32-34 Georges Bay Esplanade
St Helens Tasmania 7216
T: 03 6376 7900 | ABN 96 017 131 248

Break O'Day COUNCIL

Development Applications

Notice is hereby given under Section 57(3) of the *Land Use Planning & Approvals Act 1993* that an application has been made to the Break O' Day Council for a permit for the use or development of land as follows:

DA Number	DA 2025 / 00096
Applicant	North East Excavations (Tas) Pty Ltd
Proposal	Extractive Industry - Quarry Upgrade (Increase Capacity)
Location	Tasman Highway, St Helens (PID 2910155, situated along Basin Creek Road) with access to the subject site achieved through Sustainable Timbers Tasmania's land via Tasman Highway, Goshen (PID 3385516)

The above application has been referred to the Board of the Environment Protection Authority (the Board) for assessment under the Environmental Management and Pollution Control Act 1994 (EMPCA). An Environmental Effects Report (EER) has been lodged in support of the application.
A copy of the full development application is available for public inspection during the notification period at:

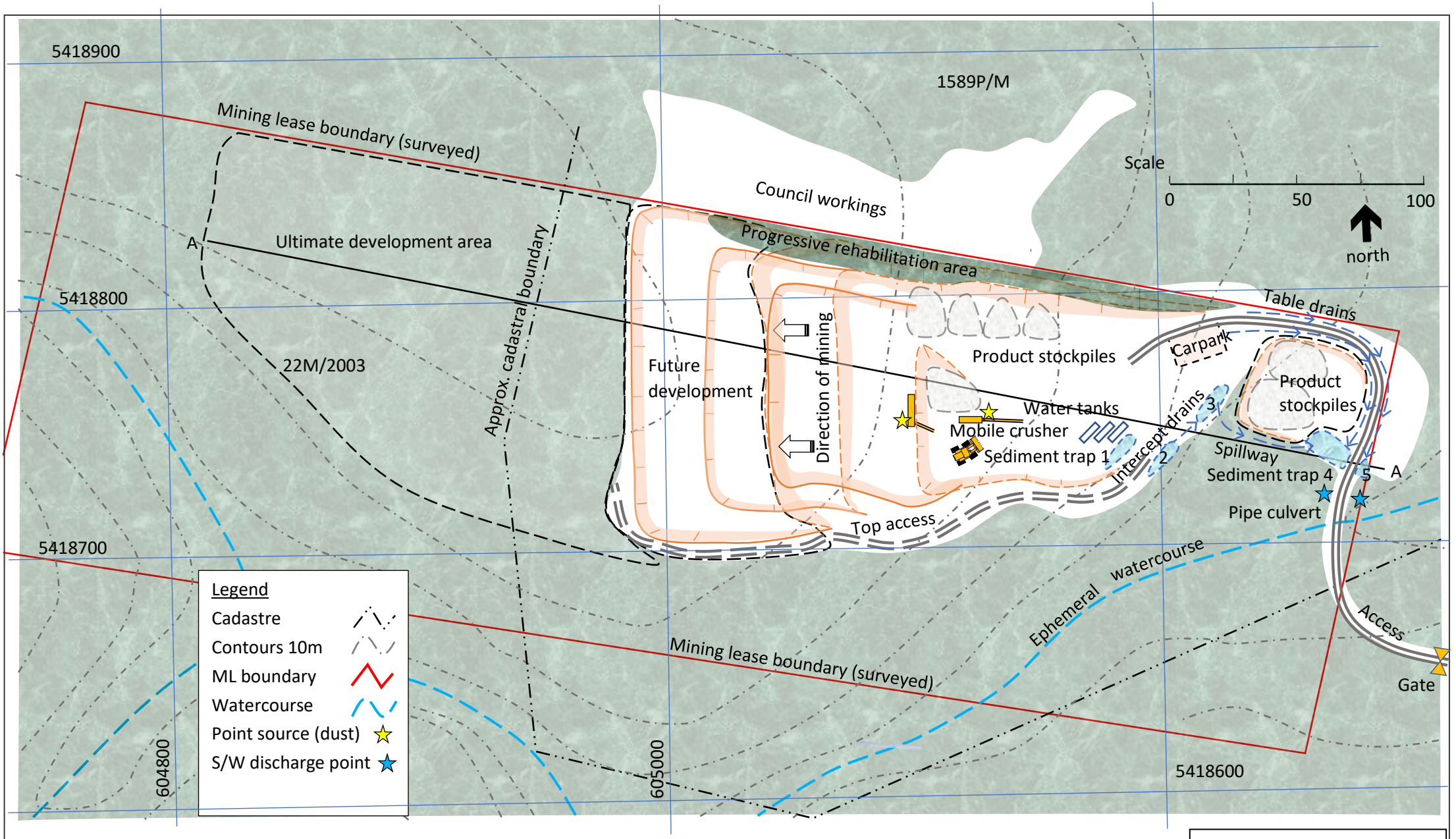
- 32-34 Georges Bay Esplanade St Helens Tasmania 7216 or alternatively the advertised documents can be accessed on Council's Website at: https://www.bodc.tas.gov.au/council/advertised-development-applications/

The EER can also be viewed at: https://epa.tas.gov.au/consultations
For assistance in accessing a copy of the EER, please contact North East Excavations (Tas) Pty Ltd on 0418 555 646 or nee@activ8.net.au.

A guide for preparing a public submission can be found at: https://epa.tas.gov.au/public-submission-guide

Representations must be submitted in writing to the General Manager, Break O'Day Council, 32 -34 Georges Bay Esplanade, St Helens 7216 or emailed to admin@bodc.tas.gov.au, and referenced with the Application Number in accordance with section 57(5) of the abovementioned Act during the fourteen (14) day advertised period commencing on Saturday 20th September 2025 **until 5pm Friday 3rd October 2025.**

John Brown
GENERAL MANAGER



Dianas Basin Quarry Plan – General Arrangement

Drawn: BW, Date: Feb 2022, Revision: 1, Datum: GDA 94

Ground conditions / slope stability:
Face slope indicated here is indicative only, actual bench heights and face slopes should be designed in accordance with a ground conditions study.

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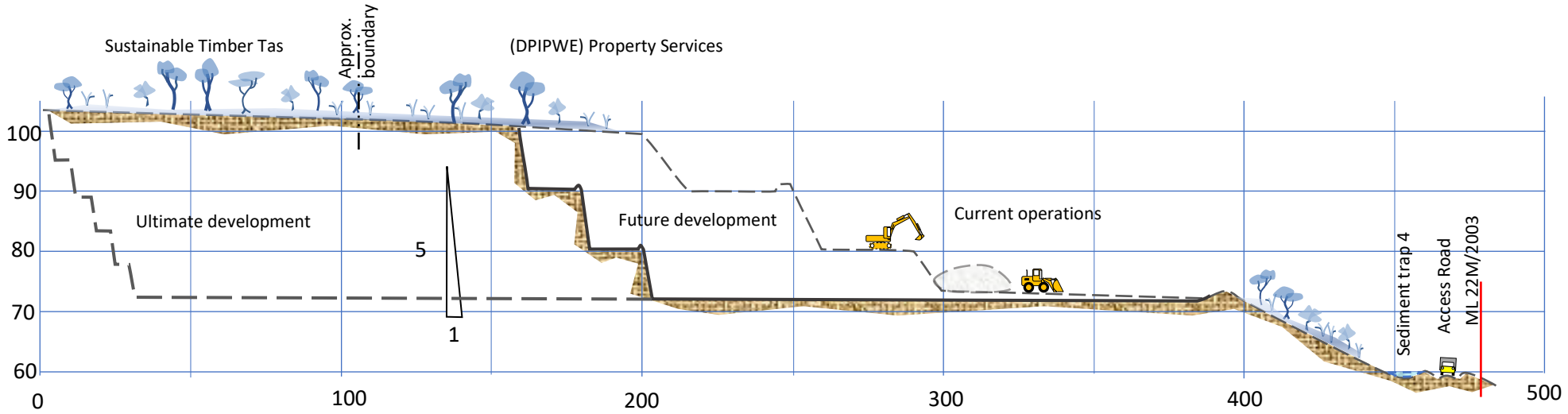

Section through A-A

Quarry development:

- Formalise the lower bench and progress upper bench in a westerly direction.
- Broaden top bench out such that the edge of the disturbance is 10 metres from the mining lease boundary. The benches on the northern side will be 5 metres high and around 5 metres wide.
- Maintain approximately 30 metres bench width and around 10 to 12 metres face height with a safety bund on the live edge.
- Improve access as the distance between the top bench and quarry floor increases. Make this track suitable for off-road haul trucks to cart extracted product to the mobile crusher / screener set on the quarry floor.

Disturbance areas:

- Current area – 2.1 hectares
- Future development – 2.6 hectares, 0.2 hectares progressive rehabilitation
- Ultimate development – 4.5 hectares.

Stormwater management:

- Clean out current sediment traps and drains of accumulated sediment.
- Enlarge sediment trap 3 to at least 3 metres by 4 metres with a maximum depth of 1 metre.
- Enlarge sediment trap 4 to 24 metres by 6 metres with a maximum depth of 1.5 metres.
- Construct a formal spillway to carry discharge from sediment trap 3 to sediment trap 4 and provide stone pitching (armour) to prevent scour.

Progressive rehabilitation:

- Maintain maximum 5 metre high faces on northern flank.
- Distribute overburden and topsoil over bench to provide a growing medium.
- Allow natural recruitment to apply vegetation cover.
- Broadcast native plant seed mix to supplement natural recruitment as required to provide a sustainable vegetation cover.

Dianas Basin Quarry Plan – Longitudinal section at A-A

Drawn: BW, Date: Feb 2022, Revision: 1

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North East Excavations (tas) Pty. Ltd
Dianas Basin Quarry – Increase in Capacity
Development Application – Supporting Information

Prepared By: Barry Williams

Date: 21 May 2025

Issue	Date	Recipient	Organisation
Revision 0	1 December 2021	Mr Andrew Griffiths	North East Excavations (tas) Pty Ltd
Revision 1	17 February 2022		Break 'O' Day Council
Revision 2	21 May 2025		Break 'O' Day Council

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1 INTRODUCTION

1.1 APPLICANT DETAILS

Name	North East Excavations (tas) Pty Ltd
ACN	081 523 579
Address	P O Box 386
	ST HELENS Tas 7216
Phone	
Contact	Mr Andy Griffiths
Mobile	0418 555 646
Email	nee@activ8.net.au

1.2 SITE DETAILS

Location	6 kilometres south of St Helens.
Address	Basin Creek Road
	ST HELENS Tas 7216
Certificate of Title	0
Property ID	2910155
Landowner	Crown land – Property Services division of the Department of Primary Industries, Parks, Water and Environment
	Permanent Timber Production Zone Land – Sustainable Timber Tasmania

2 SITE LOCATION DETAILS

Location	Dianas Basin Quarry is located off Basin Creek Road on a Crown Land parcel which is split between vacant crown land and forestry land. The mining lease (22M/2003) shares a boundary with another mining lease (1589P/M).
	The land is ex-production forest and now has low sparse native Eucalypt woodland regrowth vegetation cover.

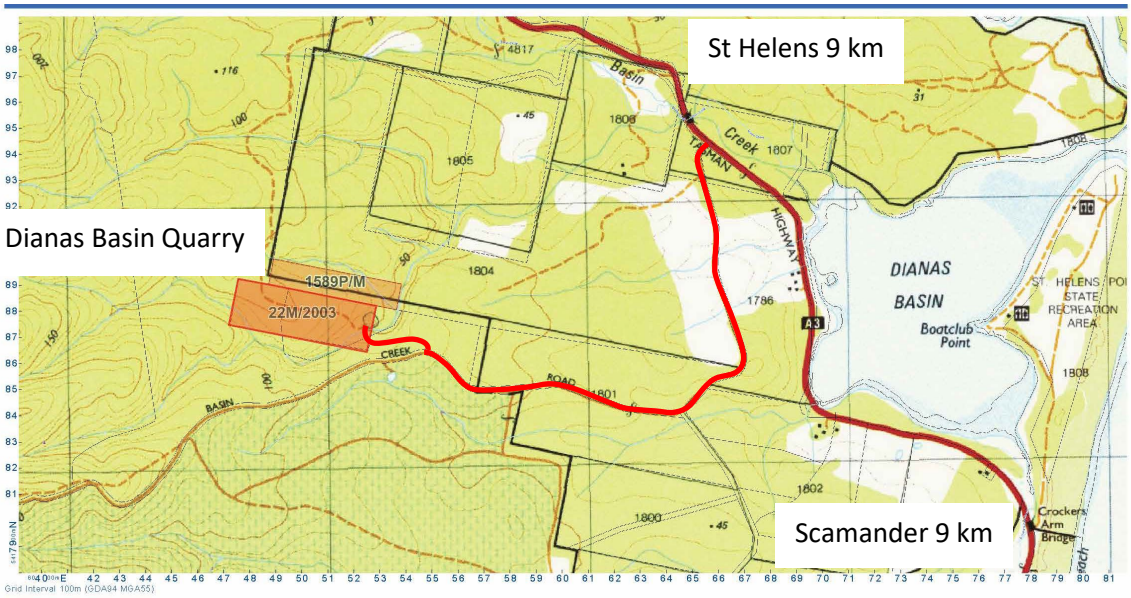

FIGURE 1: DIANAS BASIN QUARRY – LOCATION MAP

3 PROPOSAL

Intensification of an existing activity	The Proponent wishes to increase the maximum capacity to 50 000 cubic metres processed annually. As this increase will require a change to the EPN conditions, a Notice of Intent has been submitted to the EPA. The subsequent evaluation of the proposal determined a 2B class of assessment was necessary to consider the application under the *Environmental Management and Pollution Control Act 1994.* The Break 'O' Day Council considered the Notice of Intent and found that the proposal required a Development Application to be considered by Council under Section 57 of the *Land Use Planning and Approvals Act 1993.*
Materials to be extracted	The Dianas Basin Quarry exposes a Quartz rock resource which can be won predominantly by ripping and rock breaking. It is anticipated that over the life of the quarry operation, up to 1,000,000 cubic metres of rock will be extracted and processed. A quarry life of 20 years is expected.

TABLE 1: CURRENT AND PROPOSED PRODUCTION CAPACITY

Current capacity (max.) extraction	20,000 cubic metres	32,000 tonnes
Current capacity (max.) processing	20,000 cubic metres	32,000 tonnes
Proposed capacity (max.) extraction	50,000 cubic metres	80,000 tonnes
Proposed capacity (max.) processing	50,000 cubic metres	80,000 tonnes

4 ZONING

Zoning of the proposed land and neighbouring sites

Dianas Basin Quarry is located within the Break 'O' Day Local Government Area which is subject to the Tasmania Planning Scheme – Break 'O' Day Local Provisions Schedule.

The proposed development is to increase capacity of an existing gravel and hard rock quarry, within Mining Lease 22M/2003. The mining lease is located in the Rural land use zone. The land surrounding the quarry is likewise zoned Rural. Further afield between the quarry and Dianas Basin the land is zoned Landscape Conservation.

The closest residential zoned land is located on the Tasman Highway north of Beaumaris and is Particular Purpose zone (coastal settlement). This residential land is 2.6 kilometres from the mining lease boundary.

Figure 2: Land use zones below indicates land use zoning, the mining lease and demonstrates its proximity to the coastal settlement zoned land.

Figure 3: Reserved land below shows the reserved land in proximity to the Dianas Basin Quarry.

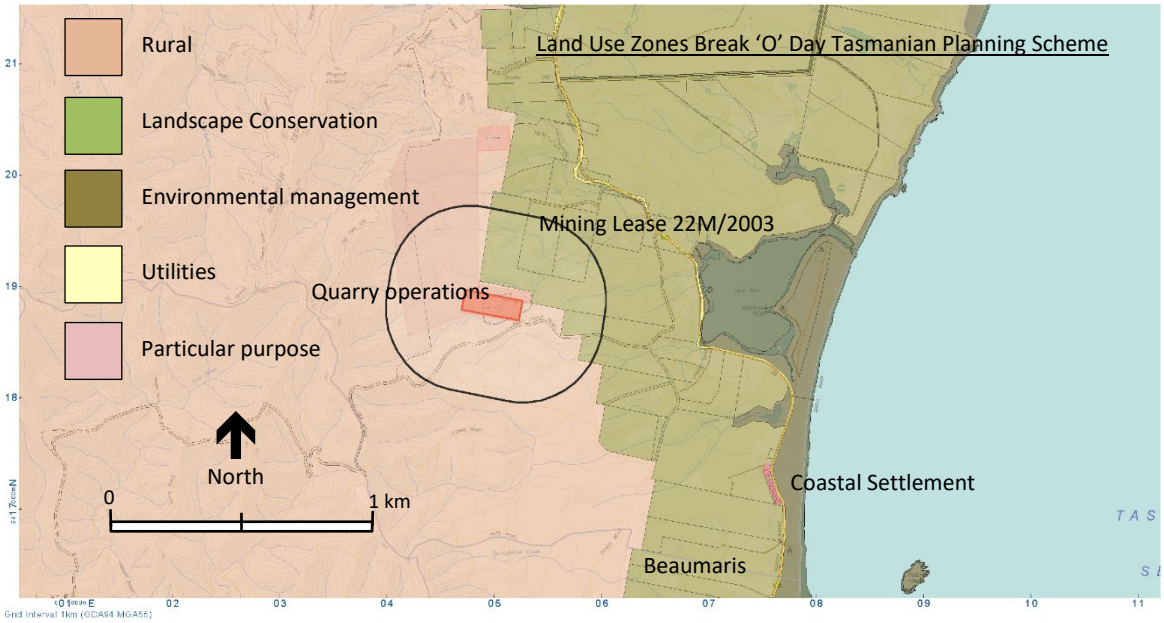

FIGURE 2: LAND USE ZONES

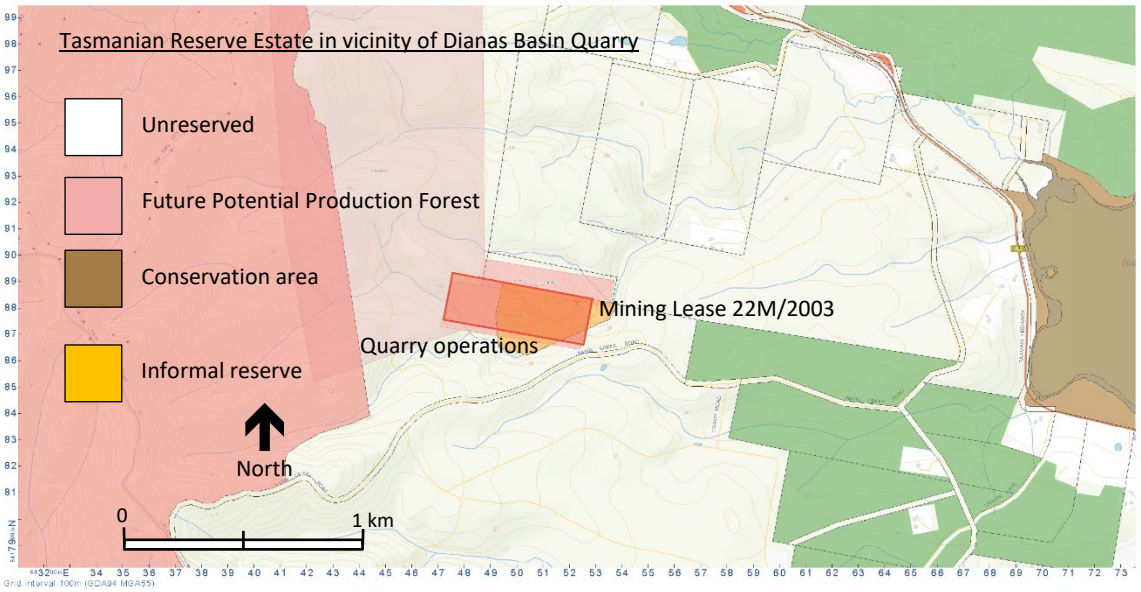

FIGURE 3: RESERVED LAND

5 USE STATUS

Use status	The proposed use is categorised as **Extractive Industry** under Table 6.2 Use Classes of the Tasmanian Planning Scheme. Extractive Industry is defined as: *use of land for extracting or removing material from the ground, other than Resource Development, and includes the treatment or processing of those materials by crushing, grinding, milling or screening on, or adjoining the land from which it is extracted. Examples include mining, quarrying, and sand mining.* **Extractive Industry** is a permitted use in the **Rural Zone**.

TABLE 2: RURAL ZONE PROVISIONS

20.0	**Rural Zone**
20.1	**Zone Purpose**
	20.1.1 To provide for a range of use or development in a rural location: *(a) where agricultural use is limited or marginal due to topographical, environmental or other site or regional characteristics;* *(b) that requires a rural location for operational reasons;* *(c) is compatible with agricultural use if occurring on agricultural land; and*

	(d) minimises adverse impacts on surrounding uses. *20.1.2 To minimise conversion of agricultural land for non-agricultural use.* *20.1.3 To ensure that use or development is of a scale and intensity that is appropriate for a rural location and does not compromise the function of surrounding settlements.*
	Assessment against Zone Purpose The proposal is to better utilise an existing gravel and rock resource through the intensification of an existing quarry operation. A quarry is primary industry and is consistent with surrounding rural use and development. The proposed use and development will not conflict with surrounding resource development uses apart from taking a small area of land temporarily out of production. The intensification of an existing gravel and rock quarry and associated processing will support the economic development of the region through the creation of local employment opportunities. It can be expected that greater efficiency in supplying construction materials and hence reduced cartage costs will result by virtue of the quarry's proximity to current and future infrastructure projects. The proposed use is compatible with surrounding extractive and forestry uses and will be planned and operated to minimise impacts on environmental and landscape values.
20.2	Use Table
	Extractive Industry is classed as a 'Permitted' use in the Rural Zone. The annual quantity of rocks or gravel extracted and processed qualifies the proposed activity as a Level 2 Activity under the *Environmental Management and Pollution Control Act 1994* (EMPC Act) Schedule 2, Section 5. (a) and Section 6. (a) (ii). Section 25. (1) of EMPC Act requires when an application is made for a permissible level 2 activity the planning authority must: (a) deal with the application in accordance with section 57 of the *Land Use Planning and Approvals Act 1993* (LUPA Act). Section 57 of LUPA Act refers to discretionary permits. This application therefore qualifies as an application for a discretionary permit.
20.3	**Use Standards**
20.3.1	Discretionary use
	Objective: That the location, scale and intensity of a use listed as Discretionary: (a) is required for operational reasons; (b) does not unreasonably confine or restrain the operation of uses on adjoining properties; (c) is compatible with agricultural use and sited to minimise conversion of agricultural land; and (d) is appropriate for a rural location and does not compromise the function of surrounding settlements.
	(a) Diana's Basin Quarry is located to take advantage of geological deposits with demonstrated material properties suitable for producing road construction pavements and sealing. (b) The site has a very low-grade forest cover and the cleared footprint will cause a minimal loss in regrowth forestry potential.

	(c) Part of the land is classified as Permanent Timber Production Zone land which is unclassified for agricultural use. The Crown Land portion is also unclassified for agricultural use. (d) The site is located remotely from settlements.

Acceptable Solutions	**Performance Criteria**
A1 A use listed as Discretionary, excluding Residential, is for an alteration or extension to an existing use, if: (a) the gross floor area does not increase by more than 30% from that existing at the effective date; and (b) the development area does not increase by more than 30% from that existing at the effective date.	P1 A use listed as Discretionary, excluding Residential, must require a rural location for operational reasons, having regard to: (a) the nature, scale and intensity of the use; (b) the importance or significance of the proposed use for the local community; (c) whether the use supports an existing agricultural use; (d) whether the use requires close proximity to infrastructure or natural resources; and (e) whether the use requires separation from other uses to minimise impacts.
Assessment against A1 (b): The proposed increase in 'development area' is from a current area of 2.1 hectares to final area of 4.7 hectares which is a 114% increase in area. Assessment against P1 (a) A rural location away from settlements is required for quarrying. (b) Diana's Basin Quarry will keep upgrades to road infrastructure affordable. (c) Improved road infrastructure supports agricultural uses. (d) The location is determined by desired geological resources. (e) Separation from settlements is required to minimise impacts.	
A2 No Acceptable Solution.	P2 A use listed as Discretionary must not confine or restrain existing use on adjoining properties, having regard to: (a) the location of the proposed use; (b) the nature, scale and intensity of the use; (c) the likelihood and nature of any adverse impacts on adjoining uses; (d) whether the proposed use is required to support a use for security or operational reasons; and (e) any off site impacts from adjoining uses.

Assessment against P2: Boundaries shared by the development site adjoin to sites either currently undertaking quarrying activities or land set aside for future forestry activities. Intensifying quarrying on the subject site will not constrain or confine these activities.	
A2 No Acceptable Solution.	P3 A use listed as Discretionary, located on agricultural land, must minimise conversion of agricultural land to non-agricultural use and be compatible with agricultural use, having regard to: (a) the nature, scale and intensity of the use; (b) the local or regional significance of the agricultural land; and (c) whether agricultural use on adjoining properties will be confined or restrained.
Assessment against P3: The land is not classed as agricultural land as part is set aside for future forestry and the Crown Land portion is not classified.	
A4 No Acceptable Solution.	P4 A use listed as Discretionary, excluding Residential, must be appropriate for a rural location, having regard to: (a) the nature, scale and intensity of the proposed use; (b) whether the use will compromise or distort the activity centre hierarchy; (c) whether the use could reasonably be located on land zoned for that purpose; (d) the capacity of the local road network to accommodate the traffic generated by the use; and (e) whether the use requires a rural location to minimise impacts from the use, such as noise, dust and lighting.
Assessment against P4: a) Quarrying is appropriate in the Rural Zone as demonstrated by the otherwise 'permitted' status. b) The development site fits in the District Service Activity Centre developed for regional areas to encourage a range of goods and services to minimise the need to supply from major centres. A local quarry supports this activity centre role. c) Quarrying is appropriate in the Rural Zone as demonstrated by the otherwise 'permitted' status. d) A Traffic Impact Assessment developed for this application addresses this question. e) An assessment undertaken by the Environment Protection Authority addresses this question.	

20.4	**Development Standards for Buildings and Works**
20.4.1	Building height
	No new buildings are proposed in this application.
20.4.2	Setbacks
	No new buildings are proposed in this application.
20.4.3	Access for new dwellings.
	No dwellings are proposed in this application.
20.5	**Development Standards for Subdivision**
	No subdivision of land is proposed in this application

6 RELEVANT CODES

The proposed intensification of Dianas Basin Quarry which is located off Basin Creek Road, Dianas Basin is located approximately 6 kilometres south of St Helens. The following section will address the relevant provisions in each of the applicable codes within the Tasmanian Planning Scheme and Break 'O' Day Local Provisions Schedules.

Table 3: Response to Codes below provides a summary of the Codes that are applicable to the proposal to intensify the Dianas Basin Quarry.

TABLE 3: RESPONSE TO CODES

	Code	Comment
C1.0	Signs Code	Not applicable – no new signs are proposed in this application.
C2.0	Parking and Sustainable Transport Code	Applicable – The current use requires carparking for employees – see comments below.
C3.0	Road and Railway Assets Code	Applicable – See comments below
C4.0	Electricity Transmission Infrastructure Protection Code	Not applicable – development is not located near to electricity transmission infrastructure.
C5.0	Telecommunications Code	Not applicable - the development is not located near to telecommunications infrastructure.
C6.0	Local Historic Heritage Code	Not applicable - the development is not located near to any historic places.
C7.0	Natural Assets Code	Exempt pursuant to C7.4.1 (b) – the proposed development is assessed as a Level 2 Activity.
C8.0	Scenic Protection Code	Not applicable – Tasman Highway is subject to scenic road corridor provisions but Diana's Basin Quarry is over 120 metres from the edge of the road.
C9.0	Attenuation Code	Exempt pursuant to C9.4.1 (a) - the proposed development is assessed as a Level 2 Activity.

C10.0	Coastal Erosion Hazard Code	Not applicable – this proposal is not located within any of the coastal erosion hazard bands.
C11.0	Coastal Inundation Hazard Code	Not applicable – this proposal is not located within any of the coastal inundation hazard areas.
C12.0	Flood-Prone Areas Hazard Code	Not applicable – this proposal is not located within any of the flood-prone hazard areas.
C13.0	Bushfire-Prone Areas Code	Not applicable – The activity is not applicable as it does not constitute a vulnerable or hazardous use pursuant to C13.2.1 (b).
C14.0	Potentially Contaminated Land Code	Applicable – The proposal is an intensification of a pre-existing potentially contaminating activity.
C15.0	Landslip Hazard Code	Exempt pursuant to C15.4.1 (b) – the proposed development is situated on a Mining Lease and is not a hazardous use.
C16.0	Safeguarding of Airports Code	Exempt pursuant to C16.4.1 (a) – the proposed development is not more than the AHD height specified in the relevant airport obstacle limitation area, i.e. 140 m which is 40 metres above natural ground level.

