Working Together

APPLICATION FORM

PLANNING PERMIT

Land Use Planning and Approvals Act 1993

- Application form & details MUST be completed **IN FULL**.
- Incomplete forms will not be accepted and may delay processing and issue of any Permits.

OFFICE USE ONLY

Property No: | | | | | | **Assessment No:** | | - | | | | | - | | | | |

DA | | **PA** | | **PC** | |

- Is your application the result of an illegal building work? ☐ Yes ☒ No
- Have you already received a Planning Review for this proposal? ☐ Yes ☒ No
- Is a new vehicle access or crossover required? ☐ Yes ☒ No

Indicate by ✓ box

PROPERTY DETAILS:

Address: PORTERS BRIDGE ROAD

Title ref: 214055/1, 229773/1, 148606/1

Suburb: REEDY MARSH 7304

Land area: REFER TO REPORT *m^2 / ha*

340 Porters Bridge Road (veg clearance)
Title ref: 31918/1

Present use of land/building: REFER TO REPORT *(vacant, residential, rural, industrial, commercial or forestry)*

- Does the application involve Crown Land or Private access via a Crown Access Licence: ☐ Yes ☒ No
- Heritage Listed Property: ☐ Yes ☒ No

DETAILS OF USE OR DEVELOPMENT:

Indicate by ✓ box

☒ Building work ☒ Change of use ☐ Subdivision ☐ Demolition
☐ Forestry ☐ Other

Total cost of development *(inclusive of GST):* $ 120, 000 *Includes total cost of building work, landscaping, road works and infrastructure*

Description of work: REFER TO REPORT

Use of building: REFER TO REPORT (main use of proposed building – dwelling, garage, farm building, factory, office, shop)

New floor area: REFER TO REPORT m^2 New building height: REFER TO REPORT m

Materials: External walls: REFER TO REPORT Colour: REFER TO REPORT

Roof cladding: REFER TO REPORT Colour: REFER TO REPORT

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RESULT OF SEARCH

RECORDER OF TITLES

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Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
214055	1
EDITION	DATE OF ISSUE
3	02-Feb-2016

SEARCH DATE : 27-May-2024
SEARCH TIME : 02.06 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Plan 214055
Derivation : Whole of Lot 32905 Gtd to R W Miller
Prior CT 2527/15

SCHEDULE 1

D137009 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 02-Feb-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
B644672 NOTIFICATION: Private Timber Reserve pursuant to
Section 15 (i) of the Forest Practices Act 1985
Registered 22-Apr-1993 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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ORIGINAL – NOT TO BE REMOVED FROM TITLES OFFICE

R.P. 1469

TASMANIA

REAL PROPERTY ACT, 1862, as amended

NOTE—REGISTERED FOR OFFICE CONVENIENCE TO REPLACE

CERTIFICATE OF TITLE

Register Book Vol. 2527 Fol. 15

Purchase Grant Vol.242 Fol.41.

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

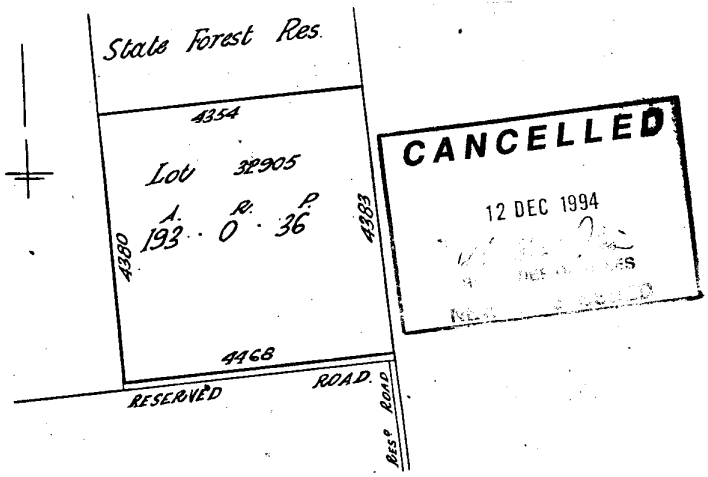
DESCRIPTION OF LAND

PARISH OF WYCOMBE LAND DISTRICT OF DEVON
ONE HUNDRED AND NINETY THREE ACRES THIRTY SIX PERCHES on the Plan hereon

FIRST SCHEDULE (continued overleaf)

RONALD WILLIAM MILLER of Deloraine, Labourer

SECOND SCHEDULE (continued overleaf)
NIL



REGISTERED NUMBER 214055

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register

E OF THE RECORDER OF TITLES ARE NO LONGER SUBSISTING.

Whole of Lot 32905 Gtd. to R.W. Miller, Meas. in Links.

FIRST Edition. Registered 11 SEP 1959

Derived from P.G.Vol.242 Fol.41.

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SEARCH OF TORRENS TITLE

VOLUME	FOLIO
229773	1
EDITION	DATE OF ISSUE
2	03-Nov-2016

SEARCH DATE : 27-May-2024
SEARCH TIME : 02.12 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Plan 229773
Derivation : Lots 2199, 2200, 2201 and 2202 the allotments Gtd. to R.Thirkell
Prior CT 2975/38

SCHEDULE 1

D137171 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 03-Nov-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
B614689 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 Registered 12-Dec-1996 at noon
C293731 Instrument Creating Forestry Right for Wesley Vale Engineering Pty Ltd for the term of 20 years from the 1st day of July 1998 the whole of the said land within described (together with ancillary rights)
C520074 Partial Release of Registered Forestry Right C293731 over that part of the said land within described (after excepting thereout the hatched portions of the land shown on the Forestry Right Diagram attached to the said Release)

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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FOLIO PLAN

RECORDER OF TITLES

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R.P. 312

ANNEXURE TO CERTIFICATE OF TITLE

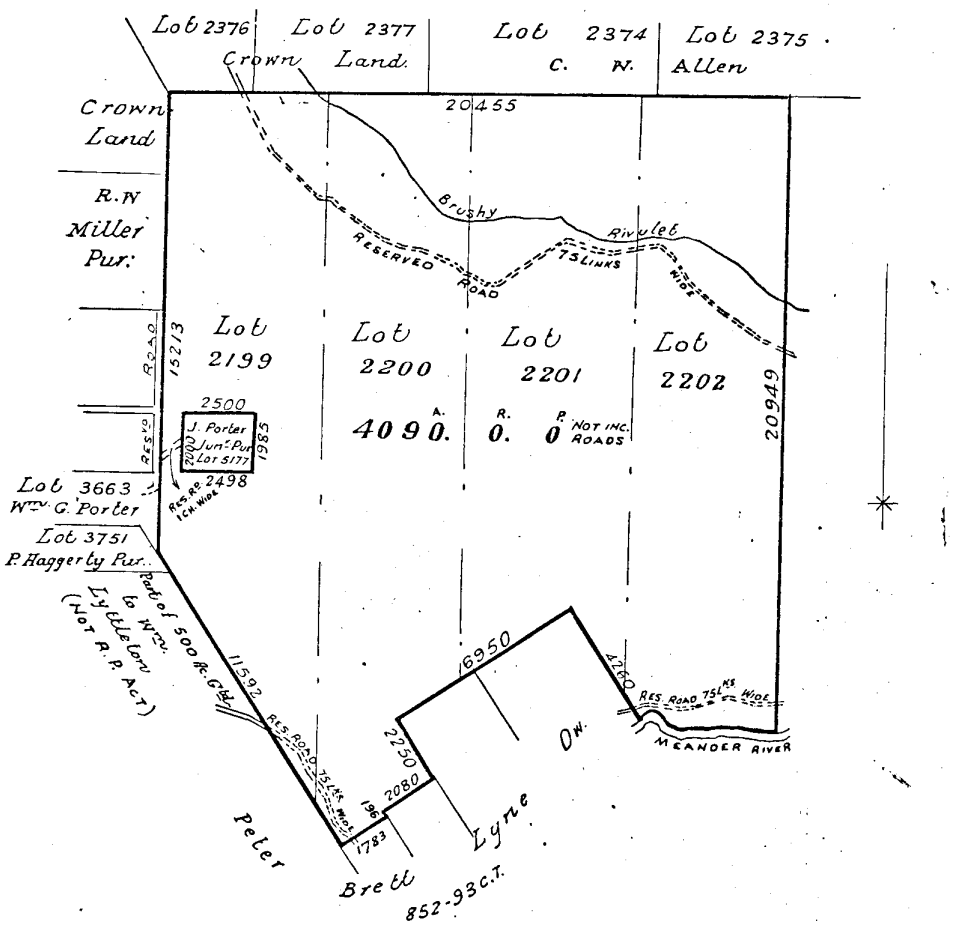
VOL. 2975 FOL. 38

REGISTERED NUMBER

229773

Recorder of Titles

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.



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SEARCH OF TORRENS TITLE

VOLUME	FOLIO
148606	1
EDITION	DATE OF ISSUE
2	03-Nov-2016

SEARCH DATE : 27-May-2024
SEARCH TIME : 02.13 PM

DESCRIPTION OF LAND

Parish of WYCOMBE Land District of DEVON
Lot 1 on Plan 148606
Being the land described in Conveyance No.54/1979
Derivation : Part of 800A-0R-0P Gtd to William Lyttleton
Derived from A23878

SCHEDULE 1

D137171 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 03-Nov-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
54/1979 CONVEYANCE Made Subject to Boundary Fences Condition
54/1979 CONVEYANCE: Burdening Easement: Right to pass and repass (appurtenant to Owen Reginald Atkins, his personal representatives and assigns) over Lot 1 shown on Plan No.148606
54/3179 CONVEYANCE: Burdening Easement: Right to pass and repass (appurtenant to Marilyn Dawn Atkins, her successors in title) over Lot 1 shown on Plan No. 148606

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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Tasmanian Government

FILE NUMBER A.23878

GRANTEE

PART OF 800 ACRES GTD TO WILLIAM LYTTLETON

CONVERSION PLAN

LOCATION

DEVON - WYCOMBE

CONVERTED FROM 54/1979

NOT TO SCALE LENGTHS IN METRES

Registered Number

P.148606

APPROVED 5 OCT 2006

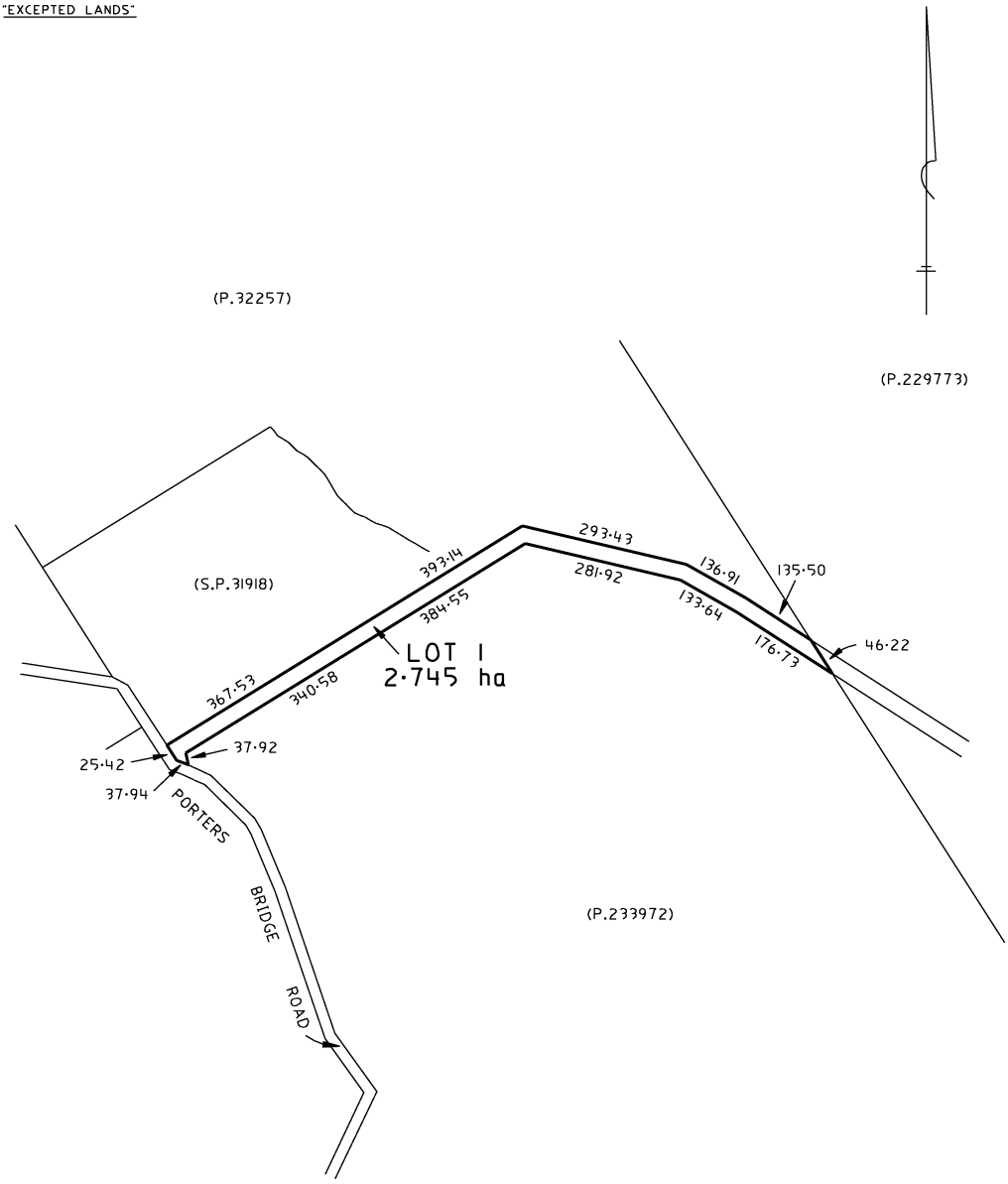
Alice Kawa

Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 121 (4640) | LAST UPI No. | ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN | DRAWN N.C

SKETCH BY WAY OF ILLUSTRATION ONLY

"EXCEPTED LANDS"



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SCHEDULE OF EASEMENTS

RECORDER OF TITLES

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Tasmanian Government

SCHEDULE OF EASEMENTS

PLAN NO.

S. P31918

NOTE:—The Town Clerk or Council Clerk must sign the certificate on the back page for the purpose of identification.

The Schedule must be signed by the owners and mortgagees of the land affected. Signatures should be attested.

EASEMENTS AND PROFITS

Each lot on the plan is together with:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and

(2) any easements or profits à prendre described hereunder.

Each lot on the plan is subject to:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and

(2) any easements or profits à prendre described hereunder.

The direction of the flow of water through the drainage easements shewn on the plan is indicated by arrows.

NO EASEMENTS covenants or profits a prendre are hereby created to benefit or burden any lot shown on the Plan.

SIGNED by RAYMOND JOSEPH HALL)
the registered proprietor of)
the land comprised in)
Conveyance No. 57/5850 in the)
presence of:)

R J Hall

BANK OFFICER
WESTBURY

DATED this day of 1987.

AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED By its Attorney GLENN ALLAN PHAIR who hereby certifies that he has received no notice of revocation of POWER OF ATTORNEY No. 54/8529 under which this instrument is signed) in the presence of

Bank Officer, Launceston

AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED
By its Attorney

Acting Area Manager

Document Set ID: 1933783
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SCHEDULE OF EASEMENTS

RECORDER OF TITLES

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Certified correct for the purposes of the Real Property Act 1862, as amended.

.....
Subdivider/Solicitor for the Subdivider

This is the schedule of easements attached to the plan of RAYMOND JOSEPH HALL
(Insert Subdivider's Full Name)

..... affecting land in

CONV. 57-5850
(Insert Title Reference)

Sealed by MUNICIPALITY OF DELORAINE on 4TH MAY 19 87

.....
Council Clerk/Town Clerk

10365

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FOLIO PLAN

RECORDER OF TITLES

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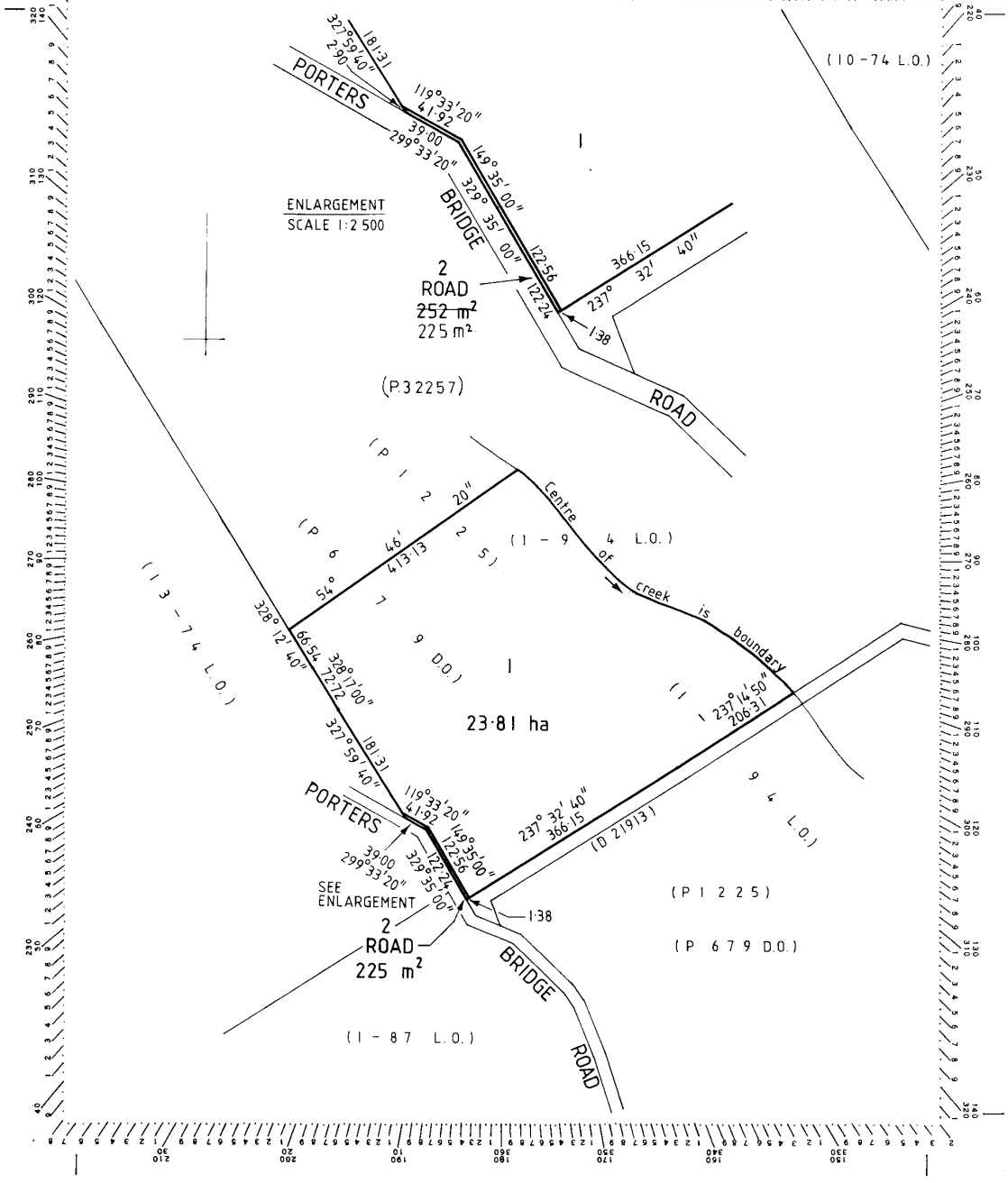
145-46

Owner: Raymond Joseph Hall	**PLAN OF SURVEY** by Surveyor C. J. Cohen of land situated in the LAND DISTRICT OF DEVON PARISH OF WYCOMBE SCALE 1:6 000 MEASUREMENTS IN METRES	Registered Number: **S. P31918** Approved Effective from: 29 SEP 1987 Recorder of Titles
Title Reference: Conveyance Nº 57-5850		
Grantee: Part of 800 acres granted to William Lyttleton		



Search Date: 18 Apr 2024 Search Time: 02:06 PM Volume Number: 31918 Revision Number: 01 Page 1 of 1

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Version: 1, Version Date: 18/04/2024
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RESULT OF SEARCH

RECORDER OF TITLES

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SEARCH OF TORRENS TITLE

VOLUME	FOLIO
31918	1
EDITION	DATE OF ISSUE
6	02-Jul-2014

SEARCH DATE : 18-Apr-2024
SEARCH TIME : 02.05 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Sealed Plan 31918
Derivation : Part of 800 Acres Gtd. to W. Lyttleton
Prior CT 4401/76

SCHEDULE 1

M465377 TRANSFER to PATRICK CHARLES COULL and SAMANTHA JANE COULL Registered 02-Jul-2014 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
D122412 MORTGAGE to MyState Financial Limited Registered 02-Jul-2014 at 12.01 PM

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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pitt&sherry

DL130 Bauxite Project

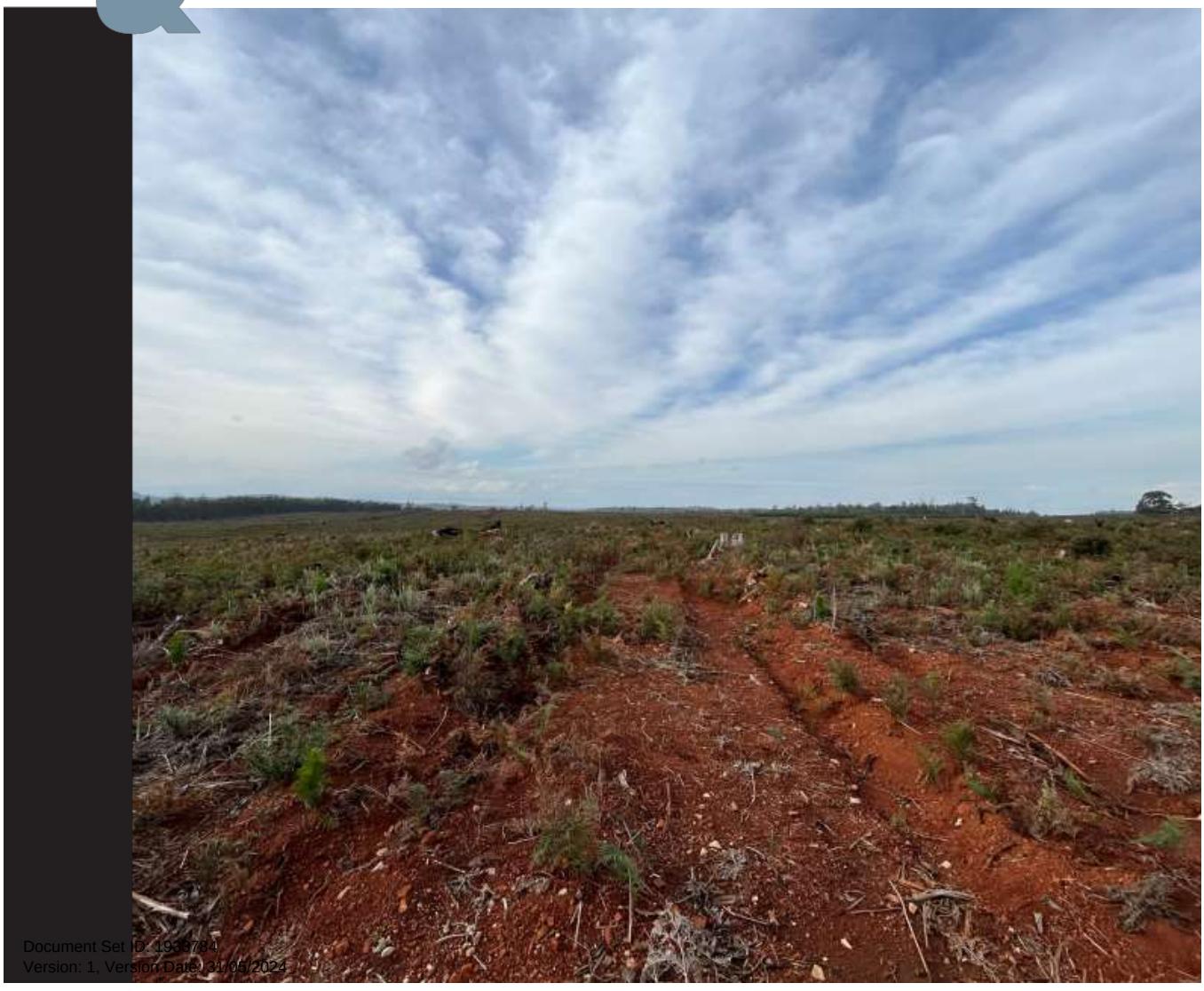
Report to Support a Planning Permit Application

Prepared for
Abx Group Limited

Client representative
Nathan Towns

Date
22 May 2024

Rev03



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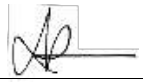
Appendices

Appendix A — Certificate of Title
Appendix B — Traffic Impact Assessment
Appendix C — Environmental Site Assessment (in the form of a Site History Review)
Appendix D — Environmental Effects Report

Prepared by — Lucas Paterno		**Date —** 22nd May 2024
Reviewed by — Douglas Fotheringham		**Date —** 22nd May 2024
Authorised by — Lucas Paterno		**Date —** 22nd May 2024

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
00	Council Submission	LP	DF	LP	15/08/2023
01	Council Submission	LP	DF	LP	23/08/2023
02	Council Submission	KH	DF	LP	02/10/2023
03	Council Submission	KH	DF	LP	22/05/2024

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1. Introduction

This report has been prepared by pitt&sherry for ABx Group Limited (ABx), the proponent, to support a planning permit application which proposes bauxite quarrying activities. The project is known as 'the DL130 Project' (DL130). This report demonstrates that the proposal complies with the applicable provisions of the Tasmanian Planning Scheme – Meander Valley (the planning scheme), and that a planning permit may be issued by the planning authority, Meander Valley Council (Council).

DL130 is adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of Deloraine. Refer to Figure 1. The land is currently operated by forestry company Forico and is dominated by intensively managed softwood plantation (*Pinus radiata*). The land has been recently harvested and replanted. After quarrying activities have finished, the site will be returned to Forico for replantation. Over time, it is likely that land quality will be improved, as the retained topsoil will be used in rehabilitation, progressively enabling soil viability.

The proponents have an excellent record of rehabilitating quarry sites. In 2014, ABx opened its first mine in Tasmania, 'Bald Hill', near Campbell Town which was operational until the end of December 2020. ABx has completed the rehabilitation of Bald Hill mine to better than pre-mining land value. This standard of finalised rehabilitation is highly regarded by Tasmanian authorities and is an excellent example of ABx's capabilities to return previously mined areas back to better than their original state in accordance with ABx's paramount corporate policy:

ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it. We only operate where welcomed.

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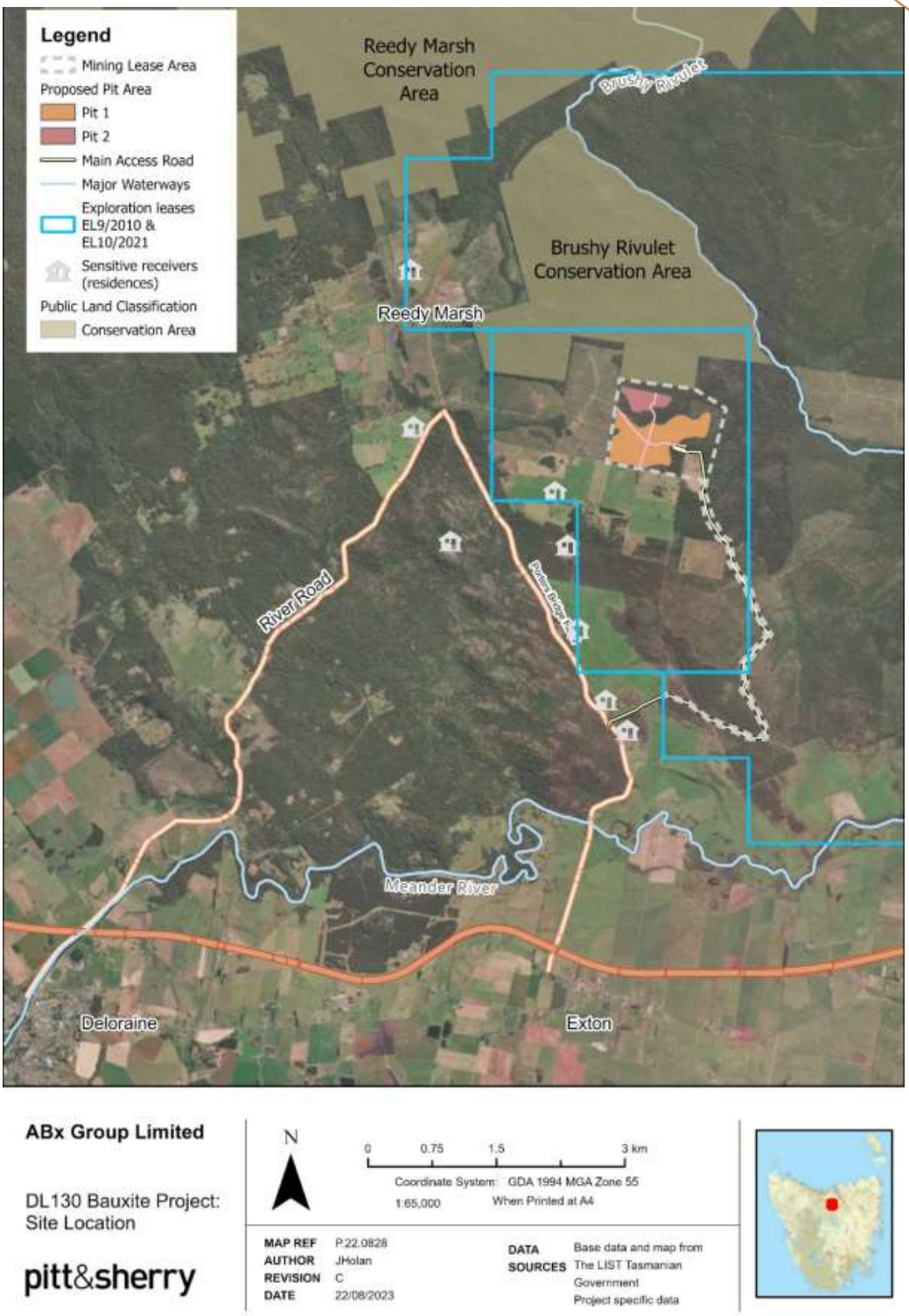

Figure 1: Locality aerial

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2. Site context

2.1 Site description

The site context is summarised above, more specifically, DL130 is adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of Deloraine.

The land is a broad north-south ridge and is located at an elevation of approximately 300 m and the topography is gradual. The proposed excavation pits are on slightly more elevated ground and the site administration infrastructure is proposed to be located at approximately 310 m Australian Height Datum (AHD).

The land is highly modified and is currently operated by forestry company Forico. The project area is dominated by intensively managed softwood plantation (*Pinus radiata*). The land has been recently harvested and replanted (Q3/Q4 2022).

To the north of the site is Brushy Rivulet Conservation Area and to the northeast is Permanent Timber Production Zone land.

As is shown in Figure 1, the proposal site is within Exploration Lease areas, except for the southernmost section of land which serves as access to Porters Bridge Road. This is consistent with the Mining Lease application and area depicted in Figure 2 (i.e. the proposal site).

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Figure 2: Site aerial

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2.2 Property details

DL130 will intersect the following property identification number (PID) and title references. Copies of the Titles are attached as Appendix A of this report.

Address	Property ID	Title Ref	Owner Name	Tenure
PORTERS BRIDGE RD REEDY MARSH TAS 7304	6274360	214055/1	THE TRUST COMPANY (PTAL) LIMITED	Private Freehold
PORTERS BRIDGE RD REEDY MARSH TAS 7304	7033091	229773/1	THE TRUST COMPANY (PTAL) LIMITED	Private Freehold
PORTERS BRIDGE RD REEDY MARSH TAS 7304	7033091	148606/1	THE TRUST COMPANY (PTAL) LIMITED	Private Freehold
adjacent to CT 214055/1 & CT 148606/1	NA	NA	The Crown	Casement
340 PORTERS BRIDGE RD EXTON TAS 7303**	7413158	31918/1	PATRICK CHARLES COULL SAMANTHA JANE COULL	Private Freehold

**The inclusion of 340 Porters Bridge Road relates solely to the removal of a slither of vegetation for the safety of the public and vehicles using the existing site entry. Refer to Figure 3 below, this area is shaded in yellow with a blue dash line. The owner has been informed that their property is subject to the application.

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Figure 3: Removal of vegetation encroaching on to 340 Porters Bridge Road (this area is shaded in yellow with a blue dash line).

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Version: 1, Version Date: 31/05/2024

3. Proposal

This application proposes the preparation and operation of a bauxite quarry (as per Figure 2).

The planned operation is a shallow quarrying operation and simple screening process. Experienced Tasmanian contractors will be carrying out the extraction, screening and rehabilitation activities, using the same high standards engaged for ABx's Bald Hill Project.

Quarrying will initially commence at Pit 1, followed by Pit 2 (refer to Figure 3). Quarrying will be occurring on a campaign basis due to demand, but the anticipated life of operation will be up to 20 years and will produce up to 56,000 tonnes of bauxite ore per annum through shallow surface excavation and extract up to 1,400,000 wet metric tonnes (wmt) and screen up to 1,100,000 wmt during the life of the operation.

Extraction will be based on grade control by either close spaced drilling prior to extraction or in-pit grade control sampling through face sampling. This will enable the identification of variations in bauxite grades both laterally and vertically and to identify thin layers of interburden. Grade control will guide quarry planning by engineers and geologists for efficient daily operations.

The slither of vegetation removed from 340 Porters Bridge Road for the safety of the public and vehicles using the existing site area does not support populations of threatened flora. (refer to Appendix A of the Environmental Effect Report supporting this application).

Progressive rehabilitation will occur simultaneously to quarrying. The topsoil will be stockpiled and then be returned for rehabilitation. In doing so, soil viability will be retained and weed dispersal prevented. This will enable the land to be returned to its previous state for forestry, or other as required by the landowner. If successful, land quality may be improved.

As it relates to staff, operating hours and vehicles:

- Staff are expected to be sourced locally from Deloraine and surrounds, and their roles on site will include working as machine operators or quarry supervisors. Other project personnel will attend the site as necessary, and will include geological, engineering, environmental, management and administrative personnel. The total on-site staff numbers will vary across the year due to the campaign-style operation of the mine. Campaigns are expected to last for 3 to 4 months each year
- Staff administration and amenities will be accommodated in demountable buildings
- Rosters are planned to be day shifts only and are 10 hours in length throughout the entire year. Operating hours are expected to be between 7:00am and 5:00pm, Monday to Friday, 8:00am to 4:00pm Saturday
- There are expected to be a maximum of 12 staff on site in total during operating hours, all of whom will start at 7:00am and finish at 5:00pm. This includes 6 operators, 2 managers, 2 technical staff and a maximum of 2 other project personnel
- Vehicles on-site will include light vehicles, trucks and other required machinery
- Approximately 78 truck and dog trailer movements per day (39 movements from site carrying a load and 39 movements to site empty) are expected at the site whilst campaign quarrying is occurring. Vehicle movements will be restricted to the above operating hours
- Site access and egress will be evenly dispersed throughout operating hours, and
- Vehicles will utilise an existing haul road (as per Figure 2).

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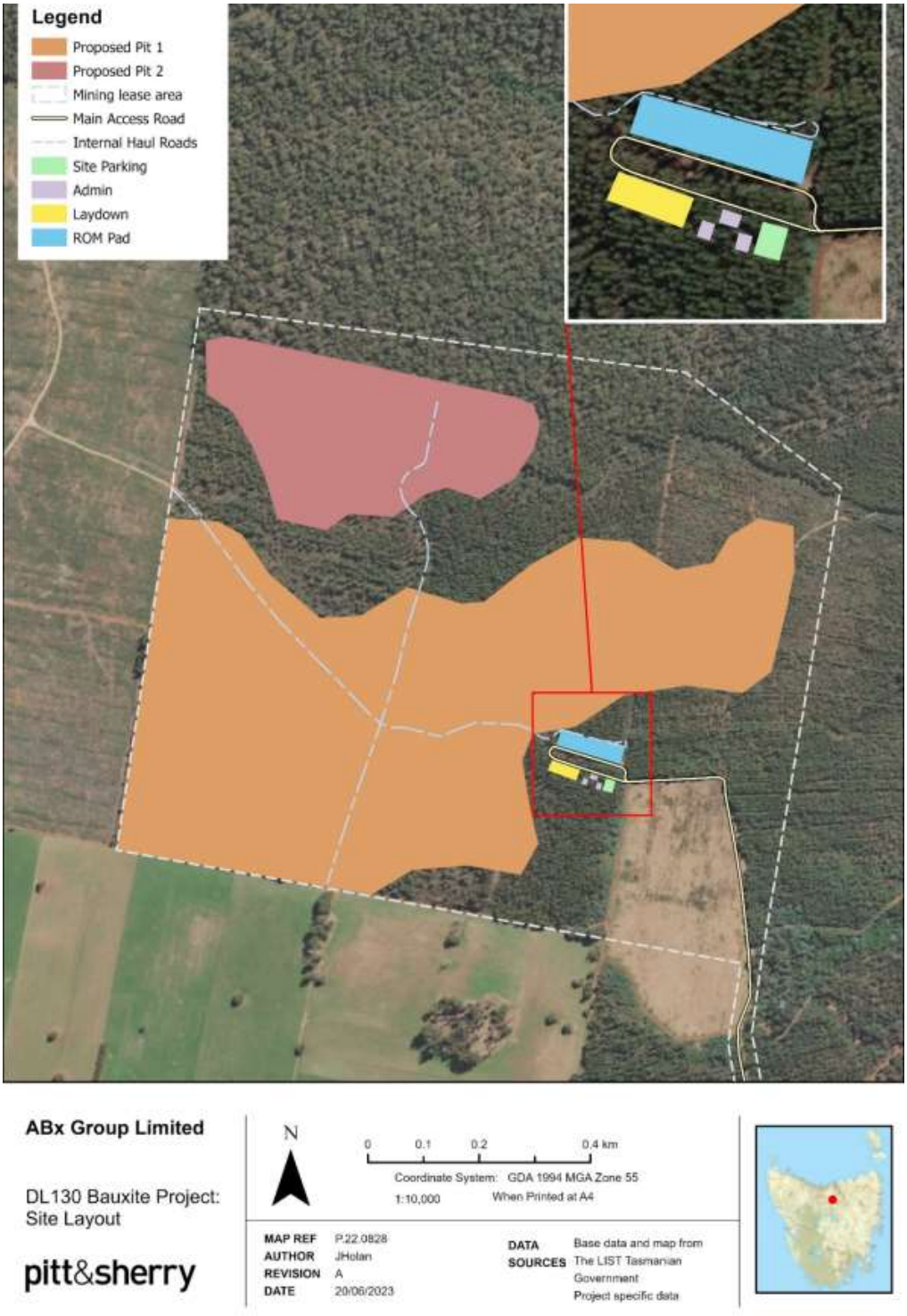

Figure 4: Proposal aerial

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4. Referral is required to the Tasmanian Environmental Protection Authority (EPA)

Because the proposal is a Level 2A activity under Schedule 2 of the *Environmental Management and Pollution Control Act 1994* (EMPCA); an Environmental Effects Report (EER) accompanies this submission (refer to Appendix D). It will be referred to the EPA for assessment and approval. The EER demonstrates that the environmental impacts of the proposal are acceptable, and that the EPA may approve it under EMPCA.

5. Stormwater assessment

A Stormwater Management Plan has been prepared and is at Appendix E of the attached EER. The plan demonstrates the proposal satisfies the requirements of the EPA Guidelines.

6. Planning assessment

6.1 Historic cultural heritage

As the proposed development is not located on a place identified in the Tasmanian Heritage Register, the provisions of the *Historic Cultural Heritage Act 1995* are not applicable.

6.2 Planning scheme

The applicable planning scheme is the Tasmanian Planning Scheme – Meander Valley (the planning scheme).

6.3 Land use

Under the planning scheme, the proposed land use is Extractive Industry, which means:

- *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.*

6.4 Planning zone

Most of the development area including the quarry is located within the Rural Zone, the existing access road intersects an area zoned as Agricultural Zone. Refer to Figure 3.

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Figure 5: Zoning map

6.5 Planning overlays

The proposed development is in the following overlays:

- Bushfire-Prone Areas (entire project area). Refer to Figure 4
- Low landslip hazard band (part of the access road). Refer to Figure 5
- Waterway and coastal protection area (part of the access road). Refer to Figure 6, and
- Priority vegetation area (north section of quarry and part of access road). Refer to Figure 7.

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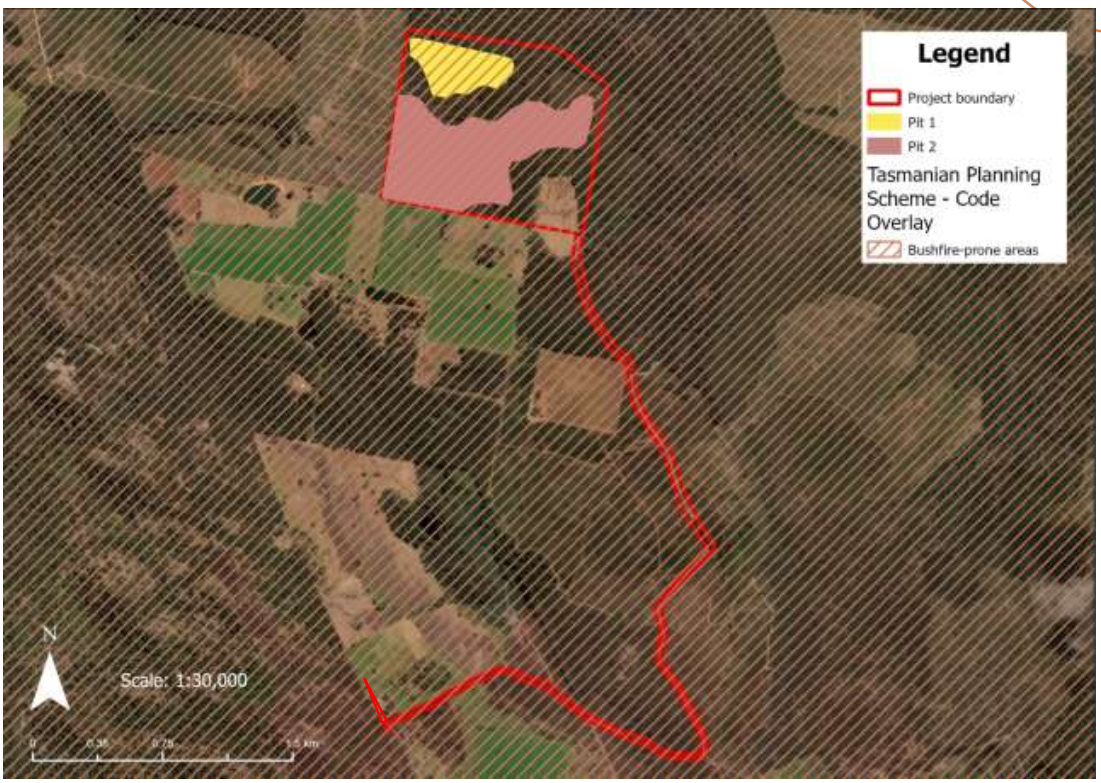

Figure 6: Bushfire-Prone Areas

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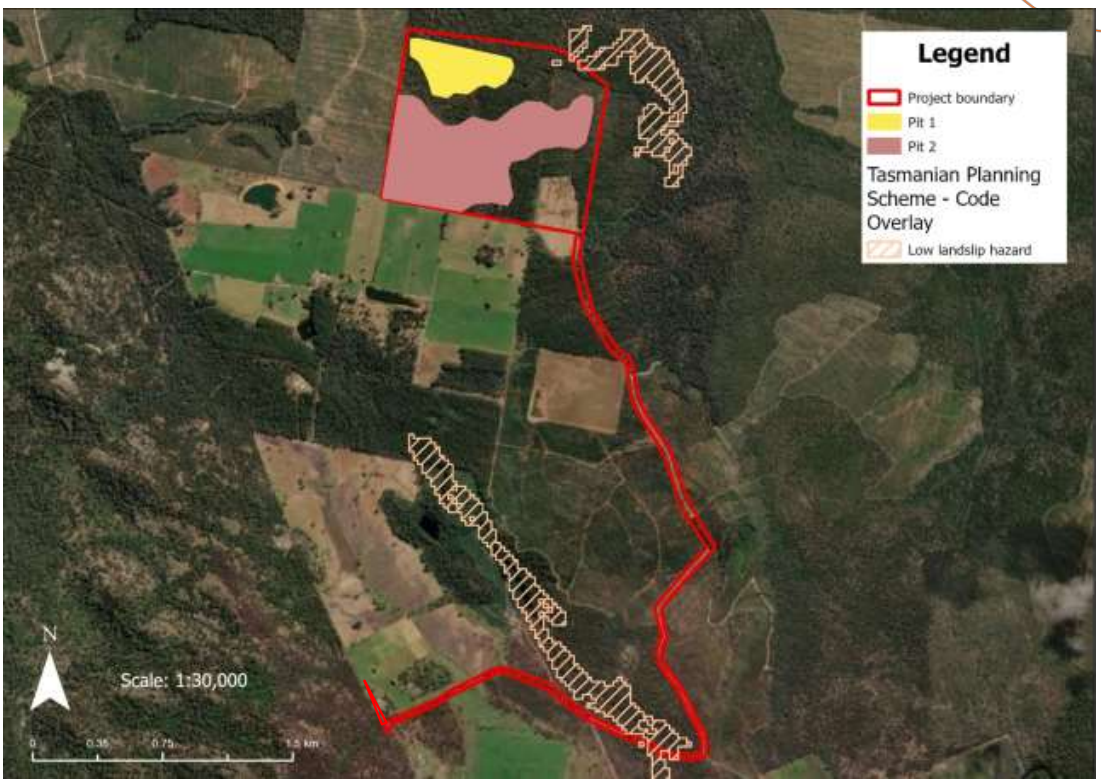

Figure 7: Low slip hazard band

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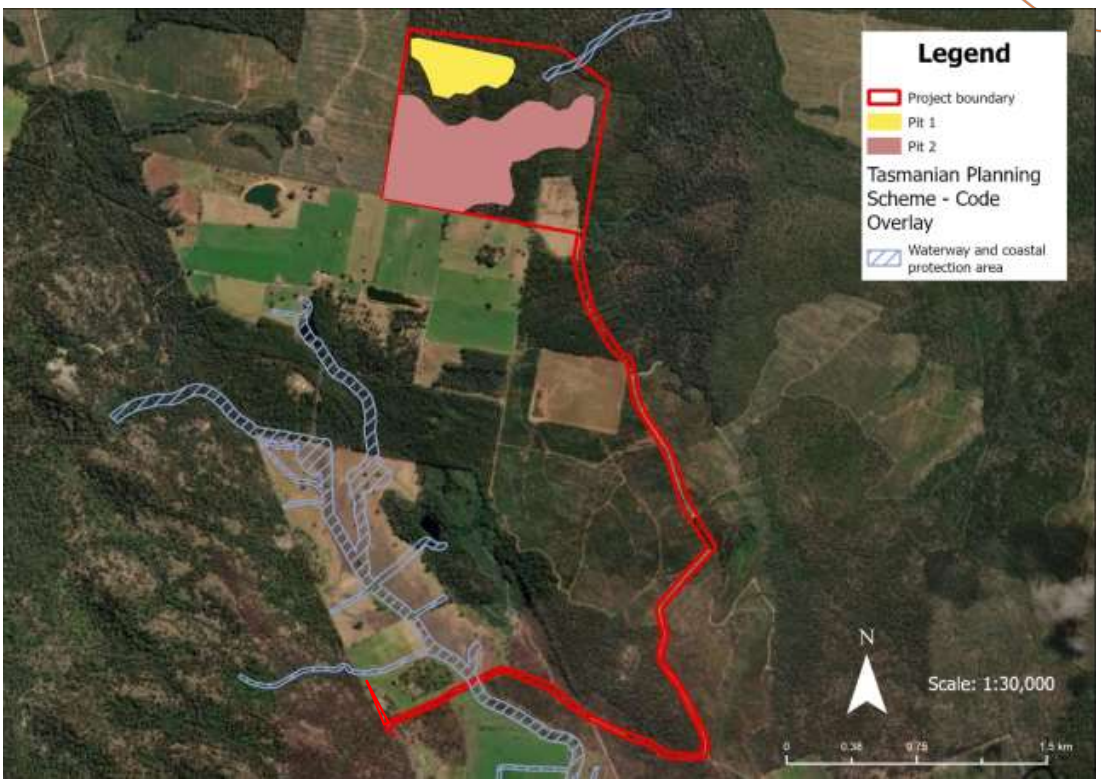

Figure 8: Waterway and coastal protection area

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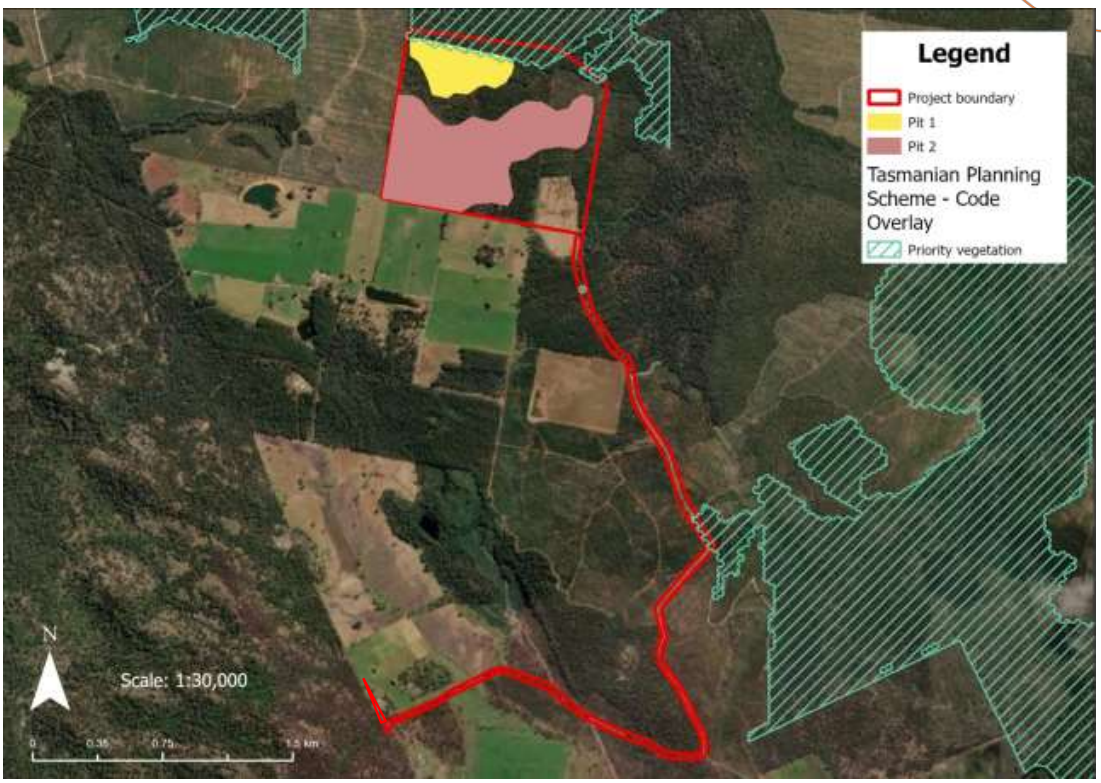

Figure 9: Priority vegetation area

6.6 Planning codes

The table below demonstrates which planning scheme codes apply to the proposal.

Code	Comment
C1.0 Signs Code	Not applicable.
C2.0 Parking and Sustainable Transport Code	Applicable – Refer to section 5.10 below.
C3.0 Road and Railway Assets Code	Applicable – Refer to section 5.11 below.
C4.0 Electricity and Transmission Infrastructure Protection Code	Not applicable.
C5.0 Telecommunications Code	Not applicable.
C6.0 Local Historic Heritage Code	Not applicable.
C7.0 Natural Assets Code	Not applicable for a Level 2 Activity – C7.4.1 (c).
C8.0 Scenic Protection Code	Not applicable.
C9.0 Attenuation Code	Not applicable for a Level 2 Activity, and no proposed alterations to an existing building used for sensitive use – C9.4.1 (a).

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Code	Comment
C10.0 Coastal Erosion Hazard Code	Not applicable.
C11.0 Coastal Inundation Hazard Code	Not applicable.
C12.0 Flood-Prone Area Hazards Code	Not applicable.
C13.0 Bushfire-Prone Areas Code	Not applicable. The proposal does not involve subdivision and is not vulnerable or hazardous use – C13.2.1 (a) and (b).
C14.0 Potentially Contaminated Land Code	Applicable – Refer to section 5.12 below.
C15.0 Landslip Hazard Code	Not applicable. No development occurs in the overlay area, and the proposal is not hazardous use or vulnerable use – C15.4.1 (a).
C16.0 Safeguarding of Airports Code	Not applicable.

6.7 Requirement for a Planning Permit

The proposal requires a planning permit for the following reasons:

- Extractive Industry (quarry) is a Permitted use in the Rural Zone and a Discretionary use (part of access road) in the Agriculture Zone; and
- The proposal relies on compliance with various performance criteria, as detailed below.

6.8 Rural zone

The planning assessment below demonstrates that the proposal complies with the requirements of this zone.

6.8.1 Zone purpose

The proposal is consistent with the purposes of this zone as is detailed in the following table.

Purpose	Assessment
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; (d) minimises adverse impacts on surrounding uses.	The application relates to the operation of a quarry on land that: • is highly modified • is dominated by intensively managed softwood plantation (Pinus radiata) • has been recently harvested and replanted (Q3/Q4 2022), and • does not require conversion of agricultural land for non-agricultural use. The nature of the quarry activity requires a rural location for operational reasons. The accompanying EER demonstrates that the quarry has minimal impacts to environmental and other values in the locality. The proposed activity is consistent with the purpose of the zone.
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.	

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6.8.2 Use Standards

The Use Standards in this zone do not apply because Extractive Industry is a Permitted use.

6.8.3 Development Standards

The following Development Standards are not applicable to the proposal:

- 20.4.2 Setbacks A2 – The proposal does not include buildings for a sensitive use; and
- 20.4.3 Access for new dwellings – No new dwellings are proposed.

The following assessment demonstrates the proposal complies with or satisfies the Development Standards applicable to the proposal.

20.4.1 Building height

Objective: To provide for a building height that:

(a) is necessary for the operation of the use; and

(b) minimises adverse impacts on adjoining properties.

Acceptable Solutions	Performance Criteria
A1 Building height must be not more than 12m.	P1 Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to: (a) the proposed height of the building; (b) the bulk and form of the building; (c) the separation from existing uses on adjoining properties; and (d) any buffers created by natural or other features.

Assessment

The proposal incorporates demountable buildings to accommodate administration and staff amenity, none of which will be more than 12m in height.

20.4.2 Setbacks

Objective: That the siting of buildings minimises potential conflict with use on adjoining sites.

Acceptable Solutions	Performance Criteria
A1 Buildings must have a setback from all boundaries of: (a) not less than 5m; or (b) if the setback of an existing building is within 5m, not less than the existing building.	P1 Buildings must be sited to provide adequate vehicle access and not cause an unreasonable impact on existing use on adjoining properties, having regard to: (a) the bulk and form of the building; (b) the nature of existing use on the adjoining properties; (c) separation from existing use on the adjoining properties; and (d) any buffers created by natural or other features.

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20.4.2 Setbacks
Assessment The proposal incorporates demountable buildings to accommodate administration and staff amenity, none of which will be less than 5 m from all boundaries.

6.8.4 Subdivision Standards

The Subdivision Standards in this zone do not apply because no subdivision is proposed.

6.9 Agriculture zone

The planning assessment below demonstrates that the proposal complies with the requirements of this zone.

6.9.1 Zone purpose

The proposal is consistent with the purposes of this zone as is detailed in the following table.

Purpose	Assessment
21.1.1 To provide for the use or development of land for agricultural use.	This zone only applies to the southern part of the existing access road. The continued use of the land as a road will be ancillary to the Extractive Industry. It does not conflict with or interfere from non-agricultural uses. The limited area of land, currently occupied as a road of land is not appropriate for agricultural use and will not conflict with surrounding agricultural uses. The proposed activity is consistent with the purpose of this zone.
21.1.2 To protect land for the use or development of agricultural use by minimising: a) Conflict with or interference from non-agricultural uses b) Non-agricultural use or development that precludes the return of the land to agricultural use; and c) Use of land for non-agricultural use in irrigation districts.	
21.1.3 To provide for use or development that supports the use of the land for agricultural use.	

6.9.2 Use Standards

The following Use Standards are not applicable to the proposal:

- 21.3.1 A3 – The area is not located on prime agricultural land, and
- 21.3.1 A4 – The proposal does not include residential use.

The following assessment demonstrates the proposal complies with or satisfies the Use Standards applicable to the proposal.

21.3.1 Discretionary uses
Objective: That uses listed as Discretionary: a) Support agricultural use; and b) Protect land for agricultural use by minimising the conversion of land to non-agricultural use.

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21.3.1 Discretionary uses	
Acceptable Solutions	**Performance Criteria**
A1 No acceptable solution	P1 A use listed as Discretionary, excluding Residential or Resource Development, must be required to locate on the site, for operational or security reasons or the need to contain or minimise impacts arising from the operation such as noise, dust, hours of operation or traffic movements, having regard to: a) Access to a specific naturally occurring resource on the site or on land in the vicinity of the site b) Access to infrastructure only available on the site or on land in the vicinity of the site c) Access to a product or material related to an agricultural use d) Service or support for an agricultural use on the site or on land in the vicinity of the site e) The diversification or value adding of an agricultural use on the site or in the vicinity of the site; and f) Provision of essential emergency services or utilities.

Assessment

The use of the road is existing and satisfies P1 because it provides:

a) Access to a specific naturally occurring resource on the site

b) Access to infrastructure only available on the site

c) Access to a product or material related to an agricultural use (superphosphate fertiliser)

d) Access to a product which supports agricultural use that could be used on land in the vicinity of the site

e) Access to a product which is considered value adding of an agricultural use, and

f) Essential services and utilities (road) to a specific naturally occurring resource on the site.

Acceptable Solutions	Performance Criteria
A2 No acceptable solution	P2 A use listed as Discretionary, excluding Residential, must minimise the conversion of agricultural land to non-agricultural use, having regard to: a) The area of land being converted to non-agricultural use b) Whether the use precludes the land from being returned to an agricultural use; and c) Whether the use confines or restrains existing or potential agricultural use on the site or adjoining sites.

Assessment

The use of the road is existing and satisfies P2 for the following reasons:

(a) No additional land will be converted to non-agricultural use

(b) The road is unlikely to be returned to an agricultural use, and

(c) The use of the road is existing, will not be significantly changed and will not significantly confine or restrain existing or potential agricultural use on the site or adjoining sites.

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6.9.3 Development Standards

None of the Development Standards are relevant to the southern part of the existing access road because:

- 21.4.1 and 21.4.2 – This area does not include any buildings
- 21.4.3 – No new dwellings proposed, and
- 21.5 – No subdivision is proposed.

6.10 Parking and Sustainable Transport Code

The Traffic Impact Assessment at Appendix B has been used to assist with the planning assessment for this code. As the proposal complies with the applicable standards and satisfies relevant performance criteria (see below), it complies with the purpose of the code:

C2.1.1 To ensure that an appropriate level of parking facilities is provided to service use and development.

C2.1.2 To ensure that cycling, walking and public transport are encouraged as a means of transport in urban areas.

C2.1.3 To ensure that access for pedestrians, vehicles and cyclists is safe and adequate.

C2.1.4 To ensure that parking does not cause an unreasonable loss of amenity to the surrounding area.

C2.1.5 To ensure that parking spaces and accesses meet appropriate standards.

C2.1.6 To provide for parking precincts and pedestrian priority streets.

6.10.1 Use Standards

The following Use Standards are not applicable to the proposal:

- C2.5.2 – Bicycle parking is not required as per Table C2.1
- C2.5.3 – Motorcycle parking is not required as per C2.2.2
- C2.5.4 – Loading Bays are not required as per C2.2.3; and
- C2.5.5 – The area is not located within the General Residential Zone and Inner Residential Zone.

The following assessment demonstrates the proposal complies with or satisfies the Use Standards applicable to the proposal.

C2.5.1 Car parking numbers	
Objective: That an appropriate level of car parking spaces are provided to meet the needs of the use.	
Acceptable Solutions	**Performance Criteria**
A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: (a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan; (b) the site is contained within a parking precinct plan and subject to Clause C2.7;	P1.1 The number of on-site car parking spaces for uses, excluding dwellings, must meet the reasonable needs of the use, having regard to: (a) the availability of off-street public car parking spaces within reasonable walking distance of the site; (b) the ability of multiple users to share spaces because of: (i) variations in car parking demand over time; or

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(c) the site is subject to Clause C2.5.5; or (d) it relates to an intensification of an existing use or development or a change of use where: (i) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or (ii) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.	(ii) efficiencies gained by consolidation of car parking spaces; (c) the availability and frequency of public transport within reasonable walking distance of the site; (d) the availability and frequency of other transport alternatives; (e) any site constraints such as existing buildings, slope, drainage, vegetation and landscaping; (f) the availability, accessibility and safety of on-street parking, having regard to the nature of the roads, traffic management and other uses in the vicinity; (g) the effect on streetscape; and (h) any assessment by a suitably qualified person of the actual car parking demand determined having regard to the scale and nature of the use and development. P1.2 The number of car parking spaces for dwellings must meet the reasonable needs of the use, having regard to: (a) the nature and intensity of the use and car parking required; (b) the size of the dwelling and the number of bedrooms; and (c) the pattern of parking in the surrounding area.

Assessment
As demonstrated by the Traffic Impact Assessment, the proposal complies with A1.

6.10.2 Development Standards

The following Development Standards are not applicable to the proposal:

- C2.6.3 A2 – The area is not located within the Central Business Zone or in a pedestrian priority street.
- C2.6.4 – The area is not within the General Business Zone and Central Business Zone.
- C2.6.5 – Less than 10 car parking spaces are required.
- C2.6.7 – The area is no located within the General Business Zone and Central Business Zone.
- C2.6.8 – The area is not within any of the Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone, General Business Zone or Central Business Zone.

The following assessment demonstrates the proposal complies with or satisfies the Development Standards applicable to the proposal.

C2.6.1 Construction of parking areas	
Objective: That parking areas are constructed to an appropriate standard.	
Acceptable Solutions	**Performance Criteria**
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	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;

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(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.	(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

As demonstrated by the Traffic Impact Assessment, the proposal complies with A1.

C2.6.2 Design and layout of parking areas

Objective: That parking areas are designed and laid out to provide convenient, safe and efficient parking.

Acceptable Solutions	Performance Criteria
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 (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. A1.2 Parking spaces provided for use by persons with a disability must satisfy the following: (a) be located as close as practicable to the main entry point to the building; (b) be incorporated into the overall car park design; and (c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities	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 parking and AS 2890.2 -2002 Parking facilities, Part 2: Off-street commercial vehicle facilities.

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Assessment

As demonstrated by the Traffic Impact Assessment, the proposal can comply with A1.1 and that A1.2 is not applicable.

C2.6.3 Number of accesses for vehicles

Objective: That:

(a) access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses;

(b) accesses do not cause an unreasonable loss of amenity of adjoining uses; and

(c) the number of accesses minimise impacts on the streetscape.

Acceptable Solutions	Performance Criteria
A1 The number of accesses provided for each frontage must: (a) be no more than 1; or (b) no more than the existing number of accesses, whichever is the greater.	P1 The number of accesses for each frontage must be minimised, having regard to: (a) any loss of on-street parking; and (b) pedestrian safety and amenity; (c) traffic safety; (d) residential amenity on adjoining land; and (e) the impact on the streetscape.

Assessment

As demonstrated by the Traffic Impact Assessment, the proposal complies with A1.

C2.6.6 Loading bays

Objective: That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.

Acceptable Solutions	Performance Criteria
A1 The area and dimensions of loading bays and access way areas must be designed in accordance with Australian Standard AS 2890.2–2002, Parking facilities, Part 2: Off-street commercial vehicle facilities, for the type of vehicles likely to use the site.	P1 Loading bays must have an area and dimensions suitable for the use, having regard to: (a) the types of vehicles likely to use the site; (b) the nature of the use; (c) the frequency of loading and unloading; (d) the area and dimensions of the site; (e) the topography of the site; (f) the location of existing buildings on the site; and (g) any constraints imposed by existing development.

Assessment

As demonstrated by the Traffic Impact Assessment, the proposal can comply with A1.

A2 The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities - Off-street commercial vehicle facilities.	P2 Access for commercial vehicles to and from the site must be safe, having regard to: (a) the types of vehicles associated with the use; (b) the nature of the use; (c) the frequency of loading and unloading; (d) the area and dimensions of the site;

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	(e) the location of the site and nature of traffic in the area of the site; (f) the effectiveness or efficiency of the surrounding road network; and (g) site constraints such as existing buildings, slope, drainage, vegetation, parking and landscaping.

Assessment

As demonstrated by the Traffic Impact Assessment, the proposal can comply with A2.

6.11 Road and Railway Assets Code

The Traffic Impact Assessment at Appendix B has been used to assist with the planning assessment for this code. As the proposal complies with the applicable standards and satisfies relevant performance criteria (see below), it complies with the purpose of the code:

C3.1.1 To protect the safety and efficiency of the road and railway networks; and

C3.1.2 To reduce conflicts between sensitive uses and major roads and the rail network.

6.11.1 Use Standards

The following assessment demonstrates the proposal complies with or satisfies the Use Standards applicable to the proposal.

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.

Acceptable Solutions	Performance Criteria
A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: (a) a new junction; (b) a new vehicle crossing; or (c) a new level crossing. A1.2 For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority. A1.3 For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority. A1.4 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	P1 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.

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(b) allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road. A1.5 Vehicular traffic must be able to enter and leave a major road in a forward direction.	

Assessment

As demonstrated by the Traffic Impact Assessment:

- A1.1, A1.2 and A1.3 are not applicable
- The proposal satisfies P1 in place of Acceptable Solution A1.4, and
- The proposal can comply with A1.5.

6.11.2 Development Standards

None of the Development Standards are relevant to the southern part of the existing access road because:

- C3.6.1 – No buildings for sensitive uses are proposed; and
- C3.7.1 – No subdivision is proposed.

6.12 Potentially Contaminated Land Code

The Environmental Site Assessment (in the form of a Site History Review) at Appendix C has been used to assist with the planning assessment for this code. As the proposal satisfies applicable Standards (see below), it complies with the purpose of the code:

C14.1.1 To ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.

6.12.1 Use Standards

None of the Use Standards apply because the proposal is not for a sensitive use, nor a specified use listed in Table C14.1.

6.12.2 Development Standards

The following Development Standards are not relevant to the proposal:

- C14.6.2 – The proposal is not on land subject to the Macquarie Point Development Corporation Act 2012; and
- C14.7 – No subdivision is proposed.

The following assessment demonstrates the proposal complies with or satisfies the Development Standards applicable to the proposal.

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C14.6.1 Excavation works, excluding land subject to the Macquarie Point Development Corporation Act 2012	
Objective: That works involving excavation of potentially contaminated land, excluding on land subject to the Macquarie Point Development Corporation Act 2012, do not adversely impact on human health or the environment.	
Acceptable Solutions	**Performance Criteria**
A1 Excavation, excluding on land subject to the Macquarie Point Development Corporation Act 2012, must involve less than 250m³ of site disturbance.	P1 Excavation, excluding on land subject to the Macquarie Point Development Corporation Act 2012, must not have an adverse impact on human health or the environment, having regard to: (a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; (b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or (c) an environmental site assessment, including a plan to manage contamination and associated risk to human health and the environment, that includes: (i) any specific remediation and protection measures required to be implemented before excavation commences; and (ii) a statement that the excavation does not adversely impact on human health or the environment.
Assessment	
As demonstrated by the Environmental Site Assessment (in the form of a Site History Review), the proposal satisfies P1(c).	

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7. Conclusion

As the proposal complies or can be conditioned to comply with the relevant provisions of the planning scheme, the planning permit application can be approved.

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Certificate of Title

Appendix A

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RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
229773	1
EDITION	DATE OF ISSUE
2	03-Nov-2016

SEARCH DATE : 20-Jun-2023
SEARCH TIME : 02.42 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Plan 229773
Derivation : Lots 2199, 2200, 2201 and 2202 the allotments Gtd. to R.Thirkell
Prior CT 2975/38

SCHEDULE 1

D137171 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 03-Nov-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
B614689 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 Registered 12-Dec-1996 at noon
C293731 Instrument Creating Forestry Right for Wesley Vale Engineering Pty Ltd for the term of 20 years from the 1st day of July 1998 the whole of the said land within described (together with ancillary rights)
C520074 Partial Release of Registered Forestry Right C293731 over that part of the said land within described (after excepting thereout the hatched portions of the land shown on the Forestry Right Diagram attached to the said Release)

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Department of Natural Resources and Environment Tasmania
Version: 1, Version Date: 31/05/2024
www.thelist.tas.gov.au

FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

R.P. 312

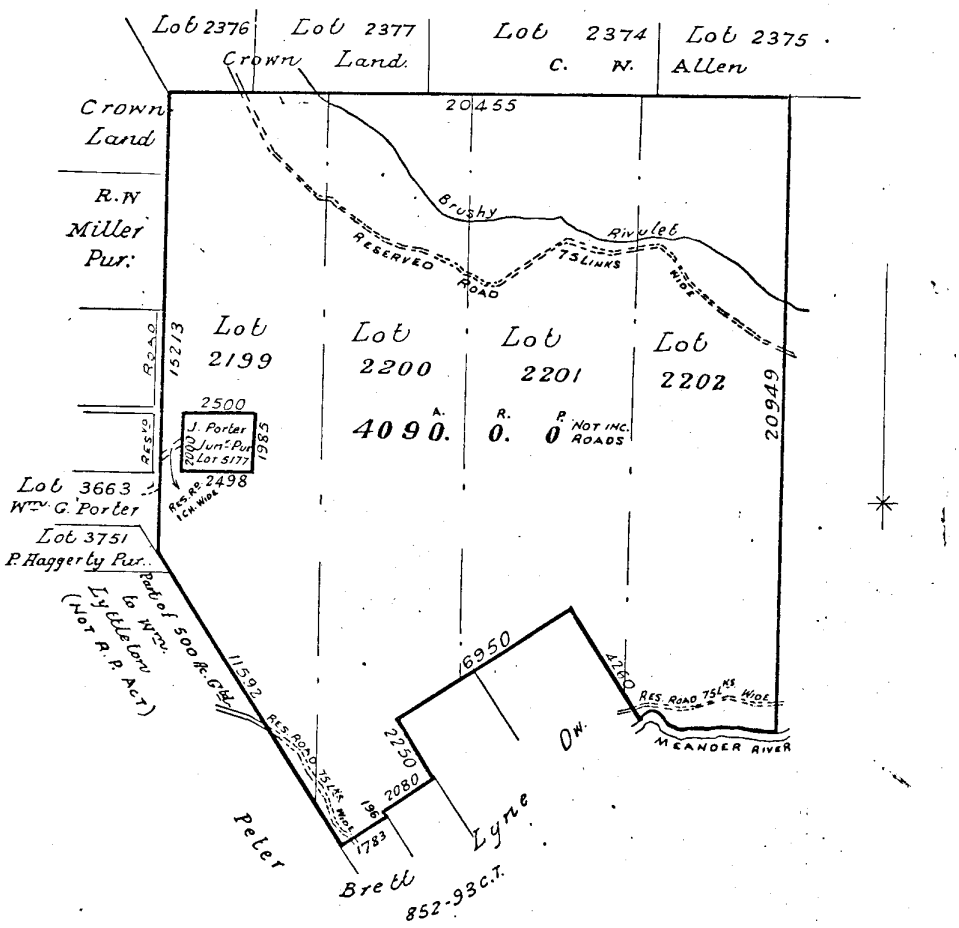
ANNEXURE TO CERTIFICATE OF TITLE VOL. 2975 FOL. 38

REGISTERED NUMBER

229773

Recorder of Titles

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.



Department of Natural Resources and Environment Tasmania
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RESULT OF SEARCH

RECORDER OF TITLES

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Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
214055	1
EDITION	DATE OF ISSUE
3	02-Feb-2016

SEARCH DATE : 20-Jun-2023
SEARCH TIME : 02.40 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Plan 214055
Derivation : Whole of Lot 32905 Gtd to R W Miller
Prior CT 2527/15

SCHEDULE 1

D137009 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 02-Feb-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
B644672 NOTIFICATION: Private Timber Reserve pursuant to
Section 15 (i) of the Forest Practices Act 1985
Registered 22-Apr-1993 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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FOLIO PLAN

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ORIGINAL – NOT TO BE REMOVED FROM TITLES OFFICE

R.P. 1469

TASMANIA

REAL PROPERTY ACT, 1862, as amended

NOTE—REGISTERED FOR OFFICE CONVENIENCE TO REPLACE

CERTIFICATE OF TITLE

Register Book Vol. 2527 Fol. 15

Purchase Grant Vol.242 Fol.41.

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

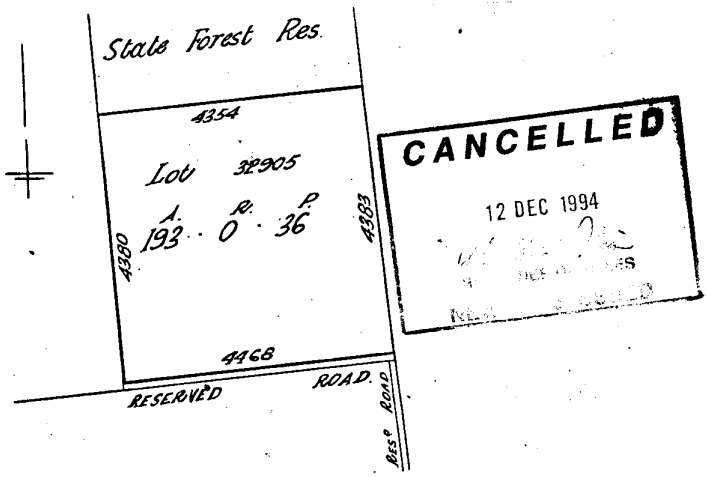
DESCRIPTION OF LAND

PARISH OF WYCOMBE LAND DISTRICT OF DEVON
ONE HUNDRED AND NINETY THREE ACRES THIRTY SIX PERCHES on the Plan hereon

FIRST SCHEDULE (continued overleaf)

RONALD WILLIAM MILLER of Deloraine, Labourer

SECOND SCHEDULE (continued overleaf)
NIL



REGISTERED NUMBER 214055

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register

E OF THE RECORDER OF TITLES ARE NO LONGER SUBSISTING.

Whole of Lot 32905 Gtd. to R.W. Miller, Meas. in Links.

FIRST Edition. Registered 11 SEP 1959

Derived from P.G.Vol.242 Fol.41.

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RESULT OF SEARCH

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SEARCH OF TORRENS TITLE

VOLUME	FOLIO
148606	1
EDITION	DATE OF ISSUE
2	03-Nov-2016

SEARCH DATE : 20-Jun-2023
SEARCH TIME : 02.41 PM

DESCRIPTION OF LAND

Parish of WYCOMBE Land District of DEVON
Lot 1 on Plan 148606
Being the land described in Conveyance No.54/1979
Derivation : Part of 800A-0R-0P Gtd to William Lyttleton
Derived from A23878

SCHEDULE 1

D137171 TRANSFER to THE TRUST COMPANY (PTAL) LIMITED
Registered 03-Nov-2016 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
54/1979 CONVEYANCE Made Subject to Boundary Fences Condition
54/1979 CONVEYANCE: Burdening Easement: Right to pass and repass (appurtenant to Owen Reginald Atkins, his personal representatives and assigns) over Lot 1 shown on Plan No.148606
54/3179 CONVEYANCE: Burdening Easement: Right to pass and repass (appurtenant to Marilyn Dawn Atkins, her successors in title) over Lot 1 shown on Plan No. 148606

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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FOLIO PLAN

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Tasmanian Government

FILE NUMBER A.23878

GRANTEE

PART OF 800 ACRES GTD TO WILLIAM LYTTLETON

CONVERSION PLAN

LOCATION

DEVON - WYCOMBE

CONVERTED FROM 54/1979

NOT TO SCALE LENGTHS IN METRES

Registered Number

P.148606

APPROVED 5 OCT 2006

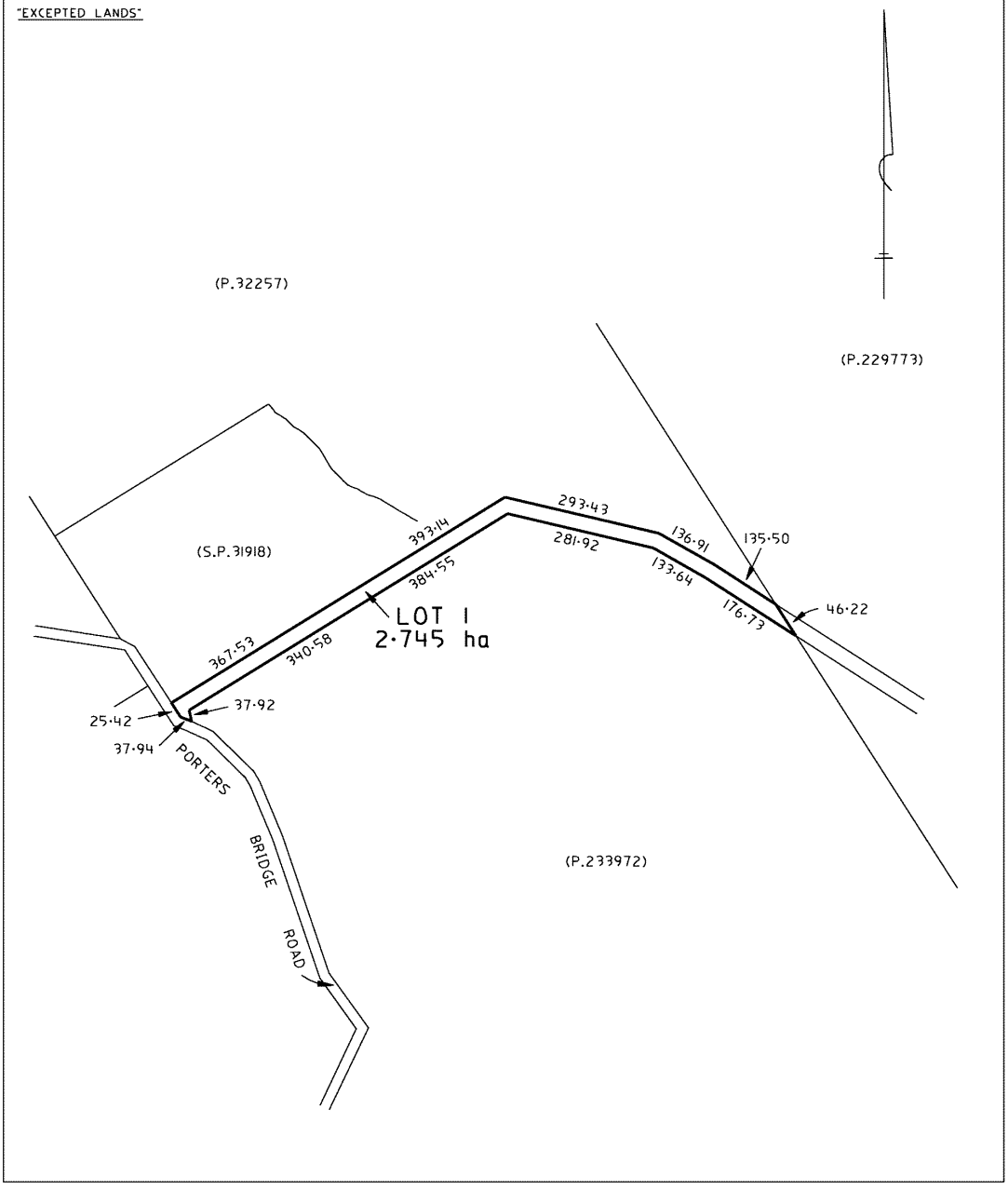
Alice Kawa

Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 121 (4640) | LAST UPI No. | ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN | DRAWN N.C

SKETCH BY WAY OF ILLUSTRATION ONLY

"EXCEPTED LANDS"



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RESULT OF SEARCH

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SEARCH OF TORRENS TITLE

VOLUME	FOLIO
31918	1
EDITION	DATE OF ISSUE
6	02-Jul-2014

SEARCH DATE : 18-Apr-2024
SEARCH TIME : 02.05 PM

DESCRIPTION OF LAND

Parish of WYCOMBE, Land District of DEVON
Lot 1 on Sealed Plan 31918
Derivation : Part of 800 Acres Gtd. to W. Lyttleton
Prior CT 4401/76

SCHEDULE 1

M465377 TRANSFER to PATRICK CHARLES COULL and SAMANTHA JANE COULL Registered 02-Jul-2014 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
D122412 MORTGAGE to MyState Financial Limited Registered 02-Jul-2014 at 12.01 PM

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

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FOLIO PLAN

RECORDER OF TITLES

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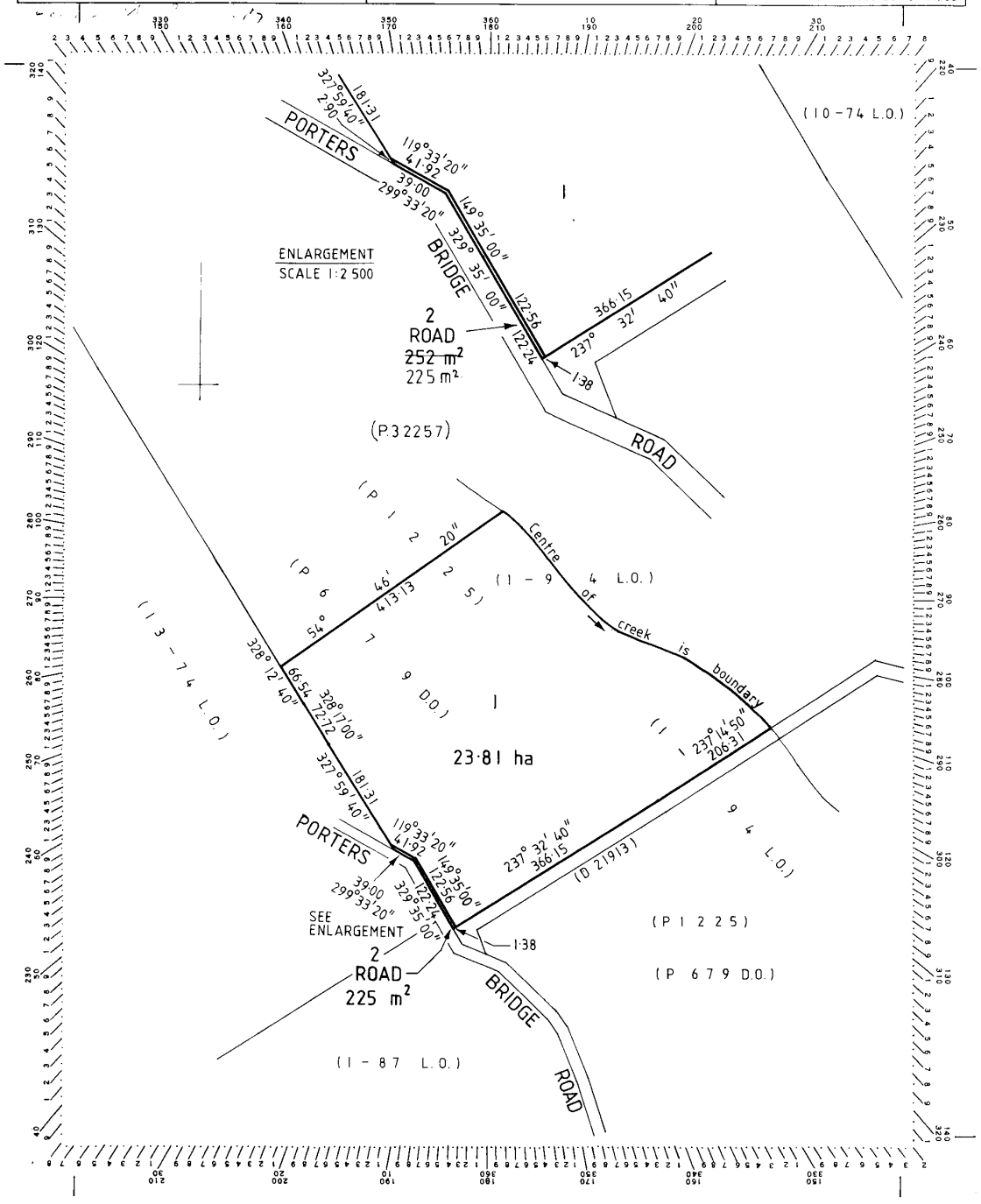
145-46

Owner: Raymond Joseph Hall	**PLAN OF SURVEY** by Surveyor C. J. Cohen of land situated in the LAND DISTRICT OF DEVON PARISH OF WYCOMBE SCALE 1:6 000 MEASUREMENTS IN METRES	Registered Number: **S. P31918** Approved Effective from: 29 SEP 1987 Recorder of Titles
Title Reference: Conveyance Nº 57-5850		
Grantee: Part of 800 acres granted to William Lyttleton		



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SCHEDULE OF EASEMENTS

RECORDER OF TITLES

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Tasmanian Government

SCHEDULE OF EASEMENTS

PLAN NO.

S. P31918

NOTE:—The Town Clerk or Council Clerk must sign the certificate on the back page for the purpose of identification.

The Schedule must be signed by the owners and mortgagees of the land affected. Signatures should be attested.

EASEMENTS AND PROFITS

Each lot on the plan is together with:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and

(2) any easements or profits à prendre described hereunder.

Each lot on the plan is subject to:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and

(2) any easements or profits à prendre described hereunder.

The direction of the flow of water through the drainage easements shewn on the plan is indicated by arrows.

NO EASEMENTS covenants or profits a prendre are hereby created to benefit or burden any lot shown on the Plan.

SIGNED by RAYMOND JOSEPH HALL)
the registered proprietor of)
the land comprised in)
Conveyance No. 57/5850 in the)
presence of:)

R J Hall

BANK OFFICER
WESTBURY

DATED this day of 1987.

AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED By its Attorney GLENN ALLAN PHAIR who hereby certifies that he has received no notice of revocation of POWER OF ATTORNEY No. 54/8552 under which this instrument is signed) in the presence of

Bank Officer, Launceston

AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED
By its Attorney

Acting Area Manager

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SCHEDULE OF EASEMENTS

RECORDER OF TITLES

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Certified correct for the purposes of the Real Property Act 1862, as amended.

.....
Subdivider/Solicitor for the Subdivider

This is the schedule of easements attached to the plan of RAYMOND JOSEPH HALL
(Insert Subdivider's Full Name)

..... affecting land in

CONV. 57-5850
(Insert Title Reference)

Sealed by MUNICIPALITY OF DELORAINE on 4TH MAY 19 87

.....
Council Clerk/Town Clerk

10365

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Traffic Impact Assessment

Appendix B

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pitt&sherry

DL130 Bauxite Mine

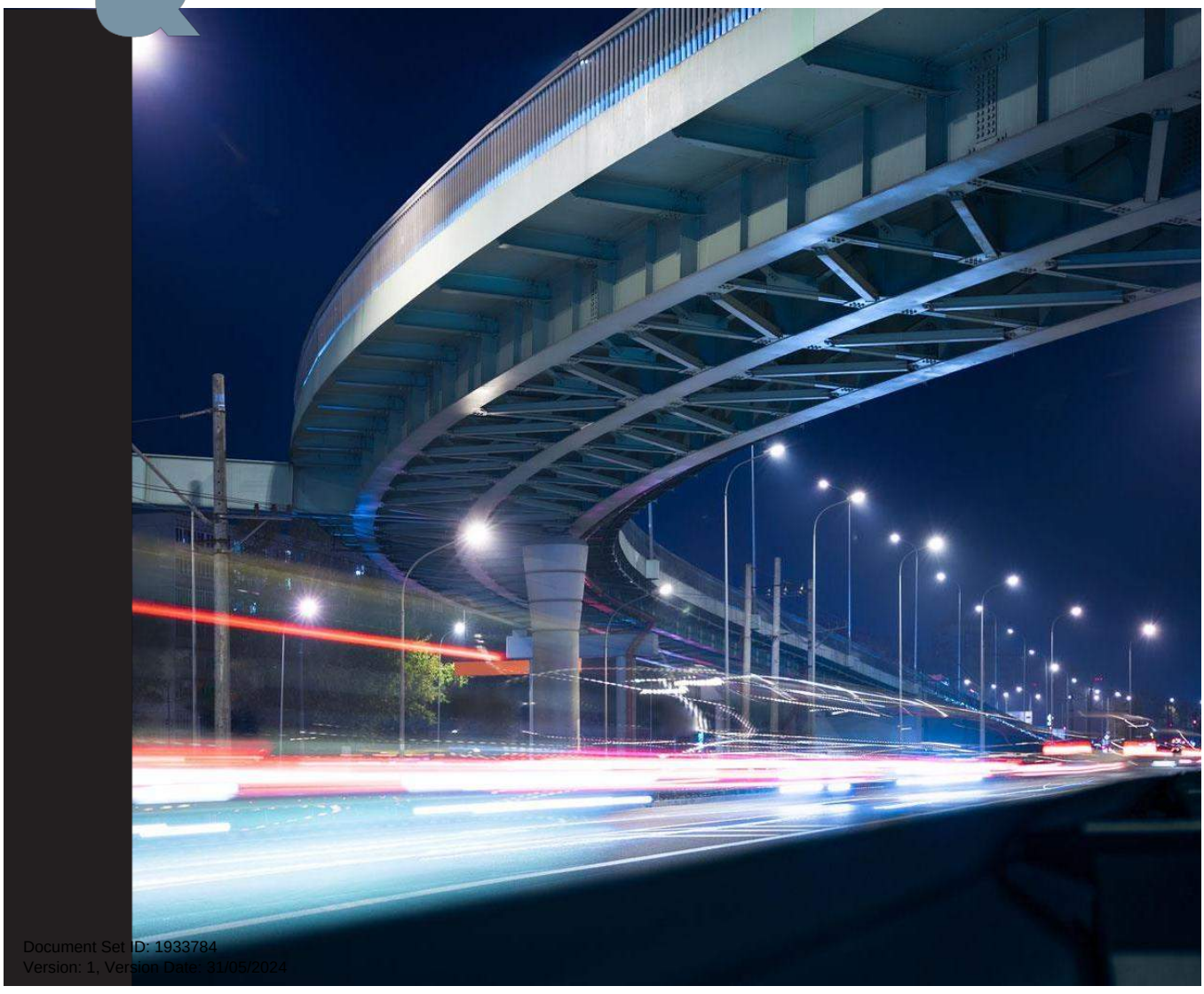
Traffic Impact Assessment

Prepared for
ABx Group Limited

Client representative
Nathan Towns

Date
30 April 2024

Rev04



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Appendix B — SIDRA – post development
Appendix C — SIDRA – 30-years post development
Appendix D — Swept paths

Prepared by — Nicholas Ashlin		**Date —** 30 April 2024
Reviewed by — Rebekah Ramm		**Date —** 30 April 2024
Authorised by — Ross Mannering		**Date —** 30 April 2024

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
00	Traffic Impact Assessment	NPA	LA	RLR	03/11/2022
01	Traffic Impact Assessment	NPA	LA	LA	2/10/2023
02	Traffic Impact Assessment (addressing Council RFI)	NPA	LA	RLR	21/12/2023
03	Traffic Impact Assessment (addressing Council RFI)	LA	RLR	RSM	26/02/2024
04	Traffic Impact Assessment (minor amendment)	NPA	RLR	RSM	30/04/2024

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1. Introduction

1.1 Project background

ABx Group Limited (ABx) is proposing to develop a bauxite mine located off Porters Bridge Road near Reedy Marsh, approximately 5km north of Exton. The bauxite mine will be located within multiple land parcels and is proposed to be accessed via an existing Forico internal haul road.

