Assessment has been prepared for the proposed development and is provided at **Appendix S.**

The proposed development and operation of Hillview Quarry is likely to have different effects on the populations of the various social localities assessed. Regional-level strategic documents indicate the need for ongoing supply of quarried materials to support the construction of the infrastructure and housing needed to support population growth. As a result, at the broader community levels, the project is likely to have positive impacts, although these may not be material in scale.

Communities nearer to the quarry site would be more exposed to its operational effects and may experience these as material impacts. The expectation that this would occur was expressed by most of those members of the community who participated in engagement on the Project. The majority of participants expressed opposition to the Project, although there were also some parties who were expressly unconcerned, or interested in potential positive engagements with the Project. The level of response to invitations to engage regarding the Project was low as a proportion of the local population, however no positive or negative inferences can be made in relation to the majority of the population that did not engage.

There are a number of impacts of concern to stakeholders relating to proposed operations. Overall, the likelihood of traffic and transport impacts of quarry-related truck movements on The Bucketts Way was the most commonly identified concern. The TPIA for the Project addresses current and likely impacts. These impacts can be mitigated to some extent by management actions, such as limitations on time permitted for truck movements. The Project would also be subject of heavy vehicle road use contributions that can be applied to managing effects on The Bucketts Way in particular.

With respect to other effects, technical assessments of these also include recommendations for the avoidance, minimisation and mitigation of impacts. In most instances, these impacts can be managed to accepted industry standards.

There have been expressions of dissatisfaction with regard to community engagement on the Project. Despite efforts to address concerns, it is inevitable that some parties will continue to contest the adequacy of engagement, noting that part of this dissatisfaction has been expressed as concerns with the consent process, despite compliance with the DPHI structure and guidance.

The SIA includes recommendations for ongoing engagement with local stakeholders should the Project obtain approval. However, there is some likelihood that some parties will not participate in engagement directly addressing the substantive aspects of the Project.

The Project would create employment and potentially some business opportunities in the local and regional areas. Overall, these would be positive for directly engaged parties, and indirectly positive on local communities and economies, based on the additional activities that incomes would support. The Applicant has also indicated its intention to directly support the local community through direct contributions to appropriate organisations and activities.

The SIA recommends that the most effective mechanism for enhancing positive aspects of the Project and managing its negative impacts is to maintain continuing engagement with the local community in particular. This may be through formal and/or informal channels.

Assessment of the social impacts of the proposed Project requires consideration of the differential effects on the local and broader communities. This necessitates consideration of the exposure to, and materiality of effects, and relative 'weighting' of these. Although this is a matter central to assessment and determination by DPHI, it is submitted that the most substantial issue for local and immediate regional stakeholders relates to traffic and transport effects on The Bucketts Way. If the effects of the additional use relating to the quarry can be managed, it is possible that, on balance, the overall social effects of the Project would be positive.

6.12.2 Economic Impacts

An Economic Impact Assessment has been prepared for the proposed development and is provided at **Appendix T**.

Cost Benefit Analysis (CBA)

The CBA indicates a positive economic outcome. Net Present Values (NPVs) are favourable, and remain so across a range of alternative scenarios. NSW would receive a flow of revenues. Importantly, access to materials for the construction of infrastructure and housing would be augmented by the proposal. This has broadly-based positive economic implications for the state and its people.

At the localised level, some of the valuations for localised environmental effects such as air quality, and noise and vibration, would not be considered as material by conventional standards. However, Aigis Group also prepared the SIA for the proposed development, and these are matters of interest to stakeholders, and have been valued where practical on that basis. The likely effects of additional quarry traffic on The Bucketts Way (particularly trucks) is the matter of greatest interest that was raised in engagement. The comparatively high valuations for this economic cost reflect this situation. However, these are offset by the assessed mandatory heavy vehicle contributions.

The economic assessment has considered both quantitative and qualitative economic aspects of the project. It is considered that, on balance, the project would produce a positive economic outcome for the State of NSW.