C2.0	**Parking and Sustainable Transport Code**		
C2.1	Code Purpose The purpose of the Parking and Sustainable Transport Code is: C2.1.1To ensure that an appropriate level of parking facilities is provided to service use and development. C2.1.2To ensure that cycling, walking and public transport are encouraged as a means of transport in urban areas. C2.1.3To ensure that access for pedestrians, vehicles and cyclists is safe and adequate. C2.1.4To ensure that parking does not cause an unreasonable loss of amenity to the surrounding area. C2.1.5To ensure that parking spaces and accesses meet appropriate standards. C2.1.6To provide for parking precincts and pedestrian priority streets.		
C2.2	Application of this Code		
C2.2.1	Unless stated otherwise in a particular purpose zone, or sub-clause C2.2.2, C2.2.3 or C2.2.4, this code applies to all use and development.		
	Car		Bicycle
Table C2.1	Extractive Industry	1 space per 2 employees	No requirement
C2.5.3	Motorcycle parking numbers		No requirement, use not listed in C2.2.2
C2.5.4	Loading bays		No requirement, use not listed in C2.2.3

C2.5.5	Number of car parking spaces within the General Residential Zone and Inner Residential Zone	No requirement, use not listed in C2.2.4
C2.6	Development Standards for Buildings and Works	
A1 All parking, access ways, manoeuvring and circulation spaces must: (a) be constructed with a durable all weather pavement; (b) be drained to the public stormwater system, or contain stormwater on the site; and (c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.		P1 All parking, access ways, manoeuvring and circulation spaces must be readily identifiable and constructed so that they are useable in all weather conditions, having regard to: (a) the nature of the use; (b) the topography of the land; (c) the drainage system available; (d) the likelihood of transporting sediment or debris from the site onto a road or public place; (e) the likelihood of generating dust; and (f) the nature of the proposed surfacing.
Assessment against A1 (a) Carparking will be formed on the fractured rock substrate which constitutes the quarry floor. (b) Carparking area will drain to the surface water management system for containment and treatment. (c) The use is within the Rural zone hence no surface seal is required.		
A1.1 Parking, access ways, manoeuvring and circulation spaces must either: (a) comply with the following: (i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6; (ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces; (iii) have an access width not less than the requirements in Table C2.2; (iv) have car parking space dimensions which satisfy the requirements in Table C2.3; (v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces; (vi) have a vertical clearance of not less than 2.1m above the parking surface level; and		P1 All parking, access ways, manoeuvring and circulation spaces must be designed and readily identifiable to provide convenient, safe and efficient parking, having regard to: (a) the characteristics of the site; (b) the proposed slope, dimensions and layout; (c) useability in all weather conditions; (d) vehicle and pedestrian traffic safety; (e) the nature and use of the development; (f) the expected number and type of vehicles; (g) the likely use of the parking areas by persons with a disability; (h) the nature of traffic in the surrounding area; (i) the proposed means of parking delineation; and (j) the provisions of Australian Standard AS 2890.1:2004 - Parking facilities, Part 1: Off-street car

(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or (b) comply with Australian Standard AS 2890-Parking facilities, Parts 1-6.	parking and AS 2890.2 -2002 Parking facilities, Part 2: Off--street commercial vehicle facilities.
Carparking will be delineated on the floor of the quarry at the entrance to the site: (a) Carpark spaces will be appropriate for the characteristics of a quarry. (b) Will have low slope (quarry floor) and ample area. (c) The fractured rock floor will provide an all-weather surface. (d) Vehicles will park before entering the active area of the quarry. (e) Car park spaces will be appropriate for a quarry use. (f) 2 car park spaces will be provided for up to 4 employees. (g) Car park spaces will be suitable for persons with a disability, although no building is provided. (h) Vehicles will park before entering the active area of the quarry. (i) Carpark spaces will be delineated with concrete wheel stops. (j) Carpark spaces will be informal and likely to move as extraction and processing activities change over time.	
C2.6.3	Number of accesses for vehicles
A single access is provided for Diana's Basin Quarry	
C2.6.4	Lighting of parking areas within the General Business Zone and Central Business Zone
Activity is not in the General Business Zone or Central Business Zone	
C2.6.5	Pedestrian access
A1.1 Uses that require 10 or more car parking spaces must: (a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by: (i) a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or (ii) protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and (b) be signed and line marked at points where pedestrians cross access ways or parking aisles	P1 Safe and convenient pedestrian access must be provided within parking areas, having regard to: (a) the characteristics of the site; (b) the nature of the use; (c) the number of parking spaces; (d) the frequency of vehicle movements; (e) the needs of persons with a disability; (f) the location and number of footpath crossings; (g) vehicle and pedestrian traffic safety; (h) the location of any access ways or parking aisles; and (i) any protective devices proposed for pedestrian safety.

Assessment against A1.1 Two carpark spaces are required.	
A1.2 In parking areas containing accessible car parking spaces for use by persons with a disability, a footpath having a width not less than 1.5m and a gradient not steeper than 1 in 14 is required from those spaces to the main entry point to the building.	
Assessment against A1.2 No buildings exist or are proposed in this application.	
C2.6.8	Siting of parking and turning areas
Objective That the siting of vehicle parking and access facilities in an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone, General Business Zone or Central Business Zone does not cause an unreasonable visual impact on streetscape character or loss of amenity to adjoining properties.	
Application is for development in Rural Zone	

C3.0	**Road and Railway Assets Code**
C3.1	Code Purpose The purpose of the Road and Railway Assets Code is: C3.1.1To protect the safety and efficiency of the road and railway networks; and C3.1.2To reduce conflicts between sensitive uses and major roads and the rail network.
C3.2	Application of this Code
C3.2.1	This code applies to a use or development that: (a) will increase the amount of vehicular traffic or the number of movements of vehicles longer than 5.5m using an existing vehicle crossing or private level crossing; (b) will require a new vehicle crossing, junction or level crossing; or (c) involves a subdivision or habitable building within a road or railway attenuation area if for a sensitive use.
The proposed development will increase the number of vehicles longer than 5.5 metres using an existing vehicle crossing.	
C3.5	Use Standards
A1.4	P1

Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than: (a) the amounts in Table C3.1; or (b) allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road.	Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to: (a) any increase in traffic caused by the use; (b) the nature of the traffic generated by the use; (c) the nature of the road; (d) the speed limit and traffic flow of the road; (e) any alternative access to a road; (f) the need for the use; (g) any traffic impact assessment; and (h) any advice received from the rail or road authority.
Assessment against A1.4 – Table C3.1: Proposed activity will increase movements of vehicle longer than 5.5 by more than 20%. Assessment against P1: A Traffic Impact Assessment answering these questions accompanies this application.	

C14.0	**Potentially Contaminated Land Code**
C14.1	The purpose of the Potentially Contaminated Land Code is:
C14.1.1	To ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.
C14.2	Application of this Code
C14.2.1	This code applies to a sensitive use, a use listed in a Use Class in Table C14.1 as one of the specified uses, or development, on land that: (a) is shown on an overlay map in the relevant Local Provisions Schedule as within an area of potentially contaminated land; (b) the planning authority knows to have been used for a potentially contaminating activity, by reference to: (i) a notice issued in accordance with Part 5A of the Environmental Management and Pollution Control Act 1994; or (ii) a previous permit; (c) the planning authority reasonably suspects may be contaminated by reference to: (i) a notice issued in accordance with Part 5A of the Environmental Management and Pollution Control Act 1994; or

	(ii) advice from the Director that it is likely that contamination has migrated onto the land; or (d) has been identified as having been used, or may have been used, for a potentially contaminating activity, or as land onto which it is likely that contamination from a potentially contaminating activity has migrated: (i) in a report lodged with the application; or (ii) in a report prepared by a site contamination practitioner in response to a request under section 54 of the Act.
The intensification of Diana's Basin Quarry is not a sensitive use, is not a Use Class listed in Table C14.1. Physical expansion of a quarry can be interpreted as meeting the definition of works as included in development as defined in LUPA Act.	
C14.4	Use or Development Exempt from this Code
C14.4.1	The following use or development is exempt from this code: (e) any use or development that operates in accordance with an approval granted as a result of an assessment of that use or development by the Board of the Environment Protection Authority.
The current activity is considered a potentially contaminating activity but has operated in accordance with an approval granted as a result of an assessment of that use or development by the Board of the Environment Protection Authority as demonstrated by the issue of Environmental Permit Part B Number 7661.	

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North East Excavations (tas) Pty Ltd - Dianas Basin Quarry Capacity Increase - Environmental Effects Report

Prepared By: Barry Williams

Date: 25 February 2022

Issue	Date	Recipient	Organisation
Revision 0	10 October 2021	Andrew Griffiths	North East Excavations (tas) Pty Ltd
Revision 1	25 October 2021		Environment Protection Authority
Revision 2	25 February 2022		Environment Protection Authority

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PART A PROPONENT INFORMATION

TABLE 1: PROPONENT DETAILS

Name	North East Excavations (tas) Pty Ltd
ACN	081 523 579
Address	P O Box 386
	ST HELENS Tas 7216
Phone	
Contact	Mr Andy Griffiths
Mobile	0418 555 646
Email	nee@activ8.net.au

TABLE 2: CONSULTANT DETAILS

Name	Integrated Land Management & Planning
Address	P O Box 1441
	LINDISFARNE Tas 7015
Contact	Mr Barry Williams
Mobile	0437 394 492
Email	barry.williams@ilmp.com.au

PART B – PROPOSAL DESCRIPTION

1.1 OVERVIEW OF ACTIVITY AND SITE

1.1.1 PROPOSED ACTIVITY

TABLE 3: ACTIVITY DETAILS

Intensification of an existing activity	North east excavations (tas) Pty Ltd (Proponent) has operated the Dianas Basin Quarry since the mining lease (22M/2003) was issued in 2003. The permit was upgraded in 2009 to a Level 2 permit under Permit Conditions - Environmental No. 7661 in 2009.
Material to be extracted	The activity seeks to extract and process quartz rock. It is anticipated that over the life of the quarry operation, up to 1,000,000 cubic metres of rock will be extracted and processed. A quarry life of 20 years is expected.
Current extraction capacity	20 000 cubic metres of product extracted per annum. 32 000 tonnes of product extracted per annum.
Current processed capacity	20 000 cubic metres of product processed per annum.

	32 000 tonnes of product processed per annum.
Proposed extraction capacity	50 000 cubic metres of product extracted per annum. 80 000 tonnes of product extracted per annum.
Proposed processing capacity	50 000 cubic metres of product extracted per annum. 80 000 tonnes of product extracted per annum.
Material extraction and processing	Hard rock will be extracted from rock outcrops primarily using ripping techniques. Particularly hard substrate may have to be won using drill and blast. This product won will be run through a primary crusher then the secondary crusher and screener circuit to produce clean aggregates for road sealing or blend with gravel to produce pavement materials. It is possible that blasting will occur up to 2 times per year.
Current transport	Currently the transport task consists of 32,000 tonnes equating to on average 1,000 loads or 2,000 movements or 8 heavy vehicle movement per day. Cartage will often be attributed to contract where it is likely that peak movements will be up to 20 heavy vehicle movement per day.
Proposed transport	Quarry traffic will travel on Basin Creek Road for a distance of 2.2 kilometres to the junction with Tasman Highway at Diana's Basin. At full production the quarry will generate 2,500 loads per year or 5,000 movements. Operating 260 days per year, it is anticipated that at full production **20 heavy vehicle movements per day** will be generated.

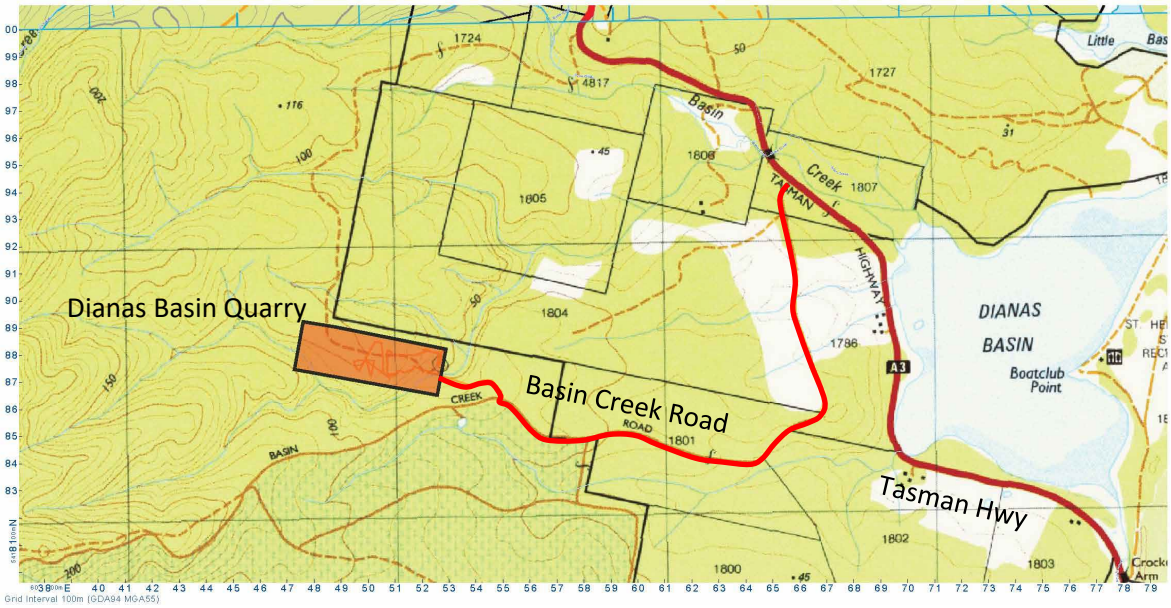


FIGURE 1: LOCATION MAP - TRANSPORT ROUTE

Cartage operations will conform to quarry standard quarry operating hours as cited in the Quarry Code of Practice **(Environment Protection Authority, May 2017)**.

Water	Process and dust suppression	A series of site water tanks supply process water and extra for dust suppression as required.
Energy	All energy is provided by diesel engines, fuel is replenished using a utility mounted refuelling tank.	
Stockpiling	Stripping	Topsoil and minimal overburden will be stockpiled in separate windrows.
	Product	Blended gravel and aggregate products will be stockpiled separately onsite. Stockpiles will be depleted over time to service contracts.
Area of disturbance	Current	The current operation has disturbed and area of **2.1 hectares.**
	Ultimate	The area of disturbance will increase to accommodate larger areas for stockpiles and truck manoeuvring. During the life of the quarry a total of **4.7 hectares** of land will remain unrehabilitated at any one time.
	Total disturbance	It is expected that a total approximately **4.5 hectares** will be disturbed over the life of the quarry.
Major Equipment	Rock drill, excavator, excavator with rock breaker, wheel loader, mobile crusher, mobile screener, various on-road truck and trailer combinations.	
Infrastructure	Existing	Relocatable crib hut and amenities block carparking, security gate and access road.
	Proposed	No additional infrastructure will be required.
Project timeline	EPA assessment	November 2021
	Council assessment	December 2021
	Permit issued	February 2022
Operating hours	Weekdays	7.00 am to 7.00 pm
	Saturdays	8.00 am to 4.00 pm

Blasting	Weekdays only	10.00 am to 2.00 pm

1.1.2 LOCATION AND PLANNING CONTEXT

TABLE 4: ACTIVITY LOCATION DETAILS

Location	6 kilometres south of St Helens.
Address	Basin Creek Road ST HELENS Tas 7216
Certificate of Title	0
Property ID	2910155

TABLE 5: LAND ZONING AND TENURE

Land tenure	Crown land
Landowner	Partly managed by DPIPWE and partly by Sustainable Timber Tas
Land use zoning	Break 'O' Day Interim Planning Scheme (BODIPS) – 26. Rural Resource
Activity status	Extractive industry is consistent with the objectives of the Rural Resource zone. No rezoning is required.
Permissibility	Quarrying is considered Extractive industry under Section 8 Administration, Table 8.2 Use Classes. Extractive industry is 'Permitted' in the Rural Resource zone except if on prime agricultural land or for a Level 2 Activity. Land capability mapping does not classify land allocated for forestry operations. A 'discretionary' application for a development permit is required, see advice from Break 'O' Day Council (attachment 1).
Mining Lease	22M/2003
Area	10 hectares

1.1.3 RATIONALE FOR PROPOSAL AND ALTERNATIVES

Rationale	The Tasman Highway is listed for extensive upgrades in coming years. The Department of State Growth is committed to improving the highway to improve road safety for the travelling public and tourists travelling on the "Great Eastern Drive". These works will continue to generate demand for rock for pavement base and sealing aggregates. A major component of the cost of pavement base and subbase is the cartage cost. Dianas Basin Quarry is ideally located to service construction contracts on the Tasman Highway north and south of Dianas Basin.

Alternatives	Dianas Basin Quarry would remain restricted to 20,000 cubic metres annual limit which would mean the Proponent cannot tender for substantial State Growth contracts. Less competition in the marketplace would result and possibly higher costs to the Government and hence to Taxpayers. Other operators can continue to tender for contracts supplying out of quarries at Campbell Town, Launceston or south of Bicheno but the cartage costs will increase the cost. Supplying out of these quarries will also cause an increase in heavy vehicles on the Tasman Highway over a significant distance with the associated road safety and road structural integrity implications.

1.1.4 DESCRIPTION OF EXISTING SITE AND SURROUNDS

Land use

Dianas Basin Quarry is located on Crown land. The quarry is situated partly on a parcel managed by DPIPWE through Property Services and partly on a parcel managed by Sustainable Timber Tasmania (STT). Both parcels have the Property ID number 2910155. The STT managed land is classed as Permanent Timber Production Zone (PTPZ) land. The balance is simply Crown Land.

Land immediately neighbouring Dianas Basin Quarry is production forest with a quarry operated by the Break 'O' Day Council on the northern boundary. Further afield are plantations in the forests to the south and private land with some residences to the east and north. Mountain bike trails have been established in the future production forest to the west.

Reserves set aside for future production forestry are located to the west of the quarry site. Conservation covenanted land has been established to the southeast the quarry site.

Residences nearest to the Dianas Basin Quarry with the separation distance from the mining lease boundary are tabulated in Table 6: Nearest residences.

TABLE 6: NEAREST RESIDENCES

Residential address	Separation distance
'Featherdale' 24671 Tasman Highway	500 m
24671A Tasman Highway	755 m
24673 Tasman Highway	950 m
24675 Tasman Highway	955 m
24669 Tasman Highway	1,000 m
'Landho' 24627 Tasman Highway	1,050 m

1.1.5 LOCATION DETAILS

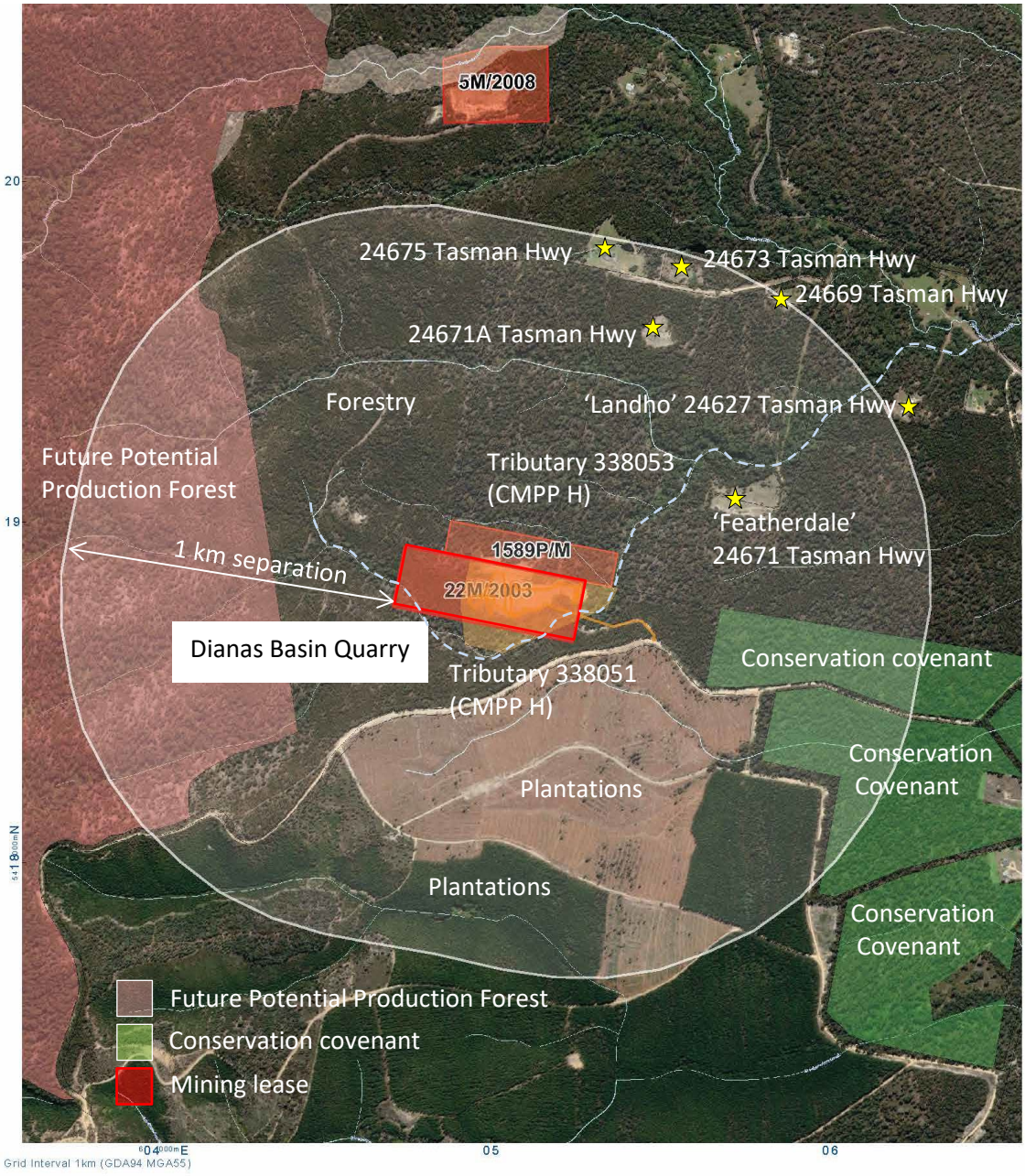
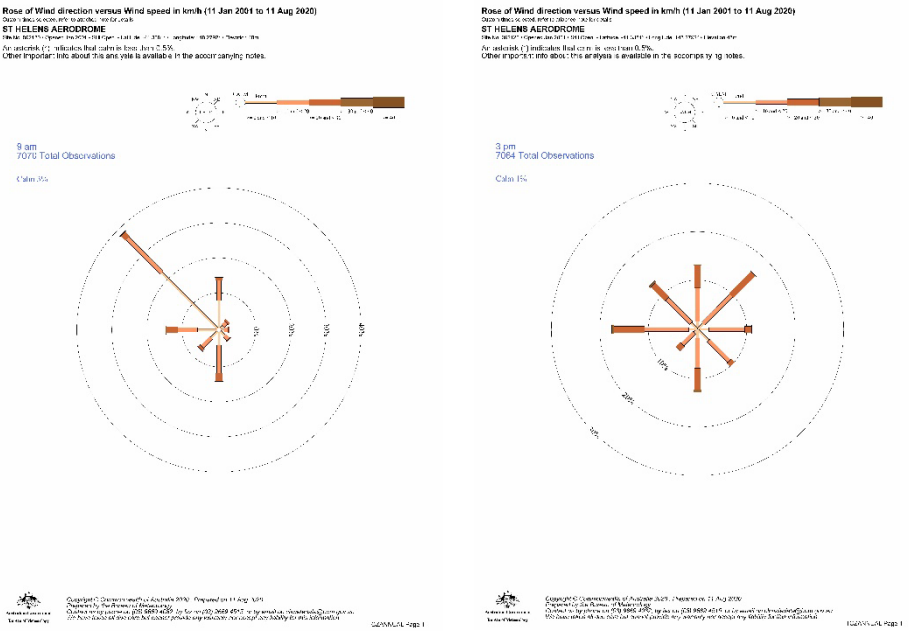


FIGURE 2: DIANAS BASIN QUARRY AND SURROUNDS

Topography	Dianas Basin Quarry occupies a low ridge top location at a reduced level of around 100 metres (AHD[1]). Natural watercourses occupy valleys to the south and north. The landscape in the vicinity of the site has an easterly aspect in the lower foothills to Scamander Tier range.

[1] AHD – Australian Height Datum

Climate data	Weather Station – St Helens Aerodrome 092120 (BOM (a), 2021)			
Mean temperature (^{0}C)	January		July	
	Maximum	Minimum	Maximum	Minimum
	23.0	13.4	13.6	4.8
Mean Rainfall (mm)	November	July	Annual	
	80.6	45.3	680.7	
Wind speed & direction	Wind rose average 9 am		Wind rose average 3 pm	



Geology

The Dianas Basin Quarry site is located on land that is geologically mapped as *Scamander Formation* further described as *Turbidite succession dominated by quartz-rich sandstones with minor siltstone and mudstone. Current related sedimentary structures abundant. Contains Devonian marine macrofossils, graptolites and vascular plant fossils.* Another unit is mapped as overlying the north west corner of the mining lease. This is described as *Cenozoic cover sequences* comprising *gravel, sand and derived lag*.

Soils

Foresty land is not considered for agriculture and hence no attempt has been made to map the soil types.

Hydrology

Two tributaries to the Basin Creek are located in valleys to the north and south of the site. At the closest approach the northern tributary is 40 metres away from the mining lease boundary. The southern tributary crosses the boundary on the west and east corners approching to within 25 metres of the quarry disturbance adjacent to the access road.

Two water bore holes loacted closest to the quarry are distant, at much lower elevation and quite different geology and hence cannot be used to predict groundwater systems at the quarry site.

Borehole	Number	16117
	Location	2.8 kilometres south east of site
	Depth (m)	6.1
	Initial yield (L/s)	0.19
	SWL (m)	3.1
	TDS (mg/L)	
	Aquifer geology	Quarternary alluvium
	Last recorded operating	1991
	Status	functioning
Borehole	Number	16114
	Location	2.7 kilometres south east of site
	Depth (m)	61.0
	Initial yield (L/s)	1.01
	Depth (m)	
	TDS (mg/L)	
	Aquifer geology	Mathinna sediments
	Last recorded operating	
	Status	unknown

1.1.6 NATURAL VALUES

TABLE 7: FLORA VALUES

Threatened Flora 500 metres			
Species	Common name	State listing	National listing
Hierochloe rariflora	cane holygrass	rare	-
Hovea corrickiae	glossy purplepea	rare	-
Threatened Flora 5000 metres			-
Species	Common name	State listing	National listing
Acacia ulicifolia	juniper wattle	rare	-
Austrostipa blackii	crested speargrass	rare	-
Brachyloma depressum	spreading heath	rare	-
Caladenia caudata	tailed spider-orchid	vulnerable	vulnerable
Caustis pentandra	thick twistsedge	rare	
Conospermum hookeri	tasmanian smokebush	vulnerable	vulnerable
Craspedia paludicola	swamp billybuttons	rare?	
Desmodium gunnii	southern ticktrefoil	vulnerable	-

Euphrasia collina subsp. deflexifolia	eastern eyebright	rare	-
Glycine microphylla	small-leaf glycine	vulnerable	-
Hibbertia calycina	lesser guineaflower	vulnerable	-
Hibbertia virgata	twiggy guineaflower	rare	-
Hierochloe rariflora	cane holygrass	rare	-
Hovea corrickiae	glossy purplepea	rare	-
Hovea tasmanica	rockfield purplepea	rare	-
Lachnagrostis billardierei subsp. tenuiseta	small-awn blowngrass	rare	-
Lachnagrostis punicea subsp. filifolia	narrowleaf blowngrass	rare	-
Lepidosperma forsythii	stout rapiersedge	rare	-
Liparophyllum exaltatum	erect marshwort	rare	-
Orthoceras strictum	horned orchid	rare	-
Persicaria subsessilis	bristly waterpepper	endangered	-
Plantago debilis	shade plantain	rare	-
Polyscias sp. Douglas-Denison	ferny panax	endangered	-
Pomaderris intermedia	lemon dogwood	rare	-
Pterostylis grandiflora	superb greenhood	rare	-
Pterostylis squamata	ruddy greenhood	vulnerable	-
Pterostylis ziegeleri	grassland greenhood	vulnerable	vulnerable
Schoenus brevifolius	zigzag bogsedge	rare	-
Stuckenia pectinata	fennel pondweed	rare	-
Utricularia australis	yellow bladderwort	rare	

TABLE 8: FAUNA VALUES

Threatened Fauna 500 metres			
Species	Common name	State listing	National listing
Tasmanipatus barretti	giant velvet worm	rare	-
Threatened Fauna 5000 metres			-
Species	Common name	State listing	National listing
Accipiter novaehollandiae	grey goshawk	endangered	-
Aquila audax	wedge-tailed eagle	p-endangered	p-endangered
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	endangered	endangered

Arctocephalus forsteri	new zealand fur seal	rare	-
Botaurus poiciloptilus	australasian bittern	-	endangered
Calidris canutus subsp. canutus	red knot	-	p-endangered
Calidris ferruginea	curlew sandpiper	-	critical
Charadrius rubricollis	hooded plover	-	p-vulnerable
Dasyurus maculatus	spotted-tail quoll	rare	vulnerable
Dasyurus maculatus subsp. maculatus	spotted-tail quoll	rare	vulnerable
Dasyurus viverrinus	eastern quoll	-	endangered
Diomedea cauta subsp. cauta	shy albatross	p-vulnerable	p-vulnerable
Eagle sp.	Eagle	endangered	endangered
Eubalaena australis	southern right whale	endangered	endangered
Gazameda gunnii	Gunn's screw shell	vulnerable	-
Haliaeetus leucogaster	white-bellied sea-eagle	vulnerable	-
Hirundapus caudacutus	white-throated needletail	-	vulnerable
Lathamus discolor	swift parrot	endangered	critical
Limosa lapponica subsp. baueri	western alaskan bar-tailed godwit	-	vulnerable
Megaptera novaeangliae	humpback whale	endangered	vulnerable
Mirounga leonina	southern elephant seal	endangered	vulnerable
Mirounga leonina subsp. macquariensis	southern elephant seal	p-endangered	p-vulnerable
Pachyptila turtur subantarctica	southern fairy prion	endangered	vulnerable
Perameles gunnii	eastern barred bandicoot	-	vulnerable
Podiceps cristatus	great crested grebe	vulnerable	-
Sarcophilus harrisii	tasmanian devil	endangered	endangered
Sterna albifrons subsp. sinensis	little tern	p-endangered	-
Sterna nereis subsp. nereis	fairy tern	p-vulnerable	p-vulnerable
Sterna vittata	antarctic tern	p-endangered	p-endangered
Sternula albifrons subsp. sinensis	little tern	endangered	-
Sternula nereis subsp. nereis	fairy tern	vulnerable	vulnerable
Tasmanipatus barretti	giant velvet worm	rare	-
Thalassarche cauta	shy albatross	vulnerable	endangered
Thinornis cucullatus	hooded plover	-	p-vulnerable

Thinornis rubricollis	hooded plover	-	vulnerable
Tyto novaehollandiae	masked owl	p-endangered	p-vulnerable
Tyto novaehollandiae subsp. castanops	masked owl (Tasmanian)	endangered	vulnerable

TABLE 9: RAPTOR NESTS

Threatened Flora 500 metres Species	Common name	Nest ID	Separation
Aquila audax	wedge-tailed eagle	2504	845 m
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	2492	1005 m
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	169	1160 m
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	832	2530 m

2 SITE LAYOUT AND DEVELOPMENT

2.1 LOCATION MAP

The location of Dianas Basin Quarry is represented on the location map Figure 1: Location Map - Transport Route. The proximity to the nearest residences in other ownership is shown on the surrounds map Figure 2: Dianas Basin Quarry and surrounds.