The mine will extract bauxite using surface mining techniques. Bauxite is the ore used for the following:

- Refining into alumina which is electro-smelted to make aluminium
- Used as a source of aluminium and iron for cement production; and
- Used as a source of aluminium and iron for manufacture of superphosphate fertiliser, supplying strength and dust reduction properties.

ABx has commissioned pitt&sherry to undertake an assessment of the traffic impacts associated with operation of the proposed bauxite mine as part of an Environmental Impact Statement (EIS) to support the Development Application (DA).

ABx has recently completed its operations and final rehabilitation at the Bald Hill Bauxite Project located 6 km northwest of Campbell Town. The Bald Hill Mining Lease ML 1961P/M has been surrendered without conditions. At the Bald Hill Bauxite Project, ABx honoured its paramount corporate policy, namely:

> ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it. We only operate where welcomed.

The project proposes to quarry bauxite rock, screen it to size and ship it via either Bell Bay Port or Burnie Port to alumina refineries, cement factories and fertiliser manufacturing plants in China, India, SE Asia and Australasia.

1.2 Traffic Impact Assessment scope

This report has been prepared with reference to the *Tasmanian Planning Scheme – Meander Valley* (Planning Scheme) and in accordance with the Department of State Growth's (State Growth's) *Traffic Impact Assessment Guidelines (August 2020)* and details the findings of the traffic assessment undertaken for the proposed development.

1.3 Experience of project team

This report has been prepared by suitably qualified persons in accordance with the *Austroads Guide to Traffic Management – Part 12 (2016).* The relevant experience of the project team is detailed below.

1.3.1 Nicholas Ashlin

Nicholas is a highly productive Roads and Traffic Engineer with three years' experience in both traffic analysis and road safety assessments. He has been involved in a wide variety of transport infrastructure projects from small commercial developments through to large transport infrastructure projects. Nicholas is a qualified road safety auditor and is proficient in the use of GIS which he utilises effectively to communicate technical analysis outputs in a form suitable for stakeholders.

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1.3.2 Leenah Ali-Lavroff

Leenah has over eight years' experience in the field of traffic and transport and has worked on a diverse range of projects across Australia. Leenah is efficient at undertaking traffic and transport assessments. She has a keen interest in road safety and is a qualified Senior Road Safety Auditor and Safe Systems Assessor. Her understanding of Australian Standards, Austroads Guidelines and familiarity with local Planning Schemes and Standard Drawings solidifies her role as a versatile and knowledgeable professional in the field.

1.3.3 Rebekah Ramm

Rebekah has almost ten years' experience primarily in the area of transport engineering and planning. Rebekah has been involved in leading transport engineering teams for several large transport planning assessment projects and has extensive experience in preparing Traffic Impact Assessments for a range of projects including large and small residential developments as well as mixed use and commercial developments.

1.3.4 Ross Mannering

Ross has over 20 years' experience in transport infrastructure design, project management, road safety, traffic engineering and stakeholder engagement which has been acquired through his involvement in a wide variety of transport infrastructure and traffic engineering projects. This experience, combined with his extensive technical knowledge, enables Ross to optimise the design of traffic and transport infrastructure projects and to undertake comprehensive assessments of development proposals. Ross' services are also frequently sought to provide expert witness advice on traffic engineering matters associated with planning appeals. He also holds Senior Road Safety Auditor accreditation with VicRoads.

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2. Existing conditions

2.1 Site location

As discussed, the site is located across multiple properties, approximately 8km north-east of Deloraine, near Reedy Marsh. It has a land use classification of 20.0 Rural Zone and 21.0 Agriculture Zone under the Planning Scheme and is primarily used by Forico. Surrounding land uses include further 20.0 Rural Zone to the east and west, 21.0 Agriculture Zone to the south and 23.0 Environmental Management Zone to the north.

2.2 Site access

The site will continue to be accessed from the existing access point on Porters Bridge Road, approximately 2km south of the mine site and 3km north of Exton.

The existing site access is approximately 19m wide at its intersection with Porters Bridge Road and is at an angle of approximately 25 degrees to northbound traffic travelling along Porters Bridge Road. The site access has a weathered seal and steepens as it approaches Porters Bridge Road. Dense vegetation is located along both sides of Porters Bridge Road in the vicinity of the site access. No turn lanes are provided along Porters Bridge Road at the site access. It is noted that vehicles primarily turn right in and left out of the access. The access is currently used by Forico haul trucks.

The site and existing access are shown below in Figure 1.

It is noted that two other access points further north on Porters Bridge Road were initially tabled as potential alternatives. However, as the site access is both existing and currently caters for vehicles like those expected to access the site, it was discerned that the existing access is the preferred access, noting also the better condition of the existing internal haul road from this access as compared to those further north.

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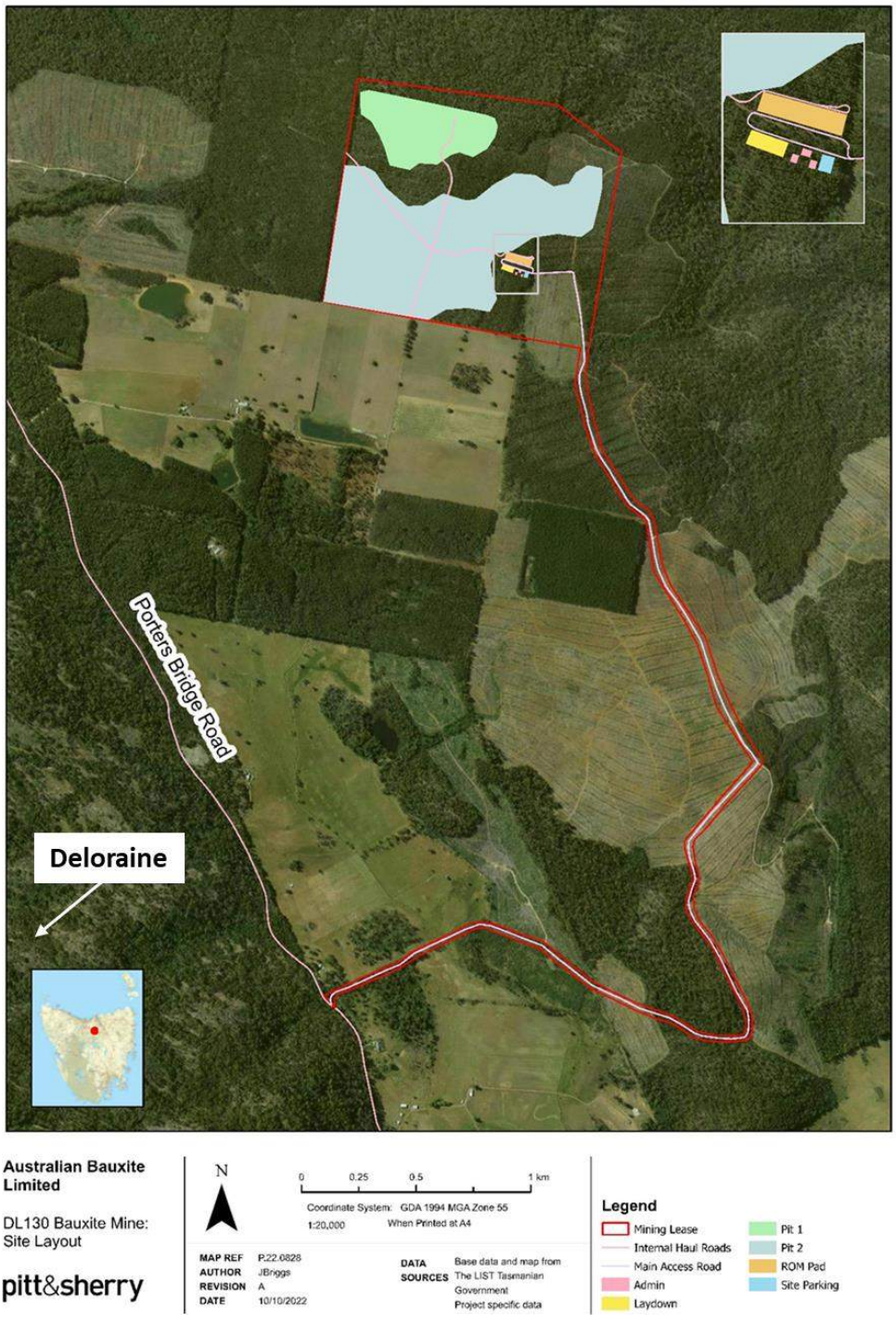

Figure 1: Site location

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2.3 Surrounding road network

2.3.1 Porters Bridge Road

Porters Bridge Road (shown in Figure 2 and Figure 3) is a Meander Valley Council (Council) owned two-way local road[1]. It operates primarily in a north-south direction from Meander Valley Road at Exton to River Road at Reedy Marsh. Four bridges are located along Porters Bridge Road south of the site access, the northernmost of which is a one-way bridge over the Meander River.

Porters Bridge Road is subject to the Tasmanian Sealed Rural Road Default Speed Limit of 100km/h.

It is understood that the road is currently used by a number of users as follows:

- WALTERS - WALTERS CONTRACTING PTY LTD - hard rock quarry; major user year-round
- CREZZCO - CRESSWELLS TRANSPORT PTY LTD - hard rock quarry; major user year-round
- FORICO - FORICO PTY LTD - forestry, plantation management and harvesting; major road user during harvesting, minor/mid-range user year-round; and
- Private landowners - major users year-round for agricultural and residential purposes.

A traffic counter located approximately 1km north of the Meander Valley Road/ Porters Bridge Road intersection found that 67% of vehicles travelled at between 70km/h and 100km/h along the road. Approximately 14% of vehicles travelled slower than this, and 19% of vehicles travelled faster. It is noted that based on measurements taken on site in the vicinity of the site access on Wednesday 7 February 2024, vehicles were recorded to be travelling at 50km/h – 70km/h. This is due to the width, horizontal and vertical geometry and sight distance along the road in the vicinity of the site compared to at the counter located on a wide, straight section of Porters Bridge Road with good sight distance.

Porters Bridge Road is expected to carry approximately 110 vehicles per day[2], of which 17% are heavy vehicles.

Road widths were recorded at several locations along Porters Bridge Road between the Meander Valley Road/ Porters Bridge Road intersection and the site access. The locations were chosen as points where the road could visibly be noted to reduce in width. The measured widths are presented in Table 1 below noting that Chainage 0.0 refers to the Meander Valley Road/ Porters Bridge Road intersection.

Table 1: Recorded road widths

Location (chainage km)	Road width
0.0 (Meander Valley Road/ Porters Bridge Road intersection)	7.2m
0.5	6.5m
0.8	5.7m
1.7 (Meander River Bridge)	4.8m
1.9	6.1m
2.2	5.7m
2.5	5.4m
2.7	5.3m
3.3 (site access)	5.6m

[1] Based on theLIST Road Centrelines Layer

[2] Based on traffic counts completed by Council in 2015. These were increased to 2023 volumes based on an annual compounding growth rate of 1.9% discerned from historic traffic growth at Station 2025255, and accounting for the estimated daily delivery rate of the Porters Bridge Road Quarry, as detailed in the 2097 P/M Porters Bridge Road, Exton Traffic Impact Assessment.

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While Porters Bridge Road does not provide any shoulders, centreline or edge line, it does provide an approximately 0.5m wide verge on both sides of the road at various locations. While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass.

Due to the dense vegetation along the road combined with the horizontal and vertical geometry of the road, there are multiple locations in which stopping sight distance (SSD) is limited.

Overall, the road width along Porters Bridge Road currently does not comply with the LGAT Standards Drawings (TSD-R02-v3) requirements for a road carrying similar vehicle volumes and heavy vehicle percentage. The SSD along the road also does not comply with contemporary requirements. However, given the existing operation and available crash history along the road, the road is considered to operate safely and efficiently.

Figure 2: Porters Bridge Road - facing south

Figure 3: Porters Bridge Road - facing north

2.3.2 Meander Valley Road

Meander Valley Road is a State Growth owned road and is classified as a Category 5 road in the State Road Hierarchy and spans from Deloraine to Travellers Rest where it connects to the Bass Highway. It is a two-way road with a single lane in each direction and operates primarily in an east-west direction. Meander Valley Road is approved for use by Truck & Dog Trailer Combinations.

Meander Valley Road has a speed limit of 80km/h at the Meander Valley Road/ Porters Bridge Road intersection. As of 2023, Meander Valley Road is expected to carry approximately 1,830 vehicles per day[3], of which 11% are heavy vehicles.

2.4 Surrounding intersections

Meander Valley Road/ Porters Bridge Road sign-controlled give-way T-intersection (shown below in Figure 4) is located approximately 0.4km west of Exton and 3.0km south of the site access. No turning treatments are provided at the intersection.

[3] Based on counts from State Growth's Tasmania traffic data website at Station 2025255 and applying a compounding annual growth rate based on historic counts.

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Figure 4: Meander Valley Road / Porters Bridge Road sign controlled give-way T-intersection

2.5 Heavy vehicle route network

The Tasmanian Truck & Dog Trailer Combination Network in the vicinity of the site (below in Figure 5) shows that the Bass Highway and Meander Valley Road are approved for such combinations. Meander Valley Road, between Westbury and the Bass Highway on-ramp from Meander Valley Road has not been assessed for Truck & Dog Trailer Combinations.

Figure 5: Tasmanian Truck & Dog Trailer Combination Network in the vicinity of the site

Note that a Truck & Dog Trailer Combination has a maximum length of 25m, 4.3m overall height and a 60.5 tonne gross mass.

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2.6 Traffic volumes

State Growth has provided Average Annual Daily Traffic (AADT) data via the Tasmania traffic data website for the surrounding road network, collected in 2022. To estimate 2023 traffic data, a compounding growth rate of 1.9% per year has been applied to the available traffic data, determined based on historic annual growth at the same location. As such, Meander Valley Road is expected to carry approximately 1,830 vehicles per day as of 2023.

Based on the data, it was also noted that the weekday AM peak hour occurs between 8:00am and 9:00am and the PM peak hour occurs between 3:00pm and 4:00pm, both of which align with school drop-off and pick-up.

2.6.1 Existing traffic volumes

If a 50:50 split is assumed between vehicles travelling east or west along Meander Valley Road to/ from Porters Bridge Road, with a peak to daily ratio of 1:10 on Porters Bridge Road, traffic volumes during the AM and PM peak period are expected to be as shown in Figure 6 and Figure 7 at the Meander Valley Road/ Porters Bridge Road intersection.

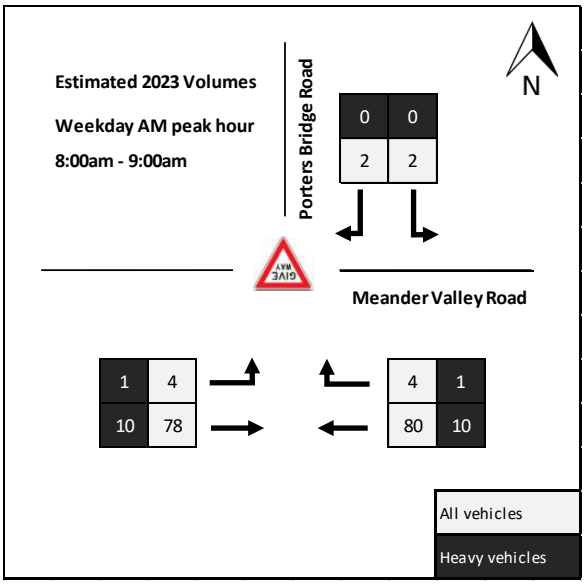

Figure 6: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 weekday AM peak hour

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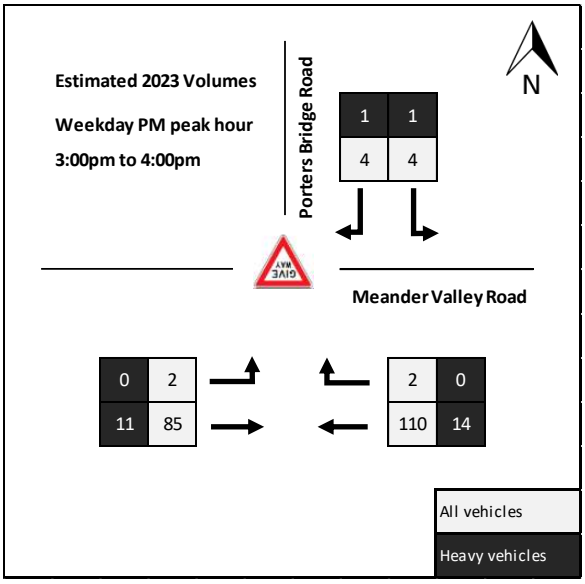

Figure 7: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 weekday PM peak hour

2.6.2 Future traffic volumes

Should the development not proceed, 2033 traffic volumes at the Meander Valley Road/ Porters Bridge Road intersection, assuming a compounding growth rate of 1.9%, are expected to be as follows in Figure 8 and Figure 9.

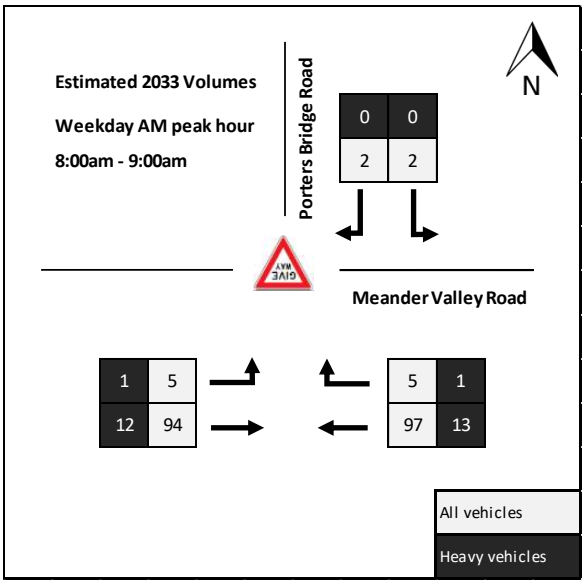

Figure 8: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2033 weekday AM peak hour (no development)

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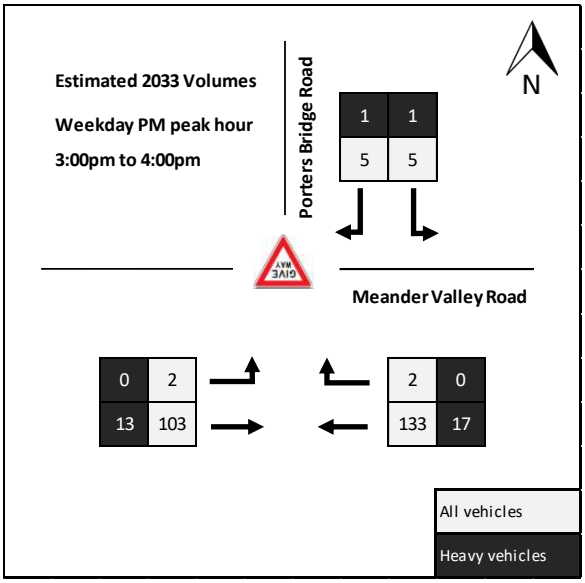

Figure 9: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2033 weekday PM peak hour (no development)

2.7 Road safety

2.7.1 Crash history

State Growth has provided crash data along the full extent of Porters Bridge Road. One crash was recorded in the most recent 10-year period and involved a light vehicle colliding with a dark coloured cow that was on the road at night. The crash caused property damage only.

An additional crash was included in a Council RFI, which described a 180 – Off Carriageway Right Bend crash involving a light vehicle and a Truck & Dog Trailer Combination. It was alleged that the light vehicle, travelling north on Porters Bridge Road was likely travelling at excessive speed around a corner with limited sight distance causing it to enter the opposing lane. To avoid the approaching light vehicle, the Truck & Dog Trailer Combination, travelling southbound, swerved left, causing its rear trailer to exit the carriageway and roll down the bank into trees.

The crash history denotes that there are no crash patterns of concern along Porters Bridge Road, however rhetoric surrounding the limited road width and vehicle speed around corners with limited sight distance was provided as part of the Council RFI. Considerations to limit the risk of crashes is provided in Table 9 of this report.

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3. Development proposal

3.1 Overview

The project proposes to quarry bauxite rock using surface mining techniques via two pits located within Forico-owned land parcels near Reedy Marsh. The quarried materials will then be transported to either Bell Bay Port or Burnie Port and shipped to alumina refineries, cement factories and fertiliser manufacturing plants across Australasia.

ABx is proposing to produce approximately 56,000 tonnes of bauxite per annum over a period of 20 or 30 years from the site.

Mining will initially commence at Pit 1, with preparation and development for Pit 2 commencing whilst Pit 1 is being extracted. Mining will be occurring on a campaign basis due to demand.

The mine will comprise two working pits, all-weather internal haul roads, multiple temporary stockpiles, run-off and silt catchment structures, an equipment laydown area with fuel storage, an all-weather haul road from Porters Bridge Road to a laydown area for trucks, a demountable site office and amenities building, and a parking area.

The proposed site layout is shown in Figure 10.

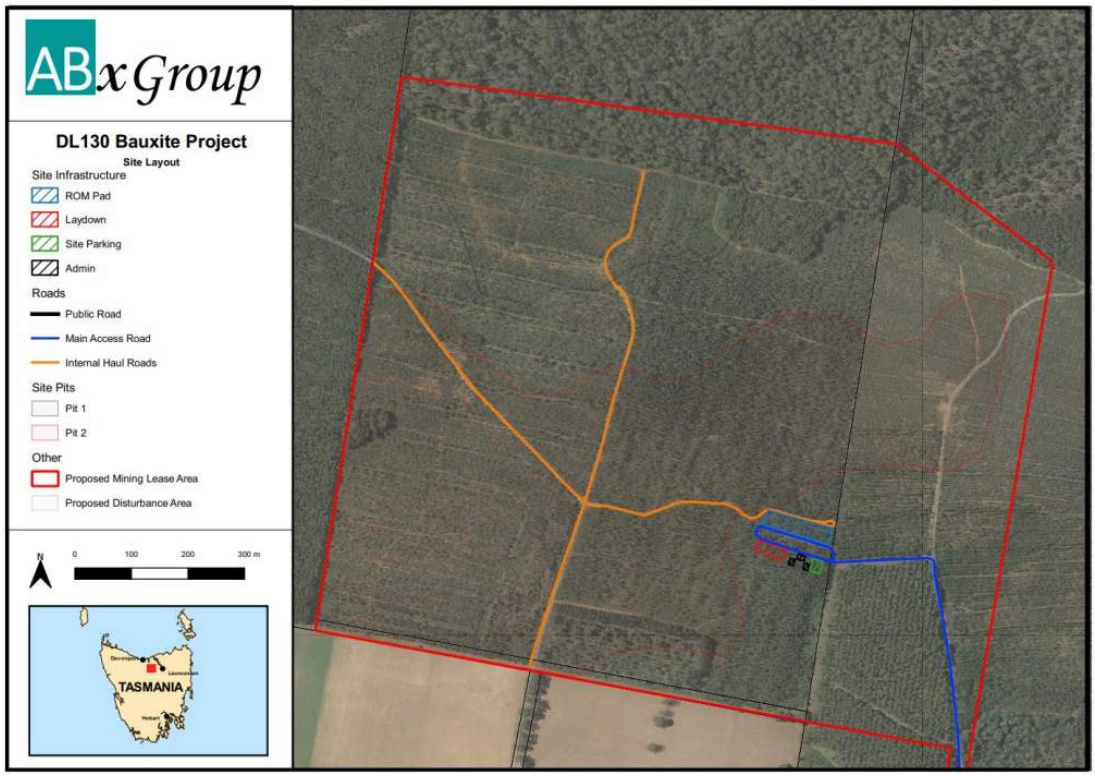

Figure 10: Site plan

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3.2 Staff and operation

Staff are expected to be sourced locally from Deloraine and surrounds, and their roles on site will include working as machine operators or mine supervisors. Other project personnel will attend site as necessary, and will include geological, engineers, environmental scientists or engineers, management and administrative personnel. The total on-site staff numbers will vary across the year due to the campaign-style operation of the mine. Campaigns are expected to last for 3 to 4 months each year.

Rosters are planned to be day shifts only and are 10 hours in length Monday to Friday, 7:00am to 5:00pm and 8 hours on Saturdays, 8:00am to 4:00pm.

There are expected to be a maximum of 12 staff on site in total during operating hours, all of whom will start at 7:00am and finish at 5:00pm, Monday to Friday, and on Saturdays, 8:00am to 4:00pm. This includes 6 operators, 2 managers, 2 technical staff and a maximum of 2 other project personnel.

Transport of ore to the port will be by a trucking contracting company. A maximum of 78 truck movements per day are anticipated during campaigns.

3.3 Vehicle access and circulation

3.3.1 Staff vehicles

All staff vehicles will access and exit the site via the existing site access. Routes taken to access the site by staff vehicles will depend on their origin. Within the site, light vehicles will travel to the site loading/ administration area using the internal haul road from Porters Bridge Road.

3.3.2 Heavy vehicles

All heavy vehicles will access and exit the site via the existing all-weather internal haul road; however, it is expected that only haul trucks (Truck & Dog Trailer Combinations) responsible for transporting bauxite from the proposed mine to the Bell Bay Port and/ or Burnie Port, will persistently access and egress the site for the extent of the mine's lifespan.

Haul trucks will travel to and from the site via one of three main routes which may be used interchangeably throughout the project lifespan based on timeliness, location of roadworks, etcetera. The routes may also vary slightly in the vicinity of Porters Bridge Road based on similar factors; however, haul trucks will only utilise Truck & Dog Trailer Combination approved routes to Meander Valley Road. The three main routes are as follows:

- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the East Tamar Highway to the Batman Highway via the underpass south of Long Reach, turning left onto the West Tamar Highway at Loira, turning right onto Frankford Road at Exeter, turning left onto Birralee Road south-east of Frankford, turning right onto Meander Valley Road at Westbury and finally turning right onto Porters Bridge Road at Exton
- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the Midland Highway to the Bass Highway via the underpass east of Prospect, exiting the Bass Highway east of Westbury onto Meander Valley Road and finally turning right onto Porters Bridge Road at Exton; and
- Burnie Port, turning right onto Edwardes Street, turning left onto the Bass Highway, exiting the Bass Highway at Bowerbank Link, turning left onto Meander Valley Road and finally turning left onto Porters Bridge Road.

All three routes, other than Porters Bridge Road itself and the section of Meander Valley Road between Westbury and the Bass Highway on ramp are approved for Truck & Dog Trailer Combination use under the Tasmanian Government's Tasmanian Heavy Vehicle network maps and are shown below in Figure 11.

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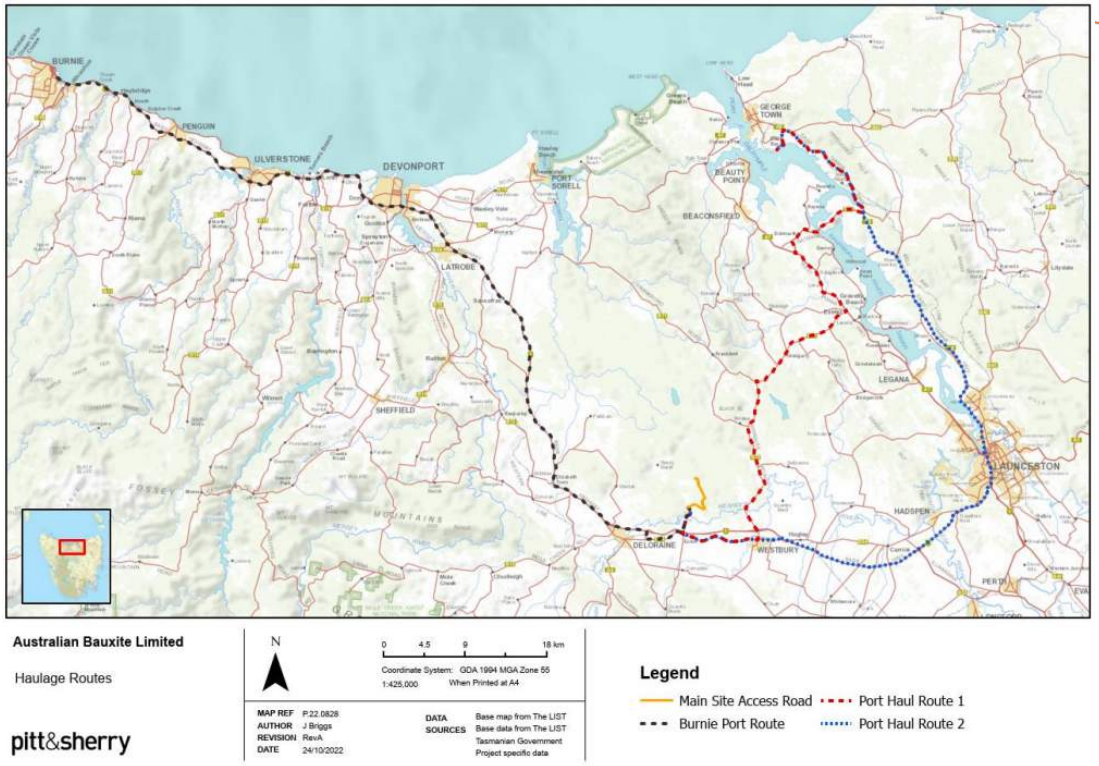

Figure 11: Transport route of heavy vehicles

3.4 Parking

Staff are expected to park alongside the site loading/ administration area.

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4. Transport assessment

4.1 Traffic Impact Assessment

4.1.1 Traffic generation

The traffic generation has been calculated based on the expected operation of the development. ABx has provided the following information which specifies vehicle movements on a typical day of operation post development of the bauxite mine.

- A maximum of 12 staff on site at any time; the staff will remain on site for a full day and will most likely access the site by car. It is not expected staff will leave site during lunch break; and
- A maximum of 78 Truck & Dog Trailer Combination movements per day are expected at the site, used to transport mined bauxite. Site access and egress is to be evenly dispersed throughout operating hours.

Using the above information and assuming all staff arrive prior to the start time of 7:00am and depart after the finish time of 5:00pm on weekdays (i.e., arrive before the AM peak hour and depart after the PM peak hour), the traffic generation for the proposed development during the AM and PM peak hours is calculated to be:

- 0 light vehicles (0 light vehicle movements); and
- 8 Truck & Dog Trailer Combination (8 heavy vehicle movements).

The site is also anticipated to generate service vehicles which range from light to heavy vehicles (machinery, equipment maintenance, contractors, fuel tankers, etc). Based on operation of similar sites, these vehicles are equivalent to a maximum of 10% of the daily vehicle generation and are generated sporadically but generally not generated during the peak hour.

The overall traffic volumes on Porters Bridge Road and Meander Valley Road in the vicinity of the proposed mine site are expected to increase by 112 vehicles per day during the mining stage of the proposed bauxite mine.

4.1.2 Traffic distribution and directional split

As previously noted, locally sourced workers will travel to site from surrounding townships.

It has been assumed that light vehicles will access the site between 6:00am and 7:00am in the morning, prior to the 7:00am start time, and egress from the site between 5:00pm and 6:00pm, after the 5:00pm finish time.

It has been assumed that Truck & Dog Trailer Combinations will access and egress the site consistently throughout the day from 7:00am to 5:00pm.

4.1.3 Post development traffic volumes

The expected traffic volumes during the AM and PM peak hours post development (assuming the development is completed in 2023), are shown below in Figure 12 and Figure 13.

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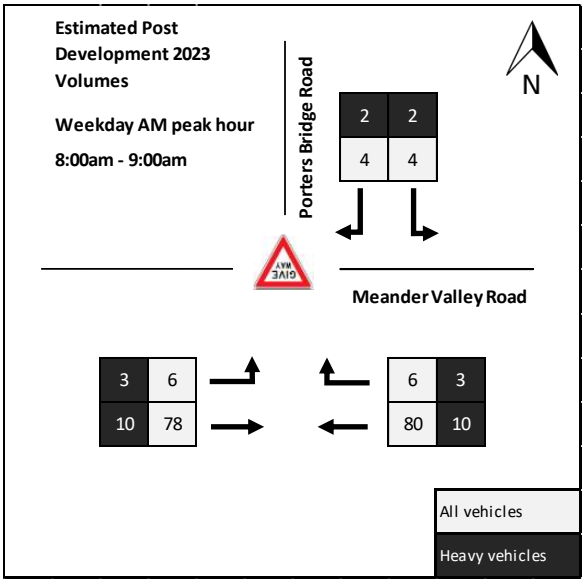

Figure 12: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 post development weekday AM peak hour

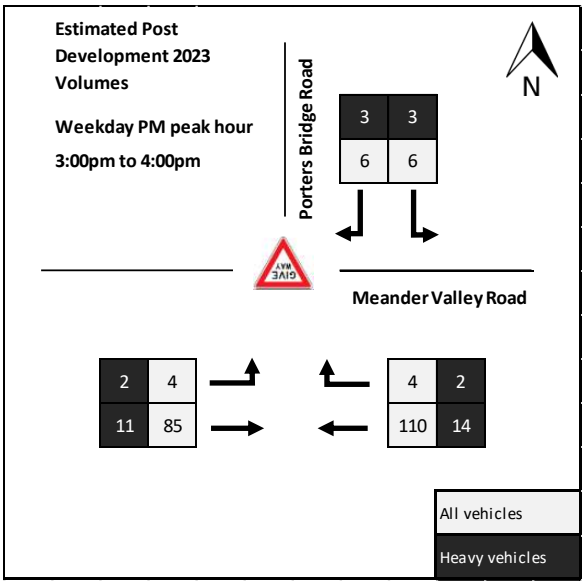

Figure 13: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 post development weekday PM peak hour

4.1.4 Post development traffic operation

Traffic modelling software

The operation of the intersection has been modelled using SIDRA Intersection 9.1 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). It is generally accepted that LOS D or better is an acceptable level of operation. Table 2 shows the criteria that SIDRA Intersection adopts in assessing the LOS.

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Table 2: SIDRA Intersection Level of Service (LOS) criteria

LOS	Delay per Vehicle (secs)		
	Signals	Roundabout	Sign Control
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

Network layout

The geometry of the Meander Valley Road/ Porters Bridge Road intersection has been modelled with reference to aerial imagery obtained from TheList, which informed the width and length of trafficable lanes, as well as overall intersection layout. Note that of the heavy vehicles on Porters Bridge Road, 100% have been assumed to be large trucks (semi-trailers, truck & dog trailers) to be conservative.

The geometry of the Meander Valley Road/ Porters Bridge Road intersection is shown below in Figure 14.

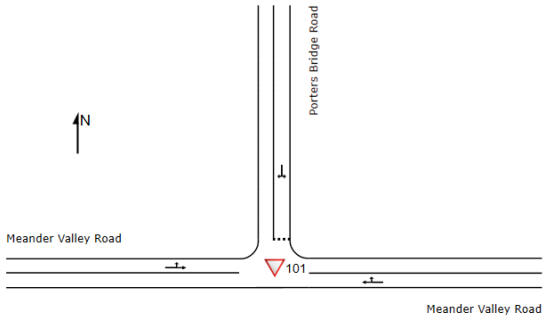

Figure 14: Geometric layout - Meander Valley Road/ Porters Bridge Road intersection

Traffic modelling results

A summary of the traffic modelling results at the Meander Valley Road/ Porters Bridge Road intersection for degree of saturation, average delay and 95th percentile queue for the post development weekday peak hour is provided below in Table 3. Detailed results are provided in Appendix B.

Table 3: SIDRA Intersection traffic modelling results – post development

Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
AM peak hour	East: Meander Valley Road	0.06	1	1	A
	North: Porters Bridge Road	0.01	11	1	B

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Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
	West: Meander Valley Road	0.05	1	0	A
	All	**0.06**	**1**	**1**	**A**
PM peak hour	East: Meander Valley Road	0.07	0	1	A
	North: Porters Bridge Road	0.02	12	1	B
	West: Meander Valley Road	0.05	0	0	A
	All	**0.07**	**1**	**1**	**A**

Based on the above, the Meander Valley Road/ Porters Bridge Road intersection will operate at an overall LOS A post development, with acceptable delays and queues.

4.1.5 30-years post development traffic volumes and operation

As ABx are proposing to extract bauxite from the site for 20-30 years, traffic has been modelled for the 30-years post development (2053) scenario, assuming the compounding annual traffic growth rate on both Porters Bridge Road and Meander Valley Road is 1.9% per year. Note that vehicle volumes travelling to and from the site have not been increased, as they are expected to stay consistent for the development's lifespan.

The expected traffic volumes during the AM and PM peak hours 30-years post development (assuming the development is completed in 2023), are shown below in Figure 15 and Figure 16.

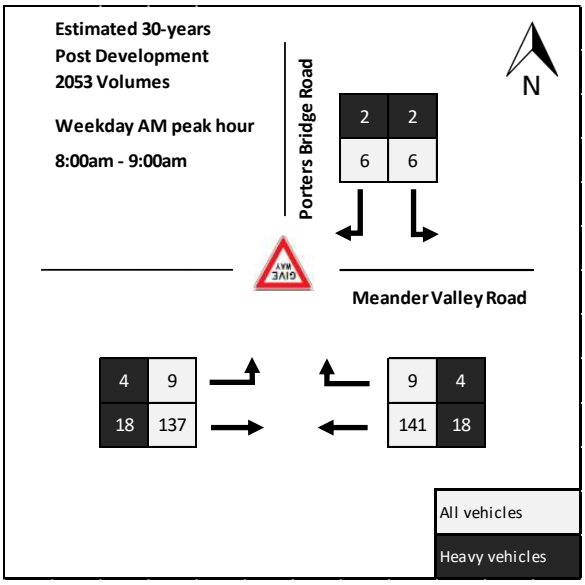

Figure 15: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2053 30-years post development weekday AM peak hour

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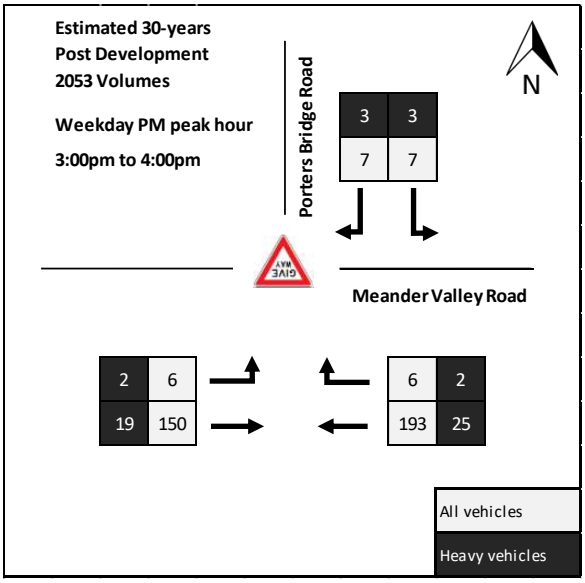

Figure 16: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2053 30-years post development weekday PM peak hour

Traffic modelling results

A summary of the traffic modelling results at the Meander Valley Road/ Porters Bridge Road intersection for degree of saturation, average delay and 95th percentile queue for the 30-years post development weekday peak hour is provided below in Table 4. Detailed results are provided in Appendix C.

Table 4: SIDRA Intersection traffic modelling results – 30-years post development

Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
AM peak hour	East: Meander Valley Road	0.10	1	1	A
	North: Porters Bridge Road	0.02	11	1	B
	West: Meander Valley Road	0.09	1	0	A
	All	**0.10**	**1**	**1**	**A**
PM peak hour	East: Meander Valley Road	0.12	0	1	A
	North: Porters Bridge Road	0.03	13	1	B
	West: Meander Valley Road	0.09	0	0	A
	All	**0.12**	**1**	**1**	**A**

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Based on the above, the Meander Valley Road/ Porters Bridge Road intersection will operate at an overall LOS A 30-years post development, with acceptable delays and queues.

4.1.6 Traffic impact

Porters Bridge Road

Based on the development, overall traffic volumes on Porters Bridge Road are expected to increase from approximately 110 vehicles per day to 222 vehicles per day (as of 2023). As these are still low volumes, representing approximately one movement every two to three minutes during peak periods, the traffic impact on Porters Bridge Road is expected to be minimal. As shown above, post development and 30-years post development, the overall level of service at the Meander Valley Road/ Porters Bridge Road intersection for the Porters Bridge Road approach is expected to be LOS A post development and 30-years post development.

Meander Valley Road

Based on the development, overall traffic volumes on Meander Valley Road are expected to increase from approximately 1830 vehicles per day to 1942 vehicles per day (as of 2023). This represents just over a 5% increase in traffic volumes on the road, which is expected to be negligible with respect to the overall operation of the road.

4.1.7 Road Safety

As the existing road width along Porters Bridge Road currently does not comply with the LGAT Standards Drawings (TSD-R02-v3) requirements and the SSD along the road also does not comply with contemporary requirements, there is an increased likelihood of safety issues as a result of the additional traffic generated by the proposed development.

In order to assess the safety implications of the additional traffic volumes post development, a risk analysis as presented in Table 9 has been undertaken.

The risk analysis has been completed as per the Safe System approach which underpins the Tasmanian Government's *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* and represents a shift away from traditional reactive approaches to road safety infrastructure. The analysis has taken into consideration the procedures set out in the *AUSTROADS Guide to Road Safety Part 6: Road Safety Audit* (AGRS6). The potential road safety problems identified have been ranked as follows:

A risk based on the **likelihood** of a crash occurring as a result of the deficiency together with the potential **severity** of that crash.

The risk ratings adopted are:

- Extreme
- High
- Medium
- Low; and
- Negligible.

Table 5 to Table 8 below show the risk rating process and how to respond to it. Figure 17 shows the 'Severity Guidance Sheet', reproduced from AGRS6, showing the severity of different crashes as a function of speed.

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Table 5: Likelihood of a crash (AGRS6)

Frequency	Description
Almost Certain	Once per quarter
Likely	Once per quarter to once per year
Possible	Once per year to once every three years
Unlikely	Once every three years to once every seven years
Rare	Less than once every seven years

Table 6: Likely severity of a crash (AGRS6)

Severity	Description
Fatal	Death at scene or within 30 days of the crash
Serious	Admitted to hospital
Moderate	Major first aid and/or presents to hospital (not admitted)
Minor	Minor first aid
Insignificant	Property damage

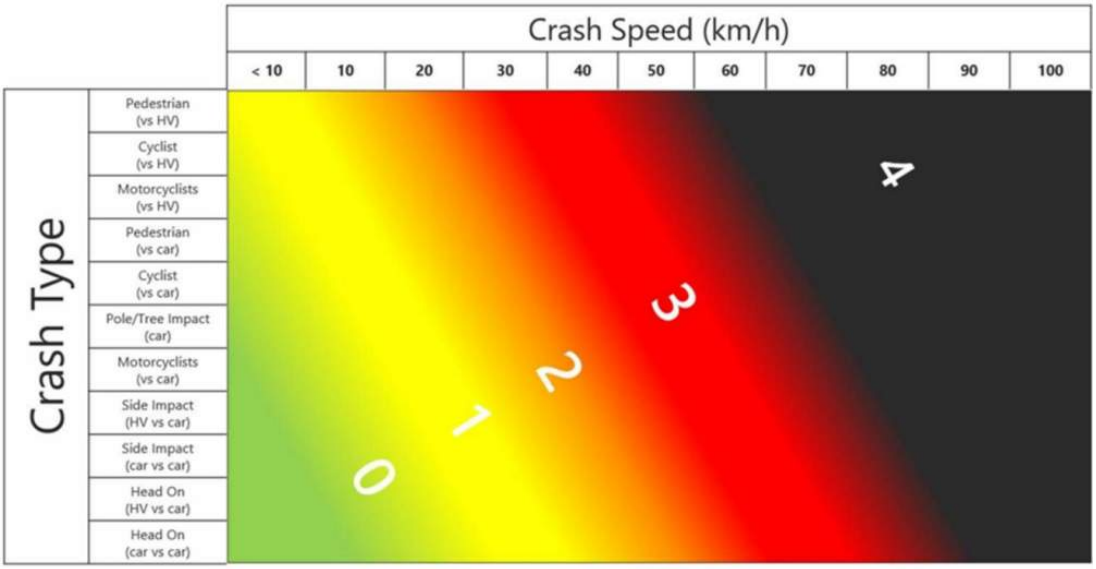

Figure 17: Severity Guidance Sheet (AGRS6)

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Table 7: Austroads RSA Risk Matrix (AGRS6)

	Insignificant	Minor	Moderate	Serious	Fatal
Almost Certain	Medium	High	High	Extreme (FSI)	Extreme (FSI)
Likely	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
Possible	Low	Medium	High	High (FSI)	Extreme (FSI)
Unlikely	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
Rare	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

**Note: FSI = Fatal and Serious Injuries*

Table 8: Treatment approach (AGRS6)

Risk	Suggested treatment approach
Extreme	Must be corrected regardless of cost.
High	Should be corrected or the risk significantly reduced, even if the treatment costs is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate but not high.
Low	Should be corrected or the risk reduced if the treatment cost is low.
Negligible	No action required

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Table 9: Risk analysis – Porters Bridge Road

Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
The existing road width does not comply with the LGAT Standard Drawings (TSD-R02-v3) requirements for a road carrying similar vehicle volumes and heavy vehicle percentage. With the increased traffic volumes, the limited road width may result in difficulties for vehicles to pass each other increasing the risk of side swipe crashes.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass as required.	Vegetation trimming along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection) along the road reservation should be undertaken to ensure vehicles have better sight distance and can reduce speed for an oncoming vehicle. – *(Council)* Monitor the road noting some widening may also be considered at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection to allow two vehicles to pass each other. – *(Council)*	Unlikely Insignificant **Negligible**
The width of the bridge crossing Meander River is such that it only supports one way traffic flow. There is no signage or line marking denoting which direction of vehicles get priority. With the increased traffic volumes generated by the proposed development, this may result in an increased likelihood of head on crashes as two vehicles attempt to cross the bridge at the same time.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road).	The priority on the one-way bridge should be clarified by installing a give-way sign and line marking for one direction of traffic (preferably northbound traffic gives way due to existing available pull over area). – *(Council)* Vegetation within the road reserve in the vicinity of the bridge should be trimmed back to improve sight distance around horizontal curves to the north and south. – *(Council)*	Unlikely Insignificant **Negligible**
Due to the horizontal and vertical geometry of the road, there are multiple locations in which SSD is limited, particularly around curves. With the increased traffic volumes, the limited SSD may result in an increased likelihood of crashes at the curves should vehicles traverse onto the opposing travel lane.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass.	Vegetation trimming along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection) should be undertaken to ensure vehicles have better sight distance and can reduce speed for an oncoming vehicle. – *(Council)* Monitor the road noting some widening may also be considered at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection to allow two vehicles to pass each other. – *(Council)* Consider installing line marking at curves. – *(Council)* Consider installing Chevron Alignment Markers and advisory speed signage along the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection. – *(Council)*	Unlikely Insignificant **Negligible**
There are numerous unprotected hazards (power poles, trees, embankments) adjacent to the roadway or within the runout area. With the increased traffic volumes, the likelihood of vehicles running off road into these unprotected hazards is also increased.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generation by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). Drivers will generally become familiar with the road environment.	Vegetation trimming within the road reserve, along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection), should be undertaken to reduce the number of unprotected hazards adjacent to the roadway or within the runout area. – *(Council)* Consider installing Chevron Alignment Markers and advisory speed signage along the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection. – *(Council)*	Unlikely Insignificant **Negligible**

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Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
The proposed development will increase the number of heavy vehicles travelling along Porters Bridge Road. This will increase the likelihood of a crash involving a heavy vehicle.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). There is signage along the road and in the vicinity of the site access currently to advise the road is used by heavy vehicles.	Straighten the Trucks Crossing or Entering signage located to the north the site access such that it faces the road. – *(ABx)* Clean the sign to remove any dirt on the surface of the sign. – *(ABx)* Consider installing another Trucks Crossing or Entering sign to the south the site access. – *(ABx)*	Unlikely Minor **Low**
There are four bridge structures located along Porters Bridge Road. There is a risk that there may be structural issues on the bridge structures due to a potential increase in the loads of the proposed vehicles exceeding the current load carrying capacity.	Possible Minor **Medium**	Within tolerable limits	It is expected that the proposed vehicles will be operating at a similar weight and configuration to the trucks currently generated by current road users. While the development will generate additional traffic, the structural capacity of the bridge structure is not impacted by the proposed number of vehicle movements. It is expected that the proposed vehicle loads and configurations are the same as those currently on the road.	Limit the weights of the proposed vehicles to match the vehicle configurations of the existing trucks using Porters Bridge Road. – *(ABx)* If additional loads are required, then a simple load assessment can be undertaken to compare the potential load effects of the increased vehicles and the expected load capacity of the individual structures. – *(ABx)*	Unlikely Minor **Low**
The site access may not be suitable for the proposed traffic generation resulting in an increased crash risk for vehicles exiting the site.	Possible Minor **Medium**	Within tolerable limits	The site access is existing and heavy vehicles currently use the site access. Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction. When turning out of the site access, Truck & Dog Trailer Combinations do require use of the majority of the width of Porters Bridge Road. Should Truck & Dog Trailer Combinations enter and exit the site access concurrently, entering trucks will need to wait approximately 40m south of the site access until the exiting truck has completed its manoeuvre. This will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required. This is considered suitable and relatively low risk given the anticipated available sight distance, truck driver site familiarity and low risk of such an occurrence (one movement generated every two to three minutes during development peak periods along Porters Bridge Road).	The existing site access should be resealed for a minimum of 30m directly off Porters Bridge Road to allow continued safe ingress and egress to the site for the extent of the mine life. The resealed access should comply with the requirements of AS 2890.2 which includes a sealed width of minimum 19m at its intersection with Porters Bridge Road and a maximum grade of 5% extending along the minimum sealed width of 30m. The seal should be designed taking into consideration the pavement requirements to withstand the pressures of heavy vehicles. – *(ABx)* Remove vegetation north of the site access (as discussed in Section 4.2.2 of this report) to improve sight distance to southbound traffic. – *(ABx)* Monitor the verges in the vicinity of the site access as some pavement strengthening may be required along the verge at the site access. – *(ABx)*	Unlikely Minor **Low**
Truck & Dog Trailer Combinations should only ingress the site via a right turn from Porters Bridge Road to the site access and egress the site via a left turn from the site access onto Porters Bridge Road. There is a risk that Truck & Dog Trailer Combinations may try to egress the site via a right turn.	Rare Minor **Negligible**	Within tolerable limits	The movement restriction will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required.	Consider installing signage highlighting the movement restriction. – *(ABx)*	Rare Minor **Negligible**

Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
Existing line marking along Porters Bridge Road is faded which may result in vehicles failing to notice the line marking and traversing onto the opposing lane. The increased traffic volumes will increase the risk of a head-on crash.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generation by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). In sections where the line marking is faded, the road is generally wide enough to support two way traffic flow.	It is recommended to repaint the faded line marking. – *(Council)*	Rare Minor **Negligible**
The existing bridge safety barriers installed do not comply with contemporary requirements. Increased traffic volumes may increase the likelihood of crashes with the bridge safety barrier, which may not perform sufficiently in the event of a crash.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). Note that where the existing bridge safety barriers do not meet contemporary requirements (Chainage 0.2 to 0.3), Porters Bridge Road is generally 7.2m wide.	Consider upgrading the safety barriers as part of Council's road/asset upgrade program such that they meet contemporary requirements. – *(Council)*	Unlikely Minor **Low**
There are a number of potholes present along the existing road surface. The condition of potholes may worsen with increased traffic volumes, increasing crash risk and damage to vehicles when struck. The presence of the potholes may also increase the rate at which the road surface deteriorates.	Unlikely Minor **Low**	Within tolerable limits	It is understood that the road is currently used by other, similar users: • WALTERS – WALTERS CONTRACTING PTY LTD – hard rock quarry; major user year-round • CREZZCO – CRESSWELLS TRANSPORT PTY LTD – hard rock quarry; major user year-round • FORICO – FORICO PTY LTD – forestry, plantation management and harvesting; major road user during harvesting, minor/mid-range user year-round, and • Private landowners – major users year-round for agricultural and residential purposes. While the development will generate additional traffic, the additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). The trucks generated will be of a similar weight and configuration to the trucks currently travelling on the road. Given the weight, configuration and low number of trucks generated, the rate at which the road surface deteriorates is not anticipated to be significantly accelerated.	Monitor and fix potholes as required along the road as part of Council's regular road maintenance program. – *(Council)*	Unlikely Minor **Low**
The trucks crossing or entering sign located to the north of the site access (shown in Figure 20) has fallen over. This may result in a vehicle missing the sign and increase the risk of a vehicle-truck crash, particularly with the increased traffic generation as a result of the development.	Unlikely Minor **Low**	Within tolerable limits	Existing signage has fallen over. The sign is suitable with reference to size, condition, type and location.	Straighten the Trucks Crossing or Entering signage such that it faces the road. Clean the sign to remove any dirt on the surface of the sign. – *(ABx)*	Unlikely Minor **Low**

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Should recommendations outlined above be implemented, it is anticipated that the residual level of risk along Porters Bridge Road will be low which is consistent with the level of risk currently present on Porters Bridge Road.

It is also noted that based on the assessment above, the site access is at the preferred location as it is currently used by heavy vehicles and provides little increase to risk post implementation of recommendations.

4.1.8 Construction Traffic Impact

Although details for the construction phases of the proposed development is currently not confirmed, it is anticipated that construction will be completed over a 2-week period.

The following heavy vehicles are anticipated to be generated during the construction phase:

- 10x truck and dog movements per day
- 1x cement truck per week
- 2x hot mix trucks per week
- 5x equipment transport trucks per week
- 1x cherry picker; and
- 1x truck and woodchipper.

In addition to the above heavy vehicles, approximately 8 light vehicles are also anticipated to be generated per day.

Overall, the traffic generated during the construction phase is less than or similar to the post development traffic volumes. Based on the assessment presented in this report for post development and 10-years post development traffic volumes, the Meander Valley Road/Porters Bridge Road intersection is expected to operate at an overall LOS A during construction, with acceptable delays and queues.

As the largest vehicles used during construction will be Truck & Dog Trailer Combinations, should recommendations outlined in this report in Table 9 be implemented, it is anticipated that the residual level of risk along Porters Bridge Road will be low which is consistent with the level of risk currently present on Porters Bridge Road.

4.2 Site access assessment

4.2.1 Intersection layouts

Clause 5.1 of the *Australian Standard AS/NZS2890.2:2018 Off-street commercial vehicle facilities* (AS 2890.2) states that "*Swept paths shall be used to check that the paths of vehicles travelling in the forward direction when negotiating access driveways and circulations roadways, can be accommodated within the proposed roadway".*

Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction. When turning out of the site access, Truck & Dog Trailer Combinations require most of the width of Porters Bridge Road. However, this is considered adequate given the traffic volume along Porters Bridge Road combined with the sight distance anticipated at the site access following vegetation trimming (as discussed in Section 4.2.2 of this report).

Should Truck & Dog Trailer Combinations enter and exit the site access concurrently, entering trucks will need to wait 40m south of the site access until the exiting truck has completed its manoeuvre. This will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required. This is considered suitable and relatively low risk given the anticipated available sight distance, truck driver site familiarity and low risk of such an occurrence. It is also noted that the entering truck may need to traverse the verge, but this is also considered suitable given the low frequency of this occurring.

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Completed swept paths are included in Appendix D.

It is recommended that the existing site access is resealed for a minimum of 30m directly off Porters Bridge Road to allow continued safe ingress and egress to the site for the extent of the mine life. The resealed access should comply with the requirements of AS 2890.2 which includes a sealed width of minimum 19m at its intersection with Porters Bridge Road and a maximum grade of 5% extending along the minimum sealed width of 30m. The seal should be designed taking into consideration the pavement requirements to withstand the pressures of heavy vehicles.

Note that Truck & Dog Trailer Combinations should only ingress the site via a right turn from Porters Bridge Road to the site access and egress the site via a left turn from the site access onto Porters Bridge Road. Although this movement restriction will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required, consideration may be given to install signage highlighting this movement restriction.

4.2.2 Sight distance assessment

Site access

A site visit was undertaken by pitt&sherry staff on Wednesday 21 September 2022 and on Wednesday 7 February 2024. During the site visit, the sight distances from the site access to vehicles travelling along Porters Bridge Road were measured. The sight distances were measured in accordance with AS 2890.2 Figure 3.3, which provides sight distance requirements for commercial vehicle traffic entering a public road from an access driveway. This is more conservative than the requirements for light vehicle traffic, due to the increased time required for acceleration and braking for heavy vehicles.

It was noted during the site visit, vehicles were recorded to be travelling at 50km/h – 70km/ past the site despite the 100km/h speed limit. The sight distance has, however, been assessed against the sight distance requirement for vehicles travelling at 100km/h, which is considered conservative.

The SISD requirements and the observed sight distance at the site accesses are shown below in Table 10.

Table 10: Sight distance assessment of Porters Bridge Road/ site access junction

Direction of Vehicle Travel on Porters Bridge Road	**Speed**	**Sight Distance Requirement**	**Available Sight Distance**	**Meets Requirements**
		AS 2890.2		**AS 2890.2**
Northbound	100km/h	139m (5s gap)	150m	Yes
Southbound	100km/h		~150m*	Yes

*With removal of vegetation between the site access and the curve in Porters Bridge Road to the north.

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Based on the above, the sight distance at the existing access to both northbound and southbound vehicles meets the requirements of AS 2890.2, should vegetation located north of the site access on the eastern side of Porters Bridge Road, be removed (see required clearing in Figure 18)

Please note that this requires some vegetation removal within the bounds of the road reserve and of 340 Porters Bridge Road as shown, the latter of which will require consultation with property owners. Ongoing maintenance of this vegetation trimming will also be required.

Note that the provision of Trucks Crossing or Entering signage both south of the Meander River Bridge for vehicles travelling northbound, and just north of the site access for vehicles travelling southbound (as shown in Figure 19 and Figure 20) provides additional warning of trucks on Porters Bridge Road, further warning vehicles to drive cautiously. However, as noted in Table 9, this sign has fallen over and as such it is recommended that this sign be straightened such that it faces the road.

The grade of the site access, should recommendations provided in Table 9 be implemented, is not expected to have a significant impact on the time it would take a truck to accelerate when entering Porters Bridge Road from the site access.

Figure 18: Approximate extent of vegetation clearing required

Photos of the sight distance from the site access are also shown below in Figure 21 and Figure 22.

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Figure 19: Trucks Crossing or Entering signage - south of Meander River Bridge

Figure 20: Trucks Crossing or Entering signage – north of site access

Figure 21: Sight distance from site access - to southbound vehicles

Figure 22: Sight distance from site access - to northbound vehicles

4.3 Car parking assessment

4.3.1 Parking requirement

The Planning Scheme requires the following parking provision:

- One car parking space per every two employees; and
- No motorcycle parking spaces for uses that require 0 to 20 car parking spaces.

As a result, the site requires:

- 6 light vehicle parking spaces; and
- 0 motorcycle spaces.

Note that the site is also required to provide sufficient area such that heavy vehicles can park.

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4.3.2 Parking provision

As determined above, the site requires 6 light vehicle parking spaces. As the site layout is high-level at the current stage of the project, there are no marked car parking spaces. However, the site is large and as such there is expected to be sufficient space for vehicles to park.

4.4 Vehicle turning

Detailed site plans have not been provided. All vehicles are required to enter and exit the site in a forward direction. Due to the size of the site, it is expected there will be sufficient space for vehicles to turn around on site.

Vehicle turning paths should be assessed once detailed design plans for the site are prepared.

4.5 Turn lane requirements

4.5.1 Meander Valley Road/ Porters Bridge Road intersection

The *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* specifies warrants for providing left and right turn treatments at unsignalised intersections where the cost of the intersection upgrade is considered impractical. These warrants apply to two-lane two-way roads. Figure 23 below shows the volumes of traffic at intersections subject to a speed limit between 70km/h and 100km/h which would warrant turn treatments.

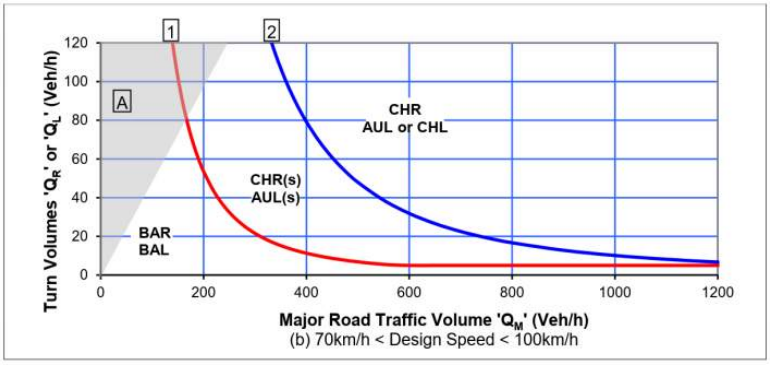

Figure 23: Warrants for turn treatments on major roads at unsignalised intersections

Based on the traffic volumes determined in this report, the expected opposing movements to the turning vehicles at the Meander Valley Road/ Porters Bridge Road intersection are shown in Table 11.

Table 11: Opposing movements to turning vehicles – Meander Valley Road/ Porters Bridge Road intersection

Scenario	Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
		QM Right	QM Left		
Existing	AM	183	88	5	5
	PM	222	96	2	2
No Development 2033	AM	222	106	6	6
	PM	268	116	2	2
	AM	187	88	9	9

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Scenario	Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
		QM Right	QM Left		
Post Development 2023	PM	226	96	6	6
Post Development 2033	AM	327	155	13	13
	PM	372	169	8	8

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided under all assessed scenarios. However, based on the fact that there are currently no turn lanes provided at the Meander Valley Road/ Porters Bridge Road intersection combined with no crash patterns of concern, the existing layout with no turn lanes is considered suitable.

As the traffic generated by the proposed development is minimal (one movement every two to three minutes during development peak periods), providing no turn treatments is considered suitable for the post development scenario.

4.5.2 Site access

Based on the traffic volumes determined in Section 4.1.4 of this report, the expected opposing movements to the right turning vehicles into the site are shown in Table 12.

Table 12: Opposing movements to turning vehicles – site access

Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
	QM Right	QM Left		
AM	12	4	4	0
PM	12	8	4	0

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided, however based on the limited turning volumes into the site access and the through volumes along Porters Bridge Road, the lack of turn treatments for other access along the site and the limited crash history, the provision of turn lanes is expected to be excessive. As such, the existing arrangement, providing no turn treatments, is expected to be suitable.

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5. Planning scheme assessment

5.1 Parking and Sustainable Transport Code

5.1.1 Use Standards

The proposed development has been assessed against the Use Standards of the Planning Scheme's Parking and Sustainable Transport Code, shown below.

Table 13: Parking and Sustainable Transport Code - Use Standards

C2.5.1 Car parking numbers	
Objective: That an appropriate level of car parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan; b) the site is contained within a parking precinct plan and subject to Clause C2.7; c) the site is subject to Clause C2.5.5; or d) it relates to an intensification of an existing use or development or a change of use where: i. the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or ii. the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on-site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.	**Can comply with Acceptable Solution A1** As the site is large, there is expected to be sufficient space to provide 6 car parking spaces. As such, the development can comply with Acceptable Solution A1.

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C2.5.2 Bicycle parking numbers	
Objective: That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Bicycle parking spaces must: a) be provided on the site or within 50m of the site; and b) be no less than the number specified in Table C2.1.	**Complies with Acceptable Solution A1** As the site is not required to provide bicycle parking as per Table C2.1, the development complies with Acceptable Solution A1.

C2.5.3 Motorcycle parking numbers	
Objective: That the appropriate level of motorcycle parking is provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site motorcycle parking spaces for all uses must: a) be no less than the number specified in Table C2.4; and b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.	**Complies with Acceptable Solution A1** As the site is not required to provide motorcycle parking as per Table C2.4, the development complies with Acceptable Solution A1.

C2.5.4 Loading bays	
Objective: That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.	**Can comply with Acceptable Solution A1** The warrant for loading bays may be determined once detailed design plans are provided. As the site is large, there is expected to be sufficient space to provide loading bays as required. As such, the development can comply with Acceptable Solution A1.

C2.5.5 Number of car parking spaces within the General Residential Zone and Inner Residential Zone
Objective: To: a) facilitate the reuse of existing non-residential buildings within the General Residential Zone and Inner Residential Zone; and b) to not cause an unreasonable impact on residential amenity by the car parking generated by that reuse.

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Acceptable Solution/ Performance Criteria	Comment
Acceptable Solution A1 Within existing non-residential buildings in the General Residential Zone and Inner Residential Zone, on-site car parking is not required for: a) Food Services uses up to 100m² floor area or 30 seats, whichever is the greater; and b) General Retail and Hire uses up to 100m² floor area, provided the use complies with the hours of operation specified in the relevant Acceptable Solution for the relevant zone.	**Not Applicable** As the site is not located with the General Residential Zone or Inner Residential Zone, Acceptable Solution A1 is not applicable.

5.1.2 Development Standards

The proposed development has been assessed against the Development Standards of the Planning Scheme's Parking and Sustainable Transport Code, shown below.

Table 14: Parking and Sustainable Transport Code - Development Standards

C2.6.1 Construction of parking areas	
Objective: That parking areas are constructed to an appropriate standard.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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. **Performance Criteria 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.	**Complies with Acceptable Solution A1** As all parking, access ways, manoeuvring and circulation spaces will be constructed with a durable all-weather seal and are either drained to the public stormwater system or contained within the site, the development complies with part a and b of Acceptable Solution A1. As the site is zoned as Rural Zone and Agriculture Zone under the Planning Scheme, the development is not required to provide a spray seal, asphalt, concrete pavers or equivalent material.

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C2.6.2 Design and layout of parking areas	
Objective: That parking areas are designed and laid out to provide convenient, safe and efficient parking.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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 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.* **Acceptable Solution A1.2** Parking spaces provided for use by persons with a disability must satisfy the following: a) be located as close as practicable to the main entry point to the building; b) be incorporated into the overall car park design; and c) be designed and constructed in accordance with *Australian/ New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.*	**Can comply with Acceptable Solution A1.1** Whether parking, access ways, manoeuvring and circulation spaces comply with requirements of the Planning Scheme or AS 2890.1 may be determined once detailed design plans are provided. The site's topography and size are such that the site can comply with Acceptable Solution A1.1. **Acceptable Solution A1.2 is not applicable** As DDA accessible spaces are not required for the development, Acceptable Solution A1.2 is not applicable.

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C2.6.3 Number of accesses for vehicles	
Objective: That: a) access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses; b) accesses do not cause an unreasonable loss of amenity of adjoining uses; and c) the number of accesses minimise impacts on the streetscape.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of accesses provided for each frontage must: a) be no more than 1; or b) no more than the existing number of accesses, whichever is the greater.	**Complies with Acceptable Solution A1** As the site is utilising an existing access to Porters Bridge Road, it complies with Acceptable Solution A1.
Acceptable Solution A2 Within the Central Business Zone or in a pedestrian priority street no new access is provided unless an existing access is removed.	**Acceptable Solution A2 is not applicable** As the site is not located within the Central Business Zone or on a pedestrian priority street, Acceptable Solution A2 is not applicable.

C2.6.4 Lighting of parking areas within the General Business Zone and Central Business Zone	
Objective: That parking and vehicle circulation roads and pedestrian paths within the General Business Zone and Central Business Zone, which are used outside daylight hours, are provided with lighting to a standard which: a) enables easy and efficient use; b) promotes the safety of users; c) minimises opportunities for crime or anti-social behaviour; and d) prevents unreasonable light overspill impacts.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 In car parks within the General Business Zone and Central Business Zone, parking and vehicle circulation roads and pedestrian paths serving 5 or more car parking spaces, which are used outside daylight hours, must be provided with lighting in accordance with Clause 3.1 “Basis of Design” and Clause 3.6 “Car Parks” in *Australian Standard/New Zealand Standard AS/NZS 1158.3.1:2005 Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P) lighting – Performance and design requirements.*	**Acceptable Solution A1 is not applicable** As the site is not located within the General Business Zone or Central Business Zone, Acceptable Solution A1 is not applicable.

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C2.6.5 Pedestrian access	
Objective: That pedestrian access within parking areas is provided in a safe and convenient manner.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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. **Acceptable Solution 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.	**Acceptable Solution A1.1 is not applicable** As the development requires fewer than 10 car parking spaces, Acceptable Solution A1.1 is not applicable. **Acceptable Solution A1.2 is not applicable** As the development is not providing DDA accessible parking spaces, Acceptable Solution A1.2 is not applicable.

C2.6.6 Loading bays	
Objective: That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The area and dimensions of loading bays and access way areas must be designed in accordance with *Australian Standard AS 2890.2–2002, Parking facilities, Part 2: Off-street commercial vehicle facilities*, for the type of vehicles likely to use the site.	**Can comply with Acceptable Solution A1** The warrant for loading bays may be determined once detailed design plans are provided. As the site is large, there is expected to be sufficient space to provide loading bays as required in accordance with AS 2890.2. As such, the development can comply with Acceptable Solution A1.
Acceptable Solution A2 The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with *Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities - Off-street commercial vehicle facilities.*	**Can comply with Acceptable Solution A2** As discussed, vehicle turning paths for Truck & Dog Trailer Combinations should be assessed once detailed design plans for the site are prepared. As the site is large, there is expected to be sufficient space to provide circulation roadways in accordance with AS 2890.2. As such, the development can comply with Acceptable Solution A2.

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C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone	
Objective: That parking for bicycles are safe, secure and convenient, within the General Business Zone and Central Business Zone.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Bicycle parking for uses that require 5 or more bicycle spaces in Table C2.1 must: a) be accessible from a road, cycle path, bicycle lane, shared path or access way; b) be located within 50m from an entrance; c) be visible from the main entrance or otherwise signed; and d) be available and adequately lit during the times they will be used, in accordance with Table 2.3 of *Australian/New Zealand Standard AS/NZS 1158.3.1: 2005 Lighting for roads and public spaces - Pedestrian area (Category P) lighting - Performance and design requirements.*	**Acceptable Solution A1 is not applicable** As the development is not required to provide bicycle parking, Acceptable Solution A1 is not applicable.
Acceptable Solution A2 Bicycle parking spaces must: a) have dimensions not less than: i. 1.7m in length; ii. 1.2m in height; and iii. 0.7m in width at the handlebars; b) have unobstructed access with a width of not less than 2m and a gradient not steeper than 5% from a road, cycle path, bicycle lane, shared path or access way; and *c)* include a rail or hoop to lock a bicycle that satisfies *Australian Standard AS 2890.3-2015 Parking facilities -- Part 3: Bicycle parking.*	**Acceptable Solution A2 is not applicable** As the development is not required to provide bicycle parking, Acceptable Solution A2 is not applicable.

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.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas must be located behind the building line of buildings, excluding if a parking area is already provided in front of the building line.	**Acceptable Solution A1 is not applicable** As the development is not located within any of the zones outlined, Acceptable Solution A1 is not applicable. Parking areas, will however, be located behind the building line.

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5.2 Road and Railways Assets Code

5.2.1 Use Standards

The proposed development has been assessed against the Use Standards of the Planning Scheme's Road and Railway Assets Code, shown below.

Table 15: Road and Railways Assets Code - Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: a) a new junction; b) a new vehicle crossing; or c) a new level crossing. **Acceptable Solution A1.2** For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority. **Acceptable Solution A1.3** For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority. **Acceptable Solution A1.4** 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. **Acceptable Solution A1.5** Vehicular traffic must be able to enter and leave a major road in a forward direction. **Performance Criteria P1** 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;	**Acceptable Solution A1.1, A1.2 and A1.3 are not applicable** As Porters Bridge Road is not a Category 1 road or limited access road, Acceptable Solution A1.1 is not applicable. As the development is not proposing a new access, Acceptable Solutions A1.2 and A1.3 are not applicable. **Can comply with Acceptable Solution A1.5** As vehicular traffic is expected to be able to enter and exit the site in a forward direction, the development complies with Acceptable Solution A1.5. **Satisfies Performance Criteria P1 in place of Acceptable Solution A1.4** As the number of heavy vehicles per day accessing the existing site access will increase by more than 5 vehicle movements per day, the development cannot comply with Acceptable Solution A1.4. The development does however satisfy the Performance Criteria in place of Acceptable Solution A1.4 as follows: a) As per the assessment and recommendations presented within this report, the traffic generated by the proposed development is not anticipated to significantly impact the safety or operation of the surrounding road network (subject to the recommendations presented within his report being implemented) b) As per assessment presented within this report, Porters Bridge Road is considered suitable for use by the heavy vehicles anticipated to be generated (subject to the recommendations

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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.

presented within this report being implemented). Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction

c) As discussed within this report, Porters Bridge Road is considered suitable for use by Truck & Dog Trailer Combinations (subject to the recommendations presented within his report being implemented). The generated traffic volumes are low (one movement every two to three minutes during development peak periods along Porters Bridge Road) and is not anticipated to significantly impact the safety or operation of Porters Bridge Road

d) Porters Bridge Road is subject to low traffic volumes as it primarily provides access to Forico-owned land, several residential properties and two quarries. As such, the traffic flow of the road is not anticipated to be impacted as a result of the development. The 100km/h speed limit along Porters Bridge Road is typical of rural roads. However, as discussed, vehicles were recorded to be travelling at 50km/h – 70km/h. in the vicinity of the site access

e) No alternative access to Porters Bridge Road is provided as part of the development

f) As discussed, much of the heavy vehicle volumes generated by the site will only be present during 3 to 4 months each year, and are required from an operational perspective to increase efficiency of material transportation

g) This Traffic Impact Assessment report outlines that the traffic generated by the development is not expected to have an adverse effect on the safety and operation of the site access and Porters Bridge Road (subject to the recommendations presented within his report being implemented). Although details for the construction phases of the proposed development is currently not confirmed, based on anticipated traffic generation during construction, the development is not expected to have an adverse effect on the safety and

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operation of the site access and Porters Bridge Road during construction, and

h) Written advice has been received from Council in the form of an RFI and has been addressed in this report.

5.2.2 Development Standards

The proposed development has been assessed against the Development Standards of the Planning Scheme's Road and Railways Assets Code, shown below.

Table 16: Road and Railways Assets Code - Development Standards

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area	
Objective: To minimise the effects of noise, vibration, light and air emissions on sensitive uses within a road or railway attenuation area, from existing and future major roads and the rail network.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Unless within a building area on a sealed plan approved under this planning scheme, habitable buildings for a sensitive use within a road or railway attenuation area, must be: a) within a row of existing habitable buildings for sensitive uses and no closer to the existing or future major road or rail network than the adjoining habitable building; b) an extension which extends no closer to the existing or future major road or rail network than: i. the existing habitable building; or ii. an adjoining habitable building for a sensitive use; or c) located or designed so that external noise levels are not more than the level in Table C3.2 measured in accordance with Part D of the *Noise Measurement Procedures Manual, 2nd edition, July 2008*.	**Acceptable Solution A1 is not applicable** As the development does not propose any buildings for sensitive uses, Acceptable Solution A1 is not applicable.

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C3.7.1 Subdivision for sensitive uses within a road or railway attenuation area	
Objective: To minimise the effects of noise, vibration, light and air emissions on lots for sensitive uses within a road or railway attenuation area, from existing and future major roads and the rail network.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A lot, or a lot proposed in a plan of subdivision, intended for a sensitive use must have a building area for the sensitive use that is not within a road or railway attenuation area. **Performance Criteria P1** A lot, or a lot proposed in a plan of subdivision, intended for sensitive uses within a road or railway attenuation area, must be sited, designed or screened to minimise the effects of noise, vibration, light and air emissions from the existing or future major road or rail network, having regard to: a) the topography of the site; b) any buffers created by natural or other features; c) the location of existing or proposed buildings on the site; d) the frequency of use of the rail network; e) the speed limit and traffic volume of the road; f) any noise, vibration, light and air emissions from the rail network or road; g) the nature of the road; h) the nature of the intended uses; i) the layout of the subdivision; j) the need for the subdivision; k) any traffic impact assessment; l) any mitigating measures proposed; m) any recommendations from a suitably qualified person for mitigation of noise; and n) any advice received from the rail or road authority.	**Acceptable Solution A1 is not applicable** As the development does not propose any buildings for sensitive uses, Acceptable Solution A1 is not applicable.

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6. Conclusion

An assessment of the traffic impacts associated with the proposed development of a bauxite mine located off Porters Bridge Road near Reedy Marsh has been prepared in accordance with the department of State Growth's Publication *Traffic Impact Assessment Guidelines (August 2020)* and with reference to the *Tasmanian Planning Scheme – Meander Valley*. The results of the assessment are summarised below:

- State Growth has provided crash data along the full extent of Porters Bridge Road for the most recent 10-year period. The crash history denotes that there are no crash patterns of concern along Porters Bridge
- The traffic impact on Porters Bridge Road as a result of the traffic generated by the proposed development is expected to be minimal post development and 30-years post development and the level of service at the Meander Valley Road/ Porters Bridge Road intersection for the Porters Bridge Road approach is expected to be LOS B post development and 30-years post development
- The traffic impact on Meander Valley Road is expected to be negligible with respect to the overall operation of the road
- While the additional traffic generated by the proposed development may impact the amenity of the road with consideration to vehicle travel speeds and the need to pass heavy vehicles more often, the generated traffic volumes are low (one movement every two to three minutes during development peak periods along Porters Bridge Road) and subject to the recommendations presented within this report in Table 9 being implemented, is not anticipated to significantly impact the safety or operation of the surrounding road network
- Although detail for the construction phases of the proposed development is currently not confirmed, based on anticipated traffic generation during construction, the development is not expected to have an adverse effect on the safety and operation of the site access and Porters Bridge Road during construction
- Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations can navigate the intersection in a forward direction
- Sight distances from the site access to vehicles travelling along Porters Bridge Road met the relevant requirements of AS 2890.2 for access driveways for a minimum 5s gap, should vegetation located north of the site access on the eastern side of Porters Bridge Road, be removed. Note that this requires the removal of vegetation within the road reserve, as well as within 340 Porters Bridge Road. This sight distance assessment takes into consideration the increased time required for acceleration and braking for heavy vehicles
- The existing arrangement of no provision of turn lanes is considered suitable for both the Meander Valley Road/ Porters Bridge Road intersection and the site access; and
- As the site is large, there is expected to be sufficient space for vehicles travelling to and from the site to park; and
- As the site is large, there is expected to be sufficient space for vehicles enter the site in a forward direction, turn around, and exit the site in a forward direction.