Local Effects Analysis (LEA)

The quantified benefit accruing to the local and regional areas is greater than the quantified cost, on the assessments presented. However, it should be noted that some significant sources of quantitative benefit are in the form of contributions to offset effects of the proposal. The most apparent of these are road haulage contributions to Mid Coast Council and Port Stephens Council with respect to the use of The Bucketts Way by quarry trucks. Nevertheless, direct application of those contributions to addressing quarry impacts is a mitigatory economic initiative.

It must also be recognised that there are also intangible costs on the community. Therefore, some stakeholders may consider that the assessments do not adequately reflect the cost to the community. In this respect, the LEA should also be considered in the context of the material presented in the SIA prepared for the proposed quarry, and in particular, the reporting of stakeholder engagement and its outcomes.

Economic Assessment

The overall assessment is that the proposed Hillview Quarry would be likely to have a positive economic impact. The broad-based positive effect of continued supply of construction materials is a matter acknowledged in the Hunter Regional Plan 2041. Sufficient supply is crucial to allow the construction of the additional housing and infrastructure required to support future population growth.

From the State's perspective, in aggregate terms, beneficial outcomes are unlikely to be material in terms of their scale. However, they do represent additional direct industrial activity and stimulus for the commercial activity required to support it. This is also the case for additional employment, with its beneficial socioeconomic onflows. Furthermore, the potential use of the quarry's output in the development of public infrastructure, such as roadworks etc., which generally benefit subsequent users of that infrastructure.

6.13 REHABILITATION

A Rehabilitation Strategy has been prepared for the proposed development and is provided at **Appendix U.**

The primary rehabilitation goal is to create a safe, stable and non-polluting post extraction landform that facilitates the achievement of the identified post mining land uses and is commensurate with site constraints. Preliminary final land use domains have been defined as land management units characterised by similar post mining land use objectives.

The Rehabilitation Strategy assumes that the quarry floor/void will be rehabilitated to include areas of native ecosystem as well as reconstructed water management areas, directing water to the retained water storage dams. Elements of the proposed final landform are proposed to achieve a safe, stable and non-polluting landform. Following the completion of extraction activities, project infrastructure (predominantly located on the processing pad) will be decommissioned and reshaped, according to the proposed final landform. The reshaped landform will be free draining, rehabilitated and returned to a land use consistent with the adopted post mining land use. The access road may be retained for use as part of the adopted final land use and/or bushfire access, subject to ongoing closure planning.

Several dams are expected to be retained as part of the final landform to facilitate effective management of water across the site. The benches will be rehabilitated progressively according to the quarry staging plans. Each bench will be rehabilitated as the quarry deepens to ensure safety of workforce when working on slopes and benches. A section of the quarry floor is to remain at closure in the form of a self-draining, undulating, shallow final void with strong resemblance to a natural creek line and wetland landscape with the goal to provide habitat for native flora and fauna.

Rehabilitation planning will be undertaken to ensure the total area of disturbance is minimised as far as practicable at any one time. This will reduce the potential for dust generation, erosion and sediment runoff or visual disruption caused by the site. Rehabilitation of the site will be undertaken to achieve a stable non-polluting landform that is compatible with the surrounding landscape both visually and functionally.

The resultant landscape will be constructed in accordance with the detailed final landform designs, proposed final landform and the recommendations of relevant assessments and studies. Achievement of the agreed post mining land use will be reached through a series of conceptual rehabilitation phases.

Preliminary final land uses (PFLUs) have been proposed in consideration of current and emerging innovative industry practices as well as alignment with the Hunter Regional Plan 2041. The PFLUs adopted by are:

- Native Ecosystem: to establish a safe, stable, non-polluting, and sustainable landform revegetated with woodland vegetation communities generally consistent with the pre-extraction landscape;
- Industrial development: to introduce land use opportunities for providing ongoing goods and services, employment, and growth to the local economy;
- Grazing land would provide the region with further sustainable farming and food production adding to an ever-growing industry that is driving the Hunter's economic performance.

A rehabilitation monitoring program will be undertaken in accordance with best practice standards.