2.2 DEFINITION OF THE LAND

The land is defined as the mining lease area 22M/2003.

2.3 MAP OF THE LAND

The land is identified as the mining lease boundary and is represented on the Site Plan.

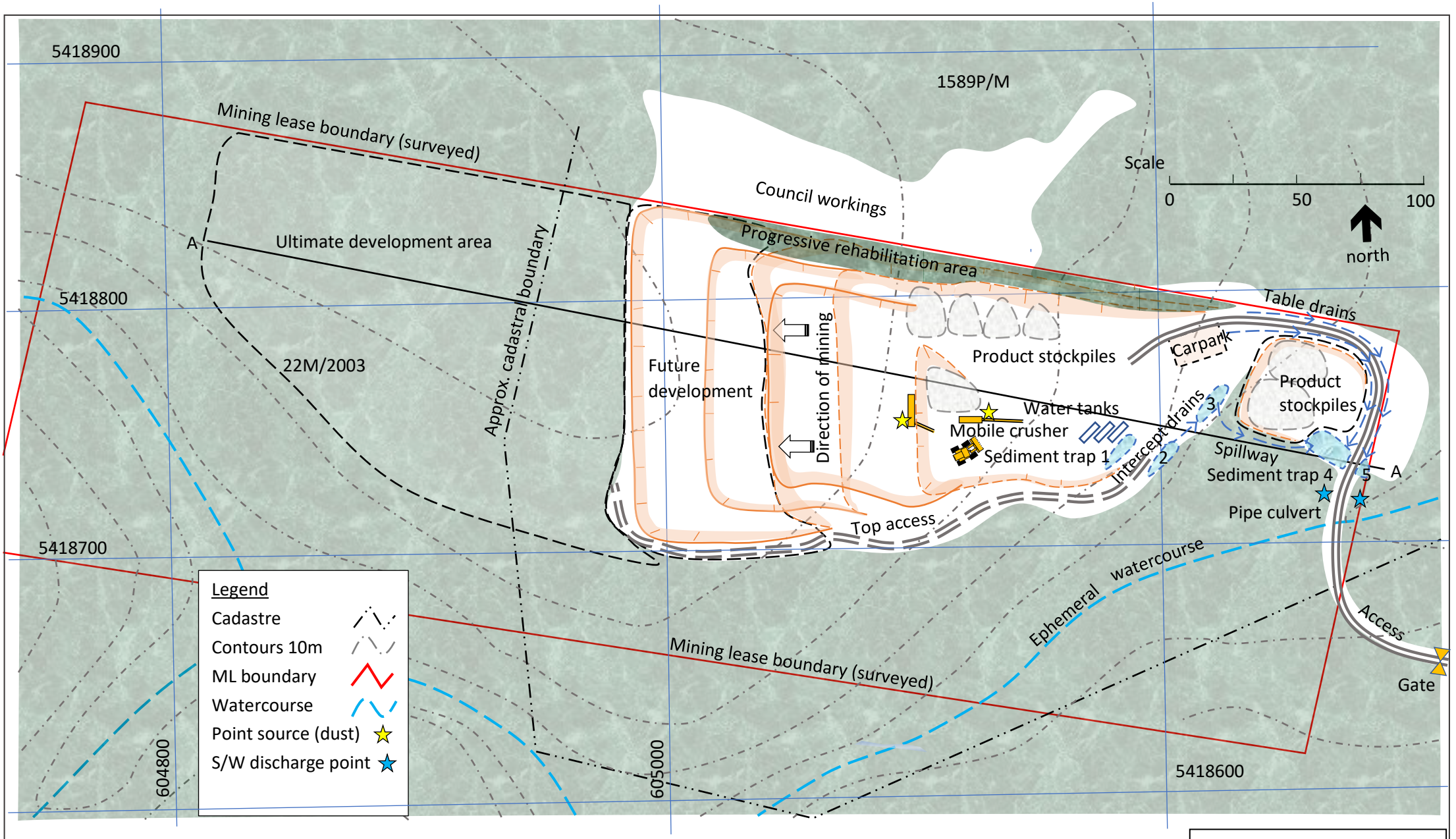


Figure 3: Dianas Basin Quarry Plan – General Arrangement

Drawn: BW, Date: Feb 2022, Revision: 1, Datum: GDA 94

Ground conditions / slope stability:
Face slope indicated here is indicative only, actual bench heights and face slopes should be designed in accordance with a ground conditions study.

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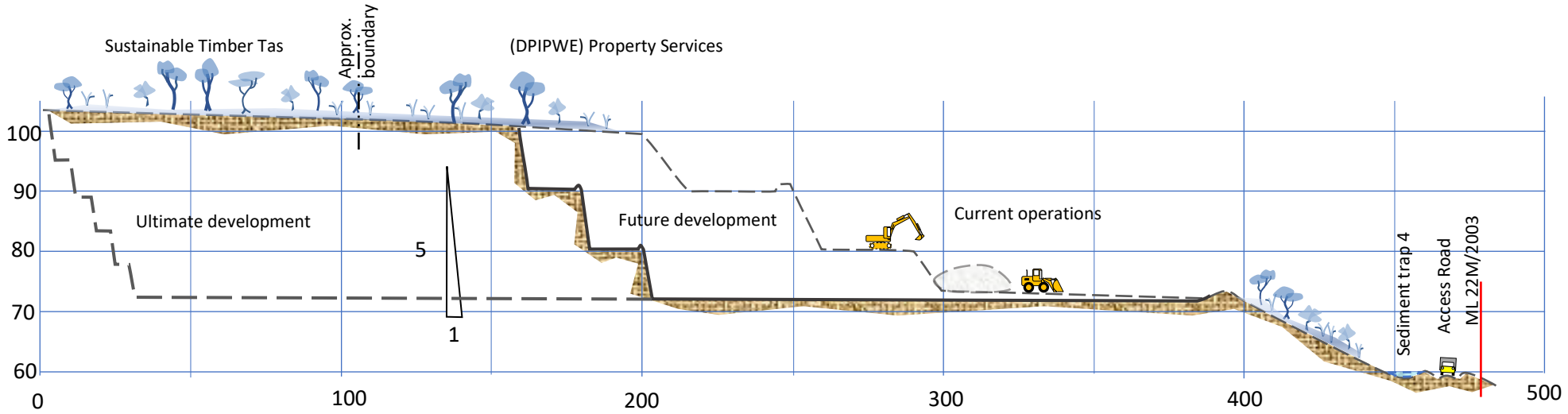

Section through A-A

Quarry development:

- Formalise the lower bench and progress upper bench in a westerly direction.
- Broaden top bench out such that the edge of the disturbance is 10 metres from the mining lease boundary. The benches on the northern side will be 5 metres high and around 5 metres wide.
- Maintain approximately 30 metres bench width and around 10 to 12 metres face height with a safety bund on the live edge.
- Improve access as the distance between the top bench and quarry floor increases. Make this track suitable for off-road haul trucks to cart extracted product to the mobile crusher / screener set on the quarry floor.

Disturbance areas:

- Current area – 2.1 hectares
- Future development – 2.6 hectares, 0.2 hectares progressive rehabilitation
- Ultimate development – 4.5 hectares.

Stormwater management:

- Clean out current sediment traps and drains of accumulated sediment.
- Enlarge sediment trap 3 to at least 3 metres by 4 metres with a maximum depth of 1 metre.
- Enlarge sediment trap 4 to 24 metres by 6 metres with a maximum depth of 1.5 metres.
- Construct a formal spillway to carry discharge from sediment trap 3 to sediment trap 4 and provide stone pitching (armour) to prevent scour.

Progressive rehabilitation:

- Maintain maximum 5 metre high faces on northern flank.
- Distribute overburden and topsoil over bench to provide a growing medium.
- Allow natural recruitment to apply vegetation cover.
- Broadcast native plant seed mix to supplement natural recruitment as required to provide a sustainable vegetation cover.

Figure 4: Dianas Basin Quarry Plan – Longitudinal section at A-A

Drawn: BW, Date: Feb 2022, Revision: 1

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PART C – POTENTIAL ENVIRONMENTAL EFFECTS

1 AIR QUALITY

Quarries generate dust through emissions from mechanical crushers and screens, dropping products from buckets into chutes and trays, dropping product from conveyors to chutes and to ground and through vehicle movements over unmade surfaces. The location of these point source emissions is highlighted on the quarry plan but will change according to the varying location of key pieces of equipment.

Dust at any quarry is managed to protect the workforce from any discomfort associated with coming into contact with fine particles. In addition to improving the workplace for employees, quarry operators consider any impact of dust on neighbours either directly from the quarry operation or more remotely from vehicular traffic.

1.1 AIR QUALITY STANDARDS

Environment Protection Policy (Air Quality) 2004

Part 3 - ENVIRONMENTAL VALUES AND STANDARDS

Environmental values

6. (1) Environmental values are the values or uses of the environment that are to be protected.

(2) The environmental values to be protected under this Policy are –

(a) the life, health and well-being of humans at present and in the future;

(b) the life, health and well-being of other forms of life, including the present and future health, wellbeing and integrity of ecosystems and ecological processes;

(c) visual amenity; and

(d) the useful life and aesthetic appearance of buildings, structures, property and materials.

1.2 MITIGATION MEASURES

Dianas Basin Quarry is in a remote location. There are no sensitive receptors (residences, schools, hospitals, nursing homes) in the vicinity that could be affected by fugitive dust emissions. The level of care provided to protect the workforce will be adequate to mitigate the threat of fugitive dust emissions.

The following measures will be employed to help further mitigate the risk of adverse fugitive dust emissions:

- Trafficked surfaces on the quarry floor, benches and haul roads will be maintained in good condition and clean.
- Drop distances between buckets and hoppers and trays and off conveyor chutes will be kept to a minimum.
- Trays carrying product off site will be loaded so the maximum height of the load does not exceed the height of the sides of the tray or alternatively will have covers fitted.
- The operator will deploy a water cart on days where weather conditions are especially dry and windy.

1.3 RESULTANT IMPACTS

Neighbours are remote from the impact of dust emissions from the Dianas Basin Quarry and hence are unlikely to be affected. Emission mitigation measures implemented to protect workers at the quarry will reduce dust emissions protecting other plants and animals and any structures or buildings in other ownership. Measures introduced on days of adverse weather will reduce visual dust emissions protecting visual amenity.

MANAGEMENT MEASURE 1: DUST MANAGEMENT

Item	Proposed measure	Timeframe
1.	A water cart will be employed on days where adverse weather conditions cause unacceptable dust emissions.	As required

2 WATER QUALITY (SURFACE DISCHARGE AND GROUNDWATER)

The Dianas Basin Quarry is situated at the top of a low ridge with natural watercourses located on the northern and southern side. The existing and future quarry development surfaces discharge to the southern watercourse where the quarry access road crosses.

2.1 WATER AND OVERLAND FLOW

The Dianas Basin Quarry site occupies a low ridge top location. The land has a low gradient falling slightly towards the top of the quarry face. The catchment is reducing as extractive activities approach the top of the ridge. The sides of the quarry disturbance fall away quite steeply to a gully with a natural watercourse on the southern side.
The quarry development plan includes retaining a hard edge on the southern side topped with a haul road. This prevents any discharge from the quarry disturbance entering the gully directly. The quarry disturbed areas are serviced by constructed sediment control infrastructure.

2.1.1 SEDIMENT CONTROL INFRASTRUCTURE

The current development area drains to a sediment trap on the quarry floor, sediment trap 1 (see Figure 3: Dianas Basin Quarry - Site Plan) which discharges into a swale drain. The swale directs overflow to sediment trap 2 which is a shallow detention area on the perimeter of the hard stand area. These detention areas discharge into sediment trap 3 which also collects runoff from the carpark area and other parts of the quarry floor. Sediment trap 3 overflows into native vegetation for a distance of approximately 50 metres before entering the natural watercourse.

The access road is steep and serviced with table drains, rock pitched on the southern side to prevent scouring. Both drains are intercepted by sediment traps (sediment traps 4 and 5) providing detention capacity before overflowing into the watercourse.

2.1.2 POTENTIAL IMPACT AND MITIGATION

An uncontrolled discharge of stormwater runoff from gravel surfaces can cause excess sediment to be deposited into the natural watercourse. The excess sediment can smother the bed of the stream killing aquatic flora and fauna and reducing the health of the stream. A substantial 'beach'

of sediment can remain in the bed of the stream and be carried downstream with each successive rain event further damaging aquatic habitat.

To account for the increase in disturbed area associated with this proposal, the sediment control infrastructure will be improved to provide more detention capacity. The initial sediment traps (1-2) will be cleaned out to restore design capacity. Sediment trap 3 will be enlarged to provide extra capacity and have a formalised spillway with rock pitching to armour and reduce flow velocity. Sediment trap 3 will discharge through the spillway to an enlarged sediment trap 4. The combination of the 4 sediment traps will retain sediment from a 5 percent reoccurrence probability event

2.1.3 SEDIMENT CONTROL CALCULATIONS

TABLE 10: TIME OF CONCENTRATION

Formula $Tc = 91L/(A^{0.1} * Se^{0.2})$	**Flow line L (km)**	**Catchment area A (ha)**	**Equal area Slope Se (m/km)**	**Concentration Tc (min)**
ultimate	0.50	4.0	100	16

TABLE 11: FLOW RATE

Formula $Q = \frac{C \cdot i \cdot A}{360}$	**Coefficient of runoff C (no units)**	**Intensity of rain event i (mm/hr)**	**Catchment area A (ha)**	**Flow rate Q (m^3/s)**
Stage 1	0.35	83.6	4.0	0.32

(BOM (b), 2021)

2.1.3.1 SIZE OF SEDIMENT TRAPS

Treat the total sediment control infrastructure as 2 individual sediment traps;
Sediments traps 1, 2 and 3 comprise combined trap 1 with a hydraulic efficiency of 0.76 and a turbulence factor of (n) = 4.
Sediment trap 4 will be treated as a secondary sediment retention basin with a lesser hydraulic efficiency of 0.5 and hence a turbulence factor of (n) = 2.

	Sediment trap 1	**Sediment trap 2**	**Sediment trap 3**	**Sediment trap 4**
Surface area (m^2)	20	24	16	24
Current capacity (m^3)	10	12	4	12
New surface area (m^2)	20	24	48	144
New capacity (m^3)	10	12	48	216

Sediment trap 1 – 3:

Depth of pond (d_p) = 1.0 m, extended depth (d_e) = 0.1 m and retention depth (d*) = 0.5 m.

Sediment trap 4:

Depth of pond (d_p) = 1.5 m, extended depth (d_e) = 0.1 m and retention depth (d*) = 1.0 m.

TABLE 12: CAPTURE EFFICIENCY

Formula $R = 1 - (1 + \frac{1}{n} \times \frac{v_s}{Q/a} \times (\frac{d_e + d_p}{d_e + d^*}))^{-n}$	**Settling velocity (fine silt) v_s (m/s)**	**Surface area a (m2)**	**Flow rate Q (m^3/s)**
Sediment trap 1-3	0.0018	92	0.32
Sediment trap 4	0.0018	144	0.32

Sediment trap 1-3 capture efficiency $R = 1 - (1.25 \times 0.5187 \times 1.38)^{-4} = 0.51$

Sediment trap 4 capture efficiency $R = 1 - (1.25 \times 1.215 \times 1.45)^{-4} = 0.96$

Sediment trap 1-3 surface area = 92 m^2, pond depth 1.0 metres, assume average 0.5 metre: Storage capacity 46 m^3. Assume sediment storage of 50% total capacity = 23 m^3.

Sediment trap 4 surface area = 144 m^2, pond depth 1.5 metres, assume average 0.75 metre: Storage capacity 108 m^3. Assume sediment storage of 50% total capacity = 54 m^3.

TABLE 13: SEDIMENT TRAP SURFACE AREA

	Flow rate Q (m3/s)	**Retention basin area from WSUD Figure 4.2 for 90% capture (m^2)** (EPA division, 2012)	**Actual basin surface area (m^2)**
Sediment trap 1-3	0.32	120	92
Sediment trap 4	0.32	120	144

TABLE 14: CLEAN OUT FREQUENCY

Formula $F_r = S_t / (A \times R \times L_o)$	**Capture efficiency (R)**	**Contributing catchment, A (ha)**	**Storage volume S_t (m^3)**	**Sediment loading rate L_o (m^3/ha/yr)**	**Desired Cleanout frequency F_r (yrs)**
Sediment trap 1-3	0.51	4.0	23	10	1.1

Sediment trap 4	0.96	4.0	54	10	1.4

The calculated clean out frequency is 1.1 years for sediment trap 1-3 and 1.4 years for sediment trap 4. The low capture efficiency of sediment trap 1-3 will mean that an amount of sediment will bypass this trap and end up in sediment trap 4.

2.2 NET ENVIRONMENTAL IMPACT

On March 24 and 25 the local area received a rainfall event totalling 85.6 mm. Observation of the sediment control infrastructure reveals that minimal erosion had taken place. Minor overtopping of the existing sediment control infrastructure had occurred but there was no evidence that a significant volume of sediment had entered the watercourse during this event. (BOM (c), 2021)

PLATE 1: UNNAMED WATERCOURSE DOWNSTREAM OF QUARRY CULVERT

The combination of the current and improved sediment control infrastructure will provide adequate sediment retention capacity to prevent an adverse impact on the receiving aquatic environment.

2.2.1 GROUNDWATER

Groundwater levels and flows commonly appear as a subdued representation of the surface topography. No constructed water bores have been installed in proximity to the Dianas Basin

Quarry site, the closest is at a lower elevation (10 metres AHD) and was sunk to depth of 31 metres but in an entirely different geological formation.

At the top of the catchment, it is likely that the quarry is located within a recharge area. Drains introduced to intercept overland flow from the quarry disturbance will keep the quarry floor free draining and prevent uncontrolled flows occurring into the neighbouring native woodland.

2.2.2 WATER QUALITY STANDARDS

State Policy on Water Management 1997

PART 2 - OBJECTIVES

5. Purpose of the Policy

5.1 To achieve the sustainable management of Tasmania's surface water and groundwater resources by protecting or enhancing their qualities while allowing for sustainable development in accordance with the objectives of Tasmania's Resource Management and Planning System. (Schedule 1 of the State Policies and Projects Act 1993)

2.2.3 POTENTIAL IMPACT AND MITIGATION

The threat of ground water becoming contaminated by water infiltrating from exposed quarry surfaces will be mitigated with intercept drains capturing and directing flows to sediment traps. The Operator will have hydrocarbon booms at the ready to collect oil from water surfaces if an accidental leak occurs. Particular care will be taken during re-fuelling to keep a hydrocarbon spill kit ready for immediate deployment if a spill occurs.

MANAGEMENT MEASURE 2: STORMWATER MANAGEMENT

Item	Proposed measure	Timeframe
2.	The existing sediment control infrastructure will be enhanced to contain the expected flow from a 5% Annual Exceedance Probability event.	On issue of a permit

3 NOISE EMISSIONS

3.1 EQUIPMENT

The Dianas Basin Quarry will use fully mobile equipment to extract and process the source rock and gravel.

TABLE 15: MOBILE EQUIPMENT ON SITE

Equipment	Make	Model	Power rating (kW)
Wheel loader	CAT	980G	229
Excavator	Kobelco	EX21035	98
Excavator	Komatsu	PC 400 lc	224

Crusher bucket	Hartl	-	-
Mobile impact crusher	Terex Finlay	IC-110rs	224
Mobile screen	Precision screen	Road master	98

3.2 NOISE ATTENUATION

The Dianas Basin Quarry site is located within a working forest with fully forested land intervening between the quarry and neighbouring residences, see Figure 2: Dianas Basin Quarry and surrounds The closest residence is 500 metres away from the mining lease boundary towards the northeast.

The current product processing area is located on the floor of the existing quarry footprint. The land immediately intervening between the crusher / screener set up is between 8 and 12 metres above the quarry floor. Topographic attenuation is most effective at attenuating noise from equipment including crushers and screeners and heavy machinery.

It is intended that the quarry will develop in a westerly direction and deeper into the slot created by the natural land to the north and south and further away from the closest residence.

The topographic attenuation along with ambient noise from the intervening forested land is highly likely to screen the closest residence from unacceptable noise impacts.

3.3 ADDITIONAL ATTENUATION MEASURES

All equipment operating at Dianas Basin Quarry will be recent models and fully maintained with proprietary silencers fitted. The quarry floor, haul roads and access road will be maintained free of ruts and pot holes to ensure traffic noise is minimised.

Operators will ensure that drop distances are minimised and vehicles and equipment maintain slow speeds.

Operating hours for the Dianas Basin Quarry will remain unchanged from the current practice.

MANAGEMENT MEASURE 3: NOISE MANAGEMENT

Item	Proposed measure	Timeframe
3.	The high wall between the quarry floor and noise generating activities and residences to the north will be retained for current and future development to provide noise attenuation.	At all times

3.4 BLASTING

It is likely that drilling and blasting will only be required infrequently, when the source rock resists ripping with the 40 tonnes excavator. It is likely that only the lower quarter of the extraction face will resist ripping. Therefore, blasting will account for 12,000 cubic metres of the annual production which will be extracted by up to 2 blasts per year

TABLE 16: BLASTING SCHEDULE

Blast frequency (max.)	2 blasts per year	
Average blast size (BCM)	8 000	
Blasting times	Monday to Friday	10.00 am to 4.00 pm
	Weekends and public holidays	No blasting

3.5 BLAST MONITORING

Limits for blasting on quarry operations are stipulated in the *Quarry Code of Practice*

Acceptable standard

a) for 95% of blasts, air blast overpressure must not exceed 115 dB (Lin Peak);

b) air blast overpressure must not exceed 120 dB (Lin Peak) at all;

c) for 95% of blasts, ground vibration must not exceed 5 mm/s peak particle velocity; and

d) ground vibration must not exceed 10 mm/s peak particle velocity at all.

3.6 MITIGATION

The operator has not had to blast to release product since 2008. At this time the blasting contractor conducted the blast and monitored the emissions at the closest residence. The results of the blast monitoring recorded at the residence at 24671 Tasman Highway are tabulated below:

TABLE 17: BLAST MONITORING RESULTS

Peak Vector Sum Velocity	0.33 mm/s
Peak Overpressure	103.6 dBL

The results of this most recent blasting episode show that the emissions occurring from a typical blast are well within the acceptable limits as cited in the current *Quarry Code of Practice 2017.*

MANAGEMENT MEASURE 4: BLAST MANAGEMENT

Item	Proposed measure	Timeframe
4.	A fully certified professional drilling and blasting contractors will be utilised for all blasting. All blasts will be monitored and any exceedance will be reported to the EPA.	During blasting

4 SOLID WASTES

4.1 WASTE FROM EXTRACTION

Stripping the current vegetation, topsoil and overburden to expose areas for extraction can produce waste products. The vegetation and topsoil is windrowed in front of the advancing top face to provide a physical barrier to discourage the public from entering the active quarry operations area. Overburden is likewise windrowed separately to the topsoil. Both topsoil and overburden will be utilised in future rehabilitation activities.

On a previous occasion the source rock was suspected of having acid forming potential. A subsequent report on PAF rock recommended that future extraction areas be sampled and assessed. Sampling and analysis occurred and the results were provided in an addendum to a DSG Specification G6 quarry assessment report, **(Statewide Geotechnics, June 2015)**.

The report found that sample taken from the western face (quarry development area) had “no detectable sulphur and calculated pyrite contents and thus would have very low Maximum Acid Producing Potential”. The Addendum letter and attachment test results are included as Attachment 2.

4.2 SPARES AND LITTER

Dianas Basin Quarry operates continuously, mobile machinery will be lubricated on site but will be removed from site for full servicing and repairs. Spares or waste generated through breakdowns or routine lubrication will be retained in the workers utes and taken off-site at the end of each working day.

Litter emanating from lunches and other amenities will be retained in enclosed containers and periodically disposed of to an approved disposal site.

4.3 TOILET WASTE

The site will be serviced with a relocatable toilet facility. The facility will be supplied with potable water from a tank maintained with a water cart. Waste from the toilet will be held in a holding tank and periodically dumped to designated dump point.

5 ENVIRONMENTALLY HAZARDOUS SUBSTANCES

5.1 HYDROCARBONS

Mobile equipment will be refuelled using a utility mounted refuelling facility. Lubricants, engine oil and hydraulic fluid for daily maintenance will be stored on a bunded pallet within a relocatable storage shed.

5.2 LEAK AND SPILLS

The Operator will retain a hydrocarbon spill kit onsite ready for immediate deployment if a hydrocarbon leak or spill occurs. Hydrocarbon mats will be retained onsite for deployment across the surface of the sediment trap should a hydrocarbon spill or leak enter the sediment control infrastructure.

5.3 OTHER HAZARDOUS SUBSTANCES

Explosives will not be stored onsite. The Blasting Contractor will retain responsibility for explosives and will bring to site only those required for the planned shot. The Blasting Contractor will be fully accredited and insured for the transport and handling of explosives.

MANAGEMENT MEASURE 5: HYDROCARBON MANAGMENT

Item	Proposed measure	Timeframe
5.	A hydrocarbon spill kit will be retained on site ready for immediate deployment should a spill occur during refuelling. Hydrocarbon mats will be retained on site to clean up any leaks from machinery that may occur.	At all times

6 NATURAL VALUES

6.1 NATURAL VALUES ASSESSMENT

The natural values assessment commissioned for this application included a field survey of the area to the west of the existing quarry operation. The final report, *Natural Values Assessment of Basin Creek Quarry (Mining Lease 22M/2003), St Helens, Tasmania* (Wapstra, August 2021) was finalised on 30 August 2021 and is included in this document as Attachment 3.

6.2 FIELD ASSESSMENT

The field assessment was conducted on 23 August 2021, and covered the area to the west of the existing quarry.

6.3 KEY FINDINGS

A summary of the key findings is as follows:

6.3.1 THREATENED FLORA

No individuals or populations of species or communities listed under state or federal legislation were observed.

6.3.2 THREATENED FAUNA

No fauna species listed as threatened under state or federal legislation were observed.

Potential habitat for some listed species was observed, as follows;

- marsupial carnivores (Tasmanian devil, spotted tailed quoll eastern quoll)
- new holland mouse
- giant velvet worm
- masked owl
- wedge-tailed eagle.

6.3.3 VEGETATION TYPES

The site area supports the following vegetation types;

- *Eucalyptus sieberi* forest and woodland not on granite (DSO)
- extra-urban miscellaneous (FUM).

6.3.4 WEEDS

No weed species classified under the Weed Management Act 1999 were detected, an environmental weed is localised in to the west of the existing quarry;

- *Pinus radiata* (radiata pine).

6.3.5 PLANT DISEASE

The site presented no evidence of the following plant diseases;

- *Phytophthora cinnamomi* (root rot),
- myrtle wilt, or
- myrtle rust.

6.3.6 ANIMAL DISEASE

The site does not support habitat that may support frog chytrid disease.

6.4 RECOMMENDATIONS

Below is a summary of the report recommendations:

- Vegetation types – no special management recommended.
- Threatened flora – no special management recommended.
- Threatened fauna – no special management recommended.
- Weed and disease management – a site specific weed and disease management should be enacted. The plan shall include removal of the radiata pine trees to the west of the quarry on the mining lease area.

6.5 LEGISLATIVE AND POLICY

No referral to the commonwealth government in relation to the *Environment Protection and Biodiversity Conservation Act 1999* is required.

No permit is required under the *Threatened Species Protection Act 1995*.

7 WEEDS, PESTS AND DISEASE

7.1 WEEDS & DISEASE STATUS

The Dianas Basin Quarry site has been recently surveyed as part of a natural values assessment. The field observations found no evidence of plant or animal disease but did find radiata pine as being established to the west of the existing quarry. A copy of the report dated 30 August 2021 is included as Attachment 3.

7.2 WEED & DISEASE MANAGEMENT

On issue of a permit, the Operator will immediately amend the existing weed control program to include the removal of the radiata pines in the woodland to the west of the quarry.

- A weed inspection and control program will continue at least annually.

The Operator will maintain weed and disease-free status by adopting the hygiene protocols from the *Weed and Disease Planning and Hygiene Guidelines 2015* **(DPIPWE, March 2015)***:*

- All machinery will be thoroughly cleaned, inspected and certified before being mobilised to site.

Access to the site will be strictly controlled when the quarry is unattended by fastening a locked gate. The operator has established barriers to prevent unauthorised access to the quarry. Un-authorised access in the undeveloped area outside the quarry footprint is harder to control.

MANAGEMENT MEASURE 6: WEED MANAGEMENT

Item	Proposed measure	Timeframe
6.	The weed management plan will be amended to include the removal of the radiata pine trees on the west of the existing quarry.	On issue of a permit

8 ENVIRONMENTAL IMPACTS OF TRAFFIC

TABLE 18: ESTIMATED TRAFFIC AT FULL PRODUCTION

Current cartage task				
Annual production capacity (tonnes)	32 000			
Average pay load various truck types (tonnes)	32			
Cartage per year (maximum production)	Loads	1,000	Movements	2,000
Average movements (expected)	Week	45	Day	8
Peak movements (expected)	Week	120	Day	20

Proposed cartage task				
Annual production capacity (tonnes)	80 000			
Average pay load various truck types (tonnes)	32			
Cartage per year (maximum production)	Loads	2,500	Movements	5,000
Average movements (expected)	Week	120	Day	20
Peak movements (expected)	Week	240	Day	40

8.1 TRAFFIC VOLUME

The volume of traffic from the quarry will be consistent throughout the year but will fluctuate according to supply contracts.