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Site Plans

Appendix A

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure

- ROM Pad
- Laydown
- Site Parking
- Admin

Roads

- Public Road
- Main Access Road
- Internal Haul Roads

Site Pits

- Pit 1
- Pit 2

Other

- Proposed Mining Lease Area
- Proposed Disturbance Area

N

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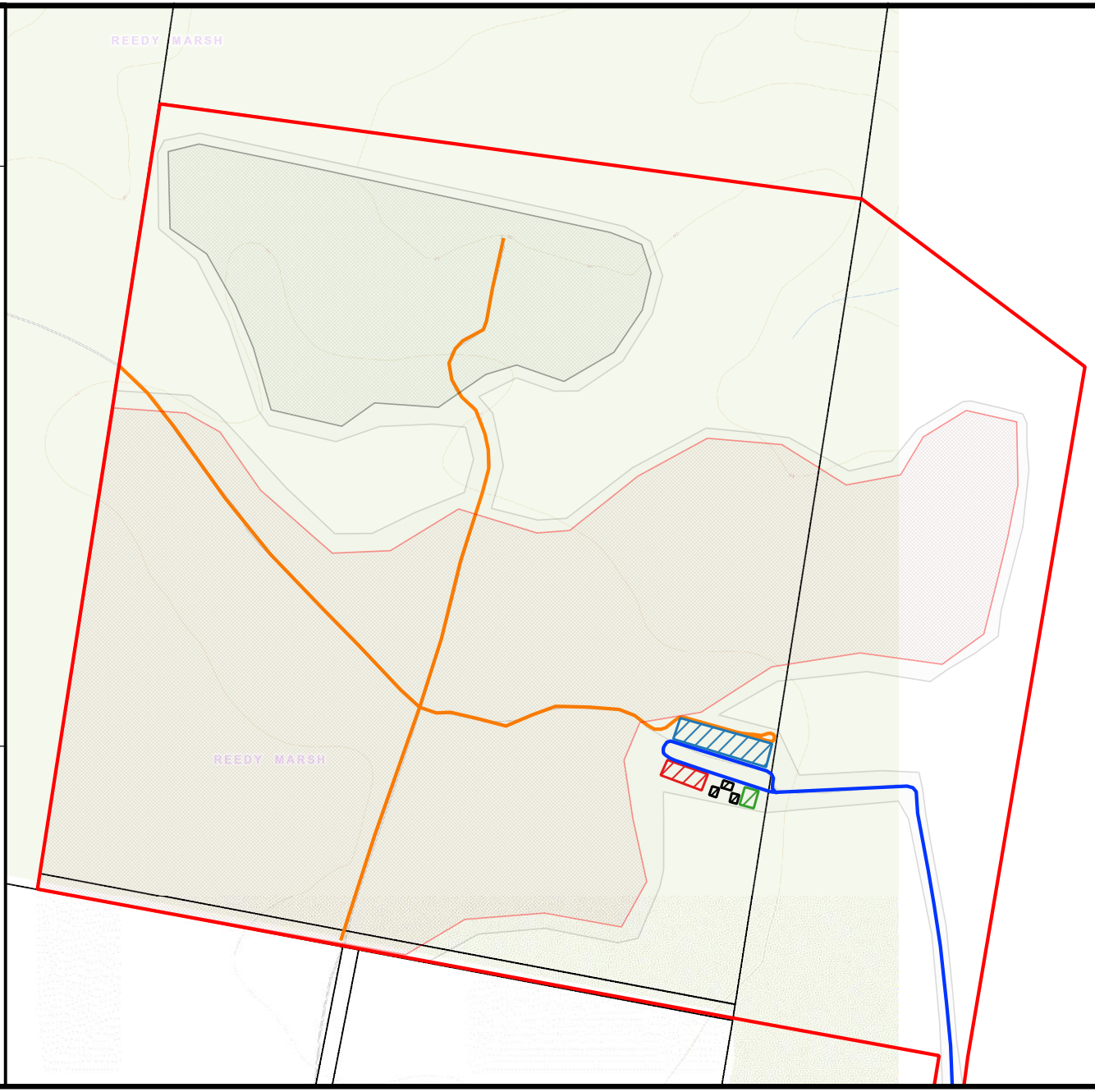

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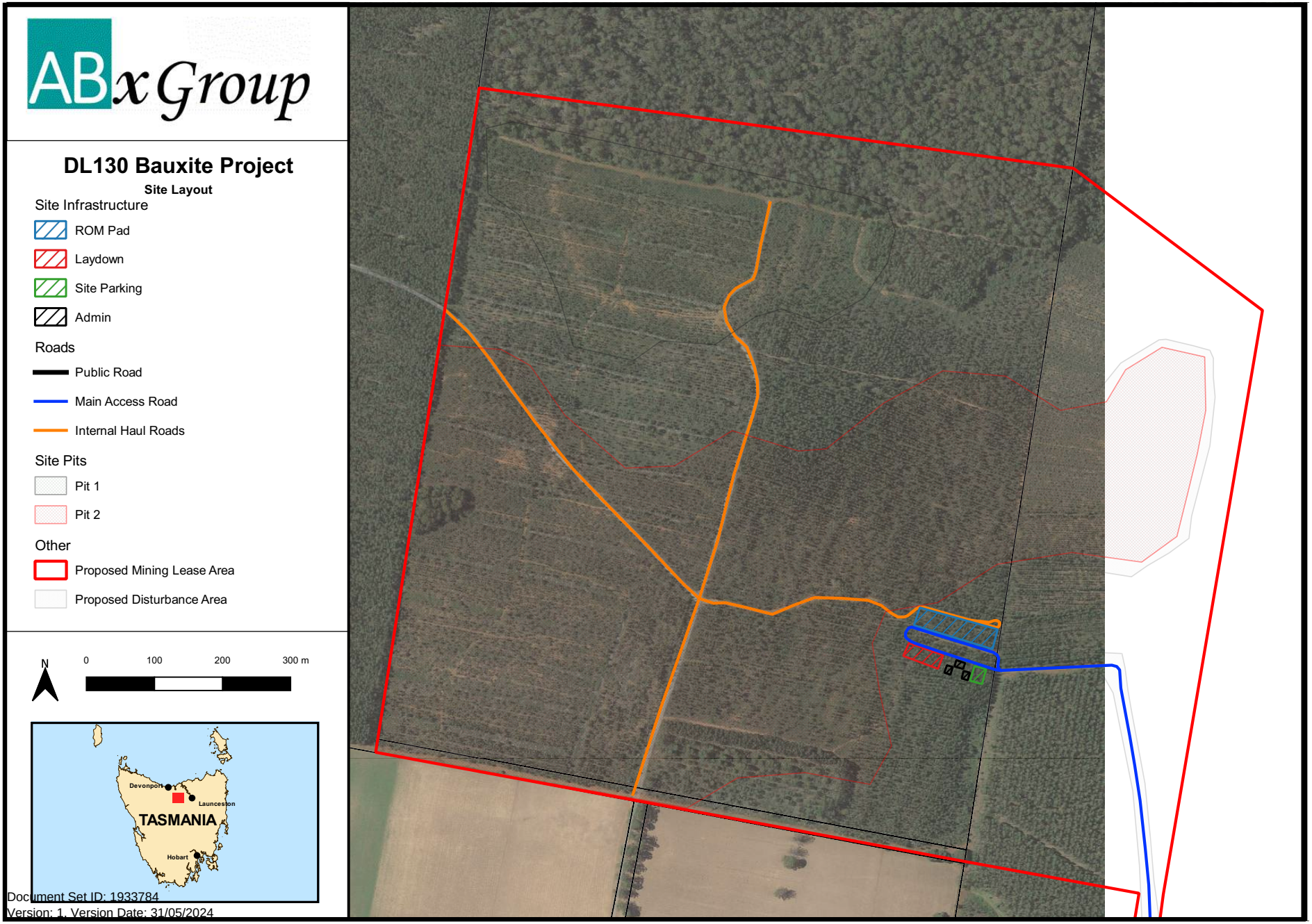

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure
- ROM Pad
- Laydown
- Site Parking
- Admin

Roads
- Public Road
- Main Access Road
- Internal Haul Roads

Site Pits
- Pit 1
- Pit 2

Other
- Proposed Mining Lease Area
- Proposed Disturbance Area

N

0 100 200 300 m

Document Set ID: 1933784
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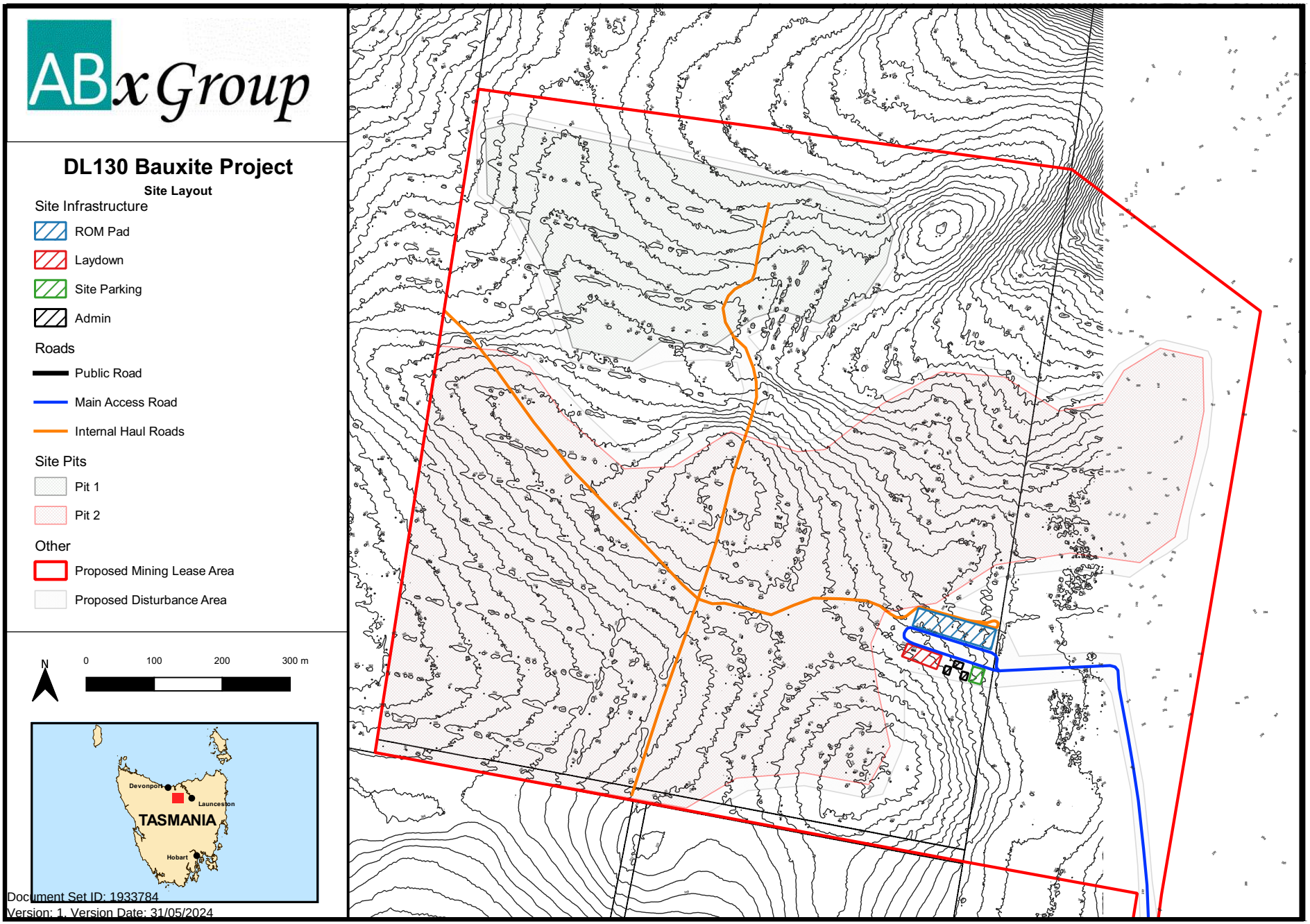

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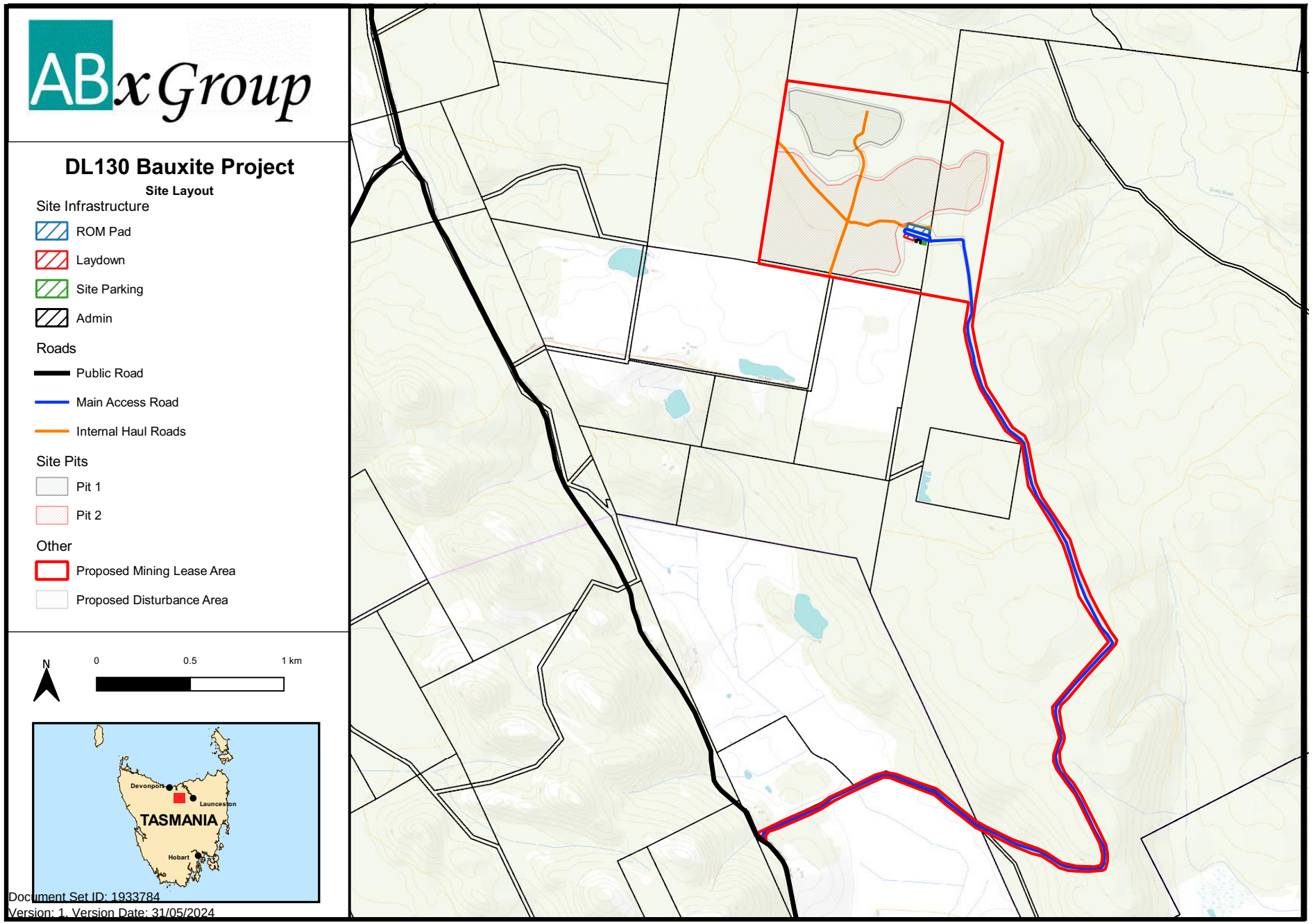

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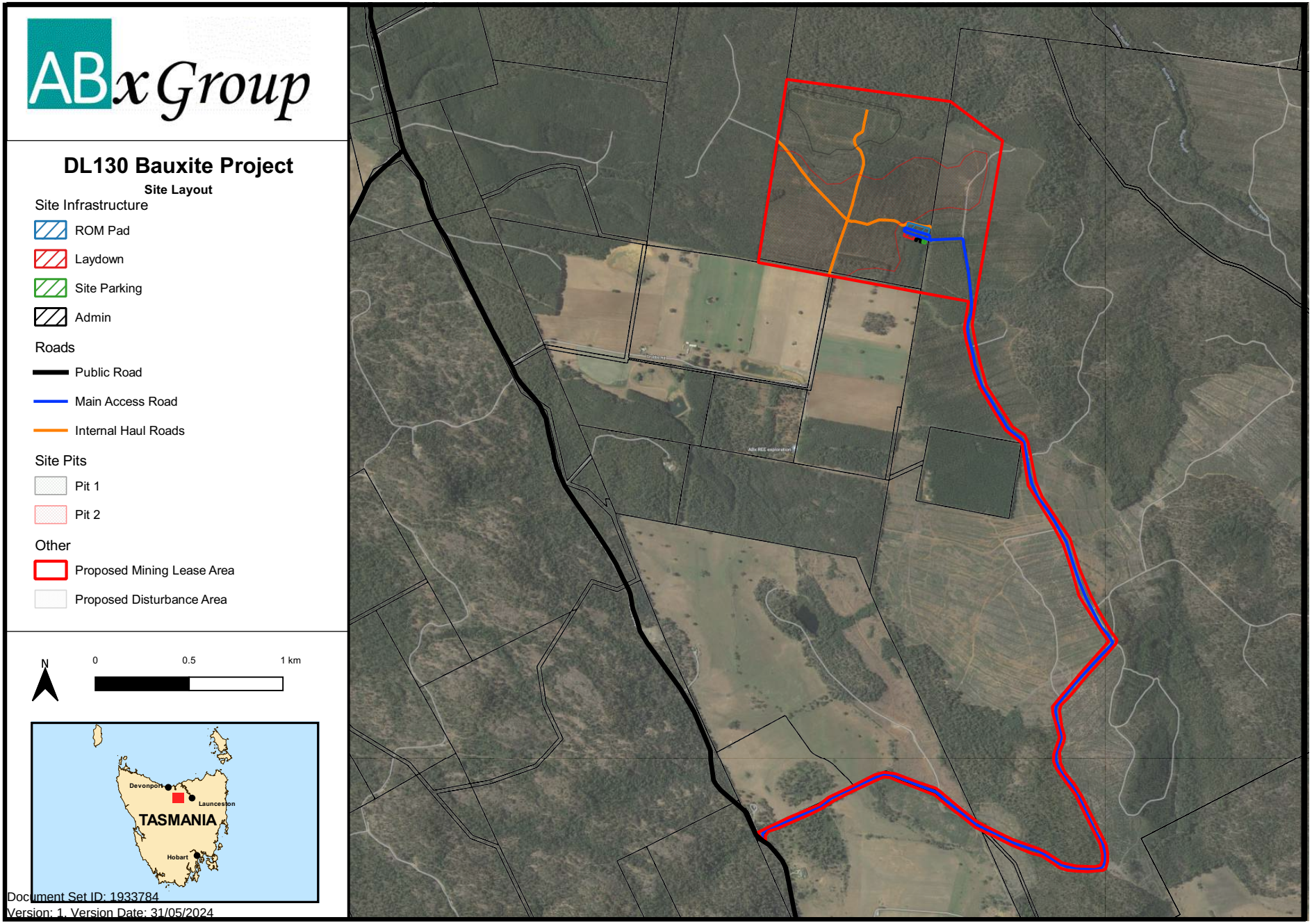

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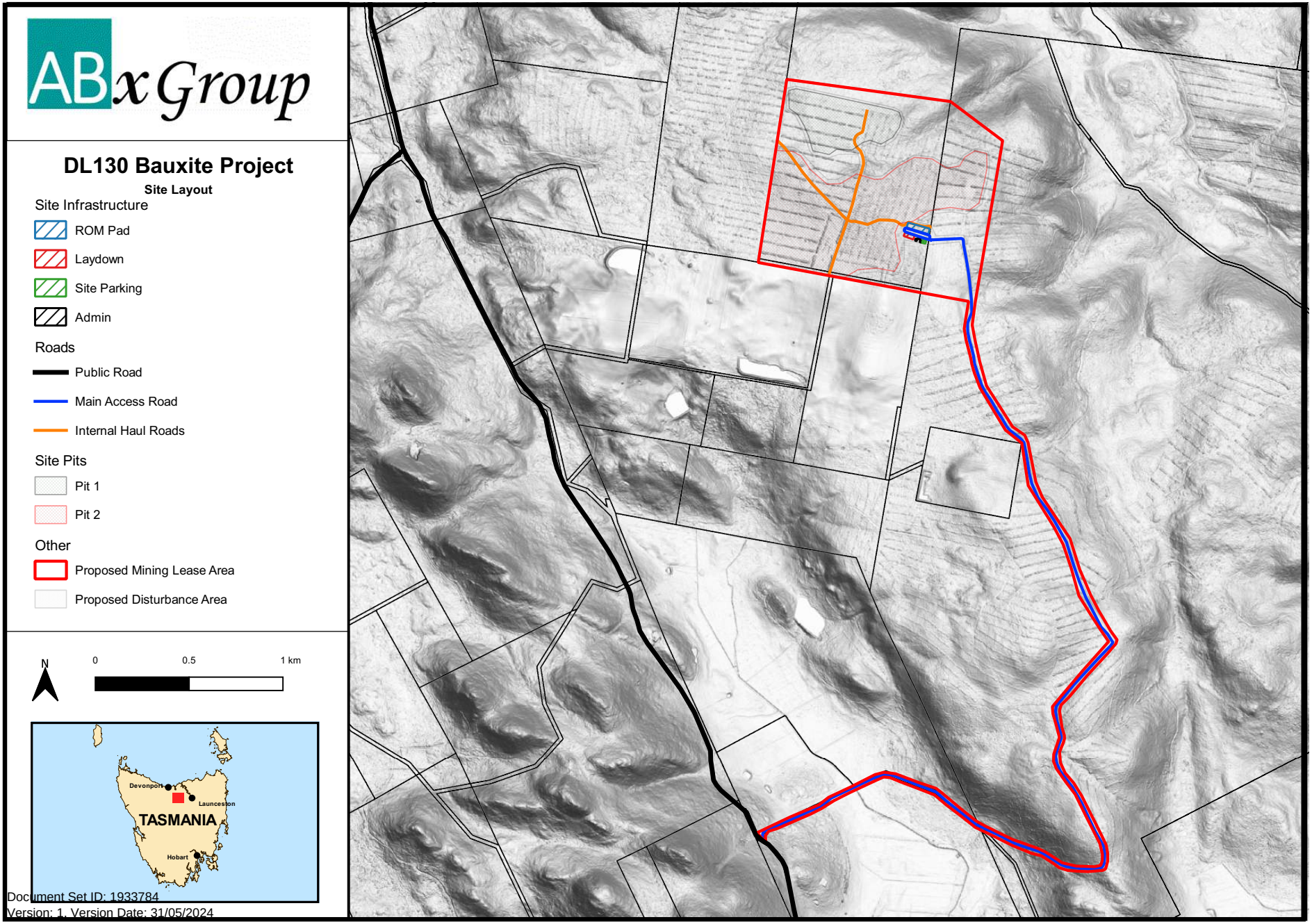

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure

- ROM Pad
- Laydown
- Site Parking
- Admin

Roads

- Public Road
- Main Access Road
- Internal Haul Roads

Site Pits

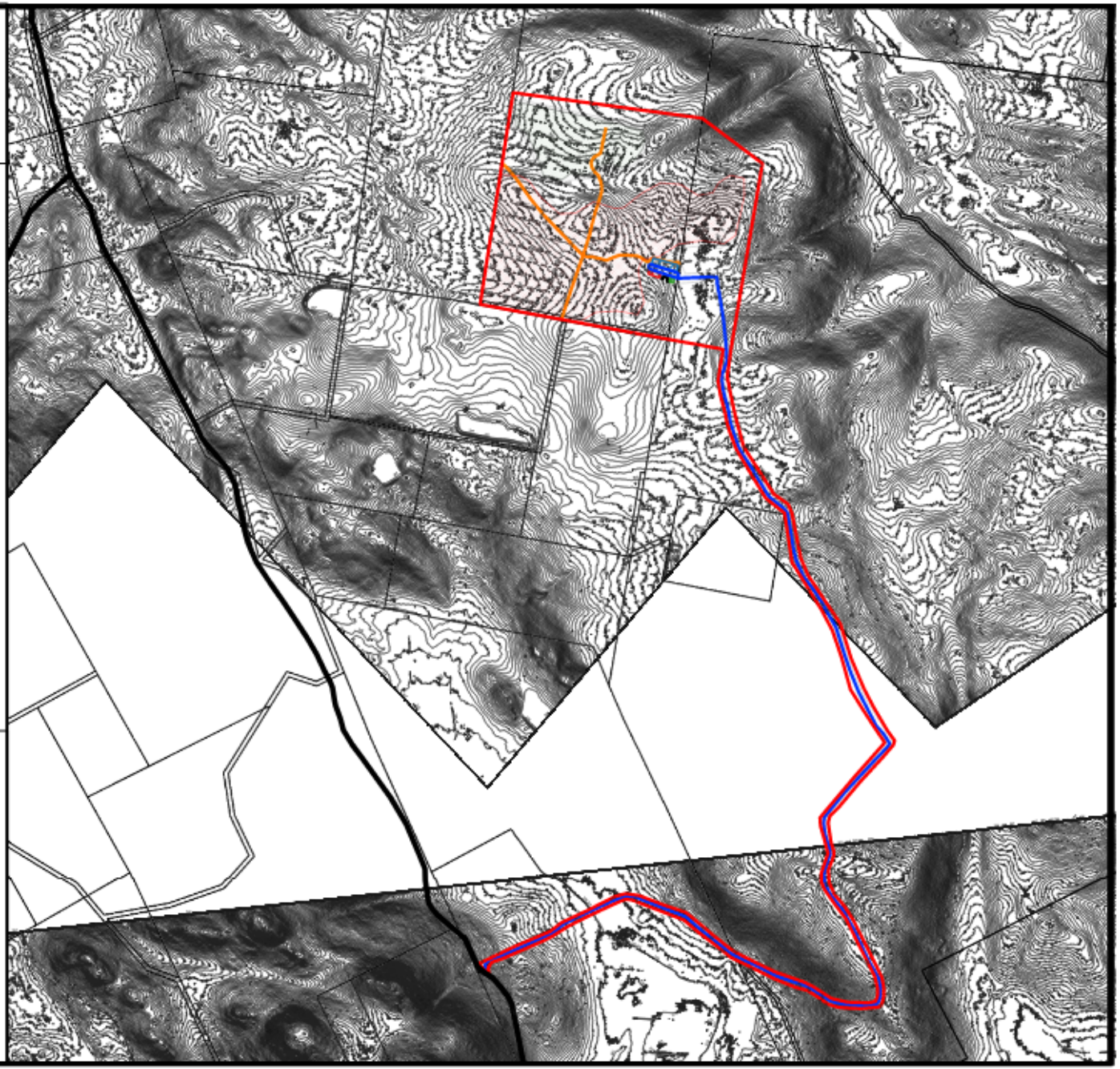
- Pit 1
- Pit 2

Other

- Proposed Mining Lease Area
- Proposed Disturbance Area

N

0 0.5 1 km



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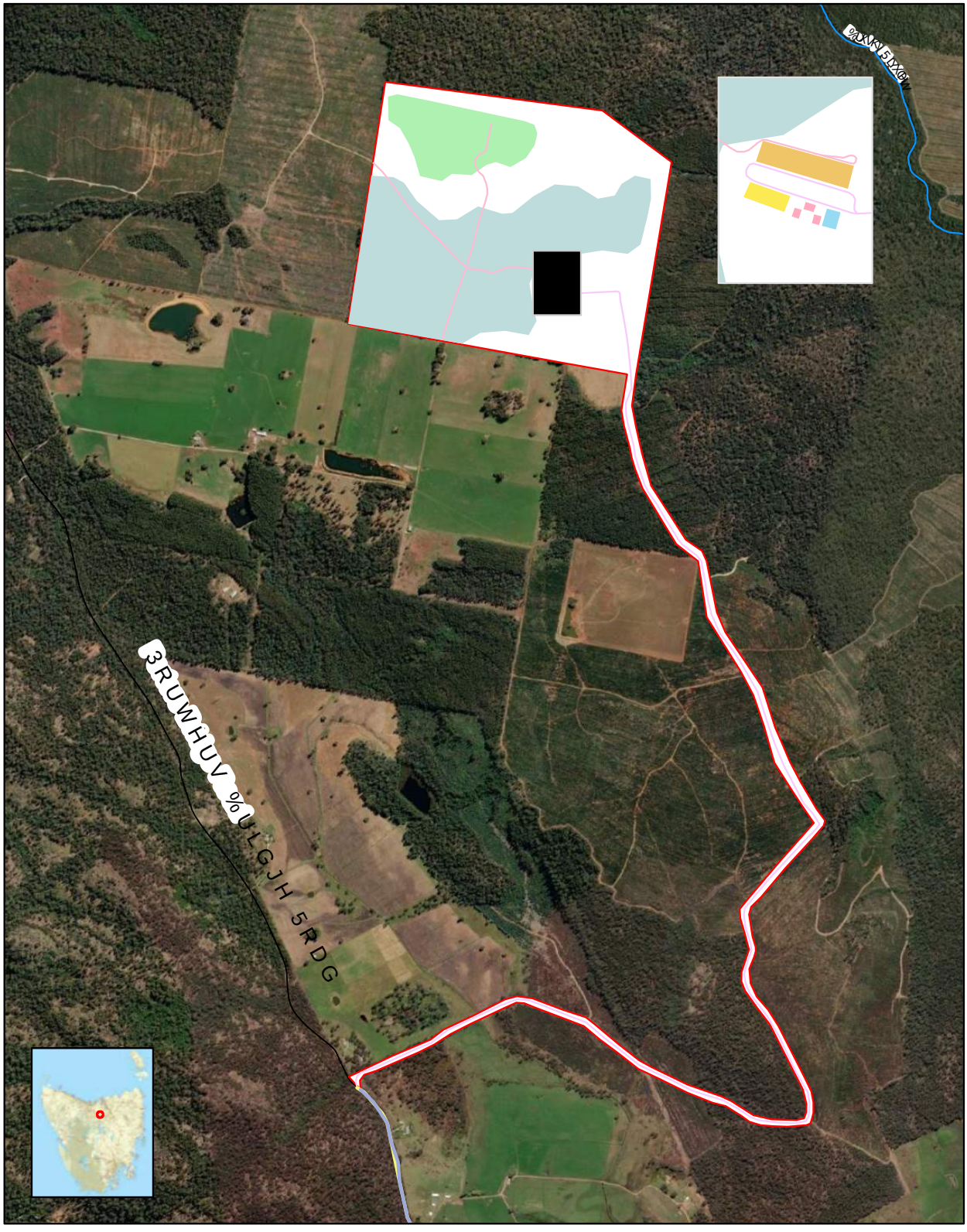

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SIDRA Analysis – post development

Appendix B

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Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - PD AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - PD AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	84	13.0	84	13.0	0.057	0.0	LOS A	0.1	0.8	0.07	0.07	0.07	79.0
6	R2	All MCs	6	50.0	6	50.0	0.057	10.9	LOS B	0.1	0.8	0.07	0.07	0.07	59.7
Approach			91	15.6	91	15.6	0.057	0.8	NA	0.1	0.8	0.07	0.07	0.07	77.2
North: Porters Bridge Road															
7	L2	All MCs	4	50.0	4	50.0	0.013	10.4	LOS B	0.0	0.7	0.28	0.62	0.28	51.4
9	R2	All MCs	4	50.0	4	50.0	0.013	11.8	LOS B	0.0	0.7	0.28	0.62	0.28	50.8
Approach			8	50.0	8	50.0	0.013	11.1	LOS B	0.0	0.7	0.28	0.62	0.28	51.1
West: Meander Valley Road															
10	L2	All MCs	6	50.0	6	50.0	0.052	8.0	LOS A	0.0	0.0	0.00	0.05	0.00	55.7
11	T1	All MCs	82	13.0	82	13.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	79.5
Approach			88	15.6	88	15.6	0.052	0.6	NA	0.0	0.0	0.00	0.05	0.00	77.1
All Vehicles			187	17.2	187	17.2	0.057	1.1	NA	0.1	0.8	0.05	0.08	0.05	75.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - PD PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - PD PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	116	13.0	116	13.0	0.071	0.0	LOS A	0.1	0.5	0.04	0.04	0.04	79.4
6	R2	All MCs	4	50.0	4	50.0	0.071	10.3	LOS B	0.1	0.5	0.04	0.04	0.04	60.3
Approach			120	14.3	120	14.3	0.071	0.4	NA	0.1	0.5	0.04	0.04	0.04	78.6
North: Porters Bridge Road															
7	L2	All MCs	6	50.0	6	50.0	0.021	10.5	LOS B	0.1	1.1	0.31	0.63	0.31	51.1
9	R2	All MCs	6	50.0	6	50.0	0.021	12.4	LOS B	0.1	1.1	0.31	0.63	0.31	50.5
Approach			13	50.0	13	50.0	0.021	11.5	LOS B	0.1	1.1	0.31	0.63	0.31	50.8
West: Meander Valley Road															
10	L2	All MCs	4	50.0	4	50.0	0.054	7.9	LOS A	0.0	0.0	0.00	0.03	0.00	56.0
11	T1	All MCs	89	13.0	89	13.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.6
Approach			94	14.7	94	14.7	0.054	0.4	NA	0.0	0.0	0.00	0.03	0.00	78.2
All Vehicles			226	16.4	226	16.4	0.071	1.0	NA	0.1	1.1	0.04	0.07	0.04	76.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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SIDRA Analysis – 30-years post development

Appendix C

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Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - 30-years PD AM Peak (Site Folder: 30-years PD)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - 30-years PD AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	148	13.0	148	13.0	0.099	0.0	LOS A	0.2	1.4	0.08	0.08	0.08	78.9
6	R2	All MCs	9	50.0	9	50.0	0.099	14.4	LOS B	0.2	1.4	0.08	0.08	0.08	59.7
Approach			158	15.2	158	15.2	0.099	0.9	NA	0.2	1.4	0.08	0.08	0.08	77.4
North: Porters Bridge Road															
7	L2	All MCs	6	33.0	6	33.0	0.021	10.2	LOS B	0.1	0.8	0.36	0.65	0.36	55.0
9	R2	All MCs	6	33.0	6	33.0	0.021	12.7	LOS B	0.1	0.8	0.36	0.65	0.36	54.5
Approach			13	33.0	13	33.0	0.021	11.4	LOS B	0.1	0.8	0.36	0.65	0.36	54.8
West: Meander Valley Road															
10	L2	All MCs	9	50.0	9	50.0	0.090	8.0	LOS A	0.0	0.0	0.00	0.04	0.00	55.8
11	T1	All MCs	144	13.0	144	13.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	79.5
Approach			154	15.3	154	15.3	0.090	0.5	NA	0.0	0.0	0.00	0.04	0.00	77.5
All Vehicles			324	15.9	324	15.9	0.099	1.1	NA	0.2	1.4	0.06	0.08	0.06	76.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\nashlin\OneDrive - pitt&sherry\Desktop\P.22.0828\SIDRA modelling.sip9

MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - 30-years PD PM Peak (Site Folder: 30-years PD)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - 30-years PD PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	203	13.0	203	13.0	0.122	0.0	LOS A	0.1	0.7	0.04	0.04	0.04	79.4
6	R2	All MCs	6	33.0	6	33.0	0.122	12.0	LOS B	0.1	0.7	0.04	0.04	0.04	65.4
Approach			209	13.6	209	13.6	0.122	0.4	NA	0.1	0.7	0.04	0.04	0.04	78.9
North: Porters Bridge Road															
7	L2	All MCs	7	43.0	7	43.0	0.031	11.0	LOS B	0.1	1.4	0.42	0.68	0.42	51.3
9	R2	All MCs	7	43.0	7	43.0	0.031	15.5	LOS C	0.1	1.4	0.42	0.68	0.42	50.8
Approach			15	43.0	15	43.0	0.031	13.2	LOS B	0.1	1.4	0.42	0.68	0.42	51.0
West: Meander Valley Road															
10	L2	All MCs	6	33.0	6	33.0	0.094	7.6	LOS A	0.0	0.0	0.00	0.02	0.00	60.9
11	T1	All MCs	158	13.0	158	13.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	79.6
Approach			164	13.8	164	13.8	0.094	0.3	NA	0.0	0.0	0.00	0.02	0.00	78.7
All Vehicles			388	14.8	388	14.8	0.122	0.8	NA	0.1	1.4	0.04	0.06	0.04	77.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Swept paths

Appendix D

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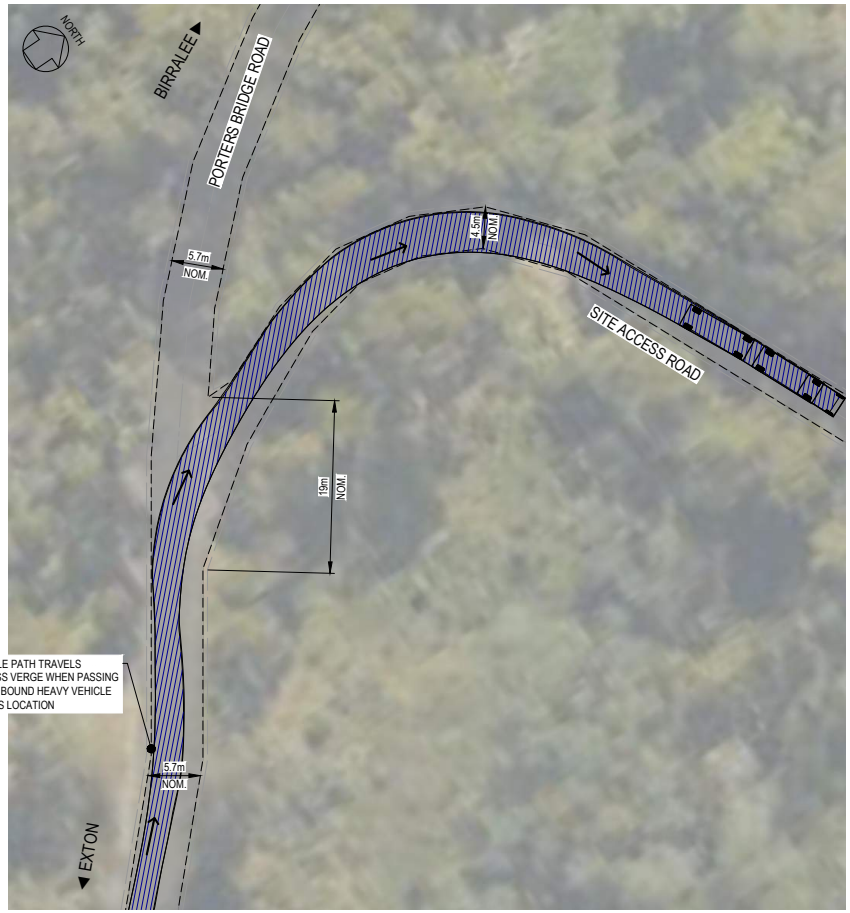
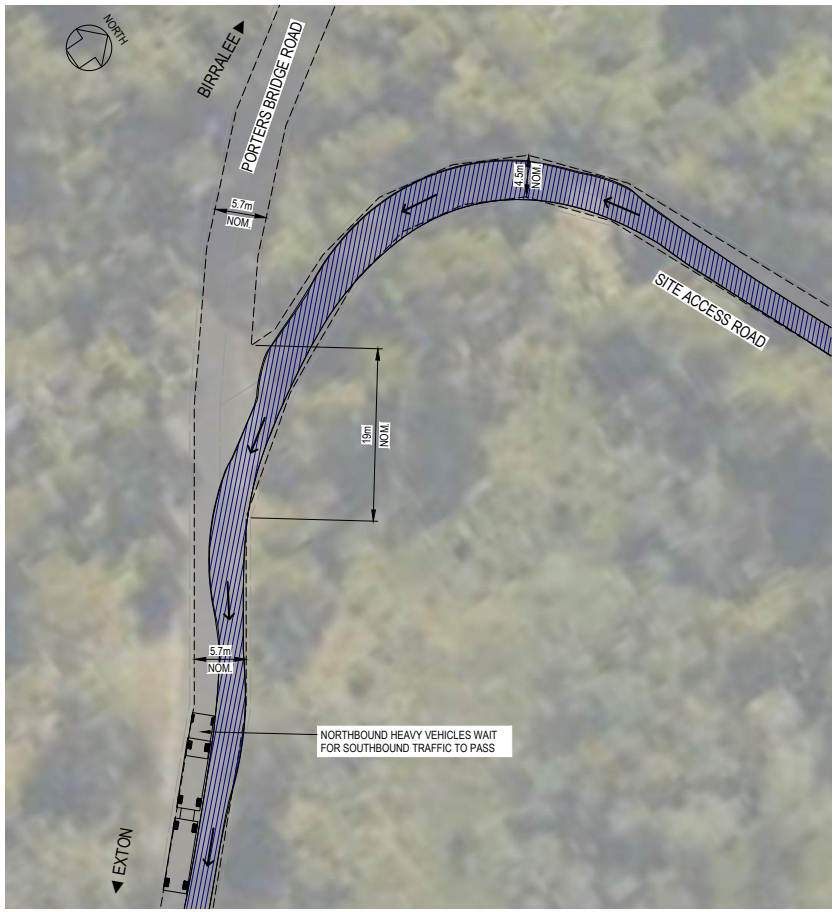
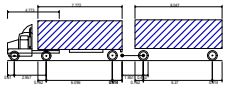


NORTHBOUND VEHICLE
SCALE 1:500



SOUTHBOUND VEHICLE
SCALE 1:500

TRUCK & DOG COMBINATION



Overall Length	19.812m
Overall Width	2.591m
Overall Body Height	3.753m
Min Body Ground Clearance	0.407m
Max Track Width	2.591m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	13.716m

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	VEHICLE SIZE UPDATED	MM	LAL	LAL	14/02/2024
		MM	NA	LAL	20/12/2023

APPROVED
ORIGINAL COPY ON FILE "e" SIGNED BY
SIGNED
DATE

SCALE (PLOTTED FULL SIZE) 1:500m (A3)
SHEET SIZE A3
5 0 5 10 15 20
SCALE IN METRES - 1:500

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CLIENT ABX GROUP LIMITED
PROJECT BAUXITE PROJECT TRAFFIC ASSESSMENT
STATUS PRELIMINARY

DRAWING TITLE VEHICLE SWEPT PATHS TRUCK & DOG (19.8m)
DATUMS: AHD / MGA
CLIENT No.: ~
DRAWING No. S-P.22.0828-00-DRG-CIV-1101
REVISION A
PRINT IN COLOUR
Feb. 14, 24 - 15:20:30 Name: S-P.22.0828-00-DRG-CIV-1101.dwg

pitt&sherry

DL130 Bauxite Mine Traffic Impact Assessment

Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

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Located nationally —
Melbourne
Sydney
Brisbane
Hobart
Launceston
Newcastle
Devonport

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Environmental Site Assessment (in the form of a Site History Review)

Appendix C

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DL130 Bauxite Project

Site History Review

Prepared for
ABx Group Limited

Client representative
Nathan Towns

Date
23 August 2023

Rev00

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Figure 1: DL130 Bauxite Project: Site Location

Figure 2: DL130 Bauxite Project Topography

Figure 3: DL130 Bauxite Project Zoning

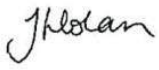
Appendix B — Groundwater Information Access Portal

Appendix C — Historical Aerial Images

Appendix D — WST communication

Appendix E — Site Visit Photographs

Appendix F — Safety Data Sheets

Prepared by — Jessica Holan		**Date —** 17 August 2023
Reviewed by — Fiona Keserue-Ponte		**Date —** 17 August 2023
Authorised by — Fiona Keserue-Ponte		**Date —** 17 August 2023

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
A	Draft for internal review	JH	FKP	FKP	26/05/2023
B	Draft for internal review	JH	FKP	FKP	27/06/2023
C	Draft for client review	JH	FKP	FKP	05/07/2023
00	Final for council	JH	FKP	FKP	17/08/2023

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Abbreviations

Abbreviation	Description
Abx	ABx Group Limited
AHD	Australian Height Datum
ASC NEPM	*National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013*
ASS	Acid Sulfate Soils
CEMP	Construction Environmental Management Plan
CEnvP SC	Certified Environmental Practitioner Site Contamination Specialist
CHMA	Cultural Heritage Management Australia
CSM	Conceptual Site Model
DA	Development Application
ECOtas	Environmental Consulting Options Tasmania
EER	Environmental Effects Report
EIANZ	Environment Institute of Australia and New Zealand
EMPCA	*Environmental Management and Pollution Control Act 1994*
EPA	Environment Protection Authority (Tasmania)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
g/ha	grams per hectare (g/ha)
ha	hectare
kg/ha	kilogram per hectare
LISTmap	Land Information System Tasmania interactive mapping tool
L/ha	litres per hectare (l/ha)
mL/ha	millilitre per hectare
NRE	Department of Natural Resources and Environment Tasmania
OECD	Organisation for Economic Co-operation and Development
OEMP	Operation Environmental Management Plan
PCLC	Potentially Contaminated Land Code under the *Tasmanian Planning Scheme – Meander Valley*
PC	*Phytophthora cinnamomi*
PID	Property Identification Number
Property	The proposed excavation pits (the Site) plus the access roads as defined on Figure 1
TASVEG	The Digital Vegetation Map of Tasmania

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Abbreviation	Description
SHR	Site History Review
Site	The proposed excavation pits as defined on Figure 1
SPR	Source-pathway-receptor
SWL	Standing water level
UPSS	Underground Petroleum Storage System
WST	WorkSafe Tasmania
wmt	wet metric tonnes

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Executive summary

ABx Group Limited (ABx) proposes to develop a new bauxite mine, which it has named DL130 Project. The proposed mine will be located adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of the Deloraine township in Tasmania.

The land has previously been cleared and is currently operated by forestry management company Forico. The Site is dominated by intensively managed softwood plantation (*Pinus radiata*). The land has been recently harvested and replanted (in quarters 3 and 4 (Q3/Q4) 2022).

As the proposed mine requires a planning permit, the use and development will be assessed against the Tasmanian Planning Scheme – Meander Valley (the Scheme). Given the nature of the Site being exposed to potential contamination from forestry activities, C14 Potentially Contaminated Land Code (PCLC) applies to the Scheme assessment. Under the PCLC, an Environmental Site Assessment (ESA) is required to demonstrate that the Property is suitable for the proposed use. The ESA undertaken in this case is in the form of a Site History Review (SHR). Pitt & Sherry Operations Pty Ltd (pitt&sherry) was engaged by ABx to compile the SHR.

On the basis of the SHR review findings and Site visit observations, there is limited potential for contamination to have occurred on the Site from historical and current uses. Contamination risks associated with activities on the Site include:

- **Hydrocarbons from fuel or oil spills, or leakage from the use of mobile equipment during forestry activities**: Although spills and leaks may have occurred, any fuel or oil contamination would likely be surficial and localised as fuel or oils are not typically stored in plantation areas; and
- **Herbicides associated with treatment and prevention of weeds prior to plantation:** herbicides are likely to have been applied in early 2022, prior to replanting. Most herbicides (though not all) biodegrade within months and typically within a year of application.

Three of the nine herbicides/additives (Garlon - Triclopyr , Verdict 520 – Haloxyfop and Outright 770 - Spray Adjuvant (additive)) used on the Site can be persistent in soils. None of these are likely to be toxic to humans or fauna at the concentrations that are likely to still persist in the Site soils. Those that may be toxic to humans or fauna will have likely degraded by the time of development (expected to be late 2023). However, the three potentially persistent herbicides/additives may be toxic to (non-threatened) natural vegetation to the north and aquatic fauna. It is recommended that soil testing be carried out prior to development to confirm the presence and residual concentrations of persistent herbicides. This is best completed shortly before land disturbance begins, as the herbicides are continuously degrading.

The contamination risk posed by each contamination type is assessed as follows (refer Table 6 for details):

- Fuel and oil contaminated soils from spills or leaks:
  - Is unlikely to be encountered
  - Impact would be very localised
  - Any impacted soils which may be encountered can be managed via appropriate contamination management measures to be outlined in the recommended construction environmental management plan (CEMP)
  - Any residual management measures from the CEMP which are applicable during operations should be carried through to the recommended operational environmental management plan (OEMP); and
  - The risk to identified human health and ecological receptors is considered to be LOW.
- Herbicide contaminated topsoils from forestry activities:
  - Likely presence of low residual concentrations of the more persistent herbicides

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- Unlikely to affect human health or terrestrial fauna due to the short half-life of those that affect fauna and humans, and the time elapsed since the last application (likely around 6-12 months prior to the date of this report). Furthermore, mine pre-works / pre-stripping will not begin until around November 2023, which will allow additional time for persistent herbicides to further biodegrade
- There are risks from persistent herbicides which are potentially toxic to (non-threatened) natural vegetation to the north and to aquatic life in the minor tributary of Brushy Rivulet (Figure 2, Appendix A). Risks can be managed via appropriate erosion and runoff containment measures of the stockpiled topsoil to be outlined within and implemented through the recommended CEMP. The recommended OEMP can include any measures to ensure any herbicide-impacted stockpiled soils remain contained, and are prevented from eroding into sediment ponds, waterways or vegetated areas to the north of the Site; and
- The risk is considered to be MEDIUM for identified native vegetation and for aquatic ecosystems.

On the basis of the risk posed by the identified contamination, recommendations for soil management have been detailed in Section 7 of the SHR.

Statement:

The excavation work associated with the proposed development satisfies P1(c) under clause C14.6.1 of the PCLC if the topsoil management measures outlined under Recommendations in Section 7 are followed.

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1. Introduction

1.1 Background

ABx Group Limited (ABx) proposes to develop a new bauxite mine, which it has named DL130 Project. The proposed mine will be located adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of the Deloraine township in Tasmania. Figure 1, Appendix A, shows the location of the DL130 Project within the Reedy Marsh region and Figure 2, Appendix A shows the hydrology and topography of the general area. The life of the operation is anticipated to be up to 20 years and is expected to:

- Produce up to 56,000 tonnes of bauxite ore per annum through shallow surface excavation; and
- Extract up to 1,400,000 wet metric tonnes (wmt) and screen up to 1,100,000 wmt over the life of operation.

A Mining Lease Application will be submitted to Mineral Resources Tasmania (MRT). The proposed mining lease area (the Property) will include the pits to be excavated (within the Site area defined in Figure 1) as well as the access road and administration areas.

The land has previously been cleared and is currently operated by forestry management company Forico. The Site is dominated by intensively managed softwood plantation (*Pinus radiata*). The land has been recently harvested and replanted (calendar Q3/Q4 2022)

ABx has recently completed operations and final rehabilitation at a similar bauxite mine site at Bald Hill, located 6 km northwest of Campbell Town, in Tasmania.

1.2 Objective

As the proposed mine requires a planning permit, the use and development will be assessed against the Tasmanian Planning Scheme – Meander Valley (the Scheme). Given the nature of the Site being exposed to potential contamination from forestry activities, C14 Potentially Contaminated Land Code (PCLC) applies to the Scheme assessment. Refer to Section 5.

Under the PCLC, an Environmental Site Assessment (ESA) is required to demonstrate that the Property is suitable for the proposed use. The ESA undertaken in this case is in the form of a Site History Review (SHR).

The objectives of this SHR are to compile publicly-available information on the historical and current uses of the Property and immediate surrounds, and assess:

- The potential for contamination to be present on the Property
- The potential for possible contamination from offsite to impact on the Property
- The risks posed by any potential contamination to human health and/or the environment from the Property (during the proposed redevelopment (i.e. quarrying, mining and associated required works)
- Whether any intrusive investigations are required to help inform the likely contamination status of the Property; and
- Whether any specific remediation and/or protection measures (i.e. management) are required to be implemented.

This SHR has been reviewed by Fiona Keserue-Ponte, who is a Certified Environmental Practitioner Site Contamination Specialist (CEnvP SC) under the Environment Institute of Australia and New Zealand (EIANZ). The author of the SHR also consulted regularly with Fiona Keserue-Ponte during the SHR work.

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1.3 Scope of works

The scope of work included the following for the SHR:

- Walkover of areas of the Property with the Operations Manager of ABx
- Obtain and review historical information pertaining to the Property and immediate surrounds
- Assess the suitability of the Property for the proposed development (from a contamination perspective)
- Demonstrate that the use and development will satisfy the relevant Performance Criteria of the PCLC; and
- Compile the findings into a SHR (this report).

1.4 Legislation

The SHR was undertaken in general accordance with the following legislation and guidelines:

- *Environmental Management and Pollution Control Act 1994 (EMPCA)* and relevant Regulations
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (ASC NEPM); and
- Potentially Contaminated Land Code in the State Planning Provisions applicable to the Tasmanian Planning Scheme – Meander Valley.

1.5 Limitations

Limitation of this SHR include:

- No intrusive investigation (i.e. sampling) was completed
- Neighbouring properties were only inspected from the outside of their boundaries
- The Property walkover was limited to the main existing disturbance areas and not all of the Property area was inspected; and
- Preparation of a contamination management plan or construction environmental management plan (CEMP; or equivalent) or operation environmental management plan (OEMP; or equivalent) to manage any identified contamination and associated risks to human health and/or the environment was outside the scope of the SHR.

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2. Property setting

2.1 Property identification

Property identification details are provided in Table 1.

Table 1: DL130 location and title information

Item	Detail
Location	• The Property is located in Reedy Marsh off Porter's Bridge Road approximately 10 km northeast of the Deloraine township in Tasmania.
Title information	• The Property area will overlap portions of three cadastral parcels, which all have the address Porters Bridge Road, Reedy Marsh. The cadastral parcels have the following property identification numbers (PID) and title references: o PID: 7033091, Title Reference: 229773/1 o PID: 7033091, Title Reference: 148606/1 o PID: 6274360, Title Reference: 214055/1; and • To the north and to the northeast of the Property is a Permanent Timber Production Zone
Land zoning	• Rural Zone over the majority of the Property • The access road is within an area zoned as Agricultural • Brushy Rivulet Conservation Area is adjacent to the northern Property boundary, and is zoned Environmental Management • All other surrounding areas are zoned either Rural or Agricultural; and • Refer to Figure 3, Appendix A for zoning.
Land tenure	• The DL130 is situated on private freehold land, most of the proposed development area including the pits are located within the Rural Zone, the existing access road intersects an area zoned as Agricultural Zone. Re-zoning is not required for DL130; and • The Project Area is currently managed by forestry management company Forico and has been recently harvested and re-planted with softwood plantation (*Pinus radiata*).
Use Class and permissibility	• The use class for the Site under the Scheme is 'Extractive Industry'; and • The 'Extractive Industry' use class is a Permitted use in the Rural Zone and Discretionary in the Agricultural Zone.
Exploration Lease (EL)	• The Property is currently contained within EL9/2010.
Property area	• Approximately 150 hectares (ha).
Current Owner	• Forico Pty Limited; the Property will be leased to ABx.
Local Government	• Meander Valley Council.

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Item	Detail
Planning Scheme Overlays	The following Scheme overlays overlap the Property: • Priority vegetation areas • Low landslip hazard band • Bushfire-prone areas; and • Waterways and coastal protection areas.

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2.2 Previous Property assessments

The following assessments have been completed at the Property for the proposed development:

- Cultural Heritage Management Australia (CHMA; 2022a) ABx Group Deloraine Bauxite Mine Project, Porters Bridge Road Exton, Aboriginal Heritage Assessment Northern Tasmania
- CHMA (2022b) ABx Group Deloraine Bauxite Mine Project, Porters Bridge Road Exton/Reedy Marsh, Historic Heritage Assessment Northern Tasmania
- Environmental Consulting Options Tasmania (ECOtas; 2022). Natural Values Assessment of Proposed Bauxite Mine DL-130, Reedy Marsh, Tasmania. Report by Environmental Consulting Options Tasmania (ECOtas) for ABx Group, 24 October 2022
- pitt&sherry (2023) DL130 Bauxite Project Stormwater Management Plan; and
- pitt&sherry (2023) DL130 Bauxite Project Environmental Effects Report

2.3 Property environmental setting

Available information on the environmental setting of the Property is summarised in Table 2.

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Table 2: Property environmental setting

Feature	Description	Information Sources
Infrastructure features	• Gravel access road.	CHMA 2014a Site visit
Elevation	• 300-310 m Australian height datum (AHD).	LISTmap
Topography	• The Property is a broad north-south orientated ridge with a gradual slope to the east and west. The Site is on the highest part of the Property.	LISTmap
Surface water	• Figure 2 (Appendix A) indicates the location of the hydrology of the area • A minor tributary of Brushy Rivulet flows from the Site but is not within the proposed pits • The Meander River is located 1.3 km south of the access road off Porters Bridge Road and 4 km south of the Site; and • A tributary of the Meander River passes under the access road. During the Site visit (7/6/2023) , vegetation clearing had occurred along the banks upstream of the access road, and water quality appeared turbid.	LISTmap – hydrographic lines Site visit
Groundwater boreholes	• During the bauxite exploration process, 244 holes were drilled into the resource. The drill holes averaged 5.4 m depth with a maximum depth of 16 m. During this phase, groundwater was not interpreted to be in any of the drill holes. However, recent reinterpretation of the data highlighted that 30 holes were logged as having “wet” intervals at various depths. This classification is not considered conclusive of groundwater being present, but the results indicate that if present, groundwater may be approximately 6 m below surface in some locations. There are no known or registered groundwater boreholes onsite; and • The closest registered groundwater borehole (ID: 42092) is located approximately 2.6 km west of the Property. Groundwater was recorded at 45 m below ground level.	Client Request For Information Ground Information Access Portal (Appendix B)
Geology	The Property is dominated by: • Jurassic dolerite (tholeiitic) bedrock with locally developed granophyre; and • The area is overlain by Cenozoic cover sequences of ferricrete, silicrete, laterite and derived lag deposits.	LISTmap (Geological polygons 1:25,000 mapping),
Soils	• Soil fertility in bauxite areas is low because bauxite is naturally leached of nutrients and is chemically inert; this is one of the reasons why bauxite is widely used for road building; and • The soils within the Property consist of a light red-brown clay loam and are shallow in depth.	LISTmap Site borehole information
Acid sulfate soils (ASS)	• The Property is located outside of any ASS risk zones	LISTmap

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Feature	Description	Information Sources
Bushfire	• The Property is within a bushfire-prone area overlay; and • There have been no recorded bushfires on the Property since records began in 1960.	LISTmap

2.4 Heritage

2.4.1 Aboriginal cultural heritage

CHMA has undertaken an Aboriginal heritage assessment for the Property (CHMA 2022a). As part of the first stage of the assessment, the Aboriginal Heritage Register (AHR) was interrogated to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the Property. The search indicated 20 registered Aboriginal sites are located within a 10 km radius of the Property.

Three Aboriginal heritage sites were identified and recorded during the field survey undertaken on the 11th and 12th of October 2022 by Shay Hannah (CHMA archaeologist) and Vernon Graham (Senior Aboriginal Heritage Officer). All identified sites are isolated artefacts located within the proposed quarrying footprint. The three Aboriginal heritage sites are described below:

- AH14114 is a cream quartzite flake located on a raised mound on flat plantation land
- AH14115 is a dark grey quartzite flake located within a depression on plantation land; and
- AH14116 is a cream chert flake located on a raised mound on flat plantation land.

As the sites cannot be adequately managed in-situ due to being located within the proposed quarrying area, a permit to impact the sites is currently being applied for. The Aboriginal heritage sites will not be disturbed until the permit is obtained.

In the event that intrusive investigations need to be undertaken near the Aboriginal heritage sites, as a recommendation of this SHR, they would not begin until the permit has been obtained and the artefacts have been relocated.

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2.4.2 Historic cultural heritage

CHMA has undertaken a historic heritage assessment for the Property (CHMA 2022b). A search of historic registers and databases identified no registered historic sites or places located within a 5 km radius of the Property.

One historic feature was identified during the field survey assessment undertaken on the 11th and 12th of October 2022 by Shay Hannah. The historic feature is a logger's hut and is located 370 m north of the southern boundary of the Site, within the proposed pits. The logger's hut will be directly impacted by the proposed mine but is likely to only be of local significance as the logger's hut would not meet the threshold requirements for either State or National significance. ABx is currently planning to retain the hut.

If the decision to retain the hut is reversed, the hut would need to be removed prior to the proposed works. Due to the poor condition of the hut, it is recommended that the historic feature be recorded and photographed with no further action required. No other historic sites or suspected features were identified during the field survey assessment, and there is a low potential for undetected historic heritage sites within the Property.

An Unanticipated Discovery Plan will provide guidance to ABx so that they meet their obligations with respect to heritage legislation. The procedures outlined in Practice Note 2 issued by the Tasmanian Heritage Council will be followed should any unexpected archaeological features and/or deposits be revealed during development work

In the event that intrusive investigations need to be undertaken near the logger's hut, as a recommendation of this SHR, they would not begin until the logger's hut has been recorded and photographed.

2.5 Natural Values

The majority of the Property is land that has been used for forestry plantation and therefore has few remaining natural values. The Property is dominated by intensively managed softwood plantation but native vegetation is present as remnants associated with the road access corridor. A Natural Values Assessment was undertaken by ECOtas (ECOtas 2022). Natural values information for the Property is summarised in Table 3.

Table 3 :Natural Values on the Property and surrounds

Ecological constraint	Description	Information Source
Threatened vegetation	• No threatened vegetation species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were identified on the Property; and • One species listed under the *Threatened Species Protection Act 1995* (TSP Act): *Pimelea curviflora* var. *gracilis.* was identified along the access road in the south of the Property.	ECOtas 2022
Threatened vegetation communities	• *Nature Conservation Act 2002* (NC Act): *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) was identified in the south of the Property • DOV is listed under the EPBC Act: Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*Eucalyptus ovata* / *E. brookeriana*); and • DOV(listed under separate names under both legislations) is situated on the access road in the south of the Property.	ECOtas 2022

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Ecological constraint	Description	Information Source

Threatened fauna	• There are no records on the NVA of threatened fauna listed on the EPBC Act, and/or the TSP Act
	• No evidence of any threatened fauna species was detected during the survey
	• Non critical habitat is present for:
	  ○ *Sarcophilus harrisii* (Tasmanian devil)
	  ○ *Dasyurus maculatus* subsp. *maculatus* (Spotted-tailed quoll)
	  ○ *Dasyurus viverrinus* (Eastern quoll)
	  ○ *Perameles gunnii* (Eastern barred bandicoot)
	  ○ *Aquila audax* subsp. *fleayi* (Tasmanian wedge-tailed eagle)
	  ○ *Haliaeetus leucogaster* (White-bellied sea-eagle)
	  ○ *Lathamus discolor* (Swift parrot)
	  ○ *Tyto novaehollandiae* (Masked owl); or
	  ○ *Littoria raniformis* (Green and gold frog).
	• The (non-threatened) vegetation community *Eucalyptus obliqua* dry forest (TASVEG code: DOB) is located within the Brushy Rivulet Conservation Area to the North. Some of this community is also located within the northern section of the Site. It is potential habitat for both swift parrots and masked owls.
		ECOtas 2022

Weeds	The following weeds were documented within the Property: • *Cytisus scoparius* (English broom) • *Erica lusitanica* (Spanish heath) • *Ulex europaeus* (Gorse); and • *Rubus* sp. (Blackberry).	ECOtas 2022
Soil diseases and pathogens	• No evidence of root rot pathogen, *Phytophthora cinnamomi* (PC) was detected, and the native vegetation types identified within the Property generally have a low susceptibility to PC • Myrtle wilt and rust is unlikely to occur as host species are not present on the Property; and • No fresh-water pathogens were noted but potential habitat of Green and Gold frog (*Litoria raniformis*) should be managed in waterways.	ECOtas 2022

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3. Property history

3.1 Environment Protection Authority

The following layers of LISTmap were inspected:

- EPA Regulated Premises: this layer identifies the location of Level 2 regulated premises as well as currently regulated contaminated sites (both of which pose a risk of contamination to the land on which they operated and to neighbouring properties); and
- EPA Underground Petroleum Storage Systems – shows sites where EPA has received notification of the registration, temporary decommissioning, or permanent decommissioning of underground petroleum storage systems (UPSS). UPSS are potential sources of ground contamination.

The closest EPA regulated sites are:

- Cresswell's Transport & Quarrying PTY LTD – 2.1 km southwest of the Property; and
- Gibsons Limited Westbury Produce Processing Works - 9 km south east of the Property.

The closest registered UPSS is 6.5 km south of the Property. The record suggests decommissioning of this UPSS is in progress.

It is very unlikely that these operations would impact or may have impacted the Property from a contamination perspective, due to the distance from the Property, and the nature of the operations.

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3.2 Historical aerial imagery

Historical aerial imagery over the Property was sourced from the Natural Resources and Environment Tasmania (NRE) Aerial imaging database.

The historical aerial images are provided in Appendix C and the findings are summarised in Table 4.

Table 4: Aerial imagery descriptions for the Site and surrounds

Aerial Image Date	Description of the Site	Description of immediate surrounds (i.e., neighbouring properties)
1975	• Likely native vegetated with clearings to the southeast and centre • Many tracks evident suggesting forestry or possibly mineral exploration activity on the Site; and • Proposed mine access road already evident.	• Mostly native vegetation surrounding the north, east and west of the Site; and • Agricultural and forestry areas to the south of the Site are evident.
1982	• Very little change since 1975.	• Agricultural extent appears to be unchanged since 1975; and • Thinning of native forested areas to the west of the Site and east and west of the access road.
1999	• Clear felling has occurred; and • Plantation establishment is now evident.	• Clear-felling and plantation establishment is now evident to east and west of the Site and surrounding access road; and • Agricultural extent appears to be unchanged since 1975.
2012	• No change from 1999 aside from plantation being more established.	• Clear-felling and plantation establishment is now evident to east and west of the Site and surrounding the access road; and • Agricultural extent appears to be unchanged since 1975.
2017	• As per 2012.	• Clear-felling and plantation establishment is now evident to east and west of the Site and surrounding the access road; and • Agricultural extent appears to be unchanged since 1975.

3.3 Worksafe Tasmania

Worksafe Tasmania does not have any records for dangerous goods on any of the titles within the Property or for any addresses on Porters Bridge Road, Reedy Marsh. A copy of the correspondence with Worksafe Tasmania is provided in Appendix D.

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3.4 Site visit and request for information

A request for information was sent to ABx to complete. A Site visit was completed on the 7th of June 2023 with the National Operations Manager, Nathan Towns. Site visit photos are presented in Appendix E. Salient information includes:

- Forico replanted the area between the months of June to December 2022
- The heritage building is planned to be retained by ABx
- The tributary to the Meander River that passes under the western end of the access road was inspected. The water quality appeared poor upstream of the road and there was evidence that vegetation clearing had occurred along around the banks of the stream
- As part of the preparations for replanting of plantation on the Site in 2022, the following herbicides and additives were used:
    - Archer - Clopyralid – 180 millilitre per hectare (mL/ha)
    - Verdict 520 - Haloxyfop – 300 ml/ha
    - Garlon - Triclopyr – 300 ml/ha
    - Outright 770 - Spray Adjuvant – 500 mL/ha
    - Hexmac 750 - Hexazinone - 2.5 kilogram per hectare (kg/ha)
    - Agrichem Supa Stick Oil – 500 ml/ha
    - Weedmaster DST - Glyphosate – 4 litres per hectare (L/ha)
    - Associate - Metsulfuron methyl – 50 grams per hectare (g/ha)
    - Mako – Sulfometuron methyl – 40 g/ha
- No further chemicals have been used on Site since replantation; and
- There were no known major spills or incidents within the Property area in the past.

3.5 Stormwater management plan

pitt&sherry completed a stormwater management plan (pitt&sherry 2023a) for the proposed mine. The main management actions recommended include:

- The Site will be mined in five stages, rehabilitated progressively. This will include stockpiling topsoil and rehabilitating each stage with the stockpiled topsoil
- Silt fences will be placed at the base of each cleared area with runoff conveyed to the sediment basins via cut-off drains
- Cut off drains between the upstream undisturbed areas and the excavated areas (i.e. operational mine areas) will be constructed to enable ‘clean-stormwater’ to be diverted from the mining area
- Check dams will be implemented to limit erosion at the bottom of the cut-off drains
- Stockpiles will be protected from erosion. Temporary silt fences will be utilised at the downstream face to prevent transport of material. Minor contour banks of cut-off drains will be placed upstream to prevent runoff eroding the base of stockpiles. As the excavation (i.e. mining work) progresses, erosion and sediment control measures will be maintained and adapted as necessary; and
- Storage zones will be included in the sediment basins, these will collect and hold settled sediment between periods of maintenance. Rock lining the inlets will prevent scouring in the bottom of basins.

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4. Identified potential contamination

4.1 Sources of potential contamination

There is limited potential for contamination to have occurred on the Property from historical and current uses. Contamination risks associated with activities on the Property include:

- **Hydrocarbons from fuel or oil spills, or leakage from the use of mobile equipment during forestry activities**: Although spills and leaks may have occurred, any fuel or oil contamination would likely be surficial and localised as fuel or oils are not typically stored in plantation areas; and
- **Herbicides associated with treatment and prevention of weeds prior to plantation:** herbicides would likely have been applied in early 2022. Most herbicides (though not all) biodegrade within months and typically within a year of application. The Safety Data Sheets for each herbicide chemical listed in Section 3.4, are provided in Appendix F and have been summarised in Table 5. It is recommended that soil testing be carried out prior to development to confirm the presence and residual concentrations of persistent herbicides. This is best completed shortly before land disturbance begins, as the herbicides are continuously degrading.

Three of the nine herbicides/additives (Garlon – Triclopyr, Verdict 520 – Haloxyfop and Outright 770 - Spray Adjuvant (additive)) used on the Site have the potential to have persisted in the soils. Neither of these are likely to be toxic to humans or fauna at the concentrations that are likely to persist in the soils. Those that may be toxic to humans or fauna will have likely degraded by the time of development (expected to be late 2023). However, the persistent herbicides may be toxic to aquatic life. It is recommended that soil testing be carried out prior to development to confirm the presence and residual concentrations of persistent herbicides. This is best completed shortly before land disturbance begins, as the herbicides are continuously degrading.

Table 5: Summary of Safety Data Sheets for herbicides and additives used on the Property

Pesticide	Half-life	Toxicity
Clopyralid herbicide	Up to 66 days in soil	Non-toxic
Garlon - Triclopyr	Not stated. Very slowly degrades and only through hydrolysis. Fails to pass Organisation for Economic Co-operation and Development (OECD) tests for biodegradability	Highly toxic to aquatic invertebrates
Agrichem Supa Stik Oil	Not measured (additive)	Non-toxic (vegetable oil)
Mako – Sulfometuron methyl	28 days	Toxic to aquatic life Non-toxic to birds or insects
Outright 770 - Spray Adjuvant (additive)	Not stated	Expected to be toxic to aquatic life, based on similar materials
Hexmac 750 - Hexazinone	Up to 180 days	Slightly/nontoxic to birds Slightly toxic to aquatic invertebrates Absorbed into root zone Should not be used in forests
Weedmaster DST - Glyphosate	47 days	Classified as hazardous Classified as carcinogenic
Associate - Metsulfuron methyl	52 days	Highly toxic to aquatic invertebrates
Verdict 520 - Haloxyfop	Not stated. Very slowly degrades and only through hydrolysis. Fails to pass OECD tests for biodegradability	Deadly if swallowed Highly toxic to aquatic life

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4.2 Preliminary conceptual site model

A preliminary Conceptual Site Model (CSM) has been developed, to identify potentially significant source-pathway-receptor linkages in relation to human health and the environment. Unacceptable risks from contamination may occur if the source-pathway-receptor linkage(s) is/are complete.

4.2.1 Sources

Potential sources of contamination include:

- Fuel / oil-contaminated soils from spills or leaks; and
- Herbicide-contaminated soils from forestry plantation pre-treatment.

4.2.2 Receptors

- Human receptors:
  - Future Property users (excavation and mining staff and support contractors)
- Ecological receptors:
  - Terrestrial fauna and flora; and
  - Aquatic flora and fauna.

Note that current Property users are not considered in this SHR.

4.2.3 Pathways

Potential migration pathways through which receptors may be exposed to contamination include:

- Human receptors:
  - Inhalation of airborne herbicide-impacted soil dust, or fuel/oil contaminated soil dust
  - Direct contact (e.g. dermal) with contaminated soils
  - Ingestion of contaminated soils
- Ecological:
  - Migration of contamination within the soil into groundwater or surface waters; and
  - Direct contact or plant uptake (terrestrial and aquatic fauna and flora).

4.3 Source-pathway-receptor linkages

A high level SPR linkages assessment is presented in Table 6, to gauge the level of risk and the need for management and mitigation measures.

- Grey shading indicates the SPR linkage is incomplete
- Green shading indicates the SPR linkage is unlikely to be complete, or is low risk
- Yellow shading indicates the SPR linkage is potentially complete, or is medium risk
- Red shading indicates the SPR linkage is complete, or is high risk; and
- Text in red signifies required management measure.

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Source-pathway-receptor (SPR) linkages are provided in Table 6.

Table 6: Source-pathway-receptor linkages

	Sources	
Receptors	Fuel / oil contaminated soils	Herbicide contaminated soils
Future Property users (excavation and mining staff and support contractors)	If fuel / oil contamination is present, and is encountered, appropriate management actions should be implemented via the CEMP	Herbicides used are generally not toxic to humans in small quantities Unlikely or very low risk of exposure with appropriate management actions to be implement from the CEMP
Terrestrial fauna	If fuel / oil contamination is present, and is encountered, appropriate management actions should be implemented via the CEMP	Herbicides used are generally not toxic to terrestrial fauna Any potential increase in exposure due to earthworks/excavations will be mitigated with appropriate management actions to be implemented via the CEMP
Terrestrial flora	If fuel / oil contamination is present, and is encountered, appropriate management actions should be implemented via the CEMP	Previous use of herbicides was restricted to the Site, while the threatened vegetation community and flora species are located along the access road, south of the Site The CEMP will include measures to avoid soil erosion and runoff (particularly topsoil) towards the (non-threatened) native vegetation to the north
Aquatic flora and fauna	If fuel / oil contamination is present, and is encountered, appropriate management actions should	Potential to harm aquatic life if herbicide-contaminated soil enters waterways Topsoil will be managed under a CEMP to ensure it does not enter waterways

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be implemented via the CEMP	

5. Planning Scheme Assessment

5.1 Potentially Contaminated Land Code

The ESA (in the form of a Site History Review) has been used to assist with the planning assessment for this code. As the proposal complies satisfies relevant performance criteria (see below), it complies with the purpose of the code:

C14.1.1 To ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.

5.1.1 Use Standards

None of the Use Standards apply because the proposal is not for a sensitive use, nor a specified use listed in Table C14.1.

5.1.2 Development Standards

The following Development Standards are not relevant to the proposal:

- C14.6.2 – The proposal is not on land subject to the Macquarie Point Development Corporation Act 2012; and
- C14.7 – No subdivision is proposed.

The following assessment demonstrates the proposal satisfies the Development Standards applicable to the proposal.

C14.6.1 Excavation works, excluding land subject to the Macquarie Point Development Corporation Act 2012

Objective: That works involving excavation of potentially contaminated land, excluding on land subject to the Macquarie Point Development Corporation Act 2012, do not adversely impact on human health or the environment.

Acceptable Solutions	Performance Criteria
A1 Excavation, excluding on land subject to the Macquarie Point Development Corporation Act 2012, must involve less than 250m³ of site disturbance.	P1 Excavation, excluding on land subject to the Macquarie Point Development Corporation Act 2012, must not have an adverse impact on human health or the environment, having regard to: (a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; (b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or (c) an environmental site assessment, including a plan to manage contamination and associated risk to human health and the environment, that includes:

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	(i) any specific remediation and protection measures required to be implemented before excavation commences; and (ii) a statement that the excavation does not adversely impact on human health or the environment.

Assessment
Section 6 below demonstrates the proposal satisfies P1 (c).

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6. Conclusions

The findings from the SHR indicate that the potential for contamination on the Property includes two sources:

- Fuel and oil spills or leaks onto soils from the operation of mobile plant during forestry activities; and
- Use of herbicides during forestry plantation operations.

The contamination risk posed by each of these is assessed as follows (refer to SPR in Table 6):

- Fuel and oil contaminated soils from spills or leaks:
  - Is unlikely to be encountered
  - Impact would be very localised
  - Any impacted soils which may be encountered can be managed via appropriate contamination management measures to be outlined in the recommended CEMP
  - Any residual management measures from the CEMP which are applicable during operations should be carried through to an OEMP; and
  - The risk to identified human health and ecological receptors is considered to be LOW.
- Herbicide contaminated topsoils from forestry activities:
  - Likely presence of low residual concentrations of the more persistent herbicides
  - Unlikely to affect human health or terrestrial fauna due to the short half-life of those that affect fauna and humans, and the time elapsed since the last application (likely around 6-12 months prior to the date of this report). Furthermore, mine pre-works / pre-stripping will not begin until around November 2023, which will allow additional time for persistent herbicides to further biodegrade
  - There are risks from persistent herbicides which are potentially toxic to (non-threatened) natural vegetation to the north and to aquatic life in the minor tributary of Brushy Rivulet (Figure 2, Appendix A). Risks can be managed via appropriate erosion and runoff containment measures of the stockpiled topsoil to be outlined within and implemented through the recommended CEMP. The recommended OEMP can include any measures to ensure any herbicide-impacted stockpiled soils remain contained, and are prevented from eroding into sediment ponds, waterways or vegetated areas to the north of the Site; and
  - The risk is considered to be MEDIUM for identified native vegetation and for aquatic ecosystems.

Summary:

The excavation works associated with the proposed development satisfies P1(c) under clause C14.6.1 of the PCLC if the topsoil management measures outlined under Section 7 Recommendations are followed.

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7. Recommendations

The purpose of the management measures is to minimise the risk of the proposed development impacting on human health, and the environment from the identified potential contamination.

Recommendations to manage potential contamination on the Property include the following:

- The CEMP and OEMP will include effective measures to minimise risks to human and ecological receptors from potentially-contaminated materials such as:
  - Fuel- and oil-contaminated soils; and
  - Herbicide-contaminated soils.
- The CEMP will need to include soil testing for herbicides and additives, specifically Garlon – Triclopyr, Verdict 520 – Haloxyfop, and Outright 770 - Spray Adjuvant (additive), to determine the level of management of the topsoil
- Topsoil will be stockpiled and bunded away from sediment ponds and waterways to prevent movement of soil into waterways or the native vegetation community to the north
- Topsoil should not be redistributed during rehabilitation, as per the mine staging, if presence of herbicides is detected at concentrations toxic to aquatic life. Suggested methods to determine toxicity may include testing of soil leachate with water of a pH similar to rainwater. The concentrations of herbicides in the leachate can then be assessed against the ecological information in the SDSs (Appendix F)
- Topsoil should remain stockpiled and prevented from eroding until the herbicide contamination has been biodegraded. This can be determined by testing for herbicides and additives regularly (e.g. every 3 – 6 months)
- In the event that intrusive investigations (i.e. sampling) need to be undertaken near the Aboriginal heritage sites, as a recommendation of this SHR, they would not begin until the permit has been obtained and the artefacts have been relocated
- In the event that intrusive investigations (i.e. sampling) need to be undertaken near the logger's hut, as a recommendation of this SHR, they would not begin until the logger's hut has been recorded and photographed
- The CEMP will need to be implemented. It will be developed to determine whether the topsoil is contaminated and to outline the requirements to manage the topsoil to prevent erosion; and
- The OEMP will need to be implemented and include any measures to ensure any herbicide-impacted stockpiled soils remain contained, and are prevented from eroding into sediment ponds, waterways or vegetated areas to the north of the Site.

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Reference list

- Corteva Agriscience Australia (2021) Safety Data Sheet. Garlon® 600 Herbicide
- Corteva Agriscience Australia (2021) Safety Data Sheet. Verdict® 520 Herbicide
- CHMA (2022a) ABx Group Deloraine Bauxite Mine Project, Porters Bridge Road Exton, Aboriginal Heritage Assessment Northern Tasmania CHMA 2022
- CHMA (2022b) ABx Group Deloraine Bauxite Mine Project, Porters Bridge Road Exton/Reedy Marsh, Historic Heritage Assessment Northern Tasmania CHMA 2022
- Department of Natural Resources and Environment Tasmania. Ground Information Access Portal. https://wrt.tas.gov.au/groundwater-info/ Accessed: 26/5/23
- ECOtas (2022). Natural Values Assessment of Proposed Bauxite Mine DL-130, Reedy Marsh, Tasmania. Report by Environmental Consulting Options Tasmania (ECOtas) for ABx Group, 24 October 2022'
- *Environmental Management and Pollution Control Act 1994* (EMPCA) and relevant Regulations
- *Environment Protection and Biodiversity Conservation Act 1999*
- Land Tasmania, Department of Natural Resources and Environment Tasmania. *Land Information Systems Tasmania* (theLIST) https://www.thelist.tas.gov.au/app/content/home Accessed: 26/5/23
- *National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013*
- Macspred (2018) Hexmac 750 SG Herbicide
- Nufarm (2020) Safety Data Sheet. Associate Herbicide
- Nufarm (2021) Safety Data Sheet. Mako Herbicide
- pitt&sherry (2023a) DL130 Bauxite Project Stormwater Management Plan
- pitt&sherry (2023b) DL130 Bauxite Project Environmental Effects Report
- Tasmanian Planning Commission, Tasmanian Government, Tasmanian Planning Scheme – Meander Valley, 19 April 2021
- Victorian Chemical Co (2022) Safety Data Sheet. Outright 770 Spray Adjuvant

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Figures

Appendix A

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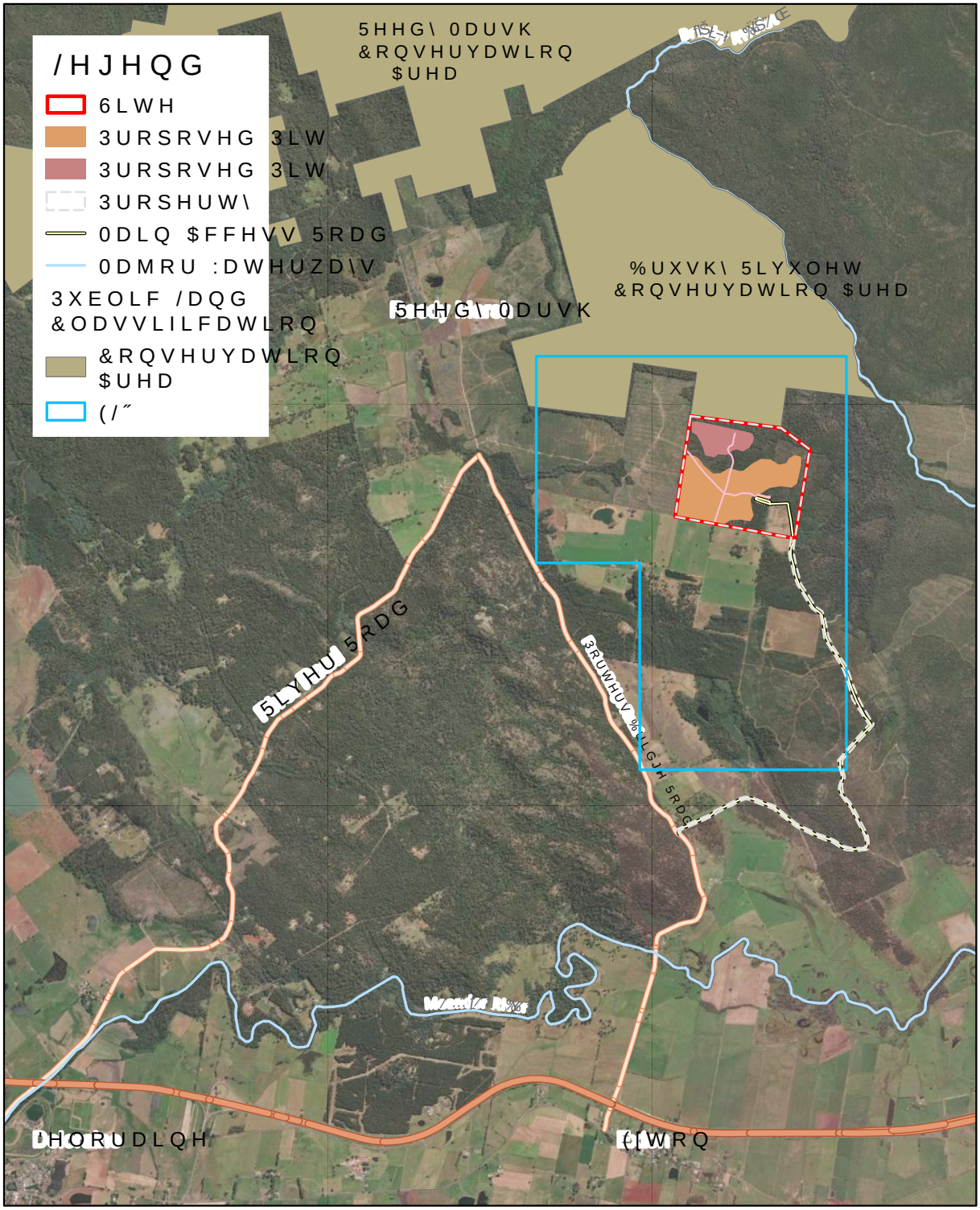

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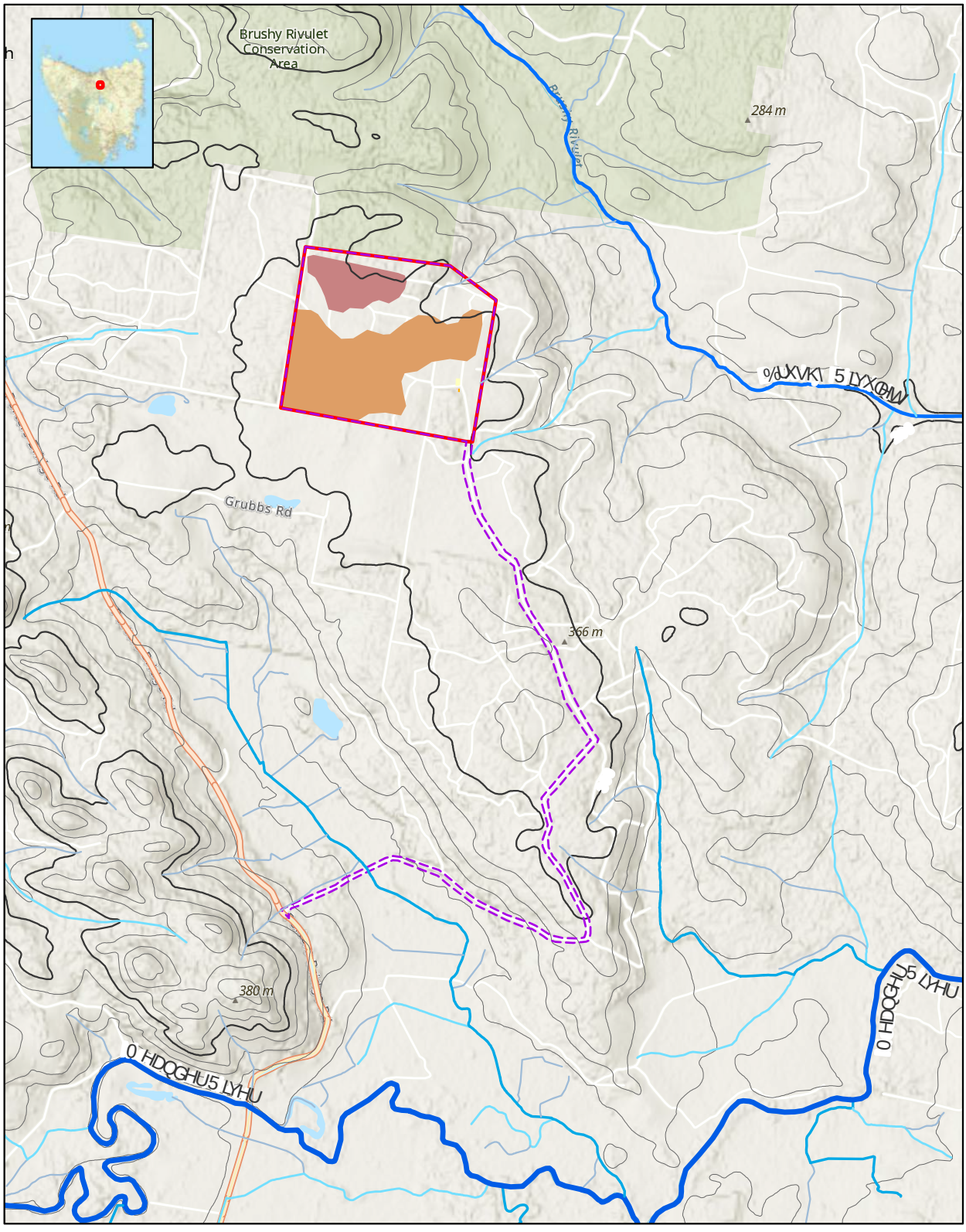

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Figure 2
DL130 Bauxite Project
Topography

N

0 0.38 0.75 1.5 km

Coordinate System: GDA 1994 MGA Zone 55
1:30,000 When Printed at A4

MAP REF	P.22.0828
AUTHOR	Jholan
REVISION	B
DATE	27/06/2023

DATA SOURCES: Base data and map from The LIST Tasmanian Government; Project specific data

Legend

- Pit 1
- Pit 2
- 20m Contours
- 100m Contours
- Site
- Property
- Major River
- Stream
- Minor Stream
- Tributary
- Minor Tributary

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Document Set ID: 1463784
Version: 1, Version Date: 31/05/2024

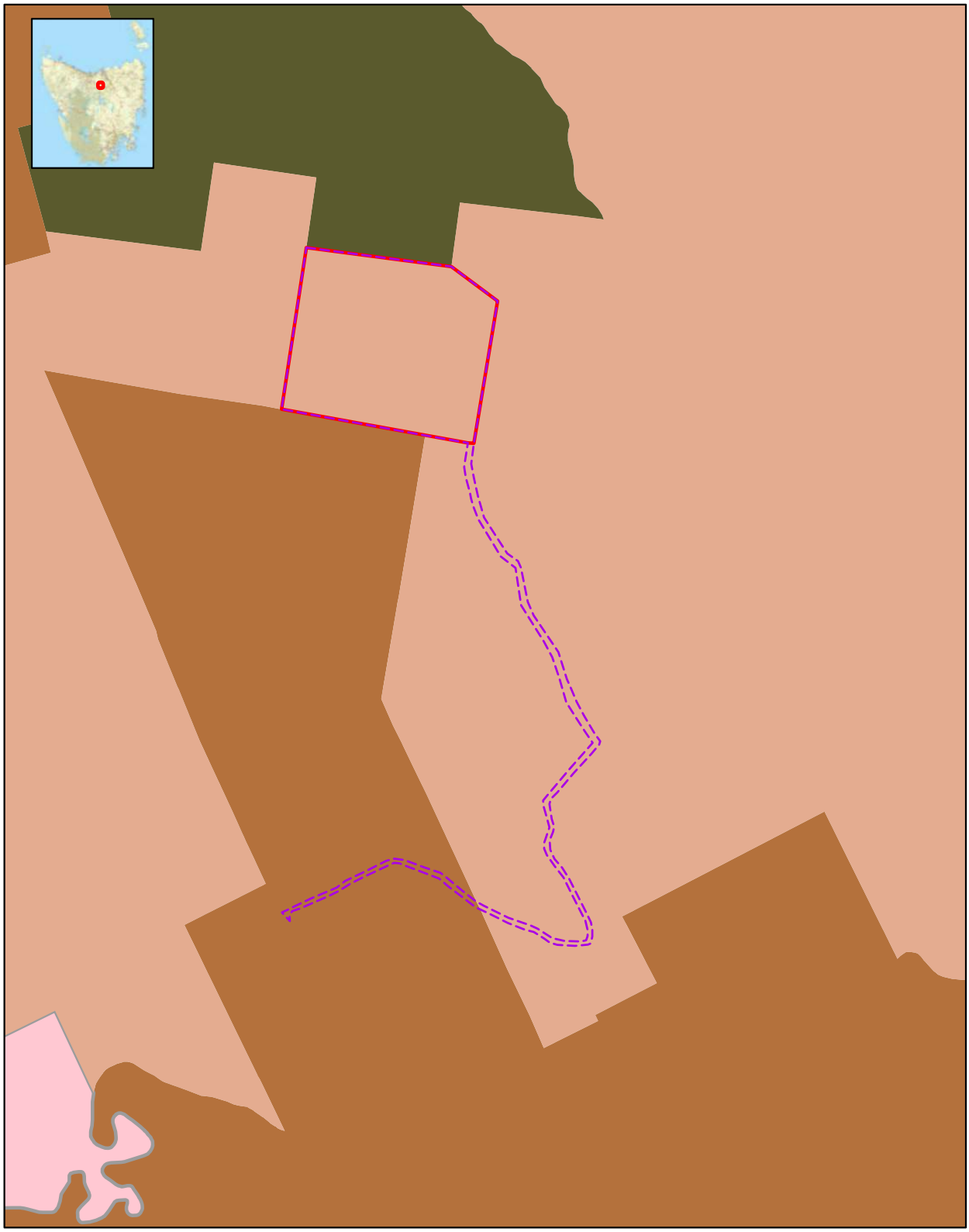

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Figure 3
DL130 Bauxite Project
Zoning

N

0 0.38 0.75 1.5 km

Coordinate System: GDA 1994 MGA Zone 55
1:30,000 When Printed at A4

MAP REF	P.22.0828
AUTHOR	Jholan
REVISION	B
DATE	27/06/2023
DATA SOURCES	Base data and map from The LIST Tasmanian Government Project specific data

Legend

Tasmanian Planning Scheme Zones
- Rural Living
- Rural
- Agriculture
- Environmental Management

- Site
- Property

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Document Set ID: 1263734
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Groundwater Information Access Portal

Appendix B

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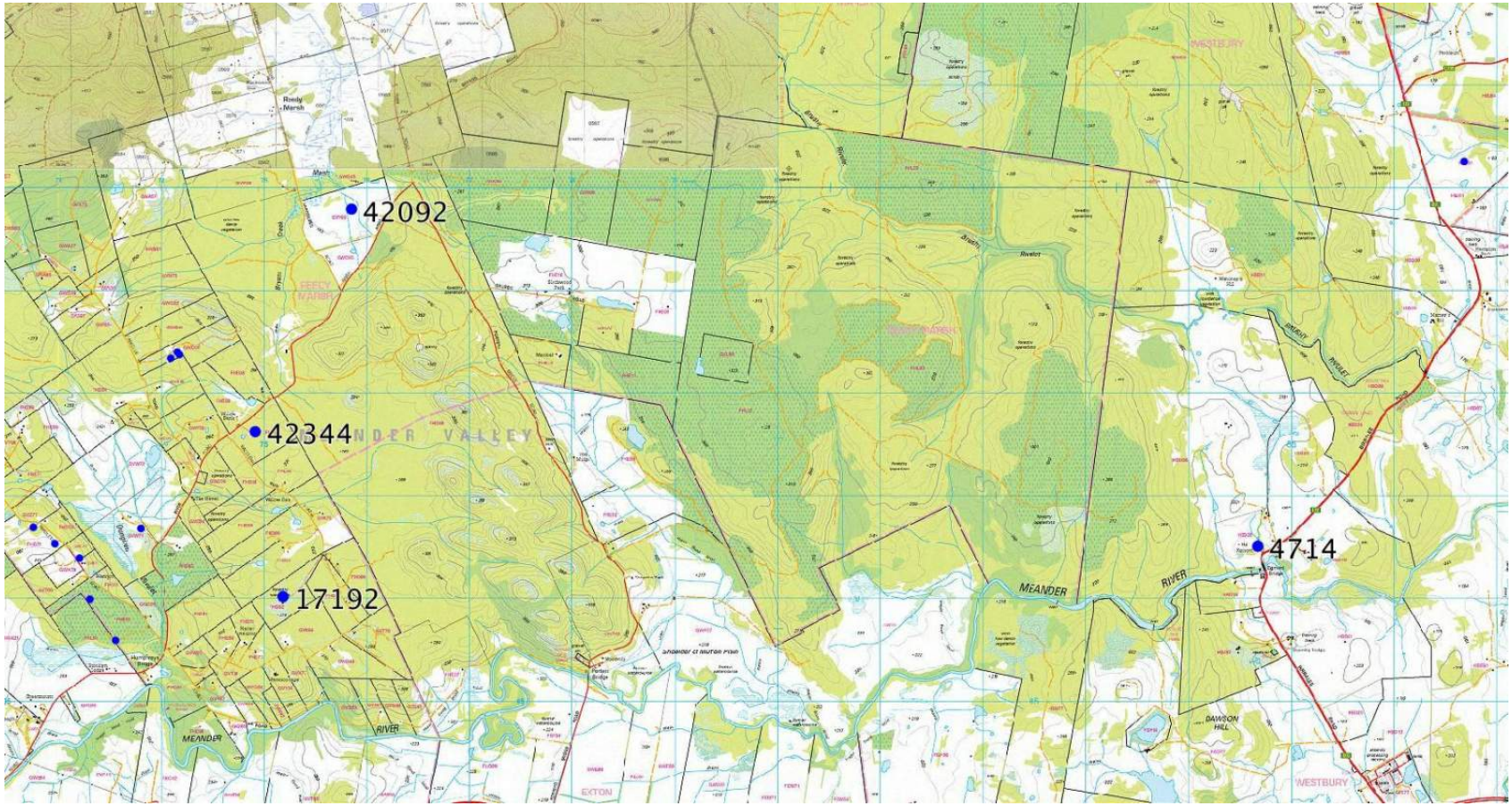
Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Groundwater Feature Detailed Report



Tasmania
Explore the possibilities

Disclaimer and Copyright. Map data is compiled from a variety of sources and hence its accuracy is variable. If you wish to make decisions based on this data you should consult with professional advisers. Apart from any use permitted under the Copyright Act 1968, no part of this report may be copied without the permission of the General Manager, Agriculture and Water Business Unit, Department of Natural Resources and Environment Tasmania, PO Box 41, Hobart, TAS 7001.

Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Groundwater Feature Detailed Report

Identification

Feature id: 4714 **Feature type:** Bore

Location

Locality: Westbury
Easting: 484680 **Datum:** GDA94
Northing: 5406500 **Accuracy:** 200
Ground level (m ASL):

Construction

Date drilled: 15/08/1984
Drilling company: Kelly
Depth (metres): 68.60
Initial yield (L/sec): 0.05
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	68.6	140.00	Rotary (Rotary Mud)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
NA				

Screens

From (m)	To (m)	Inlet type
NA		

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	68.6	clay

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
NA			

Main aquifer geology: Tertiary Sediments
Final TDS (mg/L):

Standing Water Levels

Standing water levels

Date	SWL (metres)
NA	

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Current status

Last recorded statuses

Type	Value	Date recorded
function	abandoned	15/08/1984

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Version: 1, Version Date: 31/05/2024

Groundwater Feature Detailed Report

Identification

Feature id: 17192 **Feature type:** Bore

Location

Locality: Reedys Marsh
Easting: 475193 **Datum:** GDA94
Northing: 5406008 **Accuracy:** 500
Ground level (m ASL):

Construction

Date drilled: 07/11/1998
Drilling company: Tasmanian Drilling Services Pty Ltd
Depth (metres): 39.70
Initial yield (L/sec): 0.63
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	39.7	152.00	Rotary/ Rotary Hammer (downhole hammer)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	12.2		152.00	unplasticised polyvinylchloride uPVC

Screens

From (m)	To (m)	Inlet type
NA		

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
NA		

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
07/11/1998	24.4		0.63

Main aquifer geology: Jurassic Dolerite
Final TDS (mg/L):

Standing Water Levels

Standing water levels

Date	SWL (metres)
NA	

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Current status

Last recorded statuses

Type	Value	Date recorded
function	capped	07/11/1998

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Groundwater Feature Detailed Report

Identification

Feature id: 42092 **Feature type:** Bore

Location

Locality: Reedy Marsh
Easting: 475860 **Datum:** GDA94
Northing: 5409780 **Accuracy:** 10
Ground level (m ASL):

Construction

Date drilled: 03/05/2018
Drilling company: Paul Moore Drilling
Depth (metres): 54.00
Initial yield (L/sec): 5.05
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	6.0	250.00	Downhole Hammer (Rotary Hammer)
6.0	54.0	200.00	Downhole Hammer (Rotary Hammer)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	6.0	200.00		unplasticised polyvinylchloride uPVC
6.0	30.0	150.00		unplasticised polyvinylchloride uPVC

Screens

From (m)	To (m)	Inlet type
30.0	54.0	slotted casing

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	3.0	top soil and clay
3.0	54.0	sandstone

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
03/05/2018	45.0	48.0	5.05

Main aquifer geology:
Final TDS (mg/L): 150

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Standing Water Levels

Standing water levels

Date	SWL (metres)
03/05/2018	3.00

Current status

Last recorded statuses

Type	Value	Date recorded
function	capped	22/11/2018
purpose	household needs	03/05/2018

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Groundwater Feature Detailed Report

Identification

Feature id: 42344 **Feature type:** Bore

Location

Locality: Deloraine
Easting: 474922 **Datum:** GDA94
Northing: 5407615 **Accuracy:** 5
Ground level (m ASL):

Construction

Date drilled: 22/05/2020
Drilling company: Gerald Spaulding Drillers Pty Ltd
Depth (metres): 72.00
Initial yield (L/sec): 0.25
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	72.0	178.00	Downhole Hammer (Rotary Hammer)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	60.0	125.00	140.00	unplasticised polyvinylchloride uPVC

Screens

From (m)	To (m)	Inlet type
60.0	72.0	slotted casing

Seals

From (m)	To (m)	Material type
0.0	7.0	spoil-cuttings
7.0	8.0	bentonite clay

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	1.0	Topsoil
1.0	4.0	Hard Dolerite
4.0	5.0	Broken Dolerite
5.0	7.0	Hard Dolerite
7.0	9.0	Broken Dolerite
9.0	72.0	Hard Dolerite

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
22/05/2020	30.0	32.0	0.10
22/05/2020	64.0	66.0	0.25

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Main aquifer geology: Jurassic Dolerite
Final TDS (mg/L): 200

Standing Water Levels

Standing water levels

Date	SWL (metres)
22/05/2020	6.00

Current status

Last recorded statuses

Type	Value	Date recorded
function	capped	22/05/2020
purpose	household needs	22/05/2020

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Historical Aerial Images

Appendix C

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Document Set ID: 1933784
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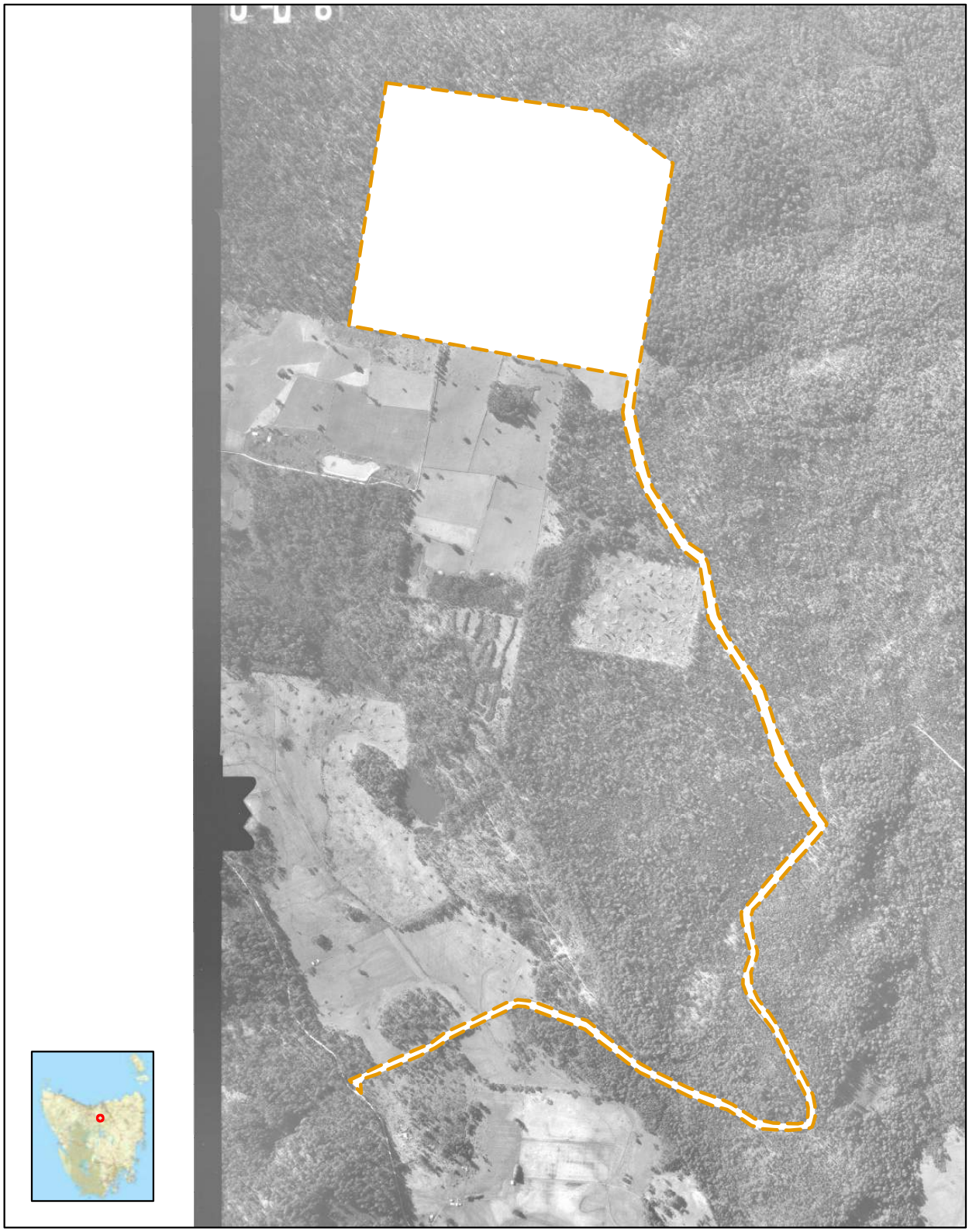

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3URMHFW VSHFLILF GDWD

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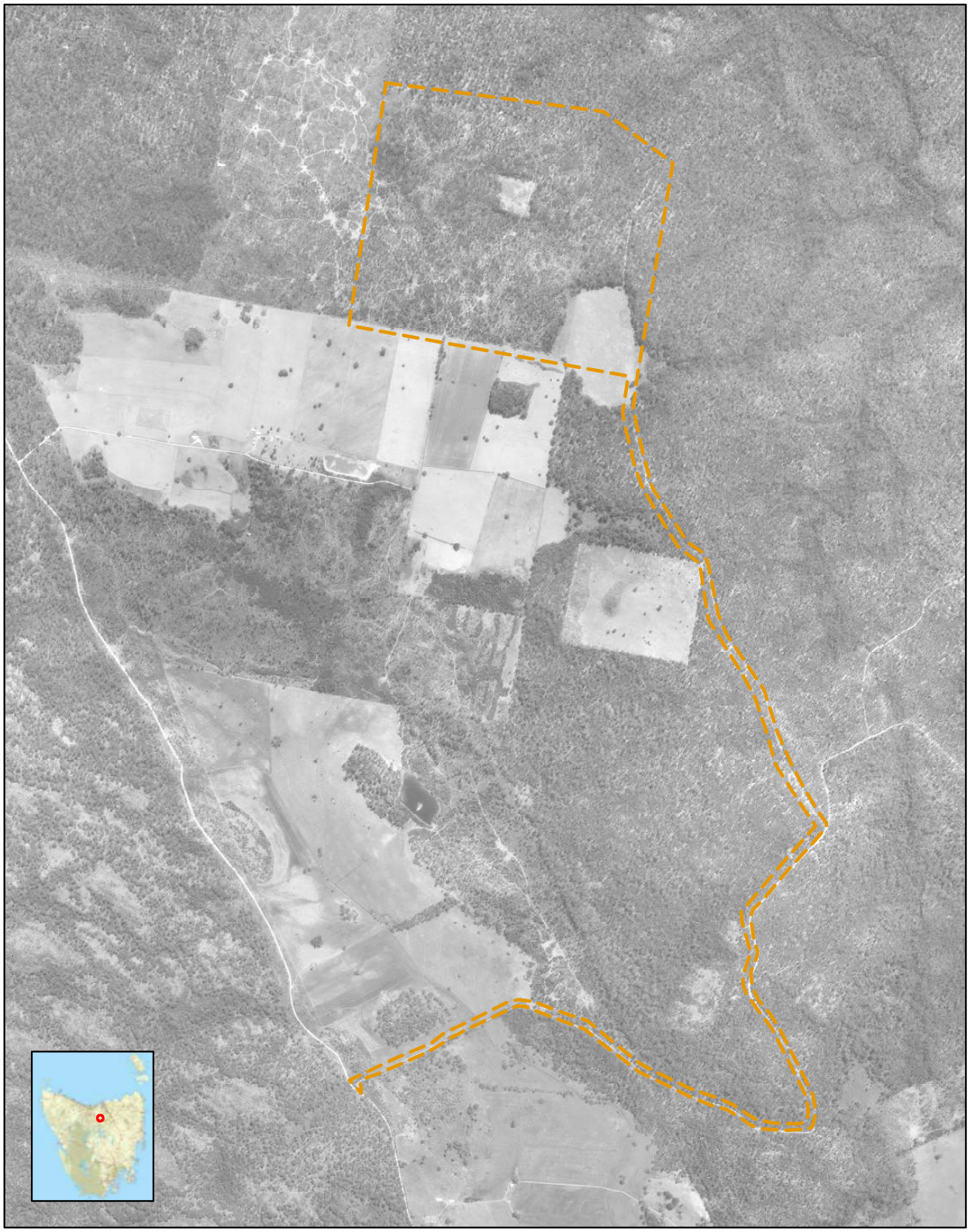
Document Set ID: 4687784
Version: 1, Version Date: 31/05/2024



ABx Group Limited

Historical images:
1982
Photo ID: 0893_223

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0 0.25 0.5 1 km

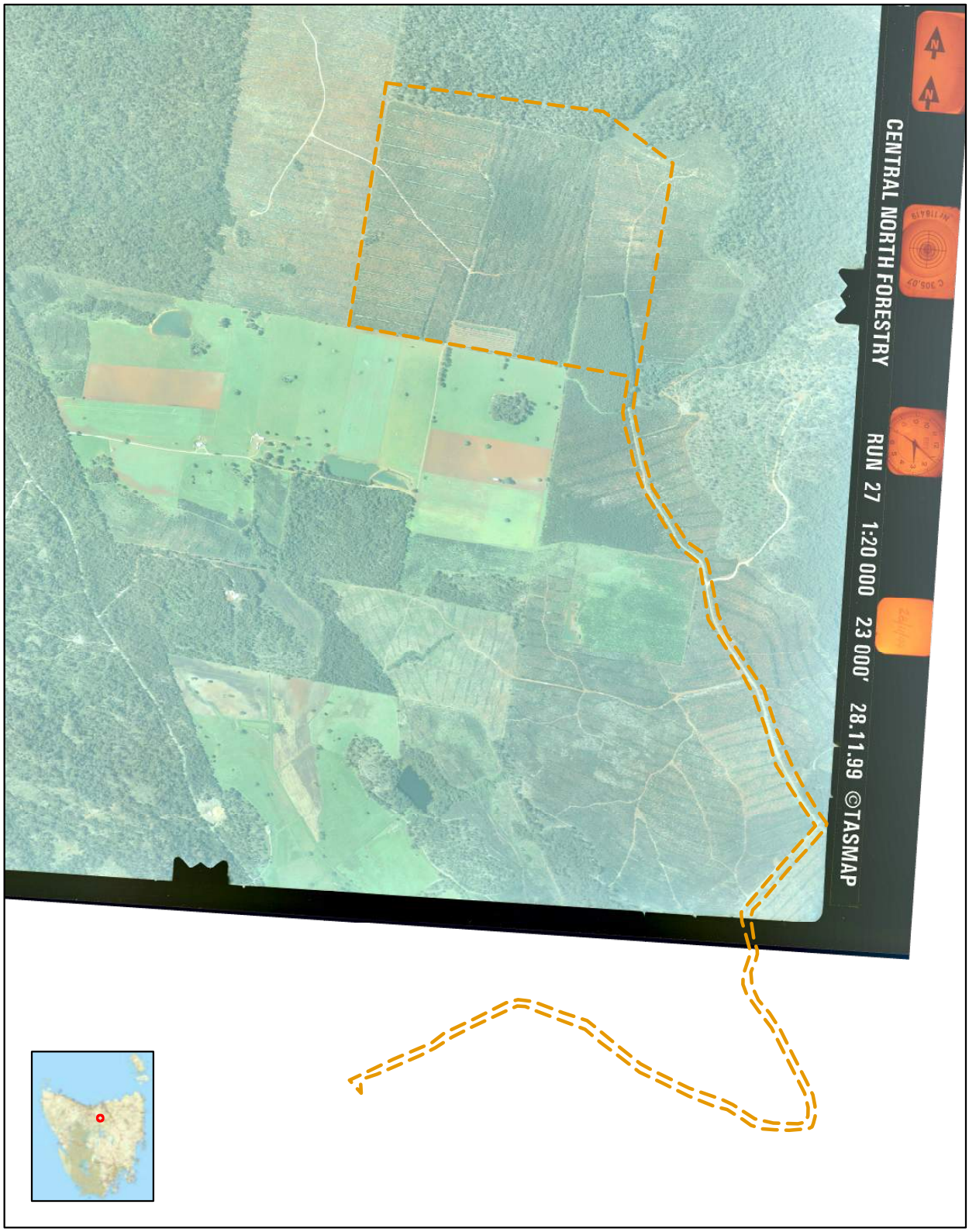
Coordinate System: GDA 1994 MGA Zone 55
1:20,000 When Printed at A4

MAP REF	P.22.0828
AUTHOR	JBriggs
REVISION	A
DATE	15/05/2023
DATA SOURCES	Base data and map from The LIST Tasmanian Government Project specific data

Legend

Proposed Mining Lease

Document Set ID: 1263734
Version: 1, Version Date: 31/05/2024



ABx Group Limited

Historical images:
1999
Photo ID: 1318_075

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Coordinate System: GDA 1994 MGA Zone 55
1:20,000 When Printed at A4

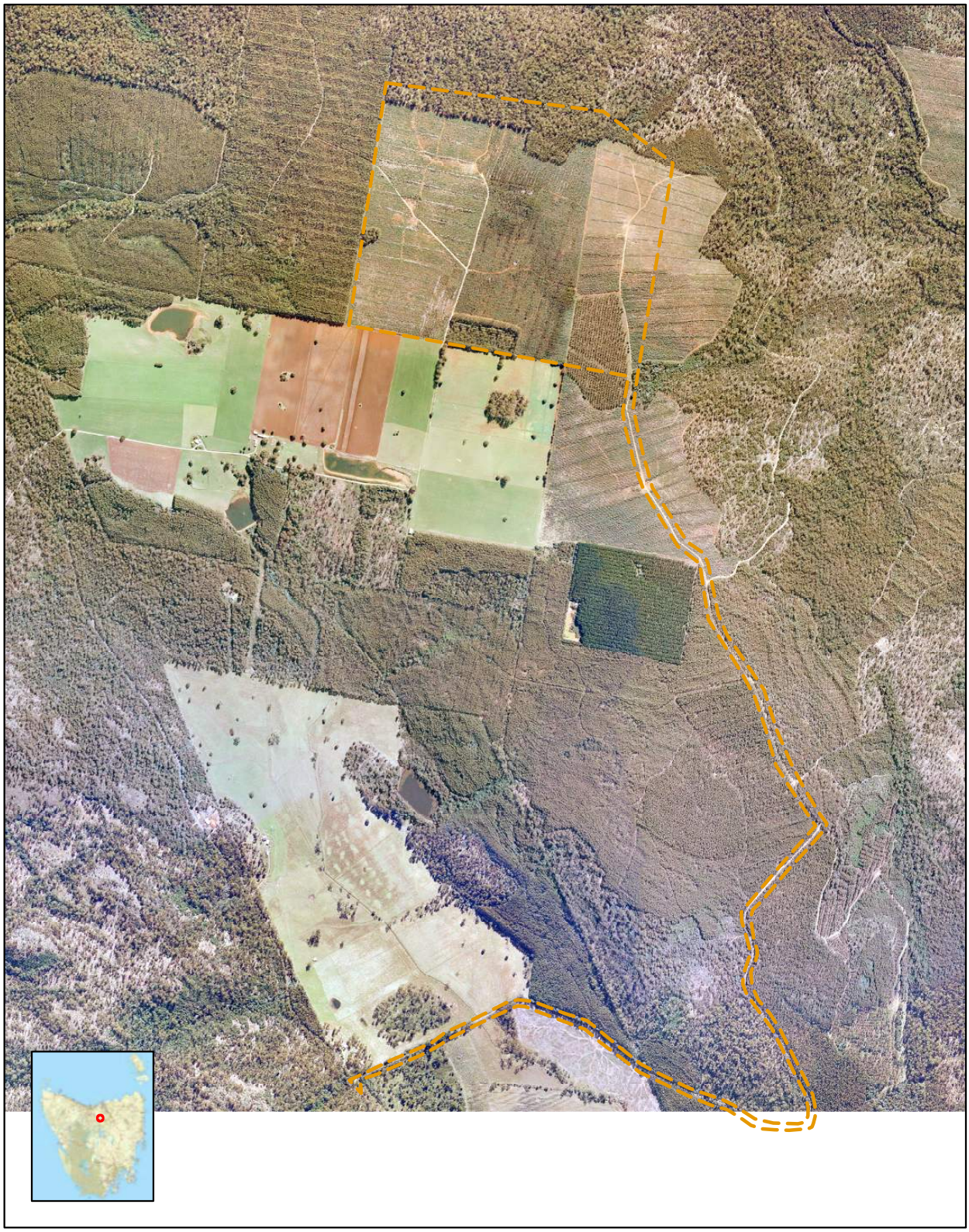
MAP REF	P.22.0828
AUTHOR	Jholan
REVISION	A
DATE	15/05/2023

DATA SOURCES	Base data and map from The LIST Tasmanian Government Project specific data

Legend

Proposed Mining Lease

Document Set ID: 1263784
Version: 1, Version Date: 31/05/2024



ABx Group Limited

Historical images:
2012
1471_03

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N

0 0.25 0.5 1 km

Coordinate System: GDA 1994 MGA Zone 55
1:20,000 When Printed at A4

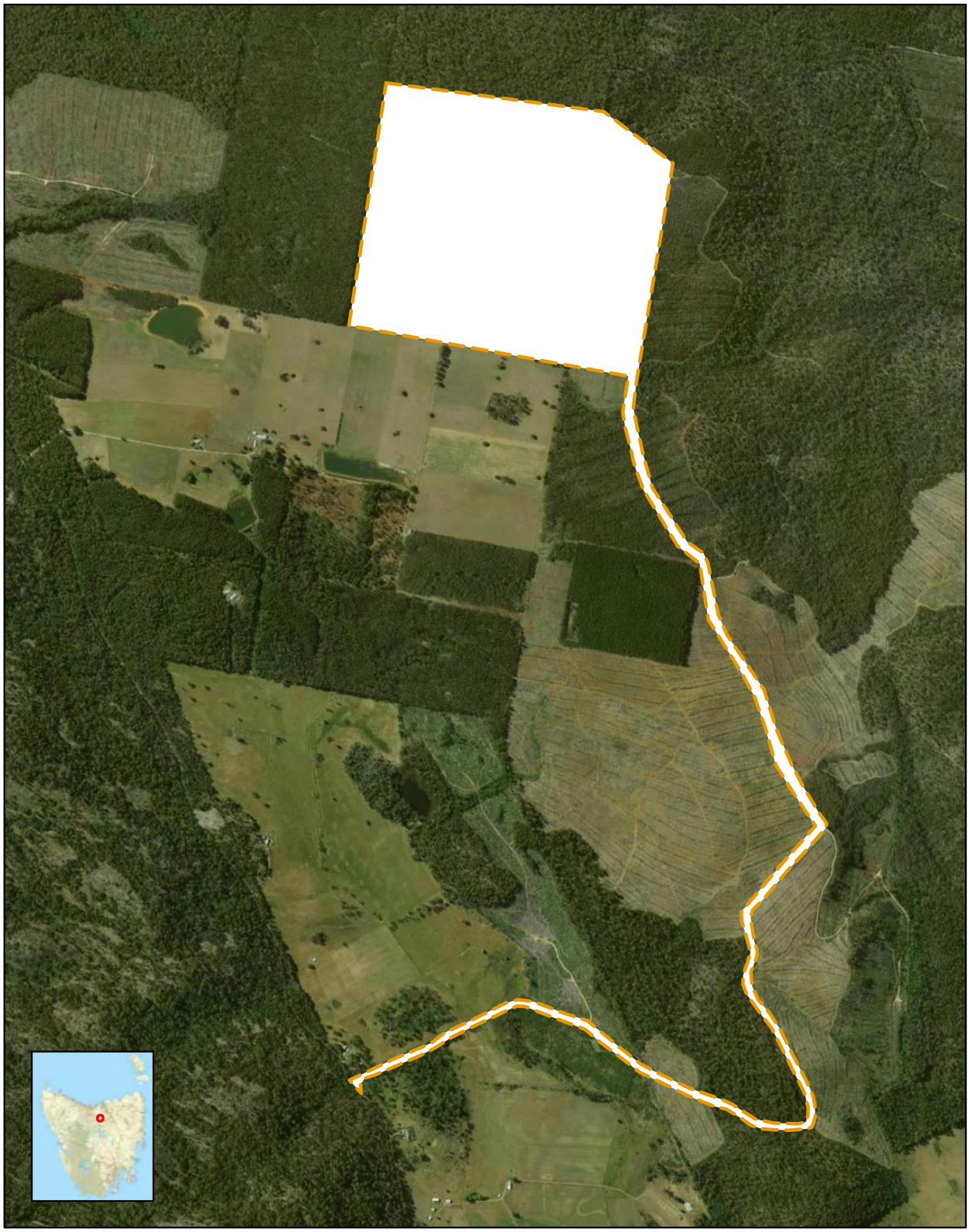
MAP REF	P.22.0828
AUTHOR	Jholan
REVISION	A
DATE	15/05/2023

DATA SOURCES	Base data and map from The LIST Tasmanian Government Project specific data

Legend

Proposed Mining Lease

Document Set ID: 1098784
Version: 1, Version Date: 31/05/2024



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Document SetID: 10387784
Version: 1, Version Date: 31/05/2024

WST Communication

Appendix D

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Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Jess Holan

From: WST Disclosures <WSTDisclosures@justice.tas.gov.au>
Sent: Monday, 15 May 2023 2:27 PM
To: Jess Holan
Subject: RE: WST files for Reedy Marsh

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Jess

I've conducted a search of our records management system and the EPA's Environmentally Relevant Land Use Register (ERLUR) for any dangerous goods records for Reedy Marsh in general and found no information relating to storage at Porters Bridge Road.

Please note my change of email for future enquiries from Monday 22nd May – 3rd July as I will be on LSL and someone else will handle DG enquiries for that time as long as they are addressed to the WST Disclosures inbox.

Kind regards
Lorraine

To: Case, Lorraine <Lorraine.Case@justice.tas.gov.au>
Subject: WST files for Reedy Marsh

Hi Lorraine,

I'm just wondering if there are any WST records for the following:

PID: 6274360, Title Reference: 214055/1

This is at Porters Bridge Road, Reedy Marsh.

I highly doubt there will be anything in the vicinity and particularly not on that property but I need to ask.

Thank you,

Jess

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Jessica Holan
Experienced Environmental Scientist
BMarSc (Hons) PhD

Direct +61 3 6210 1463 | Mobile +61490 942 346| jholan@pittsh.com.au
Note: I work Monday-Thursday

Lutruwita Country | **Hobart Office** — Level 1, Surrey House, 199 Macquarie Street
PO Box 94 Hobart Tasmania 7001 | Phone +61 3 6210 1400
pittsh.com.au

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Site Visit Photographs

Appendix E

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Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Site visit – 07/06/2023	Comment
	DL130 in the central area of the Site facing the north east
	DL130 test pit indicating soil profile

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Site visit – 07/06/2023	Comment
	Heritage shed located on the western side of the site Shed constructed with timber and aluminium
	Heritage shed located on the western side of the site Shed constructed with timber and aluminium

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Site visit – 07/06/2023	Comment
	Heritage shed located on the western side of the site Shed constructed with timber and aluminium
	Heritage shed located on the western side of the site Shed constructed with timber and aluminium

Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Site visit – 07/06/2023	Comment
	Current state upstate of the creek that flows under the access road. Note recent clearing of banks and potentially higher runoff causing cloudy water

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Safety Data Sheets

Appendix F

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Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

Safety Data Sheet

Infosafe No™ 3NU73 Issue Date :August 2021 ISSUED by NUFARM

Product Name **ASSOCIATE Herbicide**

Classified as hazardous

1. Identification

GHS Product Identifier	ASSOCIATE Herbicide
Product Code	0095
Product Type	Group B Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Telephone/Fax Number	Tel: +61 3 9282-1000
Emergency phone number	1800 033 498 (24hr Australia)
E-mail Address	SDSANZ@nufarm.com
Recommended use of the chemical and restrictions on use	For the control of certain brush and broadleaf species in native pastures, rights of way and commercial and industrial areas and for the control of certain broadleaf weeds in winter cereal crops, grass pastures and pasture renovation as per the Directions for Use table on the label.
Other Information	This Safety Data Sheet describes the properties of the concentrated product. The physical properties and the assessments may not apply to the properties of the product once it has been diluted for application.

2. Hazard Identification

GHS classification of the substance/mixture	Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1
Signal Word (s)	WARNING
Hazard Statement (s)	H410 Very toxic to aquatic life with long lasting effects.
Precautionary statement – General	P101 If medical advice is needed, have product container or label at hand. P102 Keep out of reach of children. P103 Read label before use.
Pictogram (s)	Environment

Precautionary statement – Prevention	P273 Avoid release to the environment.
Precautionary statement – Response	P391 Collect spillage.
Other Information	Poisons Schedule : Not Scheduled

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Metsulfuron Methyl	74223-64-6	600g/kg
	Silica, amorphous precipitated	112926-00-8	20g/kg
	Kaolin clay	1332-58-7	155g/kg
	Other ingredients (non-hazardous)		Balance

4. First-aid measures

Inhalation Remove affected person to fresh air until recovered. If symptoms develop or

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Safety Data Sheet

	persist, seek medical advice.
Ingestion	Rinse mouth and then drink plenty of water. If vomiting occurs, give more water to drink to assist dilution. Do not give anything by mouth to a semi-conscious or unconscious person.
Skin	Wash affected areas thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
Eye contact	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice if irritation develops or persists.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.
Hazards from Combustion Products	Non-combustible. If involved in a major fire, could evolve oxides of carbon, nitrogen or sulfur.
Special Protective Equipment for fire fighters	Breathable air apparatus must be worn when fighting a fire in which this product is involved.
Hazchem Code	2Z
Other Information	STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

6. Accidental release measures

Spills & Disposal	Recover the product by sweeping up or vacuuming without raising dust. Collect spilled material and waste in sealable open-top type containers for disposal.
Personal Protection	For appropriate personal protective equipment (PPE), refer Section 8.

7. Handling and storage

Precautions for Safe Handling	Avoid generating dusts while handling the product and mixing.
Conditions for safe storage, including any incompatibilities	Store in the closed, original container in a dry, well ventilated area, as cool as possible. Do not store for prolonged periods in direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.
Other Information	Equipment that has been used for this chemical should not be used for the application of other materials to sensitive plants, unless it has been washed with chlorine bleach solution as directed on the label. Always read the label and any attached leaflet before use.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Silica, amorphous precipitated			10		
Kaolin clay			10		

Appropriate engineering controls	Handle in well ventilated areas, generally natural ventilation is adequate.
Personal Protective Equipment	It is good practice to wear suitable personal protective equipment (PPE). When opening the container, preparing spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length PVC gloves and goggles.
Hygiene Measures	After use and before eating, drinking or smoking, wash hands, arms and face

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Version: 1, Version Date: 31/05/2024

Safety Data Sheet

Infosafe No™ 3NU73 Issue Date :August 2021 ISSUED by NUFARM

Product Name **ASSOCIATE Herbicide**

Classified as hazardous

	thoroughly with soap and water. After each day's use, wash contaminated clothing and safety equipment.
Requirements Concerning Special Training	Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

9. Physical and chemical properties

Form	Solid
Appearance	Off-white to tan granules
Solubility in Water	Disperses in water.
Vapour Pressure	3.3 x 10-7 mPa (25°C, metsulfuron methyl)
Partition Coefficient: n-octanol/water	Kow Log P is 0.0018 (pH7, 25°C for metsulfuron methyl)
Flammability	Non combustible material.
Other Information	pKa is 3.8 (20°C, metsulfuron methyl)

10. Stability and reactivity

Chemical Stability	Stable under normal conditions. Hydrolyses at pH <7.
Possibility of hazardous reactions	Keep away from strong oxidising agents.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. Toxicological Information

Acute Toxicity - Oral	LD50 (rat) >5000 mg/kg for metsulfuron methyl
Acute Toxicity - Dermal	LD50 (rabbit) >2000 mg/kg for metsulfuron methyl
Acute Toxicity - Inhalation	LC50 (rat) (4hr) >5 mg/l for metsulfuron methyl
Ingestion	Low toxicity. However, swallowing large amounts of concentrate may cause nausea and vomiting.
Inhalation	Not a likely route of exposure when handling the concentrate. May cause irritation to mucous membranes.
Skin	May irritate the skin.
Eye	The concentrate may cause irritation of the eyes.
Skin Sensitisation	Product is not a skin sensitiser.
Chronic Effects	Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Serious eye damage/irritation	Mild eye irritant.
Skin corrosion/irritation	Mild skin irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for metsulfuron methyl for a human is 0.01 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 1 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Aust Govt Dept. of APVMA, 'ADI List', April 2020).

12. Ecological information

Persistence and degradability	Half life in soil is typically 52 days.
Other Precautions	Do not contaminate dams, waterways or sewers with this product or the

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Safety Data Sheet

	containers which have held this product.
Environmental Protection	Spray drift should be avoided, read the label for more information. Do NOT apply, drain or flush equipment on or near desirable trees or other plants, or on an area where their roots extend, or in locations where the chemical may be washed or moved into contact with their roots.
Acute Toxicity - Fish	LC50 (96hr) for rainbow trout and bluegill sunfish is >150 mg/l for metsulfuron methyl
Acute Toxicity - Daphnia	EC50 (48hr) for daphnia is >120 mg/l for metsulfuron methyl.
Acute Toxicity - Algae	EC50 (72hr) for algae 0.045 mg/l.
Acute Toxicity - Other Organisms	The following data is for the active ingredient, metsulfuron methyl. Birds: Not toxic to birds. LD50 for mallard duck is >2510 mg/kg LD50 for bobwhite quail is >5620 mg/kg Bees: Not toxic to bees. LD50 >44.3 µg/bee.

13. Disposal considerations

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Do not use this container for any other purpose. Triple or preferably pressure rinse containers before disposal. Add rinsings to the spray tank. Dispose of in accordance with local regulations. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, puncture or shred and bury containers in local authority landfill. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

14. Transport information

Transport Information	It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.
Hazchem Code	2Z
Storage and Transport	Classified as non dangerous for transport according to the Australian Code for the Transport of Dangerous Goods by Road and Rail in packs not exceeding 500 kg (L) or IBCs not exceeding 3000 kg (L)(Special Provision AU01).
UN Number (Sea Transport)	3077
IMO Class/Packing Group	Class 9/PG III
IMO Marine Pollutant	Marine pollutant.
IMO Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (metsulfuron-methyl)

15. Regulatory information

Regulatory Information	Australia: WHS regulations (2011) - Schedule 11: classification not listed.
Poisons Schedule	Not Scheduled
Packaging & Labelling	READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Other Information	This product is registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). APVMA product number: 46361.

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Version: 1, Version Date: 31/05/2024

Safety Data Sheet

Infosafe No™ 3NU73 Issue Date :August 2021 ISSUED by NUFARM

Product Name **ASSOCIATE Herbicide**

Classified as hazardous

16. Other Information

Date of preparation or last revision of SDS Revised 04/08/2021

Contact Person/Point Normal Hours: SDS Coordinator Phone: +61 3 9282 1000
After Hours: Shift Supervisor Phone: 1800 033 498

...End Of MSDS...

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Version: 1, Version Date: 31/05/2024

Safety Data Sheet

infosafe CS: 3.4.22

Infosafe No™ 3NUQL Issue Date :November 2021 ISSUED by NUFARM

Product Name **Nufarm Weedmaster DST Herbicide**

Classified as hazardous

1. Identification

GHS Product Identifier	Nufarm Weedmaster DST Herbicide
Product Code	0714
Product Type	Group 9 Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Telephone/Fax Number	Tel: +61 3 9282-1000
Emergency phone number	1800 033 498 (24hr Australia)
E-mail Address	SDSANZ@nufarm.com
Recommended use of the chemical and restrictions on use	Water soluble herbicide for non selective control of many annual and perennial weeds in conservation tillage situations as per the Directions for Use table on the label.

Other Names

Name	Product Code
Nufarm Weedmaster DST Herbicide	0960

Other Information This Safety Data Sheet describes the properties of the concentrated product. The physical properties and the assessments may not apply to the properties of the product once it has been diluted for application.

2. Hazard Identification

GHS classification of the substance/mixture
Eye Damage/Irritation: Category 2A
Skin Corrosion/Irritation: Category 2

Signal Word (s) WARNING

Hazard Statement (s)
Causes serious eye irritation.
Causes skin irritation.

Precautionary statement – General
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.

Pictogram (s) Exclamation mark

Precautionary statement – Prevention
Wash hands and exposed skin thoroughly after handling.
Wear protective gloves, clothing, eye and face protection.

Precautionary statement – Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.

Other Information Poisons Schedule S5

3. Composition/information on ingredients

Ingredients

Name	CAS	Proportion
Alkoxylated alkylamine surfactant	Proprietary	0-10 %
Water	7732-18-5	Balance

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Product Name **Nufarm Weedmaster DST Herbicide**

Classified as hazardous

Ingredients	Name	CAS	Proportion
	Glyphosate (present as the potassium and mono-ammonium salts)	1071-83-6	470 g/L

4. First-aid measures

Inhalation Remove affected person to fresh air until recovered.

Ingestion If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient.
Do not give anything by mouth to a semi-conscious or unconscious person.
Give a glass of water.

Skin Wash affected areas thoroughly with soap and water.
If irritation persists, seek medical advice.

Eye contact If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes.
Seek medical advice.

First Aid Facilities If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.

Advice to Doctor Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.
Water, foam, carbon dioxide or dry chemical.

Hazards from Combustion Products Keep upwind.
This product, or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly flammable or explosive gas mixture.
If involved in a major fire, could evolve oxides of nitrogen or phosphorus.

Special Protective Equipment for fire fighters Breathable air apparatus may have to be worn if material is involved in fires especially in confined spaces.

Other Information STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

6. Accidental release measures

Spills & Disposal Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite).
Collect in sealed open top containers for disposal.
Final clean-up with degreasing agent or detergent is advised.

Environmental Precautions Prevent from entering drains, waterways or sewers.

7. Handling and storage

Precautions for Safe Handling For personal protective equipment (PPE) and hygiene advice, refer Section 8.

Conditions for safe storage, including any incompatibilities Store in the closed, original container in a dry, well ventilated area out of direct sunlight.
Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.

Other Information Always read the label and any attached leaflet before use.

8. Exposure controls/personal protection

Occupational exposure limit values No exposure standard has been established for this product.

Appropriate engineering controls No special ventilation required.

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Personal Protective Equipment	When opening the container, preparing the spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat, nitrile or elbow-length PVC gloves and face shield or goggles.
Hygiene Measures	After each day's use, wash contaminated clothing and safety equipment. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
Requirements Concerning Special Training	Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

9. Physical and chemical properties

Form	Liquid
Appearance	Green viscous liquid
Odour	Slight ammonia odour.
Melting Point	N/A
Boiling Point	>105°C
Solubility in Water	Soluble in water.
Specific Gravity	1.29 @ 20°C
pH	5.1
Volatile Component	N/A
Flash Point	None
Flammability	Non combustible material.

10. Stability and reactivity

Incompatible Materials	Corrosive to mild steel, galvanised steel and zinc. Non corrosive to stainless steel, polyethylene and plastics. Do not mix, store or apply the product or spray solutions of the product in galvanised steel or unlined steel (except stainless steel) containers or spray tanks.
Possibility of hazardous reactions	Avoid contact of the concentrate with strong alkalis and alkaline materials such as lime. Such contact may release ammonia vapour with a strong characteristic odour, which is an irritant to eyes. Ammonia is moderately toxic, with a TLV of 25ppm (TWA) or 17mg/m3 which has been set.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. Toxicological Information

Toxicology Information	No harmful effects are expected if the precautions on the label and this SDS are followed.
Acute Toxicity - Oral	LD50 (rat) >5000 mg/kg for a similar formulation
Acute Toxicity - Dermal	LD50 (rabbits) >5000 mg/kg for a similar formulation
Ingestion	The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. Possible symptoms of exposure include: nausea, vomiting and gastrointestinal discomfort and diarrhoea. Ingestion of a large quantity of the undiluted product may result in hypotension and pulmonary oedema.
Inhalation	When applying the product as a spray avoid breathing in spray mist. May cause irritation to mucous membranes and respiratory tract.
Skin	The concentrated product may cause slight irritation on contact. Prolonged contact is likely to result in irritation.

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Product Name **Nufarm Weedmaster DST Herbicide**

Classified as hazardous

Eye	The concentrate may cause irritation of the eyes. Prolonged contact with the concentrate may cause damage to the eye.
Carcinogenicity	The Australian Pesticide and Veterinary Medicine Authority (APVMA) and other regulatory agencies classify glyphosate as non-carcinogenic based on the weight-of-evidence. In 2015 the International Agency for Research on Cancer (IARC) concluded that glyphosate was probably carcinogenic to humans. This finding was considered by the APVMA in its 2016 review (1).
Chronic Effects	No information available, no chronic effects expected.
Serious eye damage/irritation	The product is an eye irritant.
Skin corrosion/irritation	The product is a skin irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for glyphosate for a human is 0.3 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 30 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Aust Govt Dept. of APVMA, 'ADI List', Edition 3/2021).

12. Ecological information

Persistence and degradability	Adsorption studies indicate that glyphosate has very low mobility. Average field half life of glyphosate is 47 days.
Known Harmful Effects on the Environment	Harmful to fish and other aquatic organisms (mainly due to the surfactant).
Other Precautions	Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.
Environmental Protection	Glyphosate is a non-selective contact herbicide. Spray drift can cause damage.
Acute Toxicity - Fish	The following is data for a similar product. LC50 (96hr) for rainbow trout is 3.13 mg/l. TL50 (96hr) carp is 19.7 ppm
Acute Toxicity - Daphnia	EC50 (48hr) for daphnia magna is 8.0 mg/l.
Acute Toxicity - Algae	EC50 for 72hrs is 0.124 mg/l for Selenastrum capricornutum
Acute Toxicity - Other Organisms	The following data is for the active ingredient, glyphosate. Birds: Not toxic to birds. LD50 for bobwhite quail is >3850 mg/kg Bees: Not toxic to bees. LD50 >100 µg/bee.

13. Disposal considerations

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Triple or preferably pressure rinse containers before disposal. Add rinsings to the spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging for appropriate disposal at an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Returnable containers: empty contents fully into application equipment. Replace cap, close all valves and return to the point of supply for refill or storage. Empty containers and product should not be burnt.

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Product Name **Nufarm Weedmaster DST Herbicide**

Classified as hazardous

QuikPour containers: DO NOT separate inner bladder from outer carton. Single rinse and add rinsings to the spray tank. Puncture outer carton and bladder. Follow recycling instructions for other containers as per the label.

14. Transport information

Transport Information	It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.
Storage and Transport	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

Regulatory Information	Australia: WHS regulations (2011) - Schedule 11: classification not listed.
Poisons Schedule	S5
Packaging & Labelling	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Other Information	This product is registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). APVMA product number: 62723.

16. Other Information

Date of preparation or last revision of SDS	Revised 18 November 2021 This SDS replaces document dated May 2019.
Literature References	(1). APVMA 2016 Regulatory position: consideration of the evidence for a formal reconsideration of glyphosate - (https://apvma.gov.au/sites/default/files/publication/20701-glyphosate-regulatory-position-report-final.pdf)
Contact Person/Point	Normal Hours: SDS Coordinator Phone: +61 3 9282 1000 After Hours: Shift Supervisor Phone: 1800 033 498
Revisions Highlighted	The SDS was reviewed. Minor changes were made to the information and product has been rebranded.

...End Of MSDS...

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Safety Data Sheet

Infosafe No™ 3NUL4 Issue Date :March 2015 ISSUED by NUFARM

Product Name **Archer 750 Herbicide**

Not classified as hazardous

1. Identification

GHS Product Identifier	Archer 750 Herbicide
Product Code	0101 NUL1606
Product Type	Group I Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Emergency phone number	1800 033 498 (24hr Australia)
Recommended use of the chemical and restrictions on use	For the control of a wide range of broadleaf weeds in wheat, barley, oats, triticale, canola, pastures, fallow land and forestry as specified in the Directions for Use table on the label.
Other Information	This Safety Data Sheet describes the properties of the concentrated product. The physical properties and the assessments may not apply to the properties of the product once it has been diluted for application.

2. Hazard Identification

GHS classification of the substance/mixture	Not classified as hazardous under the GHS criteria. NON-DANGEROUS GOODS. Dangerous goods classification according to the Australia Dangerous Goods Code.
Other Information	Poisons Schedule S5

3. Composition/information on ingredients

Chemical Characterization Solid

Ingredients

Name	CAS	Proportion
Clopyralid (present as the Potassium salt)	1702-17-6	750 g/kg
Other non hazardous ingredients		Balance

4. First-aid measures

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Skin	Wash affected areas thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
Eye contact	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.
Hazards from Combustion Products	May emit toxic fumes of hydrogen chloride or phosgene if involved in fires or exposed to extreme heat.
Special Protective Equipment for fire fighters	Breathable air apparatus may have to be worn if material is involved in fires especially in confined spaces.
Other Information	STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

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Safety Data Sheet

Infosafe No™ 3NUL4 Issue Date :March 2015 ISSUED by NUFARM

Product Name **Archer 750 Herbicide**

Not classified as hazardous

6. Accidental release measures

Spills & Disposal	Sweep up product without generating dust. Collect spilled material and waste in sealable open-top type containers for disposal. On-site disposal of concentrate is not acceptable.

7. Handling and storage

Precautions for Safe Handling	Do NOT contaminate dams, rivers or streams, or any other water bodies with pesticide or used containers.
Conditions for safe storage, including any incompatabilities	Store in the closed, original container in a cool, well ventilated area. Do not store for prolonged periods in direct sunlight.
Tank Cleaning	See label for detailed information on cleaning of spray equipment.
Other Information	Always read the label and any attached leaflet before use.

8. Exposure controls/personal protection

Occupational exposure limit values	No exposure standards have been established for this product by Safe Work Australia, however, the TWA exposure standard for dusts not otherwise specified is 10 mg/m3.
Appropriate engineering controls	Natural ventilation is sufficient when handling concentrate and preparing spray solution. Avoid generating and inhaling dusts.
Respiratory Protection	Do not inhale spray mist.
Personal Protective Equipment	It is good practice to wear suitable personal protective equipment (PPE). When opening the container, preparing spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length PVC gloves and goggles.
Hygiene Measures	After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash contaminated clothing and safety equipment.
Requirements Concerning Special Training	Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

9. Physical and chemical properties

Form	Solid
Appearance	Off-white coloured granules.
Solubility in Water	Soluble in water.
Vapour Pressure	1.33 mPa at 24°C for clopyralid acid
Flammability	Non combustible material.

10. Stability and reactivity

Chemical Stability	Stable under normal conditions.
Incompatible Materials	Not compatible with aluminium at high temperatures in the presence of water.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. Toxicological Information

Toxicology Information	No harmful effects are expected if the precautions on the label and this MSDS are followed.
Acute Toxicity - Oral	LD50 (rat) >3,500 mg/kg for a similar formulation
Acute Toxicity - Dermal	LD50 (rat) >2,000 mg/kg for a similar formulation

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Infosafe No™ 3NUL4 Issue Date :March 2015 ISSUED by NUFARM

Product Name **Archer 750 Herbicide**

Not classified as hazardous

Acute Toxicity - Inhalation	LC50 (rat) (4hr) >1 mg/l for clopyralid
Ingestion	The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury.
Inhalation	The components of the product are of low volatility and no adverse effects are expected from handling the concentrate. When applying the product as a spray avoid breathing in spray mist.
Skin	Not a skin irritant and not harmful by dermal exposure.
Eye	May cause slight irritation to the eyes.
Carcinogenicity	The weight of the evidence is that clopyralid is not carcinogenic.
Reproductive Toxicity	Data indicates no reproductive effects.
Mutagenicity	Data indicates no mutagenic effects.
Other Information	The Australian Acceptable Daily Intake (ADI) for clopyralid for a human is 0.5 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 50 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing, Office of Chemical Safety, 'ADI List', June 2014).

12. Ecological information

Persistence and degradability	Half life in soil is typically 8 - 66 days.
Mobility	High probability of mobility in soil.
Other Precautions	Do not contaminate dams, waterways or sewers with this product or the containers which have held this product.
Environmental Protection	Spray drift can cause damage, read the label for more information.
Acute Toxicity - Fish	The following is data for the active ingredient, clopyralid. LC50 (96hr) for rainbow trout is 103.5 mg/l. LC50 (96hr) for bluegill sunfish is 125.4 mg/l.
Acute Toxicity - Daphnia	EC50 (48hr) is 225 mg/l.
Acute Toxicity - Other Organisms	Birds: Not toxic to birds. LD50 for bobwhite quail is >2000 mg/kg Bees: Not toxic to bees. LD50 >100 µg/bee.

13. Disposal considerations

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Triple or preferably pressure rinse containers before disposal. Add rinsings to the spray tank. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging for appropriate disposal at an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. DO NOT burn empty containers or product.

14. Transport information

Transport Information	It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.
Storage and Transport	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

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Version: 1, Version Date: 31/05/2024

Safety Data Sheet

Infosafe No™ 3NUL4 Issue Date :March 2015 ISSUED by NUFARM

Product Name **Archer 750 Herbicide**

Not classified as hazardous

15. Regulatory information

Poisons Schedule	S5
Packaging & Labelling	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Other Information	This product is registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). APVMA product number: 63560.

16. Other Information

Date of preparation or last revision of SDS	Revised 11/03/2015. This SDS replaces document dated May 2010.
Contact Person/Point	Normal Hours: Mrs Kathleen Marsh Phone: +61 3 9282 1000 After Hours: Shift Supervisor Phone: 1800 033 498
Revisions Highlighted	The SDS was reviewed to include GHS requirements.

...End Of MSDS...

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SAFETY DATA SHEET
CORTEVA AGRISCIENCE AUSTRALIA PTY LTD

Product name: Garlon® 600 Herbicide **Issue Date:** 14.09.2021

CORTEVA AGRISCIENCE AUSTRALIA PTY LTD encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

SECTION 1: IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

Product name: Garlon® 600 Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
CORTEVA AGRISCIENCE AUSTRALIA PTY LTD
LEVEL 9, 67 ALBERT AVENUE
CHATSWOOD NSW 2067
AUSTRALIA

Customer Information Number: 1800-700-096
aucustomerservice@corteva.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: +61 2 9474 7350
Local Emergency Contact: 1800-370-754
For advice, contact a doctor (at once) or the Australian Poisons Information Centre: 131 126
Transport Emergency Only Dial 000

SECTION 2: HAZARD(S) IDENTIFICATION

GHS Classification
Skin sensitisation - Category 1
Specific target organ toxicity - repeated exposure - Category 2
Acute aquatic toxicity - Category 1
Chronic aquatic toxicity - Category 1

GHS label elements
Hazard pictograms

Signal word: **WARNING!**

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Hazard statements
May cause an allergic skin reaction.
May cause damage to organs (Kidney) through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

Precautionary statements
Prevention
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves.

Response
IF ON SKIN: Wash with plenty of soap and water.
Get medical advice/ attention if you feel unwell.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing before reuse.
Collect spillage.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS, IN ACCORDANCE WITH SCHEDULE 8

This product is a mixture.

Component	CASRN	Concentration
Triclopyr-2-butoxyethyl ester	64700-56-7	69.02%
Oxirane, polymer with methyloxirane, mono (nonylphenyl) ether	37251-69-7	< 10.0 %
TCP: 3,5,6-Trichloro-2-pyridinol	6515-38-4	< 1.0 %
Balance	Not available	<= 20.98 %

SECTION 4: FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

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Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before re-use. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5: FIREFIGHTING MEASURES

Hazchem Code:•3Z

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Nitrogen oxides. Hydrogen fluoride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may vent and/or rupture due to fire. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers,

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boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Corteva Agriscience for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

SECTION 7: HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid breathing vapour or mist. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation	
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3	SKIN, DSEN, BEI
TCP: 3,5,6-Trichloro-2-pyridinol	Dow IHG	TWA		7 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

Individual protection measures
Eye/face protection: Use safety glasses (with side shields).
Skin protection

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Hand protection: Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.
Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapour cartridge with a particulate pre-filter.

Other Information: Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:
AS/NZS 1336: Eye and face protection – Guidelines.
AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications.
AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment.
AS/NZS 2161: Occupational protective gloves.
AS/NZS 2210: Occupational protective footwear.
AS/NZS 4501: Occupational protective clothing Set

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Colour	Brown
Odour	Odourless
Odour Threshold	Odourless
pH	6.7 *pH Electrode*
Melting point/range	Not applicable to liquids
Freezing point	No data available
Boiling point (760 mmHg)	No data available
Flash point - closed cup	95 °C *Closed Cup*
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No data available

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Upper explosion limit	No data available
Vapour Pressure	No data available
Relative Vapour Density (air = 1)	1.2
Relative Density (water = 1)	No data available
Water solubility	Emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	1.2 g/cm3 at 20 °C *ANZ-01*
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with: Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen fluoride. Nitrogen oxides. Sulfur oxides.

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SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
As product: LD50, Rat, male, > 2,000 mg/kg. No deaths occurred at this concentration.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: LD50, Rabbit, female, > 2,000 mg/kg. No deaths occurred at this concentration.

Acute inhalation toxicity
Prolonged exposure is not expected to cause adverse effects. Based on the available data, respiratory irritation was not observed.
As product: The LC50 has not been determined.

Skin corrosion/irritation
Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause slight eye irritation.
Corneal injury is unlikely.

Sensitization
Has caused allergic skin reactions when tested in guinea pigs.
For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s): In animals, effects have been reported on the following organs: Kidney. Liver.

Carcinogenicity
For similar active ingredient(s). Triclopyr. For the solvent(s): Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
For the solvent(s): Did not cause birth defects or any other feotal effects in laboratory animals.

Reproductive toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

For the solvent(s): Studies in laboratory animals indicate that diethylene glycol monoethyl ether (DEGEE) is not a reproductive toxicant even when given in large amounts (a few percent in the

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drinking water). However, at the highest doses, it caused some toxic effects in offspring of treated animals: increased liver weight, decreased brain weight, reduced sperm motility.

Mutagenicity
For the active ingredient(s): For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:
Triclopyr-2-butoxyethyl ester

Acute inhalation toxicity
Prolonged exposure is not expected to cause adverse effects. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, 4 Hour, dust/mist, > 4.8 mg/l The LC50 value is greater than the Maximum Attainable Concentration.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

Acute inhalation toxicity
The LC50 has not been determined.

TCP: 3,5,6-Trichloro-2-pyridinol

Acute inhalation toxicity
The LC50 has not been determined.

Balance

Acute inhalation toxicity
The LC50 has not been determined.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Ecotoxicity
Triclopyr-2-butoxyethyl ester

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 Hour, 0.36 mg/l
LC50, Fish, 96 Hour, 0.310 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 2.9 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, > 3.00 mg/l, OECD Test Guideline 201
ErC50, Myriophyllum spicaturn, 14 d, 0.0473 mg/l
NOEC, Myriophyllum spicaturn, 14 d, 0.00722 mg/l

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Chronic toxicity to fish
NOEC, Rainbow trout (Oncorhynchus mykiss), 0.0263 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 1.6 mg/l
LOEC, Daphnia magna (Water flea), 21 d, number of offspring, 5.1 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), 21 d, number of offspring, 2.9 mg/l

Toxicity to Above Ground Organisms
Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2,000 mg/kg).
Oral LD50, Colinus virginianus (Bobwhite quail), 21 d, 735 mg/kg bodyweight.

Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5,000 ppm).
Dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, 1,890 mg/kg bodyweight.

Oral LD50, Apis mellifera (bees), 48 Hour, mortality, > 110 µg/bee
Contact LD50, Apis mellifera (bees), 48 Hour, mortality, > 100 µg/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,042 mg/kg

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 86 mg/l

TCP: 3,5,6-Trichloro-2-pyridinol

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.75 mg/l
LC50, Pimephales promelas (fathead minnow), 72 Hour, 14.3 mg/l
LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, 4.9 - 12.5 mg/l

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), 48 Hour, 3.1 - 10.4 mg/l
EC50, eastern oyster (Crassostrea virginica), 96 Hour, 9.3 mg/l
LC50, grass shrimp (Palaemonetes pugio), 96 Hour, 83.0 mg/l

Acute toxicity to algae/aquatic plants
ErC50, diatom Navicula sp., 72 Hour, Growth rate inhibition, 2.0 mg/l
EbC50, diatom Navicula sp., 72 Hour, Biomass, 1.1 mg/l
EyC50, diatom Navicula sp., 96 Hour, Growth inhibition (cell density reduction), 1.2 mg/l
EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 0.67 - 0.76 mg/l
EC50, blue-green alga Anabaena flos-aquae, 120 Hour, Biomass, 1.49 mg/l
ErC50, Lemna minor (duckweed), 336 Hour, Biomass, 8.75 mg/l

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through test, 91 d, growth, 0.178 mg/l
LOEC, Oncorhynchus mykiss (rainbow trout), flow-through test, 91 d, growth, 0.278 mg/l

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MATC (Maximum Acceptable Toxicant Level), Oncorhynchus mykiss (rainbow trout), flow-through test, 91 d, growth, 0.222 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.058 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2,000 mg/kg).
Oral LD50, Colinus virginianus (Bobwhite quail), > 2,000 mg/kg

Material is practically non-toxic to birds on a dietary basis (LC50 > 5,000 ppm).
Dietary LC50, Anas platyrhynchos (Mallard duck), > 5,620 ppm

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, 9.8 mg/kg
EC50, Eisenia fetida (earthworms), 56 d, 6.89 mg/kg

Balance

Acute toxicity to fish
No relevant data found.

Persistence and degradability

Triclopyr-2-butoxyethyl ester

Biodegradability: Chemical degradation (hydrolysis) is expected in the environment. Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 1.39 mg/mg

Stability in Water (1/2-life)
Hydrolysis, half-life, 8.7 d, pH 7, Half-life Temperature 25 °C

Photodegradation
Atmospheric half-life: 5.6 Hour
Method: Estimated.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

Biodegradability: No relevant information found.

TCP: 3,5,6-Trichloro-2-pyridinol

Biodegradability: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Theoretical Oxygen Demand: 0.89 mg/mg

Balance

Biodegradability: No relevant data found.

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Bioaccumulative potential

Triclopyr-2-butoxyethyl ester

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 4.62
Bioconcentration factor (BCF): 110 Fish

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

Bioaccumulation: No relevant data found.

TCP: 3,5,6-Trichloro-2-pyridinol

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 3.21 Measured
Bioconcentration factor (BCF): 16 Fish Measured

Balance

Bioaccumulation: No relevant data found.

Mobility in Soil

Triclopyr-2-butoxyethyl ester

Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil. For the degradation product: Triclopyr. Potential for mobility in soil is very high (Koc between 0 and 50).

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

No relevant data found.

TCP: 3,5,6-Trichloro-2-pyridinol

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient (Koc): 130 Measured

Balance

No relevant data found.

Results of PBT and vPvB assessment

Triclopyr-2-butoxyethyl ester

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

TCP: 3,5,6-Trichloro-2-pyridinol

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Balance

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

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Other adverse effects

Triclopyr-2-butoxyethyl ester

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

TCP: 3,5,6-Trichloro-2-pyridinol

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Balance

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14: TRANSPORT INFORMATION

ADG

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr-2-butoxyethyl ester)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Triclopyr-2-butoxyethyl ester

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr-2-butoxyethyl ester)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Triclopyr-2-butoxyethyl ester
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr-2-butoxyethyl ester)
UN number	UN 3082

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Class	9
Packing group	III

Hazchem Code: •3Z

Further information:
Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the Australian Code for the Transport of Dangerous Goods (ADG). This applies when transported by road or rail in packaging's that do not incorporate a receptacle exceeding 500 kg(L) or IBCs per ADG Special Provision AU01.

Marine Pollutants in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code and IATA special provision A197.

This information is not intended to convey all specific regulatory or operational requirements/ information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

Poison Schedule: S6
APVMA Approval Number: 31898

SECTION 16: ANY OTHER RELEVANT INFORMATION

Revision
Identification Number: 101200350 / A143 / Issue Date: 14.09.2021 / Replaces: 6.01.2021
DAS Code: IWD-3483
Sections amended: 1, 5, 14, 15, 16

Legend

Dow IHG	Dow Industrial Hygiene Guideline
SKIN, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
TWA	Time Weighted Average (TWA):

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods;

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IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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Version: 1, Version Date: 31/05/2024

Section 1 - Identification of The Material and Supplier

Macspred Pty Ltd
13 Kennedys Drive Delacombe
Ballarat VIC 3350
Phone: (03) 5335 8522
Fax: (03) 5335 8622

Chemical nature: Hexazinone is a 1,2,4-triazinone derivative.
Trade Name: **MACSPRED HEXMAC 750 SG HERBICIDE**
APVMA Code: 61923
Product Use: Agricultural herbicide for use as described on the product label.
Creation Date: **July, 2013**
This version issued: **July, 2018** and is valid for 5 years from this date.
Poisons Information Centre: Phone 13 11 26 from anywhere in Australia

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Xn, Harmful. Xi, Irritating. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

SUSMP Classification: S6
ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.
UN Number: None allocated

GHS Signal word: WARNING

HAZARD STATEMENT:

H302: Harmful if swallowed.
H320: Causes eye irritation.
H410: Very toxic to aquatic life with long lasting effects.

PREVENTION

P264: Wash contacted areas thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves, protective clothing and eye or face protection.

RESPONSE

P330: Rinse mouth.
P352: Wash with plenty of soap and water.
P301+P312: IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P391: Collect spillage.
P370+P378: In case of fire, use carbon dioxide, dry chemical, foam, water fog.

STORAGE

P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well-ventilated place. Keep cool.

DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

Emergency Overview

Physical Description & Colour: Light tan coloured granulated solid.

Odour: Mild acrid odour.
Major Health Hazards: Effects due to acute exposure may include irritation the eyes, nose and throat, as well as nausea and vomiting. harmful if swallowed, eye irritant.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m^3)	STEL (mg/m^3)
Hexazinone	51235-04-2	750g/kg	not set	not set
Other non hazardous ingredients	secret	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak "is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.
Skin Contact: Gently brush away excess particles. Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.
Eye Contact: Quickly and gently brush particles from eyes. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.
Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids.
Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.
Extinguishing Media: In case of fire, use carbon dioxide, dry chemical, foam, water fog.
Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade.

Flash point:	No data
Upper Flammability Limit:	No data.
Lower Flammability Limit:	No data.
Autoignition temperature:	No data.
Flammability Class:	No data.

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including eye/face protection. All skin areas should be covered. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include cotton, rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective glasses and, preferably, goggles. If there is a significant chance that dusts are likely to build up in cleanup area, we recommend that you use a suitable Dust Mask.
Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Consider vacuuming if appropriate. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is

any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits	**TWA (mg/m^3)**	**STEL (mg/m^3)**

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Hexazinone is set at 0.1mg/kg/day. The corresponding NOEL is set at 10mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, Dec 2012.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

Skin Protection: The information at hand indicates that this product is not harmful and that normally no special skin protection is necessary. However, we suggest that you routinely avoid contact with all chemical products and that you wear suitable gloves (preferably elbow-length) when skin contact is likely.

Protective Material Types: We suggest that protective clothing be made from the following materials: cotton, rubber, PVC.

Respirator: If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable Dust Mask.

Eyebaths or eyewash stations should be provided near to where this product is being handled commercially.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Light tan coloured granulated solid.
Odour:	Mild acrid odour.
Boiling Point:	Decomposes before boiling at 100kPa.
Freezing/Melting Point:	Hexazinone melts 115-117℃
Volatiles:	Nil at 100℃.
Vapour Pressure:	Nil at normal ambient temperatures.
Vapour Density:	Not applicable.
Specific Gravity:	No data.
Water Solubility:	Hexazinone 33g/L at 25℃
pH:	No data.
Volatility:	Nil at normal ambient temperatures.
Odour Threshold:	No data.
Evaporation Rate:	Not applicable.
Coeff Oil/water Distribution:	No data
Viscosity:	Not applicable.
Autoignition temp:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
Conditions to Avoid: Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
Incompatibilities: strong acids, strong bases, strong oxidising agents.
Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.
Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Toxicity: Acute toxicity: Hexazinone is harmful via the oral route, with a reported LD_{50} of 1690 mg/kg in rats, and 860 mg/kg in male guinea pigs. Via the dermal route, it is practically nontoxic, with a reported dermal LD_{50} in rabbits of greater than 5278 mg/kg. Hexazinone does not cause significant skin irritation or sensitization in guinea pigs or rabbits, but it does cause severe eye irritation in rabbits. Hexazinone's inhalation toxicity is very low, its 1-hour inhalation LC_{50} is greater than 7.48 mg/L in rats. Effects due to acute exposure may include irritation the eyes, nose and throat, as well as nausea and vomiting.
Chronic toxicity: Over a 2-week period, male rats receiving dietary doses of 300 mg/kg/day showed no evidence of cumulative toxicity. Male rats receiving doses of 50 mg/kg/day over 90 days showed no effects, but higher doses caused decreased body weights. Body weight gain was seen in dogs at doses of about 35 mg/kg/day and higher over 1 year. Very high doses for 8 weeks did not affect hamsters and caused only increased liver weights in mice.
Reproductive effects: Female rats, fed moderate to high doses (up to 150 mg/kg) over two generations, showed no effects on reproduction or milk production, but only reduced offspring weight. Available evidence suggests that Hexazinone is unlikely to cause reproductive effects in humans.
Teratogenic effects: Pregnant female rats receiving doses up to 100 mg/kg/day during gestation, and rabbits receiving up to 125 mg/kg/day, evidenced no foetal abnormalities. Teratogenic effects were observed in rats only at maternal doses greater than 400 mg/kg/day during gestation. It is unlikely that Hexazinone would pose a teratogenic effects in humans under normal conditions.
Mutagenic effects: Hexazinone showed no mutagenic activity in the Ames assay and tests using Chinese hamster ovary cell cultures. In living animal tests, no changes in chromosomal structure occurred. In other laboratory analyses of its capacity to induce genetic disruption, results were inconclusive. The evidence suggests Hexazinone is either slightly or nonmutagenic.
Carcinogenic effects: Rats, mice, and dogs have been tested for 1 to 2 years on diets containing up to 500 mg/kg. Hexazinone was not carcinogenic in rats, and was only carcinogenic in mice at dietary levels of over 300 mg/kg. At these levels in mice, liver adenomas were observed. These studies suggest that Hexazinone is unlikely to be carcinogenic to humans under normal circumstances.
Organ toxicity: Target organs affected in lab animals by chronic Hexazinone exposure include the liver.
Fate in humans and animals: Hexazinone is fairly rapidly processed and excreted by animal systems. Rats typically excrete Hexazinone almost completely within 3 to 6 days, the majority in urine. Long-term exposure does not diminish this rapid processing and elimination; rats given prior exposure for 2 weeks excreted almost all of the product within 3 days. Less than 1% of the parent Hexazinone was detected in urine and faeces. There does not appear to be any significant tissue accumulation. Dairy cows given small amounts of Hexazinone in their diets for 30 days had no detectable residues in milk, fat, liver, kidney, or lean muscle, but did have minute amounts of a Hexazinone metabolite in their milk. Lactating goats given small amounts of Hexazinone for 5 days also had small amounts of the compound in their milk and livers.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Hexazinone	Conc>=25%: Xn; R22; R36

Potential Health Effects

Inhalation:
Short Term Exposure: Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation.

Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. In addition product is unlikely to cause any discomfort in normal use.
Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.
Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. Available data shows that this product is harmful, but symptoms are not available. This product is unlikely to cause any irritation problems in the short or long term.
Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 12 - Ecological Information

Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.
Effects on birds: Hexazinone is slightly to practically nontoxic to birds. The acute oral LD_{50} of Hexazinone in bobwhite quail is 2258 mg/kg. The 5- to 8-day dietary LC_{50} in bobwhite quail and mallard ducklings is greater than 10,000 ppm.
Effects on aquatic organisms: Hexazinone is slightly toxic to fish and other freshwater organisms. Some of the reported 96-hour LC_{50} values include: rainbow trout, 320 mg/L; bluegill, 370 mg/L; fathead minnow, 274 mg/L. The 48-hour LC_{50} for Hexazinone in the water flea, Daphnia magna, is 151 mg/L. The bioconcentration factor in bluegill sunfish is only seven times the ambient water concentration, indicating very low bioaccumulation in fish.
Effects on other organisms: Hexazinone is nontoxic to honey bees. The herbicide is toxic to larch trees (Larix spp.), and should not be used for weed control in forested areas.
Environmental Fate:
Breakdown in soil and groundwater: Hexazinone is of moderate to high persistence in the soil environment. Measured field half-lives range from less than 30 to 180 days, with a representative value of about 90 days. Hexazinone is broken down by soil microbes, which release carbon dioxide in the process. Sunlight may also break down the compound via photodegradation. The rate of breakdown under natural field conditions will depend on many site-specific variables, including sunlight, rainfall, soil type, and rate of application. Hexazinone does not evaporate to any appreciable extent from soil. Hexazinone is very poorly adsorbed to soil particles, very soluble in water, and slowly degraded, so it is likely to be mobile in most soils and has the potential to contaminant groundwater.
Breakdown in water: Photodecomposition, biodegradation, and dilution are the prime mechanisms for loss of Hexazinone activity in aquatic systems.
Breakdown in vegetation: Hexazinone is readily absorbed in the root zone and translocated throughout the plant. It is less mobile following uptake from the foliage. It is converted in non-susceptible plants to less phytotoxic compounds. In susceptible plants, it is more persistent and can result in disruption of photosynthesis and chloroplast damage. Section 13 - Disposal Considerations
Disposal: Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 http://www.chemclear.com.au/ and for help with the disposal of empty drums, contact DrumMuster http://www.drummuster.com.au/ where you will find contact details for your area.

Section 14 - Transport Information

UN Number: This product is not classified as a Dangerous Good by ADG, IATA or IMDG/IMSBC criteria. No special transport conditions are necessary unless required by other regulations.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredient: Hexazinone, is mentioned in the SUSMP.

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD STATEMENT: INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS

OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (Feb 2016)

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http://www.kilford.com.au/ Phone (02)8321 8866

SAFETY DATA SHEET
CORTEVA AGRISCIENCE AUSTRALIA PTY LTD

Product name: VERDICT® 520 Herbicide **Issue Date:** 14.09.2021

CORTEVA AGRISCIENCE AUSTRALIA PTY LTD encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

SECTION 1: IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

Product name: VERDICT® 520 Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
CORTEVA AGRISCIENCE AUSTRALIA PTY LTD
LEVEL 9, 67 ALBERT AVENUE
CHATSWOOD NSW 2067
AUSTRALIA

Customer Information Number: 1800-700-096
aucustomerservice@corteva.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: +61 2 9474 7350
Local Emergency Contact: 1800-370-754
For advice, contact a doctor (at once) or the Australian Poisons Information Centre: 131 126
Transport Emergency Only Dial 000

SECTION 2: HAZARD(S) IDENTIFICATION

GHS Classification
Acute toxicity - Category 4 - Oral
Acute aquatic toxicity - Category 1
Chronic aquatic toxicity - Category 1

GHS label elements
Hazard pictograms

Signal word: **WARNING!**

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Hazard statements
Harmful if swallowed.
Very toxic to aquatic life with long lasting effects.

Precautionary statements
Prevention
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.

Response
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
Collect spillage.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS, IN ACCORDANCE WITH SCHEDULE 8

This product is a mixture.

Component	CASRN	Concentration
Haloxyfop-R methyl ester	72619-32-0	46.91 %
Diethylene glycol monomethyl ether	111-90-0	40.0 – 50.0 %
Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether	37251-69-7	< 10.0 %
Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid	116661-27-9	< 1.0 %
2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester		< 1.0 %
2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester		< 1.0 %
Balance	Not available	≤1.89 %

SECTION 4: FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5: FIREFIGHTING MEASURES

Hazchem Code: ●3Z

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots,

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and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep personnel out of low areas. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Corteva Agriscience for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

SECTION 7: HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapour or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapours. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Diethylene glycol monoethyl ether	US WEEL	TWA	25 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

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Individual protection measures
Eye/face protection: Use safety glasses (with side shields).
Skin protection
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Other protection: Wear clean, body-covering clothing.
Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapour cartridge with a particulate pre-filter.

Other Information: Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:
AS/NZS 1336: Eye and face protection – Guidelines.
AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications.
AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment.
AS/NZS 2161: Occupational protective gloves.
AS/NZS 2210: Occupational protective footwear.
AS/NZS 4501: Occupational protective clothing Set

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Colour	Brown
Odour	Solvent
Odour Threshold	No data available
pH	5.4 *CIPAC MT 75.2*
Melting point/range	Not applicable to liquids
Freezing point	No test data available
Boiling point (760 mmHg)	202 °C *Literature* (solvent)
Flash point	**closed cup** 97.5 °C
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available

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Lower explosion limit	1.2 % vol *Literature* (solvent)
Upper explosion limit	8.5 % vol *Literature* (solvent)
Vapour Pressure	14 mmHg at 20 °C *Literature*
Relative Vapour Density (air = 1)	1.148
Relative Density (water = 1)	116 at 20 °C *Literature*
Water solubility	Emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	34.4 mPa.s at 20 °C 14.1 mPa.s at 40 °C
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No significant increase (>5C) in temperature.
Liquid Density	1.151 g/ml *Calculated*
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Hydrogen fluoride. Toxic gases are released during decomposition.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death.

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As product: LD50, Rat, female, 500 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

As product: LC50, Rat, male and female, 4 Hour, dust/mist, > 5.41 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact is essentially non-irritating to skin.

Serious eye damage/eye irritation
May cause slight eye irritation. Corneal injury is unlikely.

Sensitization
For product: Did not demonstrate the potential for contact allergy in mice.
For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For similar active ingredient(s).
In animals, effects have been reported on the following organs: Kidney. Blood. Testes. Thyroid. Liver. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

For the solvent(s): Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity
For similar active ingredient(s). Haloxyfop did not cause cancer in laboratory rats; however, there was a slightly increased incidence of malignant liver tumors in female mice in a lifetime dietary feeding study.
For the solvent(s): Did not cause cancer in laboratory animals.

Teratogenicity
For similar active ingredient(s). Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
For the solvent(s): Did not cause birth defects or any other foetal effects in laboratory animals.

Reproductive toxicity
For the solvent(s): Studies in laboratory animals indicate that diethylene glycol monoethyl ether (DEGEE) is not a reproductive toxicant even when given in large amounts (a few percent in the drinking water). However, at the highest doses, it caused some toxic effects in offspring of treated animals: increased liver weight, decreased brain weight, reduced sperm motility.
For similar active ingredient(s). In animal studies, did not interfere with reproduction.

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Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Ecotoxicity

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.92 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), static test, 48 Hour, 38 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, Growth rate inhibition, > 31 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to Above Ground Organisms
Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).
Oral LD50, Colinus virginianus (Bobwhite quail), mortality, 1517 mg/kg bodyweight.

Oral LD50, Apis mellifera (bees), 48 Hour, mortality, > 210.0 micrograms/bee
Contact LD50, Apis mellifera (bees), 48 Hour, mortality, > 200.0 micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, mortality, 671.05 mg/kg

Persistence and degradability
Haloxyfop-R methyl ester
Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Fail
Biodegradation: 8 - 11 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Stability in Water (1/2-life): Hydrolysis, half-life, < 24 Hour, pH 9

Diethylene glycol monoethyl ether
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

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10-day Window: Pass
Biodegradation: 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent
10-day Window: Not applicable
Biodegradation: > 90 %
Exposure time: 5.5 d
Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 1.91 mg/mg
Chemical Oxygen Demand: 1.84 mg/mg
Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	5 - 17 %
10 d	31 - 71 %
20 d	49 - 87 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 4.093 Hour
Method: Estimated.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether
Biodegradability: No relevant information found.

Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid
Biodegradability: For similar material(s): Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Biodegradability: For similar material(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Biodegradability: For similar material(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

Balance
Biodegradability: No relevant data found.

Bioaccumulative potential
Haloxyfop-R methyl ester
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 0.63 - 4.6 Measured
Bioconcentration factor (BCF): 262 Estimated.

Diethylene glycol monoethyl ether
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water (log Pow): -0.54 Measured

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Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether
Bioaccumulation: No relevant data found.

Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid
Bioaccumulation: For similar material(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water (log Pow): 3.98 Estimated.
Bioconcentration factor (BCF): < 1 Fish Estimated.

2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 4.51 Estimated.
Bioconcentration factor (BCF): 438 Fish Estimated.

Balance
Bioaccumulation: No relevant data found.

Mobility in Soil
Haloxyfop-R methyl ester
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient (Koc): 17800 Estimated.

Diethylene glycol monoethyl ether
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 20 Estimated.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether
No relevant data found.

Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid
For similar material(s): Potential for mobility in soil is medium (Koc between 150 and 500).

2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): 5454 Estimated.

2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester
Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): 5454 Estimated.

Balance
No relevant data found.

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Results of PBT and vPvB assessment

Haloxyfop-R methyl ester

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Diethylene glycol monoethyl ether

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Balance

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Other adverse effects

Haloxyfop-R methyl ester

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Diethylene glycol monoethyl ether

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Oxirane, polymer with methyloxirane, mono(nonylphenyl)ether

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Haloxyfop Methyl (S-) isomer: 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanic acid

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2-(4-((3-Chloro-5-(chloro difluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2-(4-((6-Chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic Acid, Methyl Ester

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14: TRANSPORT INFORMATION

ADG

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Haloxyfop methyl ester)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Haloxyfop methyl ester

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Haloxyfop methyl ester)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Haloxyfop methyl ester
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Haloxyfop methyl ester)
UN number	UN 3082
Class	9
Packing group	III

Hazchem Code: ●3Z

Further information:
Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the Australian Code for the Transport of Dangerous Goods (ADG). This applies when transported by road or rail in packaging's that do not incorporate a receptacle exceeding 500 kg(L) or IBCs per ADG Special Provision AU01.

Marine Pollutants in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less

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for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code and IATA special provision A197.

This information is not intended to convey all specific regulatory or operational requirements/ information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

Poison Schedule: S6
APVMA Approval Number: 50643

SECTION 16: ANY OTHER RELEVANT INFORMATION

Revision
Identification Number: 101203289 / A143 / Issue Date: 14.09.2021 / Replaces: 6.01.2021
DAS Code: GF-142
Sections amended: 5, 14

Legend

TWA	8-hr Time Weighted Average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic

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Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System.

CORTEVA AGRISCIENCE AUSTRALIA PTY LTD urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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Safety Data Sheet

infosafe CS: 3.4.14

Infosafe No™ 3NU72 Issue Date :August 2020 ISSUED by NUFARM

Product Name **MAKO HERBICIDE**

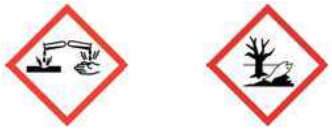
Classified as hazardous

1. Identification

GHS Product Identifier	MAKO HERBICIDE
Product Code	4114
Product Type	Group B Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Telephone/Fax Number	Tel: +61 3 9282-1000
Emergency phone number	1800 033 498 (24hr Australia)
E-mail Address	sdsanz@nufarm.com
Recommended use of the chemical and restrictions on use	For the control of certain annual and perennial grasses and broadleaf weeds in commercial and industrial areas: around agricultural buildings and rights of way as per the Directions for Use table on the label.
Other Information	This Safety Data Sheet describes the properties of the concentrated product. The physical properties and the assessments may not apply to the properties of the product once it has been diluted for application.

2. Hazard Identification

GHS classification of the substance/mixture	ED1 Eye Damage/Irritation: Category 1 SC-2 Skin Corrosion/Irritation: Category 2 AA1 Hazardous to the Aquatic Environment - Acute Hazard: Category 1 AC1 Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1
Signal Word (s)	DANGER
Hazard Statement (s)	H318 Causes serious eye damage. H315 Causes skin irritation. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.
Precautionary statement – General	P101 If medical advice is needed, have product container or label at hand. P102 Keep out of reach of children. P103 Read label before use.
Pictogram (s)	Corrosion, Environment, The below pictograms are GHS Hazard symbols for workplace use only. See SECTION 14 for Dangerous Goods information.



Precautionary statement – Prevention	P280 Wear protective gloves, clothing, eye and face protection. P264 Wash hands and exposed skin thoroughly after handling.
Precautionary statement – Response	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor/physician. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P332+P313 If skin irritation occurs: Get medical advice/attention. P362 Take off contaminated clothing and wash before reuse. P391 Collect spillage.
Other Information	Poisons Schedule S5

3. Composition/information on ingredients

Ingredients	**Name**	**CAS**	**Proportion**

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Product Name **MAKO HERBICIDE**

Classified as hazardous

Ingredients	Name	CAS	Proportion
	Sulfometuron methyl	74222-97-2	750 g/kg
	Other ingredients (non-hazardous)		10-30 %
	Anionic surfactant	N/A	0-10 %
	Kaolin clay	1332-58-7	0-10 %

4. First-aid measures

Inhalation Remove affected person to fresh air until recovered. If symptoms develop or persist, seek medical advice.

Ingestion Rinse mouth and then drink plenty of water.
If vomiting occurs, give more water to drink to assist dilution.
Do not give anything by mouth to a semi-conscious or unconscious person.

Skin Wash affected areas thoroughly with soap and water.
Remove contaminated clothing and launder before re-use.

Eye contact If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes.
Seek medical advice if irritation develops or persists.

First Aid Facilities If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.

Advice to Doctor Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.

Special Protective Equipment for fire fighters Breathable air apparatus must be worn when fighting a fire in which this product is involved.

Other Information STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

6. Accidental release measures

Spills & Disposal Recover the product by sweeping up or vacuuming without raising dust.
Collect spilled material and waste in sealable open-top type containers for disposal.

Personal Protection For appropriate personal protective equipment (PPE), refer Section 8.

7. Handling and storage

Precautions for Safe Handling Avoid generating dusts while handling the product and mixing.

Conditions for safe storage, including any incompatibilities Store in the closed, original container in a dry, well ventilated area, as cool as possible.
Do not store for prolonged periods in direct sunlight.

Other Information Equipment that has been used for this chemical should not be used for the application of other materials to sensitive plants, unless it has been washed with chlorine bleach solution as directed on the label.
Always read the label and any attached leaflet before use.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Kaolin clay			10		

Appropriate engineering controls Handle in well ventilated areas, generally natural ventilation is adequate.

Personal Protective Equipment When opening the container, preparing product for use and using the prepared product, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing), elbow-length chemical resistent gloves, goggles and a half face piece respirator.

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Product Name **MAKO HERBICIDE**

Classified as hazardous

Hygiene Measures	After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash contaminated clothing and safety equipment.
Requirements Concerning Special Training	Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

9. Physical and chemical properties

Form	Solid
Appearance	Off-white granules
Solubility in Water	Disperses in water.
Vapour Pressure	7.3 x 10-11 mPa (25°C, sulfometuron methyl)
Partition Coefficient: n-octanol/water	Kow Log P is 1.18 (pH5); -0.51 (pH7)
Flammability	Non combustible material Handling large quantities of this product, associated with industrial processing, may be a dust explosion hazard.
Other Information	pKa is 5.2

10. Stability and reactivity

Chemical Stability	Stable under normal conditions. Hydrolyses at pH <7.
Possibility of hazardous reactions	Keep away from strong oxidising agents.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. Toxicological Information

Acute Toxicity - Oral	LD50 (rat) >5000 mg/kg for sulfometuron-methyl
Acute Toxicity - Dermal	LD50 (rabbit) >2000 mg/kg for sulfometuron-methyl
Acute Toxicity - Inhalation	LC50 (rat) (4hr) >11 mg/l for sulfometuron-methyl
Ingestion	Low toxicity. However, swallowing large amounts of concentrate may cause nausea and vomiting.
Inhalation	Not a likely route of exposure when handling the concentrate. May cause irritation to mucous membranes.
Skin	May irritate the skin.
Eye	A severe eye irritant.
Skin Sensitisation	Product is not a skin sensitiser.
Reproductive Toxicity	No such effects have been observed in the absence of maternal toxicity.
Chronic Effects	Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Serious eye damage/irritation	This product is a severe eye irritant.
Skin corrosion/irritation	Moderate skin irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for sulfometuron-methyl for a human is 0.02 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 2.5 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Aust Govt Dept. of Health, Office of Chemical Safety, 'ADI List', December 2014).

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Product Name **MAKO HERBICIDE**

Classified as hazardous

12. Ecological information

Persistence and degradability Half life in soil is typically 28 days.

Environmental Protection Spray drift can cause damage, read the label for more information.
Do NOT apply, drain or flush equipment on or near desirable trees or other plants, or on an area where their roots extend, or in locations where the chemical may be washed or moved into contact with their roots.
Do NOT contaminate any body of water by spraying, cleaning of equipment, disposal of waste, including chemical or used containers, or run-off from treated areas. If accidental contamination does occur, the water must not be used for irrigation.
Marine pollutant.

Acute Toxicity - Fish LC50 (96hr) for rainbow trout and bluegill sunfish is >12.5 mg/l for sulfometuron-methyl

Acute Toxicity - Daphnia LC50 >12.5 ppm

Acute Toxicity - Algae EC50 for algae is 0.0046 mg/l.

Acute Toxicity - Other Organisms The following data is for the active ingredient, sulfometuron-methyl.
Birds: Not toxic to birds. LD50 for mallard ducks is >5000 mg/kg
LD50 for bobwhite quail is >5620 mg/kg
Bees: Not toxic to bees. LD50 >100 µg/bee.

13. Disposal considerations

Container Disposal Do not use this container for any other purpose.
Triple or preferably pressure rinse containers before disposal. Add rinsings to the spray tank.
Do not dispose of undiluted chemicals on site.
If recycling, replace cap and return clean containers to recycler or designated collection point.
If not recycling, puncture or shred and bury containers in local authority landfill.
If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots.
Empty containers and product should not be burnt.

14. Transport information

Storage and Transport UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (contains sulfometuron methyl) Class 9 PG III MARINE POLLUTANT
ADG Code: Not a dangerous good in packs <500kg (Special Provision AU001)
IATA Code: Not restricted for transport when 5kg or less (Special Provision A197)

15. Regulatory information

Poisons Schedule S5

Packaging & Labelling CAUTION
KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Other Information This product is registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA). APVMA product number: 51666.

16. Other Information

Date of preparation or last revision of SDS Revised 20/08/2020.

Contact Person/Point Normal Hours: SDS Coordinator Phone: +61 3 9282 1000
Email : SDSANZ@nufarm.com

Revisions Highlighted Product is classified as hazardous under the GHS criteria.

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Safety Data Sheet

infosafe
CS: 3.4.14

Infosafe No™ 3NU72 Issue Date :August 2020 ISSUED by NUFARM

Product Name **MAKO HERBICIDE**

Classified as hazardous

...End Of MSDS...

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Tel: +61-(0) 3-9301 7000 Fax: +61-(0) 3-9309 7966
Website: www.vicchem.com E-mail: products@vicchem.com

SAFETY DATA SHEET

SECTION 1 : Identification of the material and supplier

Product Name : OUTRIGHT† 770 Spray Adjuvant

Description:	Methyl Oleate, Ammonium Sulphate micro emulsion
Recommended Use:	Adjuvant for Herbicides
Product Code:	19880
Supplier Name:	Victorian Chemical Co. Pty. Ltd.
Address:	83 Maffra Street Coolaroo, Victoria 3048 Australia
Telephone:	+61-(0) 3-9301 7000
Fax:	+61-(0) 3-9309 7966

Australian Emergency contact number: +61-(0) 3-9301 7000 (office hours)

SECTION 2 : Hazards Identification

GHS Classification: Classified as **Hazardous** according to the criteria of NOHSC.
Not classified as Dangerous Goods according to Australian Dangerous Goods Code
Skin Irritation: Category 2
Eye Irritation: Category 2A

Signal Word: Warning

Hazard Statements: H315-Causes skin irritation

H319-Causes serious eye irritation

Precautionary Statements: P264-Wash hands thoroughly after handling

P280 Wear protective gloves and eye protection

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P332+P313 If skin irritation occurs: Get medical advice.

P362 Take off contaminated clothing and wash before reuse

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists get medical advice.

SECTION 3 : Ingredients Composition/Information

Chemical Identity	CAS Number	Proportion
Methyl Oleate	112-62-9	10-30%
Ammonium Sulphate	7783-20-2	10-30%
Non-ionic surfactants and non hazardous diluents including water	n/a	To 100%

VICTORIAN CHEMICAL CO. PTY. LTD.
ABN 36 004 188 863
83 Maffra Street, Coolaroo, Victoria, 3048, Australia
Tel: +61-(0) 3-9301 7000 Fax: +61-(0) 3-9309 7966
Website: www.vicchem.com E-mail: products@vicchem.com

SAFETY DATA SHEET

SECTION 4 : First Aid Measures

Swallowed:	Rinse mouth with water. Give water to drink. Do not induce vomiting. Seek medical advice quickly.
Eye:	Irrigate with copious quantities of water for 15 minutes. Seek medical advice quickly.
Skin:	Wash contaminated skin with plenty of water. Remove contaminated clothing and wash before reuse. If irritation occurs seek medical advice.
Inhaled:	Move to fresh air. Seek medical advice if nausea or vomiting occurs.
First Aid Facilities:	Ensure eye bath and safety shower are available and ready for use.
Advice to Doctor:	Treat symptomatically.

SECTION 5 : Fire Fighting Measures

Suitable extinguishing media: Foam, Carbon Dioxide, Dry Chemical, Water Spray

Hazards from combustion products: In the event of fire the following can be released. Carbon monoxide, carbon dioxide.

Precautions for fire fighters and special protective equipment: Fire fighters should wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion.

Hazchem Code: None Allocated

SECTION 6 : Accidental Release Measures

Emergency procedures: Slippery when spilt, clean up immediately. Wear protective equipment to prevent skin and eye damage.

Methods and materials for containment and clean up: Prevent run off into drains and waterways. Contain spills with absorbent material such as sand or soil. Collect and seal in properly labelled containers for disposal. Dispose of in accordance with all Local, State and Federal regulations at an approved waste disposal site. For small spills, wash with plenty of water.

SECTION 7 : Handling and Storage

Precautions for safe handling: Avoid skin and eye contact. Wash hands after using product.

Conditions for safe storage: Store in the closed original container in a cool, well-ventilated area.

Bulk Storage: C2 Combustible liquid

SECTION 8 : Exposure / Personal Protection

National exposure standards: None Allocated.

Biological limit values: None Allocated.

Engineering controls: Ensure adequate ventilation to keep exposure levels to a minimum.

Personal protective equipment: Wear safety glasses or goggles, impermeable gloves (PVC or neoprene) and overalls.

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SECTION 9 : Physical and Chemical Properties

Appearance:	Viscous amber coloured liquid	**Solubility in Water:**	Emulsifiable
Boiling Point:	>100°C	**Flashpoint:**	> 150°C
Melting Point:	< 0°C	**Flammability Limits:**	Not Available
Viscosity @ 40°C:	Not Available	**Vapour Pressure:**	Not Available
Specific Gravity:	1.15 @ 20°C		

SECTION 10 : Stability and Reactivity

Chemical stability: Stable under normal conditions of use.
Conditions to avoid: None Known.
Incompatible materials: Strong oxidizing agents
Hazardous decomposition products: Ammonia, oxides of nitrogen and carbon.
Hazardous reactions: No hazardous reactions with proper storage and handling.

SECTION 11 : Toxicological Information

Acute effects:

Swallowed:	Ingestion may cause nausea, vomiting or diarrhoea or irritation to the throat and stomach. Ingestion of high quantities may lead to central nervous system depression.
Eye Contact:	Irritating. Causes eye irritation, tearing, stinging, blurred vision and redness.
Skin:	Repeated exposure may cause drying, redness, itching and irritation.
Inhaled:	Inhalation of vapour or mist may cause irritation of the nose, throat and respiratory system. In high concentrations, vapour is narcotic and may cause headache, dizziness and anaesthesia.