SECTION 7
JUSTIFICATION OF PROJECT

7. Justification of Project

7.1 PROJECT DESIGN

The extraction area has been sited to avoid the more sensitive areas of the site, and the only area where the works intersect with Double Creek is where the proposed access road crosses this water course. Avoidance measures have been incorporated into the design and layout of the project. The pit shell has been specifically designed to avoid areas of high biodiversity value such as larger patches of forest with high vegetation integrity. In particular, a small gully containing rainforest vegetation (PCT 3436) has been avoided and will be retained on-site. The pavement width of the haul road has also been reduced from 14m down to 10m, reducing the amount of vegetation clearing required to facilitated access for the quarry.

The proposed staging has been designed such that once preparation works have been completed for the proposal, hard rock extraction will generally take place in a south-easterly direction below the highest RL of the extraction area. This design measure is aimed at mitigating acoustic impacts to dwellings closest to the site located adjacent The Bucketts Way, east of the site. The staging has been specifically designed with acoustic and visual mitigation measures in mind. In effect, the operations will commence at the eastern extent of the pit (processing pad), from which a haul road will circle around to the western extent, with extraction activities then being carried out so as to progress in an easterly direction, back toward the processing pad. This design ensures that operations, and therefore noise, dust, and visual impacts are screened by the working face of the extraction area.

7.2 STRATEGIC CONTEXT

The resource to be extracted is a hard rock known as Rhyolitic Tuff, which has a variety of uses including road base material, construction aggregate, concrete batching aggregate, drainage works, fill, landscaping and various other uses. The proposed quarry will extract and deliver this valuable resource to the construction and infrastructure sectors in the Sydney metropolitan area, Hunter region and Central Coast area. The quarry is essential for the guaranteed supply of construction materials for major/critical infrastructure projects of local, State and National significance. These projects are currently driving strong market demand and this demand is anticipated to remain strong well in to the future.

The proposed quarry is strategically located behind the natural ridgelines of the site and positioned on largely cleared areas, whilst also being well situated in relation to existing road infrastructure in order to be able to efficiently service both local and regional demands for the extract Rhyolite.

7.3 STATUTORY CONTEXT

The proposed Hard Rock Quarry seeks to extract 1.5 million tonnes of extractive materials per year, and a total resource amount of 45 million tonnes. As such, the proposal is declared State Significant Development in accordance with Section 2.6 of State Environmental Planning Policy (Planning Systems) 2021, and Clause 7 of Schedule 1 of the SEPP.

The development is permissible under the sites RU2 Rural Landscape Zoning and achieves the objectives of the zone.

All other approvals required for the proposed development to proceed have been identified and are considered achievable; including – S68 approval to operate a system of sewer management, S138 Roads Act Approval, Environmental Protection Licenses, Water Access Licenses, and Aquifer Interference Approvals.

The proposed quarry has addressed all pre-conditions to exercising the power to grant approval, including - EPBC Act 1999 – Matters of National Environmental Significance, PoEO Act 1997 – Section 48 and Schedule 1 (19) and SEPP (R&E) 2021 – Section 2.17.

All mandatory matters for consideration of the proposed quarry have been addressed, with compliance either achieved or not applicable to the proposed State Significant Development.

7.4 COMMUNITY VIEWS

Views and concerns identified during consultation with the community and affected stakeholders have influenced the proposed development; particularly in regards to the extent of assessment and level of consideration given to the potential impacts of the proposed quarry – predominately the potential traffic, air quality and noise impacts. As a result, extensive mitigation measures have been incorporated into the worst-case scenario assessments conducted by each of the specialist consultants to ensure the proposed design, construction and ongoing management and monitoring of the quarry achieves all legislative requirements and criteria, in order to minimise or eliminate impacts to the community and affected stakeholders.

7.5 IMPACTS OF THE PROPOSAL

The potential impacts of the proposed quarry have been identified through a process involving:

- Assessment of the site characteristics;
- Consultation with government agencies;
- Consultation with surrounding land owners and other stakeholders; and
- Expert technical assessments.

The key issues identified have been the subject of comprehensive technical assessment to identify and assess the potential impacts of the development on the existing environment and community. The results of these assessments are detailed within **Section 6** and the appendices of this EIS.