The traffic from the Dianas Basin Quarry will travel along a private access road onto Basin Creek Road. Under normal circumstances all the quarry traffic will travel on Basin Creek Road to the junction with the Tasman Highway at Dianas Basin.

8.2 ENVIRONMENTAL IMPACT

Three residences are located in close proximity to Basin Creek Road:

TABLE 19: NEAREST RESIDENCES TO BASIN CREEK ROAD

Residential address	Separation distance to centreline Basin Creek Road
'Rose Cottage' 24537 Tasman Highway	140 m
24609 Tasman Highway	90 m
24605 Tasman Highway	60 m

Basin Creek Road is unsealed for most of the transport length which will reduce heavy vehicle speeds hence reducing the potential impact of the extra traffic on native animals.

Basin Creek Road has been sealed for 200 metres from the junction with Tasman Highway as part of the ongoing highway improvement program. The sealed section extends past the frontage to 24609 and 24605 Tasman Highway. Trucks will be approaching the junction and hence will be travelling slowly over this section of Basin Creek Road.

A sealed road formation will reduce the noise of the trucks traversing this section and also eliminate dust emissions from the trucks.

8.2.1 TRAFFIC NOISE MITIGATION

- Contractors engaged to cart product for the Dianas Basin Quarry will be professional contractors with late model well maintained trucks with proprietary silencers fitted.

- The cartage task will be undertaken during normal quarry operating hours, which for the majority of the year will be during daylight hours.
- Cartage contractors will be instructed to refrain from using exhaust brakes in close proximity to residences.

MANAGEMENT MEASURE 7: TRAFFIC ENVIRONMENTAL IMPACT

Item	Proposed measure	Timeframe
7.	Trucks delivering product from Dianas Basin Quarry will be advised to refrain from using engine brakes in close proximity to residences on Basin Creek Road.	At all times

9 MONITORING

No routine monitoring will be undertaken during the course of operations. Extraordinary monitoring will be undertaken to observe the condition of stormwater runoff control infrastructure, prevailing air quality conditions and the presence of weeds.

9.1 SEDIMENT TRAP

The Operator will observe the level of accumulated sediment in both sediment traps and drainage channels. Once the level of accumulated sediment in the traps or drains has risen to half the full water level, the sediment trap and drain will be cleaned out.

9.2 DUST IMPACTS

The quarry operator will observe dust conditions in dry and windy conditions. If dust is observed crossing the mining lease boundary the water cart will be deployed to suppress the dust.

9.3 WEEDS

During normal operations the operator, employees and contractors will observe the quarry stockpiles and surrounding areas for emergent weeds and if present initiate controls as required.

10 DECOMMISSIONING AND REHABILITATION

10.1 PROGRESSIVE REHABILITATION

The Dianas Basin Quarry has approximately 20 years of full production in reserves. It is intended for the quarry development to continue in a slot arrangement. As the distance from the top face to the quarry floor increases a haul road on the southern flank of the quarry will provide access for an off-road dump truck to deliver product from the extractive face to the crusher / screener set up.

The northern flank of the quarry will be retained as a high wall which will be available for progressive rehabilitation. The benches already commenced on this flank will be continued and a third bench introduced when required to maintain a stable face height of approximately 5

metres. Overburden and topsoil will be spread over these benches to encourage natural recruitment of native vegetation.

A limited seeding and planting program will be introduced to supplement natural recruitment as required to formulate a sustainable vegetation cover to these benches and commence screening the exposed faces.

10.2 DECOMMISSIONING

When quarry closure is pending the Operator will introduce an intermediate bench into any operating quarry face higher than 5 metres or overburden will be placed against the toe of the face to reduce the height to 5 metres and provide a growing medium.

Once all remaining marketable materials have been recovered;

- all machinery, sheds and equipment will be removed from the site.
- remaining overburden and topsoil stockpiles will be spread across the floor of the quarry,
- the sediment traps will be cleaned out and the spoil used in rehabilitation works,
- quarry access road and any side tracks and hard stands will be ripped to facilitate infiltration,
- Native plant seed mix will be broadcast over recontoured slopes, quarry floor and benches, and
- the access road will be secured against unauthorised entry.

10.3 MONITORING

Inspection	Action
Emerging weeds	Weed control using herbicide spray or cut and paint
Sediment traps will be inspected for capacity	Clean out if accumulated sediment has reduced trap effectiveness.
Natural recruitment revegetation	Broadcast native seed mix if revegetation is not successful.

Item	Proposed measure	Timeframe
8.	The Operator will periodically observe the following environmental aspects of the Dianas Basin Quarry operation: • Sediment traps for accumulated sediment. • Airborne dust in dry and windy weather. • Presence of weeds anywhere around the quarry workings. Corrective action will be initiated where observation reveals a potential environmental issue.	Periodically

PART D SUMMARY OF PROPOSED MANAGEMENT MEASURES

Item	Proposed measure	Timeframe
1.	A water cart will be employed on days where adverse weather conditions cause unacceptable dust emissions.	As required
2.	The existing sediment control infrastructure will be enhanced to contain the expected flow from a 5% Annual Exceedance Probability event.	On issue of a permit
3.	The high wall between the quarry floor and noise generating activities and residences to the north will be retained to provide noise attenuation.	At all times
4.	A fully certified professional drilling and blasting contractors will be utilised for all blasting. All blasts will be monitored and any exceedance will be reported to the EPA.	During blasting
5.	A hydrocarbon spill kit will be retained on site ready for immediate deployment should a spill occur during refuelling. Hydrocarbon mats will be retained on site to clean up any leaks from machinery that make occur.	At all times
6.	The weed management plan will be amended to include the removal of the radiata pine trees on the mining lease area.	On issue of a permit
7.	Trucks delivering product from Dianas Basin Quarry will be advised to refrain from using engine brakes in close proximity to residences on Basin Creek Road.	At all times
8.	The Operator will periodically observe the following environmental aspects of the Dianas Basin Quarry operation: • Sediment traps for accumulated sediment. • Airborne dust in dry and windy weather. • Presence of weeds anywhere around the quarry workings. Corrective action will be initiated where observation reveals a potential environmental issue.	Periodically

PART E PUBLIC AND STAKEHOLDER CONSULTATION

The proponent engaged with the Planning Authority (Break 'O' Day Council) to seek advice on the proposal. Council concluded that a 'discretionary' development application is required.

As part of the development assessment process the proposal will be advertised publicly calling for representations for and against the proposal from the community. In addition, any landowner sharing a boundary with the proposed development parcel will be notified by private letter to seek representations from these stakeholders.

11 REFERENCES

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Wapstra, M. (August 2021). *Natural Values Assessment of Basin Creek Quarry (Mining Lease 22M/2003), St Helens, Tasmania.* Hobart: unpublished.

MIDSON
traffic
pty ltd

North East Excavations Pty Ltd

Dianas Basin Quarry Capacity Increase, St Helens
Traffic Impact Assessment

August 2025

CELEBRATING 15 YEARS
2008 - 2023

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1. Introduction

1.1 Background

Midson Traffic were engaged by North East Excavations to prepare a traffic impact assessment for a proposed increase in quarry output at Dianas Basin Quarry, St Helens.

1.2 Traffic Impact Assessment (TIA)

A traffic impact assessment (TIA) is a process of compiling and analysing information on the impacts that a specific development proposal is likely to have on the operation of roads and transport networks. A TIA should not only include general impacts relating to traffic management, but should also consider specific impacts on all road users, including on-road public transport, pedestrians, cyclists and heavy vehicles.

This TIA has been prepared in accordance with the Department of State Growth (DSG) publication, *Traffic Impact Assessment Guidelines*, August 2020. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management,* Part 12: *Integrated Transport Assessments for Developments*, 2020.

Land use developments generate traffic movements as people move to, from and within a development. Without a clear understanding of the type of traffic movements (including cars, pedestrians, trucks, etc), the scale of their movements, timing, duration and location, there is a risk that this traffic movement may contribute to safety issues, unforeseen congestion or other problems where the development connects to the road system or elsewhere on the road network. A TIA attempts to forecast these movements and their impact on the surrounding transport network.

A TIA is not a promotional exercise undertaken on behalf of a developer; a TIA must provide an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required. An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

This TIA also addresses the relevant clauses of C2.0, *Parking and Sustainable Parking Code*, and C3.0, *Road and Railway Assets Code*, of the Tasmanian Planning Scheme.

1.3 Statement of Qualification and Experience

This TIA has been prepared by an experienced and qualified traffic engineer in accordance with the requirements of Council's Planning Scheme and The Department of State Growth's, *Traffic Impact Assessment Guidelines*, August 2020, as well as Council's requirements.

The TIA was prepared by Keith Midson. Keith's experience and qualifications are briefly outlined as follows:

- 29 years professional experience in traffic engineering and transport planning.
- Master of Transport, Monash University, 2006
- Master of Traffic, Monash University, 2004

- Bachelor of Civil Engineering, University of Tasmania, 1995
- Engineers Australia: Fellow (FIEAust); Chartered Professional Engineer (CPEng); Engineering Executive (EngExec); National Engineers Register (NER)

1.4 Project Scope

The project scope of this TIA is outlined as follows:

- Review of the existing road environment in the vicinity of the site and the traffic conditions on the road network.
- Provision of information on the proposed development with regards to traffic movements and activity.
- Identification of the traffic generation potential of the proposal with respect to the surrounding road network in terms of road network capacity.
- Review of the parking requirements of the proposed development. Assessment of this parking supply with Planning Scheme requirements.
- Traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety.

1.5 Subject Site

The subject site is located at Dianas Basin Quarry, located on Basin Creek Road, St Helens.

The subject site and surrounding road network is shown in Figure 1.

Figure 1 Subject Site & Surrounding Road Network

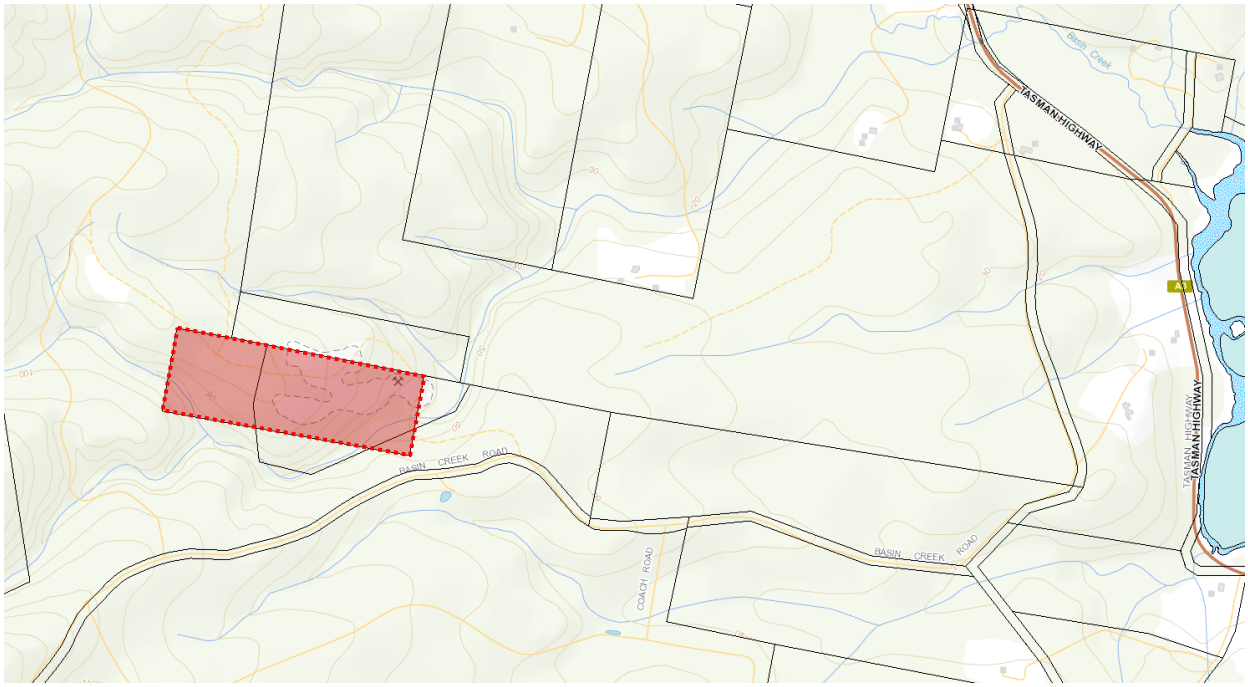


Image Source: LIST Map, DPIPWE

1.6 Reference Resources

The following references were used in the preparation of this TIA:

- Tasmanian Planning Scheme (Planning Scheme)
- Austroads, *Guide to Traffic Management,* Part 12: *Integrated Transport Assessments for Developments*, 2020
- Austroads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, 2021
- Department of State Growth, *Traffic Impact Assessment Guidelines*, 2020
- Transport NSW, *Guide to Traffic Impact Assessment*, 2024 (TfNSW Guide)
- Australian Standards, AS2890.1, *Off-Street Parking*, 2004 (AS2890.1)

2. Existing Conditions

2.1 Transport Network

For the purposes of this report, the transport network consists of Basin Creek Road and Taman Highway.

2.1.1 Basin Creek Road

Basin Creek Road is an unsealed Forestry owned road that provides access to a number of residential properties, forestry plantation land and a quarry along its length. It is currently used by Forestry and quarry access. In recent times, Basin Creek Road accesses components of the Stacked Loop mountain bike facility.

Basin Creek Road connects to Tasman Highway at a T-Junction with the Highway having priority. At its western end, it connects to Loila Tier Road. The unsealed road default speed limit of 80-km/h is applicable to Basin Creek Road, however 50-km/h advisory signage has been installed. Truck warning signage and a UHF radio safety system has been put into place to warn trucks and mountain bike tourism buses of vehicular activity on Basin Creek Road.

The road width of Basin Creek Road is approximately 5.5 metres. Existing traffic volumes are in the order of 150 vehicles per day along Basin Creek Road.

Basin Creek Road near the quarry access junction is shown in Figure 2.

Figure 2 Basin Creek Road

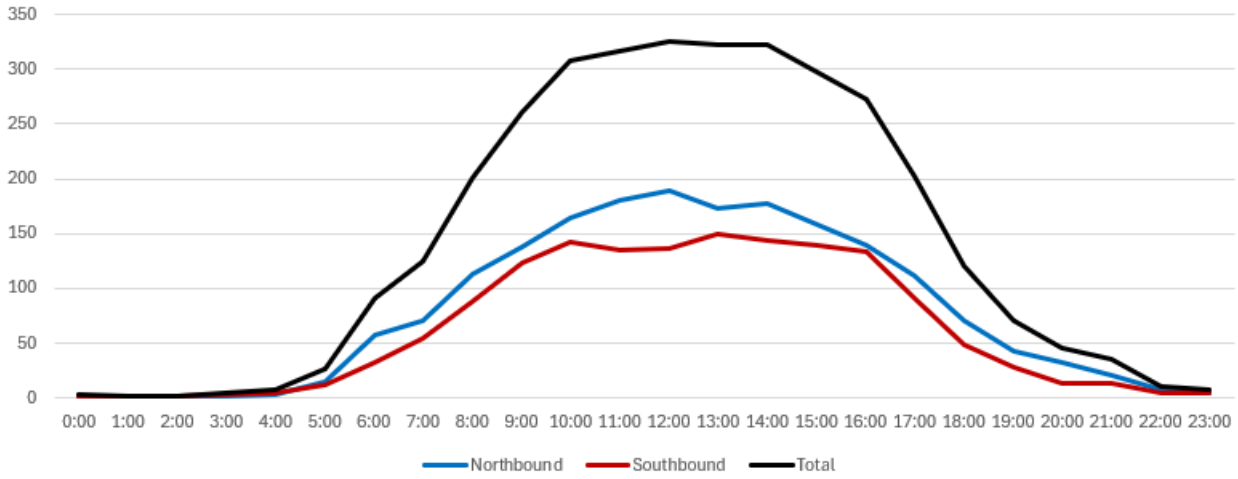
2.1.2 Tasman Highway

Tasman Highway is classified as a Category 3 '*Regional Access Road*' under the Department of State Growth's Road Hierarchy. Regional Access Roads are of strategic importance to regional and local communities and economies; they link important towns to the Category 1 and Category 2 roads. While they are used by heavy freight vehicles, this use is less than that of Regional Freight Roads.

Tasman Highway carries approximately 2,780 vehicles per day south of Basin Creek Road[1]. The posted speed limit is 90-km/h near the Basin Creek Road junction. The average weekday hourly flows of Tasman Highway south of Basin Creek Road are shown in Figure 3. Hourly flows are consistently around 300 to 325 vehicles per hour between 9:00am and 4:00pm. It is noted that there is a consistently slightly higher northbound flow throughout the day.

Tasman Highway at the Basin Creek Road junction is shown in Figure 4.

Figure 3 Tasman Highway Weekday Hourly Flows



Source: Department of State Growth, 60m north of Reedy Rd, 14th to 22nd April 2025

[1] Department of State Growth traffic data 2024 – 60m north of Reedy Road.

Figure 4 Tasman Hwy at Basin Creek Rd Junction

2.2 Road Safety Performance

Crash data can provide valuable information on the road safety performance of a road network. Existing road safety deficiencies can be highlighted through the examination of crash data, which can assist in determining whether traffic generation from the proposed development may exacerbate any identified issues.

Crash data was obtained from the Department of State Growth for a 5+ year period between 1st January 2020 and 31st December 2024 for the full length of Basin Creek Road and Tasman Highway approximately 1-kilometre either side of the Basin Creek Road junction.

The findings of the crash data is summarised as follows:

- No crashes were reported in Basin Creek Road.
- A total of 11 crashes were reported on the Tasman Highway during this time.
- Time of day. All crashes were reported between 7:30am and 6:30pm. Afternoon crashes were dominant, with a total of 7 crashes reported between 2:00pm and 6:30pm.
- Day of week. 4 crashes were reported on Wednesdays; 2 crashes were reported on Mondays; 1 crash was reported on all remaining days of the week.
- Crash types. Single vehicle loss of control crashes were dominant, with 10 crashes reported (various crash types, with 'off-right-bend' being the most frequent). 1 'head-on' collision was reported.
- Crash locations. No crashes were reported at road junctions. The crash locations are shown in Figure 5.
- Road users. All crashes involved light vehicles.

The crash data does not provide an indication that there are any pre-existing road safety deficiencies in the road network that may be exacerbated by traffic generated by the proposed development. The crash rate is consistent with a rural highway on the fringe of a town centre.

Figure 5 Crash Locations

Source: Department of State Growth

3. Proposed Development

3.1 Development Proposal

The proposed development involves increasing the extraction and processing capacity of the existing Dianas Basin Quarry located on Basin Creek Road, St Helens. The expanded operation does not require any additional infrastructure at the quarry site itself, but will result in an increased frequency of heavy vehicle movements on the road network. This Traffic Impact Assessment will examine the implications of this increased traffic volume on road capacity, safety, and amenity.

The key elements of the proposed development relevant to traffic and transport are:

Capacity Increase

- Current extraction and processing capacity: 20,000 cubic metres (32,000 tonnes) per annum
- Proposed extraction and processing capacity: 50,000 cubic metres (80,000 tonnes) per annum

Transport Requirements

- Current transport task: 32,000 tonnes equating to approximately 1,000 loads or 2,000 vehicle movements annually.
- Current daily movements: Average of 8 heavy vehicle movements per day, with peak periods of up to 20 movements per day.
- Proposed transport task: 80,000 tonnes equating to approximately 2,500 loads or 5,000 vehicle movements annually.
- Proposed daily movements: Average of 20 heavy vehicle movements per day, with peak periods of up to 40 movements per day.

Transport Route and Distance

- Quarry traffic will travel on Basin Creek Road for a distance of 2.2 kilometres to the junction with Tasman Highway at Diana's Basin.
- At the junction, trucks will either travel north or south on Tasman Highway depending on delivery destination.
- The increase in capacity is primarily to service road construction contracts on Tasman Highway.

Operating Hours and Schedule

- Weekdays: 7:00 am to 7:00 pm
- Saturdays: 8:00 am to 4:00 pm

- No operation on Sundays or public holidays
- The quarry operates approximately 260 days per year

Vehicle Types

- Various on-road truck and trailer combinations with an average payload of 32 tonnes.
- All vehicles accessing the site will be professionally maintained heavy vehicles with proper silencers fitted.

4. Traffic Impacts

4.1 Trip Generation

Trip generation was determined from first principles.

The primary traffic generation from the Dianas Basin Quarry expansion will be heavy vehicle movements associated with product transport. Based on the information provided in the Environmental Effects Report:

- Current production capacity: 32,000 tonnes per annum
- Proposed production capacity: 80,000 tonnes per annum
- Average truck payload: 32 tonnes/ truck

This translates to the following trip generation:

Current Operations:

- Annual truck loads: 1,000 loads (2,000 x two-way truck movements per annum).
- Average daily movements: 8 heavy vehicle movements per day (based on 260 operating days per year).
- Peak daily movements: Up to 20 heavy vehicle movements per day during contract periods.

Proposed Operations:

- Annual truck loads: 2,500 loads (5,000 movements).
- Average daily movements: 20 heavy vehicle movements per day (based on 260 operating days per year).
- Peak daily movements: Up to 40 heavy vehicle movements per day during contract periods.

The increase in heavy vehicle traffic represents an additional 12 movements per day on average, with potential increases of up to 20 additional movements per day during peak periods. Note that this increase in traffic movements is only applicable if the actual quarry output reaches the proposed maximum production quantity.

Hourly distribution

Based on the operating hours (weekdays 7:00 am to 7:00 pm, Saturdays 8:00 am to 4:00 pm), and considering typical quarry operations, truck movements are expected to be distributed relatively evenly throughout the day. This would result in approximately:

- Normal operations: 1 to 2 heavy vehicle movements per hour
- Peak operations: 3 to 4 heavy vehicle movements per hour

Staff and Light Vehicle Movements

The normal quarry operations typically require a small number of on-site personnel.

- Current staff requirements: 2 to 3 personnel on-site.
- Estimated future staff requirements: 3 to 4 personnel on-site to accommodate the increased production.

This would generate approximately:

- Current light vehicle movements: 4 to 6 movements per day (arrivals and departures)
- Proposed light vehicle movements: 6 to 8 movements per day

Staff arrivals typically occur before 7:00 am with departures after 4:00 pm on weekdays, and arrivals before 8:00 am with departures after 3:00 pm on Saturdays.

Total Trip Generation

The total trip generation for the proposed expanded operation is summarized as follows:

Daily Trip Generation (Average Operation):

- Heavy vehicle movements: 20 trucks per day
- Light vehicle (staff) movements: 6 to 8 vehicles per day
- Total average daily trip generation: 26 to 28 vehicle movements per day

Daily Trip Generation (During Peak Operation):

- Heavy vehicle movements: Up to 40 per day
- Light vehicle (staff) movements: 6-8 per day
- Total peak daily trip generation: Up to 46-48 vehicle movements per day

This represents a relatively modest increase in normal operational traffic volumes on Basin Creek Road and the surrounding road network, equating to approximately 2 to 4 additional vehicles per hour during normal operating hours, and up to 5 to 6 additional vehicles per hour during peak production periods.

4.2 Trip Assignment

All traffic will access the quarry site via right-in/ left-out movements at the Basin Creek Road junction accessing the subject site.

At the Tasman Highway/ Basin Creek Road, the turning movements are assumed to follow existing traffic patterns. The turning movements during weekday peak periods are summarised in Table 1.

Table 1 Basin Creek Rd/ Tasman Hwy Traffic Generation Turning Movements

Peak	Left Out	Right Out	Left In	Right In
AM Peak	11 vph	4 vph	4 vph	10 vph
PM Peak	6 vph	3 vph	3 vph	7 vph

Note that the turning movements provided in Table 1 will vary depending on where quarry products are being transport to.

4.3 Traffic Generation Impacts

The Acceptable Solution A1.4 of Clause C3.5.1 of the Planning Scheme states "*Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than the amounts in Table C3.1*".

Table C3.1 specifies a maximum increase of 20% or 40 vehicles per day, whichever is greater, and a maximum increase of 20% or 5 vehicle movements per day for vehicles longer than 5.5 metres long. The increase in traffic generation will be in the order of 14 movements per day on average.

The increase in heavy vehicle movements (vehicles longer than 5.5 metres) will be greater than 5 per day and therefore the Acceptable Solution A1 of Clause C3.5.1 of the Planning Scheme is not satisfied.

The Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme states:

> *"Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:*
>
> *(a) any increase in traffic caused by the use;*
>
> *(b) the nature of the traffic generated by the use;*
>
> *(c) the nature of the road;*
>
> *(d) the speed limit and traffic flow of the road;*
>
> *(e) any alternative access to a road;*
>
> *(f) the need for the use;*
>
> *(g) any traffic impact assessment; and*

(h) any advice received from the rail or road authority".

The following is relevant with respect to the development proposal:

a. Increase in traffic. The proposed development will increase heavy vehicle movements from 8 to 20 per day on average (150% increase), with peak periods generating up to 40 movements per day. This represents an additional 12 movements per day on average, distributed across a 12-hour operating period (approximately 1 additional movement per hour). This level of increased heavy vehicle movement can be accommodated at the access at a high level of safety and efficiency.

b. Nature of traffic. The heavy vehicle traffic generated by the quarry consists of professional heavy vehicle operators transporting quarry products using various truck and trailer combinations with average 32-tonne payloads. The nature of traffic is entirely compatible with existing road users and the established industrial character of Basin Creek Road.

c. Nature of road. Basin Creek Road is an unsealed Forestry-owned road classified under the Forestry Practices Code as Class 3, designed for 5.5-metre pavement with 0.6-metre shoulders. The road serves almost exclusively industrial purposes (forestry operations, quarry access) with limited residential access. The road has been recently upgraded with localised pavement widening and is considered appropriate for the forecast traffic increase.

   Basin Creek Road also incorporates specific safety measures including truck warning signage and a UHF radio safety system to coordinate vehicle movements and warn of approaching traffic. These systems effectively manage potential conflicts between heavy vehicles, forestry operations, and recreational users (Stacked Loop mountain bike facility).

d. Speed limit and traffic flow. Basin Creek Road operates under the default unsealed road speed limit of 80km/h, with 50km/h advisory signage installed. Current traffic volumes are approximately 150 vehicles per day. The modest increase in heavy vehicle movements will not significantly alter traffic flow characteristics or compromise the road's level of service.

e. Alternative access. No practical alternative access exists to the quarry site. Basin Creek Road provides the only viable connection between the quarry and the broader road network via Tasman Highway.

f. Need for use. The quarry expansion addresses regional demand for construction materials, particularly to service road construction contracts on Tasman Highway, demonstrating clear economic and infrastructure need.

g. Traffic impact assessment. This comprehensive TIA demonstrates that traffic impacts can be appropriately managed within the existing road network capacity and safety parameters.

h. Road authority advice. The road authority requires a TIA to be prepared to investigate the traffic impacts associated with the proposed increased quarry production.

The proposed traffic increase in heavy vehicle traffic can be accommodated while minimising adverse effects on road safety and efficiency. The nature of Basin Creek Road, existing safety systems, recent infrastructure upgrades, and professional operation of all heavy vehicles collectively demonstrate compliance with Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme.

4.4 Sight Distance

Austroads Part 4A provides the requirements for Safe Intersection Sight Distance (SISD) at a road junction. SISD is the minimum sight distance which should be provided on the major road at any intersection. SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes), and to decelerate to a stop before reaching the collision point.

Based on site observations of traffic travelling along Basin Creek Road near the junction, the 85th percentile speed of vehicles is estimated to be 60 to 70-km/h. For a design speed of 70-km/h, the required SISD is 151 metres. The available sight distance at the junction complies with this requirement in both directions along Basin Creek Road.

4.5 Basin Creek Road Impacts

Basin Creek Road is classified in the Forestry Practices Code as a Class 3 road designed for a 5.5-metre pavement with 0.6-metre shoulders on each side.

Basin Creek Road was recently upgraded to include localised pavement widening due to a quarry upgrade of a nearby site that utilises the road.

The current design of the road is considered appropriate for the forecast traffic volume increase associated with the proposed quarry's expansion. It is important to note that ongoing road maintenance will be required to ensure that the carriageway and shoulders of Basin Creek Road are traversable.

4.6 Basin Creek Rd/ Tasman Hwy Intersection Impacts

The Basin Creek Road/ Tasman Highway junction was recently upgraded as part of the Department of State Growth's comprehensive Tasman Highway improvement works. These upgrades were specifically designed to accommodate the operational requirements of heavy vehicles accessing Basin Creek Road, including quarry trucks and forestry vehicles operating in the area. The works also included a reduction of the speed limit.

The junction improvements included localised road widening and geometric modifications to facilitate the swept paths of design vehicles utilising the intersection. The design process undertaken by the Department of State Growth included swept path analysis for the range of heavy vehicle combinations expected to use the junction, ensuring safe and efficient turning movements for trucks accessing and egressing Basin Creek Road.

The junction incorporates a Channelised Right Turn Lane (CHR) for traffic entering Basin Creek Road from the Tasman Highway, providing dedicated space for vehicles to decelerate and turn without impeding

through traffic flow. This infrastructure was designed to current Austroads standards and reflects best practice for highway-to-local road connections serving industrial traffic.

The proposed quarry expansion utilises the same vehicle types and operational patterns that informed the original junction upgrade design. The additional heavy vehicle movements (up to 40 per day during peak operations) represent an increase in frequency rather than a change in vehicle characteristics. The junction's design capacity, having been established to accommodate heavy vehicle movements from multiple quarry and forestry operations along Basin Creek Road, can readily accommodate this increased traffic volume while maintaining a high level of service.

4.7 Road Safety Impacts

The proposed development generates a relatively small amount of additional traffic on the surrounding road network (in the order of 6 vehicles per hour during peak times, which is an average of approximately 1 vehicle movement every 10 minutes).

No significant adverse road safety impacts are therefore foreseen for the following reasons:

- The existing crash history of in the surrounding network does not indicate that there are any road safety deficiencies that would be exacerbated by the proposed development.
- The traffic generation of the proposed development is considered to be low (peak of 6 vehicles per hour during peak periods as noted above), and therefore will not alter the level of service of any part of the transport network. No significant road safety impacts are likely to result without a corresponding deterioration in the network's level of service.
- All traffic movements into and out of the site are clear and obvious for other road users. The nature of the traffic generated by the development is compatible and consistent with existing traffic in the surrounding network.