Chronic effects:
Repeated or prolonged skin contact may result in skin irritation.

SECTION 12 : Ecological Information

Ecotoxicity: Based on similar materials, it is expected to be harmful to aquatic organisms.
Persistence and degradability: Not Available .
Mobility: Product is emulsifiable and disperses in water.

SECTION 13 : Disposal Considerations

Disposal Methods: In accordance with local authority regulations, take to special waste incineration plant. If empty contaminated containers are recycled or disposed of, the receiver must be informed about possible hazards.
Special precautions for landfill or incineration: Avoid contaminating waterways

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Website: www.vicchem.com E-mail: products@vicchem.com

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SECTION 14 : Transport Information

UN Number: None allocated

UN Proper Shipping Name: Not applicable

Class: None allocated

Packing Group: None allocated

Hazchem Code: None allocated

Road and Rail Transport: Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

Marine Transport: Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport: Not classified as Dangerous Goods by the criteria of the international Air Transport (IATA) Dangerous Goods Regulations for transport by air.

SECTION 15 : Regulatory Information

Classification: All components are listed on the AICS

Poisons Schedule: None allocated

SECTION 16 : Other Information

None Available

CONTACT POINT

This MSDS summarises at date of issue our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Since Victorian Chemical Co. Pty. Ltd. cannot anticipate or control the conditions under which the product may be used, prior to usage each user must review this MSDS in the context of how the product will be handled and used in the workplace.

Victorian Chemical Co. Pty. Ltd. will not be responsible for any damage caused by the use of the product otherwise than in accordance with the directions and information contained in this document.

If clarification or further information is required to ensure that an appropriate risk assessment can be made, the user should contact Victorian Chemical Co. Pty. Ltd. (03) 9301 7000. Ask for Technical Manager.

Safety Data Sheets are updated regularly. Please ensure that you have a current copy.

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DL130 Bauxite Project

Site History Review

Pitt & Sherry
(Operations) Pty Ltd
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Located nationally —
Melbourne
Sydney
Brisbane
Hobart
Launceston
Newcastle
Devonport

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Environmental Effects Report

Appendix D

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DL130 Bauxite Project

Environmental Effects Report

Prepared for

ABx Group Limited

Client representative

Nathan Towns

Date

22 May 2024

Rev05

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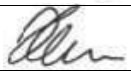
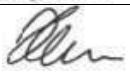
Reviewed by — Lucas Paterno		**Date —** 22nd May 2024
Authorised by — Lucas Paterno		**Date —** 22nd May 2024

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Rev03	Minor update mining lease area	JH, AH	DL	DL	23/08/2023
Rev04	Updates from EPA Review	JH, AH	DL	DL	03/10/2023
Rev05	Updates from Council and EPA review	JH, AH	LP	LP	22/05/2024

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Abbreviations

ABN	Australian Business Number
ACN	Australian Company Number
AHD	Australian Height Datum
AHR	Aboriginal Heritage Register
AHT	Aboriginal Heritage Tasmania
AMD	Acid Mine Drainage
ASX	Australian Stock Exchange
BOM	Bureau of Meteorology
CHMA	Cultural Heritage Management Australia
DAD	*Eucalyptus amygdalina* forest and woodland on dolerite
DOB	*Eucalyptus obliqua* dry forest
DOV	*Eucalyptus ovata* forest and woodland
DPIPWE	Department of Primary Industries, Parks, Water & Environment
DRP	Decommissioning and Rehabilitation Plan
DSO	Direct Shipping Ore
EER	Environmental Effects Report
EMPCA	*Environmental Management and Pollution Control Act 1994*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FAG	Agricultural land
FPH	Plantations for silviculture – hardwood
FPS	Plantations for silviculture – softwood
FRG	Regenerating cleared land
FUM	Extra-urban miscellaneous
Ha	Hectares
JV	Joint Venture
Km	Kilometres
LPS	Local Provisions Schedule
LUPA	*Land Use Planning and Approvals Act*
ML	Mining Lease
MNES	Matters of National Environmental Significance

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MRDA	*Mineral Resources Development Act 1995*
MRT	Mineral Resources Tasmania
NAF	Non-acid forming
NC Act	*Nature Conservation Act 2002*
NVA	Natural Values Atlas
PAL	*State Policy on Protection of Agricultural Land 2009*
PC	*Phytophthora cinnamomi*
PID	Property Identification
RMPS	*Resource Management and Planning System*
ROM	Run of Mine
SO_3	Sulfur trioxide
TIA	Traffic Impact Assessment
TSP Act	*Threatened Species Protection Act 1995*
wmt	Wet Metric tonne
WOB	*Eucalyptus obliqua* forest with broad-leaf shrubs

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Executive Summary

ABx proposes to develop a bauxite quarry (the DL130 Project) adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of Deloraine, Tasmania. ABx currently holds two Exploration Leases (EL9/2010 and EL10/2021) over the Project Area. A Mining Lease Application has been submitted to Mineral Resources Tasmania (MRT)[1]. The life of the operation is anticipated to be up to 20 years and will produce up to 56,000 tonnes of bauxite ore per annum through shallow surface excavation operating on a campaign basis.

The bauxite is extracted by shallow surface excavation and does not require any blasting. Most of the ore in the deposit is likely to be of high quality, to be directly trucked without requiring upgrading by screening, but this is currently unknown. There will be no permanent waste rock stockpiles as screened fines and low-grade material will be returned to support rehabilitation. Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time. Therefore, rehabilitation will be continuous and commence as soon as practicable. ABx has experience in returning previously quarried/mined areas back to better than pre-mining land value with the Bald Hill Project near Campbell Town, Tasmania.

The DL130 deposit will be critical and indispensable to ensure continuity of supply to its markets. The main output is expected to be cement-grade bauxite sales to Australasian cement companies. The high-quality bauxite within the DL130 deposit produces a cement with high strength-to-weight ratio used to build major infrastructure. Due to the high-quality, less cement powder is needed per tonne of concrete, thus reducing overall CO_2 emissions. The DL130 Project Area is heavily modified and currently operated by forestry company Forico. The Project area presents very limited risk to environmental values with limited native vegetation requiring clearing, increasing the favourability of the site.

A Notice of Intent (NoI) for the proposed Project was submitted in November 2022 to commence the approvals process. This Environmental Effects Report (EER) has been prepared in response to the Project Specific Guidelines (PSGs) issued by the Environment Protection Authority (EPA) in December 2022 under Section 74(4) of the *Environmental Management and Pollution Control Act 1994* (EMPCA). The Project will require a planning application under the *Land Use Planning and Approvals Act 1993* (LUPA Act) to be submitted to the Meander Valley Council.

The environmental aspects where the DL130 Project has potential for impact are as follows:

- **Air quality:** The only impact to air quality as a result of the Project will be dust. ABx will implement appropriate control measures to ensure that dust emissions are supressed at all times. Consequently, air emissions from the quarry are unlikely to cause environmental harm or adversely affect nearby residents
- **Water quality:** A Stormwater Management Plan has been prepared to address potential impacts to surface water. The impact from the Project on water quality is anticipated to be minimal through the implementation of stormwater management infrastructure such as sediment basins, cut-off drains and culverts. As no confirmed groundwater was encountered during exploration drilling, it is highly unlikely the Project will impact on groundwater. Management measures will reduce likelihood that groundwater is not impacted
- **Noise emissions:** Noise emissions from the Project are not likely to cause environmental harm or adversely affect nearby residents. The findings from the Noise Impact Assessment indicate the level of predicted noise emissions from the Project at nearby residences meets the Tasmanian Quarry Code of Practice daytime noise limit. “Good practice” noise mitigation measures will be adopted to ensure that noise emissions from the quarrying activities do not exceed predicted levels

[1] Mining Lease Application reference 2142P/M.

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- **Natural values:** The Project Area is highly modified and currently operated by forestry company Forico. The land has been recently harvested and replanted. Native vegetation is present largely as remnants associated with the road access corridor. *Nature Conservation Act 2002* (NC Act) listed threatened ecological community *Eucalyptus ovata* forest and woodland is present within this road access corridor but will not be impacted by the Project except for potentially being trimmed if necessary. A threatened flora species and potential habitat of threatened faunal species have been recorded within the Project Area. However, no threatened flora or fauna species are known to be present within areas that will be directly disturbed. Management measures such as preclearance den surveys, speed limits and eagle nest surveys will be undertaken to ensure threatened species are not significantly impacted by the Project
- **Waste:** The Project will not produce waste rock, tailings or other material requiring specific disposal requirements and there will be no permanent waste rock stockpiles. Any extracted material that is not of sufficient grade for blending and shipment will be used for rehabilitation. The project will generate general refuse waste, stormwater and sewage. All solid and liquid waste from the Project will comply with the EPA Quarry Code of Practice 2017 and Environmental Management and Pollution Control (Waste Management) Regulations 2020. The potential for acid mine drainage (AMD) to occur is very low but appropriate precautionary measures will be implemented
- **Environmentally hazardous materials:** Blasting or the use of chemicals for processing bauxite will not be undertaken or used. Fuels and oils will be required on site but will be stored appropriately as per the *Dangerous Goods (Road and Rail Transport) Act 2010* and *Work Health and Safety Act 2012*
- **Site contamination:** Contaminants such as fuel or herbicides used by Forico in the past are the only known contamination risks. A Site History Review has been completed to support the DA and includes results from soil samples to help determine the risk of these contaminants to human health of workers on site, and the environment
- **Environmental impacts of traffic:** A Traffic Impact Assessment (TIA) concluded the impact of traffic generated by the Project is minimal (refer to TIA at Appendix). The Noise and dust are expected to be the only impacts. Traffic was included in the noise model which did not exceed acceptable limits for receptors. Similarly, dust from traffic is likely to be minimal as vegetation lining the roads will reduce the spread of dust. Management measures including limiting vehicle speed limits and maintaining current road drainage conditions are proposed; and
- **Greenhouse gas emissions and climate change:** The Project will be operated in line with the Tasmanian Climate Change Strategy. In the long term (15-20 years) the high-grade ore pockets are advantageous worldwide for the emissions reduction opportunities it provides. The production of ore for aluminium production under any circumstance is advantageous in a holistic sense due to aluminium's role in lightweight construction of infrastructure, machinery and vehicles giving a profound reduction in moving weight and ultimately in energy used and emissions generated.

In summary, the potential impacts identified can all be mitigated by appropriate management measures proposed.

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1. Part A – Proponent information

1.1 Title of the proposal

The proposed Project is titled DL130 Bauxite Project (referred to as DL130).

1.2 Proponent and activity operator details

Proponent details are provided in Table 1.

Table 1: Proponent and activity operator details

Name of proponent (legal entity)	ABx Group Limited
Name of proponent (trading name)	ABx Group
Registered address of proponent	Level 5, 52 Phillip Street SYDNEY New South Wales 2000
Postal address of proponent	Level 5, 52 Phillip Street SYDNEY New South Wales 2000
ABN number	14 139 494 885
ACN number (where relevant)	139 494 885
Contact person's name	Nathan Towns
Telephone	+61 458 025 656
Email address	ntowns@abxgroup.com.au
Consultant details	pitt&sherry Operations (Australia) Pty Ltd (pitt&sherry) Katrina Hill +61 6323 1978 khill@pittsh.com.au

1.3 Proponent's background information

ABx is a publicly listed exploration and mining company that was listed on the ASX (code: ABX) on 24 December 2009. ABx discovered and holds the core of the Eastern Australian Bauxite Province. It has eight bauxite tenements, covering 321 km^2 in Queensland, New South Wales and Tasmania. ABx4 is a wholly owned subsidiary of ABx that holds all of ABx's Tasmanian exploration tenements.

In 2014, ABx opened its first mine in Tasmania, 'Bald Hill', near Campbell Town which was operational until the end of December 2020. Bauxite products were railed and trucked from Bald Hill to Bell Bay Port and southwards to Impact Fertilizers. ABx has completed the rehabilitation of Bald Hill mine to better than pre-mining land value.

The standard of finalised rehabilitation is highly regarded by Tasmanian authorities and is an excellent example of ABx's capabilities to return previously mined areas back to better than their original state in accordance with ABx's paramount corporate policy: ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it. We only operate where welcomed.

The operator is ABx4 and for the purposes of the *Environmental Management and Pollution Control Act 1994* (EMPCA), the entity responsible for the quarrying operations will be ABx4. DL130 entities and their statutory responsibilities are detailed below in Table 2.

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Table 2: DL130 entities and their statutory responsibilities

Responsibility	Company
Exploration Licence holder	ABx4 Pty Ltd (ABx4, ACN 141 724 281)
ABx4 Ultimate Holding Company	ABx Group Limited (ABx, ACN 139 494 885)
Joint venture (JV) partner	No JV partner is currently proposed
ABx4 owned mine lease holding companies	ABx4
Mining lease applicant	ABx4
Lease holder	ABx4
Capital confirmation	ABx4
Mining bond	ABx4
Mine operator	ABx4
Planning & environmental permit application	ABx4
Permit responsible person	ABx4

1.4 Relationship to any other proposals

DL130 is not related to any other existing proposals.

At the time of writing there are two other existing mining leases in the district as follows:

- ML 1994P/M – construction minerals, 22 ha, stone, Cresswells Transport and Quarrying Pty Ltd; and
- ML 2097P/M – construction minerals, 37 ha, stone, Walters Contracting Pty Ltd ATF C&K Walters Family Trust.

1.5 Applicable environmental legislation, standards and guidelines

Table 3 below includes the applicable commonwealth and state environmental legislation, standards, guidelines, strategies, and policies for DL130.

1.5.1 Local government

The proposed development is located within the boundaries of the Meander Valley Council. The proposed use and development will be assessed in accordance with the Tasmanian Planning Scheme - Meander Valley (TPS)

Tasmanian Planning Scheme – Meander Valley (TPS). Most of the development area including the quarry is located within the Rural Zone, the existing access road intersects an area zoned as Agricultural Zone. The use class is Extractive Industry, which is a Permitted use class within the Rural Zone and Discretionary in the Agricultural Zone. The Meander Valley Council will require a permit application under the LUPA Act, which will also be likely subject to the provisions of the Parking and Sustainable Transport Code and Road and Railway Assets Code. Refer to Section 2.6 for information on the key planning aspects of DL130.

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Table 3: Applicable environmental legislation, standards and guidelines

Applicable Environmental Legislation, Standards and Guidelines	Description	Implication
Commonwealth legislation		
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Under the EPBC Act, the proponent must determine whether a Project requires referral to the Department of Climate Change, Energy, the Environment and Water for a decision as to whether it is a 'controlled action. An action will require approval from the Minister if the action has, will have, or is likely to have a significant impact on Matters of National Environmental Significance (MNES), which encompass all species and communities listed under the EPBC Act, certain activities, and places of national importance.	As no MNES will be directly impacted by DL130, no referral to the Commonwealth will be required.
State legislation		
Tasmanian Resource Management and Planning System (RMPS)	All environmental and land management legislation in Tasmania is underpinned by the RMPS. This provides common objectives as a schedule in each relevant act.	
Mineral Resources Development Act 1995 (MRDA)	The MRDA provides for the development of mineral resources consistent with sound economic, environmental and land use management in Tasmania. Mineral Resources Tasmania (MRT) administers the approval of, and ongoing works on, exploration licences, special exploration licences, retention licences, production licences and mining leases under the MRDA.	DL130 will require Ministerial approval in response to the Mining Lease Application (2142P/M).
State Policies and Projects Act 1993	The *State Policies and Projects Act 1993* establishes the process to put in place State Policies under the RMPS of Tasmania. State Policies seek to ensure a consistent and coordinated approach and incorporate the minimum amount of regulation necessary to achieve their objectives of managing natural resources. State Policies are implemented through their integration into Local Government Planning Schemes.	

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Applicable Environmental Legislation, Standards and Guidelines	Description	Implication
	Currently there are three State Policies: State Coastal Policy 1996 (Coastal Policy) State Policy on Water Quality Management 1997 (Water Quality Policy) State Policy on Protection of Agricultural Land 2009 (PAL Policy).	
State Coastal Policy 1996 (Coastal Policy)	The purpose of the Coastal Policy is to implement the sustainable development objectives of the RMPS in Tasmania's coastal areas and is applicable to all Tasmanian State waters and land (excepting Macquarie Island) within one kilometre inland of the high-water mark.	The Coastal Policy is not applicable to any part of this proposal as no part of the site is within one kilometre of the high-water mark.
State Policy on Water Quality Management 1997 (Water Quality Policy)	The purpose of the Water Quality Policy is 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 the RMPS.	A full description of erosion and sediment control measures which will be applied to ensure compliance with the Water Quality Policy are provided in Section 3.2.
Dangerous Goods (Road and Rail Transport) Act 2010	The purpose of this Act is to regulate the transport of dangerous goods by road and rail in order to promote public safety and protect property and the environment.	DL130 will be adhering to this Act for activities associated with the use of fuels.
State Policy on Protection of Agricultural Land 2009 (PAL Policy)	The purpose of the PAL Policy is to "conserve and protect agricultural land so that it remains available for the sustainable development of agriculture, recognising the particular importance of prime agricultural land". The main objective of the PAL Policy is to ensure that the productive capacity of agricultural land is appropriately recognised and protected in the use and development of agricultural land. The PAL Policy focuses on protecting prime agricultural land (land capability classes 1, 2 and 3) from conversion to non-agricultural uses or from being fettered from being used for agricultural activities.	The land on which DL130 will be developed is class 3 land. The land is currently managed by forestry company Forico and will be returned after rehabilitation.

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Applicable Environmental Legislation, Standards and Guidelines	Description	Implication
Land Use Planning and Approvals Act 1993 (LUPA Act)	Under the LUPA Act, Councils are required to administer the development and use of land within their municipal boundary. The assessment of development and use is undertaken in accordance with the relevant planning scheme(s).	DL130 will be subject to a permit application under the LUPA Act to the Meander Valley Council. If Council approves the application, they may include conditions of approval relating to planning aspects and they must also include any environmental conditions specified by the Board of the Environment Protection Authority under the *Environmental Management and Pollution Control Act 1994* (see below).
Environmental Management and Pollution Control Act 1994 (EMPCA)	EMPCA is the primary environmental protection legislation in Tasmania. The basis of the EMPCA is prevention, reduction and remediation of environmental harm. In Tasmania, the responsibility for environmental management is shared by the Environment Protection Authority (EPA) and local councils under the EMPCA.	DL130 is a level 2A activity under Schedule 2 of the EMPCA and an Environmental Effects Report (EER) will be submitted to the EPA for assessment and approval. This EER describes in detail how the potential environmental impacts of the proposal will be managed and mitigated. Approval under this Act will establish the environmental operating permit and conditions for DL130.
Water Management Act 1999	The Tasmanian *Water Management Act 1999* deals with licencing the taking of water from watercourses and wells, management of water districts and dam approvals. Large dams require consideration of the Australian National Committee on Large Dams guidelines and possibly registration.	Submissions under this Act will only be necessary in the event a dam of greater capacity than 1 ML is required.
Aboriginal Heritage Act 1975	It is recognised that all registered and unregistered Tasmanian Aboriginal sites are protected by the State *Aboriginal Heritage Act 1975* and the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.	Three isolated artefact Aboriginal heritage sites have been identified by Cultural Heritage Management Australia (CHMA) in the DL130 Project Area. Refer to Section 2.8.10 for Aboriginal heritage site management. An unanticipated discovery plan will be put in place to ensure any finds are appropriately managed.

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Applicable Environmental Legislation, Standards and Guidelines	Description	Implication
Historic Cultural Heritage Act 1995	The purpose of the Act is to promote the identification, assessment, protection and conservation of places having historic cultural heritage significance and to establish the Tasmanian Heritage Council.	During CHMA's site survey no European heritage features of state or national significance were detected (refer to Section 2.8.11).
Nature Conservation Act 2002 (NC Act)	The NC Act makes provision with respect to the conservation and protection of the fauna, flora and geological diversity of the State, to provide for the declaration of national parks and other reserved land and for related purposes.	A natural values assessment was undertaken by ECOTas which addresses the implications of this Act. Refer to Section 3.4.
Threatened Species Protection Act 1995 (TSP Act)	The TSP Act is designed to provide for the protection and management of threatened native flora and fauna and to enable and promote the conservation of native flora and fauna.	A natural values assessment was undertaken by ECOTas which addresses the implications of this act. Refer to Section 3.4.
Biosecurity Act 2019	The *Biosecurity Act 2019* prohibits the introduction of declared weeds into Tasmania and provides a framework for the eradication of declared weed species, prevention of their spread and mechanisms for action for their control.	A natural values assessment was undertaken by ECOTas which addresses the implications of this act. Refer to section 3.5.3.
Workplace Health and Safety Act 2012	The *Workplace Health and Safety Act 2012* provides for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces. Workers and other persons should be given the highest level of protection against harm to their health, safety and welfare from hazards and risks arising from work or from specified types of substances or plant as is reasonably practicable.	ABx will operate DL130 in accordance with established environmental, health and safety systems and procedures.
Environment Protection Policy (Air Quality) 2016	The Environment Protection Policy (Air Quality) provides a framework for the management and regulation of point and diffuse sources of emissions to air for pollutants with the potential to cause environmental harm.	Assessment of potential air quality impacts, along with proposed management and mitigation measures, for DL130 are included in Section 3.1.

Applicable Environmental Legislation, Standards and Guidelines	Description	Implication
Environment Protection Policy (Noise) 2009	The Environment Protection Policy (Noise) sets a strategic framework for noise management by focussing on objectives and principles for noise control, with human health as a value to be protected. It does not include implementation measures, which are dealt with through other instruments such as regulations and planning schemes.	Assessment of potential noise impacts, along with proposed management and mitigation measures for DL130 are included in Section 3.3.
EPA Quarry Code of Practice 2017	The purpose of this code is to document acceptable safety and environmental guidelines for quarrying.	DL130 will operate under the acceptable safety and environmental guidelines outlined in the Quarry Code of Practice 2017.
EPA Decommissioning and Rehabilitation Plan (DRP) – A guideline for the Tasmanian mining industry 2011	This guideline formally recognizes and sets out an agreed documented environmental management strategy for the decommissioning and rehabilitation (D&R) of an activity prior to and after the cessation of the activity.	Decommissioning and rehabilitation will be undertaken in accordance with the EPA DRP.

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2. Part B – Proposal description

2.1 Overview of activity and site

2.1.1 Proposal's background

The proposed DL130 Project will be located adjacent to Porters Bridge Road in Reedy Marsh, approximately 10 km northeast of the Deloraine township in Tasmania. Figure 1 shows the location of the DL130 Project Area (referred to as Project Area) within the Reedy Marsh region. The life of the operation is anticipated to be up to 20 years and will:

- Extract up to 1,400,000 wet metric tonnes (wmt), including processing through screening, up to 1,100,000 wmt during the life of operation and crushing, likely one occurrence per year. It is predicted that a minimum of 20% if the ore will not need to be processed; and
- Extract up to 70,000 wmt of bauxite ore per annum through shallow surface excavation, including 56,000 wmt of processing.

This is a small portion of the DL130 bauxite resource and ABx plans to seek other customers for Tasmanian bauxite. The potential for future expansion will be subject to market opportunities and commodity value. It is acknowledged that any future increase in production limits will be subject to ABx's statutory obligations under the EMPCA.

The land is highly modified and is currently operated by forestry company Forico. The project area is dominated by intensively managed softwood plantation (*Pinus radiata*). The land has been recently harvested and replanted (Q3/Q4 2022). After quarrying activities have finished, the site will be returned to Forico for replantation. Land quality may be improved as the retained topsoil will be used in rehabilitation progressively enabling soil viability to be retained.

Although a threatened flora species and potential habitat of threatened faunal species have been recorded within the Project Area, none are known to be present within areas that will be disturbed. A Natural Values Assessment was undertaken by ECOtas and the legislative and policy implications section of the report (Appendix A) concludes that referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is not required.

ABx currently hold Exploration Leases (EL9/2010 and EL10/2021) over the Project Area. A Mining Lease Application has been submitted to Mineral Resources Tasmania (MRT), reference 2142P/M. Subject to MRT's assessment and approval, it is anticipated that a conditional Mining Lease (ML) will be granted to ABx in accordance with the *Mineral Resources Development Act 1995* and regulations pertaining to ML grants. The ML will only cover the Exploration Leases, while the Project Area also includes the access road between the ML and Porters Bridge Road.

The Project area also includes 340 Porters Bridge Road which relates which solely to the removal of a slither of vegetation for the safety of the public and vehicles using the existing site entry. Refer to Figure 2 below, this area is shaded in yellow with a blue dash line. This area is also referred to in Addendum 1 of the Natural Values Assessment (Appendix A) and Traffic Impact Assessment (Appendix D). The landowner owner has been informed that their 340 Porters Bridge Road is subject to this submission.

A Development Application (DA) will also be submitted to the Meander Valley Council.

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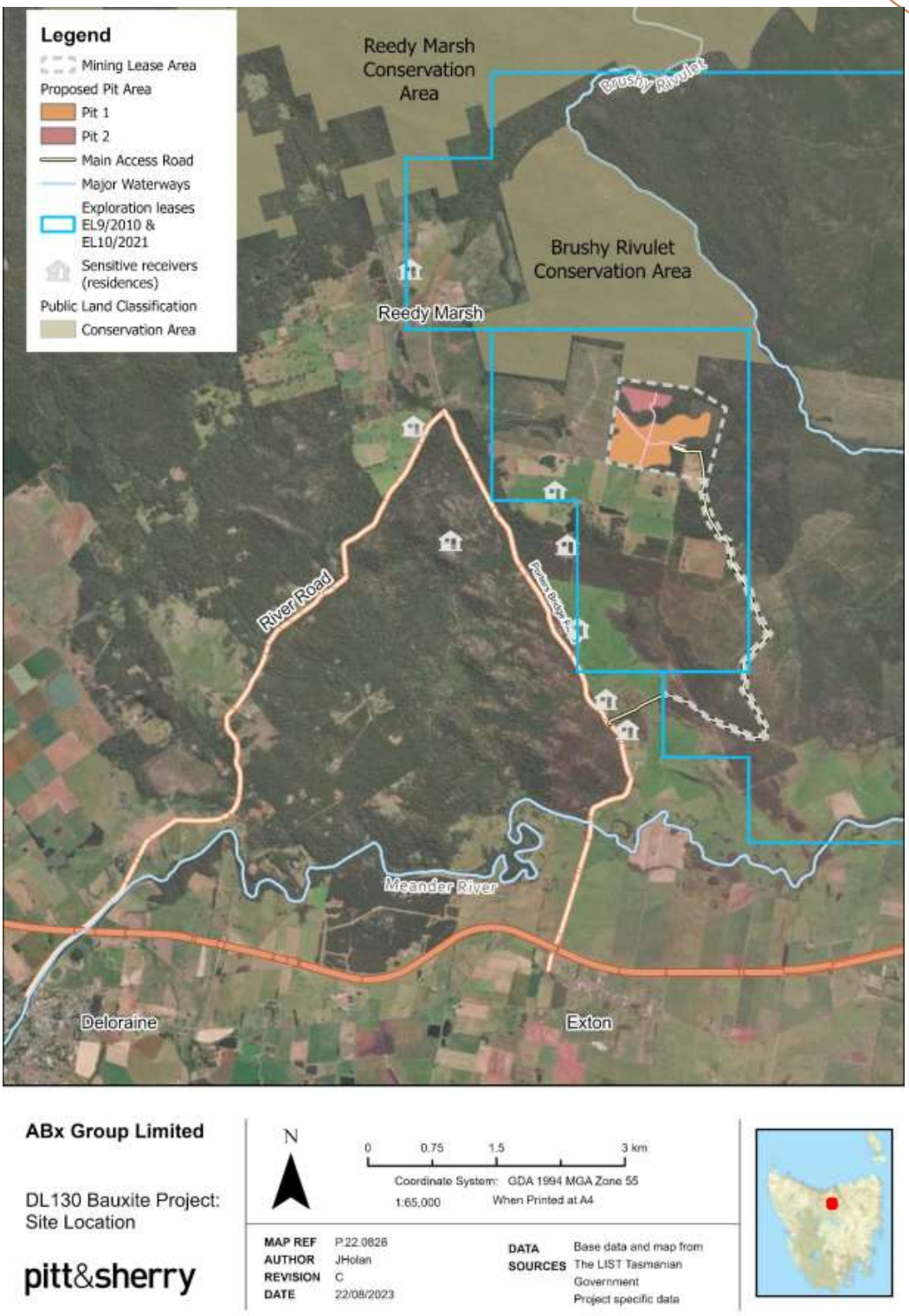

Figure 1: Location of the DL130 Bauxite Project in Reedy Marsh, Tasmania

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Figure 2: Removal of vegetation encroaching on to 340 Porters Bridge Road (this area is shaded in yellow with a blue dash line).

2.1.2 Proposed activity

ABx is proposing to develop a bauxite quarry near Reedy Marsh, Tasmania. Bauxite is the ore used for the following:

- Refining into alumina which is electro-smelted to make aluminium
- As a source of aluminium and iron for cement production; and
- Used as a source of aluminium and iron for manufacture of superphosphate fertiliser, supplying strength and dust reduction properties.

Cement-grade bauxite sales to Australasian cement companies are expected to be the main product as it produces a cement with high strength-to-weight ratio which is needed for concrete used to build major infrastructure. When cement-grade bauxite is used in cement manufacture, less cement powder is needed per tonne of concrete, thus reducing overall CO_2 emissions. Details of the proposed activity are provided in Table 4.

Table 4: DL130 Bauxite Project proposed activity

Item	Detail
Activity	• DL130 is a new activity • In accordance with section 27C of the EMPCA, the level of assessment for the proposed Project is Level 2A; and • The activity will require a planning application under the LUPA Act to be submitted to the Meander Valley Council.
Product	• Bauxite ore; and • Low grade bauxite and clay.

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Item	Detail
Maximum extraction quantity	• Mining: up to 50,000 m^3 or 70,000 wmt per annum (conversion factor of 1.4) • Approximately 1,400,000 tonnes of material will be extracted during the life of operation; and • The quarry will operate on campaign basis and is expected to operate continuously for a three to four month campaign per year. The time of year is likely to vary each campaign.
Maximum processing quantity	• Up to 40,000 m^3 or 56,000 wmt per annum of bauxite ore and clay • Screening: up to 40,000 m^3 per annum • Crushing: up to 1,000 m^3 per annum; and • Approximately 1,100,000 tonnes of ore/clay will be processed during the life of operation.
Material extraction and processing	The main quarrying activities include: • Surface site preparation by removal of topsoil and stockpiling for rehabilitation using an excavator loader and dozer • Shallow surface excavation using excavators and/or scrapers to extract bauxite • Barren layers within the bauxite horizon will be stockpiled and used for site rehabilitation • Any ore that requires upgrading will be dry screened using mobile screens • Any oversize material will be crushed on a campaign basis, once-per-year • Transportation of bauxite to Run of Mine (ROM) stockpiles using 35 t haul trucks • Loading of trucks from stockpiles; and • Offsite transport of materials – using 38 t capacity trucks. Refer to section 2.1.4 for additional information.
Transport	• Vehicles on-site will include light vehicles, trucks and other required machinery • Approximately 78 truck and dog trailer movements per day (39 movements from site carrying a load and 39 movements to site empty) are expected at the site whilst campaign quarrying is occurring Vehicle movements will be restricted to the operating hours (7:00am – 5:00pm Monday to Friday, 08:00am – 04:00pm Saturdays) • Site access and egress will be evenly dispersed throughout operating hours; and • Vehicles will utilise an existing haul road. Refer to section 2.1.6 for more information.
Stockpiling	There will be no permanent waste rock stockpiles as screened fines and low-grade material will be returned to aid in rehabilitation. Temporary stockpiles will include: • Topsoil and waste rock (mostly finely screened bauxite); and • Bauxite awaiting dispatch.

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Item	Detail

Area of disturbance	• The land is currently used by Forico for forestry and has recently been harvested and replanted (Q3/Q4 2022). The recent replantation will need to be cleared
	• The proposed quarrying and associated infrastructure (including upgrading of the access road) will require clearing of approximately 86 ha over the 20-year operating period
	• A maximum of 12 ha will be disturbed at any one time, which includes:
	  ○ 2 ha operational pit, which is based on excavating 30 m wide panels within the largest stage and a buffer around the working area
	  ○ 10 ha of service areas, including access road, laydown area, administration block, screening, stockpiling and grade blending; and
	• Refer to Figure 3 for pit staging, areas of pits and overall disturbance area. A 10 m buffer will be created between the relevant working areas and Mining Lease boundary.

Major equipment	Quarrying equipment will include conventional haul trucks and excavators that are proven in similar working environments, the likely equipment required will be: • Three excavators (ranging from 30 tonne to 87 tonne sized) • Two loaders (WA500 sized or similar) • Two haul trucks (ranging from 25 tonne to 40 tonne sized) • Two mobile screening units (Warrior 1800 and Warrior 2400 sized or similar) • One bulldozer (D8 sized or similar) • One service truck; and • Three light vehicles.
Infrastructure	All screening plant and building infrastructure will be mobile and will be contained within the mining lease. The site administration buildings will be demountable. The infrastructure requirements will include: • Access to Porters Bridge Road (already existing) • Demountable site office and amenities building • All weather haul road to loading area for trucks • Equipment laydown area with fuel storage; and • Run-off and silt catchment structures.
Proposal timeline	• Submission of EER – August 2023 • Project approval – November 2023; and • Project commencement – November 2023; and • The forecasted life of quarry is up to 20 years.
Operating hours	• Operating hours will be restricted to 7:00am to 5:00pm (10-hour day shifts on campaign basis), Monday to Friday and 08:00am to 04:00pm (8-hour shifts on campaign basis), Saturdays.

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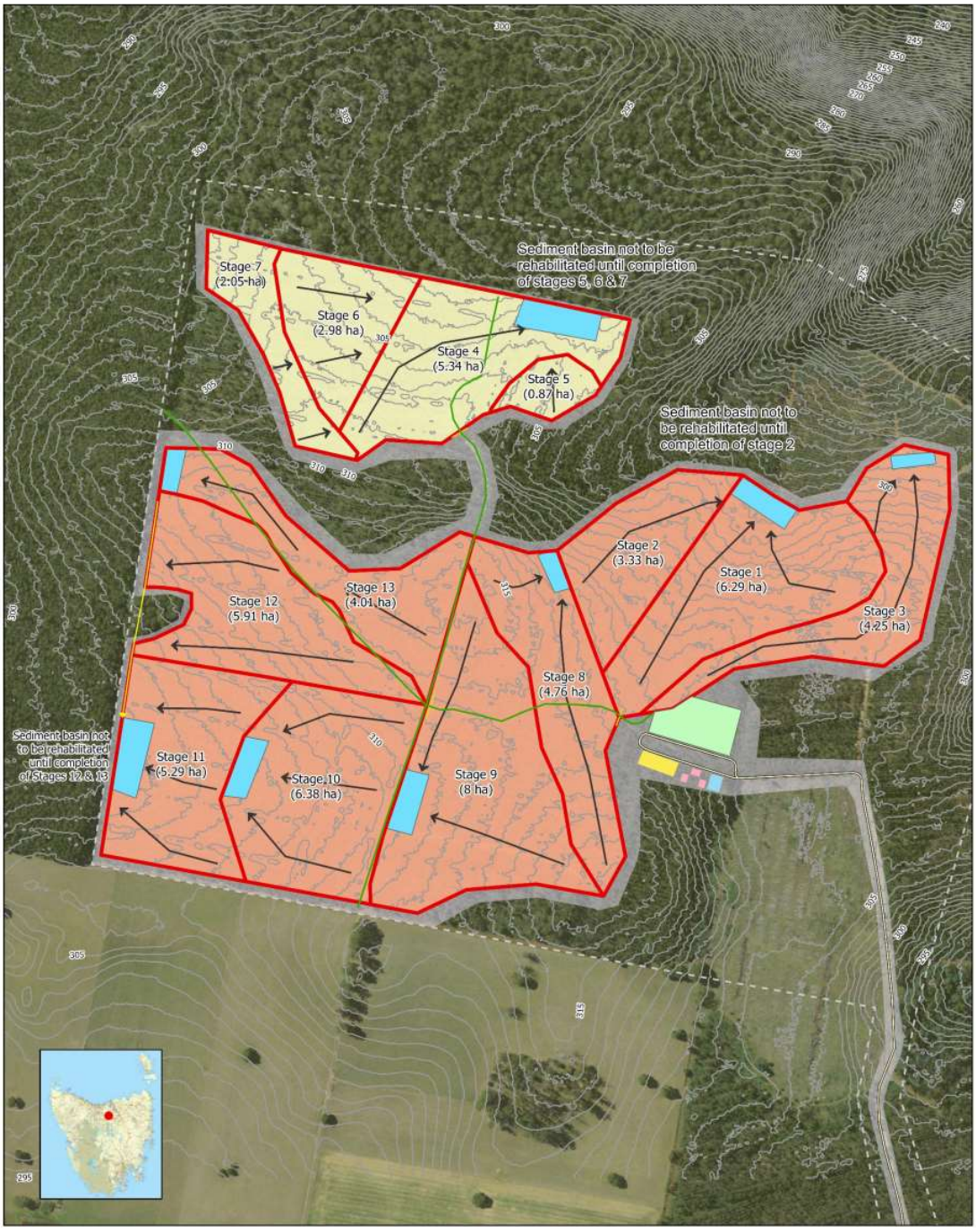

ABx Group Limited

DL130 Bauxite Project: Mining Plan

pitt&sherry

N

0 0.07 0.15 0.3 km

Coordinate System: GDA 1994 MGA Zone 55

1:5,000 When Printed at A4

MAP REF	P.22.0828
AUTHOR	JB
REVISION	RevB
DATE	16/08/2023

DATA SOURCES	Base data and map from The LIST Tasmanian Government
	Project specific data

Legend

Mining Plan Areas	Proposed Pit Area
Mining Direction	Pit 1
Main Access Road	Pit 2
Internal Haul Roads	Site infrastructure
Sediment Basin	ROM Pad
Culvert	Laydown
Disturbance Area	Admin
Cut Drain	Site Parking
1 m Contour	ROM Pad
	Mining Lease

Figure 3: Mine Plan. Note that there will be minimal stockpiling and all equipment is mobile

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2.1.3 Bauxite resources

ABx explores for bauxite by first identifying areas with suitable geology and geophysical patterns for bauxite. The socio-environmental suitability is assessed along with access to infrastructure. Exploration licenses are then applied for through MRT. Once an exploration license is granted simple mapping and rock chip sampling occurs.

Once the relevant approvals are granted more intensive exploration occurs. Reconnaissance drill testing of prospective areas is carried out using a small reverse-circulation aircore drilling rig to test the depth, distribution, thickness and qualities of the bauxite deposits. Holes are 100 mm in diameter and typically 10 m to 12 m deep. Holes are filled and rehabilitated immediately so that within days, they cannot be located again. ABx has a 100% record of landholder approval of drill hole rehabilitation.

Samples from potential bauxite zones are sent to ALS laboratories for complex bauxite assays.

ABx has determined the total resources for DL130 to be 5.2 million tonnes of bauxite including 0.7 million tonnes of ideal cement-grade bauxite averaging 39.2% Aluminium oxide (Al2O3), 21.2% Iron (III) oxide (Fe2O3) and 10.2% total silicon dioxide (SiO2). The total bauxite resources in all areas drilled are detailed in Table 5 below.

Table 5: DL130 deposit total bauxite resources – all areas

DL130 PROJECT

TOTAL BAUXITE RESOURCES IN AREAS DRILLED

DL130 Bauxite Resources - all areas. SG=1.4 t/m^3

								RAW IN-SITU GRADES							
Cut-off-grade raw Al2O3 %	Avg From m	Avg To m	Thickness m	m internal waste	Tonnes per sq m	Area (m^2)	Tonnes	Al_2O_3	SiO_2	*Qtz calc*	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
37.0%	0.52	7.38	6.48	0.38	9.3	84,237	787,213	38.92	14.57	3.94	21.12	2.39	21.66	26.70	10.62
33.0%	0.51	6.03	4.81	0.71	6.6	534,254	3,513,243	35.41	14.89	4.16	24.84	3.26	19.89	23.37	10.73
29.5%	0.65	5.40	3.97	0.77	5.3	897,072	4,747,388	34.03	15.70	4.73	25.67	3.35	19.19	22.09	10.97

	RAW IN-SITU GRADES							
Lab yield %	Al_2O_3	SiO_2	*Qtz calc*	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
50.39	40.99	12.89	4.04	20.92	1.67	22.81	29.24	8.84
47.17	35.17	17.82	4.36	25.14	2.27	18.75	19.50	13.46
45.04	32.57	19.24	4.68	27.59	2.41	17.25	15.99	14.56

The resources targeted by the DL130 are divided into two pits. Exploration drilling has indicated the ore body extends outside of the proposed mining lease. Subject to necessary approvals, it is considered possible that operations could be expanded. Figure 4 shows the exploration drill hole locations and grade within and near Pits 1 and 2.

DL130 will have an overall production capacity of approximately 1,100,000 tonnes of bauxite ore.

2.1.4 Quarrying

The bauxite will be extracted by shallow surface excavation. The bauxite is extracted using excavators and does not require any blasting. Most of the ore (mainly from deeper layers) will be of sufficient quality to be directly trucked without upgrading by screening. This is referred to as Direct Shipping Ore (DSO).

Excavation would be in 30 m wide panels, cut in a series of small benches of 1 m to 2 m depth, dependent on grade control requirements. Pit floors would slope gently to controlled drainage channels as per the Mine Plan

Any remaining bauxite requiring upgrading will be dry screened before trucking. The left over finely screened material will be used for site rehabilitation. Clay fines fractions are valuable for the rehabilitation of the sand horizon and are salt-free.

The general form of the area will be retained. The topsoil will be relocated to disturbed areas which will allow for a free-draining profile. DL130 requires a temporary waste stockpile, but the waste will be used for ongoing rehabilitation.

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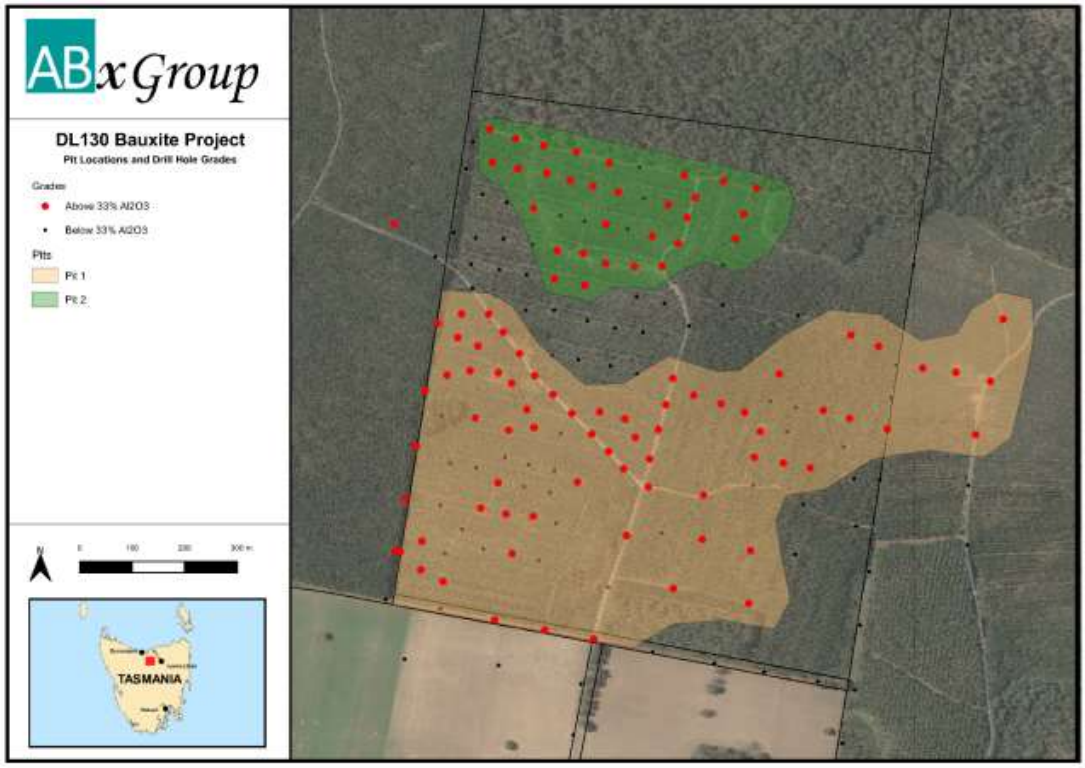

Figure 4: DL130 Bauxite Project drill hole locations and grade

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Table 6 below details the resources in Pits 1 and 2 individually as well as combined.

Table 6: DL130 Bauxite Project Resources

Pit 1. SG=1.4 t/m³

Cut-off-grade raw Al2O3 %	Avg From m	Avg To m	Thickness m	m internal waste	Tonnes per sq m	Area (m²)	Tonnes	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
37.0%	0.14	6.86	6.71	0.00	9.3	35,112	324,801	38.24	13.14	2.94	22.86	2.90	21.60	26.04	10.20
33.0%	0.27	5.94	5.11	0.56	7.1	271,779	1,926,304	34.94	14.44	3.74	25.36	3.51	19.91	22.96	10.71
29.5%	0.36	5.44	4.35	0.72	5.9	438,212	2,594,562	33.83	15.29	4.07	26.19	3.60	19.17	21.54	11.22

Lab yield %	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
50.82	39.55	10.71	2.83	24.31	2.48	22.13	28.35	7.87
47.34	34.73	15.29	3.60	27.45	2.74	18.89	20.51	11.69
45.70	32.66	16.49	3.88	29.54	2.80	17.58	17.60	12.60

Pit 2. SG=1.4 t/m3

Cut-off-grade raw Al2O3 %	Avg From m	Avg To m	Thickness m	m internal waste	Tonnes per sq m	Area (m2)	Tonnes	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
37.0%	0.25	10.75	9.50	1.00	12.6	31,277	393,258	39.24	16.11	4.77	19.89	2.09	21.61	26.64	11.34
33.0%	0.41	9.04	7.04	1.59	9.7	100,353	971,092	36.30	16.13	5.16	23.42	2.77	19.91	24.12	10.98
29.5%	0.31	8.17	6.28	1.58	8.5	135,070	1,149,385	35.14	17.07	6.45	24.58	2.86	19.06	22.77	10.61

Lab yield %	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
48.33	41.93	12.86	4.14	19.96	1.47	23.09	30.69	8.72
48.37	36.32	16.87	5.00	24.62	2.12	19.33	15.10	14.10
45.58	34.02	17.22	5.68	27.92	2.28	17.80	19.68	11.54

PITS 1 & 2 COMBINED

Cut-off-grade raw Al2O3 %	Avg From m	Avg To m	Thickness m	m internal waste	Tonnes per sq m	Area (m2)	Tonnes	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
37.0%	0.20	8.99	8.24	0.55	10.8	66,389	**718,059**	**38.78**	14.77	3.94	21.24	2.46	21.60	26.37	10.82
33.0%	0.32	6.98	5.76	0.90	7.8	372,133	**2,897,396**	**35.39**	15.01	4.21	24.71	3.26	19.91	23.35	10.80
29.5%	0.35	6.28	4.94	0.98	6.5	573,283	**3,743,947**	**34.23**	15.84	4.80	25.70	3.37	19.14	21.92	11.04

Lab yield %	RAW IN-SITU GRADES Al_2O_3	SiO_2	Qtz calc	Fe_2O_3	TiO_2	LOI	Avl Al_2O_3	Rx SiO_2
49.46	40.86	11.88	3.55	21.93	1.93	22.66	29.63	8.34
47.68	35.26	15.82	4.07	26.50	2.53	19.04	18.70	12.50
45.66	33.08	16.71	4.44	29.04	2.64	17.65	18.24	12.27

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Grade control

Extraction will be based on grade control by either close spaced drilling prior to extraction or in-pit grade control sampling through face sampling. This will enable the identification of variations in bauxite grades both laterally and vertically and to identify thin layers of interburden. Grade control will guide quarry planning by engineers and geologists for efficient daily operations. Low grade bauxite with high clay content may be sold as construction materials.

Clearing and site preparation

The proposed quarrying and associated infrastructure (including upgrading the access road) will require approximately 86 ha to be quarried over the 20-year operating period. Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time.

The planned operation is a shallow quarrying operation and simple screening process. Experienced Tasmanian contractors will be carrying out the extraction, screening and rehabilitation activities, using the same high standards engaged for ABx's Bald Hill Project.

The topsoil will be collected by loader and excavator and initially stockpiled. The topsoil will then be used for rehabilitation, allowing for soil-stored seeds and nutrients to be preserved. If required, sandy topsoil may be mixed with clay-bearing, low-grade bauxite to improve water retention and produce a higher quality topsoil for rehabilitation.

Once a Pit has been completed, the topsoil that has been stockpiled from the initial Pit as well as topsoil sourced from the adjacent new pit will be returned for rehabilitation. In doing so, soil viability will be retained and weed dispersal prevented. This will enable the land to be returned to its previous state for forestry, or other as required by the landowner. If successful, land quality may be improved.

Any barren layers within the bauxite horizon will be stockpiled and used for site rehabilitation minimising the need for extensive waste rock stockpiles. At all times the stripped topsoil will be placed as quickly as viable onto completed areas. The shallow surface excavation using excavators and/or scrapers will commence when sufficient bauxite is exposed.

Extraction and transport

The extraction will occur on a campaign basis based on demand. The quarry will operate on campaign basis and is expected to operate continuously in a for three to four month campaign per year. The time of year is likely to vary each campaign.

An excavator will be used to extract and stockpile the bauxite in the Pit. Bauxite of the required grade and sizing will be placed onto a DSO stockpile or directly loaded onto road vehicles. Non-DSO will be further blended and/or screened and stored in haulage stockpiles for transport. ROM material will be screened within the Pits to minimise haulage and to use the reject material, overburden and interburden to construct the final landform profile prior to replacement of topsoil horizons for rehabilitation. A second excavator will be used to place the stockpiled bauxite into the mobile screen. Following this, a front-end loader will load the ore into an articulated dump truck for transportation to ROM. Finally, the ROM front-end loader will load the road trucks for transportation to port.

There will be minimal crushing required and no blasting. Oversized material will be stockpiled until stockpiles are large enough to warrant bringing a rock crusher to the site. This is likely to happen at maximum once a year/at the end of a campaign. For instance, oversized material occurred once during ABx's previous operation at Bald Hill.

Bauxite occurs in discrete zones below the topsoil. The average resource thickness of the bauxite resources in Pits 1 and 2 is 6.5 m. The average depth of extraction will be 7 m. Extraction with excavators will be in 30 m wide panels, cut in a series of small benches of 0.5 m to 1 m depth, dependent on grade control requirements.

The geologist will provide directions to operators regarding grade control. All material will be excavated based on grade control to optimise blending and stockpiling strategies. Extraction will be done in thin benches and small panels to minimise contamination of the bauxite product by interburden and waste.

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Schedule

Quarrying will initially commence at Pit 1 – stage 1 as ABx is currently applying for a trial pit within this area for samples of bauxite to be supplied to customers. It is proposed that quarrying operations commence within this stage as disturbance will have already occurred. Pit 2 is proposed to be quarried at stages 4-7 before recommencing activities within Pit 1. Quarrying will be occurring on a campaign basis due to demand, but the anticipated life of operation will be up to 20 years.

The larger Pit 1 will be split into nine stages with Pit 2 extracted as the second stage as depicted in the Mine Plan (Figure 3. In summary, the following quarrying schedule will be applied, within the following indicative timeline:

- Stage 1 (Pit 1) – Years 1-2
- Stage 2 (Pit 1) – Years 2-4
- Stage 3 (Pit 1) – Years 4-5
- Stage 4 (Pit 2) – Years 5-6
- Stage 5 (Pit 2) – Years 6-7
- Stage 6 (Pit 2) – Years 7-8
- Stage 7 (Pit 2) – Years 8-9
- Stage 8 (Pit 1) – Years 9-11
- Stage 9 (Pit 1) – Years 11-13
- Stage 10 (Pit 1) – Years 13-15
- Stage 11 (Pit 1) – Years 15-17
- Stage 12 (Pit 1) – Years 17-9; and
- Stage 13 (Pit 1) – Years 19-20.

Progressive Rehabilitation

Note that the mining stages do not mean that the whole stage area (up to 6.3 ha) will be exposed at one time. Progressive rehabilitation will occur simultaneously to quarrying, commencing in the upper elevations of each stage, towards the sediment basins at the lower elevation, in 30 m long panels. Refer to section 3.2.3 for management of stormwater. This sequencing is preferred for three reasons:

- To ensure that stormwater can be managed appropriately and effectively without the need for unnecessary infrastructure to be installed, such as cut-off drains and culverts.
- Minimise, as far as reasonably practical during cooler months, the exposure of unrehabilitated land to rain, and resulting erosion; and
- Minimise, as far as reasonably practical, exposure during dry, windy conditions, which may increase the likelihood of dust emissions.

Energy requirements

As all administration buildings and plant equipment will be mobile, no permanent power supply or connection to grid electricity will be required. One diesel generator will be used for the demountable administration buildings.

2.1.5 Personnel

Rosters will be 10-hour day shift only with operational hours expected to be between 7:00am and 5:00pm, Monday to Friday and 8:00am and 4:00pm, Saturday. Therefore, there will be no operational lighting at night. The extraction will occur on a campaign basis and will not be constantly operational. Where possible, the DL130 workforce will be sourced locally from Deloraine and surrounds. Reputable contractors will be used for construction and operation of the site.

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The total on-site staff numbers may vary due to the campaign style operation, but full-time employees' roles will include:

- Site manager
- Maintenance/mobile plant personnel
- Machine operators; and
- Contract truck drivers.

Other DL130 personnel will not be on site full time but will attend as necessary, and will include:

- Geological personnel
- Engineering personnel
- Environmental personnel; and
- Management and administration personnel.

There are expected to be a maximum of 12 staff on site in total during operational hours. This will include 6 operators, 2 managers, 2 technical staff and a maximum of 2 other Project personnel.

Transport of ore to port will be by a road haulage contracting company.

2.1.6 Transport of ore

There are three proposed haulage routes for the DL130, these are shown in Figure 5

The three main routes are as follows:

- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the East Tamar Highway to the Batman Highway via the underpass south of Long Reach, turning left onto the West Tamar Highway at Loira, turning right onto Frankford Road at Exeter, turning left onto Birralee Road south-east of Frankford, turning right onto Meander Valley Road at Westbury and finally turning right onto Porters Bridge Road at Exton
- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the Midland Highway to the Bass Highway via the underpass east of Prospect, exiting the Bass Highway east of Westbury onto Meander Valley Road and finally turning right onto Porters Bridge Road at Exton; and
- Port of Burnie, turning right onto Edwardes Street, turning left onto the Bass Highway, exiting the Bass Highway at Bowerbank Link, turning left onto Meander Valley Road and finally turning left onto Porters Bridge Road.

All three routes, other than Porters Bridge Road itself and the section of Meander Valley Road between Westbury and the Bass Highway on ramp are approved for Truck & Dog Trailer Combination use under the Tasmanian Government's Tasmanian Heavy Vehicle network maps.

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Figure 5: Proposed haulage routes from DL130 Bauxite Project to Bell Bay and Burnie Port

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Approximately 78 truck and dog trailer movements per day are expected at the site during campaigns, used to transport extracted bauxite. Site access and egress is to be evenly dispersed throughout operating hours. The overall traffic volumes on Porters Bridge Road and Meander Valley Road in the vicinity of the proposed quarry site are expected to increase by 102 vehicles per day during the operational stage of DL130. The quarry will be operating on a campaign basis expected to last 3 to 4 months per year. A Traffic Impact Assessment (TIA) is attached as Appendix D

2.2 Construction

Construction and site preparation activities will include the development of the infrastructure areas and associated buildings, roads and equipment. The site administration buildings will be demountable, and infrastructure will be mobile. No construction of permanent buildings is required.

2.2.1 Site preparation works

The expected site preparation works are summarised as follows:

- Existing roads will be upgraded and used where possible. An established road to the south of the Pit areas has been identified as the best site access option in a TIA. The assessment has recommended that the existing site access is resealed directly off Porters Bridge Road and upgraded (repairing potholes and trimming vegetation) where required to ensure compliance with Australian Standard 2890.2 and continued safe ingress and egress to the site for the extent of the operation's life
- Construction will commence with the infrastructure area. The site requires an administration area, staff parking, run of mine (ROM) pad and laydown area
- The vegetation and topsoil within the footprint of the infrastructure areas will be removed and stockpiled (for future rehabilitation works) or windrowed in accordance with a Construction Environmental Management Plan
- The vegetation clearance and topsoil removal will be undertaken in a progressive manner to minimise the footprint of disturbance
- A suite of erosion mitigation measures, appropriate for the encountered materials, to control and manage erosion and sediment transport arising from construction activities will be implemented; and
- During construction safety fencing will be installed around sensitive areas to prevent unauthorised access.

2.2.2 Plant hygiene measures

Plant hygiene measures will be taken to prevent the introduction or spread of introduced plant species, weeds, pests and diseases during the preparation and construction of the site. These plant hygiene measures will include:

- Weed and disease hygiene wash down procedures will be undertaken for equipment entering and leaving the site from outside the Project Area
- Any material required from outside the lease area will be from a supplier certified to be free of *Phytophthora cinnamomi* (PC); and
- In the event that PC is detected, wash down procedures will be instigated in accordance with Appendix 5 (Washing down) of the Interim *Phytophthora cinnamomi* Management Guidelines produced by the Department of Primary Industries, Parks, Water and Environment (Rudman, 2005).

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2.2.3 Construction equipment and materials

The equipment expected to be used for the construction phase of DL130 are outlined below. It should be noted that contractors may use different, but equivalent vehicles:

- Surface miner
- Graders
- Water truck
- Excavators
- Loaders
- Dump trucks; and
- Rollers (including vibrating).

The proposed development activities will be undertaken during daylight hours.

2.2.4 Timing

Depending on the approvals timeframe, construction is planned to commence in November 2023.

The indicative timeframe for the different steps of construction are as follows:

- Minor upgrades required for the access road are expected to take 1-2 weeks with the pre-existing forestry internal haul roads not requiring any construction or upgrades
- The construction and setting up of the administration and laydown areas is proposed to also take 1-2 weeks; and
- Implementing drainage measures and silt traps will take approximately a week for each stage.

2.3 Commissioning

The initial construction will require development of the stockpile infrastructure and shallow extraction operations and installation of a mobile screening plant.

Once this infrastructure is in place, operations will be able to commence. The commissioning requirements will be minimal and limited to the mobile screening plant as well as erosion and sediment controls.

2.4 Decommissioning

As all equipment and buildings will be portable, only minimal decommissioning will be required in order to demobilise and relocate the elements to another site.

2.5 Off-site infrastructure

All processing infrastructure will be on-site. The only off-site infrastructure to be used will be the state road network for transport to the Bell Bay Port or Burnie Port. There are three proposed haulage routes which may be used interchangeably throughout DL130's lifespan, described in section 2.1.6.

DL130 will utilise existing road and port infrastructure. The existing facilities at both the Bell Bay and Burnie ports are adequate and no structural changes are required for either port.

The power supply for the site will be from a single diesel generator, no transmission lines are required.

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Sewage and waste will be taken off-site for disposal at municipal facilities and there are no requirements for any extension or upgrades of those facilities.

Water for dust suppression will be sourced off-site at the TasWater fill-point in Deloraine. Water may be sourced from nearby landholders if an agreement is reached. Potable water will be transported onto site via tanker and stored in holding tanks, which could be supplemented by building roof runoff collection.

2.6 Location and title information

Location and title information are detailed in Table 7.

Table 7: DL130 location and title information

Item	Detail
Location	• The Project Area is located in Reedy Marsh off Porter's Bridge Road approximately 10 km northeast of the Deloraine township in Tasmania. There is no definitive street address • A small section of the DL130 deposit bauxite resource will intersect the following property identification number (PID) and title references: ○ PID: 7033091, Title Reference: 229773/1 ○ PID: 7033091, Title Reference: 148606/1 ○ PID: 6274360, Title Reference: 214055/1 ○ PID: 7413158, Title Reference: 31918/1** • To the north of the site is Brushy Rivulet Conservation Area and to the northeast is Permanent Timber Production Zone land • Figure 1 shows the location of the Project Area within the Reedy Marsh region. Road access will be from Porters Bridge Road • The proposal will intersect two slithers of Crown Land that will require approval from the Department of Natural Resources and the Environment (DNRE) Property Management Services. They are located as follows: - A narrow 14 m wide easement will be traversed by the proposal's access road, approximately 1 km east of Porters Bridge Road where it enters the Project Boundary; and - An 18 m wide strip of land bordering the southern extent of the operation mining area. ** The inclusion of this property relates solely to the removal of a slither of vegetation for the safety of the public and vehicles using the existing site entry. Refer to Figure 3 above, this area is shaded in yellow with a blue dash line. The owner has been informed that their property is subject to the application.
Planning permit	• A planning application under the LUPA Act will be submitted to the Meander Valley Council, and subject to the provisions of the Tasmanian Planning Scheme – Meander Valley.
Land zoning and tenure	• The DL130 is situated on private freehold land, most of the development area including the quarry is located within the Rural Zone, the existing access road intersects an area zoned as Agricultural Zone. Re-zoning is not required for DL130; and • The Project Area is currently managed by forestry company Forico and has been recently harvested and re-planted with softwood plantation (*Pinus radiata*).
Use Class and permissibility	• The use class for DL130 under the Planning Scheme is 'Extractive Industry'; and • The 'Extractive Industry' use class is a Permitted use in the Rural Zone and Discretionary in the Agricultural Zone.

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Item	Detail
Exploration Leases (EL)	• EL9/2010, EL10/2021
Proposed Mining Lease (ML)	• DL130 will have an approximate ML area of 150 ha • The potential impact area is 136 ha and as such this is the basis of this EER and technical studies • The proposed lease and impact area is not based on the size of the exploration lease but on agreements with Forico; and • The ML includes Category 1 (bauxite ore) and Category 3 (low grade bauxite and clay).

2.7 Rationale for proposal and alternatives

2.7.1 Rationale

The DL130 deposit will be critical and indispensable to ensure continuity of supply to its markets. It contains high quality bauxite and will have an operating life of up to 20 years. The Project Area also presents very limited risk to environmental values. The site is modified, dominated by intensively managed softwood plantation with an associated road network and firebreaks. Therefore, limited native vegetation requires clearing, increasing the favourability of the site.

Benefits of DL130 include:

- Most of the ore in the deposit is likely to be of high quality, to be directly trucked without requiring upgrading by screening, but this is currently unknown
- There will be no permanent stockpiles as topsoil, left over material from screening and inter-burden will be used for rehabilitation
- Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time
- DL130 workforce will be sourced locally, from Deloraine and surrounds; and
- ABx has experience in returning previously quarried/mined areas back to better than original state.

2.7.2 Alternatives

ABx was exploring the Fingal Rail bauxite deposit, situated 14 km by road north of Campbell Town. The landowners were unsupportive of any quarrying activity and as such the Fingal Rail site was deemed an unsuitable alternative. The Fingal Rail Project Area also has substantially higher development costs than the DL130. The location of the DL130 is necessarily determined by the location of the resource.

2.8 Existing environment

The site's landscape and vegetation characteristics are shown in Figure 6. As is evident from the photographs, the site has recently been harvested by Forico. The site has been recently replanted (in 2022). The recent softwood plantation (*Pinus radiata*) will require clearing.

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View south-west towards nearest residence (April 2022)

View west (April 2022)

Cleared plantation. East view over proposed ROM and admin area (May 2022)

Exploration drilling on site: Northwest view on main access and haul road (June 2022)

Figure 6: Photographs of DL130 Bauxite Project Area

2.8.1 Land use

The Project site is dominantly zoned as Rural Zone with a portion of the proposed access route zoned as Agriculture Zone under the Tasmanian Planning Scheme – Meander Valley.

The land surrounding the proposed mining lease is predominately agricultural land.

Brushy Rivulet Conservation Area is located on the northern margin of the proposed quarrying area with the remainder of the study area wholly bound by private land titles. Brushy Rivulet Conservation Area is 593.15 ha and managed by Tasmania Parks and Wildlife Service (PWS). DL130 is not anticipated to have any direct impact on the conservation area.

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2.8.2 Topography

The Project Area is a broad north-south ridge. The Project Area is located at an elevation of approximately 300 m and the topography is gradual. The proposed excavation pits (the Pits) are on slightly more elevated ground and the site administration infrastructure is proposed to be located at approximately 310 m Australian Height Datum (AHD). Refer to Figure 7.

2.8.3 Geology

As identified on theLIST (MRT Geological polygons 1:25,000 mapping), the geological unit at the Project Area is Jurassic dolerite (tholeiitic) with locally developed granophyre. The area is overlain by Cenozoic cover sequences of ferricrete, silicrete, laterite and derived lag deposits.

Bauxite has historically been identified in northern Tasmania (Owen, 1954) and further explored by several companies including CRA Exploration and Alcoa during the 1960's and 1970's in various regions associated with Tertiary volcanics in ancient, low-relief plains representing the final stage of fluvial erosion during times of extended tectonic stability, preserved as plateaus. The bauxite formed in the low-lying valley regions of Central Tasmania between two large dolerite plateaus. Within this valley, volcanics, sediments and some dolerite has been laterised with the source rock for the bauxite thought to be older mafic volcanics / intrusives.

Bauxite is a highly leached, oxidized, and permeable dry rock unit and whilst each deposit has its own characteristics, no notable fugitive emissions have been recorded from bauxite mining worldwide or from bauxite quarrying in Tasmania over many decades. Bauxite is essentially sterile, heavy washed and rusted dirt that has cemented together into a layer of porous hard rock over geological time. Some of this bauxite material is sold as "volcanic rock" for barbecues and ornamental aggregate which is indicative of its benign chemistry and stable form.

2.8.4 Soils

Soil fertility in bauxite areas is low because bauxite is naturally leached of nutrients and is chemically inert - one reason that bauxite is widely used for road building. The soils within the Project Area consist of a light red-brown clay loam and are shallow in depth.

No acid sulfate soils (ASS) are mapped within the Project Area according to theLIST

2.8.5 Land systems

Two land systems are mapped within the Project Area and are described below:

Land System 472141 Tippogoree

This land system covers the majority of the Project Area (including all area proposed to be extracted) and is described as a large area of gently rolling hills formed on Jurassic dolerite. Due to rugged terrain, large areas are undeveloped, but parts are used for forestry, quarrying, grazing and recreation. A broad band stretches from Birralee and Bridgenorth to the Bass highway between Deloraine and Westbury.

The land system contains the following characteristics:

- Hills that trend mainly north-west/south-east
- An average altitude of 200 m
- Traversed by numerous rivulets and small creeks
- Stony gradation Al soils on all components except drainage lines where a stony clay has developed on dolerite alluvium
- Gravelly clay loam surface on all soils except those on gentler slopes; and
- Dolerite boulders and outcrops.

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The major hazards are low to severe sheet and gully erosion.

Land System 493121 Supply River

This land system covers just part of the access road. The system is mainly associated with the Supply River in the Exeter-Glengarry-Winnaleah area. It is an area of undulating plains formed on Quaternary sands and clays. Almost the entire system has been cleared for grazing.

The land system contains the following characteristics:

- Deep mottled duplex and uniform clay soils; and
- Soils influenced by the surrounding Jurassic, Permian and Ordovician deposits.

Within this land system major hazards include sheet, rill and streambank erosion, waterlogging and flooding.

2.8.6 Climate

The closest Bureau of Meteorology (BOM) station is Deloraine (Reedy Marsh) [station 3091278]. The station is approximately 6 km east of the site at an altitude of 325 m. Rainfall statistics in Table 8 below are from the 1994-2020 observation period. Temperature and wind data have been sourced from Launceston (Ti Tree Bend) station due to the Deloraine station not recording this data. The Launceston station is situated approximately 35.1 km northeast of Reedy Marsh and is at an elevation of 5 m. The temperature statistics in Table 8 below are from the 1980-2022 observation period.

Table 8: Rainfall and temperature statistics at the closest weather station to the DL130 Bauxite Project

Statistic Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Temperature													
Mean maximum (°C)	24.6	24.6	22.6	19.0	15.8	13.2	12.7	13.8	15.7	18.2	20.6	22.6	18.6
Mean minimum (°C)	12.5	12.3	10.4	7.6	5.1	2.9	2.4	3.6	5.2	7.0	9.1	10.8	7.4
Rainfall													
Mean rainfall (mm)	68.3	47.0	59.4	72.2	101.0	114.6	135.4	130.3	109.1	73.7	73.8	57.6	1048.5
Decile 1 (mm)	15.2	16.3	11.2	25.4	40.4	48.0	71.2	53.7	52.4	20.3	24.4	24.0	795.0
Decile 5 (mm)	52.2	40.2	41.2	65.8	86.6	114.2	125.8	105.4	113.8	66.7	64.4	52.4	1047.6
Decile 9 (mm)	161.6	81.1	123.2	122.1	168.2	162.2	214.7	247.9	178.4	140.0	132.4	105.6	1295.7

The dominant wind direction from the Launceston meteorological station for both the 9 am and 3 pm wind rose is north westerly. Secondary winds are northerly (Figure 8). Conditions are likely to be similar at the Project Area.

The potential air impacts of dust and noise from DL130 are therefore mainly to the southeast of the site. Refer to section 3.1.3 for management measures to minimise dust impacts and section 3.3.3 for management measures to minimise noise impacts.

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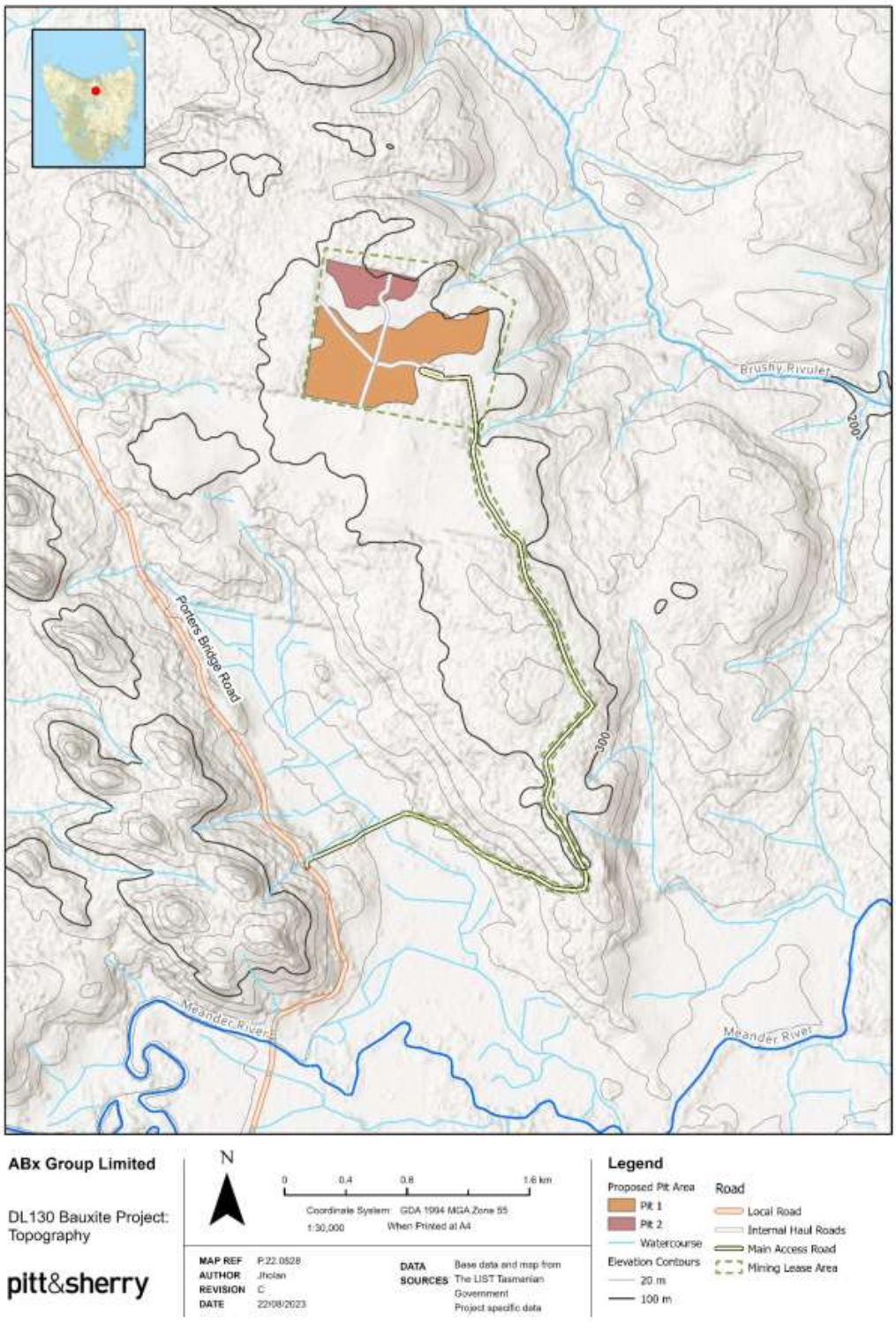

Figure 7: Topography of area surrounding the DL130 Bauxite Project Area

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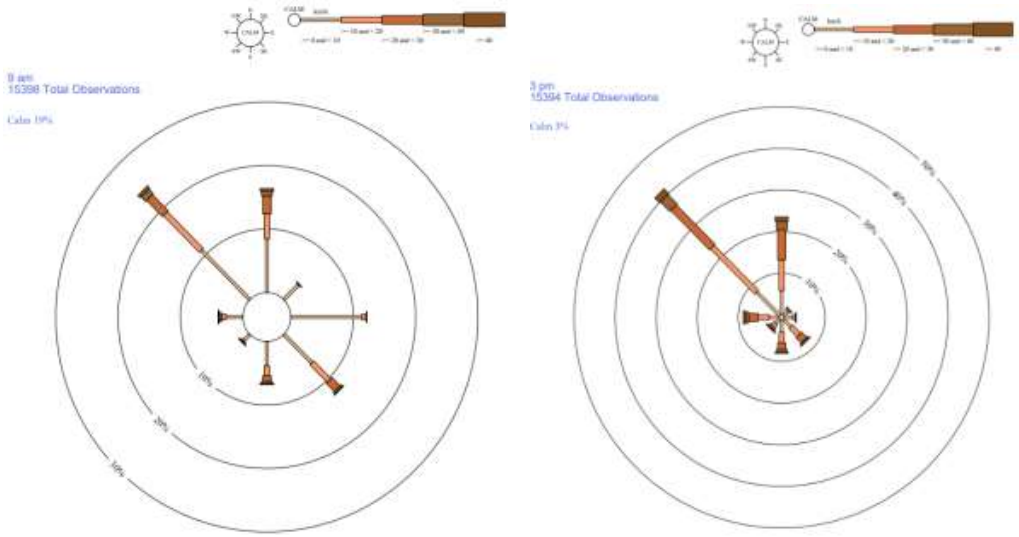

Figure 8: 9am wind rose (left) and 3pm wind rose (right)

2.8.7 Land capability

The land on which the quarry will be located is mapped as Class 3 agricultural land.

Class 3 land is: *Land suitable for cropping and intensive grazing. Moderate levels of limitation restrict the choice of crops or reduce productivity in relation to Class 1 or Class 2 land. Soil conservation practices and sound management are needed to overcome the moderate limitations to cropping use. Land is moderately productive, requiring a higher level of inputs than Classes 1 and 2. Limitations either restrict the range of crops that can be grown or the risk of damage to the soil resource is such that cropping should be confined to three to five years out of ten in a rotation with pasture or equivalent during normal years* (Grose, 1999).

According to the Tasmanian agricultural land classification system, prime land is considered to be land that is classified as Class 1, 2 or 3. The PAL policy sets constraints as to how prime land can be used to protect prime agricultural land from conversion to non-agricultural uses. The land is currently being used for forestry and will be rehabilitated and returned to better than pre-mining land value.

2.8.8 Natural Values

The majority of the Project Area is land that has been formerly used for forestry and therefore has few natural values. The Project Area is dominated by intensely managed softwood plantation but native vegetation is present as remnants associated with the road access corridor. One threatened vegetation community listed on the NC Act (*Eucalyptus ovata* forest and woodland) and one threatened flora species listed on the TSP Act (*Pimelea curviflora var. gracilis*) are present along the access road. Management measures will ensure there is little to no impact on this community and species.

There are no records of threatened fauna listed on the EPBC Act, and/or the TSP Act on the NVA within the Project Area and no evidence of any threatened species was detected during the survey. Although, the Project Area supports potential habitat for several threatened fauna species. The potential impacts to these species has been considered and no species are expected to be significantly impacted by DL130.

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A Natural Values Assessment (including Addendum 1 to the report) was undertaken by ECOtas and the report is provided as Appendix A. The survey was completed by Brian French of ECOtas on 15 September 2022. Refer to Section 3.4 for description of impacts and to Natural Values and their mitigation.

2.8.9 Hydrology

There is a minor tributary of Brushy Rivulet within the proposed mining lease but not within the Pits. The Meander River, the largest major watercourse in this part of the Northern Region is located 1.3 km south of the access track off Porters Bridge Road and 4 km south of the Pits.

Surface water is predominantly limited to localised incidental rain runoff. The Project Area's soil is routinely dry and overland flow of surface water during rain events would primarily be sheet flow that quickly infiltrates into the ground.

During the exploration process, 244 holes were drilled into the resource. The drill holes averaged 5.4 m depth with a maximum depth of 16 m. Groundwater interception was not confirmed in any of the drill holes. However, recent reinterpretation of the data highlighted that 30 holes were logged as having "wet" intervals at various depths. This classification is not considered conclusive of groundwater being present, but the results indicate that if present, groundwater may be on average 6 m below surface.

2.8.10 Aboriginal cultural heritage

CHMA has undertaken an Aboriginal heritage assessment for the Project Area (refer to Appendix B). As part of the first stage of the assessment, the Aboriginal Heritage Register (AHR) was interrogated to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the Project Area. The search indicated 20 registered Aboriginal sites are located within a 10 km radius of the Project Area.

Three Aboriginal heritage sites were identified and recorded during the field survey undertaken on the 11th and 12th of October 2022 by Shay Hannah (CHMA archaeologist) and Vernon Graham (Senior Aboriginal Heritage Officer). All sites are isolated artefacts located within the proposed quarrying footprint. The three Aboriginal heritage sites are described below:

- AH14114 is a cream quartzite flake located on a raised mound on flat plantation land
- AH14115 is a dark grey quartzite flake located within a depression on plantation land; and
- AH14116 is a cream chert flake located on a raised mound on flat plantation land.

Each site has a has very low potential for additional surface or sub-surface artefacts to be present and has been heavily disturbed. Each site has been allocated a rating of significance. All sites are considered to have a low scientific, aesthetic and historic significance but a medium-high social significance.

All Aboriginal relics are protected under the *Aboriginal Heritage Act 1975* and all legal and procedural requirements specified in the Act will be adhered to. It has been assessed that there is very low potential for additional undetected Aboriginal heritage sites to occur in the Project Area. However, a copy of the Unanticipated Discovery Plan will be kept on-site during all ground disturbance, construction work and site operation. All construction personnel will be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975*.

As the sites cannot be adequately managed in-situ due to being located within the quarrying area, a permit to impact the site is currently being applied for. The Aboriginal heritage sites will not be impacted until the permit is obtained.

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2.8.11 Historic cultural heritage

CHMA has undertaken a historic heritage assessment for the Project Area (refer to Appendix C). A search of historic registers and databases identified no registered historic sites or places located within a 5 km radius of the Project Area.

One historic feature was identified during the field survey assessment undertaken on the 11th and 12th of October 2022. The historic feature is a loggers' hut and is located 370 m north of the southern boundary of the Project Area in the one of the Pits. The loggers' hut is likely only to be of local significance and would not meet the threshold requirements for either State or National significance. ABx is currently planning to retain the hut.

If the decision to retain the hut is reversed, the hut would need to be removed prior to excavation. Due to the poor condition of the site, it is recommended that the site be recorded and photographed with no further action required. No other historic sites or suspected features were identified during the field survey assessment. There is a low potential for undetected historic heritage sites within the Project Area. If other features are discovered within the Project Area, they are likely to be representative of early pastoral settlement and logging activity.

An Unanticipated Discovery Plan will provide guidance to Project personnel so that they meet their obligations with respect to heritage legislation. The procedures outlined in Practice Note 2 issued by the Tasmanian Heritage Council will be followed should any unexpected archaeological features and/or deposits be revealed during development work.

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3. Part C – Potential environmental impacts

3.1 Air quality

The only impact to air quality as a result of the Project will be dust. ABx will implement appropriate control measures to ensure that dust emissions as a result of project activities are supressed at all times. Consequently, air emissions from the quarry are not likely to cause environmental harm or adversely affect nearby residents.

3.1.1 Existing environment

The area surrounding the Project is farmland and bushland with gently rolling topography. The Project Area is approximately 6 km north of the Bass Highway. The nearest sensitive receiver is a rural residence located approximately 800 metres to the southwest, with six other residences located further away to the west and south of the quarry within a nominal 3 km radius. Refer to Figure 9 for locations of sensitive receivers.

There are currently no major sources of dust in the area however current forestry, farming and quarrying activities do generate some dust infrequently as a result of heavy vehicle operation and ground disturbance, especially during periods of extended dry weather. The closest regular source of dust emissions is the Exton Quarry, operated by Cresswells Transport, approximately 2 kilometres southwest of the site.

3.1.2 Potential impacts

Dust can be a significant safety issue during clearing and excavation. It can hinder visibility and reduce the efficiency of operations. It is in the best operational interests of site staff to maintain safe working conditions, as this allows all equipment to work at their most effective rate. As the Project Area has recently been cleared and re-planted, the area of new clearing required to undertake the mining operation is limited and is not anticipated to create significant dust emissions.

Dust has the potential to cause environmental nuisance if it is blown beyond the boundary of the proposed construction and operational activities. It can cause respiratory annoyance, reduce visual amenity and fall out onto land or surfaces in other ownership, with the potential to soil clean surfaces and contaminate roof-collected water supplies. In addition to nuisance to people, dust can also fall onto vegetation and in extreme cases retard plant growth by blocking photosynthesis.

Wind conditions are described in Section 2.8.6. The prevailing wind direction is from the northwest, however winds of varying strengths occur from all directions relatively frequently. The Project Area is surrounded by bush and vegetated farmland on rolling terrain. This will provide significant attenuation of any dust emissions generated on site. The nearest sensitive receivers are rural residences located to the south west.

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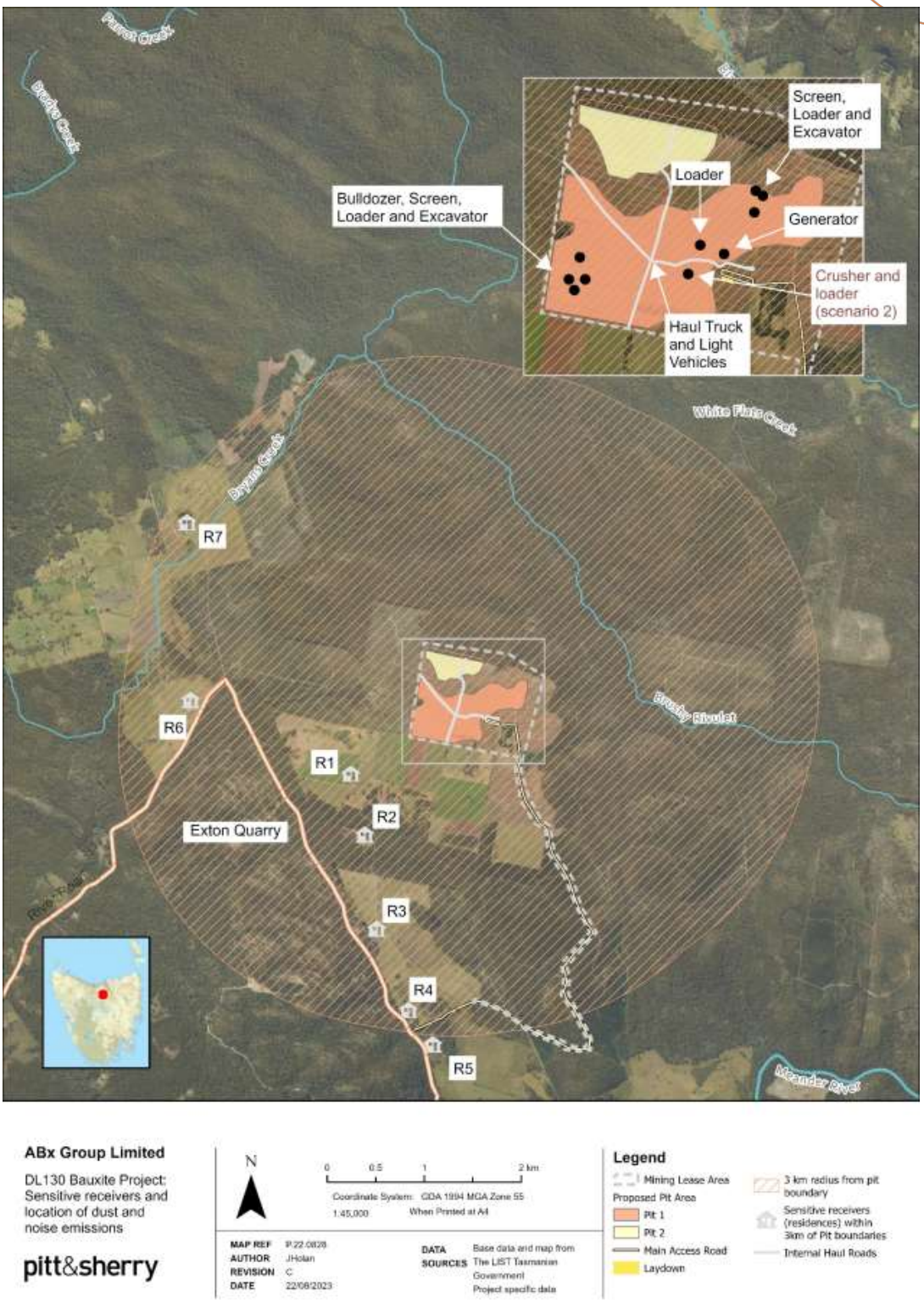

Figure 9: Locations of noise and dust producing equipment, and sensitive receivers within 3 km of pit boundary

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The potential sources of dust are located as shown on Figure 9 and include:

- Dust generated on site by mining plant operations including bulldozers, excavators, loaders, trucks, crushers and screens
- Wind erosion of disturbed ground surfaces including disturbed topsoil, shallow surface excavations and material stockpiles
- Dust generated by vehicles traveling on unsealed roads in the vicinity of the Project Area; and
- Engine exhaust emissions of fine particulates from vehicles and equipment.

Dust settles rapidly as it travels away from the sources generating it, especially when traveling through bush and heavy vegetation. Given the distances to receptors, the terrain, vegetation, and the scale of the infrastructure in the area, and the frequency and duration of the operational campaigns, it is unlikely that the concentration of any dust reaching the nearest receptors would be sufficient to result in environmental nuisance.

In addition, ABx will put in place appropriate mitigation measures, described below, to ensure that excessive dust is not generated by the activity.

3.1.3 Management

Dust generated from the quarrying operations will be managed in accordance with Section 7.5 of the Tasmanian *Quarry Code of Practice 2017* as well as the Tasmanian Environment Protection Policy (Air Quality).

The following mitigation measures will be utilised to minimise the generation of dust and emissions during construction and operations:

- Excavation of topsoil will not be undertaken during periods of extended dry, windy weather
- Most soils require at least 30% ground cover to prevent wind erosion. Where practical a minimum of at least 50% ground cover will be maintained across a given resource area during mining operations. Where this is unachievable, soils will be stored in locations protected from wind and other forms of erosion and in a configuration that keeps the soil viable during storage
- Vehicle speed limits on site will be restricted to 40 km/h to minimise dust generation
- Haul roads including the main site access road, stockpiles and crusher drop points will be watered whenever required to prevent dust generation by vehicles. A water cart will be kept permanently on-site during campaigns. Watering will be commenced immediately whenever dust generation is observed by the site managers
- Water may also be sourced from sediment ponds for dust suppression
- Water for dust suppression will also be sourced off-site at the TasWater fill-point in Deloraine or Westbury. Water may alternatively be sourced from nearby landholders if an agreement is reached. Potable water will be transported onto site via tanker and stored in holding tanks, which could be supplemented by building roof runoff collection
- When processing oversize material, the mobile crusher and loader will be located no further south or west than the position indicated in Figure 9, approximately 270 metres west of the site access point
- Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time. The 10 ha of service areas will also be managed for dust suppression by the use of water carts during dry periods
- During campaign breaks lasting more than 2 months, the excavation panels will either be rehabilitated prior to the end of the campaign or will be temporarily covered with excavated material to minimise dust production
- Vehicle exhaust emissions will be minimised by ensuring that all equipment is properly maintained and operated; and
- Outside of campaign the Site Manager will monitor weather conditions and visit the site regularly to ensure any dust generated will not cause environmental nuisance. If weather conditions are likely to cause dust emissions, mitigation measures (such as watering haul roads with a water cart) will be implemented.

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3.2 Water quality (surface, discharge and groundwater)

A Stormwater Management Plan has been prepared by pitt&sherry and is provided in Appendix E. The impact from the Project on water quality is anticipated to be minimal due to the implementation of appropriate infrastructure and management measures.

3.2.1 Existing environment

The Meander River, the largest major watercourse in this part of the Northern Region is located 1.3 km south of the access track off Porters Bridge Road and 4 km south of the Pits. There is a minor tributary of Brushy Rivulet within the proposed mining lease but not within the Pits. The Pits are located approximately 200 m from an unnamed tributary running off Brushy Rivulet, 1.73 km north of an unnamed tributary associated with the Meander River and approximately 750 m southeast of an unnamed tributary running off Bryan's Creek, which runs east to west. Refer to Figure 7.