The impacts of the proposed quarry have been avoided or minimised by utilising the sites topography and existing cleared areas, refining the project design in consideration of environmental constraints and stakeholder input, and implementation of appropriate control measures as part of an interactive project design process. Therefore, through the implementation of appropriate measures to avoid, minimise and/or manage impacts, it considered that the proposed quarry can proceed without significant impacts to the environment and local community.

7.6 ONGOING MONITORING AND COMPLIANCE

The proposed Hard Rock Quarry will operate under an Environmental Management Plan (EMP), including details on:

- Responsibilities;
- Environmental monitoring;
- Environmental requirements;
- Complaints management;
- Induction and training;
- Environmental management and contingencies;
- Environmental procedures for key aspects of the operation such as health and safety, security, traffic, water management, dust management, noise management, waste management;
- This EIS;
- Conditions of consent; and
- Any other approval, licence or permit issued.

The following matters will be addressed in the Environmental Management Plan:

- Project Description;
- Environmental management structure and responsibility;
- Approval and licensing requirements;
- Environmental training requirements;
- Emergency contacts and response procedures;
- Risk assessment;
- Environmental monitoring;
- Environmental auditing;
- Corrective actions; and
- EMP review schedule.

7.7 SITE SUITABILITY

The proposed quarry site is located within a rural environment, with the primary land uses within the surrounding neighbourhood including traditional agricultural production (primary stock grazing), small scale poultry operations and rural/lifestyle holdings. While the proposed quarry is neighboured by some rural residences, the site is distanced from major residential areas. The terrain of the site provides topographical shielding for the proposed quarry from neighboring residence and in terms of the overall surrounding scenic landscape.

The location of the proposed quarry has previously been partially cleared for agricultural purposes and thereby reduces the amount of clearing required for the pit. The shallow depth of the Rhyolite resource on site also reduces the amount of overburden removal required. While alternate areas of resource are present within the wider land owned by the proponent, the adopted resource area has been selected as it can be extracted with the lowest possible environmental impacts, whilst maintaining a viable extractive project.

The site is highly accessible to key markets through its proximity to the Pacific Highway and regional road infrastructure. Significant demand for the site's target resource is expected to continue as a result of the need for materials critical to the construction of housing, buildings, roads and other supporting infrastructure which is becoming increasingly difficult to access, and will require quarry products such as those to be produced by Hillview Hard Rock Quarry.

This comprehensive environmental impact assessment demonstrates that the site is suitable for the proposed quarry and that the environmental impacts of the development can be effectively manage.

7.8 PUBLIC INTEREST/BENEFIT

Key benefits associated with the proposed Hillview Quarry include:

- Provision of high-quality supply of Rhyolite for construction and infrastructure projects locally and regionally to meet the identified and growing needs for this resource;
- Continued growth and development within the area through the supply of high-quality Rhyolite for construction;
- The location of the site away from major population centres and incompatible land uses and topographic shielding for neighboring residences;
- Employment of 30 staff for operation of the proposed quarry;
- Direct economic benefits in capital expenditure, plus continued ongoing expenditure associated with quarry operations and labour, providing an ongoing contribution to the local and regional economies;
- Contribution to Mid Coast Council for the maintenance of the surrounding local road network.

7.9 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The objectives of the EP&A Act include the facilitation of Ecologically Sustainable Development (ESD). Additionally, Part 8, Division 5 of the EP&A Regs requires a proponent to include in an EIS the reasons justifying the development, including the principles of ESD. Section 193 provides the following principles of ecologically sustainable development:

*(2) The **precautionary principle** is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

(3) In applying the precautionary principle, public and private decisions should be guided by—
(a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
(b) an assessment of the risk-weighted consequences of various options.

*(4) The principle of **inter-generational equity** is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*

*(5) The principle of the **conservation of biological diversity and ecological integrity** is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.*

*(6) The principle of **improved valuation, pricing and incentive mechanisms** is that environmental factors should be included in the valuation of assets and services, such as—*

(a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and

(b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and

(c) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

7.9.1 Precautionary Principle

The precautionary principle requires careful evaluation of potential environmental damage and risk-weighted consequences of such damage to avoid serious or irreversible harm. The precautionary principle promotes proactive environmental protection as opposed to reactive measures following environmental damage.