5. Conclusions

This traffic impact assessment (TIA) investigated the traffic impacts of a proposed expansion to extraction and processing capacity at the Dianas Basin Quarry on Basin Creek Road, St Helens.

The key findings of the TIA are summarised as follows:

- The proposed development will increase extraction and processing capacity from 20,000 cubic metres (32,000 tonnes) to 50,000 cubic metres (80,000 tonnes) per annum.
- This capacity increase will result in an increase from approximately 8 heavy vehicle movements per day to 20 movements per day on average, with peak periods generating up to 40 movements per day.
- The heavy vehicle traffic generation increase satisfies Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme. The traffic generation of the proposed development (peak of 6 vehicles per hour during peak periods) will not significantly alter the level of service of any part of the transport network.
- Basin Creek Road was recently upgraded to include localised pavement widening and is considered appropriate for the forecast traffic volume increase associated with the proposed quarry expansion.
- The Basin Creek Road/ Tasman Highway junction was recently upgraded to include localised road widening to facilitate swept paths of design vehicles and includes a Channelised Right Turn Lane (CHR). This junction can accommodate the modest increase in heavy vehicles at a high level of service.
- The existing crash history in the surrounding network does not indicate any road safety deficiencies that would be exacerbated by the proposed development.

Based on the findings of this report, the proposed development is supported on traffic grounds.

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NATURAL VALUES ASSESSMENT OF BASIN CREEK QUARRY (CAPACITY INCREASE), ST HELENS, TASMANIA

Environmental Consulting Options Tasmania (ECO*tas*) for Northeast Excavations (Tas) Pty Ltd

30 August 2021

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AUTHORSHIP

Field assessment: Brian French

Report production: Brian French & Mark Wapstra

Habitat and vegetation mapping: Brian French

Base data for mapping: LISTmap

Digital and aerial photography: Brian French, GoogleEarth, LISTmap

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COVER ILLUSTRATION

Regrowth eucalypt woodland to the west of the existing quarry.

Please note: the blank pages in this document are deliberate to facilitate double-sided printing.

CONTENTS

SUMMARY

General

Northeast Excavations (Tas) Pty Ltd engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of a proposed upgrade of the existing Basin Creek quarry, St Helens, Tasmania, primarily to ensure that the requirements of the identified ecological values are appropriately considered during any further project planning under local, State and Commonwealth government approval protocols.

Site assessment

A natural values assessment of the proposed extension area was undertaken by Brian French (ECO*tas*) on 23 Aug. 2021.

Summary of key findings

Threatened flora

- No flora species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.

Threatened fauna

- No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.
- The study area supports potential habitat to some degree of some species, as follows:
  - *Sarcophilus harrisii* (Tasmanian devil);
  - *Dasyurus maculatus* subsp. *maculatus* (spotted-tailed quoll);
  - *Dasyurus viverrinus* (eastern quoll);
  - *Pseudomys novaehollandiae* (new holland mouse);
  - *Tasmanipatus barretti* (giant velvet worm);
  - *Tyto novaehollandiae* subsp. *castanops* (masked owl) and
  - *Aquila audax* subsp. *fleayi* (wedge-tailed eagle).

Vegetation types

- The study area supports the following TASVEG mapping units:
  - *Eucalyptus sieberi* forest and woodland not on granite (TASVEG coder: DSO); and
  - extra-urban miscellaneous (TASVEG code: FUM).
- Neither of the identified communities are listed as threatened on Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Weeds

- No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* were detected from the study area.

- The environmental weed *Pinus radiata* (radiata pine) is localised to the west of the existing quarry.

Plant disease

- No evidence of *Phytophthora cinnamomi* (PC, rootrot) was recorded from within the study area.
- No evidence of myrtle wilt was recorded from within the study area.
- No evidence of myrtle rust was recorded from within the study area.

Animal disease (chytrid)

- The proposed development part of the study area does not support particular habitats conducive to frog chytrid disease.

Recommendations

The recommendations provided below are a summary of those provided in relation to each of the ecological features described in the main report. The main text of the report provides the relevant context for the recommendations.

Vegetation types

No vegetation types with a high priority for conservation management identified – no special management recommended.

Threatened flora

None identified – no special management recommended.

Threatened fauna

None identified – no special management recommended.

Weed and disease management

It is recommended that specific weed and hygiene management actions be incorporated into any quarry operations plans. This includes the removal of the environmental weed species *Pinus radiata* (radiata pine), which is localised to the west of the existing quarry and has the potential to invade surrounding forest areas.

Legislative and policy implications

A permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* is not required (no known sites of listed flora or fauna will be impacted).

No formal referral to the relevant Commonwealth government agency under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is considered warranted but this should be confirmed by the client through their own consideration of the *Significant Impact Guidelines* (or through discussion with DPIPWE and/or the Commonwealth Department of Agriculture, Water and the Environment).

INTRODUCTION

Purpose

Northeast Excavations (Tas) Pty Ltd engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of a proposed upgrade of the existing Basin Creek quarry, St Helens, Tasmania, primarily to ensure that the requirements of the identified natural values are appropriately considered during any further project planning under local, State and Commonwealth government approval protocols.

Scope

This report relates to:

- flora and fauna species of conservation significance, including a discussion of listed threatened species (under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*) potentially present, and other species of conservation significance/interest;
- vegetation types (forest and non-forest, native and exotic) present, including a discussion of the distribution, condition, extent, composition and conservation significance of each community;
- plant and animal disease management issues;
- weed management issues; and
- a discussion of some of the policy and legislative implications of the identified ecological values.

This report follows the government-produced *Guidelines for Natural Values Surveys – Terrestrial Development Proposals* (DPIPWE 2015) in anticipation that the report (or extracts of it) may be required as part of various approval processes.

The report format should also be applicable to other assessment protocols as required by the Commonwealth Department of Agriculture, Water and the Environment (for any referral/approval that may be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*), which is unlikely to be required in this case.

More specifically, the assessment has been undertaken to address item 6 (natural values) and item 7 (weeds, pests and pathogens) of the *Extractive Industry Environmental Effects Report Guidelines, North East Excavations Pty Ltd, Basin Creek Quarry Upgrade, St Helens* issued by the Environment Protection Authority (EPA 2021).

Limitations

The natural values assessment was undertaken on 23 Aug. 2021. Many plant species have ephemeral or seasonal growth or flowering habits, or patchy distributions (at varying scales), and it is possible that some species were not recorded for this reason. However, every effort was made to sample the range of habitats present in the survey area to maximise the opportunity of recording most species present (particularly those of conservation significance). Late spring and into summer is usually regarded as the most suitable period to undertake most botanical assessments. While

some species have more restricted flowering periods, a discussion of the potential for the site to support these is presented. In this case, we believe that the survey was appropriately timed to detect the species with a highest priority for conservation management in this part of the State.

The survey was also limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, a consideration is made of threatened species (vascular and non-vascular) likely to be present (based on habitat information and database records) and reasons presented for their apparent absence.

Surveys for threatened fauna were largely limited to an examination of "potential habitat" (i.e. comparison of on-site habitat features to habitat descriptions for threatened fauna), and detection of tracks, scats and other signs.

Qualifications

Except where otherwise stated, the opinions and interpretations of legislation and policy expressed in this report are made by the authors and do not necessarily reflect those of the relevant agency. The client should confirm management prescriptions with the relevant agency before acting on the content of this report. This report and associated documents do not constitute legal advice.

Permit

Any plant material was collected under DPIPWE permit TFL 21138 (in the names of Mark Wapstra & Brian French). Relevant data will be entered into DPIPWE's *Natural Values Atlas* database by the authors. Some plant material may be lodged at the Tasmanian Herbarium by the authors.

No vertebrate or invertebrate material was collected.

STUDY AREA & LAND USE PROPOSAL

The study area (Figures 1-3) comprises the proposed mining lease application area as indicated in *North East Excavations (Tas) Pty Ltd Basin Creek Quarry Upgrade – Notice of Intent* (ILMP 2021), and as indicated in supplied GIS data of various aspects of the proposal.

The mining lease is situated at Basin Creek Road, St Helens, Tasmania. The proposed capacity increase is to the existing tenement of 22M/2003.

Land tenure and other categorisations relevant to natural values management of the study area are as follows:

- Crown land managed by Crown Land Services (PID 0; C.T. 1156307; LPI KKL85) in the eastern half of 22M/2003;
- Crown land managed by Sustainable Timber Tasmania (PID 3385516; C.T. 1456547; LPI GES83);
- Break O'Day municipality, with the study area zoned as Rural Resource pursuant to the *Break O'Day Interim Planning Scheme 2013*, and subject to Bushfire Prone Areas overlay and partially subject to a Priority Habitat overlay; and
- Flinders bioregion, according to the IBRA 7 bioregions used by most government agencies.

Figure 1. General location of the study area

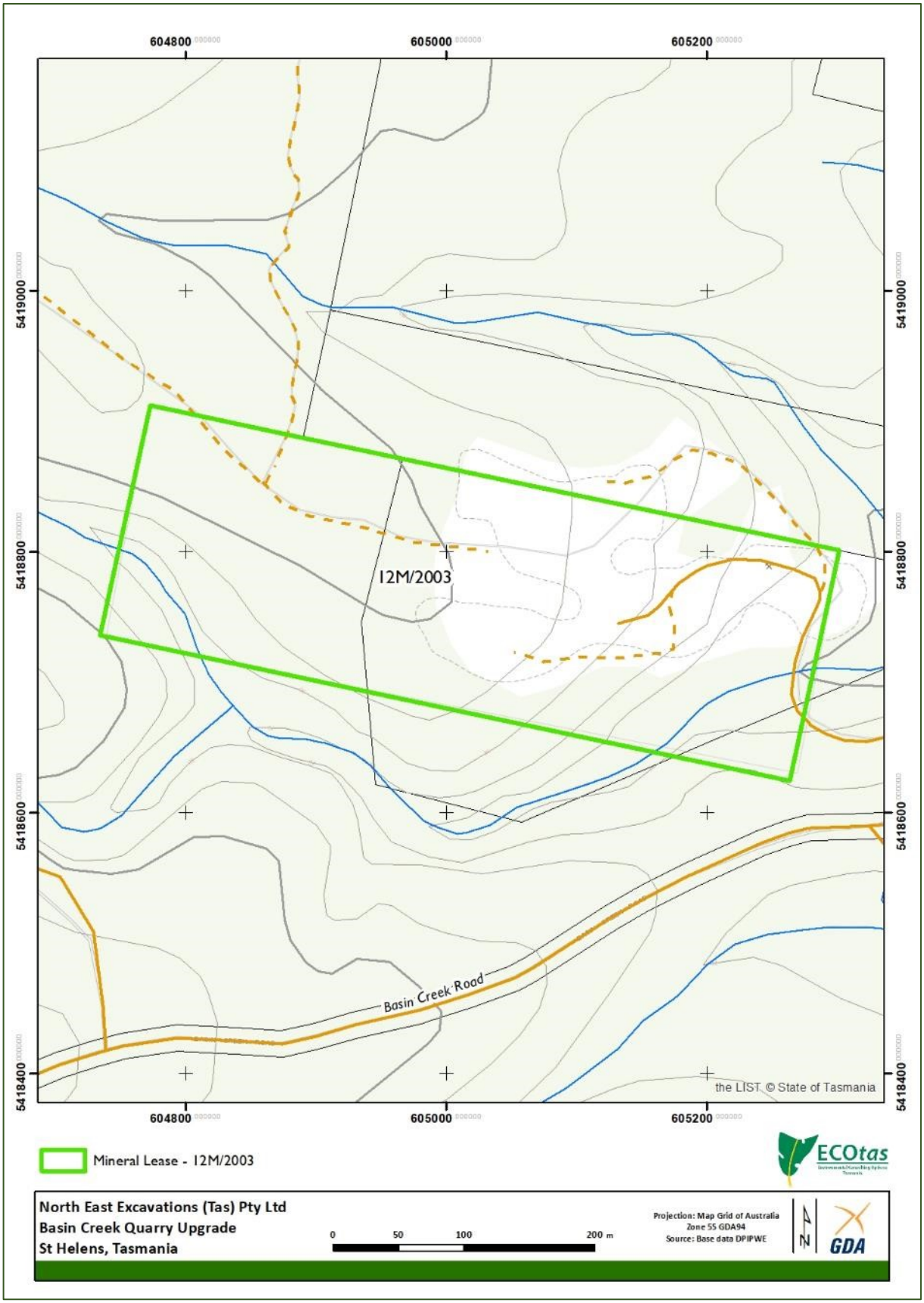

Figure 2. Detailed location of the study area showing general topographic features

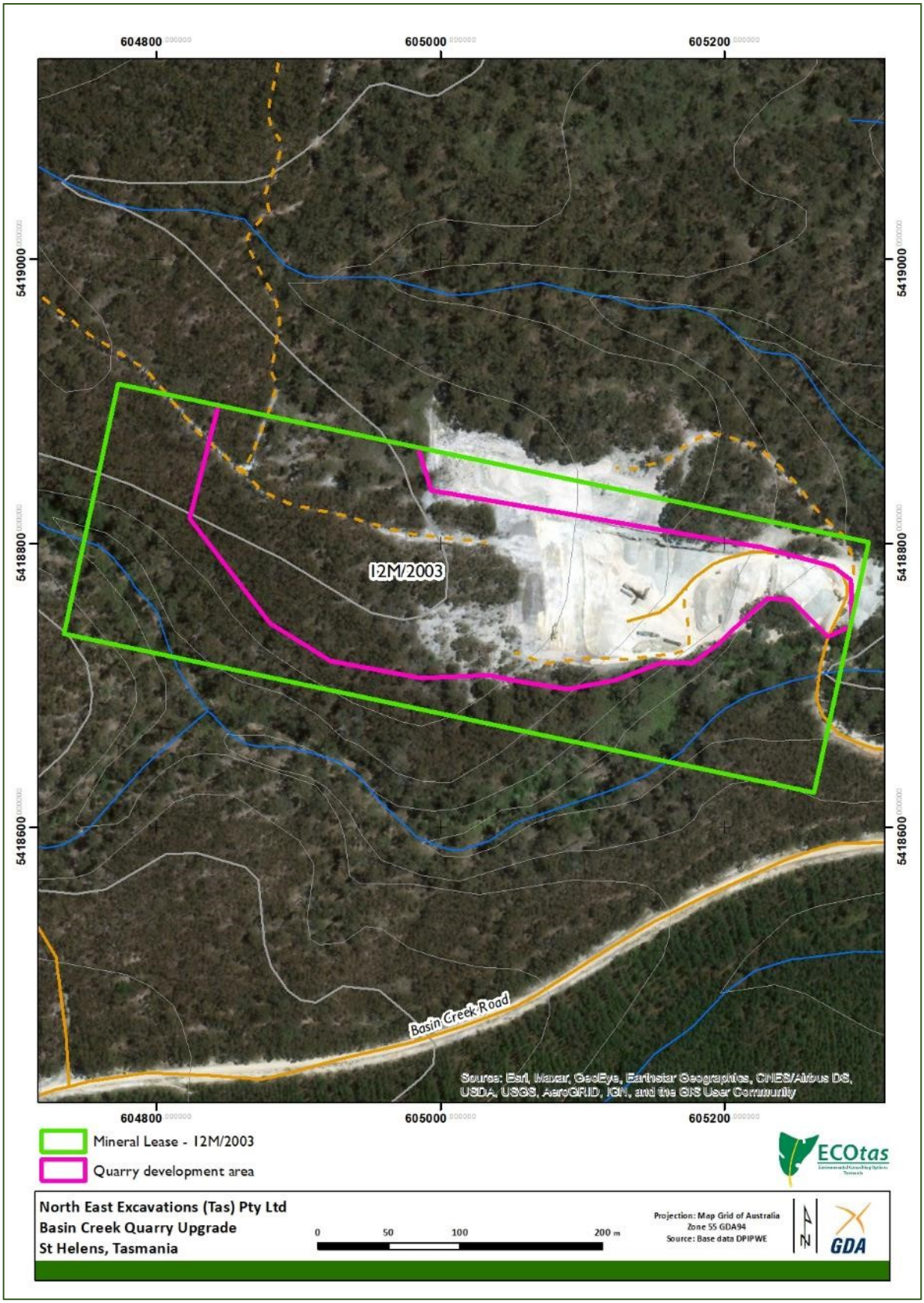

Figure 3. Detailed location of the study area – showing recent aerial imagery, cadastral boundaries and proposed upgrade area

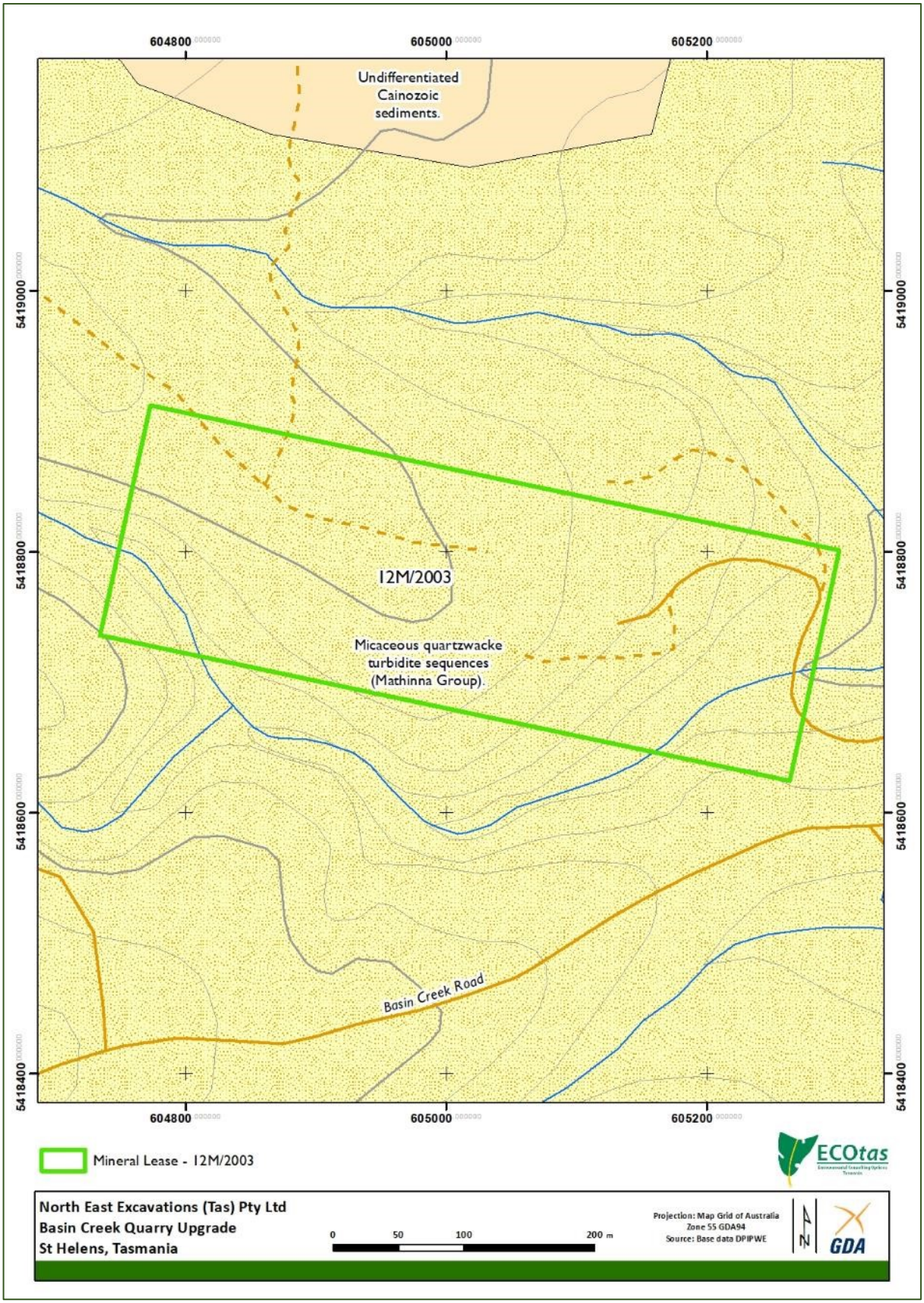

Figure 4. Geology of study area and surrounds

For the purposes of assessment and reporting, the study area was defined as the existing 12M/2003 mining lease area. The site is accessed by an existing well-formed road requiring no works such that this feature did not need to be included in the assessment.

The study area is within the Basin Creek catchment that flows east into Dianas Basin to the east of the study area. The lease area 12M/2003 is crossed in the southwest and southeastern corners by tributaries of Basin Creek. The mining lease area comprises mainly moderately steep east-facing slope. Elevation varies from ca. 50 m a.s.l. to ca. 110 m a.s.l.

LISTmap's Fire History layer does not indicate any recent bushfire events. Evidence of forestry operations was noted in the form of stumps and the regrowth nature of the eucalypt woodland in the greater area.

Geology (Figure 4) of the study area (access and lease area) is mapped as Ordovician-Devonian-age "micaceous quartzwacke turbidite sequences (Mathinna Group)" (geocode: ODq), which was confirmed informally by site assessment. The geology is mentioned as it influences vegetation classification and characterisations and the potential for threatened species (especially threatened flora, and to a lesser extent, threatened fauna).

Other physical features of the proposed mining lease area are described in *North East Excavations (Tas) Pty Ltd Basin Creek Quarry Upgrade - Notice of Intent* (ILMP 2021).

METHODS

Nomenclature

All grid references in this report are in GDA94, except where otherwise stated.

Vascular species nomenclature follows de Salas & Baker (2021) for scientific names and Wapstra et al. (2005+) for common names. Fauna species scientific and common names follow the listings in the cited *Natural Values Atlas* report (DPIPWE 2021).

Vegetation classification follows TASVEG 4.0, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation (*Kitchener & Harris 2013+).

Preliminary investigation

Available sources of previous reports, threatened flora records, vegetation mapping and other potential environmental values were interrogated. These sources include:

- Tasmanian Department of Primary Industries, Parks, Water & Environment's *Natural Values Atlas* records for threatened flora and fauna (GIS coverage maintained by the author current as at date of report);
- Tasmanian Department of Primary Industries, Parks, Water & Environment's *Natural Values Atlas* report ECOtas_NEExcavations_BasinCk for a polygon defining the broader study area (centred on 605033mE 5418776mN), buffered by 5 km, dated 20 Aug. 2021 (DPIPWE 2021) – Appendix E;
- Forest Practices Authority's *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 605033mE 5418776mN (i.e. a point defining the approximate centre of the assessment area), buffered by 5 km and 2 km for threatened fauna and flora records, respectively, hyperlinked species' profiles and predicted range boundary maps, dated 20 Aug. 2021 (FPA 2021) – Appendix F;

- Commonwealth Department of Agriculture, Water and the Environment's *Protected Matters Report* for a polygon defining the broader study area, buffered by 5 km, dated 20 Aug. 2021
(CofA 2021) – Appendix G;
- the TASVEG 4.0 vegetation coverages (as available through GIS coverage and via LISTmap);
- GoogleEarth and LISTmap aerial orthoimagery; and
- other sources listed in tables and text as indicated.

Field assessment

The assessment was undertaken by Brian French (ECO*tas*) on 23 Aug. 2021. The survey included the whole mining lease area. Cadastral data uploaded to the iGIS application guided the in-field assessment (as most boundaries were undefined). Meandering transects were used to capture the greater range of aspects, slopes and site conditions.

The survey was not limited by access due to the relatively small area requiring assessment with simple configuration and relatively open understorey.

Vegetation classification

Vegetation was classified by waypointing vegetation transitions for later comparison to aerial imagery. The structure and composition of the vegetation types was described using nominal 30 m radius plots at a representative site within the vegetation types, and compiling "running" species lists between plots and vegetation types. Hand-held GPS (Garmin Dakota 10) was used to waypoint the transition between vegetation types.

Threatened flora

With reference to the threatened flora, the survey included consideration of the most likely habitats for such species. In this regard, no threatened flora sites were located.

Threatened fauna

Surveys for threatened fauna were largely limited to an examination of "potential habitat" (i.e. comparison of on-site habitat features to habitat descriptions for threatened fauna), and detection of tracks, scats and other signs, except as indicated below.

With respect to the wedge-tailed eagle, the Forest Practices Authority, in conjunction with DPIPWE, developed a model of nesting habitat of the wedge-tailed eagle, described in FPA (2014), with the spatial model available as a free download from the Authority's web site for use in GIS packages. The model can be used to indicate the relative likelihood of nest occurrence across the State, based on a range of variables. It is noted, however, that the model and its use were developed for wood production activities and may have less applicability to different types of development proposals.

The output of the model is presented as a series of polygons coded 0-8. The different 'gridcode' values in the model indicate the relative likelihood that an eagle nest will be found in a particular area. For example, a gridcode value of '8' indicates a nest is very likely to be found (similar to a probability of presence value of 0.8-0.9), while a gridcode value of '0' indicates a low likelihood of finding a nest (probability<0.1). There is no set level at which nest surveys are recommended, but the larger the search area the more nests are likely to be located, and to capture most nests (70-80%), areas of gridcode '3' and higher should be searched.

The model (Figure 5) indicates that the mining lease area itself provides generally low to moderate potential nesting habitat, which was confirmed by site assessment. However, taller forest areas in the creek catchment, west and south of the proposed mining lease area, provides limited potential nesting habitat, noting that these areas are topographically out-of-sight and generally greater than 500 m from the boundary of the proposed lease area. Known nests occur on the upper slopes of Loila Tier to the west of the study area, which are discussed further below.

Weed and hygiene issues

The study area was also assessed with respect to plant species classified as declared weeds under the Tasmanian *Weed Management Act 1999*, Weeds of National Significance (WoNS) or "environmental weeds" (author opinion and as included in *A Guide to Environmental and Agricultural Weeds of Southern Tasmania*, NRM South 2017).

The study area was also assessed with respect to potential impacts of plant and animal pathogens, by reference to habitat types and field symptoms.

FINDINGS

Vegetation types

Comments on TASVEG mapping

This section, which comments on the existing TASVEG 4.0 mapping for the study area, is included to highlight the differences between existing mapping and the more recent mapping from the present study to ensure that any parties assessing land use proposals (via this report) do not rely on existing mapping. Note that TASVEG mapping, which was mainly a desktop mapping exercise based on aerial photography, is often substantially different to ground-truthed vegetation mapping, especially at a local scale. An examination of existing vegetation mapping is usually a useful pre-assessment exercise to gain an understanding of the range of habitat types likely to be present and the level of previous botanical surveys.

TASVEG 4.0 maps the study area as (Figure 6):

- *Eucalyptus amygdalina* forest and woodland on mudstone (TASVEG code: DAM)

  DAM is mapped as the dominant forest community within and surrounding the mining lease area.

- *Eucalyptus sieberi* forest and woodland on granite (TASVEG code: DSG)

  DSG is mapped as small areas in the northwest and in the creek line in the south of the mining lease area.

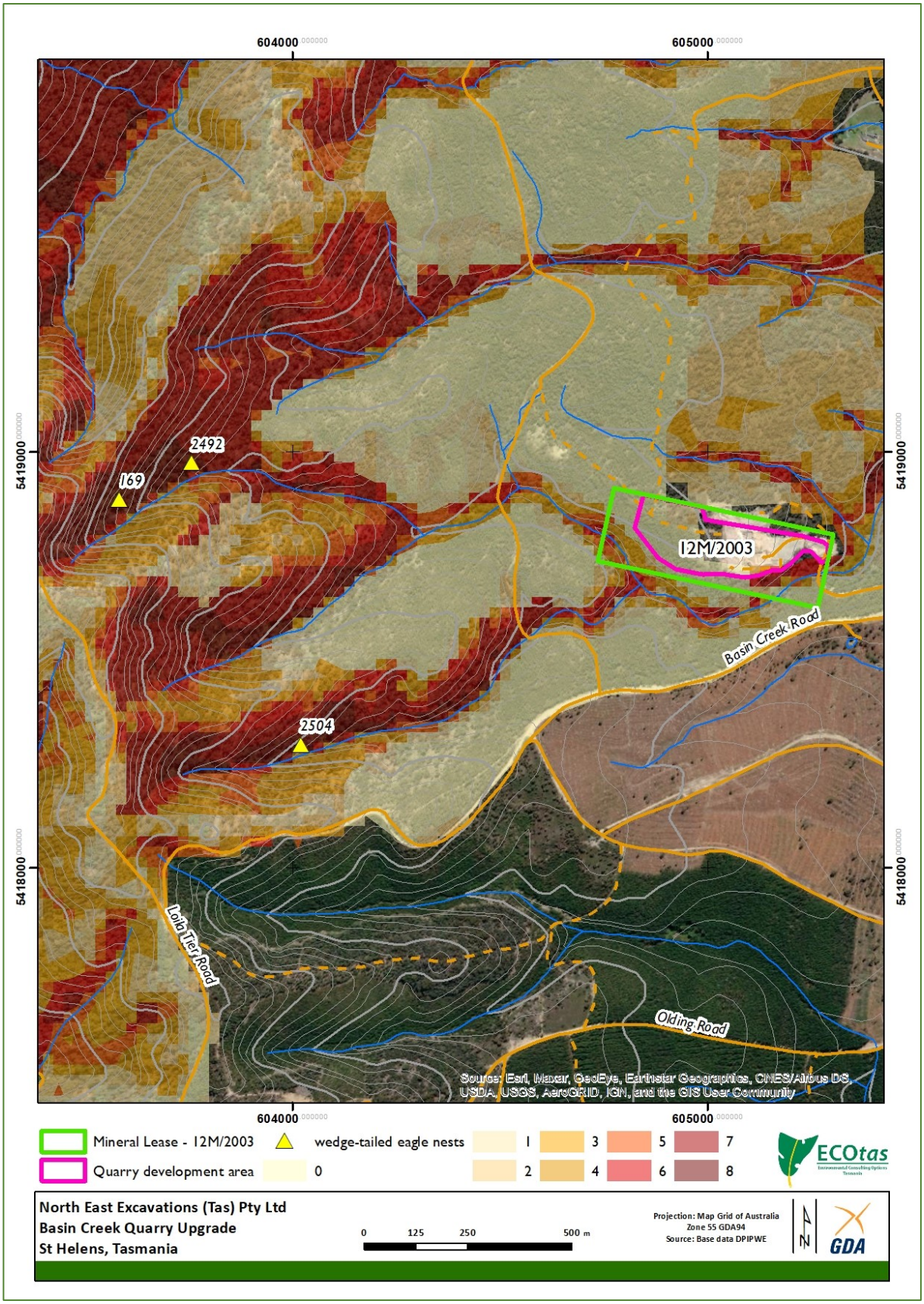

Figure 5. Low elevation eagle nesting model relative to the study area

Vegetation types recorded as part of the present study

Vegetation types have been classified according to TASVEG 4.0, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation* (Kitchener & Harris 2013+). Table 1 provides information on the vegetation types identified from the study area. Refer to Figure 7 that provides a map of the revised vegetation types recorded from the study area. Refer to Appendix A for a more detailed description of the native vegetation mapping units identified from the study area.