Surface water is predominantly limited to localised incidental rain runoff. The Project Area's soil is routinely dry, particularly those of the bauxite resource, which holds water poorly. Overland flow of surface water during rain events would primarily be sheet flow that quickly infiltrates into the ground.

While no groundwater was intercepted during exploration drilling, the soil data indicated areas of 'wet' or waterlogged clay. ABx is committed to taking a precautionary approach and assume that that the 'wet' samples be considered as groundwater. The drilling data can, therefore, be interpreted as follows:

- The 'wet' clay layer across the site is expected to vary, with an average depth of 6 m below ground level (mbgl)
- The top of the bauxite layer is variable across the pits, with the majority sitting at 0 to 2 mbgl in Pit 1, and 0 and 6 mbgl in Pit 2; and
- The bottom of the bauxite layer sits at around 6 to 7 mbgl in Pit 1, and at least 6 mbgl in Pit 2.

In Pit 1, the bauxite is found at a maximum depth of approximately 6 mbgl, the vast majority of which is above the 'wet' clay level. Therefore, it is likely that most of the bauxite can be extracted without intersecting the 'wet' areas.

In Pit 2, the maximum bauxite depths are between 6 and 14 mbgl. Consequently, the deeper bauxite may not be accessible without intersecting the 'wet' clay as it is generally located 6 m below the surface. At these depths, a geologist will observe excavation to help assess any signs of groundwater and minimise the likelihood of interception. If groundwater is observed and confirmed, vertical excavation at these locations will cease. Refer to the management summary in section 3.2.3.

Existing drainage

There is no significant drainage infrastructure at the site (such as cut off drains) which may divert runoff from the tributary channels to Brushy Rivulet. The entire area of Pit 2 and the eastern half of Pit 1 discharge runoff to hillslopes above Brushy Rivulet. The western area of Pit 1 discharges runoff into forest area with no obvious nearby creeks or rivulets.

3.2.2 Potential impacts

Stormwater runoff has potential to carry hydrocarbons, nutrients, sediment and other pollutants if not managed appropriately. Infrastructure proposed includes sediment basins, cut-off drains and culverts. As no groundwater was encountered during exploration drilling, it is highly unlikely the Project will impact on groundwater.

Waterways could be impacted by mining if in the very unlikely event acid mine drainage (AMD) occurs or if stormwater is not adequately managed. This could result in low pH. Although this is unlikely, monitoring and sufficient stormwater management will detect and prevent the impacts of AMD. AMD is described in section 3.6.2 and management measures for stormwater is described in section 3.2.3

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3.2.3 Management

The hydrologic and hydraulic assessment adopts a conservative approach in estimating the location and sizes of the sediment basins and cut-off drains by treating each stage separately.

Sediment basins

To minimise stormwater runoff, several sediment basins are proposed to receive runoff discharging from each stage. These have been designed from modelled runoff flow paths shown in Figure 3.

The characteristics of these sediment basins to ensure best practice and minimal impact to receiving environments include:

- Designing basins by use of the methodology prescribed in International Erosion Control Association's Best Practise Erosion and Sediment Control 2018
- Development of type D basins, due to the site characteristics and multiple inflow locations. Preliminary estimates of the sizes of the sediment basins indicates that it is feasible to construct and maintain them throughout the quarrying operation
- Quarrying operations within each stage will start on the upper slopes, progressing towards the sediment basins at the lowest elevation of each stage. Rehabilitation of the disturbed land will occur simultaneously, commencing in the upper slopes, towards the sediment basins, as shown in Figure 3. This will reduce the need to construct drainage channels to convey water into the sediment basins. Clean run-off from undisturbed stages will be diverted around disturbed, working areas by cut-off drains; and
- Bunds at the downstream end of each stage will direct runoff into sediment basins.

The specifics of each proposed sediment basin is provided in the Stormwater Management Plan in Appendix E.

Some of the catchment areas do not flow naturally into the proposed sediment basins. These areas will remain undisturbed until quarrying operations commence in them. This quarrying method to manage stormwater drainage will mean deep cut-off drains or additional sediment basins will not be required.

Upslope run-off from undisturbed areas will be diverted from the quarrying area so clean stormwater is not contaminated with sediment from the operations.

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Cut-off drains and culverts

Cut-off drains will be used to divert clean water around sediment basins and to direct sediment-laden stormwater to sediment basins. Cut-off drains and culverts provide flow capacity for a 5% Annual Exceedance Probability rainfall event. The drains will connect to the sediment basins on one side, be widened by up to 5 m and will have a rock lining at the base of the basin. Figure 3 shows the proposed culvert locations under the internal haul roads. The culverts required will be 450 mm reinforced concrete pipe, class 4 and have a 600 mm minimum cover.

Groundwater

The bauxite in the Project Area is not expected to be significantly leachable (refer to sections 3.6.2 and 2.8.3) and is therefore not expected to have significant effect on groundwater quality. Further, it has not been determined whether the 'wet' samples represent groundwater. However, ABx is committed to applying a precautionary approach and will assume that the 'wet clay' is groundwater. The proposed mining plan is to extract bauxite only to within one vertical metre of the modelled top of the 'groundwater', which is assessed to limit the potential for interception of groundwater.

In the unlikely event that groundwater is intercepted, it would be channelled along site drainage lines to sediment ponds; these are proposed to be periodically tested for pH levels and should impacts be detected then appropriate remedial actions will be undertaken as described in section 3.6.3.

Management Summary

Drainage and erosion control from screening and minimal crushing activities will be managed in accordance with Section 7.9 of the Tasmanian Quarry Code of Practice 2017. Various site sediment and erosion control operations will include:

- Silt fences will be placed at the base of each cleared area with runoff conveyed to the sediment basins via cut-off drains
- Cut off drains between the upstream undisturbed areas and the excavated areas will be constructed to enable 'clean-stormwater' to be diverted from the mining area
- Check dams will be implemented to limit erosion at the bottom of the cut-off drains
- The use of sediment basins
- Stockpiles will be protected from erosion. Temporary silt fences will be utilised at the downstream face to prevent transport of material. Minor contour banks of cut-off drains will be placed upstream to prevent runoff eroding the base of stockpiles. As the excavation progresses, erosion and sediment control measures will be maintained and adapted as necessary
- Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time
- During breaks lasting more than 1-2 months between campaigns, the excavation panels will either be rehabilitated prior to the end of the campaign or will be covered with excavated material to minimise runoff
- Storage zones will be included in the sediment basins, these will collect and hold settled sediment between periods of maintenance. Scouring will be prevented through the inlets to the bottom of the basin being rock-lined
- A geologist will observe excavation within 1 m of the modelled groundwater depths to determine signs of groundwater and minimise the likelihood of interception. Should groundwater be intercepted it would be channelled along site drainage lines to sediment ponds
- Monitoring of sediment basins will be carried out on a routine basis to monitor pH, ORP, EC, DO, colour, and temperature. Monitoring will be undertaken for the first three months of excavation only, unless low pH values are recorded; and
- If low pH values are recorded regularly, treatment of sediment ponds will be required.

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3.3 Noise emissions

Noise emissions from the Project are not likely to cause environmental harm or adversely affect nearby residents. This is demonstrated by a Noise Impact Assessment which was undertaken by pitt&sherry in 2023 (Appendix F). The findings show that the results do not exceed the 45 dB(A) Quarry Code of Practice limit for daytime operations by more than one fraction of a decibel and therefore on average noise levels will be below the limit and meet the Quarry Code of Practice.

3.3.1 Existing environment

The existing environment of the area surrounding the Project is farmland and bushland with the Project Area approximately 6 km north of the Bass Highway. The nearest sensitive receiver is a rural residence located approximately 800 metres to the southwest of the closest point of the proposed mining lease boundary. Several other residences located further away to the west and south of the mine. Refer to Figure 9 for locations of sensitive receivers. The only other significant noise source in the area is the Exton Quarry operated by Cresswells Transport approximately 2 km southwest of the site.

3.3.2 Potential impacts

The Project is likely to produce noise emissions from the following equipment:

- Excavator
- Loader
- Haul Truck
- Mobile Screen
- Generator
- Bulldozer
- Mobile crusher
- Service truck; and
- Light vehicles.

Specific makes and models of equipment have not been confirmed, sound power levels (provided in Table 9) are based on noise measurements of equivalent equipment made recently at various Tasmanian industrial and quarrying sites by pitt&sherry.

The potential noise emissions will come from the clearing, shallow surface excavation and transportation of extracted material. The Project will only operate during the day and no blasting is proposed to occur. The locations of potential noise equipment are presented in Figure 9. Note that the locations of these equipment are not fixed, however, a conservative approach has been adopted in the Noise Impact Assessment to ensure the worst-case scenarios are accommodated.

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Table 9: Equipment sound power levels.

Noise Source	Quantity	Nominal Height Above Ground – m	Sound Power Level – dB(A)
Excavator	3	2	107.4
Loader	2	2	102.6
Trucks	2	2	103.9
Mobile Screen	2	2	109.2
Generator	1	1.5	92.5
Bulldozer	1	2	110.0
Service Truck	1	2	103.9
Light Vehicles	3	0.5	75.0
Mobile Crusher & Excavator	1	2	120.2

Noise modelling

Noise from quarrying and associated activities, when measured at any neighbouring sensitive receiver must not exceed the greater of:

- The $L_{A90,10min}$ plus 5 db(A) excluding noise from the quarry; or
- 45 db(A) during the daytime (0700 to 1900), when measured as an $L_{Aeq,10min}$.

These criteria are consistent with acoustic indicator levels in the Tasmanian Environmental Protection Policy (Noise), 2009 for various daytime residential activities. Noise monitoring was not undertaken as part of this assessment, so the 45 dB(A) level is used as the assessment criterion.

The noise modelling was carried out in accordance with the Tasmanian Department of Environment, Parks, Heritage and the Arts Noise Measurement Procedures Manual, 2008. The noise calculation standard incorporated “worst case” meteorological conditions for noise propagation, considered topography, ground absorption, and expected equipment locations.

All of the predicted noise emission levels from the quarry, at residential premises within 3 km of the Project are below the 45 dB(A) Quarry Code of Practice limit for daytime operation. It should be noted that conservative weather conditions are assumed within the model. On average noise levels will be below these levels and meet the Quarry Code of Practice limit. The results include the required penalties for low frequency and tonality, calculated at each receiver. Table 10 below shows the noise modelling results.

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Table 10: Noise Modelling Results for DL130 Bauxite Project

Location	Distance from Site boundary (m)	Scenario 1 – Normal Operations - dB(A)	Scenario 2 – Mobile Crusher – dB(A)
R1 - 620 Porters Rd	780	43.7	44.8
R2 - 550 Porters Rd	1200	40.4	40.5
R3 - 420 Porters Rd	2110	36.0	36.1
R4 - 340 Porters Rd	2895	39.0	33.2
R5 - 304 Porters Rd	3170	35.3	32.6
R6 - 875 River Road	2275	34.8	34.0
R7 - 114 Kellys Rd	2700	32.8	32.5

3.3.3 Management

"Good practice" noise mitigation measures will be adopted to ensure that noise emissions from the quarrying activities do not exceed the calculated levels. These measures include:

- All plant and equipment will be maintained and in good order at all times, especially noise control equipment such as mufflers and exhaust pipes
- Noise control issues will be considered carefully when selecting new plant or equipment or engaging contractors to carry out work onsite
- An on-site speed limit of 40 km/h will be observed
- All heavy vehicle based on site will use broad band style reversing beacons
- Unnecessary noises such as "dropped loads" or scraping loader buckets on the ground will be avoided
- When processing oversize material, the mobile crusher and loader will be located no further south or west than the position indicated in Figure 9, approximately 270 metres west of the site access point
- In the event a line of site is established between the crusher location and the nearest sensitive receptor to the southwest, and found to be supporting noise transmission, additional mitigation measures such as earthen bunds will be created to help mitigate impacts; and
- To ensure that sound levels do not exceed at the nearest sensitive receptor, rock crushing will not occur at the time of other mining activities such as screening.

3.4 Natural Values

A threatened flora species and potential habitat of threatened faunal species have been recorded within the Project Area. However, no threatened flora or fauna species are known to be present within areas that will be directly disturbed. Management measures will ensure there is negligible impact on threatened species or threatened vegetation communities (refer to section 3.4.3).

A Natural Values Assessment (including Addendum 1 of the report) was undertaken by ECOtas and is provided as Appendix A. The survey was completed by Brian French on the 15th of September 2022 and 10 May 2024.

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3.4.1 Existing environment

Vegetation Communities

The Project Area is dominated by intensely managed softwood plantation with associated road network including firebreaks. Native vegetation is present largely as remnants associated with the road access corridor. These areas will not be disturbed by the proposal as only road maintenance will be undertaken as necessary. A 4.8 ha area of dry eucalypt woodland (DOB) occurs to the north of Pit 2. This vegetation will not be cleared. The vegetation communities are shown in Figure 10 and Figure 11. The vegetation which is required to be cleared for the safety of the public and vehicles using the existing site entry does not support populations of threatened flora. Refer to Figure 13.

ECOtas has mapped the Project Area with TASVEG 4.0 classification. The study area supports the following TASVEG mapping units:

- *Eucalyptus amygdalina* forest and woodland on dolerite (TASVEG code: DAD)
- *Eucalyptus obliqua* dry forest (TASVEG code: DOB)
- *Eucalyptus ovata* forest and woodland (TASVEG code: DOV)
- *Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB)
- Agricultural land (TASVEG code: FAG)
- Plantations for silviculture – hardwood (TASVEG code: FPH)
- Plantations for silviculture – softwood (TASVEG code: FPS)
- Regenerating cleared land (TASVEG code: FRG); and
- Extra-urban miscellaneous (TASVEG code: FUM).

Threatened Vegetation Communities

Of the vegetation communities mapped in the Project Area, *Eucalyptus ovata* forest and woodland (DOV) is the only community listed on the NC Act. Occurrences of this community can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*Eucalyptus ovata* / *E. brookeriana*), which is identified as a threatened ecological community listed as Critically Endangered (Matter of National Environmental Significance) under the Commonwealth EPBC Act. For *Eucalyptus ovata* forest and woodland to be listed as the EPBC Act listed entity certain threshold measures are met.

Flora

A total of 97 vascular plant species were recorded during the survey undertaken by ECOtas. The species diversity is considered low given the size of the surveyed area. The dominance of silvicultural plantation monoculture and other disturbance has limited native species diversity across the area. It was concluded that additional surveys at different times of the year are not considered warranted due to the low likelihood of species with a high priority for conservation management being present.

Threatened flora

Database information from the LIST indicates that the Project Area does not support any known populations of flora listed as threatened on either the Tasmanian TSP Act and/or the Commonwealth EPBC Act.

One threatened flora plant species was recorded within the proposed mining lease during the survey; *Pimelea curviflora* var. *gracilis* (Slender curved riceflower), listed under the Tasmanian TSP Act. Three plants were recorded in a highly disturbed area on the southern margin of the access road. There were no plant species listed on the Commonwealth EPBC Act that were detected during the survey, and none listed on the Tasmanian Government Natural Values Atlas (NVA) database.

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The Slender curved riceflower is located in a highly disturbed area at the southern margin of the access road.

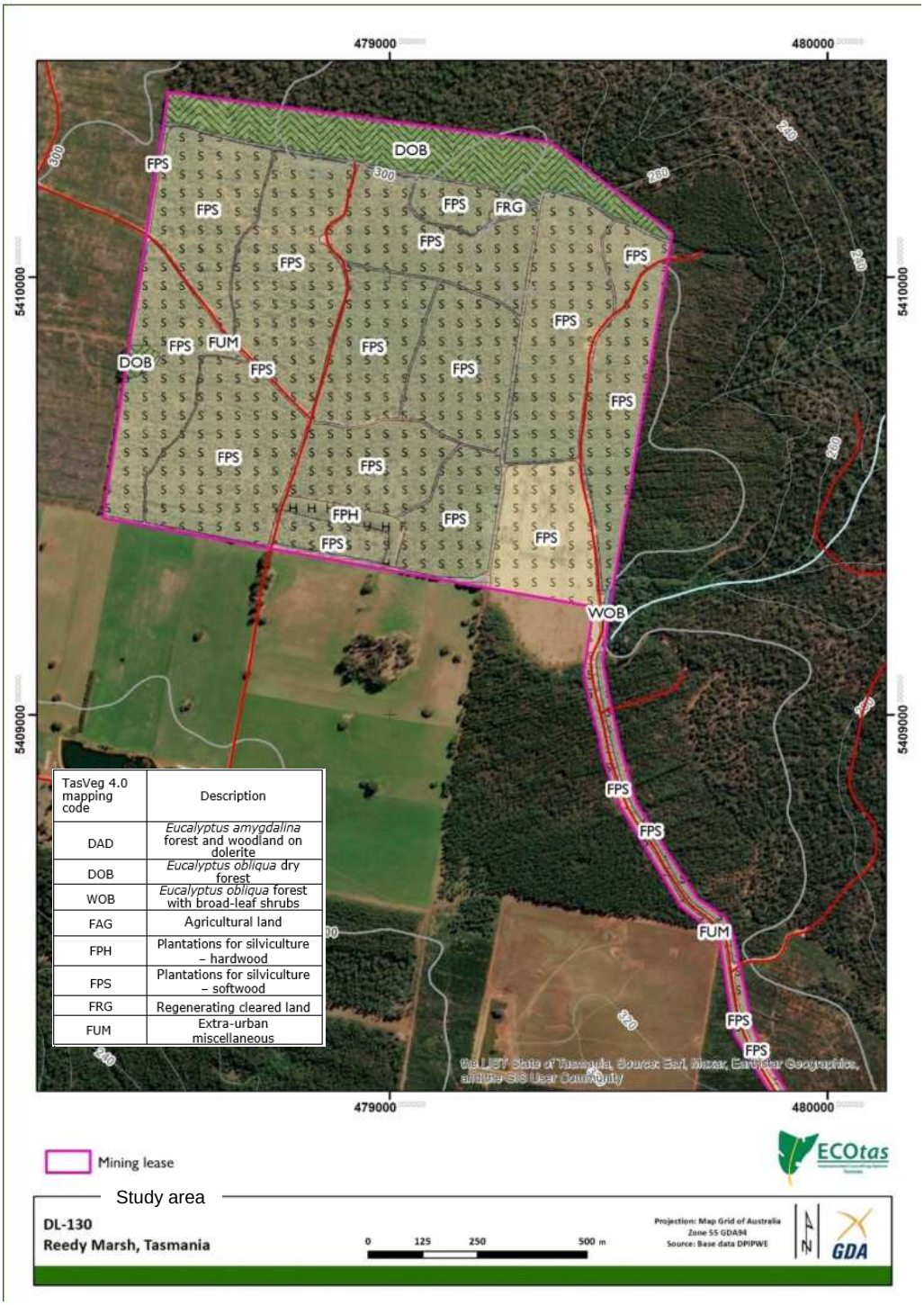

Figure 10: Vegetation communities within the Project Area including the proposed pits

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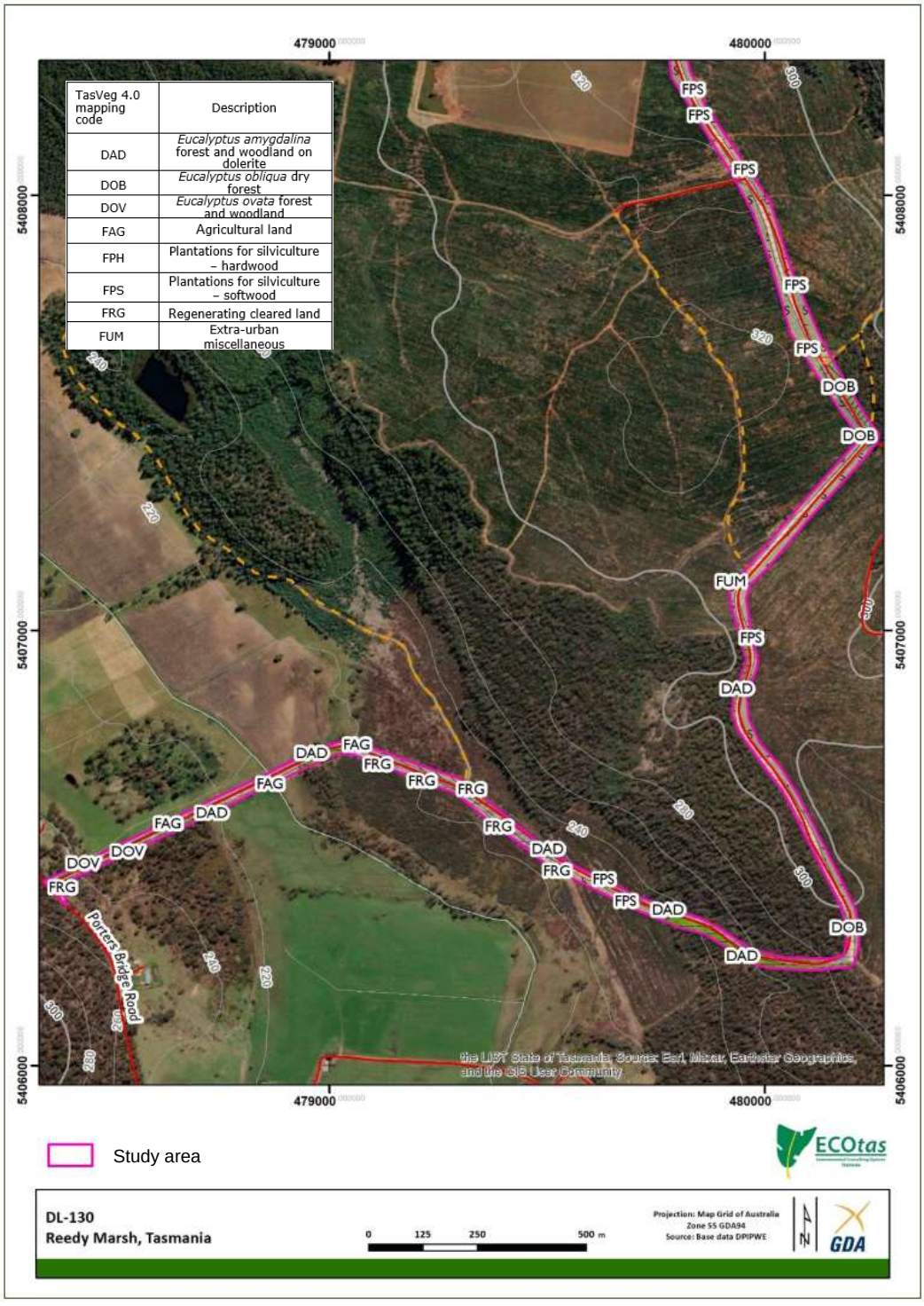

Figure 11: Vegetation communities within the Project Area including the south of the access road

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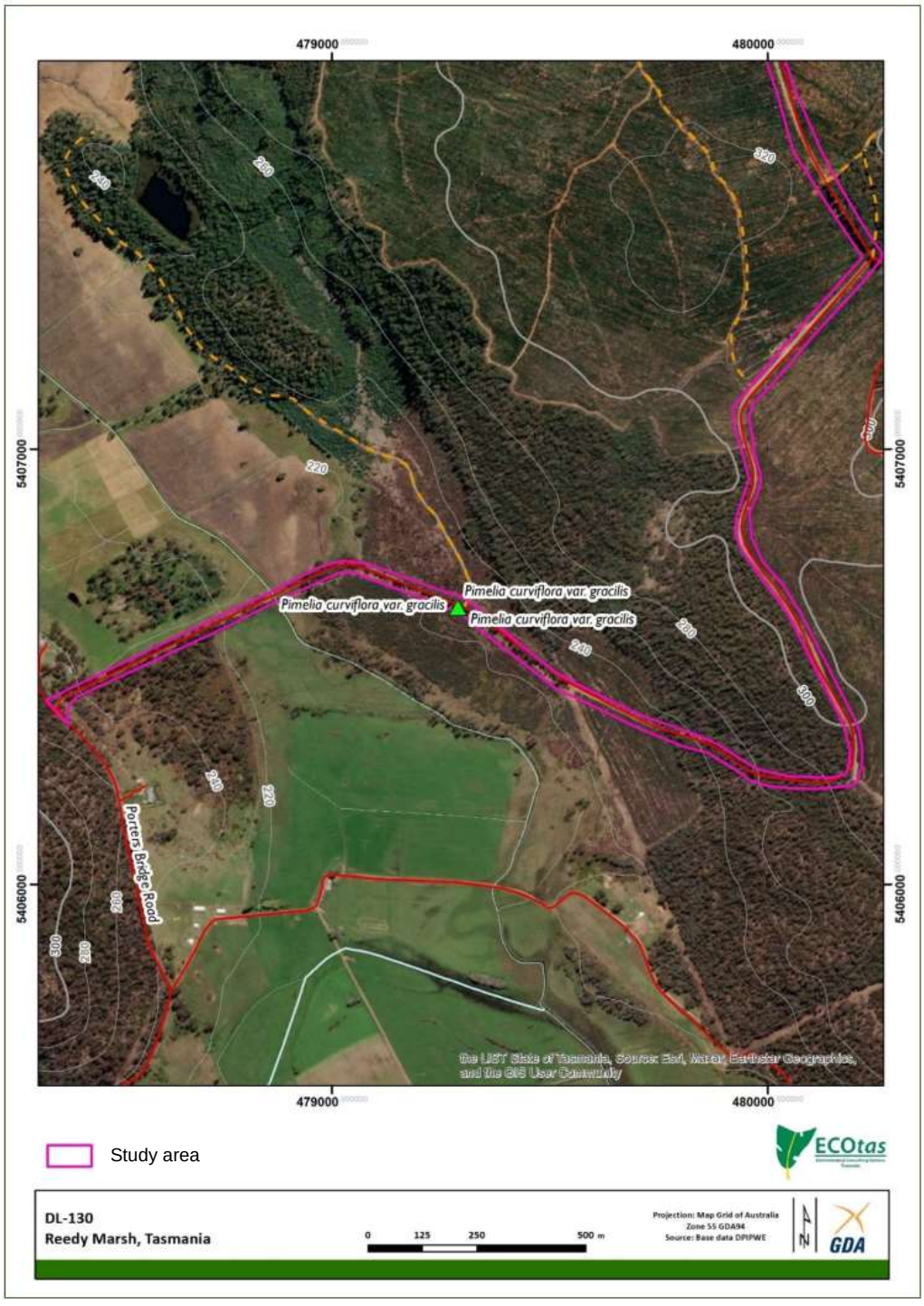

Figure 12: Threatened flora species within the Project Area. Note that no threatened species are present in the northern part of the Project Area

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Figure 13: Threatened flora species within the Project Area. Note that no threatened species are present in the northern part of the Project Area

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Threatened fauna

There are no records of threatened fauna listed on the EPBC Act, and/or the TSP Act on the NVA within the Project Area. No evidence of any threatened species was detected during the survey.

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

- *Sarcophilus harrisii* (Tasmanian devil)
- *Dasyurus maculatus* subsp. *maculatus* (Spotted-tailed quoll)
- *Dasyurus viverrinus* (Eastern quoll)
- *Perameles gunnii* (Eastern barred bandicoot)
- *Aquila audax* subsp. *fleayi* (Tasmanian wedge-tailed eagle)
- *Haliaeetus leucogaster* (White-bellied sea-eagle)
- *Lathamus discolor* (Swift parrot)
- *Tyto novaehollandiae* (Masked owl); and
- *Littoria raniformis* (Green and gold frog).

Marsupial carnivores

The three marsupial carnivores (Tasmanian devil, Spotted-tailed quoll and Eastern quoll) are considered collectively because they have broadly similar habitat and management requirements.

There are numerous NVA records within 5 km of the Project Area for the Tasmanian devil (25 records) and Spotted-tailed quoll (4 records), indicating that these species utilise the area for opportunistic foraging. No potential den sites were located within or near the Project Area.

Eastern barred bandicoot

Potential habitat exists for the Eastern barred bandicoot with favoured habitat including landscapes with a mosaic of agricultural land and remnant bushland. There are 35 records of this species within 5 km of the Project Area. No evidence of the species was found. However, it is likely the species utilises the greater area for foraging.

Wedge-tailed eagle

Nest NRD #193 is located 540 m to the southwest of the access road intersection at Porters Bridge Road. The nest was last reported in 2010 as in poor condition with no recent addition of material to the nest or eagles observed. There have been no observations since 2010. There are no other nests within 1 km of the Project Area. Line of site modelling indicates the first 400-500 m of the access road is within line-of-site for nest NRD #193. This modelling does not consider vegetation, which would effectively obscure the whole access road from view. No other nests were observed during the survey or during Forico's extensive survey (refer to details in Appendix A) as part of the recent plantation harvesting.

White-bellied sea-eagle

No known nests of white-bellied sea eagles occur within the wider area with forests surrounding the study area generally providing marginal nesting habitat due to the lack of suitable nesting trees. This is further verified by the nesting model which indicates marginal nesting habitat in the greater area and the lack of suitable waterbodies in the greater area suitable for foraging.

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Swift parrot

There are no observations for the swift parrot within 5 km of the Project Area with the area representing potential habitat only. No nests have been recorded within or adjacent to the Project Area. No potential nesting habitat will be cleared as the DOB to the north of Pit 2 will not be cleared. There is potential foraging habitat with *Eucalyptus ovata* being present within the creek line in the southwest of the Project Area.

Masked owl

There are seven records of the masked owl within 5 km of the Project Area, and it is likely the species uses the greater area for foraging and temporary roosting. There is extensive potential habitat within the Brushy Rivulet Conservation Area to the north of the Project Area. Within the Project Area potential habitat is present along the boundary with the conservation area. Scattered suitable large individuals of *Eucalyptus obliqua* with large hollows were noted. However, the density of the trees was sparse with evidence of use by brush-tailed possums with distinct trails present with scats at the tree base.

Green and gold frog

Potential habitat for the green and gold frog, *Litoria raniformis,* is located in the ephemeral watercourse that runs under the access road, 750 m from Porters Bridge Road (refer to Figure 6).

3.4.2 Potential impacts

Vegetation communities

- The threatened community *Eucalyptus ovata* forest and woodland community (DOV) is dissected by the access road near the intersection with Porters Bridge Road. The DOV patch within the Project Area is approximately 0.2 ha in size. Although the mapped DOV patch does very marginally meet the nominal thresholds due to extent (mapped patch is <0.5 ha including on adjacent titles) to be listed as an EPBC Act-listed entity, there is unlikely to be any significant impact on the DOV patch as a result of the Project. As the access road is classed as an all-weather road and is already used by Forico haul trucks, the road will not need to be widened. The only upgrades will include repairing potholes and potentially trimming vegetation. These small upgrades and use of the road will not constitute a significant impact
- *Eucalyptus obliqua* dry forest occurs on the margins of the access road. The DOB area in the north of the Project Area will not be cleared
- *Eucalyptus amygdalina* forest and woodland on dolerite is localised to the margins of the access road and will not be disturbed apart from pruning of the existing road verges and weed management activities
- *Eucalyptus obliqua* forest with broad-leaf shrubs occurs as an isolated community on the margin of the access road in the east of the Pits. The area mapped as WOB will not be disturbed apart from pruning of the existing road verge and potential weed management activities, if required; and
- The modified land (other than plantations) includes agricultural land occurring on the margins of the access road which will not be disturbed by the Project.

Threatened flora

The Slender curved riceflower, *Pimelea curviflora* var. *gracilis*, is located in a highly disturbed area at the southern margin of the access road. It is not anticipated that the plants will be impacted by DL130 and therefore an application for a permit to take will not be required.

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Threatened fauna

No fauna species listed as threatened under the EPBC Act and/or the TSP Act are known from database information, within the study area. There were no traces of threatened fauna species such as potential dens observed during the natural values survey. Although the study area supports potential habitat to some degree of some species, no species are anticipated to be deleteriously impacted by DL130.

Potential impacts to non-critical habitat of the relevant species have been considered below.

Marsupial carnivores

The main disturbance areas (Pits 1 and 2) are cleared land with limited potential for den sites and threatened marsupials will unlikely be impacted by the Project. The areas proposed for clearance are located in areas of currently high rotation plantation forestry and therefore potential dens sites are limited.

The risk of roadkill is low as the roads will not support high traffic speeds and vehicle movements will be during the day. The operational hours will be between 7:00am and 5:00pm Monday to Friday and between 8:00am and 4:00pm Saturday.

In accordance with the Tasmanian Devil Survey Guidelines and Management Advice for Development Proposals (DPIPWE 2015a), roadkill mitigation should be implemented if a development is Projected to increase the rate of roadkill by more than 10%. Both the Tasmanian devil and quolls (Spotted-tailed and Eastern) are mainly nocturnal, hence the concern is primarily if DL130 will result in a substantial increase in traffic between dusk and dawn which will not be the case.

According to ECOtas, even if DL130 was to generate an increase of greater than 10% in daytime traffic, there is little evidence that this would lead to an increase in the rate of roadkill of devils, and quolls. The risk of this increase is probably negligible due to the narrow roads and topography within the Project Area as well as Porters Bridge Road naturally limiting the speed of any vehicle. Furthermore, most, if not all vehicle movements will be during daytime hours.

Eastern barred bandicoot

DL130 is unlikely to have a significant impact on this species within the broader context of existing forestry activities.

Wedge-tailed eagle and White-bellied sea eagle

It is unlikely that the passing of vehicles within 500 m of nest #193 should warrant any mitigation, further to those already committed to in this proposal, such as speed limits.

This assumption is based upon:

- The nest's age, and the year it was entered into the LISTmap (2010)
- The lack of any evidence suggesting its current use
- The nest's location within an extensive landscape of plantation forestry and primary production; and
- The nest's proximity to public roads which are frequented daily.

No impacts on the Wedge-tailed eagle or White-bellied sea eagle are anticipated.

Swift parrot

If not appropriately managed, impacts to swift parrots may occur if:

- Areas of the DOB vegetation community are cleared while trees are being occupied for nesting; and
- The foraging habitat (DOV) is cleared or disturbed.

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As both of these vegetation communities will be avoided, the swift parrot is unlikely to be impacted.

Masked owl

Disturbance of potential nesting habitat of the Masked owl will not occur as no potential habitat will be cleared.

Green and gold frog

The green and gold frog, listed under the TSP Act, may be affected by changes to water quality from runoff if not appropriately managed. The specific location noted is the ephemeral watercourse that runs under the access road, 750 m from Porters Bridge Road (refer to Figure 6). The habitat is unlikely to be directly affected by the development as access road is existing.

Geoconservation

There are no geoconservation sites, listed on the Tasmanian Geoconservation Database, within 5 km of the Project Area. The nearest geoconservation site is the Deloraine Eocene Fossil Site approximately 6 km to the south-east of the Project Area. Therefore, there is no potential for impacts to geoconservation sites.

3.4.3 Management

Vegetation Communities

The recommendation from ECOtas to exclude the threatened vegetation community; *Eucalyptus ovata* forest (DOV) and woodland from disturbance will be implemented. The community will be managed to minimise risk of degradation.

Management measures will include:

- No disturbance of the community. The road will not require widening and will only need light pruning in some areas to improve sight distances
- Prevention of the spread of weeds into community
- Institution of barrier fencing or similar; and
- Maintain the current drainage regime or improve where required.

A referral to DCCEEW under the EPBC Act is not considered necessary as the areas will be excluded from disturbance and appropriate management strategies are in place. An alternative access avoiding the DOV has been deemed not viable as a new road would have to be constructed through neighbouring property and it is assumed utilising the existing road will have the least environmental impact on the surrounding area.

If passing bays are required, these will not be located in the vicinity of the DOV.

Flora

Given that the Slender curved riceflower plants only occur on road margins and can easily be avoided, management measures include excluding the plants from disturbance. Their protection from disturbance will be in the form of barrier fencing or similar. A preclearance survey for the Slender curved riceflower, *Pimelea curviflora* var. *gracilis* will be undertaken along the access track before any (minimal) road upgrades take place. No other special management is warranted due to the widespread distribution of the species, its reservation status and known ability to colonise highly modified sites.

Additional flora 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.

If passing bays are required, these will not be located in the vicinity of the threatened flora.

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Threatened fauna

Marsupial carnivores

Preclearance surveys for Tasmanian devil and Spotted-tailed quoll dens will be undertaken and managed accordingly. If any potential den sites for the Tasmanian devil are recorded in the Project Area and exclusion zones cannot be established, the dens will be monitored and managed in accordance with the Tasmanian Devil Guidelines. Dens that cannot be avoided would require a permit to take under the NC Act.

Roadkill mitigation measures will be implemented in accordance with the Tasmanian Devil Guidelines. Mitigation measures will include:

- Speed limits will be placed on the access road between dusk and dawn
- Advisory signage will be installed; and
- Education and awareness training for drivers will be provided.

Wedge-tailed eagle

The Guidelines for Natural Values Surveys – Terrestrial Development Proposals (DPIPWE 2015b) indicate eagle nest surveys should be conducted a maximum of two years prior to any development. As such, a new nest survey will be required within the modelled potential habitat within a minimum of 500 m from the proposed operational areas (and likely within 1 km line-of-sight of such areas) prior to works commencing in order to maintain survey currency requirements. The relatively small areas of mapped potential habitat and gentle terrain with reasonably easy to traverse vegetation will allow ground surveys to be practical.

Swift parrot & Masked Owl

Management of impacts to swift parrot habitat includes:

- DOV (swift parrot foraging habitat) will be excluded from disturbance as the community does not intersect any areas that will be disturbed; and
- Any potential nesting habitat will not be cleared. Note that the DOB north of Pit 2 will not be cleared and thus potential habitat will be avoided.

Green and gold frog

Measures will be implemented to protect nearby waterways, as follows:

- Runoff will be managed and contained through the stormwater management plan described in Section 3.2.3 to ensure there is very limited risk of runoff into nearby waterways
- The ephemeral stream on the access road will be reassessed by an ecologist at time of development as neighbouring activities have been observed during the assessment period to indicate that the waterways may no longer be potential habitat for the species; and
- If the waterway is still deemed to be potential habitat, *and* the road begins to become degraded through the course of a campaign, drainage measures such as silt fences will be installed during prior to development to ensure sedimentation from the road does not enter the creek.

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3.5 Weeds, pests and pathogens

3.5.1 Existing environment

Weed species

Four species classified as declared weeds under the Tasmanian *Biosecurity Act 2019* have been identified within the Project Area. The four declared weeds include:

- *Cytisus scoparius* (English broom)
- *Erica lusitanica* (Spanish heath)
- *Ulex europaeus* (Gorse); and
- *Rubus* sp. (Blackberry).

Of the above species, Gorse forms extensive populations with 100s to 1000s of plants present, mainly along the proposed access route. All other species generally occur as small populations or localised plants in the same general area as gorse.

Phytophthora cinnamomi

There was no symptomatic field evidence of the root pathogen PC, with the native vegetation remnants all in good health (apart from weeds along the access road). The native vegetation types identified from the study area generally have a low susceptibility to PC.

Myrtle wilt

Myrtle wilt, caused by a wind-borne fungus (*Chalara australis*), occurs naturally in rainforest where Myrtle beech (*Nothofagus cunninghamii*) is present. As the study area does not support *Nothofagus cunninghamii* no management is required.

Myrtle rust

Myrtle rust is a disease limited to plants in the Myrtaceae family. No evidence of myrtle rust was noted.

Chytrid fungus and other freshwater pathogens

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. The Project Area includes defined drainage features, mainly along the access route and the Pits are on generally well-drained soils.

3.5.2 Potential impacts

Although weed management measures will be followed, the spreading of weeds is possible. Weeds may be spread through machinery, vehicles and personnel on site. The spreading of weeds is anticipated to be minimal due to management measures.

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3.5.3 Management

Due to the abundance of invasive weeds, management actions will aim to minimise the risk of spreading weeds to weed-free areas. The current distribution of weed species will be contained to minimise the potential for the weeds to spread to surrounding forestry and agricultural land and the adjacent Brushy Rivulet Conservation Area. The key management measures to ensure this occurs will be as follows:

- Hygiene protocols for machinery, vehicles and personnel entering the Project Area
- A formal weed and disease hygiene management plan will be developed and implemented to minimise the risk of further infestations to the Project Area, and critically, to prevent the spread of the declared and environmental weeds from the proposed Project Area to other sites
- All external haul trucks will remain on all-weather roads void of vegetation; and
- Wash down procedures will be followed for all earthmoving equipment.

In order to ensure the Project Area remains free of PC, good condition of the proposed access road and internal tracks will be ensured. The roads will be free from puddling and the proposed quarrying areas will remain well-drained. Provided that the stripped topsoil is well-managed it is also noted that DL130 presents a negligible opportunity to host PC.

Specific actions will be taken to ensure freshwater pathogens are not introduced to the site. These include:

- Ensuring vehicles, machinery, equipment, materials and personnel adhere to general hygiene protocols; and
- Ensuring that access tracks are well-drained such that water does not pool for long periods, minimising the opportunity for the disease to establish and persist, and ensuring that frog species are restricted to non-anthropogenic habitats in the adjacent forest/natural streams.

ABx maintains a policy to neither transport nor purchase exogenous soils so as to avoid the risk of introducing weeds and plant diseases. ABx also washes all field vehicles before moving from one property to the next so as to minimise the risk of spreading seeds and plant disease.

ABx employs drilling and earth moving contractors that are experienced in these issues and who work with rural landholders in their normal course of business to ensure that the importance of these issues is part of their corporate culture.

These land care policies will continue to be developed and apply throughout all production stages as well.

3.6 Waste

Waste from site must comply with the following:

- EPA (2017) Quarry Code of Practice 3rd Edition; and
- Environmental Management and Pollution Control (Waste Management) Regulations 2020.

Aqueous emissions, including diffuse emissions to surface waters and groundwater, must meet the requirements of the State Policy on Water Quality Management 1997. DL130 will be designed, constructed and operated to maintain water quality in accordance with this policy.

3.6.1 Existing environment

The site is currently well-managed and the current Forico practices produce minimal waste materials. ABx will maintain this standard by ensuring that all general refuse and rubbish generated during operation will be removed from the Project Area.

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3.6.2 Potential impacts

Waste material can cause environmental nuisance or harm if it is not contained and disposed of appropriately. All solid and liquid waste will be managed in accordance with the Environmental Management and Pollution Control (Waste Management) Regulations 2020.

Solid waste

DL130 will not produce any waste rock, tailings or other material that will require specific disposal requirements. There will be no permanent waste rock stockpiles. Screened fines and low-grade material will be returned to aid in rehabilitation.

Other solid waste produced will be general refuse waste and mined material that is not of sufficient grade for blending and shipment.

Liquid waste

Liquid waste will be generated during the construction and operation of the DL130 in the form of stormwater and sewerage. Acid mine drainage (although extremely unlikely to occur), is also considered in this section.

Spillage of sewage effluent has the potential to contaminate surface water, reduce water quality, degrade habitat and cause reductions and the loss of aquatic populations. Overland flow of surface water during rain events would primarily be sheet flow that quickly infiltrates into the ground.

The relevant receptors for liquid waste are the natural surface drainage systems of the Project Area. The Project Area is not in the immediate vicinity of a water body. A minor tributary of Brushy Rivulet flows towards the proposed mining lease. The tributary is not within any of the Pits and is unlikely to be impacted by operations. The potential impact of sediment laden run-off on the drainage systems is considered in section 3.2.

No designated and/or scheduled aqueous discharge points to watercourses will be required for DL130. The surface water management options for each Pit will allow for trapping of surface runoff and rainwater which collects from excavated Pits. This water will be left to stand to allow the sediment to settle and then the water will be reused for dust control around the site. Bauxite is free draining and also is very effective as a water filter, being able to filter water to a potable standard. Runoff water from bauxite ore is therefore likely to be of good quality.

Acid mine drainage

As part of the formation of bauxite, soluble elements, especially alkali metals and to a lesser extent clays are leached out of the fresh rock to form bauxite weathered rock. Elemental compounds that exist in bauxite today are typically immobile under all prevailing environmental physico-chemical conditions. Hence the probability of any leach products such as acid mine drainage (AMD) forming from bauxite and surrounding waste rock is considered to be very low.

AMD is typically generated by the oxidation of sulfides, in particular, pyrite. High sulfur bauxites are defined as bauxites containing more than 0.7% sulfur. Assay test work undertaken on over 500 unsieved samples and over 900 sieved samples from the Project Area, returned the following results:

- Unsieved average: 0.24% sulfur trioxide (SO_3); and
- Sieved average: 0.26% SO_3.

The results suggest that the ore can be considered low sulfur bauxite.

Bauxite includes neutralising elements such as calcium and magnesium. As such, bauxite's overall chemistry is slightly alkaline and is expected to be non-acid forming (NAF).

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The potential for acid mine drainage to occur is therefore considered to be very low.

Although the risk of acid drainage is very low, precautionary measures will nevertheless be implemented, as described in Section 3.6.3.

3.6.3 Management

Solid waste

The following mitigation measures will be undertaken:

- Any extracted material that is not of sufficient grade for blending and shipment will be placed back into the extracted Pits prior to covering with topsoil
- All waste materials will be disposed of offsite to an appropriately approved or licensed facility, in accordance with EPA and/or Meander Valley Council requirements
- Rubbish bins will be provided with lids at appropriate locations around the site and all staff will be required to avoid littering, and to collect and bin any rubbish and litter that they observe on site
- Refuse will be periodically taken to an approved waste disposal facility; and
- Waste will be reused and recycled where possible.

Adherence to the commitments outlined above will ensure that there will be no adverse impacts resulting from solid waste generated from DL130.

Liquid waste

All ablution blocks will be temporary and will contain black water storage tanks which will be emptied or removed by a suitably qualified waste disposal contractor for sewage disposal to the municipal wastewater treatment plant.

While the acid mine drainage potential is considered to be very low, the following precautionary measures will be implemented:

- Water collected in the sediment basins will be monitored for pH and if low pH is detected regularly, treatment for AMD will be implemented
- An AMD contingency plan will be developed, which will incorporate dosing the sediment basins with lime or another appropriate medium. Since any acid is expected to be at very low concentrations, if it is present at all, this dosing approach will readily manage the pH issue; and
- Disturbed areas will be covered as soon as practicable to prevent exposure and erosion of the remaining profile.

3.7 Environmentally hazardous materials

3.7.1 Existing environment

The only hazardous materials to potentially occur within the Project Area would be associated with former Forico activities. These may include:

- Fuel spills from machinery used for forestry
- Herbicides have been used within the past year and include:
  - Archer - Clopyralid – 180 ml/ha
  - Verdict 520 - Haloxyfop – 300 ml/ha
  - Garlon - Triclopyr – 300 ml/ha

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- Outright 770 - Spray Adjuvant – 500 ml/ha
- Hexmac 750 - Hexazinone - 2.5 kg/ha
- Agrichem Supa Stick Oil – 500 ml/ha
- Weedmaster DST - Glyphosate – 4 l/ha
- Associate - Metsulfuron methyl – 50 g/ha; and
- Mako - Sulfometuron methyl – 40 g/ha.

3.7.2 Potential impacts

Blasting is not planned to be carried out and no explosive materials will be stored on site. There will also be no chemical processing of bauxite, and no need for chemicals on site.

Fuels and oils will be required on site. The spillage of fuels and oils has the potential to contaminate surface water, reduce water quality, degrade habitat and cause reductions and the loss of aquatic populations. Loss of fuel or oil during construction and operation may occur during refuelling or from spillage and breakdown during normal construction or operational activities. Loss of fuel or oil on flat ground away from creek systems is likely to be absorbed by the soils and vegetation.

3.7.3 Management

Fuel and oil will be brought onto the site as required in a mobile tanker and stored in an appropriately designed and operated bunded area. Therefore, a permanent facility for bulk quantities will not be required. All refuelling and equipment repairs will be undertaken in the designated laydown facility which will be appropriately designed, bunded and equipped to contain and clean any spills that may occur.

The fuel storage and transport requirements of the *Dangerous Goods (Road and Rail Transport) Act 2010* and *Work Health and Safety Act 2012* will be met. Relevant criteria are listed below and these will be adhered to during the construction and operation phase:

- The fuel tanker will satisfy appropriate construction standards
- The fuel tanker will be located in a bunded area with 110% capacity of the tank
- The tanker will carry fuel clean-up equipment in case fuel spills occur during refuelling and a spill kit will be permanently located at the site office
- Refuelling and lubrication will be undertaken away from any freestanding water
- Maintenance and repair facilities and workshop will be appropriately designed and operated in order to contain and clean up any spills that may occur
- Fuel clean-up equipment will be stored in readily accessible sites
- Oil spill absorption materials will be used immediately for clean-up if there are any spills
- If there is any residual contaminated soil evident outside the bunded area after a spill and clean up, it will be excavated immediately and taken for disposal or treatment at an appropriately licensed facility
- All workers will be trained to respond to spills and leaks
- The EPA will be notified as soon as possible of any spills; and
- All equipment will be properly maintained and serviced regularly to prevent ongoing oil or fuel leaks.

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The surface water management options for the Pits will allow for trapping of surface runoff and rainwater which collects in pit floors. This water will be left to stand to allow the sediment to settle and then reused for dust control around the site. Bauxite is free draining and also is very effective as a water filter, being able to filter water to a potable standard. Runoff water from bauxite ore is therefore likely to be of good quality.

The site will have a sediment pond which will be provided with a hydrocarbon separator to remove potential hydrocarbon contamination from the workshop and parking areas. The sediment will be allowed to settle and in the unlikely event that the pond overflows it will enter the natural low point in the topography preventing any direct discharge to watercourses and allowing the water to infiltrate and evaporate into the grazing land.

3.8 Site contamination

As the only former activity within the Project Area has been forestry, there is very low risk of contamination that may cause risk to human health or the environment as part of this Project. A Site History Review has been completed to support the DA to determine the risk of these contaminants to human health of workers on site, and the environment.

Contaminants, if any, may include:

- Fuel spills from machinery used for forestry – these would be very small and isolated and unlikely to create a risk.
- Herbicides have been used almost one year ago and include:
  - Archer - Clopyralid – 180 ml/ha
  - Verdict 520 - Haloxyfop – 300 ml/ha
  - Garlon - Triclopyr – 300 ml/ha
  - Outright 770 - Spray Adjuvant – 500 ml/ha
  - Hexmac 750 - Hexazinone - 2.5 kg/ha
  - Agrichem Supa Stick Oil – 500 ml/ha
  - Weedmaster DST - Glyphosate – 4 l/ha
  - Associate - Metsulfuron methyl – 50 g/ha; and
  - Mako – Sulfometuron methyl – 40 g/ha.

3.8.1 Management

- The Site History Review recommends that soil testing is undertaken as part of a Construction or Operational Environmental Management Plan prior to excavation; and
- If herbicides persist in topsoil, the top soil will not be used onsite for applications such as bunding. Instead topsoil will be appropriately located and bunded to ensure runoff does not enter waterways.

3.9 Environmental impacts of traffic

3.9.1 Existing environment

A Traffic Impact Assessment (TIA at Appendix D) undertaken by pitt&sherry provides for a detailed assessment of the existing road network including Porters Bridge Road and Meander Valley Road.

3.9.2 Potential impacts

The overall traffic volumes on Porters Bridge Road and Meander Valley Road in the vicinity of the proposed mine site are expected to increase by 112 vehicles per day during the mining stage of the proposed bauxite mine.

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Approximately 78 truck and dog trailer movements are expected per day (i.e., a total of 39 trucks per day coming to site and leaving with a load) when the quarry is operational. Site access and egress is to be evenly dispersed throughout operating hours.

The impact of traffic generated by the proposed development is minimal during both the AM and PM peak hours and throughout the day, particularly given workers will travel to and from the site outside of peak hours. The maximum vehicles per hour set to access or egress the site is approximately 23 and will occur between 6:00am to 7:00am and between 5:00pm and 6:00pm, Monday to Friday, and between 07:00am to 08:00am and between 04:00pm and 05:00pm on Saturdays.

Traffic will create some noise and dust. Traffic was included in the noise model which did not exceed acceptable limits for receptors. Similarly, dust from traffic is likely to be minimal as vegetation lining the roads will reduce the spread of dust.

If not managed appropriately, flora and fauna impact due to traffic and increased road use include:

- Sedimentation into waterways, which may impact aquatic flora and fauna
- Potential to impact native fauna through roadkill; and
- Impact to vegetation along roadsides through road upgrades.

These impacts to flora and fauna are detailed in section 3.4

3.9.3 Management

Potential traffic impacts will be minimised by the following mitigation measures:

- Ensuring only minimal upgrades to roads occur (filling potholes, minor trimming)
- Use of sediment fences around waterways
- Maintaining current road drainage conditions
- Limiting cartage to and from the Project Area to within daylight hours
- Limiting vehicle speed between dusk and dawn; and
- Educating and training drivers onsite regarding safe driving practices.

3.10 Other offsite impacts

No other aspects are considered to be impacted by DL130.

3.11 Monitoring

Monitoring of sediment basins will be carried out on a routine basis to monitor pH, ORP, EC, DO, colour, and temperature. This will ensure the continued success of the sediment basins as well as monitor for AMD.

3.12 Decommissioning and rehabilitation

Decommissioning and rehabilitation measures are ongoing and are carried out in accordance with Section 8 of the Quarry Code of Practice 2017. The method, objectives and outcomes of decommissioning and rehabilitation activities of DL130 will be similar to those undertaken for the Bald Hill Project.

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The main components of the DL130 for decommissioning and rehabilitation include:

- The infrastructure area located on the eastern side of the quarrying operations which includes:
  - Demountable offices and ablutions
  - Car park
  - Laydown area
  - Workshop and hydrocarbon storage area
  - Ore stockpile area
  - Water tanks (potable and non-potable)
  - ROM pad (high-grade ore and low-grade ore)
  - Cut off drains, sumps and sediment basins
- The resource/excavation areas; and
- Access and haul roads.

Decommissioning of DL130 is likely to require very limited works of cleaning and preparation for transport as all infrastructure and equipment on site will be temporary and portable.

Decommissioning of infrastructure will involve the removal of all infrastructure. Following the closure of the quarry, all structures associated with the mobile plant and portable offices and buildings will be removed. As no new roads will be developed for DL130, it will not be necessary to maintain any road networks. The existing roads will be used by Forico once the land is returned on closure.

Rehabilitation of the infrastructure and resource areas will follow the same guiding principles, which includes:

- Rehabilitate land disturbed by operations in accordance with appropriate post-mining land uses
- Consult relevant stakeholders and develop a closure plan that clearly defines the post-closure land use
- Where appropriate, rehabilitate progressively over the life of the operation
- Monitor rehabilitation success based on agreed criteria with relevant stakeholders
- Use appropriate technologies/methods to reduce environmental impacts and improve site rehabilitation techniques; and
- Develop designs for appropriate landforms that will behave and evolve in a predictable manner, according to the design principles established.

Rehabilitation of the resource Pits will be undertaken progressively with all quarried areas rehabilitated on mine closure. It is expected some vegetation growth will establish as stock-piled topsoil should contain preserved stored seeds and nutrients.

Mining operations will be such that at any one time the maximum area of ground disturbance will be a maximum of 2 ha of operational area within a pit at any one time, with rehabilitation occurring as soon as practicable on excavated sites which are no longer required for extraction purposes. Rehabilitation will be continually monitored for success throughout the mine life.

There will be very little alteration to the landform through the quarrying of the surficial resource. The removal of the top 7 metres will have little effect on the overall topography of the site. No benches, berms or sumps will be left around the edges of the quarried sections upslope that may promote ponding of water. The infrastructure drainage system will be removed or infilled on closure as part of rehabilitation. The rehabilitated site will aim to match the original natural surface flow paths and produce a free draining final profile.

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Once rehabilitation is complete there will be no remaining Pits or stockpiles. Waste rock material, screened fines and the original topsoil will be used for rehabilitation. Topsoil will be stockpiled to minimise the deterioration of seed loads, nutrients and soil biota. This will be done by avoiding topsoil collection when saturated (as this will promote composting) and by creating stockpiles of lower height (one to three metres). The duration of stockpiling will also be kept to a minimum, with rehabilitation of the site undertaken as soon as possible.

Following the closure of the quarry the Project Area will be returned to Forico to replant.

3.13 Greenhouse gas emissions and climate change

The Project has a number of inherent greenhouse gas (GHG) advantages that represent a high practice standard in emission reductions. The operation will use diesel powered equipment for excavation, trucking on and off site, and for the minimal screening that is anticipated. The site electricity will also be provided by diesel powered generators. However, usage is minimal due to the campaign style of operations. The inherent GHG minimisation factors include:

- No processing is required for export thus reducing on site emissions for fuel for processing. The high grade of ore additionally reduces emissions at the receiving plants
- The ore requires no grinding also significantly reducing extraction energy use and emissions
- The ore body has a very shallow layer of overburden meaning minimal fuel and emissions from the initial dig to the ore body itself
- Vegetation clearance of the Project Area is minimal as the site has recently been cleared for forestry harvesting. Reforestation and continued use for forestry after the life of mine will be strongly enabled by the preservation, stockpiling and redistribution of topsoil
- All operations will occur in daylight, eliminating the need for artificial lighting on site. The only diesel generation electricity on site will be for small office demountables (air conditioning, lighting and computer usage)
- Employee transport – the campaign style of operation will utilise local contractors, minimising employee transport; and
- The use of demountables removes the potential for a construction component of emissions for the operations. They will likely be reused and the GHG emissions will only result from transport to site and craneage (if required).

In the long term (15-20 years) the high-grade ore pockets are advantageous worldwide for the emissions reduction opportunities it provides. The production of ore for aluminium production under any circumstance is advantageous in a holistic sense due to aluminium's role in lightweight construction of infrastructure, machinery and vehicles giving a profound reduction in moving weight and ultimately in energy used and emissions generated.

Additionally aluminium is, while being energy intensive in production and hence at many plants also emissions-intensive, one of the most highly recycled materials in the world. This fundamentally reduces the "round trip" emissions for aluminium usage.

3.13.1 Potential impacts

Ore transport

One of the most significant emissions for this Project will be from the transport of ore to the shipping port. Three routes have been explored and the preferred route is the Batman Bridge route, which is the shortest. While currently undecided, it is clear that the shorter Batman Bridge route also has the most advantageous elevation changes for driving from an emissions perspective (360 m ascent 610 m descent).

Due to the campaign nature of the Project the transport vehicles will, unfortunately, be restricted to those available from local contractors.

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In the long term (15-20 years) the high-grade ore pockets are advantageous worldwide for the emissions reduction opportunities they provide. The production of ore for aluminium production under any circumstance is advantageous in a holistic sense due to aluminium's role in lightweight construction of machinery and vehicles giving a profound reduction in moving weight and ultimately in energy used and emissions generated.

Impacts under the Tasmanian Climate Change Strategy

- Transport emissions – the effect on operating emissions levels is nowhere as pronounced as it is in transport vehicles. The (admittedly local) focus of the strategy is at least mirrored in the holistic outcome of emissions minimised aluminium production
- The Project will have little impact on Tasmania's direct transport emissions. This is further minimised by prioritising using the most appropriate route choice for transport to port
- Climate ready economy – as noted above aluminium is an essential component of a future climate ready world, and this mine increases Tasmania's participation in that economy; and
- Climate resilience – the Project contributes to resilience through the role of aluminium in the worldwide future climate resilient industries and equipment.

3.13.2 Management of climate change effects upon the Project

The major climate change effects and measures in place are:

- Increased intense rainfall events
    - Sediment basins will be designed by use of the methodology prescribed in International Erosion Control Association's Best Practise Erosion and Sediment Control 2018 to ensure there are no alterations of areas subject to erosion, inundation or flood
- Increased and more prolonged high temperature events
    - The demountable buildings tend to have a reasonable level of insulation of the external skin – and little effect is expected in those
    - Other site activities are not expected to be affected by elevated temperatures
- Fire weather events
    - As the Project Area has been recently cleared it is noted that increased fire risk to workers during campaigns is low
    - Similarly, the risk of creating a bushfire that may expand or accelerate is also low; and
    - Bushfire advice will be obtained in terms of locations of refuelling stations, office demountables and equipment laybys.

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4. Part D – Summary of Proposed Management Measures

Table 11:Summary of Proposed Management Measures

No.	Management measure	Timing for implementation	Relevant EER Section
Air Quality			
1	Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time	Ongoing from Project commencement	3.1.3
2	During campaign breaks lasting more than 1-2 months, the excavation panels will either be rehabilitated prior to the end of the campaign or will be covered with excavated material to minimise dust production	During campaign breaks	3.1.3
3	Excavation of topsoil will not be undertaken during periods of extended dry, windy weather	Ongoing from Project commencement	3.1.3
4	Where practical a minimum of at least 50% ground cover will be maintained across a given resource area during mining operations. Where this is unachievable, soils will be stored in locations protected from wind and other forms of erosion and in a configuration that keeps the soil viable during storage	Ongoing from Project commencement	3.1.3
5	Outside of campaign the Site Manager will monitor weather conditions and visit the site regularly to ensure any dust generated will not cause environmental nuisance. If weather conditions are likely to cause dust emissions, mitigation measures (such as watering haul roads with a water cart) will be implemented.	During campaign breaks	3.1.3
6	Rock crushing will occur in the north east corner of the Project Area to ensure dust from crushing does not travel to the nearest residence (located to the south west of the Property)	Ongoing from Project commencement	3.1.3
7	Vehicle speed limits on site will be restricted to 40 km/h to minimise dust generation	Ongoing from Project commencement	3.1.3
Water Quality			
8	Following the stormwater plan	Ongoing from Project commencement	3.2.3
9	Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a pit at any one time	Ongoing from Project commencement	3.2.3
10	During breaks lasting more than 1-2 months between campaigns, the excavation panels will either be rehabilitated prior to the end of the campaign or will be covered with excavated material to minimise runoff	Ongoing from Project commencement during campaign breaks	3.2.3
11	Implementing temporary silt fences at the downstream face to prevent transport of material	Ongoing from Project commencement	3.2.3

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No.	Management measure	Timing for implementation	Relevant EER Section
12	Ensuring routine monitoring of sediment basins to monitor pH, ORP, EC, DO, colour, and temperature	Ongoing from Project commencement	3.2.3
Noise emissions			
13	Ensuring all plant and equipment will be maintained and in good order at all times, especially noise control equipment such as mufflers and exhaust pipes	Ongoing from Project commencement	3.3.3
14	Considering noise control issues carefully when selecting new plant or equipment or engaging contractors to carry out work onsite	Ongoing from Project commencement	3.3.3
15	Ensuring all heavy vehicles based on site use broad band style reversing beacons	Ongoing from Project commencement	3.3.3
16	Avoiding unnecessary noises such as “dropped loads” or scraping loader buckets on the ground	Ongoing from Project commencement	3.3.3
Natural Values			
17	Threatened vegetation community, *Eucalyptus ovata* forest and woodland, will be excluded from any disturbance by: • Installing barrier fencing or similar • Preventing the spread of weeds into the community; and • Maintaining the current drainage regime.	Ongoing from Project commencement	3.4.3
18	Avoiding clearance of the DOB to the north of Pit 2	During Pit 2 operations	3.4.3
19	Excluding the threatened Slender curved riceflower plants occurring on the road margins from disturbance through installing barrier fencing or similar	Ongoing from Project commencement	3.4.3
20	A preclearance survey for marsupial carnivore dens	Prior to Project commencement	3.4.3
21	Roadkill mitigation measures, including: • Speed limits on the access road between dusk and dawn • Installing advisory signage; and • Providing education and awareness training for drivers	Ongoing from Project commencement	3.4.3
22	A preclearance eagle nest survey within the modelled potential habitat within a minimum of 500 m from the proposed operational areas (and likely within 1 km line-of-sight of such areas).	Prior to Project commencement	3.4.3
23	Ensuring runoff is managed by implementing silt fencing on the side of tracks and around development that is in close proximity to water sources to protect aquatic fauna	Ongoing from Project commencement	3.4.3

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No.	Management measure	Timing for implementation	Relevant EER Section
Weeds, pests and pathogens			
24	Developing a formal Weed and Pathogen Management Plan	Ongoing from Project commencement	3.5.3
25	Maintaining appropriate hygiene protocols, including wash down procedures for vehicles entering and exiting the Project Area	Ongoing from Project commencement	3.5.3
26	Ensuring the area remains free of PC and freshwater pathogens by maintaining puddle free access roads, internal tracks and quarrying areas	Ongoing from Project commencement	3.5.3
Waste			
27	Quarried solid waste material that is not of sufficient grade for blending will be used to rehabilitate the Pits followed by being covered in topsoil	Ongoing from Project commencement	3.6.3
28	Ensuring waste is disposed of offsite to an appropriately approved or licensed facility, in accordance with EPA and/or Meander Valley Council requirements	Ongoing from Project commencement	3.6.3
19	Ensuring rubbish bins (with lids) are located at appropriate locations across the site with staff required to avoid littering and collect any rubbish observed across the Project Area	Ongoing from Project commencement	3.6.3
30	Removing waste regularly to maintain good housekeeping practices	Ongoing from Project commencement	3.6.3
31	Ensuring liquid waste from temporary ablution blocks is emptied/removed by a suitably qualified waste disposal contractor for sewage disposal and taken to the municipal wastewater treatment plant	Ongoing from Project commencement	3.6.3
32	Ensuring the pH of water collected in the sediment basins is monitored and if low pH is detected regularly, treatment for AMD will be implemented	Ongoing from Project commencement	3.6.3
33	Developing an AMD contingency plan which will incorporate dosing the sediment basins with lime or another appropriate medium	Ongoing from Project commencement	3.6.3
34	Ensuring disturbed areas are covered as soon as practicable to prevent exposure and erosion of the remaining profile	Ongoing from Project commencement	3.6.3
Environmentally hazardous materials			
35	Ensuring the fuel storage and transport requirements of the *Dangerous Substances (Safe Handling) Act 2005* are met (as outlined)	Ongoing from Project commencement	3.7.3
36	Ensuring fuel and oil brought onto site is stored in an appropriately designed and operated bunded area	Ongoing from Project commencement	3.7.3

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No.	Management measure	Timing for implementation	Relevant EER Section
37	Refuelling and repair of equipment is undertaken in a designated laydown area that is appropriately designed, bunded and equipped to contain and clean any spills that may occur	Ongoing from Project commencement	3.7.3
38	Maintaining a site sediment pond with hydrocarbon separator to remove potential hydrocarbon contamination from the laydown area	Ongoing from Project commencement	3.7.3
Environmental impacts of traffic			
39	Ensuring only minimal upgrades to roads occur (filling potholes, minor trimming)	Ongoing from Project commencement	3.9.33.7.3
40	Installing sediment fences around waterways	Ongoing from Project commencement	3.9.33.7.3
41	Maintaining current road drainage conditions	Ongoing from Project commencement	3.9.33.7.3
42	Limiting cartage to and from the Project Area to within daylight hours	Ongoing from Project commencement	3.9.33.7.3
43	Limiting vehicle speed between dusk and dawn	Ongoing from Project commencement	3.9.33.7.3
44	Ensuring drivers are educated on safe driving practices	Ongoing from Project commencement	3.9.33.7.3

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5. Part E – Public and stakeholder communication

ABx understands the importance of best practice stakeholder and community engagement. Stakeholder and community engagement has already begun with key communities and individuals, including:

- Forico
- State Government Departments, including:
  - Department of State Growth
  - MRT
  - EPA
- Meander Valley Council; and
- Neighbouring residents.

A letterbox drop has been undertaken recently for the surrounding residence to inform them of the proposed development.

Aside from Forico, there are no additional stakeholders based on the access route proposed. Discussions are ongoing with Forico and no issues have been raised and ABx does not forsee any issues arising.

Six Project stages have been identified, and stakeholder specific objectives and engagement methods have been identified for each stage.

- Site selection (already undertaken)
- Project feasibility (already undertaken)
- Planning and approvals (currently in phase)
- Construction
- Commissioning and operation; and
- Decommissioning.

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6. References

Bureau of Meteorology (BOM) (2022) Climate Data Online. Available from: http://www.bom.gov.au/climate/data/index.shtml (Accessed October 2022)

DPIPWE (2015a) 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. Department of Primary Industries, Parks, Water & Environment, Hobart.

DPIPWE (2015b) Guidelines for Natural Values Surveys - Terrestrial Development Proposals. Department of Primary Industries, Parks, Water and Environment, Hobart.

Grose C.J. (Ed) 1999, Land Capability Handbook. Guidelines for the Classification of Agricultural Land in Tasmania. Second Edition, Department of Primary Industries, Water and Environment, Tasmania, Australia

Land Information System Tasmania (theLIST) (2023) Available from: https://maps.thelist.tas.gov.au/listmap/app/list/map (Accessed January 2023)

Owen, H.B., 1954. Bauxites in Australia, Bureau of Mineral Resources, Geology and Geophysics. Bulletin No. 24.

Pitt&sherry (2023) ABx DL130 Project. Site History Review

Rudman T., 2005, Interim *Phytophthora cinnamomi.* Management Guidelines. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water and Environment, Hobart.

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Natural Values Assessment

Appendix A

pitt&sherry

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Environmental Consulting Options Tasmania

NATURAL VALUES ASSESSMENT OF PROPOSED BAUXITE MINE DL-130, REEDY MARSH, TASMANIA

Environmental Consulting Options Tasmania (ECO*tas*) for ABx Group

12 March 2023

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CITATION

This report can be cited as:

ECO*tas* (2023). *Natural Values Assessment of Proposed Bauxite Mine DL-130, Reedy Marsh, Tasmania.* Report by Environmental Consulting Options Tasmania (ECO*tas*) for ABx Group, 12 March 2023.

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

ACKNOWLEDGEMENTS

Nathan Towns (ABx Group) and Jessica Holan (pitt&sherry) provided background information on the proposal and facilitated access.

QUALIFICATIONS

Except where otherwise stated, the opinions and interpretations of legislation and policy expressed in this report are made by the author 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.

Note that any reference to the Department of Primary Industries, Parks, Water & Environment (DPIPWE) now refers to the Department of Natural Resources and Environment Tasmania.

COVER ILLUSTRATION

View across the proposed mineral extraction area.

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

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SUMMARY

General

ABx Group engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of a proposed bauxite mine, Reedy Marsh, 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.

Site assessment

A natural values assessment of the study area was undertaken by Brian French (ECO*tas*) on 15 Sep. 2022.

Summary of key findings

Threatened flora

- No plant species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) were detected, or are known from database information, from the study area.
- One plant species listed as threatened (rare) on the Tasmanian *Threatened Species Protection Act 1995* was recorded from the study area, as follows:
  - *Pimelea curviflora* var. *curviflora* (slender curved riceflower).

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) 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);
  - *Perameles gunnii* (eastern barred bandicoot);
  - *Lathamus discolor* (swift parrot);
  - *Tyto novaehollandiae* subsp. *castanops* (masked owl);
  - *Haliaeetus leucogaster* (white-bellied sea-eagle);
  - *Aquila audax* subsp. *fleayi* (wedge-tailed eagle); and
  - *Litoria raniformis* (green and golden frog).

Vegetation types

- The study area supports the following TASVEG mapping units:
  - *Eucalyptus amygdalina* forest and woodland on dolerite (TASVEG coder: DAD);
  - *Eucalyptus obliqua* dry forest (TASVEG code: DOB);

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- *Eucalyptus ovata* forest and woodland (TASVEG code: DOV);
- *Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB);
- agricultural land (TASVEG code: FAG);
- plantations for silviculture – hardwood (TASVEG code: FPH);
- plantations for silviculture – softwood (TASVEG code: FPS);
- regenerating cleared land (TASVEG code: FRG); and
- extra-urban miscellaneous (TASVEG code: FUM).

- Of the vegetation types recorded, *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) equates to a native vegetation community (with the same name) listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002.*
- Occurrences of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*), which is identified as a threatened ecological community listed as Critically Endangered (Matter of National Environmental Significance) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Weeds

- Four plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) were detected from the study area, as follows:
  - *Cytisus scoparius* (english broom);
  - *Erica lusitanica* (spanish heath);
  - *Rubus* sp. (blackberry); and
  - *Ulex europaeus* (gorse).

Plant disease

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

Animal disease (chytrid)

- The study area is not known to support frog chytrid disease but does support localised habitats suitable for amphibian species within and surrounding the study area.

Recommendations

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

Vegetation types

It is recommended that the area mapped as *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) along the access road be excluded from disturbance and be managed to minimise the risk of degradation (e.g. institution of barrier fencing or similar; maintain drainage regime). It should be noted that only 'pruning' may occur on the road margin to manage heavy vehicle risk.

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Threatened flora

Pimelea curviflora var. *curviflora* (slender curved riceflower) is listed as threatened (rare) on the Tasmanian *Threatened Species Protection Act 1995.* Given that the plants located occur on the road margin and are easily avoided, it is recommended that the plants be excluded from any proposal (ideally excluded with some form of barrier fencing or similar during road maintenance or upgrades). If this cannot be accommodated, a permit to take will be required.

Threatened fauna

Refer to recommendation to exclude areas of DOV vegetation types as potential foraging habitat for the swift parrot.

A survey of the area mapped as DOB in the north is recommended prior to clearance of Stage 1 to assess mature trees for the presence of suitable nesting hollows for masked owls, swift parrots and any potential marsupial carnivore denning habitat. Any clearing of DOB is recommended to occur outside of the breeding season of swift parrot (Feb. to Aug.). If this survey identifies any threatened fauna nests, dens or hollows, further information should be sought from Conservation Assessments Section (CAS) before any development works commence.

It is recommended that water runoff and sediment controls are implemented to avoid contamination of any waterways that are potential amphibian habitat.

Further aerial/ground searching for wedge-tailed eagle nests is recommended prior to the commencement of works.

Weed and disease management

It is recommended that a formal weed and disease hygiene management plan is developed to minimise the risk of further infestations to the mining lease area and critically, to prevent the spread of the declared weeds from site to the greater northern Tasmania region. This plan will need to consider contaminated zones such as the widespread infestations of *Ulex europaeus* (gorse) and other declared weed species along the proposed access route.

Regarding plant and animal disease, it is recommended to assume that any plant or animal diseases and pathogens are absent and to manage operations to minimise the risk of introducing disease or pathogens. It is recommended that specific weed and disease management actions be incorporated into a formal weed and disease hygiene management plan.

Legislative and policy implications

There are no formal requirements for a permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* (TSPA) if the known sites of *Pimelea curviflora* var. *curviflora* (slender curved riceflower) are avoided.

A formal referral to the relevant Commonwealth agency under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) is not considered required if the area of native vegetation mapped as DOV is excluded and appropriately managed (threatened ecological community and potential foraging habitat of the swift parrot). If this cannot be accommodated, a more detailed consideration of the referral requirements under the Act may be needed. This should be confirmed by the client through their own consideration of the *Significant Impact Guidelines* (or through discussion with NRE and/or the relevant Commonwealth agency).

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INTRODUCTION

Purpose

ABx Group engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of a proposed bauxite mine, Reedy Marsh, 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 natural 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 relevant Commonwealth agency (for any referral/approval that may be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*).

Limitations

The natural values assessment was undertaken on 15 Sep. 2022. 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, particularly from within parts of the study area most likely to be developed.

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)

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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.

Permit

Any plant material was collected under DNRET permit TFL 22382 (in the names of Mark Wapstra & Brian French). Relevant data will be entered into DNRET'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. A permit is not required to undertake the type of habitat-level assessment described herein.

STUDY AREA & LAND USE PROPOSAL

The proposed bauxite mine survey area (Figures 1-3) comprises of the proposed mining area and proposed access road within the existing exploration tenement EL9/2010. The proposal area is situated to the eastern side of Porters Bridge Road, Reedy Marsh, Tasmania.

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

- several private land titles with Land Parcel Index (LPI) numbers indicated in Figure 2;
- Meander Valley municipality, with the study area dominantly zoned as Rural with a portion of the proposed access route zoned as Agriculture pursuant to the *Tasmanian Planning Scheme – Meander Valley*, entirely subject to Bushfire-prone Areas overlay and partially subject to the Priority Vegetation Area and Waterway and Coastal Protection Area overlays (Figures 4 & 5); and
- Tasmanian Northern Midlands and Tasmanian Northern Slopes bioregions according to the IBRA 7 bioregions used by most government agencies.

For the purposes of assessment and reporting, the study area was defined as the proposed Mining Lease (ML) area (subject to future approval) within the existing EL9/2010 exploration lease area. The site is accessed from Porters Bridge Road in the south by an existing well-formed gravel road that requires minimal vegetation clearing works (roadside slashing) or by existing alternative routes in the north via Kellys Road that are mostly formed gravel forestry roads or through existing softwood plantation (Figures 2 & 3).

The study area is dominated by intensively-managed softwood plantation (*Pinus radiata*) with an associated road network including firebreaks. Within the extensive pine plantation areas, native vegetation is present largely as remnants associated with the road access corridor in the south and a small area in the north that will not be disturbed by the proposal as only road maintenance is proposed. A ca. 4.8 ha area of dry eucalypt woodland occurs on the northern margin of the proposed mining area that is potentially subject to clearing under the mining proposal.

The entire study area is a broad north-south ridge with water flowing to Brushy Rivulet to the east, Meander River catchment to the west and south, and Bryans Creek to the north/northwest. Several minor ephemeral drainage features are present across the study area.

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Elevation varies from ca. 210 m a.s.l. in the broad valley on the access road in the southwest to ca. 320 m a.s.l. at various points on the broad ridgeline.

LISTmap's Fire History layer does not indicate any recent fire events.

Geology (Figure 6) of the study area is mapped (at a 1:250,000 scale) as Jurassic-age "dolerite (tholeiitic) with locally developed granophyre" (geocode: Jd), which dominates the study area, and Quaternary-age "sand gravel and mud of alluvial, lacustrine and littoral origin" (geocode: Qh), which is mapped in the broad valley areas associated with the proposed access route. The geology is mentioned as it potentially influences vegetation classification and characterisations and the potential for threatened species (especially threatened flora, and to a lesser extent, threatened fauna).

Brushy Rivulet Conservation Area occurs on the northern margin of the proposed mining area with the remainder of the study area otherwise wholly bound by private land titles.

METHODS

Nomenclature

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

Vascular species nomenclature follows de Salas & Baker (2022) 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 (DNRET 2023a).

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 Natural Resources & Environment Tasmania's *Natural Values Atlas* records for threatened flora and fauna (GIS coverage maintained by the authors current as at date of report);
- Tasmanian Department of Natural Resources & Environment Tasmania's *Natural Values Atlas* report ECOtas_ABx_Porters_Bauxite for a polygon defining the study area (centred on 479093mE 5409501mN), buffered by 5 km, dated 1 Mar. 2023 (DNRET 2023a) – Appendix E;
- Forest Practices Authority's *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 479093mE 5409501mN (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 1 Mar. 2023 (FPA 2023) – Appendix F;
- Commonwealth *Protected Matters Report* for a polygon defining the study area, buffered by 5 km, dated 1 Mar. 2023 (CofA 2023) – Appendix G;
- TASVEG 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.