To satisfy the precautionary principle, the potential for serious or irreversible environmental damage must be anticipated, measured and prevented from the outset to ensure a level of certainty has been achieved in relation to the proposed development.

Therefore, an evaluation of all key components with the potential to result in environmental damage has been conducted as part of this EIS – including detailed assessment of issues and mitigation measures. Through this method of assessment, each potential issue arising from the proposed quarry has been identified, evaluated and mitigated.

There has been careful consideration to avoid (where possible), irreversible damage to the environment, including the following measures:

- The most up to date, available scientific information has been utilised. Where uncertainty in data was identified, 'worst case scenario' was adopted;
- The location and footprint of the proposed quarry is on generally cleared land, within the shielded topography of the site and appropriate zoning;
- Worst case scenario modelling has provided greater certainty in regards to potential adverse impacts of the proposed quarry, and has subsequently resulted in conservative mitigation measures to manage anticipated environmental impacts.

The potential environmental impacts have been anticipated, assessed and managed for the proposed quarry through the preparation of this EIS. It is considered that the proposed Hillview Quarry does not pose a risk of serious or irreversible damage to the environment, and is therefore consistent with the precautionary principle.

7.9.2 Inter-Generational Equity

The principle of inter-generational equity requires that the present generation preserves or enhances the health, diversity and productivity of the environment for the benefit of future generations – 'equality between generations'. The principle includes both intra-generational equity (i.e. within generations), and inter-generational equity (i.e. between generations). As such, the principle extends beyond the requirement of environmental protection and enhancement for inter-generations, but also requires that the economic and social benefits of the proposal are equally distributed among members of a community intra-generationally.

As part of the assessment of the proposal and preparation of this EIS, the type and extent of potential impacts as a result of the proposed quarry have been analysed and mitigated. The methodologies adopted ensure enhanced environmental, social and economic protection for current and future generations. The mitigation measures proposed, have been development to minimise the impacts of the proposed quarry on the environment for future generations.

7.9.3 Conservation of Biological Diversity and Ecological Integrity

This principle refers to the maintenance of species richness, ecosystem diversity and health and the links and processes between them. The proposed quarry is located within an existing disturbed site, with the development footprint having generally been cleared from previous agriculture and grazing activities.

A biodiversity assessment has been undertaken by an accredited accessor to identify the extent of biological diversity on site and the surrounding area, which has determined that the proposal will not have a significant impact. Furthermore, no MNES are expected to be impacted upon significantly as a result of the proposal. The BDAR includes a preliminary assessment of impacts on EPBC Act matters. Considering the nature and duration of the potential impacts, the presence or likely occurrence of threatened and migratory species on the site and the nature and condition of the habitats for the Threatened Ecological Communities (TEC) present on the site, the proposed development is not likely to have a significant impact on: listed threatened species; listed migratory species and listed threatened ecological communities. Notwithstanding this assessment, referral of the development application to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) has been made. If deemed a controlled action, the application should be assessed under the bilateral agreement (between NSW Government and DCCEEW).

7.9.4 Improved Valuation, Pricing and Incentive Mechanisms

This principle refers to the need to determine proper values of services provided by the natural environment. It aims to apply economic terms and values to the elements of the natural environment. The proposed quarry optimises the valuation and pricing of natural resources by:

- Ensuring operations at Hillview Quarry suit predicted future markets by providing a Rhyolite resource to assist in meeting client needs and peak market demands through an annual production of 1.5 million tonnes, which is currently not available; and
- Providing for the operational viability of the proposed quarry by optimising the approach to extraction of the target resource, maximising operational and economic efficiencies where possible

Development feasibility considerations have included the costs of integrating effective management measures to minimise potential environmental and social impacts as well as the design of the proposed development to limit the impact on other natural resources including soil, water and native vegetation.

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