Table 1. Vegetation mapping unit present in the study area

[conservation status: NCA – as per Schedule 3A of the Tasmanian *Nature Conservation Act 2002*, using units described by Kitchener & Harris (2013+), relating to TASVEG mapping units (DPIPWE 2021); EPBCA – as per the listing of ecological communities on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, relating to communities as described under that Act, but with equivalencies to TASVEG units]

TASVEG mapping unit (Kitchener & Harris 2013+)	**Conservation priority** NCA *EPBCA*	**Comments**
Modified land		
extra-urban miscellaneous (FUM)	not threatened *not threatened*	FUM is the mapping unit used to describe disturbed areas associated with human activities. In this regard, FUM describes the existing quarry area in the east, the main access road, and tracks in the west. Generally, vegetation is entirely absent within these areas with only opportunistic herb and shrub species noted.
Dry eucalypt forest and woodland		
Eucalyptus sieberi forest and woodland not on granite (DSO)	not threatened *not threatened*	DSO dominates the forest areas within and surrounding the lease area, where it is generally represented by a regrowth-structured form due to the past commercial harvesting of the area. Taller trees occur in the creek line in the south of the study area. The understorey ranges from sparse with leaf litter dominating to shrubby generally dominated by *Allocasuarina littoralis* that forms an even tall shrub layer on the relatively moist south-facing slopes. The insolated northwest of the lease has a heathy understorey with bracken (*Pteridium esculentum*) and southern grasstree (*Xanthorrhoea australis*) common. DSO is in good ecological condition, albeit of a mainly regrowth canopy structure with no hollow-bearing trees and relatively simple ground habitat (limited coarse woody debris). Weeds are limited to radiata pine (*Pinus* radiata) wildlings on disturbed ground surrounding the existing quarry operation. No symptoms of *Phytophthora cinnamomi* (PC) were observed.

Conservation significance of identified vegetation types

None of the identified mapping units are threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*, nor equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Protection Act 1999*.

It is noted that EPA (2021) states: "*Eucalyptus amygdalina* forest on mudstone (DAM) is mapped as occurring on the property. DAM may grade into *E. amygdalina* inland forest and woodland on Cainozoic deposits (DAZ) on valley flats or be in a mosaic with *E. amygdalina* woodland and forest on sandstone (DAS), both of which are listed under the *Nature Conservation Act 2002*. The presence or absence of these vegetation communities within any areas of impact must be determined". It is confirmed that the site only supports DAM with no affinities to DAZ.

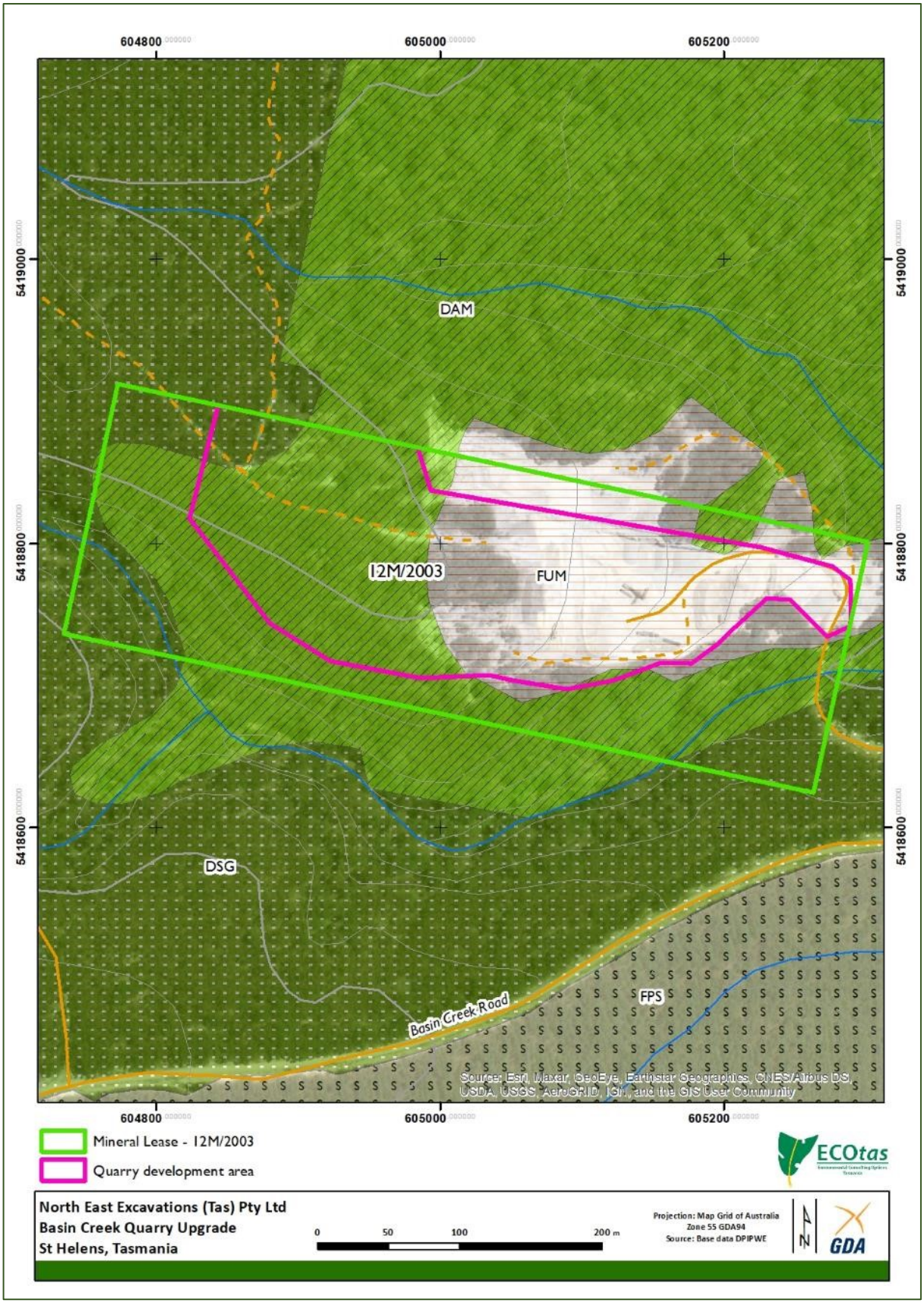

Figure 6. Study area and surrounds showing existing TASVEG 4.0 vegetation mapping (see text for codes)

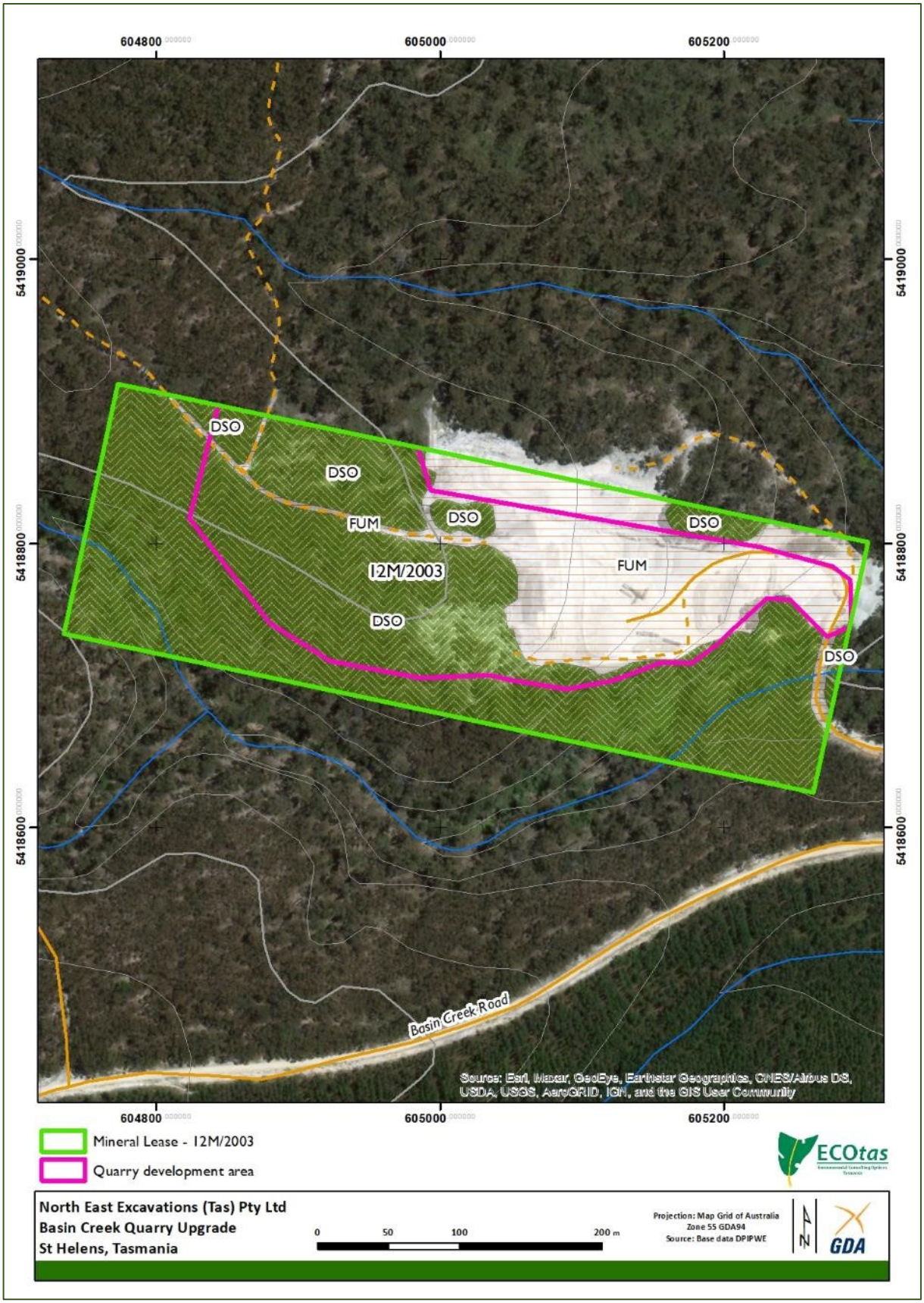

Figure 7. Revised vegetation mapping for the study area (refer to text for codes)

Plant species

General information

A total of 39 vascular plant species were recorded from the study area (Appendix B), comprising 24 dicotyledons (including 1 endemic), 10 monocotyledons (including 1 endemic species), 1 gymnosperm (introduced) and 4 pteridophytes (all native). This species diversity is highly typical of these vegetation types in this part of the State.

Additional surveys at different times of the year may detect additional short-lived herbs and grasses but a follow-up survey is not considered warranted because of low likelihood of species with a high priority for conservation management being present.

Threatened flora species recorded from the study area

Database information indicates that the study area does not support known populations of flora listed as threatened on either the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection and Biodiversity Protection Act 1999*.

The site assessment did not detect any species listed on the above Acts within or adjacent to the study area.

Threatened flora species potentially present (database analysis)

Figure 8 indicates threatened flora species near to the study area and Table C1 (Appendix C) provides a listing of threatened flora from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

It is noted that EPA (2021) states: "There are records in the area for flora listed under the *Threatened Species Protection Act 1995* (TSPA) including glossy purplepea (*Hovea corrickiae*), superb greenhood (*Pterostylis grandiflora*) and cane holygrass (*Hierochloe rariflora*). Timing of surveys must allow for identification of any superb greenhood orchid specimens (April to August)". The survey was undertaken within the peak flowering period of *Pterostylis grandiflora* (Wapstra 2018) and this was confirmed by reference to recently posted images in the public Facebook group Tasmanian Native Orchids (sites from near Narawntapu and Freycinet Peninsula), as well as a recent check (M. Wapstra pers. obs.) of a known site on Connors Road north of Bicheno. Other target species are perennial and require no timed-targeted survey period.

Fauna species

Threatened fauna species recorded from the study area

Database information indicates that the study area does not support known populations of fauna listed as threatened on either the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection and Biodiversity Protection Act 1999* (Figure 9). The site

assessment did not detect any such species from the study area. Potential habitat is present doe several species (discussed below).

Figure 9 indicates threatened fauna species near to the study area and Table C1 (Appendix C) provides a listing of threatened fauna from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Potential habitat (to some degree) is present for several species, as follows:

- *Sarcophilus harrisii* (Tasmanian devil);
- *Dasyurus maculatus* subsp. *maculatus* (spotted-tailed quoll);
- *Dasyurus viverrinus* (eastern quoll);
- *Pseudomys novaehollandiae* (new holland mouse);
- *Tasmanipatus barretti* (giant velvet worm);
- *Tyto novaehollandiae* subsp. *castanops* (masked owl) and
- *Aquila audax* subsp. *fleayi* (wedge-tailed eagle)

Further information on these species is provided below. Refer to Appendix C for further discussion of additional species for which potential habitat is considered more marginal.

- marsupial carnivores

Three species (*Sarcophilus harrisii*, Tasmanian devil; *Dasyurus maculatus* subsp. *maculatus*, spotted-tailed quoll; and *Dasyurus viverrinus*, eastern quoll) are considered collectively because they have broadly similar habitat and management requirements.

While there are no database records within the immediate vicinity of the mining lease, all these species have broad ranges and can occupy a wide variety of habitats. These species have broad ranges and can occupy a wide variety of habitats. Within (and close to) the area, it is highly likely that these species use the greater area for opportunistic foraging and denning/lay-ups. However, the assessment did not locate any potential den sites such as suitable hollow logs, cliffs with small caves or wombat burrows or any evidence of these species such as distinctive scats.

In our opinion, provided that the quarry activities are restricted to the area indicated, these species should not be deleteriously affected by the works.

Under the *Survey Guidelines and Management Advice for Development Proposals that may Impact on the Tasmanian Devil (*Sarcophilus harrisii*): A Supplement to the Guidelines for Natural Values Surveys - Terrestrial Development Proposals* (DPIPWE 2015), the following is recommended in relation to assessing the potential risk of roadkill from a project:

> "3.7 Roadkill assessment
>
> To be conducted where desktop assessment of the local devil population and the projected roadkill risk indicate potential for a substantial impact on the local population (i.e. predicted >10 % increase in deaths). Ideally, the survey should be conducted regularly over a long period of time, preferably covering all seasons (noting that January to April is when peak roadkill of weaned devils may occur). Notwithstanding the previous point, at a minimum, survey of road-killed devils should cover one of the following set periods of time - either 3 months for weaned devils between January and April or 6 months over the remainder of the year.

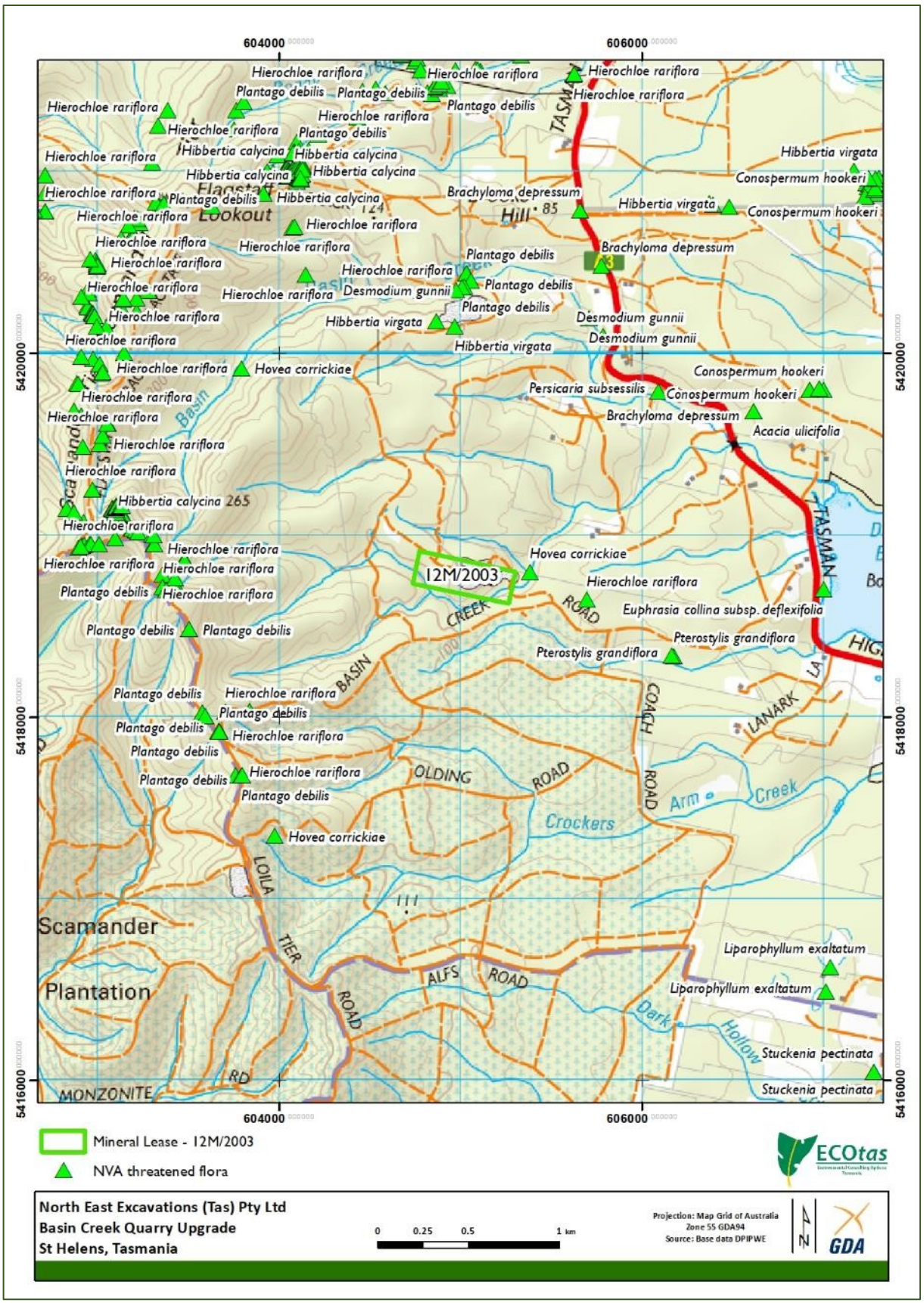

Figure 8. Distribution of threatened flora surrounding the study area (overview)

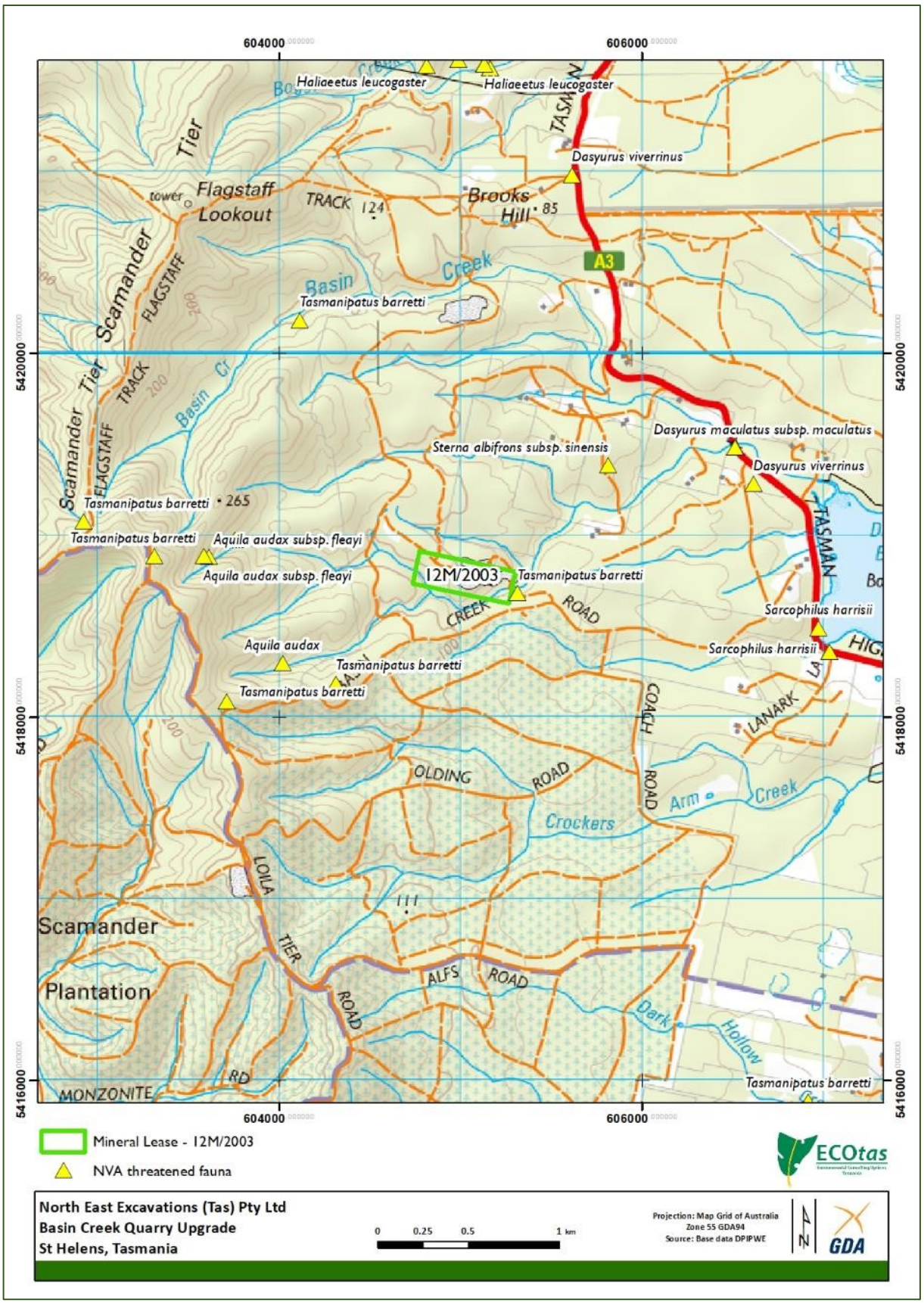

Figure 9. Distribution of threatened fauna surrounding the study area (overview)

Additional notes:

• If assessing the impact of traffic associated with a proposed development on the devil, it is necessary to understand the current roadkill rate, potential construction phase roadkill rate, and potential post-development roadkill rate.

• It can be difficult to attribute the relative contribution of an individual proposed development to roadkill rates on public roads. Where this is an issue, it should be resolved by extending the impact assessment area to the point on a road at which it no longer represents a potential increase in the risk of roadkill of greater than 10 % using a parameter relevant to the proposed development or activity (e.g. to a point where the proposed land use activity is no longer responsible for a greater than 10 % increase in the volume or speed of night time traffic)".

The *Guidelines* intend for roadkill mitigation to be implemented if a development is projected to increase the rate of roadkill by more than 10%. Devils (and quolls) are mainly nocturnal, hence the concern is primarily if a project will result in a substantial increase in traffic between dusk and dawn. Even if this proposal were to generate an increase of greater than 10% in daytime traffic, there is little evidence that this would lead to any increase in the rate of roadkill of devils (and quolls). As we understand this project, the risk of an increase in the rate of roadkilled devils (and quolls) is probably negligible because: (a) Basin Creek Road is a relatively narrow gravel road that winds through the forest mosaic west of the Tasman Highway, with little opportunity for vehicles (especially heavy gravel trucks) to gain any significant speed; and (b) any vehicle movements are most likely to be in daytime hours. On this basis, unless the proponent presents evidence that clearly demonstrates a significant risk of the incidence of roadkill of devils (and quolls) increasing (e.g. if there will be a substantial increase in dusk to dawn vehicle movements), in our opinion, this project should not require special management for the Tasmanian devil, spotted-tailed quoll and eastern quoll.

- *Pseudomys novaehollandiae* (New Holland mouse)

Potential habitat for *Pseudomys novaehollandiae* is heathlands (mainly dry heathlands but also where dry heathlands form a mosaic with other heathland, moorland and scrub complexes), heathy woodlands (i.e. eucalypt canopy cover 5-20%), *Allocasuarina*-dominated forests on sandy substrates (not dolerite or basalt), and vegetated sand dunes. Key indicator plant species include (but are not restricted to) *Aotus ericoides*, *Lepidosperma concavum*, *Hypolaena fastigiata* and *Xanthorrhoea* species (FPA 2021). Significant habitat for the species is all potential habitat within the core range of the species (FPA 2021).

The nearest record for this species is ca. 15 km to the north in the Binalong Bay area. Based on the vegetation mapping, the mapped areas of DSO in the study area may support potential habitat for the New Holland mouse, at least in general terms. The very northwestern portion mineral lease mapped as DSO marginally has key habitat elements present (e.g. *Xanthorrhoea australis, Aotus ericoides*, *Lepidosperma concavum*) that occur as small 'patches' near the northern boundary of the tenement. It should be noted that the soils are gravelly, which are not ideal habitat as all the known records of this species occur on sandy soils.

Undertaking surveys to confirm the presence of the New Holland mouse is problematic and resource-hungry because it requires many person-hours and trap-nights using a range of techniques, often only returning false negatives (i.e. the species may be there but an unsuccessful trapping effort is not sufficient to draw any conclusions). As such, management of the species tends to be more directed at developing a pattern of reserved habitat in a pattern that may be suitable to provide habitat linkages to known sites or other areas of potential habitat.

The small-scale clearing of 3 ha proposal has the potential to impact on the species through the loss of potential habitat. However, it should be noted that the potential habitat within the clearing area only constitutes 0.3 ha in a landscape that has immeasurable areas of 'potential habitat'.

- *Tasmanipatus barretti* (giant velvet worm)

Potential habitat for the giant velvet worm includes wet sclerophyll forest grading into rainforest or mixed forest and dry forest within its known range (FPA 2021). IT is noted that EPA (2021) states: "There are multiple records of the Giant Velvet Worm (*Tasmanipatus barrette* [sic]), which is listed as rare under TSPA, within 2 km of the site. The site is within the known range of the species and Basin Creek is an important location for the species. A targeted survey is required to determine the presence or absence of the species and any habitat".

There is a known record of the species along the access road to the quarry with an accuracy of ± 100 m. It is likely that the record occurs within the relatively damp forest along the creek as course woody debris is present. The mapped DSO within the proposed quarry expansion area lacks good potential habitat as larger logs are entirely absent and as noted above, only are common along the creek line. Numerous logs both within the creek and the expansion area were assessed but failed to locate any individuals of this species. The proposal is unlikely to have an impact on any life stage of this species.

- *Tyto novaehollandiae* (masked owl)

Potential habitat of *Tyto novaehollandiae* is for the masked owl is all areas with trees with large hollows (≥15 cm entrance diameter). Significant habitat for the masked owl is any area of native dry forest, within the core range, with trees with large hollows (≥15 cm entrance diameter) (FPA 2021).

It is likely that the species uses the greater area for foraging and temporary roosting with extensive potential habitat occurring. However, within the study area, potential nesting habitat is entirely absent (at least at present) as the no suitable trees with large hollows were noted.

- *Aquila audax subsp. fleayi* (wedge-tailed eagle)

Potential habitat for the wedge-tailed eagle comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is a wide variety of forest (including areas subject to native forest silviculture) and non-forest habitats. Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands). Nests are usually not constructed close to sources of disturbance and nests close to disturbance are less productive. More than one nest may occur within a territory but only one is used for breeding in any one year. Breeding failure often promotes a change of nest in the next year. [see FPA's *Fauna Technical Note 1* and FPA's *Fauna Technical Note 6* for more information] Significant habitat for the wedge-tailed eagle is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where the nest tree is still present) (FPA 2021).

It is noted that EPA (2021) states: "There are multiple records of Wedge-tailed Eagle (*Aquila audax subsp. fleayi*) nests, and highly suitable nesting habitat, within 5 km of the mining lease. The presence of any nests within 1 km of the proposal must be determined. Searches for the presence of nests should be undertaken outside of the breeding season (July to January inclusive)".

There are three eagle's nests (RNDs #169, #2492 and #2504) known to the west of the mineral lease in the Scamander Tier area. None of the known nests are within line-of-sight of any proposed operational/clearing areas. Nest #2504 is ca. 960 m to the southwest of the proposed expansion area (Figure 9). This nest was reported in 2018 associated with formal eagle nest search/checks, which included the whole of the Basin Creek gully for a proposed large harvest area to the south of the road, which has recently been clearfelled (G. Tempest, Timberlands pers. comm. 27 Aug. 2021). No suitable nesting trees are present within or adjacent to the lease area. Given the high levels of disturbance (existing quarry, numerous roads, recent clearfelling to south), the most recent search of potential habitat is considered appropriate.

It is likely that this species uses the greater area for foraging. Given that the proposal is only an extension of ca. 200 m to an already active quarry operation, there should not be a deleterious impact on this species at any reasonable level.

Other ecological values

Weed species

No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* were detected from the project area. One environmental weed *Pinus radiata* (radiata pine) was detected from the project area (Figure 10). This species was confined to disturbed areas as small wildlings within the lease that have invaded from the commercial softwood plantation area to the south of the lease. It is suggested that the wildlings be simply removed by either cutting down the larger individuals or hand-pulling the seedlings prior to the upgrade and the area monitored for any regrowth.