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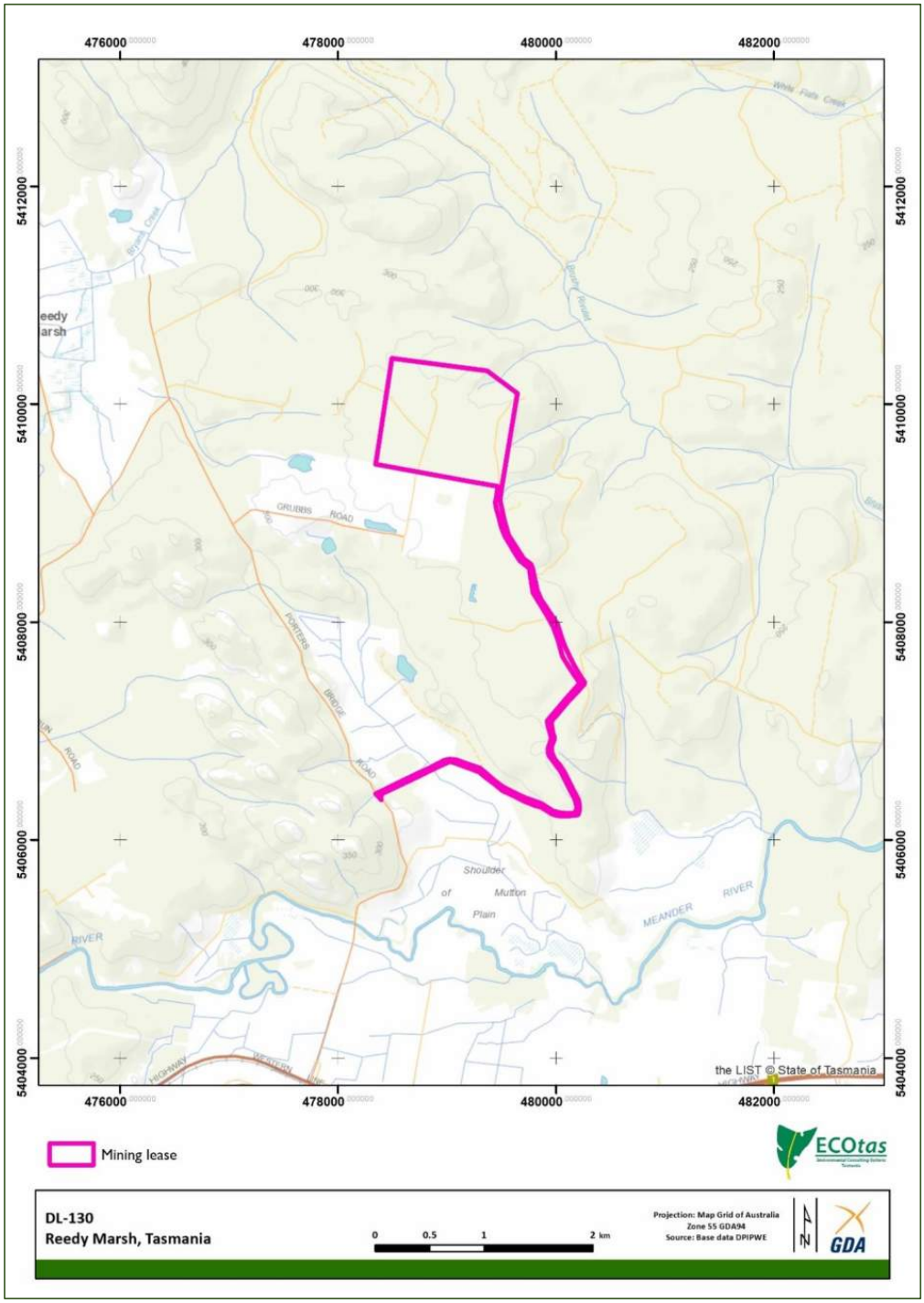

Figure 1. General location of the survey area

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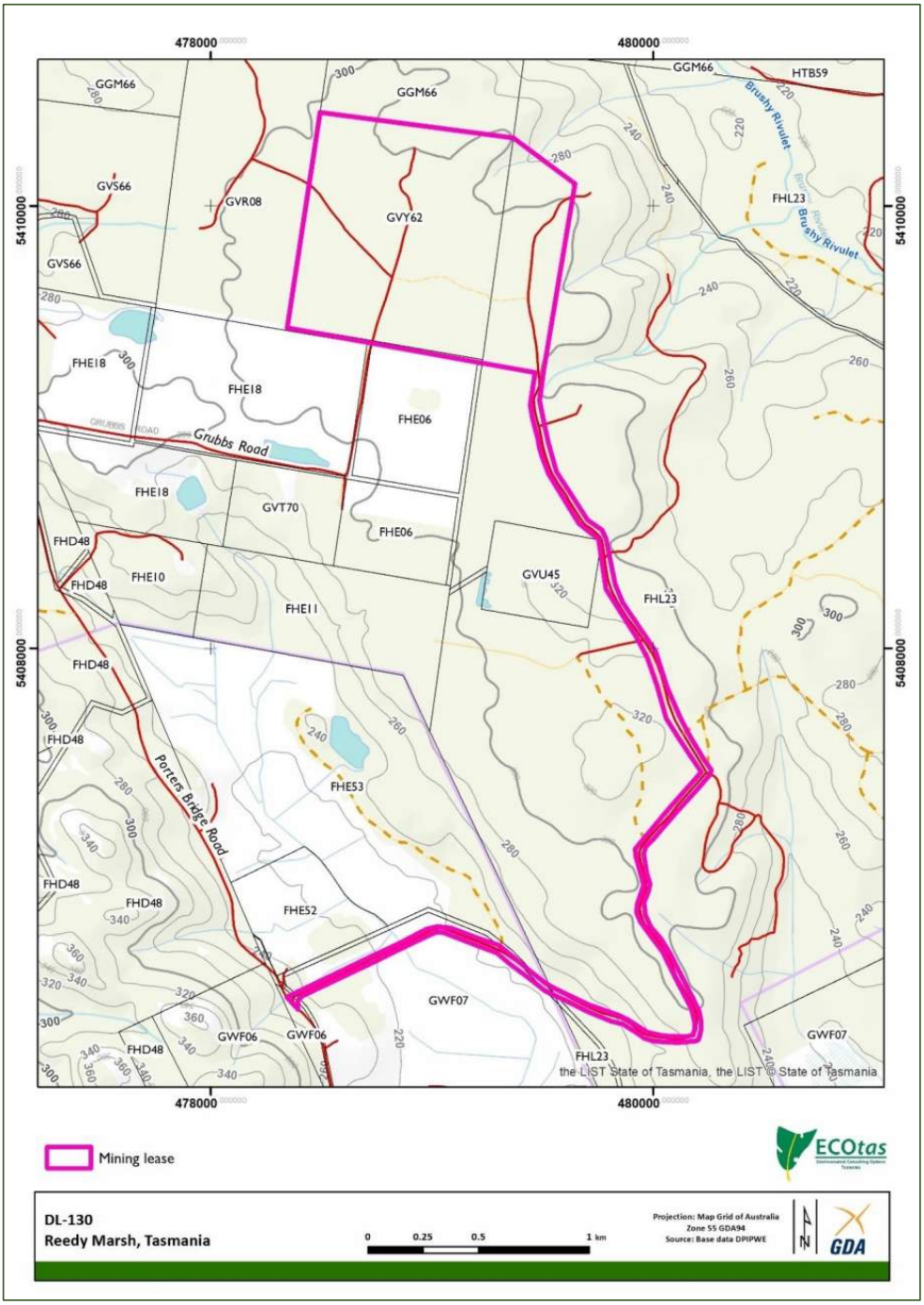

Figure 2. Detailed location of the survey area showing general topographic features, cadastral parcel boundaries with Land Parcel Index (LPI) codes indicated

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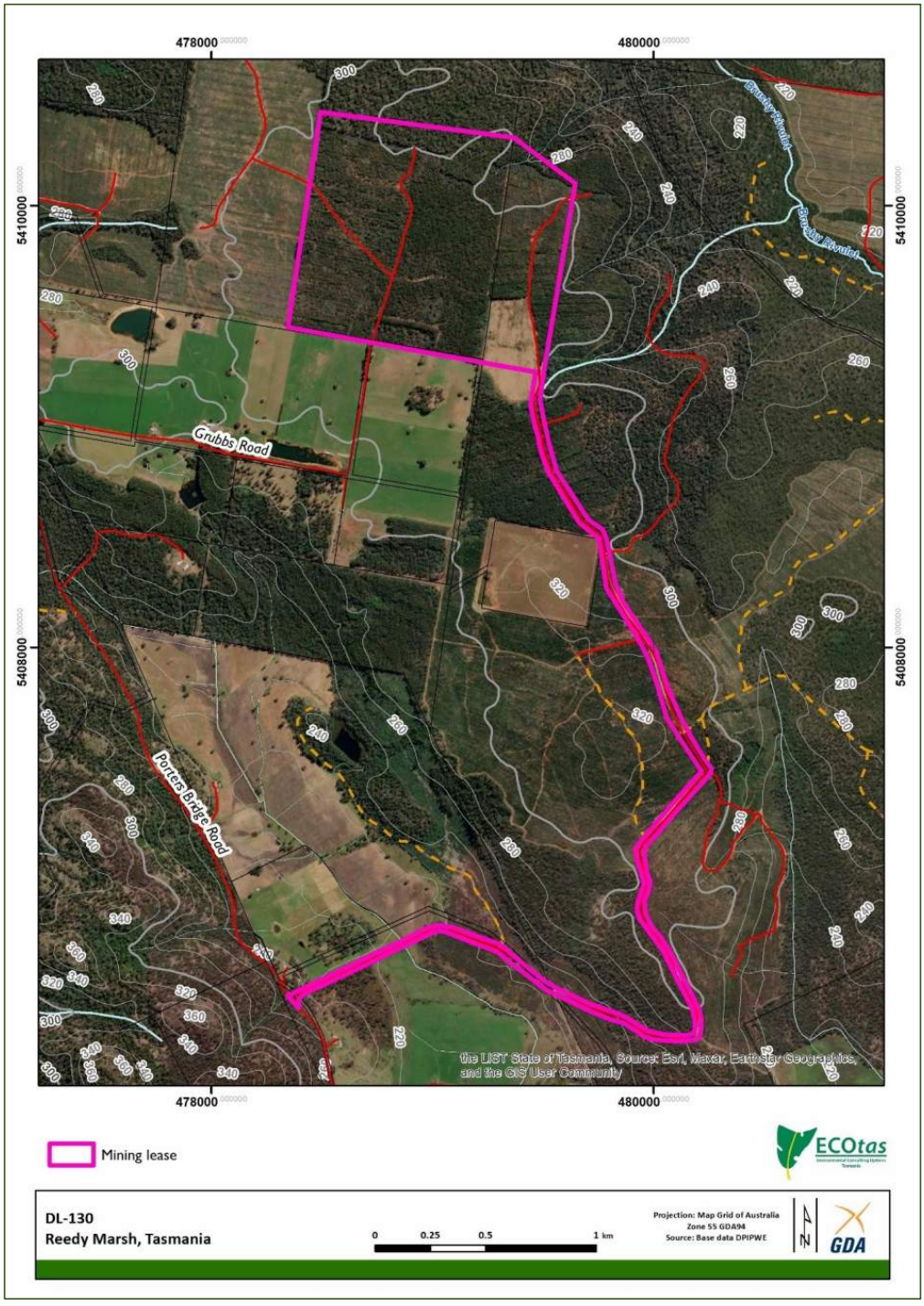

Figure 3. Detailed location of the survey area showing recent aerial imagery and cadastral boundaries

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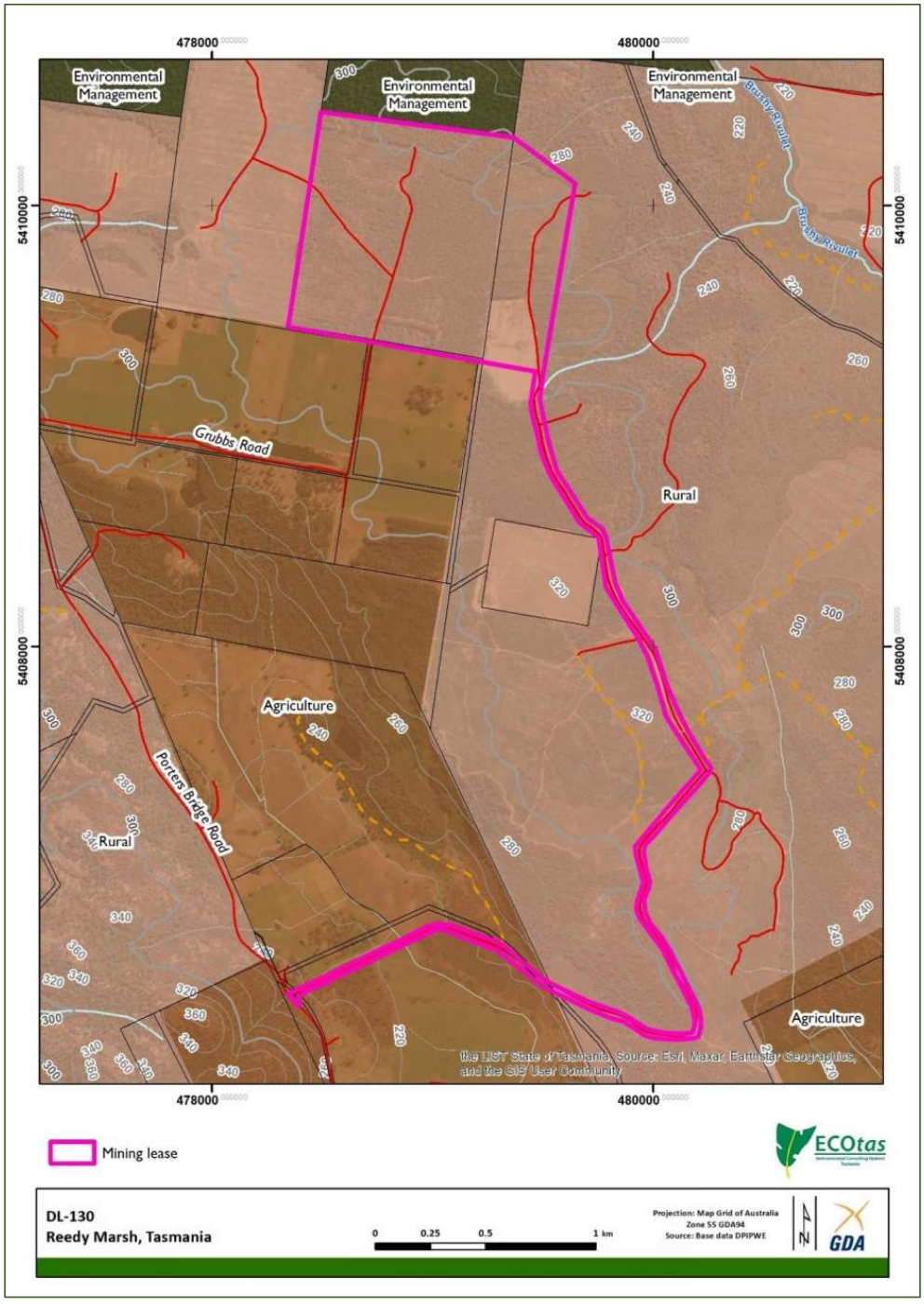

Figure 4. Zoning of survey area and surrounds pursuant to the *Tasmanian Planning Scheme – Meander Valley*

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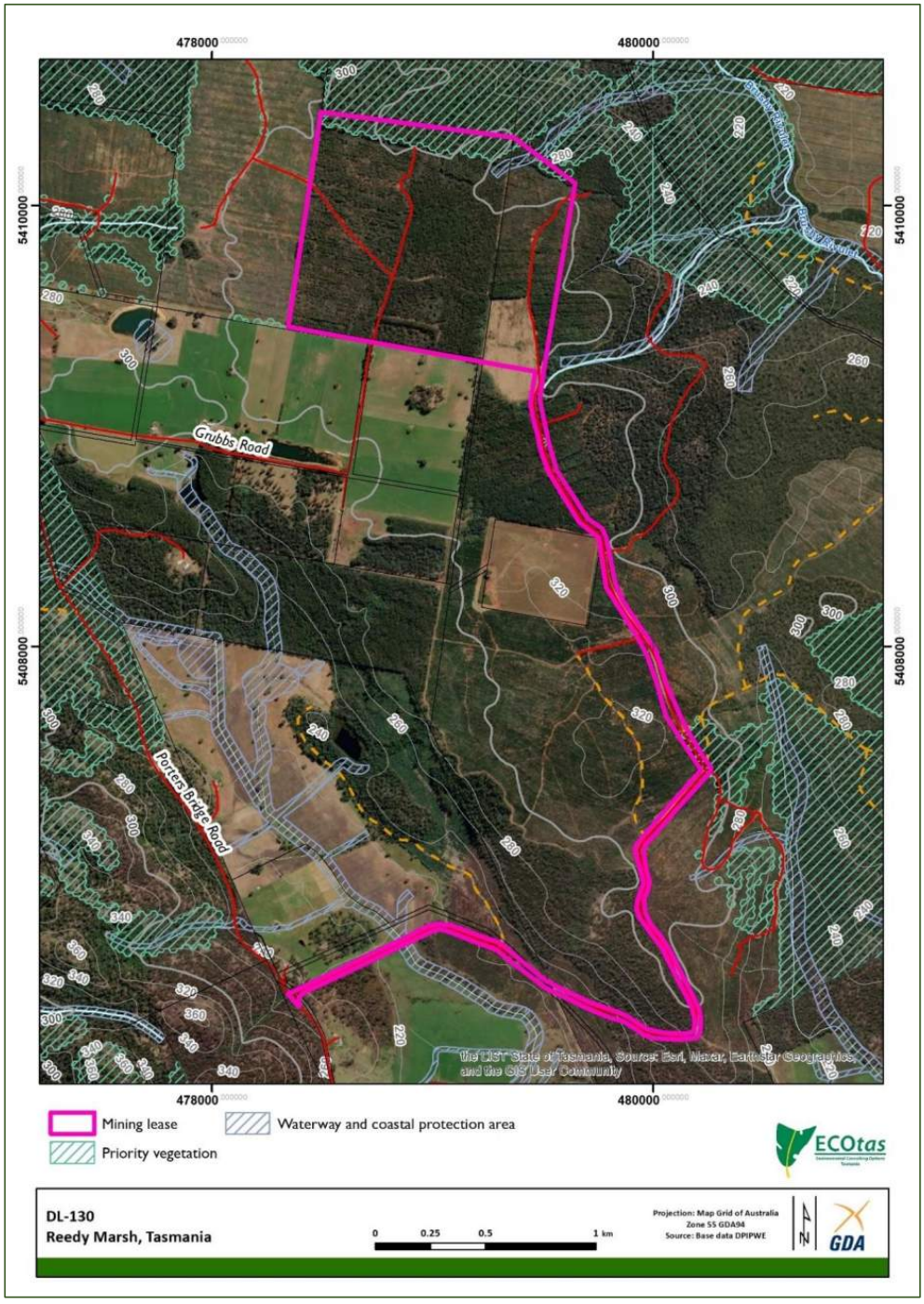

Figure 5. Applicable overlays within and adjacent to the study area pursuant to the *Tasmanian Planning Scheme – Meander Valley*

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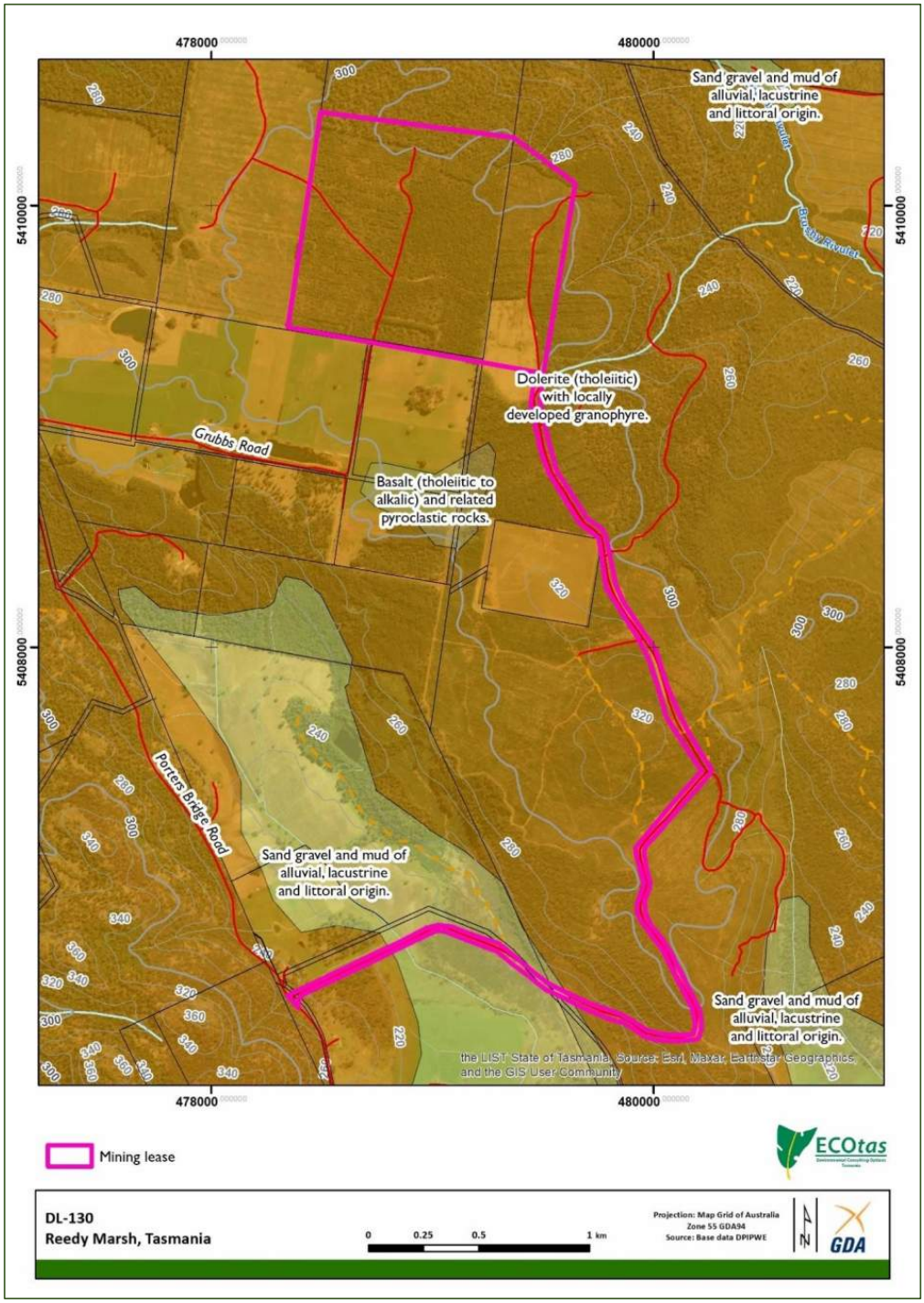

Figure 6. Geology of survey area and surrounds

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METHODS continued…

Field assessment

The assessment was undertaken by Brian French (ECO*tas*) on 15 Sep. 2022. The survey included the whole mining lease area and the access road. 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 numerous roads and tracks, cleared plantation areas and the relatively small areas requiring assessment with relatively open understorey of the vegetation remnants.

Hand-held GPS (Garmin Dakota 10) was used to capture any relevant natural values features required for later mapping.

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.

Threatened flora

With reference to the threatened flora, the survey included consideration of the most likely habitats for such species.

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 (and white-bellied sea-eagle), the Forest Practices Authority, in conjunction with DPIPWE (DNRET), 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' (dark red) 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' (light yellow) indicates a low likelihood of finding a nest (probability<0.1). There is no set level at which nest

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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 12) indicates that the study area itself provides either no or low potential nesting habitat, which was confirmed by site assessment. However, small areas of remnant taller forest areas provide limited moderate potential nesting habitat, noting that these areas are generally topographically out-of-sight and generally greater than 500 m from the boundary of the study area or are surrounded by intensively managed plantation. A known nest of wedge-tailed eagle occurs to the southwest of the access road (nest RND #193), which is ca. 500 m southwest of the Porters Bridge Road/access intersection. No further nests are known within 1,000 m of the study area.

Weed and hygiene issues

The study area was assessed with respect to plant species classified as declared weeds under the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*), Weeds of National Significance (WoNS) or "environmental weeds" (authors' opinion and as included in *A Guide to Environmental and Agricultural Weeds of Southern Tasmania*, NRM South 2017).

The study area was 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 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.

There are three relevant versions of TASVEG that can be referred to with respect to these types of assessments. In theory, TASVEG Live should represent the most up-to-date version (but is only available "live" via LISTmap) but is often identical (or at least very similar) to TASVEG 4.0 (which is the case for the present study area). TASVEG 3.0 is the immediately preceding version and it can be useful to examine this because it was one of the key inputs into the production of the Priority Vegetation Area overlay under the Natural Assets Code of the *Tasmanian Planning Scheme – Meander Valley* through application of the Regional Ecosystem Model.

In this case, TASVEG 4.0 & Live are identical with respect to the study area (minor differences outside the study area of no particular consequence). However, TASVEG 3.0 & 4.0 are somewhat different, mainly with respect to the classification and delineation of non-native mapping units such as plantations for silviculture (all coded as FPL under TASVEG 3.0) and plantations for silviculture – softwood, plantations for silviculture – hardwood and unverified plantations for silviculture (coded as FPS, FPH & FPU, respectively, under TASVEG 4.0, replacing the generic FPL).

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TASVEG 4.0 maps the study area as (Figure 7):

- *Eucalyptus amygdalina* forest and woodland on dolerite (TASVEG code: DAD);
- *Eucalyptus amygdalina – Eucalyptus obliqua* damp sclerophyll forest (TASVEG code: DSC);
- *Eucalyptus ovata* forest and woodland (TASVEG code: DOV);
- *Eucalyptus viminalis* grassy forest and woodland (TASVEG code: DVG);
- agricultural land (TASVEG code: FAG);
- plantations for silviculture - hardwood (TASVEG code: FPH);
- plantations for silviculture - softwood (TASVEG code: FPS);
- plantations for silviculture – unverified (TASVEG code: FPU); and
- regenerating cleared land (TASVEG code: FRG).

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 8 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 units present in 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 (DNRET 2023b); 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**
Dry eucalypt forest and woodland		
Eucalyptus amygdalina forest and woodland on dolerite (DAD)	not threatened *not threatened*	DAD is localised to the to the margins of the access road. DAD is characterised by a canopy of *Eucalyptus amygdalina* with *E. obliqua* occurring as a subdominant over a tall shrub layer of *Acacia dealbata, Exocarpos cupressiformis* and *Banksia marginata.* The understorey is dominated by a mix of graminoids dominated by *Lomandra longifolia* and native grasses (mainly *Poa* spp.) with scattered low shrubs of *Epacris impressa, Pultenaea juniperina* and *P. daphnoides.* DAD is gradational with DOB. DAD is generally in good ecological condition; however, disturbance such as vehicle tracks are common and past selective logging was noted. No symptoms of *Phytophthora cinnamomi* (PC) observed. Weed species were noted on the road margins, which mainly consisted of clumps of gorse (*Ulex europaeus*). The areas mapped as DAD will not be disturbed apart from pruning of the existing road verges and weed management activities.

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TASVEG mapping unit (Kitchener & Harris 2013+)	**Conservation priority** NCA *EPBCA*	**Comments**
Eucalyptus obliqua dry forest (DOB)	not threatened *not threatened*	DOB occurs on the margins of the access road, as isolated remnant patches and as the main area of forest that will be potentially cleared by the proposed mining operation in the north. DOB is characterised by a tree layer dominated by *E. obliqua* with *E. amygdalina* occurring as a subdominant. Subdominant tree layers are present from past fire events. A tall shrub layer of *Acacia dealbata, A. melanoxylon, Exocarpos cupressiformis* and *Banksia marginata* is present with the understorey dominated by a mix of graminoids dominated by *Lomandra longifolia* and native grasses (mainly *Poa* spp.) with scattered low shrubs of *Epacris impressa, Lomatia tinctoria, Pultenaea juniperina* and *P. daphnoides.* DOB is gradational with DAD in the south of the study area along the access road. DOB is generally in good condition with very few weed species noted with only limited clumps of gorse (*Ulex europaeus*) noted on roadside margins in the south. No symptoms of *Phytophthora cinnamomi* (PC) were observed.
Eucalyptus ovata forest and woodland (DOV)	threatened *threatened*	DOV occurs as two patches on the margins of the access road in the south. These areas are dissected by the access road covering a total area of 0.2 ha. The areas are continuous with larger patches on adjacent private titles. DOV is characterised by a tall tree layer dominated by *Eucalyptus ovata* (black gum) with a dense tree/tall shrub layer dominated by *Melaleuca ericifolia* and *Acacia* species present. The ground cover is a dense sedgy layer of *Lomandra longifolia.* Scattered weedy shrubs of *Ulex europaeus* and *Cytisus scoparius* are common to locally abundant. DOV is continuous with a larger area (patch) on private land to the south The proposed access through this community is along an existing hardened (gravel) forestry road with no further clearing required. Roadside vegetation management (pruning) will be the only possible disturbance. DOV is in marginal condition with introduced weed species abundant. The linear shape of this community surrounded by disturbance will make long-term management difficult as it will be prone to continued edge effects from adjacent land management practices and potential weed invasion. The declared weeds *Ulex europaeus, Cytisus scoparius* and *Rubus* sp. (blackberry) are common along the roadsides and adjacent properties. No symptoms of *Phytophthora cinnamomi* (PC) were observed.
Wet eucalypt forest and woodland		
Eucalyptus obliqua forest with broad-leaf shrubs (WOB)	not threatened *not threatened*	WOB occurs as an isolated community on the margin of the access road in the east of the study area. WOB is characterised by an even-aged regrowth canopy dominated by *Eucalyptus obliqua* (stringybark) over a dense tall shrub layer dominated by *Pomaderris apetala, Acacia melanoxylon, A. dealbata* and *Zieria arborescens.* The area mapped as WOB will not be disturbed apart from pruning of the existing road verge and potential weed management activities, if required. WOB is in good floristic condition with no weed species or symptoms of PC noted.
Modified land		
agricultural land (FAG)	not threatened *not threatened*	FAG is the mapping unit used to classify productive agricultural areas that have virtually no native plant species present with plant species present dominated by high productivity grass and herb species suited to the grazing of stock. Within the study area, these areas are mapped on the margins of the access road easement. The areas mapped as FAG will not be disturbed by the current proposal.

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TASVEG mapping unit (Kitchener & Harris 2013+)	**Conservation priority** NCA *EPBCA*	**Comments**
plantations for silviculture – hardwood (FPH)	not threatened *not threatened*	FPH describes hardwood (*Eucalyptus* species) planted as a monoculture for silvicultural purposes. Whilst the original TASVEG mapping mapped most of the study area as FPH, this mapping unit is virtually absent as *Pinus radiata* has been planted across the study area. In the revised mapping (Figure 8), a small area of hardwood plantation is mapped, presumably as a silvicultural trial, within the proposed northern mining area. This area has been retained following the removal of surrounding FPH.
plantations for silviculture – softwood (FPS)	not threatened *not threatened*	FPS describes softwood (*Pinus radiata*) planted as a monoculture for silvicultural purposes. FPS dominates the study area with the main mining areas dominated by this vegetation mapping unit. These areas are characterised by *Pinus radiata* of variable age depending on time since harvest. The main proposed mining area in the north has been harvested in 2021/22 and has only been recently planted.
regenerating cleared land (FRG)	not threatened *not threatened*	FRG describes the previously cleared areas that are regenerating to native vegetation. In this regard, FRG is mapped on the margins of the access road that have been clearfelled in the past with failed regeneration of tree species such as eucalypts. These areas are generally dominated by regenerating native shrub and sedge species.
extra-urban miscellaneous (FUM)	not threatened *not threatened*	FUM is the mapping unit used to describe miscellaneously-disturbed areas associated with human activities. In this regard, FUM describes the existing forestry roads, firebreaks, vehicle tracks and forestry log landings. Generally, vegetation is absent within these areas with only opportunistic herb and shrub species noted. It should be noted that several environmental and declared weed species occur within these areas, which are discussed under **FINDINGS *Other natural values*** Weed species.

Conservation significance of identified vegetation types

Of the vegetation types recorded from the study area, *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) equates to a native vegetation community listed as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*.

Occurrences of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*), which is identified as a threatened ecological community listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This is listed as a Critically Endangered community and as such qualifies as a Matter of National Environmental Significance (MNES) – refer to **FINDINGS *Other natural values*** and **DISCUSSION *Legislative and policy implications*** for more details.

Plant species

General information

A total of 97 vascular plant species were recorded from the study area (Appendix B), comprising 76 dicotyledons (including 7 endemic & 15 introduced species), 18 monocotyledons (including 4 introduced species), 1 gymnosperm (introduced) and 2 pteridophytes (both native). The species

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diversity is relatively low given the size of the study are; however, the dominance of silvicultural plantation monoculture and other disturbance has limited native species diversity across the area.

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

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

One plant species, *Pimelea curviflora* var. *curviflora* (slender curved riceflower), listed as threatened (rare) on the Tasmanian *Threatened Species Protection Act 1995* was recorded from the study area (Figure 10).

- *Pimelea curviflora* var. *curviflora* (slender curved riceflower)

Pimelea curviflora var. *curviflora* (slender curved riceflower) is a straggly shrub to 1 m with a widespread distribution across northern Tasmania. The species was located at a highly disturbed site associated with the existing main access road margin, in the south (Figure 10, Plates 1 & 2). This is highly typical for the species. The species occurs as three plants on the south side of the road associated with weeds (gorse) and a fence line.

It is recommended that these plants be clearly marked to avoid disturbance from road maintenance and that weed management actions be implemented to avoid invasion by gorse which is prolific in the area. This species is widespread and abundant in the greater area with numerous records to the west of the study area (Figure 9). See **DISCUSSION *Legislative and policy implications*** for further details.

Plates 1 & 2. *Pimelea curviflora* var. *curviflora* (slender curved riceflower) in the south of the study area along the main access road: note the highly disturbed nature of the site with the plants growing in *Ulex europaeus* (gorse)

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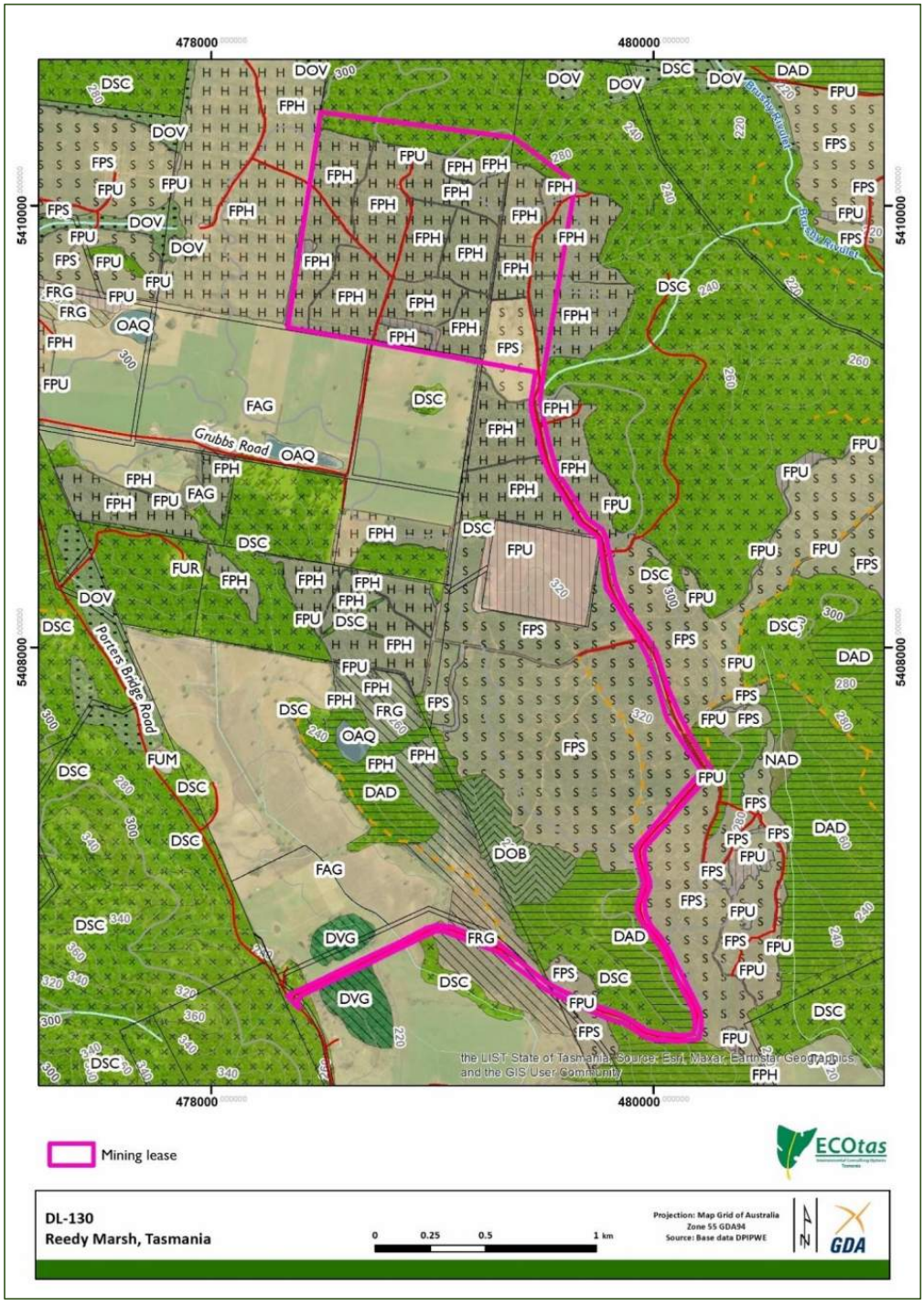

Figure 7. Study area and surrounds showing existing TASVEG 4.0 vegetation mapping (see text for codes)

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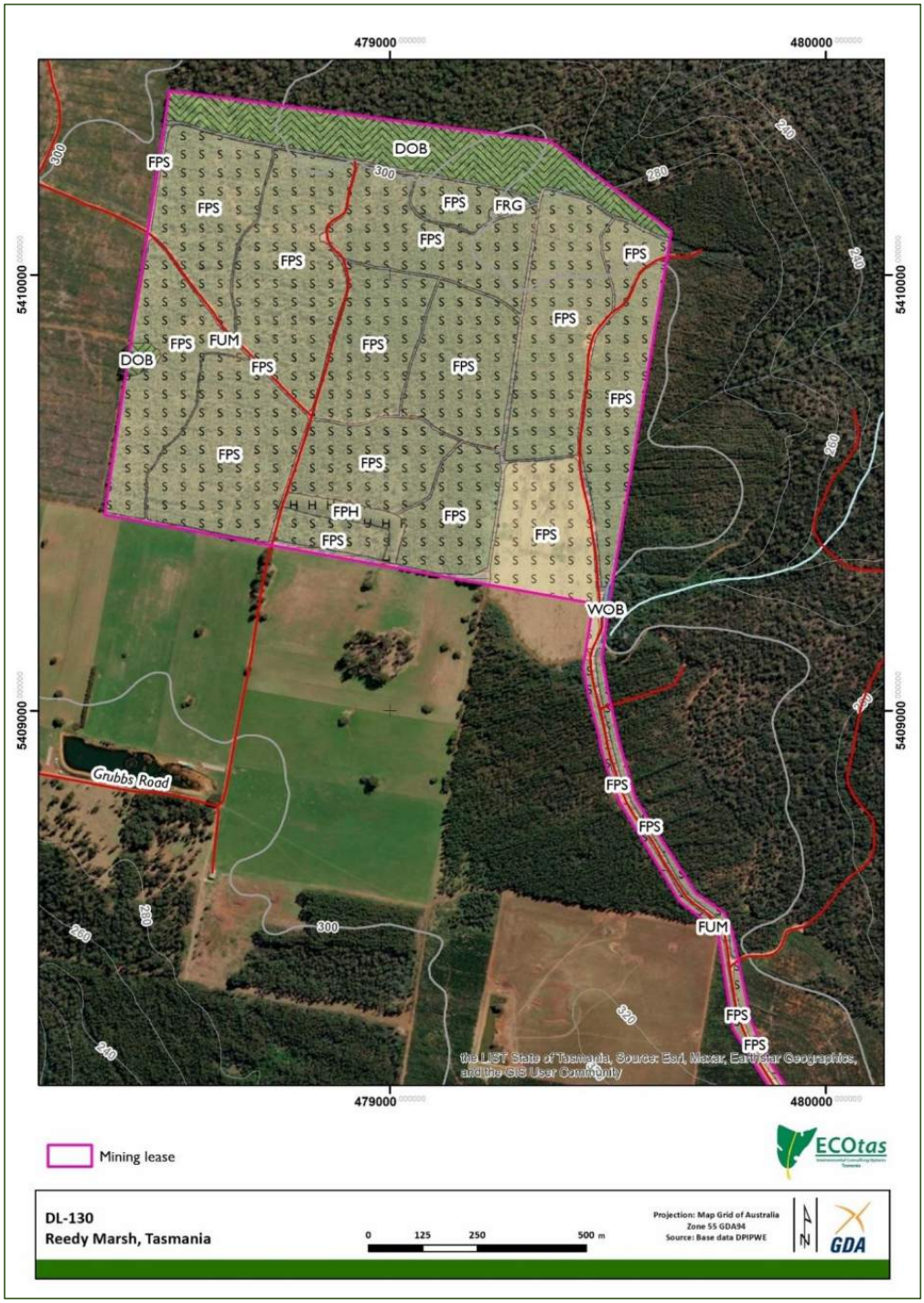

Figure 8a. Revised vegetation mapping for study area – north (refer to text for codes)

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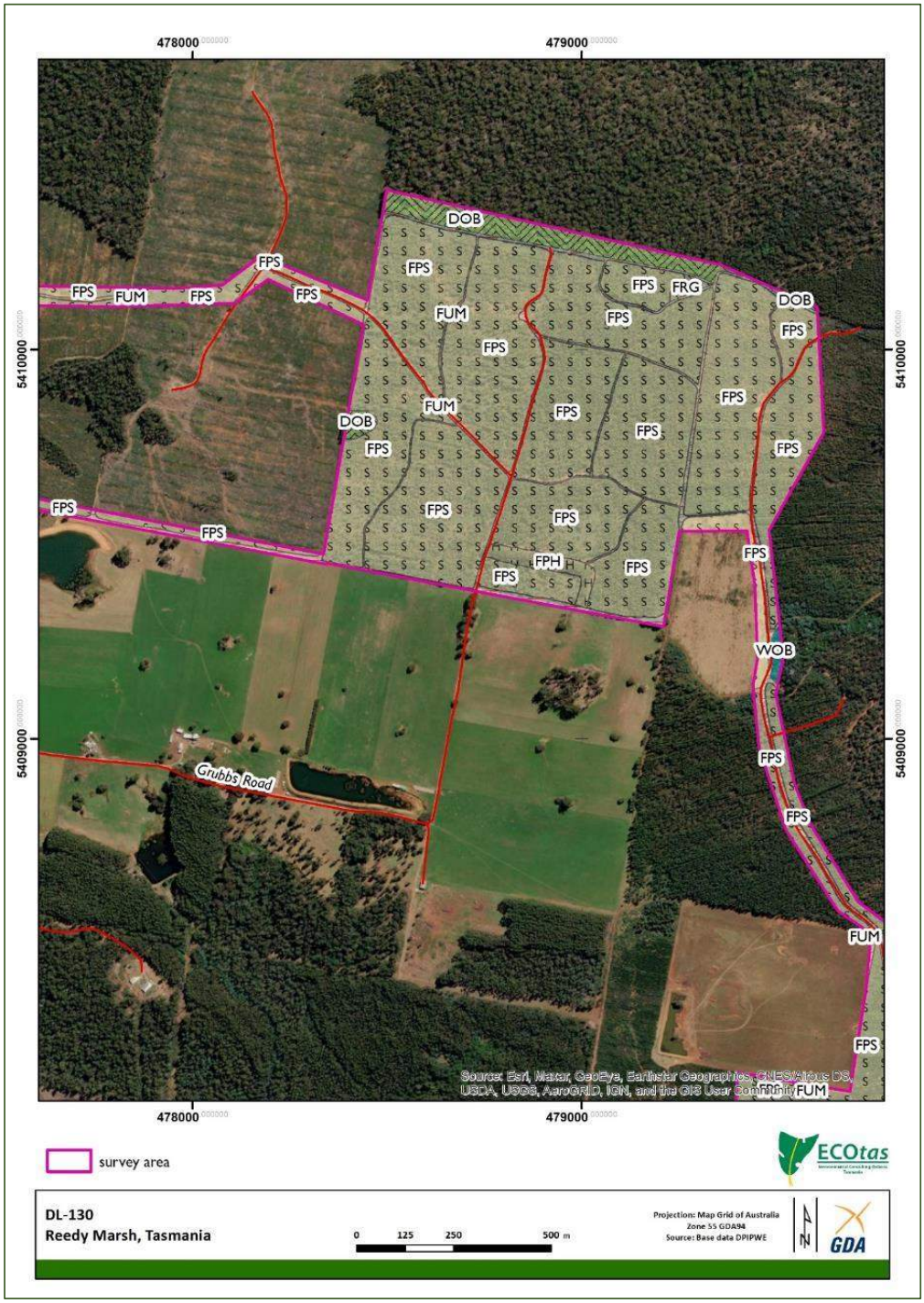

Figure 8b. Revised vegetation mapping for study area – south (refer to text for codes)

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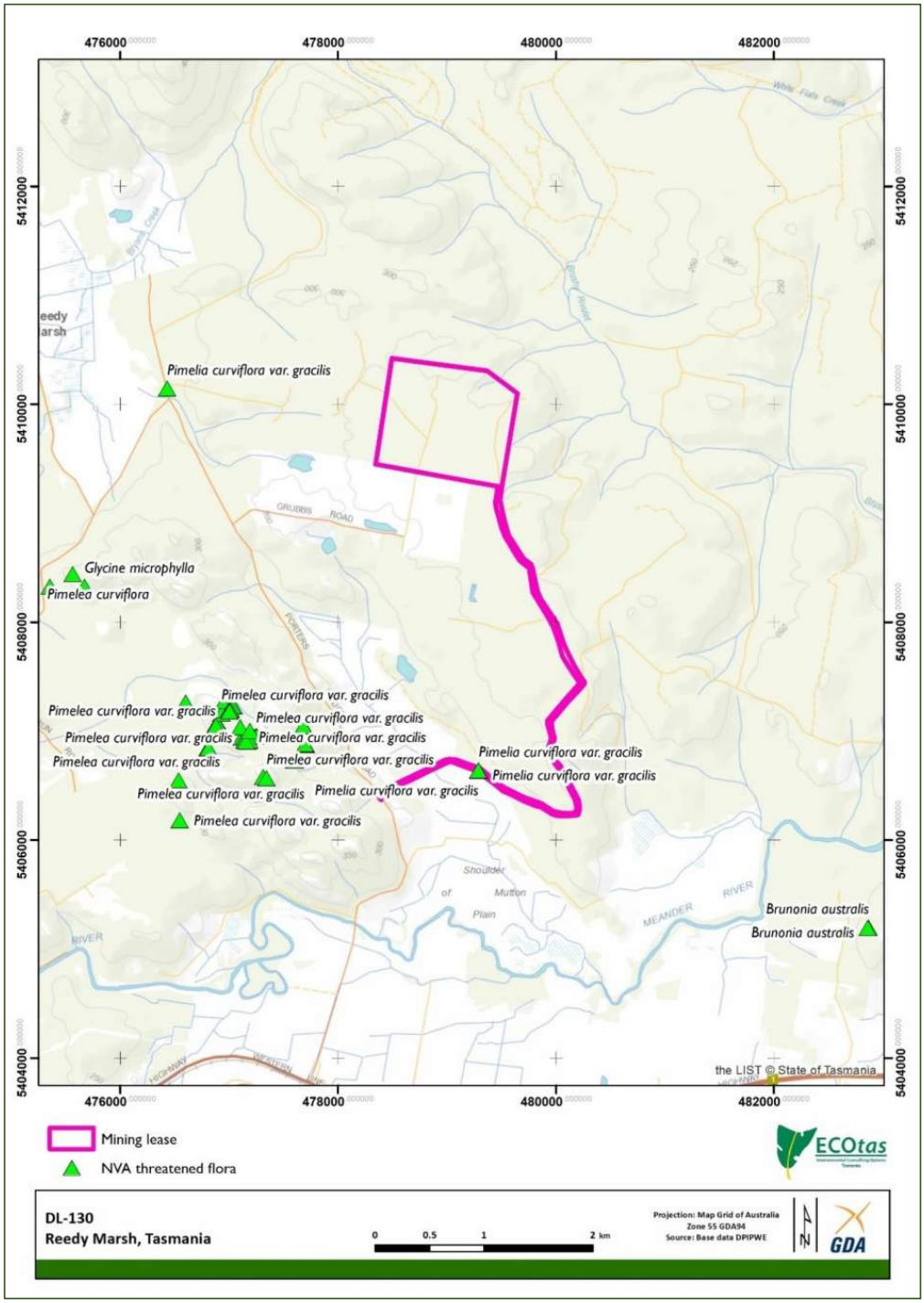

Figure 9. Distribution of threatened flora (known) surrounding the study area

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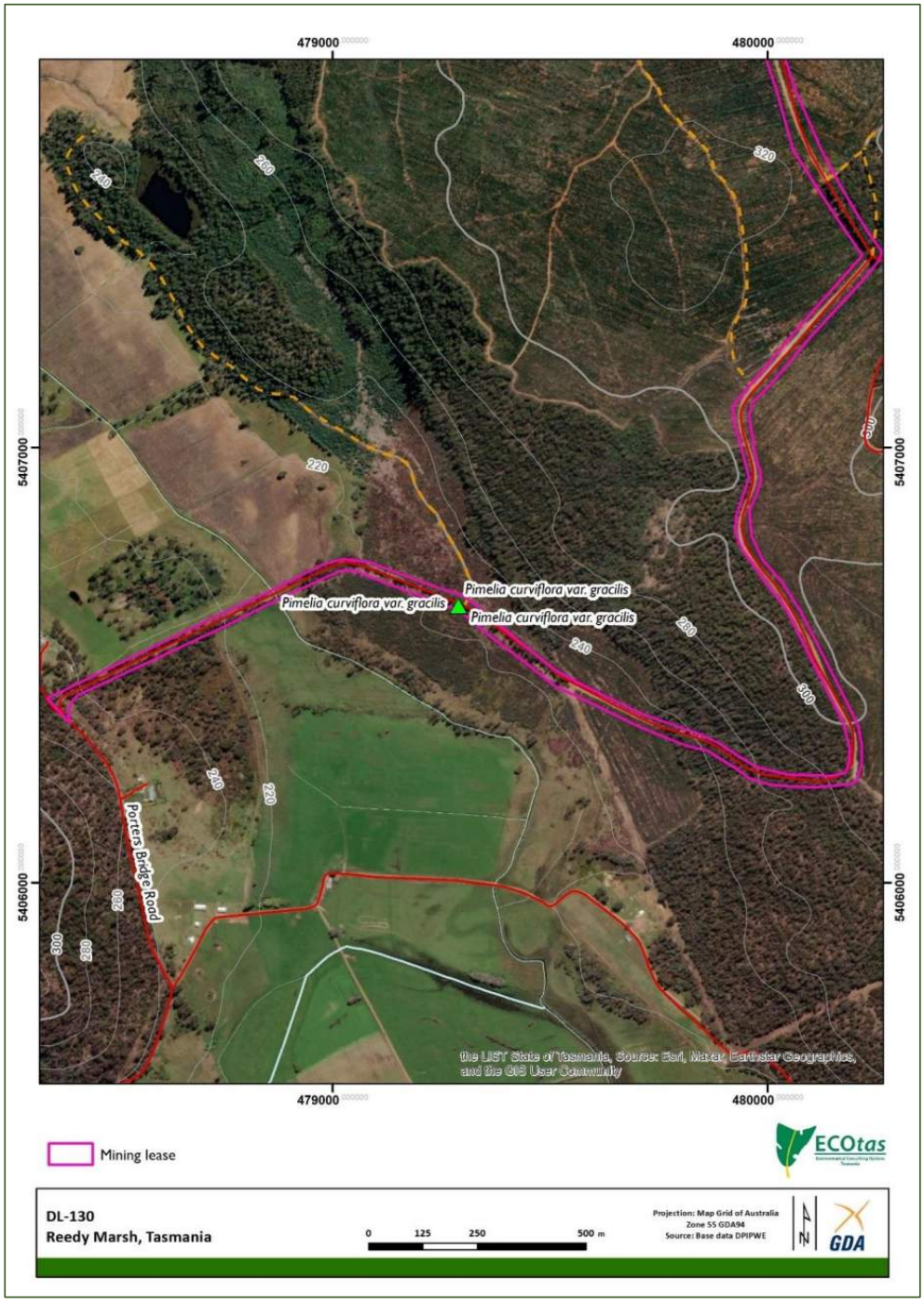

Figure 10a. Distribution of *Pimelea curviflora* var. *curviflora* (slender curved riceflower) in the south of study area

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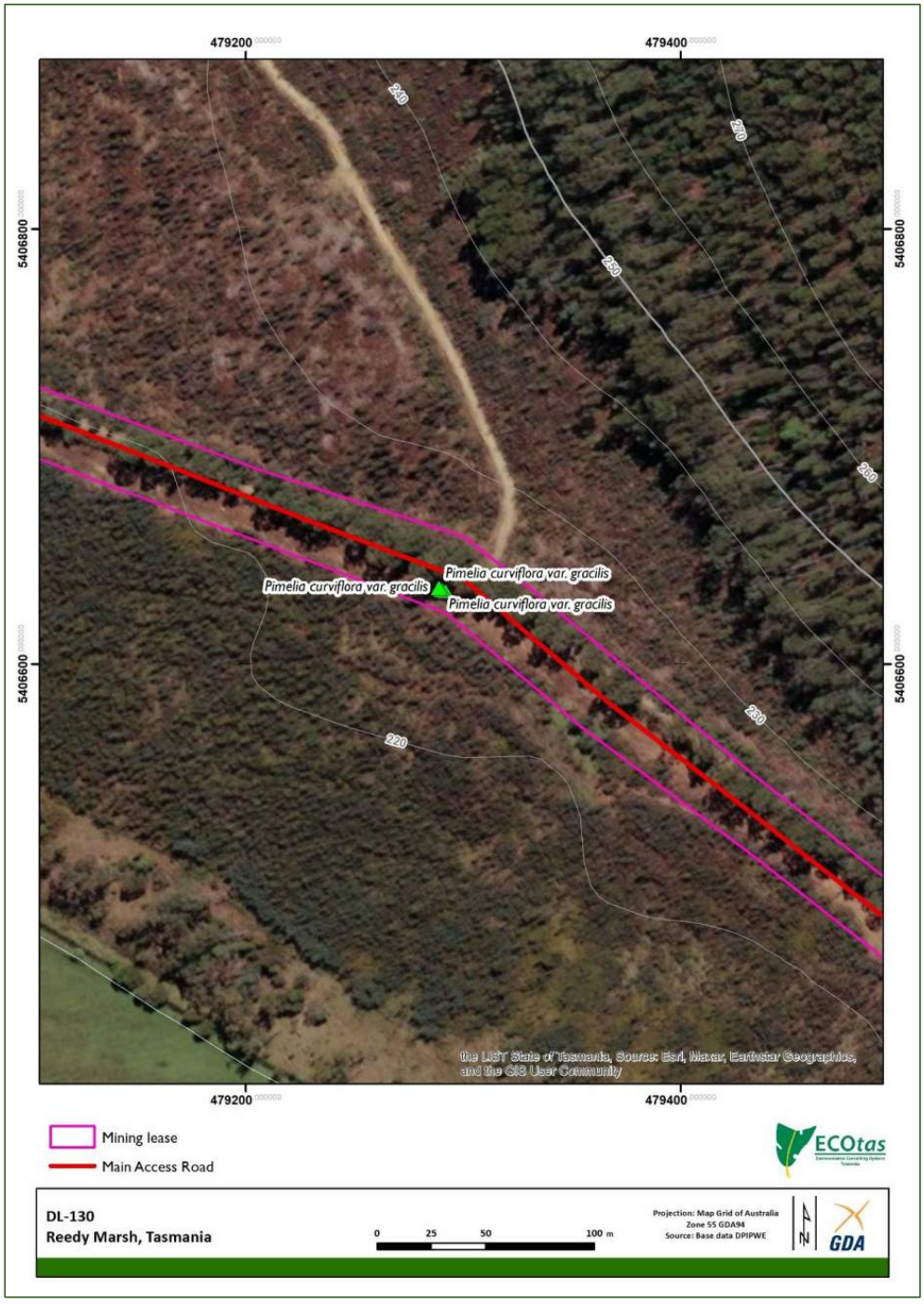

Figure 10b. Detail of *Pimelea curviflora* var. *curviflora* (slender curved riceflower) location in the south of study area

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FINDINGS continued

Threatened fauna

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 11). Figure 11 indicates threatened fauna species near to the study area and Table D1 (Appendix D) 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);
- *Perameles gunnii* (eastern barred bandicoot);
- *Aquila audax* subsp. *fleayi* (tasmanian wedge-tailed eagle);
- *Haliaeetus leucogaster* (white-bellied sea-eagle);
- *Lathamus discolor* (swift parrot);
- *Tyto novaehollandiae* (masked owl); and
- *Litoria raniformis* (green and golden frog).

Further information on these species is provided below. Refer to Appendix D 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.

There are numerous database records within 5,000 m of the study area for the Tasmanian devil (25 records) and spotted-tailed quoll (4 records) (Figure 11), indicating that these species utilise the area for opportunistic foraging. These species have broad ranges and can occupy a wide variety of habitats. Within (and close to) the study area, however, the assessment did not locate any potential den sites such as suitable hollow logs, cliffs with small caves or wombat burrows within remnant native forest areas. It is noted that plantations can provide denning habitat, depending on its history, management and status (e.g. presence of windrows and the like). Detecting such dens is challenging without camera and live trapping, sometimes combined with radio-tracking.

Furthermore, the main disturbance (mining) areas are entirely cleared land and managed for high rotation plantation forestry and in this regard, potential den sites are presently limited. In our opinion, provided that the proposed mining activities are restricted to the areas indicated, these species should not be deleteriously affected by the proposal.

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*

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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.
>
> 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) the roads within the proposal area are narrow and the topography of the site naturally limits the speed of any vehicles, with limited opportunity for vehicles (especially heavy trucks) to gain any significant speed; and (b) any vehicle movements are most likely to be in daytime hours and (c) Porters Bridge Road is narrow and again the topographic location of the road naturally limits the speed of vehicles. 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.

- *Perameles gunnii* (eastern barred bandicoot)

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 (FPA 2023) – this site is within the core range (FPA 2023).

Virtually all the potential habitat elements are present within and surrounding the study area. There are 35 records of this species within 5,000 m of the study area. The records for this species in the greater Exton/Reedy Marsh area represent opportunistic sightings or roadkill specimens. No evidence of this species was noted (such as distinctive diggings), however, it is likely that the species utilises the greater area for foraging. Any proposal is unlikely to have a significant impact on this species within the broader context of existing forestry activities.

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

Potential habitat 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. Significant 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 2023).

Nest RND #193 is located ca. 540 m to the southwest of the Porters Bridge Road/access road intersection (Figure 12). This nest was last reported in Sep. 2010 as "in poor condition and has sagged. No recent addition of material and no eagles observed"; there have been no further reported observations of this nest post-2010. There are no further known wedge-tailed eagle nests within 1,000 m and any known nests are at least 1.7 km from the study area. Line-of-sight modelling (as available via LISTmap – see Figure 13) for RND #193 indicates that the first ca. 400-500 m of the access road is within line-of-sight within the 500-1,000 m management zone. However, this modelling is based on the "bare earth" concept and takes no account of intervening vegetation, which in this case would effectively obscure the whole access road from view. In addition, it must be recognised that technically line-of-sight modelling (Figure 13) also places much of this public road network within view of this nest site. Given that this nest is now very old (pre-dates 1985), is within an extensive landscape of plantation forestry, native forest silviculture and primary production, and the roads are used for these activities on a daily basis, as well as general public use and access to properties, any activities related to the use of the access road to the proposed mine site should not be constrained in any manner.

The modelled potential nesting habitat surrounding the study area is marginal (Figure 14a) due to the very intensive land management of the study area and surrounds. No further nests were located during the current survey. As part of the recent plantation harvesting, Forico Pty Limited undertook surveys for nests in the modelled habitat east, northeast and north of the northern part of the study area, with no nests detected (Figure 14b; J. Newman pers. comm. 21 Oct. 2022). The *Guidelines for Natural Values Surveys – Terrestrial Development Proposals* (DPIPWE 2015) indicate that surveys for nests should be conducted a minimum of two years prior to any development. That is, it is likely that a new aerial and/or ground search will be required within the modelled potential nesting habitat within a minimum of 500 m from the proposed operational areas (and likely within 1 km line-of-sight of such areas) prior to works commencing. While aerial surveys are usually more successful (and usually avoid the need for complex landowner permissions), the relatively small areas of mapped potential habitat and gentle terrain with reasonably easy to traverse vegetation means that ground surveys may also be practical.

- *Haliaeetus leucogaster* (white-bellied sea-eagle)

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 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

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(class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used. Significant habitat is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where nest tree still present) (FPA 2023).

No known nests of a white-bellied sea-eagle occurs within the wider area. The forests surrounding the study area are generally marginal nesting habitat due to the lack of suitable nesting trees. This is further verified by the nesting model (Figure 14), which indicates marginal nesting habitat in the greater area and the lack of suitable waterbodies in the greater area suitable for foraging. However, see additional commentary under wedge-tailed eagle.

- *Lathamus discolor* (swift parrot)

Potential habitat comprises potential foraging habitat and potential nesting habitat. Potential foraging habitat comprises *Eucalyptus globulus* (blue gum) and *E. ovata* (black gum) trees that are old enough to flower. For management purposes, potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees (FPA 2023).

There are no observations for the swift parrot within 5,000 m of the study area with the study area representing potential habitat only. No nests have been recorded within or adjacent to the study area. The study area contains potential nesting habitat in the form of scattered mature trees of *Eucalyptus obliqua* (stringybark) in the north with hollows present and potential foraging habitat with *Eucalyptus ovata* being present on the existing formed access road margins in the south of the study area. That said, the topography and context are highly atypical of reported nesting habitat, which tends to be on ridgelines/upper slopes with a high abundance of hollow-bearing trees.

The proposal within the study area is unlikely to constitute a significant impact on the swift parrot at any reasonable scale as limited potential nesting trees will be disturbed and no foraging habitat will be impacted. It is, however, recommended that disturbance along the existing access road in the south be limited to 'pruning' for vehicle line-of-sight in the vicinity of the area mapped as DOV (i.e. the primary potential foraging habitat type). It is unlikely that major works will be required; however, appropriate barriers could be utilised during any works program to minimise edge effects. Regarding breeding habitat (hollows), it is recommended that any forest clearing occur outside of the breeding period (Feb. to Aug.) with no clearing to occur within the breeding season (Sep. to Jan., inclusive). Refer also to **DISCUSSION *Legislative and policy implications*** for more details, with particular respect to the implications under the Commonwealth *Environment Protection and Biodiversity Protection Act 1999*.

- *Tyto novaehollandiae* (masked owl)

Potential habitat 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 2023).

There are seven records for this species within 500 m of the study area. It is likely that the species uses the greater area for foraging and temporary roosting with extensive potential habitat occurring within the Brushy Rivulet Conservation Area to the north of the study area. Within the study area, potential nesting habitat is present in the north along the boundary with Brushy Rivulet Conservation Area. Scattered suitable large individuals of *Eucalyptus obliqua* with large hollows were noted. However, the density of the trees was sparse with evidence of use by brush-tailed possums with distinct trails present with scats at the tree base(s).

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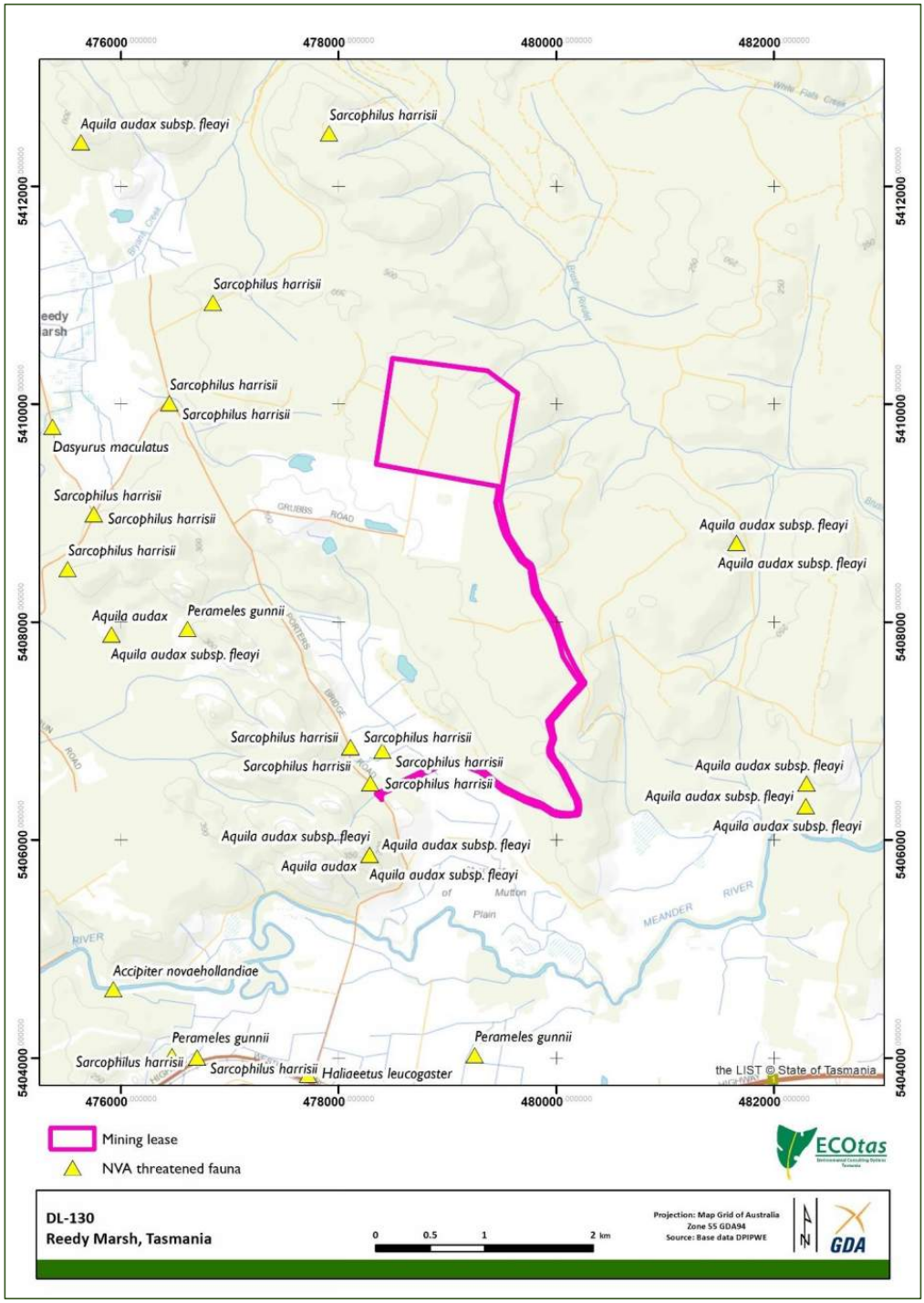

Figure 11. Distribution of threatened fauna (known) surrounding the study area (overview)

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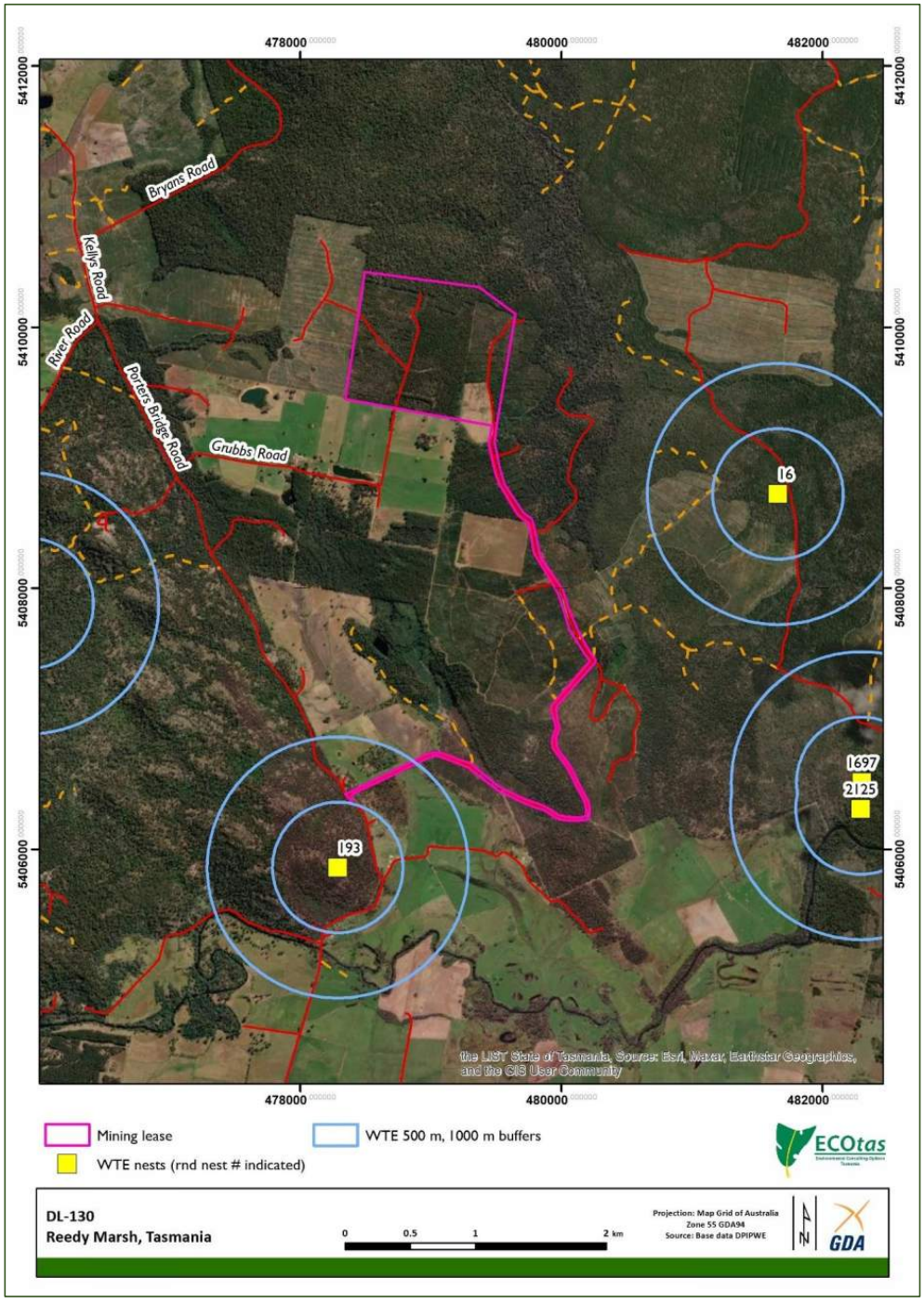

Figure 12. Known wedge-tailed eagle nests relative to the study area (500 m and 1,000 m buffers surrounding known nests indicated)

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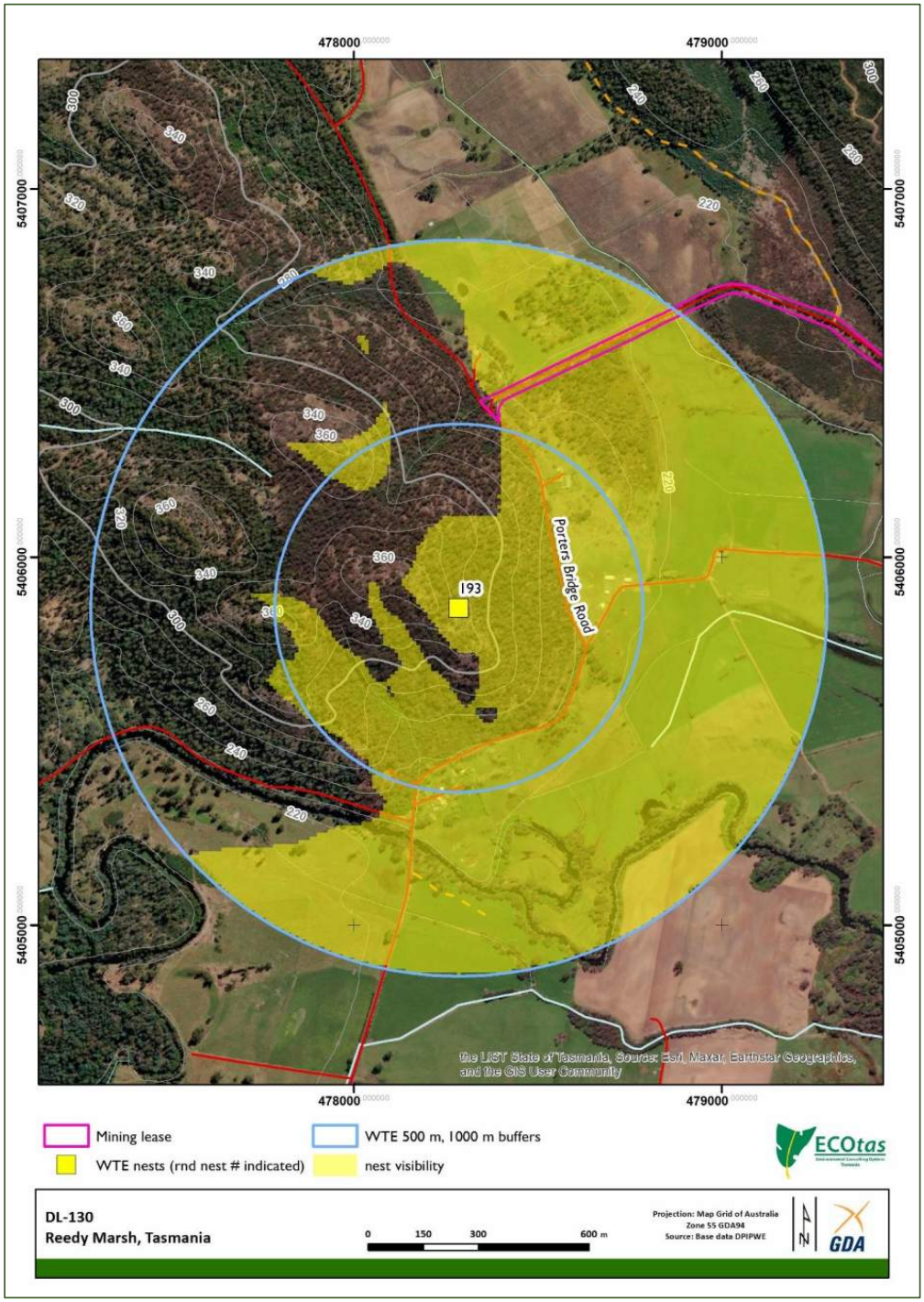

Figure 13. Nest visibility model within 1,000 m of nest #193

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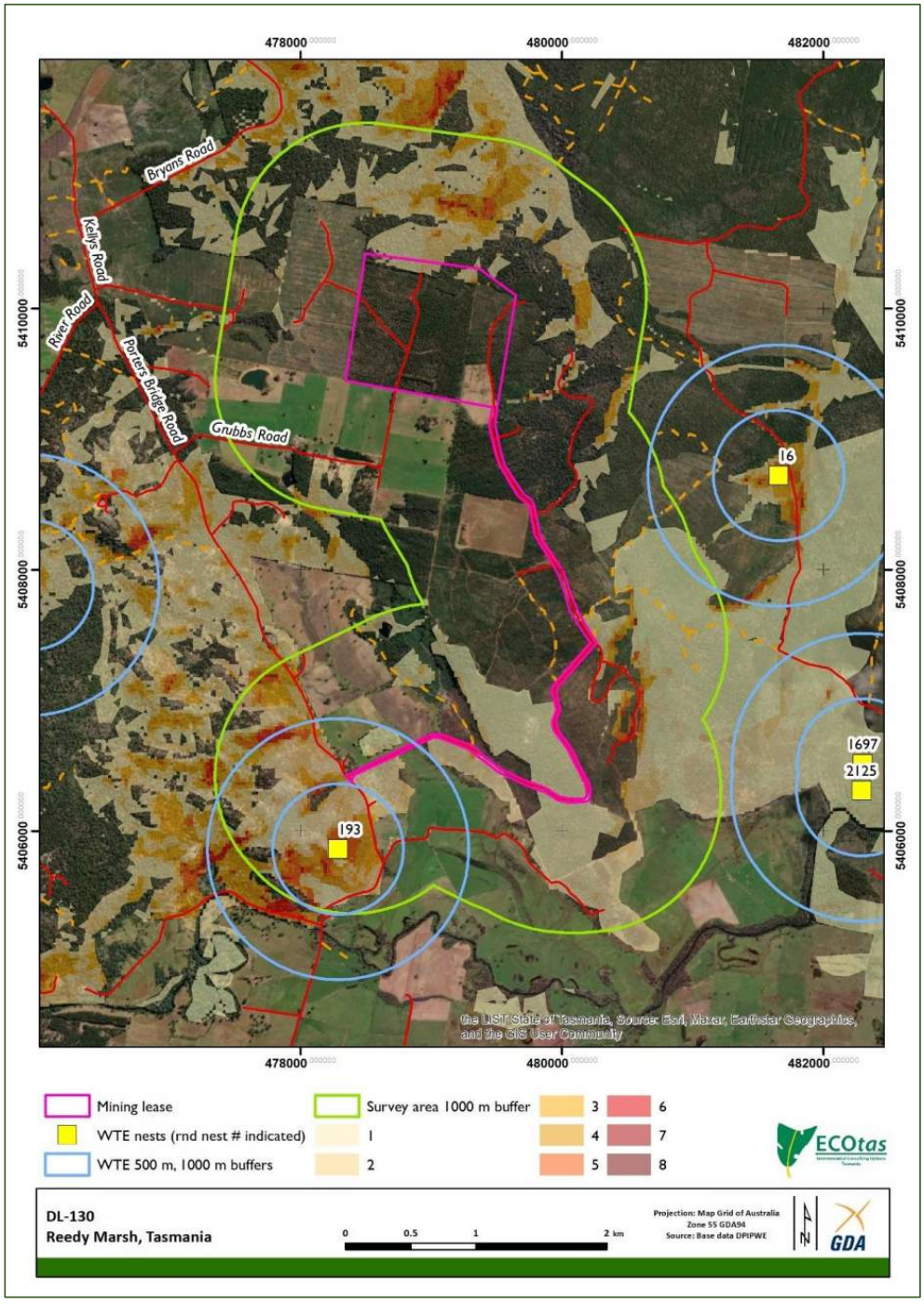

Figure 14a. Low elevation eagle nesting model relative to the study area: 1 = low quality nesting habitat to 8 = high quality nesting habitat; nominal 500 m and 1,000 m buffers from known nest indicated

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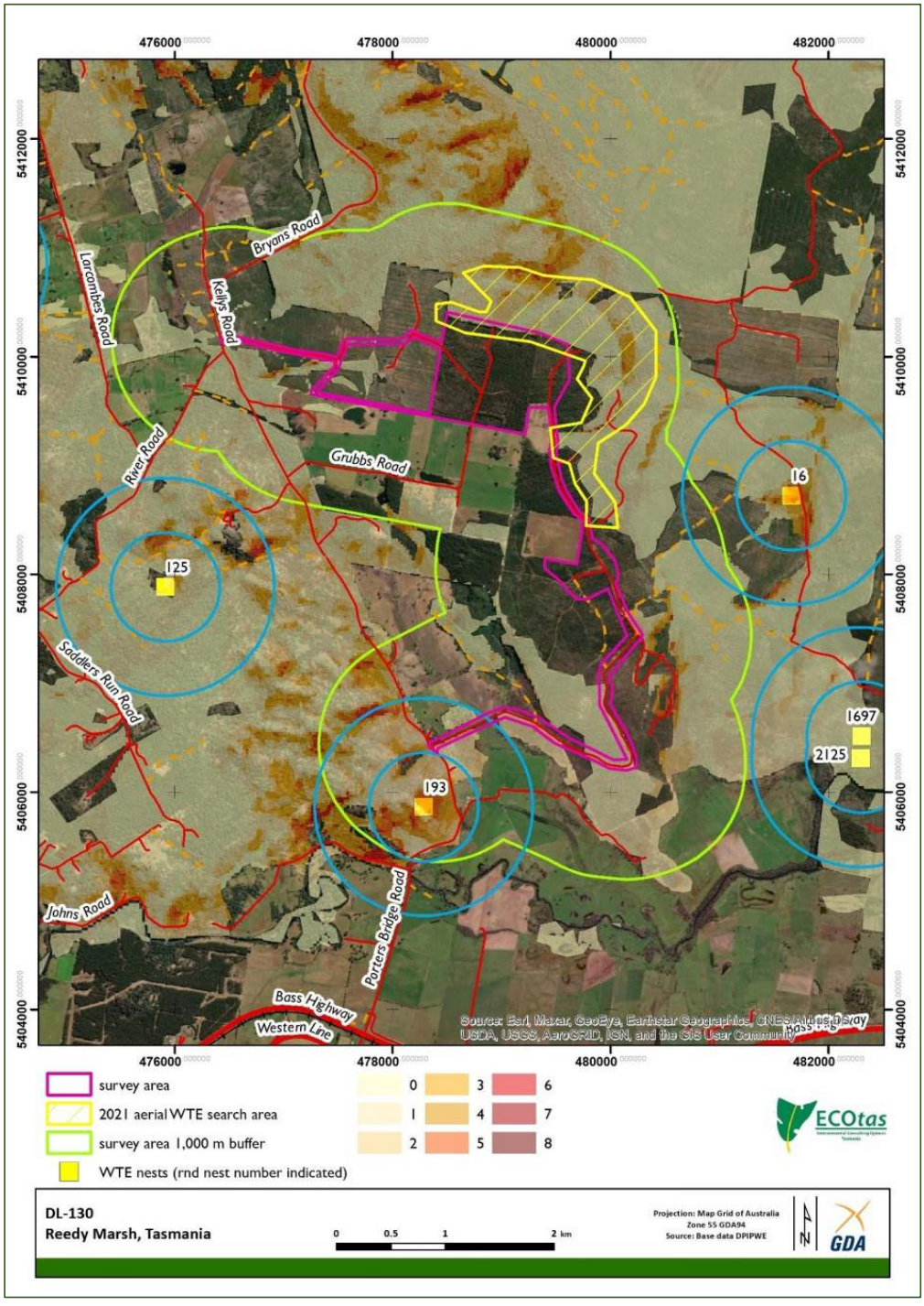

Figure 14b. Previous searching for nests [source: Forico Pty Limited]

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FINDINGS *Threatened fauna* continued…

- *Litoria raniformis* (green and golden frog)

Potential habitat for the green and golden frog is permanent and temporary waterbodies, usually with vegetation in or around them. Potential habitat includes 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 (FPA 2023), with significant habitat described as "still or very slow flowing water bodies, with at least some vegetation, and a lack of obvious pollutants (oils, chemicals, etc.)" (FPA 2023).

Threatened Frogs: Fauna Technical Note No. 18 (FPA 2014b) indicates that the ephemeral watercourse in the south of the study area is potential habitat. The habitat of this species is unlikely to be directly affected due to being crossed by an existing formed road. No standing water is present in any of the ephemeral drainage depressions in the main mining proposal area in the north. It is recommended that water runoff and sediment controls are implemented to avoid contamination of any waterways.

The degree to which clearing of forest habitat within the vicinity of potential habitat may comprise a significant impact under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is more complex because the guidelines for the species consider dispersal and hibernation habitat as well as natal ponds (see **DISCUSSION *Legislative and policy implications*** for more detail).

Other natural values

Weed species

The study area supports four species (Figure 15) classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*), which include highly invasive species, namely *Cytisus scoparius* (english broom), *Erica lusitanica* (spanish heath), *Ulex europaeus* (gorse) and *Rubus* sp. (blackberry). Of the above species, *Ulex europaeus* (gorse) forms extensive populations with 100s to 1000s of plants present, mainly along the access route (Figure 15). All other species generally occur as small populations or localised plants in the same general area as gorse.

Any management actions should aim to minimise the risk of introducing weeds and distributing weeds to other areas due to the abundance of invasive species within the study area. Importantly, the current distribution of weed species needs to be contained to minimise the potential spread of these species to surrounding forestry and agricultural land and the adjacent Brushy Rivulet Conservation Area. The key to this will be hygiene protocols for machinery, vehicles and personnel entering the area, particularly if they have come from a potentially weed-affected site or are leaving the site with contaminated soil present. It is recommended that a formal weed and hygiene management plan is developed to minimise the risk of further infestations to the mining lease area and critically, to prevent the spread of the declared and environmental weeds from the proposed mining area(s) to other sites.

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:

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- 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 native vegetation types identified from the study area generally have a low susceptibility to PC. No evidence of the pathogen was observed, with the native vegetation remnants all in good health (apart from weeds along the access road) and no symptoms of disease in susceptible species. It appears reasonable to consider this area 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 proposed access road and internal tracks (free from puddling), as well as ensuring the mining areas remain well-drained, will be the key to ensuring a PC-free operation. It is also noted that the mining proposal presents a negligible opportunity to host PC, provided that stripped topsoil is well-managed. As with weeds, development of a facility-wide weed disease and hygiene management plan is strongly recommended.

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).

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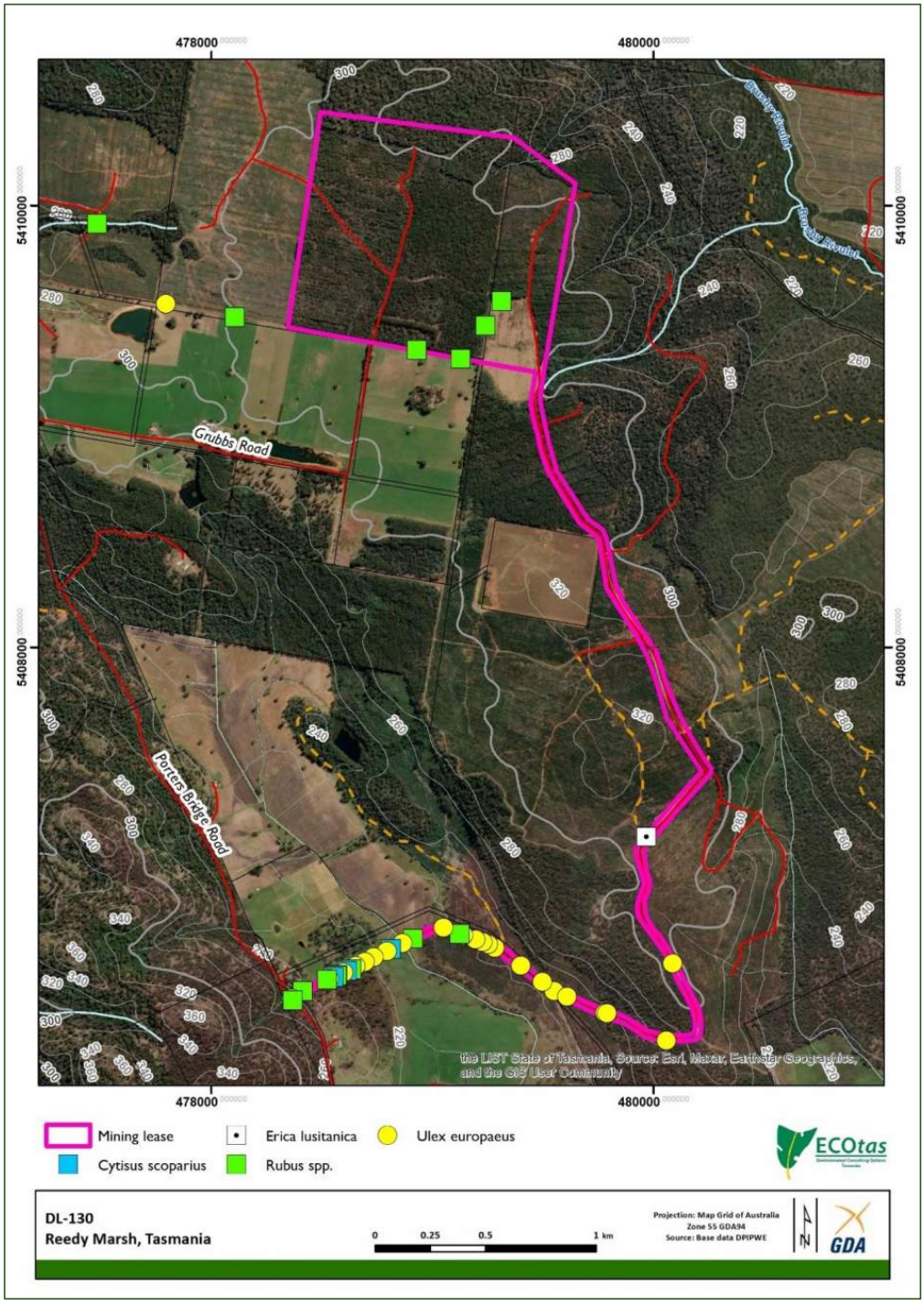

Figure 15. Distribution of declared weed species within and adjacent to the study area

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FINDINGS *Other natural values* continued…

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 proposed development area does include defined drainage features mainly along the proposed access route. The proposed mining areas are on generally well-drained soils. It is recommended to assume that the disease is absent and to manage operations to minimise the risk of introducing the pathogen. At this site, the following specific actions are recommended:

- ensure that vehicles, machinery, equipment, materials and personnel adhere to the general hygiene protocols provided in *Keeping it Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens* (Allan & Gartenstein 2010); and
- ensure that access tracks are well-drained such that water does not pool for long periods, minimising the opportunity for the disease to establish and persist, and ensuring that frog species are restricted to non-anthropogenic habitats in the adjacent forest/natural streams.

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

CofA (2023) 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:

- Lowland Native Grasslands of Tasmania [Critically Endangered];
- Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*) [Critically Endangered]; and
- Tasmanian White Gum (*Eucalyptus viminalis*) Wet Forest [Critically Endangered].

Existing vegetation mapping (Figure 7) and revised vegetation mapping (Figure 8) indicates that *Eucalyptus ovata* forest and woodland (TASVEG code: DOV), which can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*) is present within study area i.e. there are potential implications under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. In this case, the patch meets the intent of the EPBCA-listed entity.See **DISCUSSION *Legislative and policy implications*** for further details.

DISCUSSION

Summary of key findings

Threatened flora

- No plant species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) were detected, or are known from database information, from the study area.
- One plant species listed as threatened (rare) on the Tasmanian *Threatened Species Protection Act 1995* was recorded from the study area, as follows:
  - *Pimelea curviflora* var. *curviflora* (slender curved riceflower).

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) 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);
  - *Perameles gunnii* (eastern barred bandicoot);
  - *Lathamus discolor* (swift parrot);
  - *Tyto novaehollandiae* subsp. *castanops* (masked owl);
  - *Haliaeetus leucogaster* (white-bellied sea-eagle);
  - *Aquila audax* subsp. *fleayi* (wedge-tailed eagle); and
  - *Litoria raniformis* (green and golden frog).

Vegetation types

- The study area supports the following TASVEG mapping units:
  - *Eucalyptus amygdalina* forest and woodland on dolerite (TASVEG coder: DAD);
  - *Eucalyptus obliqua* dry forest (TASVEG code: DOB);
  - *Eucalyptus ovata* forest and woodland (TASVEG code: DOV);
  - *Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB);
  - agricultural land (TASVEG code: FAG);
  - plantations for silviculture – hardwood (TASVEG code: FPH);
  - plantations for silviculture – softwood (TASVEG code: FPS);
  - regenerating cleared land (TASVEG code: FRG); and
  - extra-urban miscellaneous (TASVEG code: FUM).
- Of the vegetation types recorded, *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) equates to a native vegetation community (with the same name) listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002.*

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- Occurrences of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*), which is identified as a threatened ecological community listed as Critically Endangered (Matter of National Environmental Significance) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Weeds

- Four plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) were detected from the study area, as follows:
  - *Cytisus scoparius* (english broom);
  - *Erica lusitanica* (spanish heath);
  - *Rubus* sp. (blackberry); and
  - *Ulex europaeus* (gorse).

Plant disease

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

Animal disease (chytrid)

- The study area is not known to support frog chytrid disease but does support localised habitats suitable for amphibian species within and surrounding the study area.

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

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(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, Department of Natural Resources and Environment Tasmania, through a formal application process. In this case, the final management of the sites supporting *Pimelea curviflora* var. *curviflora* (slender curved riceflower) will need to be determined in conjunction with other matters. However, in the first instance, it is recommended to seek a solution that allows for the retention of these sites of a threatened species. If this cannot be achieved, a permit to take will need to be applied for. We do not propose any special management would be warranted because of the widespread distribution of the species, its reservation status and known preponderance to persist in and colonise highly modified sites, with these novel sites not representing a range extension nor infill of any note and very low abundance population in a highly disturbed habitat.

The Act does not refer to the management 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 relevant Commonwealth agency 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:

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> *"…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 supports a patch of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV), which can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum *(Eucalyptus ovata / E. brookeriana*), listed as Critically Endangered (and therefore a Matter of National Environmental Significance) where certain threshold conditions are met such as extent, composition and condition (CofA 2019).

For DOV to be listed as the EPBCA-listed entity, an interaction of the following criteria is used to determine if a minimum condition threshold is met:

- size of the patch (≥0.5 or ≥2.0 ha);
- contiguity of the patch with a native vegetation remnant ≥2.0 ha;
- proportion of the understorey that is native (≥70% or ≥50%);
- quantity of large or hollow-bearing trees; and
- understorey species diversity in 0.5 ha area.

The mapped DOV patch does meet these nominal thresholds due to extent (mapped patch is <ca. 5 ha including on adjacent titles) with the understorey largely native plant species dominated (≤70% native plant species in the vicinity of the study area). Hollow-bearing trees are potentially present (however none observed along the road easement). This patch meets the criteria for Category A1 (large patch with few weeds and [potential] habitat trees) (CofA 2019). It should be noted, however, that the mapped area along the proposed access is narrow linear and is subject to edge effects such as weed invasion. Unless there is a proposal to materially impact on this patch of DOV (such as significant road widening and/or major changes to hydrological conditions), use of an existing well-formed road should not trigger any of the nominal significant impact criteria.

Threatened flora

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

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Threatened fauna

The study area may support populations of threatened fauna listed on the Act, most notably the Tasmanian devil, spotted-tailed quoll, eastern quoll, eastern barred bandicoot, swift parrot and wedge-tailed eagle. 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 masked owl – refer to Appendix D for a more detailed review).

With respect to the mammal species (with particular reference to the Tasmanian devil, eastern quoll and eastern barred bandicoot that are listed as Endangered, noting the spotted-tailed quoll is listed as Vulnerable so the "test" for significance is marginally different, mainly with respect to the concept of an "important population"), the *Guidelines* consider a "significant impact" to comprise loss that is likely to lead to a long-term decrease in the size of a population of a species (unlikely to be the case at any reasonable scale); reduce the area of occupancy of the species (also unlikely at any reasonable scale); fragment an existing 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 but this site is hardly likely to qualify in any reasonable sense); disrupt the breeding cycle of a population (unlikely, given no dens observed); 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.

With respect to the swift parrot, this species is listed as Critically Endangered, and while the "test" of significance is as described above, the status of the species, combined with the recognition of the cumulative loss of potential nesting and foraging habitat ("death by a thousand cuts"), and the fact that there have been referrals for relatively small areas of potential habitat (even a small number of individual trees), further consideration is provided here. This would apply to an activity that resulted in the loss of potential habitat (in this case identified as the area mapped as DOV). There is no defined threshold for what may constitute a significant impact for the swift parrot because there are no species-specific guidelines. In this case, a conservative approach is suggested in which the extent of potential foraging habitat is excluded from operations and this area appropriately managed to minimise the risk of degradation (e.g. no further disturbance to the mapped DOV area). If this cannot be accommodated, some level of referral to the relevant department may become needed to "test" if the matter needs to be formally referred as a "controlled action".

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–

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(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 proposed mining lease (study) 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 proposed mining 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 supports an area of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV), which equates to threatened native vegetation community (with the same name) on the Act.

The administrative/regulatory mechanism for managing threatened communities is through either the Tasmanian *Forest Practices Act 1985* (and associated *Forest Practices Regulations 2017*) – not applicable in this case – or the local planning scheme (*Tasmanian Planning Scheme – Meander Valley*), depending on the zone and code provisions (refer to the relevant section).

Tasmanian *Weed Management Act 1999 (Biosecurity Act 2019)*

Four plant species classified as declared weeds within the meaning of the Act were detected from the study area, as follows:

- *Cytisus scoparius* (english broom);
- *Erica lusitanica* (spanish heath);
- *Rubus* sp. (blackberry); and
- *Ulex europaeus* (gorse).

Meander Valley municipality is a zone B municipality (widespread infestations) with respect to these species under the Statutory Weed Management Plans (see www.nre.tas.gov.au). "Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the

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spread of [these species] from existing infestations to areas free or in the process of becoming free of gorse".

In this case, it is recommended that a formal weed and hygiene management plan is developed to minimise the risk of further infestations to the proposed mining lease area and critically, to prevent the spread of the declared (and potentially) environmental weeds from the active mining area(s) to the greater northern Tasmanian region. This plan will need to consider contaminated zones such as the widespread infestations of *Ulex europaeus* (gorse), which is widespread along the proposed access route.

Tasmanian *Land Use Planning and Approvals Act 1993*

The applicable planning scheme for the study area is the *Tasmanian Planning Scheme – Meander Valley*. Note that the following is our interpretation of the provisions of the *Scheme* and may not necessarily represent the views of Meander Valley 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.

The operational part of the proposed mining lease area is zoned as Rural (Figure 4). Some areas are subject to the Priority Vegetation Area overlay and the Waterway and Coastal Protection Area overlays. The Natural Assets Code (C.7.0) 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 C7.4.1(b). In this regard, the proposal is subject to the Level 2 Activity approvals process.

On this basis, the proposal does not "trigger" the Natural Assets Code of the *Tasmanian Planning Scheme – Meander Valley*.

Recommendations

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

Vegetation types

It is recommended that the area mapped as *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) along the access road be excluded from disturbance and be managed to minimise the risk of degradation (e.g. institution of barrier fencing or similar; maintain drainage regime). It should be noted that only 'pruning' may occur on the road margin to manage heavy vehicle risk.

Threatened flora

Pimelea curviflora var. *curviflora* (slender curved riceflower) is listed as threatened (rare) on the Tasmanian *Threatened Species Protection Act 1995.* Given that the plants located occur on the road margin and are easily avoided, it is recommended that the plants be excluded from any proposal (ideally excluded with some form of barrier fencing or similar during road maintenance or upgrades). If this cannot be accommodated, a permit to take will be required.

Threatened fauna

Refer to recommendation to exclude areas of DOV vegetation types as potential foraging habitat for the swift parrot.

A survey of the area mapped as DOB in the north is recommended prior to clearance of Stage 1 to assess mature trees for the presence of suitable nesting hollows for masked owls, swift parrots and any potential marsupial carnivore denning habitat. Any clearing of DOB is recommended to occur outside of the breeding season of swift parrot (Feb. to Aug.). If this survey identifies any threatened fauna nests, dens or hollows, further information should be sought from Conservation Assessments Section (CAS) before any development works commence.

It is recommended that water runoff and sediment controls are implemented to avoid contamination of any waterways that are potential amphibian habitat.

Further aerial/ground searching for wedge-tailed eagle nests is recommended prior to the commencement of works.

Weed and disease management

It is recommended that a formal weed and disease hygiene management plan is developed to minimise the risk of further infestations to the mining lease area and critically, to prevent the spread of the declared weeds from site to the greater northern Tasmania region. This plan will need to consider contaminated zones such as the widespread infestations of *Ulex europaeus* (gorse) and other declared weed species along the proposed access route.

Regarding plant and animal disease, it is recommended to assume that any plant or animal diseases and pathogens are absent and to manage operations to minimise the risk of introducing disease or pathogens. It is recommended that specific weed and disease management actions be incorporated into a formal weed and disease hygiene management plan.

Legislative and policy implications

There are no formal requirements for a permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* (TSPA) if the known sites of *Pimelea curviflora* var. *curviflora* (slender curved riceflower) are avoided.

A formal referral to the relevant Commonwealth agency under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) is not considered required if the area of native vegetation mapped as DOV is excluded and appropriately managed (threatened ecological community and potential foraging habitat of the swift parrot). If this cannot be accommodated, a more detailed consideration of the referral requirements under the Act may be needed. This should be confirmed by the client through their own consideration of the *Significant Impact Guidelines* (or through discussion with NRE and/or the relevant Commonwealth agency).