Given the virtually weed-free status of the project area, any management actions should aim to minimise the risk of introducing weeds. The key to this will be hygiene protocols for machinery, vehicles and personnel entering the area during works, particularly if they have come from a potentially weed-affected site. It is noted, however, that the access road is also weed-free (no obvious infestations) and the existing quarry facility is well-managed with weed-free roads, batters, levels and stockpiles, and that all n-site machinery is used. That is, the risk of new weed infestations is considered very low.

Several planning manuals provide guidance on appropriate management actions, which can be referred to develop site-specific prescriptions for any proposed works in the study area. These manuals include:

- Allan, K. & Gartenstein, S. (2010). *Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens*. NRM South, Hobart;
- Rudman T. (2005). *Interim* Phytophthora cinnamomi *Management Guidelines*. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart;
- Rudman, T., Tucker, D. & French, D. (2004). *Washdown Procedures for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water & Environment, Hobart; and

- DPIPWE (2015). *Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania*. Department of Primary Industries, Parks, Water & Environment, Hobart.

Rootrot pathogen, *Phytophthora cinnamomi*

Phytophthora cinnamomi (PC) is widespread in lowland areas of Tasmania, across all land tenures. However, disease will not develop when soils are too cold or too dry. For these reasons, PC is not a threat to susceptible plant species that grow at altitudes higher than about 700 m or where annual rainfall is less than about 600 mm (e.g. Midlands and Derwent Valley). Furthermore, disease is unlikely to develop beneath a dense canopy of vegetation because shading cools the soils to below the optimum temperature for the pathogen. A continuous canopy of vegetation taller than about 2 m is sufficient to suppress disease. Hence PC is not considered a threat to susceptible plant species growing in wet sclerophyll forests, rainforests (except disturbed rainforests on infertile soils) and scrub e.g. teatree scrub (Rudman 2005; FPA 2009).

The vegetation type identified from the project area (DSO) is moderately susceptible to PC. No evidence of the pathogen was observed, with the vegetation all in excellent health and no symptoms of disease in susceptible species. It appears reasonable to consider this facility to be PC-free.

Note that the publications listed under Weed species provide relevant planning information related to management of *Phytophthora cinnamomi* (PC). In this case, maintaining the good condition of the access road and internal tracks (free from puddling), as well as ensuring the quarry facility remains well-drained, will be the key to ensuring a PC-free facility. It is also noted that the crushed product being produced from bedrock presents a negligible opportunity to hoist PC, provide that stripped topsoil is well-managed.

Myrtle wilt

Myrtle wilt, caused by a wind-borne fungus (*Chalara australis*), occurs naturally in rainforest where myrtle beech (*Nothofagus cunninghamii*) is present. The fungus enters wounds in the tree, usually caused by damage from wood-boring insects, wind damage and forest clearing. The incidence of myrtle wilt often increases forest clearing events such as windthrow and wildfire.

The study area does not support *Nothofagus cunninghamii*. No special management is required.

Myrtle rust

Myrtle rust is a disease limited to plants in the Myrtaceae family. This plant disease is a member of the guava rust complex caused by *Austropuccinia psidii*, a known significant pathogen of Myrtaceae plants outside Australia. Infestations are currently limited to NSW, Victoria, Queensland and Tasmania (DPIPWE 2015).

No evidence of myrtle rust was noted (several possible indicator species present). The longer-term management issue for the site is to ensure that any ornamental plantings source plants from a reputable nursery free from the pathogen (such businesses are already subject to strict biosecurity conditions).

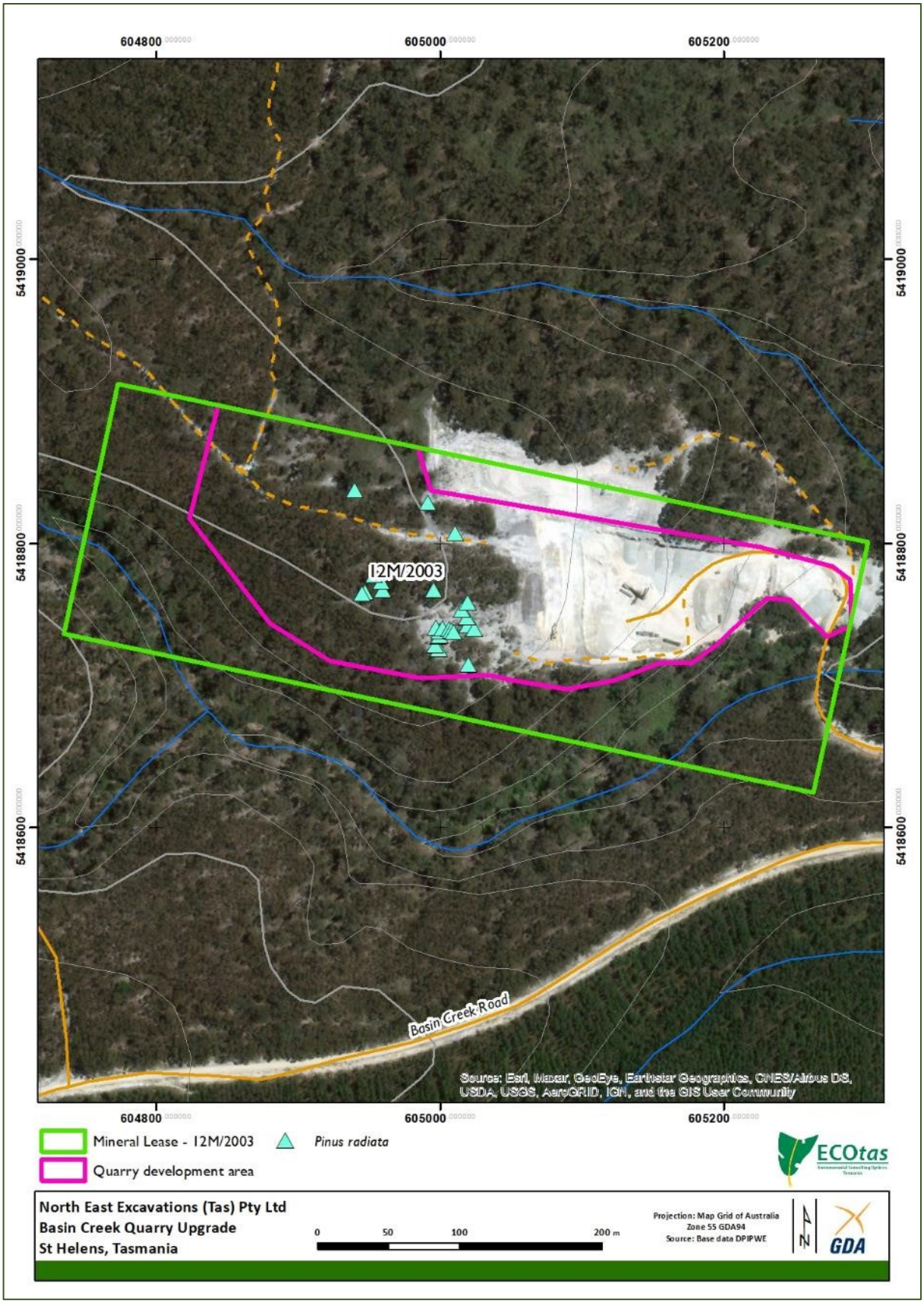

Figure 10. Distribution of *Pinus radiata* (radiata pine) in the mineral lease area

Chytrid fungus and other freshwater pathogens

Native freshwater species and habitat are under threat from freshwater pests and pathogens including *Batrachochytrium dendrobatidis* (chytrid frog disease), *Mucor amphibiorum* (platypus mucor disease) and the freshwater algal pest *Didymosphenia geminata* (didymo) (Allan & Gartenstein 2010). Freshwater pests and pathogens are spread to new areas when contaminated water, mud, gravel, soil and plant material or infected animals are moved between sites. Contaminated materials and animals are commonly transported on boots, equipment, vehicles tyres and during road construction and maintenance activities. Once a pest pathogen is present in a water system it is usually impossible to eradicate. The manual *Keeping it Clean - A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens* (Allan & Gartenstein 2010) provides information on how to prevent the spread of freshwater pests and pathogens in Tasmanian waterways wetlands, swamps and boggy areas.

The lease area does include a defined drainage feature but is entirely avoided by quarry activities. The extraction area is on well-drained bedrock-based gravelly soils such that special management should not be required.

Additional "Matters of National Environmental Significance" – Threatened Ecological Communities

CofA (2021) indicates that the following threatened ecological communities listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) are likely to occur within the area:

- Giant Kelp Marine Forests of South East Australia [Endangered]
- Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata* / E*. brookeriana*) [Critically Endangered]

Existing vegetation mapping (Figure 6) and revised vegetation mapping (Figure 7) indicates that these communities are not present within, or adjacent to, the study area i.e. there are no implications under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* in relation to threatened ecological communities.

Geoconservation

It is noted that EPA (2021) requests "description of potential impacts to geoconservation sites (e.g. karst systems), aquatic or riparian environments and other natural values, and a description of management measures to mitigate such impacts, as relevant".

Examination of LISTmap's Geoconservation Sites layer indicates no reported geoconservation matters from the project area or surrounds.

The lease area includes a tributary of Basin Creek but the operational activities completely avoid this feature (buffered by a significant distance such that impact on aquatic and/or riparian habitats within and downstream of he lease area is not anticipated).

DISCUSSION

Summary of key findings

Threatened flora

- No flora species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.

Threatened fauna

- No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.
- The study area supports potential habitat to some degree of some species, as follows:
  - *Sarcophilus harrisii* (Tasmanian devil);
  - *Dasyurus maculatus* subsp. *maculatus* (spotted-tailed quoll);
  - *Dasyurus viverrinus* (eastern quoll);
  - *Pseudomys novaehollandiae* (new holland mouse);
  - *Tasmanipatus barretti* (giant velvet worm);
  - *Tyto novaehollandiae* subsp. *castanops* (masked owl) and
  - *Aquila audax* subsp. *fleayi* (wedge-tailed eagle).

Vegetation types

- The study area supports the following TASVEG mapping units:
  - *Eucalyptus sieberi* forest and woodland not on granite (TASVEG coder: DSO); and
  - extra-urban miscellaneous (TASVEG code: FUM).
- Neither of the identified communities are listed as threatened on Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Weeds

- No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* were detected from the study area.
- The environmental weed *Pinus radiata* (radiata pine) is localised to the west of the existing quarry.

Plant disease

- No evidence of *Phytophthora cinnamomi* (PC, rootrot) was recorded from within the study area.
- No evidence of myrtle wilt was recorded from within the study area.
- No evidence of myrtle rust was recorded from within the study area.

Animal disease (chytrid)

- The proposed development part of the study area does not support particular habitats conducive to frog chytrid disease.

Legislative and policy implications

Some commentary is provided below with respect to the key threatened species, vegetation management and other relevant legislation. Note that there may be other relevant policy instruments in addition to those discussed. The following information does not constitute legal advice and it is recommended that independent advice is sought from the relevant agency/authority.

Tasmanian *Threatened Species Protection Act 1995*

Threatened flora and fauna on this Act are managed under Section 51, as follows:

> 51. Offences relating to listed taxa
>
> (1) Subject to subsections (2) and (3), a person must not knowingly, without a permit –
>
> (a) take, keep, trade in or process any specimen of a listed taxon of flora or fauna; or
>
> (b) disturb any specimen of a listed taxon of flora or fauna found on land subject to an interim protection order; or
>
> (c) disturb any specimen of a listed taxon of flora or fauna contrary to a land management agreement; or
>
> (d) disturb any specimen of a listed taxon of flora or fauna that is subject to a conservation covenant entered into under Part 5 of the *Nature Conservation Act 2002*; or
>
> (e) abandon or release any specimen of a listed taxon of flora or fauna into the wild.
>
> (2) A person may take, keep or process, without a permit, a specimen of a listed taxon of flora in a domestic garden.
>
> (3) A person acting in accordance with a certified forest practices plan or a public authority management agreement may take, without a permit, a specimen of a listed taxon of flora or fauna, unless the Secretary, by notice in writing, requires the person to obtain a permit.
>
> (4) A person undertaking dam works in accordance with a Division 3 permit issued under the *Water Management Act 1999* may take, without a permit, a specimen of a listed taxon of flora or fauna.

The simplest interpretation of this is that any activity that results in a specimen (i.e. individual) of listed flora or fauna being "knowingly taken" would require a permit to be issued through Conservation Assessments, DPIPWE, through a formal application process. In this regard, no threatened flora or fauna species were identified from the area proposed for development. The Act does not make reference to the clearance or disturbance of "potential habitat".

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

Matters of national environmental significance considered under the EPBCA include:

- listed threatened species and communities
- listed migratory species;

- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

The Commonwealth Department of Agriculture, Water and the Environment provides a policy statement titled *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (CofA 2013, herein the *Guidelines*), which provides overarching guidance on determining whether an action is likely to have a significant impact on a matter protected under the EPBCA.

The *Guidelines* define a **significant impact** as:

> *"…an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts"*

and note that:

> *"…all of these factors [need to be considered] when determining whether an action is likely to have a significant impact on matters of national environmental significance".*

The *Guidelines* provide advice on when a significant impact may be likely:

> *"To be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.*
>
> *If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment".*

The *Guidelines* provide a set of Significant Impact Criteria (CofA 2013), which are "intended to assist…in determining whether the impacts of [the] proposed action on any matter of national environmental significance are likely to be significant impacts". It is noted that the criteria are "intended to provide general guidance on the types of actions that will require approval and the types of actions that will not require approval…[and]…not intended to be exhaustive or definitive".

Listed ecological communities

The study area does not support any such communities.

Threatened flora

The study area does not support populations of EPBCA-listed flora, nor significant potential habitat of such species.

Threatened fauna

The study area may support populations of threatened fauna listed on the Act, most notably the Tasmanian devil, spotted-tailed quoll and eastern quoll. Note that the study area is within the range of several other species listed on the Act but it is unlikely that the proposal will result in a significant

impact on these species (this includes wide-ranging species such as the wedge-tailed eagle and masked owl).

The Commonwealth Department of Agriculture, Water and the Environment provides a *Significant Impact Guidelines* policy statement (CofA 2013) to determine if referral to the department is required. The *Guidelines* consider a "significant impact" to comprise loss that is likely to lead to a long-term decrease in the size of an important population of a species (unlikely to be the case); reduce the area of occupancy of an important population (also unlikely at any reasonable scale); fragment an existing important population into two or more populations (minor habitat loss will occur but not such that fragmentation will result); adversely affect habitat critical to the survival of a species ("critical habitat" has not been defined per se); disrupt the breeding cycle of an important population (unlikely); modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline (this seems unlikely – see previous commentary); result in invasive species that are harmful to a threatened species becoming established in the threatened species' habitat (unlikely); introduce disease that may cause the species to decline (unlikely to introduce and/or exacerbate Devil Facial Tumour Disease); or interfere substantially with the recovery of the species (unlikely at any reasonable scale). On this initial review of the *Guidelines*, it seems unlikely that the proposal as notionally proposed will result in the need for a referral with respect to any of the species.

Tasmanian *Forest Practices Act 1985* and associated *Forest Practices Regulations 2017*

The Act provides this definition of the concept of "clearing":

> *clearing of trees* means the removal of trees by–
>
> (a) clearing, cutting, pushing or otherwise removing; or
>
> (b) destroying the trees in any way.

The Act provides this definition of the concept of "trees":

> *trees* means –
>
> (a) any woody plants with a height or potential height of 5 metres or more, whether or not living, dead, standing or fallen, that are–
>
> (i) native to Tasmania; or
>
> (ii) introduced into Tasmania and used for the processing or harvesting of timber; and
>
> (b) tree ferns [where *tree fern* means a plant of the species *Dicksonia antarctica*].

Within the mining lease area, on this basis, even the removal of seedlings, saplings, logs or trunks (dead or alive) of various species of trees and tall shrubs may constitute "clearing" of "trees" under the Act.

Section 4 of the *Forest Practices Regulations 2017* specifies the following circumstance in which an FPP is not required, as follows:

> 4. Circumstances in which forest practices plan, &c., not required
>
> (i) the harvesting of timber or the clearing of trees on any land, or the clearance and conversion of a threatened native vegetation community on any land, in the course of mineral exploration activities, or mining activities, that are authorised under –
>
> (i) a permit granted under the *Land Use Planning and Approvals Act 1993*; or
>
> (ii) an exploration licence within the meaning of the *Mineral Resources Development Act 1995*; or
>
> (iii) a retention licence within the meaning of the *Mineral Resources Development Act 1995*; or

(iv) a mining lease within the meaning of the *Mineral Resources Development Act 1995*.

It is understood that the quarry will be operated under a mining lease pursuant to the *Mineral Resources Development Act 1995*, such that a Forest Practices Plan will not be required.

Tasmanian *Nature Conservation Act 2002*

Schedule 3A of the Act lists vegetation types classified as threatened within Tasmania. The study area does not support listed vegetation types on the Act.

The administrative/regulatory mechanism managing threatened communities is through either the Tasmanian *Forest Practices Act 1985* (and associated *Forest Practices Regulations 2017*) or the local planning scheme (*Break O'Day Interim Planning Scheme 2013*), depending on the zone and code provisions. In this case, no zone or code provisions are applicable to the proposed lease area.

Tasmanian *Weed Management Act 1999*

No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* were detected from the study area. As such, this Act should not impose direct management requirements on the proposal (but note the suggested management recommendations in relation to weed and hygiene protocols). However, whilst not listed on the Tasmanian *Weed Management Act 1999,* it is suggested that the environmental weed species *Pinus radiata* (radiata pine), which is localised to the west of the existing quarry, be removed from the lease area. This species has the potential to invade surrounding forest areas.

Tasmanian *Wildlife (General) Regulations 2010*

While the assessment of the study area indicated the presence of species listed on schedules of the *Regulations* (i.e. "specially protected wildlife", "protected wildlife", "partly protected wildlife"), no individuals, or products (e.g. nests, dens, etc.), of these species, are likely to be directly physically affected by the works.

Tasmanian *Land Use Planning and Approvals Act 1993*

The applicable planning scheme for the study area is the *Break O'Day Interim Planning Scheme 2013*. Note that the following is our interpretation of the provisions of the *Scheme* and may not necessarily represent the views of Break O'Day Council. The following does not constitute legal advice. It is recommended that formal advice be sought from the relevant agency prior to acting on any aspect of this statement. We note, however, that the *Tasmanian Planning Scheme* (SPS) is close to being implemented, along with the Local Provision Schedule (LPS), which may be relevant depending on the timing of any planning application.

The project area is zoned as Rural Resource (Figure 4) and is partially subject to the Priority Habitat overlay (which incidentally only covers the existing quarry area and not the forest in the west of the lease). Clause E10.4 of the Biodiversity Code indicates that "clearance and conversion or disturbance associated with a Level 2 Activity under the *Environmental Management and Pollution Control Act 1994*" is exempt from the Code under E10.4.1(a).

Recommendations

The recommendations provided below are a summary of those provided in relation to each of the ecological features described in the main report. The main text of the report provides the relevant context for the recommendations.

Vegetation types

No vegetation types with a high priority for conservation management identified – no special management recommended.

Threatened flora

None identified – no special management recommended.

Threatened fauna

None identified – no special management recommended.

Weed and disease management

It is recommended that specific weed and hygiene management actions be incorporated into any quarry operations plans. This includes the removal of the environmental weed species *Pinus radiata* (radiata pine), which is localised to the west of the existing quarry and has the potential to invade surrounding forest areas.

Legislative and policy implications

A permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* is not required (no known sites of listed flora or fauna will be impacted).

No formal referral to the relevant Commonwealth government agency under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is considered warranted but this should be confirmed by the client through their own consideration of the *Significant Impact Guidelines* (or through discussion with DPIPWE and/or the Commonwealth Department of Agriculture, Water and the Environment).

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APPENDIX A. Vegetation community structure and composition

The tables below provide basic information on the structure and composition of the vegetation mapping units identified from the study area.

***Eucalyptus sieberi* forest and woodland not on granite (TASVEG code: DSO)**
DSO dominates the forest areas within and surrounding the lease area, where it is generally represented by a regrowth-structured form due to the past commercial harvesting of the area. Taller trees occur in the creek line in the south of the study area. The understorey ranges from sparse with leaf litter dominating to shrubby generally dominated by *Allocasuarina littoralis* that forms an even tall shrub layer on the relatively moist south-facing slopes. The insolated northwest of the lease has a heathy understorey with bracken (*Pteridium esculentum*) and southern grasstree (*Xanthorrhoea australis*) common. DSO is in good ecological condition, albeit of a mainly regrowth canopy structure with no hollow-bearing trees and relatively simple ground habitat (limited coarse woody debris). Weeds are limited to radiata pine (*Pinus* radiata) wildlings on disturbed ground surrounding the existing quarry operation. No symptoms of *Phytophthora cinnamomi* (PC) were observed.

DSO regrowth in the west of the lease area (left) and (right), open DSO woodland with bracken dominating the understorey

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse)
Trees	14-18 m 25%	*Eucalyptus sieberi*
Tall shrubs	6-12 m 5-40%	*Allocasuarina littoralis* (dominates moist south-facing slopes), *Eucalyptus sieberi*
Shrubs	1-2 m 10%	*Epacris impressa, Aotus ericoides, Lomatia tinctoria, Leucopogon collinus, Philotheca virgata, Leptospermum scoparium*
Low shrubs	<0.5 m +	*Euryomyrtus ramosissima*
Graminoids	<2 m 10-20%	*(Gahnia sieberiana), Lepidosperma concavum, (Xanthorrhoea australis), (Gahnia radula), Lepidosperma laterale, Burchardia umbellata*
Ground ferns	<1 m 5-50%	*Pteridium esculentum*
Herbs	+	*Gonocarpus tetragynus, Stylidium graminifolium, Goodenia lanata*

APPENDIX B. Vascular plant species recorded from study area

Botanical nomenclature follows *A Census of the Vascular Plants of Tasmania* (de Salas & Baker 2021), with family placement updated to reflect the nomenclatural changes recognised in the *Flora of Tasmania Online* (de Salas 2021+) and APG (2016); common nomenclature follows *The Little Book of Common Names of Tasmanian Plants* (Wapstra et al. 2005+, updated online at www.dpipwe.tas.gov.au).

e = endemic to Tasmania

EW = environmental weed (author opinion)

Table B1. Summary of vascular species recorded from the study area

	ORDER			
STATUS	**DICOTYLEDONAE**	**MONOCOTYLEDONAE**	**GYMNOSPERMAE**	**PTERIDOPHYTA**
	23	9	1	4
e	1	1	-	-
i	-	-	1	-
Sum	**24**	**10**	**1**	**4**
TOTAL	**39**			

DICOTYLEDONAE		
	APIACEAE	
	Hydrocotyle hirta	hairy pennywort
	Xanthosia pilosa	woolly crossherb
	ASTERACEAE	
	Euchiton japonicus	common cottonleaf
	CASUARINACEAE	
	Allocasuarina littoralis	black sheoak
	DROSERACEAE	
	Drosera auriculata	tall sundew
	ELAEOCARPACEAE	
	Tetratheca labillardierei	glandular pinkbells
	ERICACEAE	
	Epacris impressa	common heath
	Leucopogon collinus	white beardheath
	FABACEAE	
	Acacia longifolia subsp. *sophorae*	coast wattle
	Acacia stricta	hop wattle
	Acacia suaveolens	sweet wattle
	Acacia terminalis	sunshine wattle
	Aotus ericoides	golden pea
	GOODENIACEAE	
	Goodenia lanata	trailing native-primrose
	HALORAGACEAE	
	Gonocarpus tetragynus	common raspwort
	Gonocarpus teucrioides	forest raspwort
	MYRTACEAE	
	Eucalyptus globulus subsp. *globulus*	tasmanian blue gum
	Eucalyptus sieberi	ironbark
	Euryomyrtus ramosissima	rosy heathmyrtle
	Leptospermum scoparium	common teatree
	PROTEACEAE	
e	*Lomatia tinctoria*	guitarplant
	RUTACEAE	
	Philotheca virgata	twiggy waxflower
	STYLIDIACEAE	
	Stylidium graminifolium	narrowleaf triggerplant
	VIOLACEAE	
	Viola hederacea subsp. *hederacea*	ivyleaf violet

GYMNOSPERMAE			
	PINACEAE		
i	*Pinus radiata*	radiata pine	EW
MONOCOTYLEDONAE			
	ASPARAGACEAE		
	Lomandra longifolia	sagg	
	ASPHODELACEAE		
	Xanthorrhoea australis	southern grasstree	
	COLCHICACEAE		
	Burchardia umbellata	milkmaids	
	CYPERACEAE		
	Gahnia radula	thatch sawsedge	
	Gahnia sieberiana	redfruit sawsedge	
	Lepidosperma concavum	sand swordsedge	
	Lepidosperma laterale	variable swordsedge	
	ORCHIDACEAE		
e	*Chiloglottis gunnii*	tall bird-orchid	
	RESTIONACEAE		
	Centrolepis strigosa subsp. *strigosa*	hairy bristlewort	
	Leptocarpus tenax	slender twinerush	
PTERIDOPHYTA			
	CULCITACEAE		
	Calochlaena dubia	rainbow fern	
	DENNSTAEDTIACEAE		
	Histiopteris incisa	batswing fern	
	Pteridium esculentum subsp. *esculentum*	bracken	
	GLEICHENIACEAE		
	Gleichenia dicarpa	pouched coralfern	

APPENDIX C. Analysis of database records of threatened flora

Table C1 provides a listing of threatened fauna from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table C1. Threatened flora records from within 5,000 m of boundary of the study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from DPIPWE's *Natural Values Atlas* (DPIPWE 2021) and other sources where indicated. Habitat descriptions are taken from FPA (2016), FPA (2017) and TSS (2003+), except where otherwise indicated. Species marked with # are listed in CofA (2021).

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Acacia ulicifolia juniper wattle	r -	*Acacia ulicifolia* is found in sandy coastal heaths and open heathy forest and woodland in the north and east of Tasmania. Populations are often sparsely distributed and most sites are near-coastal but it can occasionally extend inland (up to 30 km).	Potential habitat marginally present (quite atypical of most known sites). This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).
Austrostipa blackii crested speargrass	r -	The habitat of *Austrostipa blackii* is poorly understood because of confusion with other species. In its "pure" form (i.e. long coma), *A. blackii* is a species of very near-coastal sites such as the margins of saline lagoons, creek outfalls and vegetated dunes. Further inland, where it seems to grade into other species, it occurs in open grassy woodlands.	Potential habitat absent (atypical of most known sites). This perennial grass was not detected (no seasonal constraint on detection and/or identification).
Brachyloma depressum spreading heath	r -	*Brachyloma depressum* is found in shrubby heathland and low open woodland amongst granite boulders/sheets or on granite soils, mainly in near-coastal sites in northern and eastern Tasmania.	Potential habitat absent – granite soils are not present.
Caladenia caudata tailed spider-orchid	v VU #	*Caladenia caudata* has highly variable habitat, which includes the central north: *Eucalyptus obliqua* heathy forest on low undulating hills; the northeast: *E. globulus* grassy/heathy coastal forest, *E. amygdalina* heathy woodland and forest, *Allocasuarina* woodland; and the southeast: *E. amygdalina* forest and woodland on sandstone, coastal *E. viminalis* forest on deep sands. Substrates vary from dolerite to sandstone to granite, with soils ranging from deep windblown sands, sands derived from sandstone and well-developed clay loams developed from dolerite. A high degree of insolation is typical of many sites.	Potential habitat marginally present in the areas mapped as DSO. However, most of the area mapped as DSO is now long unburnt and highly unsuitable at a local scale. Herb diversity is low throughout. The survey was outside the peak flowering period of the species (Wapstra 2018). A further timed-targeted survey to coincide with the peak flowering period (Wapstra 2018) is not considered warranted as there is a statistically low likelihood of occurrence.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Caustis pentandra thick twistsedge	r -	*Caustis pentandra* occurs on sandy soils derived from granite in coastal heathland and heathy woodland, mainly between Freycinet Peninsula and Binalong Bay.	Potential habitat marginally present in the very northwest of the area mapped as DSO. This distinctive perennial graminoid was not detected (no seasonal constraint on detection and/or identification).
Conospermum hookeri tasmanian smokebush	v VU #	*Conospermum hookeri* usually occurs in coastal and near-coastal heathland and heathy forest/woodland dominated by *Eucalyptus amygdalina* or *E. tenuiramis*. It extends from Bruny Island to the Furneaux islands, on granite or sandy, acid, low-nutrient soils. There are some inland occurrences in heathy *E. amygdalina* forest on granite substrates.	Potential habitat very marginally present (atypical of most sites in this part of the State). This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).
Craspedia paludicola swamp billybuttons	?r -	*Craspedia paludicola*) is a robust herb in the daisy family that grows in open wet swampy areas or at the edges of water bodies or courses. In Tasmania, the species is known from 12 locations scattered in mostly lowland areas in the eastern half of the State, and in montane areas in the Central Highlands.	Potential habitat absent -no 'swampy' ground occurs within or adjacent to the lease area.
Desmodium gunnii southern ticktrefoil	v -	*Desmodium gunnii* occurs in the north and sub-coastal areas of the northeast, with outlying sites at Woolnorth. It grows mostly in damp sclerophyll forest and woodland, usually on fertile sites.	Potential habitat marginally present (moist slopes). This perennial herb/sub-shrub was not detected (no seasonal constraint on detection and/or identification).
Euphrasia collina subsp. *deflexifolia* eastern eyebright	r -	*Euphrasia collina* subsp. *deflexifolia* occurs in open woodland or heath (sometimes extending to forest), often associated with road edges, tracks and depressions near the headwaters of creeks. Its habitat is associated with the availability of open patches of ground maintained by fire or other disturbance, the proximity of low vegetation and relatively high soil moisture in spring.	Potential habitat absent – no disturbed moist ground present and a very low fire frequency to provide suitable habitat.
Glycine microphylla small-leaf glycine	v -	*Glycine microphylla* occurs in dry to dampish sclerophyll forest and woodland in the north and east of the State, with outlying sites at Woolnorth.	Potential habitat present. This perennial twining herb was not detected (no seasonal constraint on detection and/or identification).
Hibbertia calycina lesser guineaflower	v -	*Hibbertia calycina* is found only in the northeast near Scamander and St Helens where it occurs on ridgelines and upper slope areas in *Eucalyptus sieberi* forest on Devonian mudstone. It favours sheltered north and west facing slopes, with soils that are extremely shallow, free-draining and relatively stony with little moisture-holding capacity and low nutrient status.	Potential habitat marginally present (atypical of most sites in this part of the State). This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).
Hibbertia virgata twiggy guineaflower	r -	*Hibbertia virgata* occurs in sandy heaths and open woodlands in the northeast.	Potential habitat marginally present in the very northwest of the area mapped as DSO. This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Hierochloë rariflora cane holygrass	r -	*Hierochloe rariflora* mainly occurs along rocky flood-prone riparian environments but can extend upslope, and sometimes occurs on localised disturbed sites such as fallen trees, along mining races and on steep road banks. Granite outcrops in open forest are also favoured. The species mainly occurs on Mathinna series sediments and Devonian granodiorites in the northeast of the State. The main vegetation type is usually shrubby dry or wet sclerophyll forest, but the species has also been recorded from pine plantations.	Potential habitat present. This distinctive perennial grass was not detected (no seasonal constraint on detection and/or identification).
Hovea corrickiae glossy purplepea	r -	*Hovea corrickiae* occurs mainly on Mathinna series sedimentary substrates on mid to lower slopes on the sheltered side of often quite steep hills. Occasionally occurs on ridges. It tends to occur in forest intermediate between dry sclerophyll and wet sclerophyll forest, with a shrubby understorey.	Potential habitat present (moist slopes above in the south of the lease area). This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).
Hovea tasmanica rockfield purplepea	r -	*Hovea tasmanica* occurs in central and northeastern regions. It is usually found on dry, rocky ridges or slopes (mostly dolerite) in forest and riverine scrub.	Records of this species from this part of the State probably refer to *Hovea corrickiae*.
Lachnagrostis billardierei subsp. *tenuiseta* small-awn blowngrass	r -	*Lachnagrostis billardierei* subsp. *tenuiseta* grows on deep windblown sands, such as on the edge of the seaward side of sand dunes. It can grow amongst stands of marram grass, close to the beach, either on or between the first two or three sand dunes (subsp. *billardierei* tends to grow in more sheltered positions).	Potential habitat absent.
Lachnagrostis punicea subsp. *filifolia* narrowleaf blowngrass	r -	*Lachnagrostis punicea* subsp. *filifolia* purportedly occurs in moist depressions in grassy woodlands/forests and grasslands, and on the edges of swamps and saline flats. In Tasmania, it is known only from historic records, two near Hobart and one near Ulverstone.	Potential habitat absent.
Lepidium hyssopifolium soft peppercress	e EN #	The native habitat of *Lepidium hyssopifolium* is the growth suppression zone beneath large trees in grassy woodlands and grasslands (e.g. over-mature black wattles and isolated eucalypts in rough pasture). *Lepidium hyssopifolium* is now found primarily under large exotic trees on roadsides and home yards on farms. It occurs in the eastern part of Tasmania between sea-level to 500 m a.s.l. in dry, warm and fertile areas on flat ground on weakly acid to alkaline soils derived from a range of rock types.	Potential habitat absent.
Lepidosperma forsythii stout rapiersedge	r -	*Lepidosperma forsythii* occurs in wet heathland and sedgeland.	Potential habitat absent.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Lepidosperma tortuosum twisting rapiersedge	r -	*Lepidosperma tortuosum* occurs in heathland and heathy woodland, in lowland sites, mainly in eastern parts of the State. It often occurs in the sedgier (peatier) parts of dry heathland. It can occur on a range of substrates.	Potential habitat absent.
Liparophyllum exaltatum erect marshflower	r -	*Liparophyllum exaltatum* occurs in the northeast near St Helens, Scamander and the Ringarooma River. It grows in stationary or slow-flowing water to a depth of 50 cm or in seasonally inundated areas on the margins of water bodies.	Potential habitat absent.
Orthoceras strictum horned orchid	r -	*Orthoceras strictum* occurs in a wide range of habitat types including buttongrass moorland, sedgy and scrubby heathland, sedgy eucalypt shrubland and open forest, usually on poorly- to moderately-drained peaty, sandy and clay soils that are at least seasonally moist. It can also occur on thin mossy soils at soaks on and below rock faces.	Potential habitat absent.
Persicaria subsessilis bristly waterpepper	e -	*Persicaria subsessilis* is found in a variety of habitats, including rocky (dolerite) river margins, disturbed *Melaleuca ericifolia* (coast paperbark) swamp forest and lagoon margins, *Cyperus lucidus* (leafy flatsedge) sedgeland and within openings in riparian scrub on alluvium. It is known from the Ringarooma River, the South Esk River downstream of Trevallyn Dam, and the West Tamar near Launceston.	Potential habitat absent.
Phebalium daviesii davies waxflower	e CR #	The native distribution of *Phebalium daviesii* has become restricted to the George River near St Helens (with historic records from nearby Constable Creek). It occurs in a narrow valley in the flood zone close to the river in riparian *Eucalyptus viminalis* woodland with an understorey of heath and wet sclerophyll species on generally poor, coarse, granitic sands.	Potential habitat absent.
Plantago debilis shade plantain	r -	*Plantago debilis* mainly occurs in riparian environments and other disturbed sites, generally in dry and wet sclerophyll forest (but sometimes pine plantations). The species mainly occurs on Mathinna series sediments and Devonian granodiorites in northeast Tasmania. It often occurs along steep road banks.	Potential habitat present. This perennial herb was not detected (no seasonal constraint on detection and/or identification).
Polyscias sp. Douglas-Denison ferny panax	e -	*Polyscias* sp. Douglas-Denison is restricted to Tasmania's central east coast region between Coles Bay and the Douglas River where it grows in damp shrubby sclerophyll forest with a high dolerite or granite rock cover on steep-sided gullies to more gentle slopes.	Potential habitat marginally present (atypical of most sites in this part of the State). This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Pomaderris intermedia lemon dogwood	r -	*Pomaderris intermedia* occurs in heathland and heathy woodland on eastern Bass Strait islands but extends to mainly dry sclerophyll forest on mainland Tasmania, most often associated with rock outcrops (dolerite), riparian areas and open forest.	Potential habitat present. This distinctive shrub was not detected (no seasonal constraint on detection and/or identification).
Prasophyllum apoxychilum tapered leek-orchid	v EN # only	*Prasophyllum apoxychilum* is restricted to eastern and northeastern Tasmania where it occurs in coastal heathland or grassy and scrubby open eucalypt forest on sandy and clay loams, often among rocks. It occurs at a range of elevations and seems to be strongly associated with dolerite in the east and southeast of its range.	Potential habitat marginally present in the areas mapped as DSO. However, most of the area mapped as DSO is now long unburnt and highly unsuitable at a local scale. Herb diversity is low throughout. The survey was outside of the flowering period of the species (Wapstra 2018). A further timed-targeted survey to coincide with the peak flowering period (Wapstra 2018) is not considered warranted as there is a statistically low likelihood of occurrence.
Pterostylis grandiflora superb greenhood	r -	*Pterostylis grandiflora* occurs mostly in heathy and shrubby open eucalypt forests and in grassy coastal *Allocasuarina* (sheoak) woodland on moderately to well-drained sandy and loamy soils. It prefers to grow amongst undergrowth on lightly shaded sites. A recent population has been detected in wet sclerophyll forests.	Potential habitat present (moist slopes along the creek in the south of the lease). There is a known record in the creek to the immediate east of the study area. The survey was within the flowering period of the species (Wapstra 2018). The survey did not detect the species (nor leaves of any *Pterostylis* species).
Pterostylis squamata ruddy greenhood	v -	*Pterostylis squamata* occurs in heathy and grassy open eucalypt forest, woodland and heathland on well-drained sandy and clay loams.	Potential habitat marginally present in the areas mapped as DSO. However, most of the area mapped as DSO is now long unburnt and highly unsuitable at a local scale. Herb diversity is low throughout. A further timed-targeted survey to coincide with the peak flowering period (Wapstra 2018) is not considered warranted as there is a statistically low likelihood of occurrence.
Pterostylis ziegeleri grassland greenhood	v VU	*Pterostylis ziegeleri* occurs in the State's south, east and north, with an outlying occurrence in the northwest. In coastal areas, the species occurs on the slopes of low stabilised sand dunes and in grassy dune swales, while in the Midlands it grows in native grassland or grassy woodland on well-drained clay loams derived from basalt.	Potential habitat absent.
Schoenus brevifolius zigzag bogsedge	r -	*Schoenus brevifolius* grows in shallow water around the fringes of lagoons in the northeast.	Potential habitat absent.
Senecio psilocarpus swamp fireweed	e VU # only	*Senecio psilocarpus* is known from six widely scattered sites in the northern half of the State, including King and Flinders islands. It occurs in swampy habitats including broad valley floors	Potential habitat absent.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
		associated with rivers, edges of farm dams amongst low-lying grazing/cropping ground, herb-rich native grassland in a broad swale between stable sand dunes, adjacent to wetlands in native grassland, herbaceous marshland and low-lying lagoon systems.	
Stuckenia pectinata fennel pondweed	r -	*Stuckenia pectinata* is found in fresh to brackish/saline waters in rivers, estuaries and inland lakes. It forms dense stands or mats, particularly in slow-flowing or static water. The species grows in water of various depth.	Potential habitat absent.
Thelymitra jonesii skyblue sun-orchid	e EN # only	*Thelymitra jonesii* occurs in moist coastal heath on sandy to peaty soils and in *Eucalyptus obliqua* forest in deep loam soil over dolerite.	Potential habitat absent.
Utricularia australis yellow bladderwort	r -	*Utricularia australis* has a widespread distribution, ranging from the Gordon River in the southwest to the northern part of Flinders Island in the far northeast (and also reportedly from the Derwent River in the State's south). It grows in stationary or slow-moving water, including natural lakes, farm dams and reservoirs, where it has been reported as forming 'locally dense swards'.	Potential habitat absent.
Xanthorrhoea bracteata shiny grasstree	v EN # only	*Xanthorrhoea bracteata* is restricted to coastal areas from the Asbestos Range to Waterhouse Point in the northeast, where it occurs in sandy soils, often acid and waterlogged, in coastal heathland, extending into heathy woodland and forest, mainly dominated by *Eucalyptus amygdalina*.	Reference to this species in this part of the State is erroneous and should refer to *Xanthorrhoea arenaria*. However, potential habitat is only marginally present.
Xerochrysum bicolor eastcoast everlasting	r -	Species of *Xerochrysum* are poorly understood in Tasmania, especially the identification of coastal species (*X. bicolor* and *X. bracteatum*). *X. bicolor* may be restricted to stabilised dune systems.	Potential habitat absent.
Xerochrysum palustre swamp everlasting	v VU # only	*Xerochrysum palustre* has a scattered distribution with populations in the northeast, east coast, Central Highlands and Midlands, all below about 700 m elevation. It occurs in wetlands, grassy to sedgy wet heathlands and extends to associated heathy *Eucalyptus ovata* woodlands. Sites are usually inundated for part of the year.	Potential habitat absent.

APPENDIX D. Analysis of database records of threatened fauna

Table D1 provides a listing of threatened fauna from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table D1. Threatened fauna records from 5,000 m of boundary of the study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from the DPIPWE's *Natural Values Atlas* (DPIPWE 2021), Bryant & Jackson (1999) and FPA (2021); marine, wholly pelagic and littoral species such as marine mammals, fish and offshore seabirds are excluded. Species marked with # are listed in CofA (2021).

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
Accipiter novaehollandiae grey goshawk	e -	Potential habitat is native forest with mature elements below 600 m altitude, particularly along watercourses. Significant habitat for the grey goshawk may be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body.	Potential habitat marginally present along the watercourse. However, the development area is open canopied dry sclerophyll forest. The species may very occasionally utilise the greater study area as part of a home range and for foraging but small-scale expansion of the quarry should not have a significant impact on this aspect of the life history of the species.
Antipodia chaostola tax. *leucophaea* chaostola skipper	e EN #	Potential habitat is dry forest and woodland supporting *Gahnia radula* (usually on sandstone and other sedimentary rock types) or *Gahnia microstachya* (usually on granite-based substrates).	Potential habitat marginally present. *Gahnia radula* is very occasional. Random hand-searching of numerous clumps of the species failed to detect the distinctive larval shelters and chewed leaf tips. The specific proposed development site does not support a high density of *Gahnia radula*. At present, it is reasonable to conclude that the species is not present and does not need to be further considered.
Apus pacificus fork-tailed swift	- - # only	Occasional non-breeding migrant to Tasmania only.	Potential habitat widespread but this is an aerially-foraging bird that rarely lands. Further consideration of this species should not be required.
Aquila audax subsp. *fleayi* wedge-tailed eagle	e EN #	Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands).	Refer to **FINDINGS *Fauna species*** for more details.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
Botaurus poiciloptilus Australasian bittern	- EN #	Potential habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. *Phragmites*, *Cyperus*, *Eleocharis*, *Juncus*, *Typha*, *Baumea*, *Bolboschoenus*) or cutting grass (*Gahnia*) growing over a muddy or peaty substrate (TSSC 2011).	Potential habitat absent.
Ceyx azureus subsp. *diemenensis* Tasmanian azure kingfisher	v EN # only	Potential foraging habitat is primarily freshwater (occasionally estuarine) waterbodies such as large rivers and streams with well-developed overhanging vegetation suitable for perching and water deep enough for dive-feeding. Potential breeding habitat is usually steep banks of large rivers (a breeding site is a hole (burrow) drilled in the bank).	Potential habitat absent.
Dasyurus maculatus subsp. *maculatus* spotted-tailed quoll	r VU #	Potential habitat is coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex and steep rocky areas are present, and includes remnant patches in cleared agricultural land.	Refer to **FINDINGS *Fauna species*** for more details.
Dasyurus viverrinus eastern quoll	- EN #	Potential habitat is a variety of habitats including rainforest, heathland, alpine areas and scrub. However, it seems to prefer dry forest/native grassland mosaics which are bounded by agricultural land.	Refer to **FINDINGS *Fauna species*** for more details.
Galaxias pusilla eastern dwarf galaxias	v VU #	Potential habitat is slow to moderately fast-flowing streams containing permanent water (even when not flowing), which have good instream cover from overhanging banks and/or logs, and shade from overhanging vegetation. A population can only be maintained where barriers have prevented establishment of trout and redfin perch. The nature of these barriers is variable and can include permanent natural structures such as waterfalls and chutes and also low flow-dependent features such as marshes, ephemeral water-losing and remnant channels, braided channel floodplain features.	Potential habitat absent. The site is also well outside the recognised range of the species (no known sites south of the Ansons River).
Haliaeetus leucogaster white-bellied sea-eagle	v -	Potential habitat comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is any large waterbody (including sea coasts, estuaries, wide rivers, lakes, impoundments and even large farm	The species may very occasionally utilise the greater study area as part of a home range and for foraging but small-scale expansion of the quarry should not have a significant impact on

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
		dams) supporting prey items (fish). Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including shores, bays, inlets and peninsulas), large rivers (class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used.	this aspect of the life history of the species.
Hirundapus caudacutus white-throated needletail	- VU #	Occasional non-breeding migrant to Tasmania only.	Potential habitat widespread but this is an aerially-foraging bird that rarely lands. This species does not require further consideration.
Lathamus discolor swift parrot	e CR #	Potential foraging habitat comprises *E. globulus* or *E. ovata* trees that are old enough to flower. Potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees.	Potential foraging habitat absent (a single seeding of *Eucalyptus globulus* was located however the plant is ca. 10 years from flowering-age). No nesting habitat is present as all of the trees within the development area is young regrowth.
Litoria raniformis green and golden frog	v VU #	Potential habitat is permanent and temporary waterbodies, usually with vegetation in or around them, including features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features.	Potential habitat absent.
Perameles gunnii subsp. *gunnii* eastern barred bandicoot	- VU #	Potential habitat is open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland. Significant habitat is dense tussock grass-sagg-sedge swards, piles of coarse woody debris and denser patches of low shrubs (especially those that are densely branched close to the ground providing shelter) within the core range of the species.	Potential habitat marginally present. The distinctive diggings of this species were not recorded. The species can occur in a range of vegetation types but tends to be most prevalent in grassier and more open habitats. The species may utilise the greater study area as part of a home range and for foraging but small-scale development should not have a significant impact on this aspect of the life history of the species.
Prototroctes maraena Australian grayling	v VU #	Potential habitat is all streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. Prosser River dam, weirs) that prevent fish migration, are not potential habitat.	Potential habitat absent.
Pseudemoia pagenstecheri tussock skink	v -	Potential habitat comprises native grasslands dominated by tussock-forming grasses.	Potential habitat absent as no tussock forming grass species were recorded.
Pseudomys novaehollandiae New Holland mouse	e VU #	Potential habitat of *Pseudomys novaehollandiae* is heathlands (mainly dry heathlands but also where dry heathlands form a mosaic with other heathland, moorland and scrub complexes), heathy woodlands (i.e. eucalypt canopy cover 5-20%), *Allocasuarina*-dominated	Refer to **FINDINGS *Fauna species*** for more details.

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
		forests on sandy substrates (not dolerite or basalt), and vegetated sand dunes. Key indicator plant species include (but are not restricted to) *Aotus ericoides*, *Lepidosperma concavum*, *Hypolaena fastigiata* and *Xanthorrhoea* spp.	
Sarcophilus harrisii Tasmanian devil	e EN #	Potential habitat is all terrestrial native habitats, forestry plantations and pasture. Devils require shelter (e.g. dense vegetation, hollow logs, burrows or caves) and hunting habitat (open understorey mixed with patches of dense vegetation) within their home range (4-27 km^2). Potential denning habitat is areas of burrowable, well-drained soil, log piles or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of inundation and with at least one entrance through which a devil could pass.	Refer to **FINDINGS *Fauna species*** for more details.
Tasmanipatus barretti giant velvet worm	r -	Potential habitat includes wet sclerophyll forest grading into rainforest or mixed forest and dry forest within its known range.	Refer to **FINDINGS *Fauna species*** for more details.
Tyto novaehollandiae subsp. *castanops* masked owl	e VU #	Potential habitat is all areas with trees with large hollows (≥15 cm entrance diameter). Remnants and paddock trees (in any dry or wet forest type) in agricultural areas may constitute potential habitat. Significant habitat is any areas within the core range of native dry forest with trees over 100 cm dbh with large hollows (≥15 cm entrance diameter).	Refer to **FINDINGS *Fauna species*** for more details.

APPENDIX E. DPIPWE's *Natural Values Atlas* report for the study area

Appended as pdf file.

APPENDIX F. Forest Practices Authority's *Biodiversity Values Atlas* report for the study area

Appended as pdf file.

APPENDIX G. CofA's *Protected Matters* report for the study area

Appended as pdf file.

ATTACHMENT

- .shp file of revised vegetation mapping

STATEWIDE geotechnics

26th June 2015 Our Ref Q001

Attention: Mr Andrew Griffiths
North East Excavations (Tas) Pty. Ltd
PO Box 386
St Helens TAS 7216

via email: nee@activ8.net.au
Hard copy to follow

Re: Acid-Forming Potential of Source Rock – Dianas Basin Quarry, St Helens

This document is an addendum to the assessment report entitled *'DSG Specification G6 Quarry Assessment Report – Dianas Basin Quarry, St Helens'*, authored by Statewide Geotechnics and dated 15th May 2015. This letter should be read in conjunction with the assessment report.

In section 5 of the assessment report it was noted that petrographic testing had been undertaken by Mineral Resources Tasmania ('MRT') in October 2014 to assess the pyrite content of the quartzite source rock at the quarry. A copy of the petrographic report was presented in Appendix C of the assessment report.

Although the findings of the analysis were largely inconclusive, it was recommended by MRT and subsequently by Statewide Geotechnics that further testing be undertaken to confirm the pyrite content of source rock currently being quarried.

Subsequent to this recommendation being made, samples of rock and crushed quartzite aggregate sourced from the current working face of the quarry was submitted to MRT by Statewide Geotechnics on the 9th June 2015 for X-Ray Diffraction ('XRD') testing. A copy of the analytical report, dated 22nd June 2015, is provided as an attachment to this letter.

The findings of this most recent testing demonstrate that the rock currently being utilised for production, being that prevailing in the western face of the quarry, "…has no detectable sulphur and calculated pyrite contents, and thus would have very low Maximum Acid Producing Potential". These results suggest that material is very unlikely to be capable of generating acid despite potentially acid-forming rock having been found at the site previously.

Should you require further clarification, or if we can be of further assistance, please contact the undersigned.

For and on behalf of Statewide Geotechnics

Drew Bedelph
Engineering Geologist
Statewide Geotechnics

Attachment:

- MRT Geochemical and Mineralogical Analysis Report LJN2015/086 (9 pages)

Mineral Resources Tasmania

Laboratory Report

LJN2015/086

GEOCHEMICAL AND MINERALOGICAL ANALYSES, NE EXCAVATIONS QUARRY, DIANAS BASIN

An unpublished Mineral Resources Tasmania report for

Statewide Geotechnical

by R S Bottrill and R N Woolley

22 June 2015

Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

ABSTRACT

The rock and aggregate samples collected from this quarry were tested to determine if they could be potentially acid-forming materials (PAF). No sulphides, sulphates, or carbonates were detected by XRD, so we can only estimate the maximum and minimum potential acid generating and neutralising capacities based on the geochemistry and mineralogy. The samples have no detectable sulphur and calculated pyrite contents, and thus would have very low Maximum Acid Producing Potential (MAP <0.5kg/t H_2SO_4). The Acid neutralising capacity (ANC) is also low (<7kg/t H_2SO_4) and no carbonates could be detected, though mica and chlorite are abundant and will help neutralise any acid. Near the detection limits, the NPR would be about 11, with NAPP about -6, indicating the samples are most likely weakly alkaline (Parbhakar-Fox and Lottermoser, 2011). These results suggest that the samples are very unlikely to be capable of generating a significant amount of acid, despite PAF being found at the site in a previous study.

INTRODUCTION

The rock and aggregate samples collected from this quarry near St Helens (details in Table 1) were submitted for chemical analyses and XRD (X-Ray Diffraction), in regards to possible natural acid-production (Acid Mine Drainage, AMD). The chemical analyses were done by NDIR (Non-Dispersive Infra-Red), and mineralogy by XRD (X-Ray diffraction), in the MRT laboratories, Rosny, and reported here. Similar samples from the site were previously analysed by XRF, XRD, and carbon and sulphur analysis; reports were presented by Bottrill and Woolley (2014).

TABLE 1: SAMPLE DETAILS.

Registration Number	Field No.	MRT Lab Number	Location	Sample Description
G406347		20150308	NE Excavations Quarry 22M/2003 at Dianas Basin	Rocks & Agg., Mathinna quartzite

XRD

The samples were prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. They were run on an automated Philips X-Ray diffractometer system: PW 1729 generator, PW 1050 goniometer and PW 1710 microprocessor with nickel-filtered copper radiation at 35kV/25mA, a graphite monochromator (PW1752), sample spinner and a proportional detector (sealed gas filled PW1711). Our typical step-size is 0.02 degrees, and the standard scanning speed is 0.02 degrees/second. The PW1710 system is presently driven by the CSIRO XRD software: "VisualXRD" , "PW1710 for Windows" and "XPLOT for Windows". Interpretation and quantification is largely manual, using a series of prepared standards of the more common minerals to enable some semi-quantitative analysis. Quartz, if present, is used as an internal standard; and if not present, it is often added to the sample for a supplementary scan. Our semi-quantitative results are calculated using single-peak calibration factors derived from scans of known mixtures of minerals.

The XRD results on these samples (Appendix 1) indicate they are generally all dominated by quartz, kaolinite with minor mica, goethite and anatase. No sulphides, sulphates or deleterious minerals were found, although one contained trace jarosite, suggesting the possible presence of sulphides. The mineralogy could be compatible with an origin from both granitic and Mathinna Beds source rocks.

NDIR

The carbon and sulphur contents of these samples were determined by Non-dispersive infrared (NDIR) analysis using a Bruker G4 Icarus analyser, in the MRT laboratories, Rosny Park.

The results have been included in Appendix 1, and show only low sulphur values (<0.02%).

ACID BASE ACCOUNTING

The results of this analysis are summarised in Table 2 and discussed below.

Reg No	E202501		
Lab No	20150308		
Field No	1		
H_2SO_4	0.06	max	wt%
MPA	0.6		kg/t
ANC	0.8	max	wt%
ANC	0.0	min	kg/t
ANC	0.7	max	kg/t
NPR	0.0	min	
NPR	10.9	max	
NAPP	0.6	max	kg/t
NAPP	-6.1	max	kg/t

Table 2: Acid-Potential and Neutralisation Calculations.
H_2SO_4: sulphuric acid (calculated from S);
MPA: Maximum potential acid production from Pyrite;
ANC: maximum and minimum calculated acid neutralisation capacity from $CaCO_3$;
NPR: Neutralisation potential ratio (ANV/MPA);
NAPP: max and min: : calculated Net Acid Production Potential (MPA-ANC)

DISCUSSION AND INTERPRETATION

No sulphides, sulphates or carbonates were identified in these samples by XRD or visual observation (Table 1). They also have no detectable sulphur or carbon contents (Table 2). As shown in this table the maximum possible S value (0.01 wt.%) can be used to calculate the theoretical maximum pyrite content and thus the maximum potential sulphuric acid (MPA) that could be produced if this sulphide was entirely converted by oxidation to sulphuric acid, as discussed by Anon (2009) and Parbhakar-Fox and Lottermoser (2011). The calculated MPA is 0.3kg/t, a low value.

The carbon value can be used to calculate a theoretical maximum carbonate content, assuming all C is in a carbonate. The calculated CaCO3 values (<0.1wt.%), are however, much larger than the detection limit for most common carbonates (~0.5 wt.%) and thus the XRD detection limit is used to calculate the maximum possible carbonate content, as CaCO3. This value determines the acid neutralising capacity (ANC, range 0-0.4 kg/t), also shown in Table 2 above, and is a low value.

From these values we can calculate the NPR (Neutralising Potential ratio, =ANC/MPA; Table 2), is about 11, near the detection limits, indicating that the samples are unlikely acid generators (Parbhakar-Fox and Lottermoser, 2011). We can also calculate the NAPP (Net acid production potential, = MPA-ANC) to be about -6 near the detection limits, indicating the samples are most likely weakly alkaline rather than acid-producing (Parbhakar-Fox and Lottermoser, 2011).

The samples submitted are very low in pyrite and other sulphides and thus unlikely to be acid-producing, especially as they contain significant amounts of mica and chlorite which will help neutralise any possible acid generated, if there is any pyrite in them.

A previous study on the quarry, in contrast, indicated some pyrite actually was present in rocks collected on site, and there was a significant sulphur content (0.18 wt.%), with a significant Maximum Acid Producing Potential (about 5.5kg/t). However the Acid Neutralising Capacity was still difficult to measure, and may have been as high as about 4.9, making the Net Acid Production Potential between 0.6 and 5.5. (Bottrill and Woolley, 2014) Those samples were classified as likely PAF (potentially

acid forming), quite different to these rocks, which presumably derive from a different part of the quarry.

Static chemical laboratory tests and geological investigations are required to better verify the probable nett acid potential of the site.

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R S Bottrill

MINERALOGIST-PETROLOGIST

R N Woolley

TECHNICAL OFFICER

Disclaimers

Mineral Resources Tasmania

Appendix 1: Laboratory Report: XRD analyses

Client: Statewide Geotechnics
Sample Source: Scotia - 15M/2004
MRT Job Number: LJN2015/086
Analysis: Approximate Mineralogy
Method: X-Ray Diffraction

Results:

Reg No	E202501
Lab. No.	20150308
Field No.	1
Mineral	*Wt %*
Quartz	89 ± 3
Mica	7 ± 1
Chlorite	3 ± 1
Smectite	*

[1] based on carbon content as determined by NDIR analysis

* possible trace

Peak overlap (e.g. Rutile and K-Feldspar) may interfere with identifications and quantitative calculations.

Amorphous minerals (e.g. some hydrous iron oxides) and minerals present in trace amounts may not be detected.

Analyst: R.N. Woolley
Date: 6 May 2015

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Appendix 2: Laboratory Report: Chemical analyses (Major Elements)

Client: Statewide Geotechnics
Sample Source: Scotia - 15M/2004
MRT Job Number: LJN2015/086
Analysis: C & S
Method: NDIR

Reg No	E202501
Lab No	20150308
Field No	1
***C**	<0.1
****CO_2**	<0.04
*****S**	<0.02

* All C shown as elemental C (NDIR)
** all C shown as CO_2 (NDIR)
*** all S shown as elemental S (NDIR)

Analyst: Richie Woolley
Date: 16 June 2015

Ralph Bottrill
Laboratory Manager

Mineral Resources Tasmania

Appendix 3: Laboratory Report

Client: Statewide Geotechnics
Sample Source: Scotia - 15M/2004
MRT Job Number: LJN2015/086
Analysis: Acid-Base accounting
Method: Var.

Reg No	E202501		
Lab No	20150308		
Field No	1		
S (%)	0.0	wt%	max
Py	0.0	wt%	max
H2SO4	0.0	wt%	max
MPA	0.3	kg/t	max
CaCO3	0.5	wt%	max
ANC	0.4	wt%	max
ANC	0.0	kg/t	min
ANC	4.0	kg/t	max
NPR	0.0		min
NPR	13.1		max
NAPP	0.3	kg/t	max
NAPP	-3.7	kg/t	min

Acid-Potential and Neutralisation Calculations.

S: Sulphur (measured); Py: pyrite (calculated from S, max.);

H_2SO_4: sulphuric acid (calculated from max. Py);

MAP: Maximum potential acid production from Py;

$CaCO_3$: maximum calculated calcite content from XRD;

ANC: maximum and minimum calculated acid neutralisation capacity from $CaCO_3$;

NPR: Neutralisation potential ratio (ANV/MPA);

NAPP: max and min: calculated Net Acid Production Potential (MPA-ANC);

Ralph Bottrill
16 June 2015