REFERENCES

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.

APG (Angiosperm Phylogeny Group) (2016). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society* 181(1): 1–20.

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Version: 1, Version Date: 31/05/2024

Bryant, S.L. & Jackson, J. (1999). *Tasmania's Threatened Fauna Handbook: What, Where and How to Protect Tasmania's Threatened Animals*. Threatened Species Unit, Parks & Wildlife Service, Hobart.

CofA (Commonwealth of Australia) (2013). *EPBC Act Policy Statement 1.1: Significant Impact Guidelines – Matters of National Environmental Significance*. Commonwealth of Australia, Canberra.

CofA (Commonwealth of Australia) (2019). *Approved Conservation Advice (incorporating listing advice) – Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*Eucalyptus ovata / E. brookeriana*)*. Commonwealth of Australia, Canberra.

CofA (Commonwealth of Australia) (2023). *Protected Matters Report* for a polygon defining the study area, buffered by 5 km, dated 6 Mar. 2023 – Appendix G.

de Salas, M.F. (Ed.) (2023+). *Flora of Tasmania Online*. Tasmanian Herbarium, Hobart.

de Salas, M.F. & Baker, M.L. (2022). *A Census of the Vascular Plants of Tasmania, including Macquarie Island*. Tasmanian Herbarium, Hobart.

DNRET (Department of Natural Resources & Environment Tasmania) (2023a). *Natural Values Atlas* report ECOtas_ABx_Porters_Bauxite for a polygon defining the study area (centred on 479093mE 5409501mN), buffered by 5 km, dated 6 Mar. 2023 – Appendix E.

DNRET (Department of Natural Resources & Environment Tasmania) (2023b). Threatened Native Vegetation Communities List, as per Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. https://nre.tas.gov.au/conservation/threatened-species-and-communities/threatened-native-vegetation-communities.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (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.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *Guidelines for Natural Values Surveys – Terrestrial Development Proposals*. Department of Primary Industries, Parks, Water & Environment, Hobart.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *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*. Department of Primary Industries, Parks, Water & Environment, Hobart.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *Biosecurity Factsheet: Myrtle Rust*. Department of Primary Industries, Parks, Water & Environment, Hobart.

EPA (Environment Protection Authority) (2022). *Environmental Effects Report Guidelines (Extractive Industry)*, ABx Group Limited Bauxite Quarry Porters Bridge Road, Reedy Marsh. Dec. 2022. Environment Protection Authority, Hobart, Tasmania.

FPA (Forest Practices Authority) (2009). *Management of* Phytophthora cinnamomi *in Production Forests. Flora Technical Note No. 8*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2014a), *'Wedge-tailed eagle nesting habitat model'*, Fauna Technical Note No. 6, Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2014b). *Threatened Frogs. Fauna Technical Note No. 18*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2016). *Habitat Descriptions of Threatened Flora in Tasmania*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2017). *Threatened Flora Species Survey Notes*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2023). *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 479093mE 5409501mN (i.e. a point defining the approximate centre of the study area), buffered by 5 km and 2 km for threatened fauna and flora records, respectively, hyperlinked species' profiles and predicted range boundary maps, dated 1 Mar. 2023 – Appendix F.

Kitchener, A. & Harris, S. (2013+). *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*. Edition 2 (online edition). Department of Primary Industries, Parks, Water & Environment, Hobart.

McNab, A. (2022). *The Guide to Tasmanian Wildlife* (second edition). Forty South Publishing Pty Ltd, Hobart.

NRM South (2017). *A Guide to Environmental and Agricultural Weeds of Southern Tasmania*. 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.

TSS (Threatened Species Section) (2003+). *Notesheets* and *Listing Statements for* various threatened species. Department of Primary Industries, Parks, Water & Environment, Hobart.

TSSC (Threatened Species Scientific Committee) (2011). *Commonwealth Conservation Advice on Botaurus poiciloptilus (Australasian Bittern).* Department of Sustainability, Environment, Water, Population & Communities. Canberra.

Wapstra, M. (2018). *Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists*. Self-published by the author (Fourth Edition, July 2018 version).

Wapstra, H., Wapstra, A., Wapstra, M. & Gilfedder, L. (2005+, updated online at www.nre.tas.gov.au). *The Little Book of Common Names for Tasmanian Plants*. Department Primary Industries, Parks, Water & Environment, Hobart.

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 amygdalina* forest and woodland on dolerite (TASVEG code: DAD)**
DAD is localised to the to the margins of the access road. DAD is characterised by a canopy of *Eucalyptus amygdalina* with *E. obliqua* occurring as a subdominant over a tall shrub layer of *Acacia dealbata, Exocarpos cupressiformis* and *Banksia marginata.* The understorey is dominated by a mix of graminoids dominated by *Lomandra longifolia* and native grasses (mainly *Poa* spp.) with scattered low shrubs of *Epacris impressa, Pultenaea juniperina* and *P. daphnoides.* DAD is gradational with DOB. DAD is generally in good ecological condition; however, disturbance such as vehicle tracks are common and past selective logging was noted. No symptoms of *Phytophthora cinnamomi* (PC) observed. Weed species were noted on the road margins, which mainly consisted of clumps of gorse (*Ulex europaeus*). The areas mapped as DAD will not be disturbed apart from 'pruning' of the existing road verges and weed management activities.

DAD either side of the proposed access road in the south of the study area

Stratum	Height (m) Cover (%)	Species (underline = dominant, parentheses = sparse; + = present)
Trees	25-30 m 15%	*Eucalyptus amygdalina, (E. viminalis), (E. obliqua)*
Trees	16-20 m 20-25%	*Eucalyptus amygdalina, (E. viminalis), (Acacia dealbata), (A. melanoxylon)*
Tall shrubs	4-10 m 30%	*Banksia marginata, Exocarpos cupressiformis, Eucalyptus amygdalina, (Acacia dealbata), (A. melanoxylon)*
Shrubs	<2.5 m +	*Hibbertia riparia, Epacris impressa, Pultenaea juniperina*
Ferns	<1 m <20%	*Pteridium esculentum*
Grasses/graminoids	30-40% <1 m	*Lomandra longifolia, Lepidosperma laterale, Poa labillardierei, P. tenera*
Herbs	+	*Viola hederacea, Gonocarpus teucrioides*

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***Eucalyptus obliqua* dry forest (TASVEG code: DOB)**
DOB occurs on the margins of the access road, as isolated remnant patches and as the main area of forest that will be potentially cleared by the proposed mining operation in the north. DOB is characterised by a tree layer dominated by *E. obliqua* with *E. amygdalina* occurring as a subdominant. Subdominant tree layers are present from past fire events. A tall shrub layer of *Acacia dealbata, A. melanoxylon, Exocarpos cupressiformis* and *Banksia marginata* is present with the understorey dominated by a mix of graminoids dominated by *Lomandra longifolia* and native grasses (mainly *Poa* spp.) with scattered low shrubs of *Epacris impressa, Lomatia tinctoria, Pultenaea juniperina* and *P. daphnoides.*
DOB is gradational with DAD in the south of the study area along the access road.
DOB is generally in good condition with very few weed species noted with only limited clumps of gorse (*Ulex europaeus*) noted on roadside margins in the south. No symptoms of *Phytophthora cinnamomi* (PC) were observed.

LHS. Remnant patch of DOB in the north; RHS. DOB on the northern boundary of the study area

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse; + = present)
Trees	25-30 m 15-25%	*Eucalyptus obliqua, (Eucalyptus amygdalina)*
Trees	14-20 m 5%	*Eucalyptus obliqua, (Eucalyptus amygdalina), (Acacia dealbata)*
Tall shrubs	2-8 m 20%	*Exocarpos cupressoides, Banksia marginata, (Acacia dealbata) (A. melanoxylon), Pultenaea daphnoides, Olearia lirata*
Shrubs	<1.5 m 10-45%	*Lomatia tinctoria, Pultenaea daphnoides, P. gunnii, Epacris impressa, Hibbertia riparia, Correa reflexa, Acacia dealbata*
Low shrubs	<0.2 m +	*Acrotriche serrulata, Pimelea filiformis*
Ferns	<1.5 m variable	*Pteridium esculentum*
Grasses/graminoids	40-60% <1 m	*Lomandra longifolia, Lepidosperma laterale, Diplarrena moraea, Poa labillardierei, P. tenera*
Herbs	<10% <0.1 m	*Acaena novae-zelandiae, Viola hederacea, Gonocarpus teucrioides, G. tetragynus, Lagenophora stipitata*

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***Eucalyptus ovata* forest and woodland (TASVEG code: DOV)**
DOV occurs as two patches on the margins of the access road in the south. These areas are dissected by the access road covering a total area of 0.2 ha. The areas are continuous with larger patches on adjacent private titles. DOV is characterised by a tall tree layer dominated by *Eucalyptus ovata* (black gum) with a dense tree/tall shrub layer dominated by *Melaleuca ericifolia* and *Acacia* species present. The ground cover is a dense sedgy layer of *Lomandra longifolia.* Scattered weedy shrubs of *Ulex europaeus* and *Cytisus scoparius* are common to locally abundant. DOV is continuous with a larger area (patch) on private land to the south The proposed access through this community is along an existing hardened (gravel) forestry road with no further clearing required. Roadside vegetation management (pruning) will be the only possible disturbance. DOV is in marginal condition with introduced weed species abundant. The linear shape of this community surrounded by disturbance will make long-term management difficult as it will be prone to continued edge effects from adjacent land management practices and potential weed invasion. The declared weeds *Ulex europaeus, Cytisus scoparius* and *Rubus* sp. (blackberry) are common along the roadsides and adjacent properties. No symptoms of *Phytophthora cinnamomi* (PC) were observed.

DOV along the main access road in the south of the study area

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse; + = present)
Trees	25-30m 15%	*Eucalyptus ovata, (E. amygdalina), Pinus radiata* (planted row along road with wildlings present)
Trees	15-18 m 10%	*Eucalyptus ovata, (E. amygdalina*), *E. viminalis*
Tall shrubs	4-8 m 15-40%	*Melaleuca ericifolia, (E. ovata), Acacia dealbata, (Exocarpos cupressiformis), Crataegus monogyna*
Shrubs	<3 m 25%	*Ulex europaeus*, *Cytisus scoparius*, *Acacia* species, *Rosa rubiginosa*
Climber	<3 m 10-40%	*Rubus* spp.
Ferns	<1 m 10-20%	*(Pteridium esculentum)*
Grasses/graminoids	<1 m 30 50%	*Lomandra longifolia, Dactylis glomerata, Holcus lanatus, Agrostis stolonifera*

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***Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB)**
WOB occurs as an isolated community on the margin of the access road in the east of the study area. WOB is characterised by an even-aged regrowth canopy dominated by *Eucalyptus obliqua* (stringybark) over a dense tall shrub layer dominated by *Pomaderris apetala, Acacia melanoxylon, A. dealbata* and *Zieria arborescens.* The area mapped as WOB will not be disturbed apart from pruning of the existing road verge and potential weed management activities, if required. WOB is in good floristic condition with no weed species or symptoms of PC noted.

WOB patch in the east of the study area

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse; + = present)
Trees	10-15 m 25%	*Eucalyptus obliqua, (E. viminalis)*
Trees/tall shrubs	5-9 m 45%	*Pomaderris apetala, Acacia melanoxylon, A. dealbata, Zieria arborescens*
Shrubs	<2 m +	*Coprosma quadrifida*
Ferns	<1 m +	*Pteridium esculentum*

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APPENDIX B. Vascular plant species recorded from study area

Botanical nomenclature follows *A Census of the Vascular Plants of Tasmania* (de Salas & Baker 2022), with family placement updated to reflect the nomenclatural changes recognised in the *Flora of Tasmania Online* (de Salas 2023+) and APG (2016); common nomenclature follows *The Little Book of Common Names of Tasmanian Plants* (Wapstra et al. 2005+, updated online at www.nre.tas.gov.au).

i = introduced to Tasmania; e = endemic to Tasmania

DW = declared weed within meaning of Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*)

Table B1. Summary of vascular species recorded from study area

	ORDER			
STATUS	**DICOTYLEDONAE**	**MONOCOTYLEDONAE**	**GYMNOSPERMAE**	**PTERIDOPHYTA**
	54	13	-	2
e	7	1	-	-
i	15	4	1	-
Sum	**76**	**18**	**1**	**2**
TOTAL	**97**			

DICOTYLEDONAE			
	APIACEAE		
i	*Conium maculatum*	hemlock	
	Hydrocotyle hirta	hairy pennywort	
	ASTERACEAE		
e	*Bedfordia salicina*	tasmanian blanketleaf	
	Cassinia aculeata subsp. *aculeata*	common dollybush	
i	*Cirsium vulgare*	spear thistle	
	Euchiton japonicus	common cottonleaf	
i	*Helminthotheca echioides*	bristly oxtongue	
i	*Hypochaeris glabra*	smooth catsear	
i	*Hypochaeris radicata*	rough catsear	
	Lagenophora stipitata	blue bottledaisy	
	Olearia lirata	forest daisybush	
e	*Olearia phlogopappa* subsp. *gunniana*	forest dusty daisybush	
	Ozothamnus ferrugineus	tree everlastingbush	
	Senecio linearifolius var. *linearifolius*	common fireweed groundsel	
	BRASSICACEAE		
i	*Capsella bursa-pastoris*	shepherds purse	
	CONVOLVULACEAE		
	Dichondra repens	kidneyweed	
	DILLENIACEAE		
	Hibbertia riparia	erect guineaflower	
	ELAEOCARPACEAE		
	Tetratheca pilosa subsp. *pilosa*	hairy pinkbells	
	ERICACEAE		
	Acrotriche serrulata	ants delight	
	Epacris impressa	common heath	
i	*Erica lusitanica*	spanish heath	DW
	FABACEAE		
	Acacia dealbata subsp. *dealbata*	silver wattle	
	Acacia melanoxylon	blackwood	
	Acacia myrtifolia	redstem wattle	
	Acacia verticillata subsp. *verticillata*	prickly moses	
i	*Cytisus scoparius*	english broom	DW
	Hovea heterophylla	winter purplepea	
	Indigofera australis subsp. *australis*	native indigo	

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	Pultenaea daphnoides	heartleaf bushpea	
	Pultenaea gunnii subsp. *gunnii*	golden bushpea	
	Pultenaea juniperina	prickly beauty	
	Pultenaea prostrata	silky bushpea	
i	*Ulex europaeus*	gorse	DW
	GENTIANACEAE		
i	*Centaurium erythraea*	common centaury	
	GOODENIACEAE		
	Goodenia ovata	hop native-primrose	
	HALORAGACEAE		
	Gonocarpus tetragynus	common raspwort	
	Gonocarpus teucrioides	forest raspwort	
	MYRTACEAE		
e	*Eucalyptus amygdalina*	black peppermint	
i	*Eucalyptus nitens*	shining gum	
	Eucalyptus obliqua	stringybark	
	Eucalyptus ovata var. *ovata*	black gum	
	Eucalyptus viminalis subsp. *viminalis*	white gum	
	Leptospermum lanigerum	woolly teatree	
	OLEACEAE		
	Notelaea ligustrina	native olive	
	OXALIDACEAE		
	Oxalis perennans	grassland woodsorrel	
	PITTOSPORACEAE		
	Billardiera macrantha	forest appleberry	
	Bursaria spinosa subsp. *spinosa*	prickly box	
	Pittosporum bicolor	cheesewood	
	Rhytidosporum procumbens	starry appleberry	
	PRIMULACEAE		
i	*Lysimachia arvensis*	scarlet pimpernel	
	PROTEACEAE		
	Banksia marginata	silver banksia	
e	*Lomatia tinctoria*	guitarplant	
	RHAMNACEAE		
	Pomaderris apetala subsp. *apetala*	common dogwood	
	Pomaderris elliptica var. *elliptica*	yellow dogwood	
	ROSACEAE		
	Acaena echinata	spiny sheepsburr	
	Acaena novae-zelandiae	common buzzy	
i	*Crataegus monogyna*	hawthorn	
i	*Rosa rubiginosa*	sweet briar	
	Rubus parvifolius	native raspberry	
i	*Rubus* sp.	blackberry	DW
	RUBIACEAE		
	Coprosma quadrifida	native currant	
	RUTACEAE		
	Correa reflexa var. *reflexa*	common correa	
e	*Nematolepis squamea* subsp. *retusa*	blunt satinwood	
	Zieria arborescens subsp. *arborescens*	stinkwood	
	SANTALACEAE		
	Exocarpos cupressiformis	common native-cherry	
	Exocarpos strictus	pearly native-cherry	
	Leptomeria drupacea	erect currantbush	
	SAPINDACEAE		
	Dodonaea viscosa subsp. *spatulata*	broadleaf hopbush	
	SCROPHULARIACEAE		
	Veronica calycina	hairy speedwell	
	SOLANACEAE		
	Solanum laciniatum	kangaroo apple	
	THYMELAEACEAE		
	Pimelea curviflora var. *curviflora*	slender curved riceflower	
	Pimelea drupacea	cherry riceflower	
e	*Pimelea filiformis*	trailing riceflower	
	Pimelea humilis	dwarf riceflower	
e	*Pimelea nivea*	bushmans bootlace	
	VIOLACEAE		
	Viola hederacea subsp. *hederacea*	ivyleaf violet	

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	GYMNOSPERMAE	
	PINACEAE	
i	*Pinus radiata*	radiata pine
	MONOCOTYLEDONAE	
	ASPARAGACEAE	
	Lomandra longifolia	sagg
	CYPERACEAE	
	Carex appressa	tall sedge
	Gahnia grandis	cutting grass
	Lepidosperma laterale	variable swordsedge
e	*Lepidosperma oldfieldii*	dark swordsedge
	IRIDACEAE	
	Diplarrena moraea	white flag-iris
	JUNCACEAE	
	Juncus pallidus	pale rush
	ORCHIDACEAE	
	Acianthus caudatus	mayfly orchid
	Corybas diemenicus	stately helmet-orchid
	Thelymitra sp.	sun-orchid
	POACEAE	
i	*Agrostis stolonifera*	creeping bent
	Australopyrum pectinatum	prickly wheatgrass
i	*Dactylis glomerata*	cocksfoot
i	*Holcus lanatus*	yorkshire fog
i	*Poa annua*	winter grass
	Poa labillardierei var. *labillardierei*	silver tussockgrass
	Poa rodwayi	velvet tussockgrass
	Poa tenera	scrambling tussockgrass
	PTERIDOPHYTA	
	BLECHNACEAE	
	Blechnum nudum	fishbone waterfern
	DENNSTAEDTIACEAE	
	Pteridium esculentum subsp. *esculentum*	bracken

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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 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 DNRET's *Natural Values Atlas* (DNRET 2023a) 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 (2023).

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Aphelia pumilio dwarf fanwort	r -	*Aphelia pumilio* is found growing on damp flats, often with impeded drainage. The main vegetation types are lowland grassland (*Themeda triandra)* and dry sclerophyll forest and woodland dominated by *Eucalyptus viminalis*, *E. amygdalina* or *E. ovata*.	Potential habitat present on the margins of DOV and across the study area in moist locations such as roadside drains and firebreaks surrounding plantation areas. Species not detected (spring survey, as conducted, considered ideal, with species in flower in the Midlands at the time of survey – M. Wapstra pers. obs.).
Acacia axillaris midlands wattle	v VU # only	*Acacia axillaris* is mainly confined to riparian habitats such as dense riparian scrub and associated floodplains but also extends to paddocks and open grassy forests in frost hollows and areas of poor drainage, but also occasionally occurs on rocky slopes (there is a somewhat anomalous population on the midslopes of Mt Barrow in the northeast). All populations are strongly associated with dolerite. Records outside the core of the range (e.g. Prosser River, Broad River, River Clyde) need to be treated carefully as they may represent the more recently described *Acacia derwentiana*.	Potential habitat absent and the study area is well outside the known range of the species.
Barbarea australis riverbed wintercress	e EN # only	*Barbarea australis* is a riparian species found near river margins, creek beds and along flood channels adjacent to the river. It tends to favour the slower reaches, and has not been found on steeper sections of rivers. It predominantly occurs in flood deposits of silt and gravel deposited as point bars and at the margins of base flows, or more occasionally or between large cobbles on sites frequently disturbed by fluvial processes. Some of the sites are a considerable distance from the river, in flood channels scoured by previous flood action, exposing river pebbles. Most populations are in the Central Highlands, but other populations occur in the northeast and upland areas in the central north.	Potential habitat absent. No flood channels associated with any watercourses are present that include gravelly flood deposited material, which this species prefers.

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Brunonia australis blue pincushion	r -	*Brunonia australis* typically occurs in grassy woodlands and dry sclerophyll forests dominated by *Eucalyptus amygdalina* or less commonly *E. viminalis* or *E. obliqua*. Some smaller populations are found in heathy and shrubby dry forests. The species occurs on well-drained flats and gentle slopes between 10-350 metres a.s.l. It is most commonly found on sandy and gravelly alluvial soils, with a particular preference for ironstone gravels. Populations found on dolerite are usually small.	Potential habitat is marginally present within the area mapped as DAD and DOB; however, the habitat elements are atypical of the known sites of this species. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal, currently detectable at known sites in and around Launceston and Railton – M. Wapstra pers. obs.).
Colobanthus curtisiae grassland cupflower	r VU # only	*Colobanthus curtisiae* occurs in lowland grasslands and grassy woodlands but is also prevalent on rocky outcrops and margins of forest on dolerite on the Central Highlands (including disturbed sites such as log landings and snig tracks).	Potential habitat absent.
Dianella amoena grassland flaxlily	r EN # only	*Dianella amoena* occurs mainly in the northern and southern Midlands, where it grows in native grasslands and grassy woodlands.	Potential habitat absent (wholly atypical of all known sites). Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
Epacris moscaliana seepage heath	r -	*Epacris moscaliana* occurs in riparian environments and marshes associated with some rivers in the Eastern Tiers (e.g. St Pauls River, Dukes River), northeast (Nile River) and central north (Mersey River). The species has mainly recorded on dolerite from riparian vegetation and the ecotone between wet scrub and *Eucalyptus pauciflora-E. dalrympleana* forest; from *Callitris oblonga-E. ovata* forest on Quaternary alluvium; and moist south-facing rock plates and flats on Ordovician conglomerates and sandstones (Gog Range, Mersey River).	Potential habitat (riparian areas) absent.
Glycine latrobeana clover glycine	v VU # only	*Glycine latrobeana* occurs in a range of habitats, geologies and vegetation types. Soils are usually fertile but can be sandy when adjacent to or overlaying fertile soils. The species mainly occurs on flats and undulating terrain over a wide geographical range, including near-coastal environments, the Midlands, and the Central Plateau. It mainly occurs in grassy/heathy forests and woodlands and native grasslands.	Potential habitat absent (wholly atypical of all known sites, noting that previous records of the species in northern-central Tasmania are considered erroneous).
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 within the DAD and DOB forest communities. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Haloragis heterophylla variable raspwort	r -	*Haloragis heterophylla* occurs in poorly-drained sites (sometimes only marginally so), which are often associated with grasslands and grassy woodlands with a high component of *Themeda triandra* (kangaroo grass). It also occurs in grassy/sedgy *Eucalyptus ovata* forest and woodland, shrubby creek lines, and broad sedgy/grassy flats, wet pasture and margins of farm dams.	Potential habitat is present on the margins of the areas mapped as DOV and across the study area in moist locations such as roadside drains. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
Juncus prismatocarpus branching rush	r -	The habitat of *Juncus prismatocarpus* is poorly understood because of a paucity of records in Tasmania but includes sedgy/grassy margins of rivers such as the Apsley River. On the mainland it occurs in floodplain and riparian vegetation.	Potential habitat (riparian areas) largely absent (or at least highly atypical of reported locations such as the sedgy margins of the Apsley River). Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
Lepidium hyssopifolium soft peppercress	e EN # only	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 metres 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. It can also occur on frequently slashed grassy/weedy roadside verges where shade trees are absent.	Potential habitat is marginally present across the study area including in weedy sites. However, the study area is atypical of known sites. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
Leucochrysum albicans subsp. *tricolor* grassland paperdaisy	e EN # only	*Leucochrysum albicans* subsp. *tricolor* occurs in the west and on the Central Plateau and the Midlands, mostly on basalt soils in open grassland. This species would have originally occupied *Eucalyptus pauciflora* woodland and tussock grassland, though most of this habitat is now converted to improved pasture or cropland.	Potential habitat absent (no grasslands) and the study area is entirely outside of the known range of the species.
Lycopus australis australian gypsywort	e -	*Lycopus australis* occurs in moist shaded places including disturbed areas within *Melaleuca ericifolia* swamp forest, *Phragmites australis* reed beds, and rocky (dolerite) riverbeds fringed by riparian scrub.	Potential habitat is marginally present in the area mapped as DOV. However, this area is atypical of the known sites of this species. Species not detected (spring survey, as conducted, considered ideal).
Persicaria decipiens slender waterpepper	v -	*Persicaria decipiens* occurs on the banks of rivers and streams, mostly in the north of the State, including King Island. The species may colonise farm dams.	Potential habitat is marginally present in roadside drains along the access route. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Pimelea curviflora var. *gracilis* slender curved riceflower	r -	*Pimelea curviflora* var. *gracilis* occurs in a range of vegetation types from wet and dry sclerophyll forest to hardwood plantations. Understories vary from open and grassy to densely shrubby. It can densely colonise disturbed sites such as firebreaks, log landings and tracks.	Refer to **FINDINGS *Plant species*** Threatened flora for more details.
Prasophyllum stellatum ben lomond leek-orchid	e CR # only	*Prasophyllum stellatum* is known from two disjunct locations in Tasmania, at Storys Creek and Cluan Tiers, with sites ranging from 555-960 m a.s.l. The species occurs in forest dominated by *Eucalyptus delegatensis* (with *Eucalyptus dalrympleana* as a minor canopy component), with a shrubby to grassy understorey. All sites occur on dolerite, with a relatively high surface rock cover and deep clay-loam soils at most sites.	Potential habitat absent (atypical of known sites). The survey was conducted during the early growth period of the species (Wapstra 2018), with the species detectable at a known site (Cambridge Street Reserve, West Launceston) at the time of the present survey (M. Wapstra pers. obs.). No evidence of *Prasophyllum* species was observed.
Pterostylis commutata midlands greenhood	e CR # only	*Pterostylis commutata* is restricted to Tasmania's Midlands, where it occurs in native grassland and *Eucalyptus pauciflora* grassy woodland on well-drained sandy soils and basalt loams.	Potential habitat absent and the study area is well outside of the known range.
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 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.	Potential habitat is very marginally present in roadside drains along the access route. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
Senecio squarrosus leafy fireweed	r -	*Senecio squarrosus* occurs in a wide variety of habitats. One form occurs predominantly in lowland damp tussock grasslands. The more widespread and common form occurs mainly in dry forests (often grassy) but extends to wet forests and other vegetation types.	Potential habitat marginally present within the areas mapped as DAD and DOB. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).
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 is very marginally present within the areas mapped as DOV. Species not detected (no significant seasonal constraint on detection and/or identification – spring survey, as conducted, considered ideal).

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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 DNRET's *Natural Values Atlas* (DNRET 2023a), Bryant & Jackson (1999), McNab (2022) & FPA (2023); marine, wholly pelagic and littoral species such as marine mammals, fish and offshore seabirds are excluded. Species marked with # are listed in CofA (2023).

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*** 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 (i.e. stream, river, lake, swamp, etc.).	***Potential habitat*** present. ***Significant habitat*** marginally present in the area mapped as DOV. The significant habitat elements utilised by this species will not be affected by the proposal.
Apus pacificus fork-tailed swift	- - # only	Seasonal migrant (December through March) with habitat open skies over any habitat, more commonly associated with forested hills and mountains (McNab 2022).	***Potential habitat*** widespread but this is a species that flies at high altitude, very fast and highly mobile, feeding on the wing and virtually never perches (McNab 2022). This species should not require further consideration.
Aquila audax subsp. *fleayi* Tasmanian wedge-tailed eagle	e EN #	***Potential habitat*** 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.	***Potential habitat*** present. ***Potential nesting habitat*** present. ***Significant habitat*** present. Refer to **FINDINGS *Threatened fauna*** for more details.

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Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
		Significant habitat 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).	
Astacopsis gouldi giant freshwater crayfish	v VU # only	***Potential habitat*** is freshwater streams of all sizes. Characteristics of potential habitat include a combination of well-shaded flowing and still waters, deep pools, decaying logs and undercut banks. Riparian vegetation needs to be native and predominantly intact to provide shade, nutrient, energy and structural inputs into streams. Smaller juveniles inhabit shallow fast-flowing streams favouring habitats with rocks or logs that are large enough to be stable but not embedded in finer substrates, but overlie coarser substrates and/or have a distinct cavity underneath. Perennial headwater streams have substantially higher juvenile densities than non-perennial headwater streams.	***Potential habitat*** absent. Drainage depressions are ephemeral and are dry for a large portion of the year. This species is not known from the Meander River catchment, as indicated by the non-listing in FPA (2023) and DNRET (2023a).
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. No wetlands are present.
Bubulcus coromandus [syn. *B. ibis*, *Ardea ibis*] cattle egret	- - # only	Seasonal migrant (April through October) with habitat agricultural lands, crops, dams, pastures, particularly those with cattle, mudflats and wetlands (McNab 2022).	***Potential habitat*** absent (except in the most general of senses). This species should not require further consideration.
Catadromus lacordairei green-lined ground beetle	v -	***Potential habitat*** is open, grassy/sedgy, low altitude grasslands and woodlands associated with temporary and permanent wetlands and low-lying plains, flats and ephemeral drainages adjacent to rivers and streams. Key habitat elements that need to be present include sheltering sites such as patches of stones, coarse woody debris and/or cracking soils.	***Potential habitat*** absent (as described and based on known sites).

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
Ceyx azureus subsp. diemenensis [syn. *Alcedo azurea* subsp. *diemenensis*] Tasmanian azure kingfisher	e EN # only	***Potential habitat*** comprises potential foraging habitat and potential breeding habitat. ***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. No permanent watercourses are present.
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. ***Significant habitat*** is all potential denning habitat within the core range of the species. ***Potential denning habitat*** for the spotted-tailed quoll includes 1) any forest remnant (>0.5 ha) in a cleared or plantation landscape that is structurally complex (high canopy, with dense understorey and ground vegetation cover), free from the risk of inundation, or 2) a rock outcrop, rock crevice, rock pile, burrow with a small entrance, hollow logs, large piles of coarse woody debris and caves. ***FPA's Fauna Technical Note 10*** can be used as a guide in the identification of potential denning habitat.	***Potential habitat*** present. ***Significant habitat*** possibly present. Refer to **FINDINGS *Threatened fauna*** 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 and native grassland mosaics which are bounded by agricultural land.	***Potential habitat*** present. Refer to **FINDINGS *Threatened fauna*** for more details.
Engaeus granulatus central north burrowing crayfish	v VU # only	Not relevant.	Listed in CofA (2023) but both FPA (2023) and DNRET (2023a) correctly indicate that the species is not known from east or south of the Dazzler Range. No crayfish burrows were noted.
Galaxias fontanus swan galaxias	e EN	***Potential habitat*** is slow to moderately fast flowing streams containing permanent water (even when not flowing), which have good in-stream 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	***Potential habitat*** possibly present. ***Significant habitat*** absent. The study area and entire Meander River catchment is outside the core range of this species.

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Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
		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, and braided channel floodplain features. ***Significant habitat*** is all potential habitat and a 30m stream-side reserve within the core range. This includes the Wildlife Priority Areas (Fauna Special Management Zones) on the upper Swan River, Tater Garden Creek and upper Blue Tier Creek, and other upper catchments of tributaries of the Macquarie, Blackman and Isis Rivers.	
Galaxiella pusilla eastern dwarf galaxias	v VU # only	**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 (FPA 2023).
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 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. ***Significant habitat*** is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where nest tree still present).	***Potential habitat*** present. ***Potential nesting habitat*** present. ***Significant habitat*** absent. Refer to **FINDINGS *Threatened fauna*** for more details.
Hirundapus caudacutus (white-throated needletail)	- VU # only	Seasonal migrant (December through March) with habitat open skies over any habitat, more commonly associated with forested hills and mountains (McNab 2022).	***Potential habitat*** widespread but this is a species that flies at high altitude, very fast and highly mobile, feeding on the wing and virtually never perches (McNab 2022). This species should not require further consideration.

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
Lathamus discolor swift parrot	e CR #	***Potential habitat*** comprises potential foraging habitat and potential nesting habitat. ***Potential foraging habitat*** comprises *Eucalyptus globulus* (blue gum) or *Eucalyptus ovata* (black gum) trees that are old enough to flower. For management purposes, ***potential nesting habitat*** is considered to comprise eucalypt forests that contain hollow-bearing trees. ***Significant habitat*** is all potential breeding habitat within the SE potential breeding range and the NW breeding areas.	***Potential foraging habitat*** present. ***Potential nesting habitat*** marginally present. ***Significant habitat*** absent. The study area is not within the SE potential breeding range or the NW breeding areas. Refer to **FINDINGS *Threatened fauna*** for more details.
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. ***Significant habitat*** is high quality potential habitat.	***Potential habitat*** marginally present. ***Significant habitat*** absent. Refer to **FINDINGS *Threatened fauna*** for more details.
Myiagra cyanoleuca satin flycatcher	- - # only	Seasonal migrant (November through march) with habitat scrub, wet and dry sclerophyll forests, woodlands and creeklines (McNab 2022).	***Potential habitat*** present. This is a spring-summer migrant that may occasionally utilise the greater study area for foraging and possibly nesting. No sightings were made on the single day of assessment in August, which was undertaken during the early part of the species' resident period in Tasmania. This species should not require further consideration at any reasonable scale.
Neophema chrysostoma blue-winged parrot	- - # only	Seasonal migrant (October through April) with habitat agricultural lands, crops, dams, paddocks, coastal scrub, open grassy woodlands, heathland and saltmarshes (McNab 2022).	See under satin flycatcher.
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*** present. ***Significant habitat*** possibly present. Refer to **FINDINGS *Threatened fauna*** for more details.

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Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
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. There are no records of this species in the Meander River catchment beyond Trevallyn Dam in Launceston.
Pseudemoia pagenstecheri tussock skink	v -	***Potential habitat*** is grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present.	***Potential habitat*** absent (there are no areas with greater than 20% cover of tussock-forming grass species present).
Pseudemoia rawlinsoni glossy grass skink	r -	***Potential habitat*** is wetlands and swampy sites (including grassy wetlands, teatree swamps and grassy sedgelands), and margins of such habitats.	***Potential habitat*** is marginally present along the drainage lines that dissect the access route. However, the study area and surrounds are atypical of the known sites of this species.
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 (427 km^2). ***Significant habitat*** is a patch of potential denning habitat where three or more entrances (large enough for a devil to pass through) may be found within 100 m of one another, and where no other potential denning habitat with three or more entrances may be found within a 1 km radius, being the approximate area of the smallest recorded devil home range. ***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.	***Potential habitat*** present. ***Significant habitat*** absent. Refer to **FINDINGS *Threatened fauna*** for more details.
Tyto novaehollandiae subsp. *castanops* Tasmanian 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).	***Potential habitat*** present. ***Significant habitat*** possibly present. Refer to **FINDINGS *Threatened fauna*** for more details.

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

Appended as pdf file.

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

Appended as pdf file.

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

Appended as pdf file.

ATTACHMENTS

- .shp file of revised vegetation mapping
- .shp file of weed location points

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ADDENDUM 1. Porters Bridge Road intersection

Preamble

Following presentation of the original report (unaltered preceding this addendum), the main access road to the project area intersection with Porters Bridge Road is proposed to be upgraded to improve the line-of-sight to improve vehicle safety (Figure AddA-1). As a portion of this area had not been specifically assessed with respect to their natural values, ABx Group via Pitt&Sherry further engaged ECO*tas* to undertake assessment and reporting on this area.

The current study area comprises the eastern margin of Porters Bridge Road immediately to the north of the existing intersection and main project area access. The study area is characterised by a mix of native and weedy plant species that have 'invaded' the roadside batter and clearing associated with the intersection and margin of the road alignment. All vegetation at the site is managed for roadside slashing, fence line maintenance along the adjacent private property boundary and for powerline clearing in the north of the area. An access to a private residence dissects the northern third of the study area.

Assessment

Previous database interrogations remain valid and have not been re-run (except in so far as ECO*tas* maintains its GIS projects up-to-date with respect to records of threatened flora and fauna and TASVEG mapping).

Site assessment was undertaken by Brian French (ECO*tas*) on 15 Sep. 2022 (original assessment – part of area only) & 10 May 2024 (present assessment – balance of area), with the proposed assessment area uploaded to the iGIS application prior to site assessment.

All other methods are as per the preceding report.

Findings

Vegetation types

A section of the intersection has been previously assessed within the scope of the preceding report.

For the purposes of management, the vegetation of this area is mapped as (Figure AddA-2):

- extra-urban miscellaneous (TASVEG code: FUM): describes the modified vegetation in the north associated with the road easement, powerlines and access to the residence; and
- *Eucalyptus ovata* forest and woodland (TASVEG code: DOV): occurs in the south between the private property and Porters Bridge Road.

Both these communities are described in the preceeding report. The vegetation is mapped by TASVEG 4.0 and TASVEG Live as *Eucalyptus amygdalina-Eucalyptus obliqua* damp sclerophyll forest (TASVEG code: DSC) with a small amendment in the north to agricultural land (TASVEG code: FAG) under TASVEG Live. However, both TASVEG 4.0 and TASVEG Live map both Porters Bridge Road and the access road incorrectly as forest communities. Both versions of TASVEG are incorrect as *Eucalyptus ovata* is clearly the dominant species in the greater area

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Figure AddA-1. Aerial imagery of study area

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Figure AddA-2. Revised vegetation mapping of study area

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Conservation value of identified vegetation types

The fringe of vegetation along the verge of Porters Bridge Road to the north of the intersection is dominated by *Eucalyptus ovata* so is mappable as *Eucalyptus ovata* forest and woodland (TASVEG code: DOV). *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) equates to a native vegetation community listed as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*.

The administrative/regulatory mechanism for managing threatened communities is through either the Tasmanian *Forest Practices Act 1985* (and associated *Forest Practices Regulations 2017*) – presumably not applicable in this case – or the local planning scheme (*Tasmanian Planning Scheme – Meander Valley*), depending on the zone and code provisions (refer to the relevant section).

Occurrences of *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*Eucalyptus ovata / E. brookeriana*), which is identified as a threatened ecological community listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, where certain threshold conditions are met such as extent, composition and condition (CofA 2019). However, this particular example of DOV does not qualify as a Matter of National Environmental Significance (MNES). For DOV to be listed as the EPBCA-listed entity, an interaction of the following criteria is used to determine if a minimum condition threshold is met:

- size of the patch (≥0.5 or ≥2.0 ha);
- contiguity of the patch with a native vegetation remnant ≥2.0 ha;
- proportion of the understorey that is native (≥70% or ≥50%);
- quantity of large or hollow-bearing trees; and
- understorey species diversity in 0.5 ha area.

The mapped DOV patch does not meet these nominal thresholds due to extent (mapped patch is less than 0.02 ha) and is not continuous with a native vegetation remnant >2 ha (separated by a well-formed road), with the understorey only partially native with invasive weed species common (<50% native plant species within the mapped area). Hollow-bearing trees are entirely absent due to the regrowth form of the trees. That is, the patch does not qualify as the EPBCA-listed entity.

It should be noted that the area mapped area of DOV is a result of the 'invasion' of both native and introduced plant species onto the slope associated with the Porters Bridge Road batter. Porters Bridge Road within this zone has been 'filled' to cross an ephemeral drainage feature that has a culvert present. Both native and introduced plants that have regenerated the batter have migrated from either the western side of the road (i.e. *E. ovata* seed 'blow' from predominant westerly winds) or from the immediately adjacent private title (which has remnant 'weedy' DOV present).

Refer to Plates 1-6.

Threatened flora

No additional issues to those discussed in preceding report noted. That is, this extended area assessed does not support populations of threatened flora.

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Plates AddA1 1 & 2. View north of the existing intersection (left) and along Porters Bridge Road (right): note the narrow single-tree width DOV with fence and paddock visible in the right image

Plates AddA1 3 & 4. View south toward the existing intersection – study area on the left (both images)

Plates AddA-5 & 6. *Ulex europaeus* (gorse) scattered along the road (left) and a 'blanket' of *Rubus* sp. (blackberry) on the road batter near the drainage feature

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Threatened fauna

Marginal foraging habitat for *Lathamus discolor* (swift parrot) is present and discussed further below. No additional issues to those discussed in preceding report regarding potential or known habitat for other threatened fauna noted.

- *Lathamus discolor* (swift parrot)

Potential habitat comprises potential foraging habitat and potential nesting habitat. Potential foraging habitat comprises *Eucalyptus globulus* (blue gum) and *E. ovata* (black gum) trees that are old enough to flower. For management purposes, potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees (FPA 2024).

There are no observations for the swift parrot within 5,000 m of the study area with the study area representing potential habitat only. No nests have been recorded within or adjacent to the study area. The study area does not contain potential nesting habitat due to the regrowth form of the trees with no hollows present. Potential foraging habitat is present with *Eucalyptus ovata* being the dominant tree species within and adjacent to the study area. Refer to the proceeding report for further information.

Weeds

The study area supports three species (Figure AddA-3) classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*), which include highly invasive species, namely *Ilex aquifolium* (holly), *Ulex europaeus* (gorse) and *Rubus* sp. (blackberry). Of the above species, *Ulex europaeus* (gorse) and *Rubus* sp. (blackberry) are widespread and common along Porters Bridge Road margin. All other species generally occur as small populations or localised plants in the same general area as gorse.

Several other widespread 'weedy' species were observed (Figure AddA-3)., namely *Kunzea ericoides* (burgan)*, Cotoneaster pannosus* (silverleaf cotoneaster) and *Crataegus monogyna* (hawthorn).

Refer to preceding report for management recommendations.

Plant and animal disease

Refer to preceding report for management recommendations.

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Figure AddA-3. Weeds associated with study area

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Aboriginal Heritage Assessment

Appendix B

pitt&sherry

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ABx Deloraine Bauxite Mine Project, Porters Bridge Road Exton

Aboriginal Heritage Assessment Report
Final Version 3

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CULTURAL HERITAGE MANAGEMENT AUSTRALIA

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Executive Summary

Introduction

ABx Group, the proponent, is seeking to establish a Bauxite and Rare Earth Element mine in former forestry land 9km northeast of Deloraine, in the Northern Region of Tasmania. The Bauxite and rare earth element mine will be situated on an approximately 138.86ha area of private forestry plantation land.

The proposed Deloraine Bauxite and Rare Earth Element mine is located adjacent to Porters Bridge Road within the southern section of the study area. The northern section of the study area is adjacent to Porters Bridge Road and River Road in Exton in the Northern Region of Tasmania (see Figures 1-3). The site will be accessed via two existing access tracks into the site, an access track off River Road that leads into the site from the west and an unnamed access track off Porters Bridge Road that provides access to the southern and northern sections of the study area. This access track also connects to other existing access tracks within the study area.

CHMA Pty Ltd and Vernon Graham, Senior Aboriginal Heritage Officer (SAHO) have been engaged by the proponent to undertake an Aboriginal heritage assessment for the proposed Deloraine Bauxite Mine Project (the study area), to identify any potential Aboriginal heritage constraints. This report presents the findings of the Aboriginal heritage assessment.

Registered Aboriginal Sites in the Vicinity of the Study Area

As part of Stage 1 of the present assessment, a search was carried out on Aboriginal Heritage Register (AHR) to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the Deloraine Bauxite Mine Project study area.

The search shows that there is a total of 20 registered Aboriginal sites that are situated within a 10km radius of the study area (search results provided by Joel Williams from AHT on 1-09-2022). Eight of these sites are classified as isolated artefacts and the remaining 12 are classified as artefact scatters. None of these registered sites are situated within the bounds of the study area. The detailed AHR search results are presented in section 4.2 of this report.

Summary of Survey Results

Three Aboriginal heritage sites were identified and recorded during the field survey inspection of the proposed Deloraine Bauxite Mine Project footprint. The sites (three isolated artefacts) were located within the bounds of the Deloraine Bauxite Mine Project footprint (see Table i). Table i provides the summary details for the three identified and recorded sites, with Figure i showing the site locations. The detailed site descriptions are presented in Appendix 2.

As noted previously, a search of the AHR shows that there are no other registered Aboriginal sites within the Deloraine Bauxite Mine Project footprint.

The field survey was able to confirm that there are no stone resources identified within the study area that would be suitable for stone artefact manufacturing. Nor are there any sizeable rock outcrops occurring within the study area, and therefore there is no potential for Aboriginal rock shelters to be present.

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As discussed in section 6, surface visibility across the study area was variable, ranging between <10% to 90%. Given these constraints, it cannot be stated with certainty that there are no undetected Aboriginal heritage sites present in the proposed Deloraine Bauxite Mine Project footprint. With this acknowledged, the survey assessment still did achieve effective coverage of an estimated 200,965.75m². This level of effective coverage is certainly sufficient to provide a reasonable indication as to the potential extent, nature and distribution of Aboriginal cultural heritage sites in the study area.

The survey results strongly indicate that site and artefact densities across the study area are likely to be low to very low. If undetected sites are present, they are most likely to be isolated artefacts or small artefact scatters, representing sporadic Aboriginal activity. Given that soil deposits across much of the study area were generally shallow to skeletal, there is a very limited potential for sub-surface artefact deposits to be present.

It should be noted that there are no specific landscape features present within the study area, where it would be likely that an elevated site or artefact densities may be present, such as elevated and well-drained alluvial terraces, or small knolls or spurs fringing watercourses.

The detailed survey results and discussions are presented in section 7.

Table i: Summary details for Aboriginal sites AH14114, AH14115 and AH14116.

Site Name	Grid Reference	Site Type	Site Description
AH14114	E 478481 N 5409690	Isolated Artefact	One cream quartzite flake located on a raised mound with 20° slopes within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14115	E 478820 N 5410133	Isolated Artefact	One dark-grey quartzite flake located within a depression within plantation land on a gentle slope of 5°. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14116	E 478669 N 5410255	Isolated Artefact	One cream chert flake located on a raised mound with 20° slopes

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Site Name	Grid Reference	Site Type	Site Description
			within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.

Significance Assessments

AH14114, AH14115 and AH14116 (recorded during the current assessment) have been assessed and allocated a rating of significance. A five-tiered rating system has been adopted for the significance assessment; low, low-medium, medium, medium-high and high. Table ii provides the summary details for significance ratings for the three recorded sites. A more detailed explanation for the assessment ratings is presented in section 8. Section 9 of this report presents a statement of social significance provided by Vernon Graham for sites AH14114, AH14115 and AH14116, and the study area as a whole.

Table ii: Summary significance ratings for Aboriginal heritage sites AH14114, AH14115 and AH14116.

AH Number	Site Type	Scientific Significance	Aesthetic Significance	Historic Significance	Social Significance
AH14114	Isolated Artefact	Low	Low	N/A	Medium-High
AH14115	Isolated Artefact	Low	Low	N/A	Medium-High
AH14116	Isolated Artefact	Low	Low	N/A	Medium-High

Management Recommendations

Heritage management options and recommendations provided in this report are made based on the following criteria.

- Consultation with Vernon Graham (Aboriginal Heritage Officer).
- The legal and procedural requirements as specified in the *Aboriginal Heritage Act 1975* (The Act).
- The results of the investigation as documented in this report; and
- Background research into the extant archaeological and ethnohistoric record for the study area and the surrounding region.

Recommendation 1 AH14114, AH14115 and AH14116

Three isolated artefact Aboriginal heritage sites were identified during the field survey inspection of the proposed Deloraine Bauxite Mine Project footprint (sites AH14114, AH14115 and AH14116). All three of these sites are classified as isolated artefacts and are located in the northwest portion of the study area (see Figure i). The preferred management strategy is to avoid any impacts on these three sites and to protect the sites in situ. The following recommendations apply to these three sites.

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- The location of the sites is to be plotted on to the design plans for the Deloraine Bauxite Mine Project footprint.
- Prior to construction commencing in these areas, temporary high visibility protective barricading is to be erected around the identified boundaries of the three sites with a 2m radial buffer applied. Barricading is to remain in place for the duration of construction.
- Construction contractors should be informed of the location of the site and informed that the site is not to be impacted.
- No soil disturbance works are to be carried out within the site boundaries, or within the barricaded zone of the site.
- Barricading is to be removed on completion of construction works for the Deloraine Bauxite Mine.

As specified in section 10.1 of this report, all Aboriginal relics are protected under the *Aboriginal Heritage Act 1975* (The Act). It is illegal to destroy, damage, deface, conceal or otherwise interfere with a relic, unless in accordance with the terms of a permit granted by the Minister. Therefore, if it appears that sites AH14114, AH14115 and AH14116 may be impacted by construction works, then the proponent will need to apply for and obtain a Permit to impact the sites, prior to any works commencing.

Recommendation 2

It is assessed that there is generally a low to very low potential for additional undetected Aboriginal heritage sites to occur within the Deloraine Bauxite Mine Project footprint. However, if, during the course of the proposed works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Appendix 3). A copy of the Unanticipated Discovery Plan should be kept on-site during all ground disturbance and construction work. All construction personnel should be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

Recommendation 3

Copies of this report should be submitted to Aboriginal Heritage Tasmania (AHT) for review and comment.

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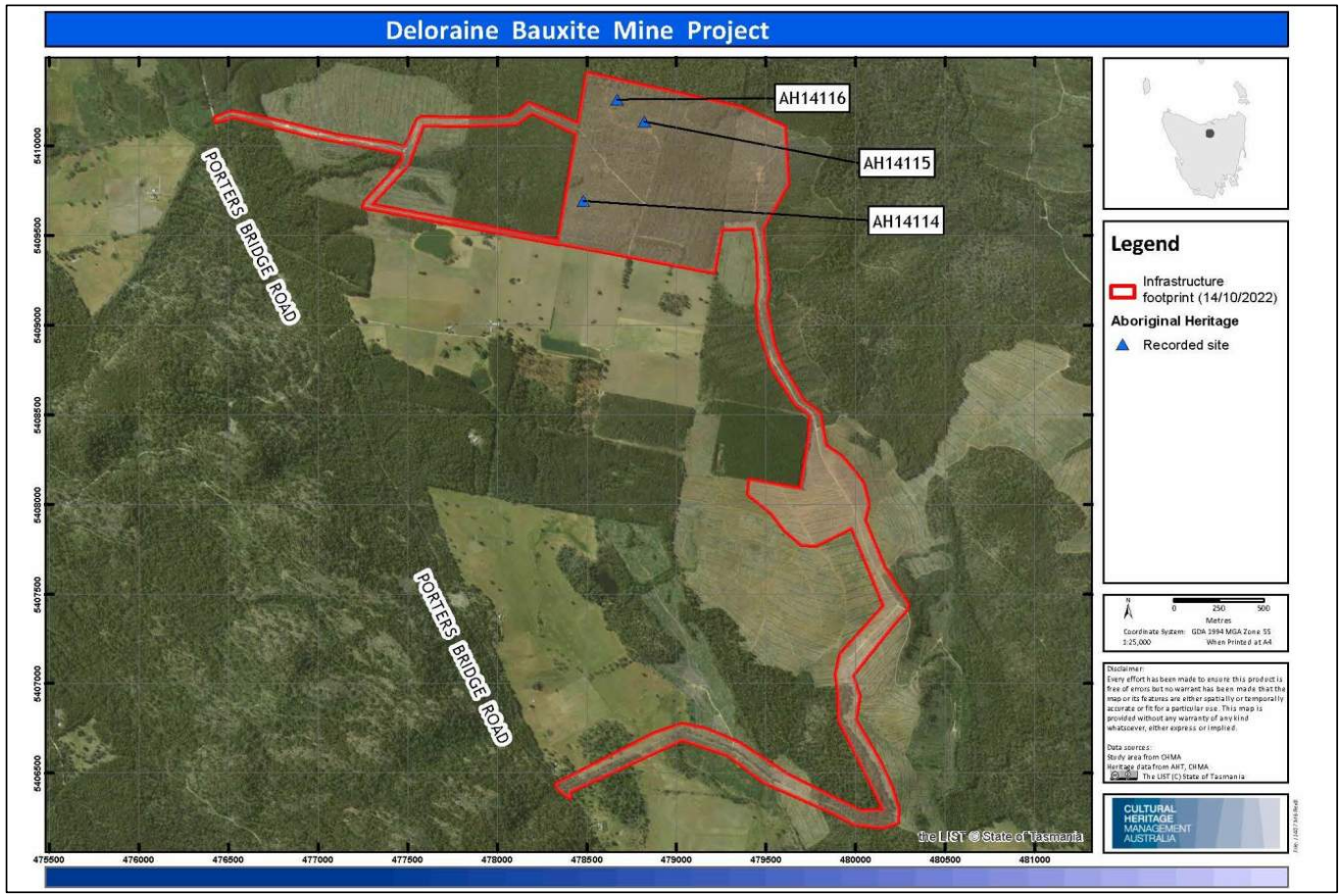

Figure i: Aerial image showing the location of the three Aboriginal sites recorded during the survey assessment of the study area.

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1.0 Project Outline

1.1 Project Details

ABx Group, the proponent, is seeking to establish a Bauxite and Rare Earth Element mine in former forestry land 9km northeast of Deloraine, in the Northern Region of Tasmania. The Bauxite and rare earth element mine will be situated on approximately 138.86ha area of private forestry plantation land.

The proposed Deloraine Bauxite and Rare Earth Element mine is located adjacent to Porters Bridge Road within the southern section of the study area. The northern section of the study area is adjacent to Porters Bridge Road and River Road in Exton in the Northern Region of Tasmania (see Figures 1-3). The site will be accessed via two existing access tracks into the site, an access track off River Road that leads into the site from the west and an unnamed access track off Porters Bridge Road that provides access to the southern and northern sections of the study area. This access track also connects to other existing access tracks within the study area.

CHMA Pty Ltd and Vernon Graham, Senior Aboriginal Heritage Officer (SAHO), have been engaged by the proponent to undertake an Aboriginal heritage assessment for the proposed Deloraine Bauxite Mine Project (the study area), to identify any potential Aboriginal heritage constraints. This report presents the findings of the Aboriginal heritage assessment.

1.2 Aims of the Investigation

The principal aims of the current Aboriginal Heritage assessment are as follows.

- To undertake an Aboriginal cultural heritage assessment for the proposed Deloraine Bauxite Mine Project footprint (the study area, as shown in Figures 1 and 2). The assessment is to be compliant with both State and Commonwealth legislative regimes, in particular the intent of the *Aboriginal Heritage Act 1975* and the associated *Aboriginal Heritage Standards and Procedures (June 2018).*
- Search the Aboriginal Heritage Register (AHR) to identify previously registered Aboriginal heritage sites within and in the general vicinity of the study area.
- Undertake relevant archaeological, environmental and ethnohistorical background research to develop an understanding of site patterning within the study area.
- To locate, document and assess any Aboriginal heritage sites located within the study area.
- To assess the archaeological and cultural sensitivity of the study area.
- To assess the scientific and Aboriginal cultural values of any identified Aboriginal cultural heritage sites located within the study area.
- Consult with (or ensure the Aboriginal community representative consults with) Aboriginal organisation(s) and/or people(s) with an interest in the study area in order to obtain their views regarding the cultural heritage of the area.
- To develop a set of management recommendations aimed at minimising the impact of the proposed Deloraine Bauxite Mine Project on any identified Aboriginal heritage values.
- Prepare a report which documents the findings of the Aboriginal heritage assessment and meets the standards and requirements of the current *Aboriginal Heritage Standards and Procedures* prepared by AHT.

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1.3 Project Methodology

A three-stage project methodology was implemented for this assessment.

Stage 1 (Pre-Fieldwork Background Work)

Before fieldwork was undertaken, the following tasks were completed by CHMA staff.

Consultation with Aboriginal Heritage Tasmania

Aboriginal Heritage Tasmania (AHT) was contacted and informed that CHMA had been engaged to undertake an Aboriginal heritage assessment for the Deloraine Bauxite Mine Project. As part of this initial contact, a search request of the Aboriginal Heritage Register (AHR) was submitted to AHT in order to ascertain the presence of any previously registered sites in the vicinity of the study area (search request submitted on 19-08-2022).

The collation of relevant documentation for the project

As part of Stage 1, the following research was carried out and background information was collated for this project:

- The collation of information pertaining to any registered heritage sites located within the general vicinity of the study area.
- Mapping information showing the proposed footprint of the Deloraine Bauxite Mine Project.
- Relevant reports documenting the outcomes of previous Aboriginal heritage studies in the vicinity of the study area.
- Ethno-historic literature for the region.
- References to the land-use history of the study area.
- GIS Information relating to landscape units present in the study area;
- Geotechnical information for the study area, including soil and geology data.

Consultation with Aboriginal Heritage Officer

Vernon Graham is the Senior Aboriginal Heritage Officer for this project. As part of Stage 1 works, Stuart Huys and Shay Hannah (CHMA archaeologists) were in regular contact with Vernon Graham. The main purpose of this contact was to discuss the scope of the present investigations, ratify the proposed methodology for the investigations and coordinate the timeframes for implementing fieldwork.

Stage 2 (Field Work)

Stage 2 entailed the fieldwork component of the assessment. The field survey was undertaken by Shay Hannah (CHMA archaeologist), Vernon Graham (Senior Aboriginal Heritage Officer) and Kieran Graham (Trainee Aboriginal Heritage Officer), over a period of 2 days (11-10-2022 – 12-10-2022).

The field team walked a total of 32km of survey transects across the proposed Deloraine Bauxite Mine Project footprint, with the average width of each transect being 5m on access tracks and 10m within the plantation sections. As part of the field survey program, additional transects were walked in areas where there was improved surface visibility, in order to gain a better insight as to the potential presence or absence of Aboriginal sites across the study

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area. Section 6 provides further details as to the survey coverage achieved within the study area.

For any Aboriginal sites identified by the field team, the following details were recorded.

- The spatial extent of the site (polygon coordinates).
- The nature of Aboriginal heritage deposits and features associated with the site.
- Any intra-site variations that occur.
- The condition of the site, and any notable impacts to the site.
- Photos and site maps.
- Proposed management recommendations (as discussed between the archaeologist and AHO).

Aboriginal Heritage Register (AHR) forms for all located Aboriginal sites have been completed and submitted as part of the process.

The results of the field investigation were discussed between Vernon Graham and Shay Hannah (CHMA Archaeologist). This included the potential cultural and archaeological sensitivity of the study area, and possible management options.

Stage 3 (Report Preparation)

Stage three of the project involves the production of a Draft and Final Report that includes an analysis of the data obtained from the field survey, an assessment of archaeological sensitivity and management recommendations. The report has been prepared by Stuart Huys and Shay Hannah, in consultation with Vernon Graham.

A draft copy (electronic PDF version) of the report was submitted to the proponent for review. Any comments that were received have been incorporated into the final draft report. One electronic copy (PDF version) of the final draft report has been provided to Aboriginal Heritage Tasmania (AHT) for review and comment. In addition, CHMA has provided AHT and the proponent with all site spatial data files, and mapping associated with the project (in ESRI shape file format (GDA94). A copy of the report has been provided to Vernon Graham, to assist in the Aboriginal community consultation process. The report has been sent out to a range of Tasmanian Aboriginal organisations for review and comment.

1.4 Project Limitations

Most archaeological investigations are subject to limitations that may affect the reliability of the results. The main constraint to the present investigation was restricted surface visibility due primarily to vegetation cover. At the time of the field survey, surface visibility across the proposed bauxite mine footprint ranged between <10% and 90%, with the estimated average being 70%. Throughout the study area, there was a network of previously graded and ungraded vehicle tracks that provided transects of improved surface visibility. There were also numerous areas where plantation harvesting and clearing were present that provided locates of improved visibility. To offset constrained surface visibility, any areas of improved visibility were inspected in detail. The constraints in surface visibility limited the effectiveness of the survey assessment to some extent. The issue of surface visibility is further discussed in Section 6 of this report.

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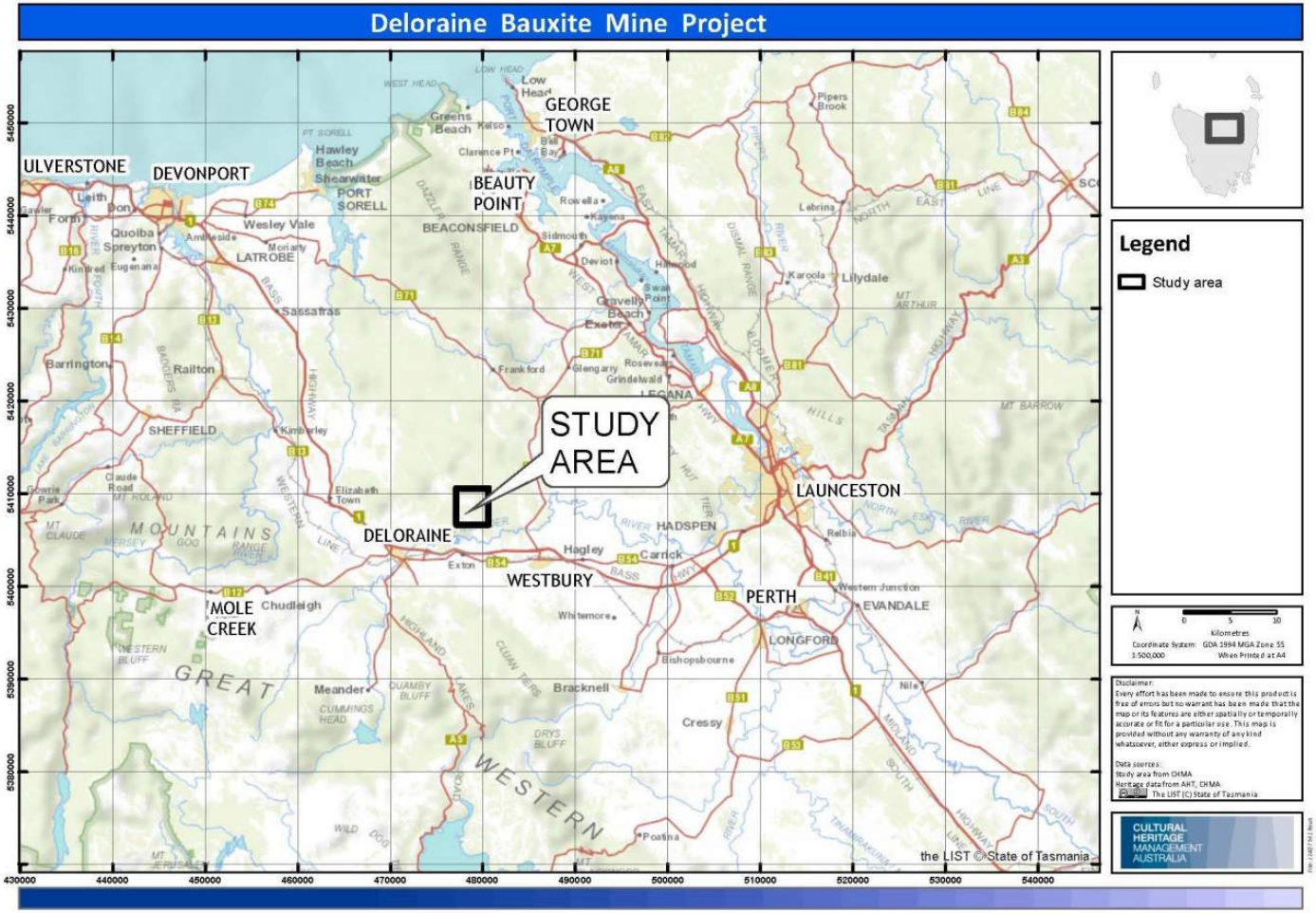

Figure 1: Topographic map showing the location of the study area at Deloraine/Exton in the Northern Region of Tasmania.

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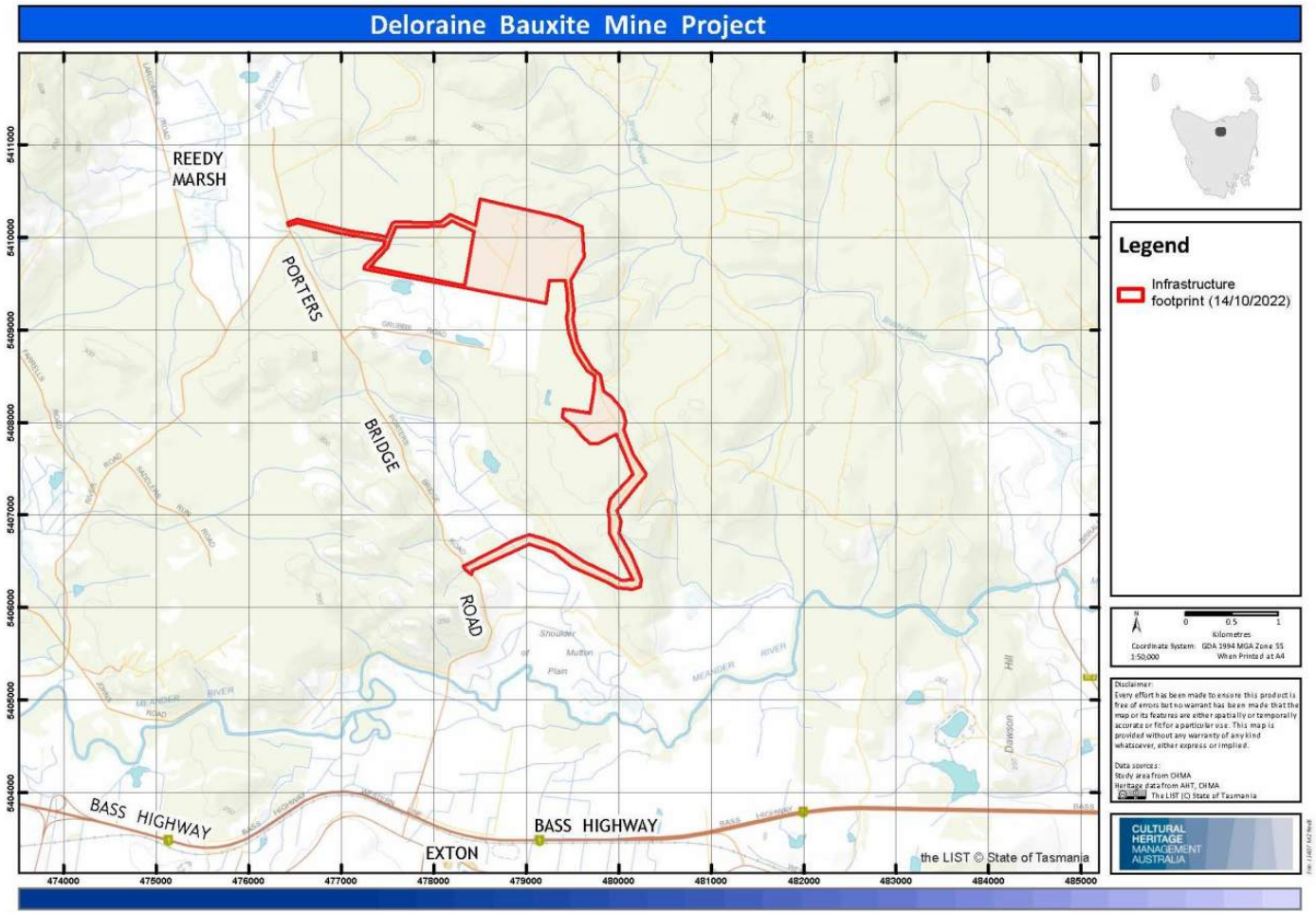

Figure 2: Topographic map showing the landscape setting of the study area.

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Figure 3: Aerial image showing the boundaries of the study area.

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2.0 Environmental Setting of the Study Area

2.1 Introduction

Prior to undertaking an archaeological survey of the study area, it is necessary to characterise the landscape. This includes considering environmental factors such as topography, geology, climate, vegetation and past and current landscape use. An assessment of the environmental setting helps to develop an understanding of the nature of Aboriginal occupation and site patterning that might be expected to occur across the study area. In addition, it must be remembered that in Aboriginal society, the landscape extends beyond economic and technological behaviour to incorporate social geography and the embodiment of Ancestral Beings.

The archaeological context is generally only able to record the most basic aspects of Aboriginal behaviour as they relate to artefact manufacture and use and other subsistence-related activities undertaken across the landscape such as raw material procurement and resource exploitation. The distribution of these natural resources occurs intermittently across the landscape and as such, Aboriginal occupation and associated archaeological manifestations occur intermittently across space. However, the dependence of Aboriginal populations on specific resources means that an understanding of the environmental resources of an area accordingly provides valuable information for predicting the type and nature of archaeological sites that might be expected to occur within an area.
The primary environmental factors known to affect archaeological patterning include the presence or absence of water, both permanent and ephemeral, animal and plant resources, stone artefact resources and terrain.

Additionally, the effects of post-depositional processes of both natural and human agencies must also be taken into consideration. These processes have a dramatic effect on archaeological site visibility and conservation. Geomorphological processes such as soil deposition and erosion can result in the movement of archaeological sites as well as their burial or exposure. Heavily vegetated areas can restrict or prevent the detection of sites, while areas subject to high levels of disturbance may no longer retain artefacts or stratified deposits.

The following sections provide information regarding the landscape context of the study area including topography, geology, soils and vegetation.

2.2 Landscape Setting of the Study Area

The proposed Deloraine Bauxite Mine Project area (the study area) covers approximately 138.86ha. The northern sections of the study area are situated 9.65km northeast of Deloraine on a rise of 300m above the surrounding plains, whilst the southern sections of the study area are situated 9.58km northeast of Deloraine, in the Northern Region of Tasmania. Both sections of the study area are on flat to moderately undulating terrain with gradients ranging between 5°–25° (see Plates 1 and 6).

The underlying geology of the study area is divided into two types. The northern sections of the study area primarily consist of Cenozoic cover sequences with ferricrete, silcrete, laterite and derived lag deposits present (see Plate 4). The remaining area of the study area

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including the southern section consists of Tasmanian Jurassic Dolerite with locally developed granophyre (see Plate 5). The soils within the entire study area consist of a light red-brown clay loam and are shallow to skeletal in depth (see Plate 1) (List 2022).

The access track connecting Porters Bridge Road to the southern sections of the study area is located 1.3km north of the Meander River, which is the largest major water course in this part of the Northern Region. This is a perennial river that runs from west to east direction. There is also an unnamed tributary associated with the Meander River that runs through part of the main southern access track. The northern sections of the study area are located approximately 400m to the southwest of an unnamed tributary running off Brushy Rivulet, 1.73km north of an unnamed tributary associated with the Meander River and approximately 750m southeast of an unnamed tributary running off Bryan's Creek, which runs east to west. These are the only named watercourses in the immediate vicinity of the study area. The access track the links the southern sections to Porters Bridge Road is located 1km north of Shoulder of Mutton Plain which is a floodplain. The northern sections overlook the surrounding floodplain.

The vegetation structure across the majority of both sections of the study area consists of former hardwood plantations of either Silvertop eucalypts (*Eucalyptus nitens*) or Tasmanian Blue Gum (*Eucalyptus globulus*) and softwood plantations of Radiata Pine (*Pinus radiata*) (Jordan 2011; List 2022). Also present within the study area is native regrowth including Bracken Fern (*Pteridium esculentum*), Sagg (*Lomandra longifolia*), Black Wattle saplings (*Acacia mearnsii*) (see Plates 1, 2 and 5). Within the western most section of the study area, the vegetation types present include a small standing of Swamp Paper Bark (*Melaleuca ericifolia*) (see Plates 2 and 3) surrounded by mature eucalypts with Cutty Grass (*Gahnia grandis*), Prickly Moses (*Acacia ulicifolia*) and Bracken Fern throughout (Kodela 2002; Wilson 1991).

The entire study area has been intensely disturbed by current and previous logging and clearing activity. A network of previously graded and ungraded vehicle tracks occur throughout the entire study area, particularly around the existing plantation rows and Forico graded access tracks (see Plates 2, 6 and 7). The graded access tracks are divided into two types, those with introduced gravels and those constructed using local gravel. Any Aboriginal sites that may be present within these more highly disturbed infrastructure areas will have been either destroyed or heavily impacted.

The study area has a cool, wet climate typical of northern Tasmania. Rainfall occurs throughout the year; with a mean annual rainfall of 589mm. Rainfall is highest in August and September (64mm – 71mm) and lower from January to February (28 – 31mm). The warmest months of the year are January and February when mean temperatures range from minimums of 10°C to maximums of about 23°C. Winter tends to be cold with mean annual temperatures in the coldest months of June and July ranging from 1.5°C mean minimum to maximum temperatures of about 11°C (BOM 2020).

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Plate 1: View east showing Vernon Graham (SAHO) within the recently cleared and replanted plantation rows.

Plate 2: View southwest showing Kieran Graham (Trainee Aboriginal Heritage Officer) on one of the existing graded access tracks and the mature regrowth in the study area.

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Plate 3: View southwest showing tea tree and other species present within the western most section of the study area.

Plate 4: View southwest showing exposed bedrock present in the northern section of the study area.

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Plate 5: View north showing a Dolerite outcrop in the southern section of the study area.

Plate 6: View northeast showing the Radiata Pine plantation on either side of a main graded access track.

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Plate 7: View north showing a graded access track marking the border between plantation land and the Brushy Rivulet Reserve.

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3.0 Ethno-historic Background

3.1 Aboriginal Social Organisation in Tasmania

Ryan (2012) explains that the terms 'nation' and 'clan' are the preferred terms used by the Tasmanian Aboriginal community in place of 'tribe' and 'band' respectively. This terminology has been adopted in the following discussion.

According to Jones (1974), the social organisation of Tasmanian Aboriginal society appears to have consisted of three social units, these being the hearth group, the band (clan) and the tribe (nation). The hearth group was the basic family unit and would generally have consisted of a man and woman, their children, aged relatives and sometimes friends and other relatives. The size of hearth groups would generally range from between 2-8 individuals (Jones 1974: Plomley 1983). Plomley (1983) provides a description made by Peron of a hearth group he encountered at Port Cygnet:

> *There were nine individuals in this family, and clearly they represented a hearth group, because Peron visited their campsite with its single hut. The group comprised an older man and wife, a younger man and wife, and five children, one a daughter (Oure-Oure) of the older man and wife, and the other four the children of the younger man and wife.* (Plomley 1983:168).

The clan appears to have been the basic social unit and was comprised of a number of hearth groups (Jones 1974). Jones (1974:324-325) suggests that the clan owned a territory and that the boundaries of this territory would coincide with well-marked geographic features such as rivers and lagoons. Whilst the clan often resided within its territory, it also foraged widely within the territories of other clans. Brown (1986:21) states that the band was led by a man, usually older than the others and who had a reputation as a formidable hunter and fighter. Brown also suggests that the clan (as well as the hearth group) was ideally exogamous, with the wife usually moving to her husband's band and hearth group.

Each clan was associated with a wider political unit, the nation. Jones (1974:328-329) defines the tribe (or nation) as being:

> *…that agglomeration of bands which lived in contiguous regions, spoke the same language or dialect, shared the same cultural traits, usually intermarried, had a similar pattern of seasonal movement, habitually met together for economic and other reasons, the pattern of whose peaceful relations were within the agglomeration and of whose enmities and military adventures were directed outside it. Such a tribe had a territory, consisting of the sum of the land owned by its constituent bands…The borders of a territory ranged from a sharp well defined line associated with a prominent geographic feature to a broad transition zone*. (Jones 1974:328-329)

According to Ryan (2012:11), the Aboriginal population of Tasmania was aligned within a broad framework of nine nations, with each nation comprised of between six and fifteen clans (Ryan 2012:14). The mean population of each nation is estimated to have been between 350 and 470 people, with overall population estimates being in the order of between seven to ten thousand people prior to European occupation (Ryan 2012:14).

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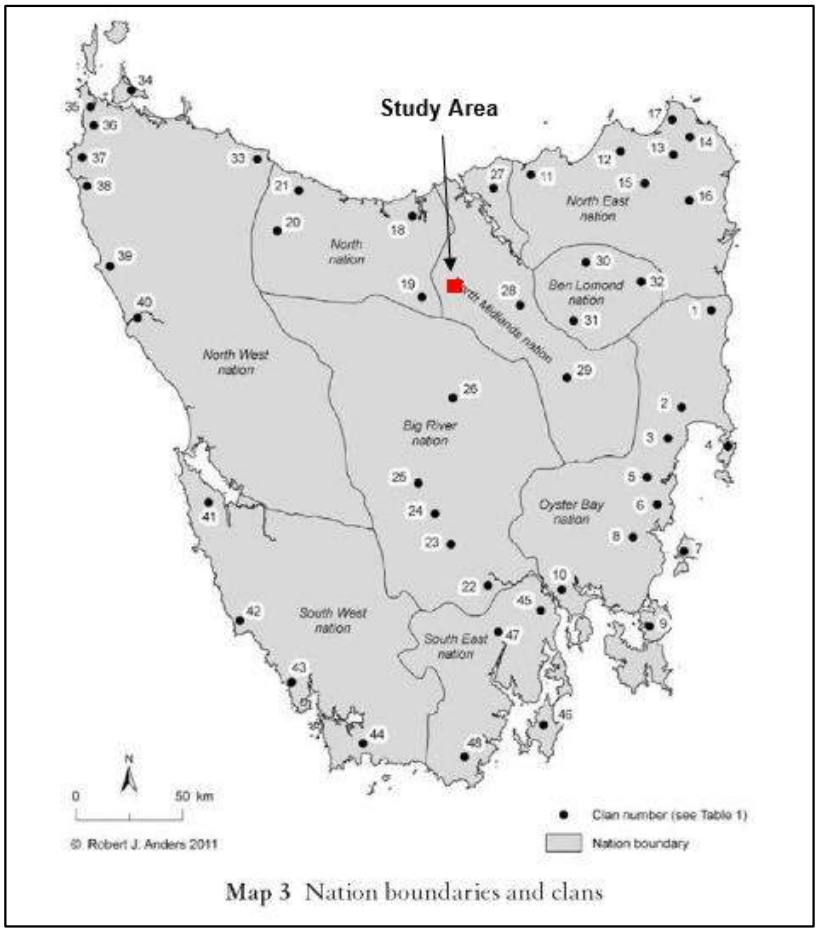
The current study area is located within the boundaries of the North Midlands Nation (see Figure 4). The territory of the North Midlands Nation ran from approximately St Peters Pass to Quamby Bluff in the west, along the Western Tiers through the Deloraine district through to the west edge of the Tamar Valley, and along the north coast of Tasmania. From here it ran southeast along the Pipers River, through to Launceston, then eastwards along the South Esk River through to St Paul's Dome. In total, the North Midlands nation occupied an area of approximately 6,750km² and incorporated around 160km of coastline (Ryan 2012:29).



Map 3 Nation boundaries and clans

Figure 4: The Aboriginal Nations of Tasmania in relation to the study area (Ryan 2012:13).

The North Midlands Nation was comprised of at least three clans. These were the Leterremairrener (Port Dalrymple people) who were located around the east Tamar, the Panninher (Norfolk Plains people) located around the Norfolk Plains, and the Tyerrernotepanner (Stoney Creek or Campbell Town people) who were situated in the vicinity of Campbell Town. There was possibly a fourth clan around the York Town area, west of the Tamar, and a fifth around the Isis River (Ryan 2012:29). Each clan is thought to have been comprised of between 50 and 80 people, with the overall population of the North Midlands nation estimated at between 300 and 400 people (Ryan 2012:29). The clan most

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likely to have occupied the area around Deloraine/Exton (including the current study area) was the Panninher (Norfolk Plains people).

The North Midlands nations were among the first to experience British invasion in northern Tasmania in 1804, and as such, insufficient information exists as to the exact location of each clan. However, the clan most likely to have had rights over the land within which the study area is located are the Panninher clan who extensively utilized the plains areas surrounding Perth (Ryan 2012).

The largest kangaroo hunting grounds in Tasmania lay in the heart of North Midland country at Campbell Town, Norfolk Plains and Launceston, together with the rich marine and bird life provided by the Tamar River. As such, the North Midland nation had extensive relations with neighbours of the North, North East, Big River, Ben Lomond and Oyster Bay nations (Ryan 2012:31). These connections in turn facilitated seasonal access of the North Midland nation to the east coast at Oyster Bay through negotiations with the Oyster Bay Nation (Ryan 2012:31) and the existence of other seasonal travel routes to the east venturing into the territory of the Ben Lomond Nation to exchange ochre (Ryan 2012:31). Other major ochre sources in Tasmania were in the Western Tiers, in the territory of the North Nation.
The Panninher (Norfolk Plains people) is said to have spent the winter on the lower reaches of the west bank of the Tamar exploiting available shellfish and swan eggs, before returning to their own country to exploit the hunting grounds in spring (Ryan 2012:31). The seasonal movement to the Great Western Tiers to obtain ochre in autumn is also recorded (see Figure 5).

Very few available ethnohistoric accounts exist, that relate to aspects of the material culture of the North Midlands Nation. One description of the huts used by the Aboriginal people of the Midlands is provided by John Bass in 1799 at Port Dalrymple:

> *'Their huts, of which seven or eight were frequently found together like a little encampment, were constructed of bark torn in long strips from some neighbouring tree, after being divided transversely at the bottom, in such breadths as they judge their strength would be able to disengage from its adherence to the wood, and the connecting bark on each side. It is then broken in convenient lengths, and placed, slopingwise against the elbowing part of some dead branch that has fallen off from the distorted limbs of the gum tree; and a little grass is sometimes thrown over the top. But after all their labour, they have not ingenuity sufficient to place the slips of bark in such a manner as to preclude the free admission of rain'*
>
> (Collins 1971, as reported in Kee 1990:17).

In a diary entry dated 22/10/1831, Robinson provides a comparatively detailed description of the clothes and tool kits used by people of the North Midlands Nation:

> *'The costume of the native women is a mantle made of kangaroo skin. Their implements consist of a short stick eighteen inches long sharpened at the end similar to a chisel, and with this implement they bark the tree and use it in the same way a carpenter would use the same sort of tool. Instead of the mallet they use a stone. The wooden chisel is made to answer the purpose of a lever, hence we may call them mechanics. It is the business of the woman especially of the inland tribes to fetch wood for the fire. If the woman is married she carries her own and her husband's burden. Part of their luggage consists of a mull, a flat stone which the men*

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> *use for the purpose of preparing the pomatum to dress their hair with. The woman also carried with her for this purpose a large quantity of ochre. It is the business of the women also to hunt and catch opossum and for this purpose they carry a rope which they make of the long cutting grass of the iris. They also hunt other small animals, look for eggs &c. They carry with them also a sharp stone with which the men make their spears and waddies. The men carry their spears and waddies, their only weapons except stones which they throw with great dexterity. It is the business of the men to hunt kangaroo. The men also wear a mantle of kangaroo skin'* (Plomley 1966:531).

In an earlier diary entry dated 20/9/1831, Robinson describes that tea trees were procured to provide relatively straight timber with which spears were manufactured (Plomley 1966:215).

Robinson also records a number of instances of Aboriginal people in the Midlands using ochre for hair and body decoration. In one account, Robinson observes:

> *'Previous to setting off the natives ochred or painted themselves. It might appear ludicrous to civilised society to see people daub their hair with a thick substance of ochre and grease, but I observe that my natives at Campbell Town procured some soft red brick which they pound into dust mixing it with grease to anoint their heads. I have not yet ascertained their particular motive for this custom and it is particular to only a few tribes'* (Plomley 1966:501).

In terms of food resources, Robinson provides a series of accounts in his diary entries of the range of foods eaten by the North Midlands Tribe. Birds and eggs appear to have formed a major component of the diet of the local inhabitants, with swans, ducks and red bills being some of the main species targeted (Plomley 1966: 217). A range of mammal species are also documented as having been hunted and eaten, including forester kangaroo, wallaby, kangaroo rat (possibly bandicoots), and possums (Plomley 1966). In a diary entry dated 22/10/1831, Robinson provides an interesting account of a kangaroo hunt undertaken by Aboriginal men:

> *'...when the natives hunt...they surround the animal, and hence it is driven from one position to another till at length it becomes exhausted, when they rush upon it and seize the prey'* (Plomley 1966:555-6).

Only a few plant foods are documented in the ethnohistoric accounts as having been eaten. This includes a bulbous plant known as 'native bread' and a plant that has the appearance of asparagus that was found by the roots of peppermint trees (Plomley 1966). It is very likely that many more plant foods were eaten by the local Aboriginal population.

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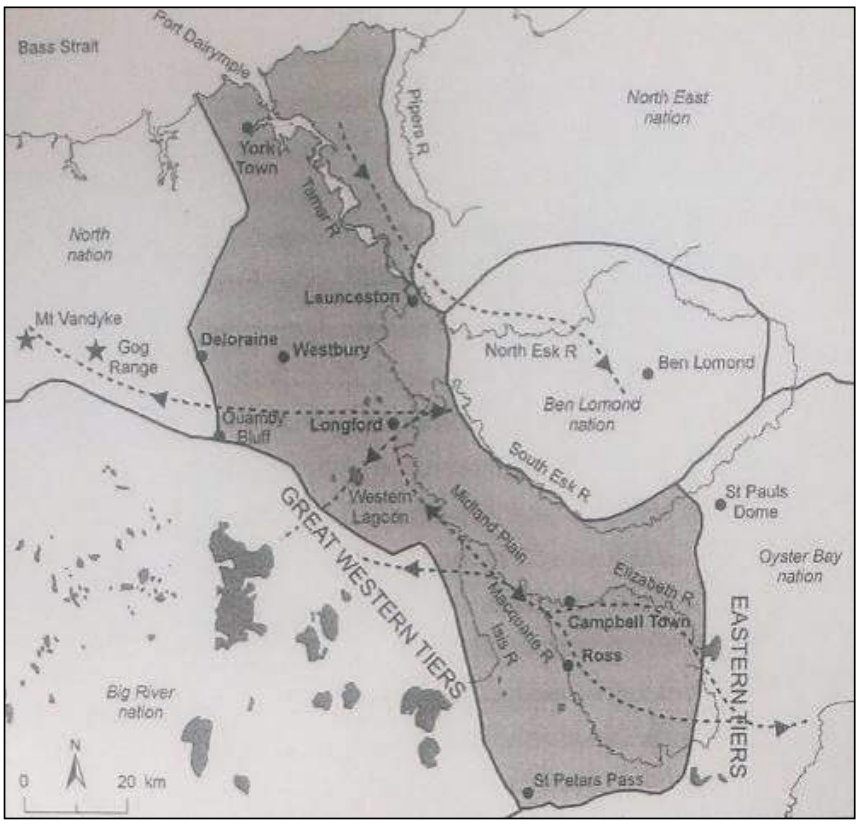

Figure 5: Settlement and movement patterns of the Midland Plain clans (Ryan 2012:30).

3.2 Culture Contact and Frontier Violence

The first recorded meeting between Europeans and the Aboriginal people of northeast Tasmania was in 1773 when Tobias Furneaux sailed into, and named, the Bay of Fires for the smoke he saw along the coast (Kee 1987:15). A quarter of a century later Jean-Baptiste-Louis Clarke Theodore also recorded smoke on the northeast coast (Plomley 1966, in Kee 1991:8). In 1800 Matthew Flinders observed smoke on the northern coast but noted that the Furneaux Islands appeared uninhabited (Kee 1987:15). Bass accompanied Flinders on further voyages later in 1800 and he observed that while smoke was often visible from ships, the people ran into the bush at the approach of Europeans (Kee 1987:15).

In 1804 Lieutenant Colonel William Patterson founded the European settlement at George Town. This camp was short-lived, with the party moving within a few weeks to the west bank of the River where they established York Town. The Port Dalrymple (Launceston) settlement was established in 1806. Hence, the study area was impacted from the very earliest phase of European settlement of Tasmania. The Leterremairrener people would have been among those Aboriginal clans that bore the brunt of the contact period.

By the early nineteenth century sealers and whalers had established hunting grounds in the Bass Strait and inhabited islands and parts of the coast. In 1816 a sealer James Kelly met

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up to 300 people at George Rocks. Kelly traded culled seals with the Aboriginal people of the coast in exchange for kangaroo (Kee 1987:19).

While there are some suggestions that initial contact between Aboriginal people and the whalers and sealers may have been friendly, Ryan's research on the North Midland nation indicates that 'at least 300 were probably killed outright by the settlers between 1820 and 1830' (Ryan 2012:19) and by the time George Augustus Robinson was moving through the area in 1830 – 1831, the sealers had instilled widespread terror among the Aboriginal people (Kee 1987:16). The sealers typically abducted women to be wives and to work on the sealers camps, and Robinson recorded that people along the northern coast referred to the murder of Aboriginal people at all the places where the sealers camped (Kee 1987:16).

This violent contact between Aboriginal people and Europeans, especially sealers, along the northeast coast had disastrous implications for the North Midlands nation. Apart from individual, emotional devastation, the loss of large numbers of women disrupted social organisation, as well as impacting economic systems of gender-based division of labour (Kee 1987:16).

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4.0 Background Archaeology

4.1 Previous Archaeological Investigations in the Region

The study area is located in the Northern Region of Tasmania. A number of regional archaeological investigations have been undertaken in the region over the past three decades. The most comprehensive, and pertinent investigations are those of Kee (1987, 1990 and 1991) and Moore (1997a and b). The following provides an overview of these studies.

Kee (1990)

In 1990 Kee implemented the Midlands Regional Aboriginal archaeological site investigation, which was funded through the National Estate Grants Program. The primary objectives of the study were primarily to establish (on the basis of literary and field research) a predictive model of site location for the Midlands Region, and secondly to carry out a limited archaeological excavation with the aim of providing a temporal context for the information generated for the study.

As part of the study, Kee (1990) surveyed 72km within the Midlands area. This survey resulted in the identification of 236 Aboriginal sites. This brought the total number of known Aboriginal sites in the Midlands to 350. The vast majority of these sites are classified as isolated artefacts or artefact scatters. The exception is the coastal fringes in the midlands where shell-midden sites tend to predominate. Stone quarries and suitable stone sources for procurement were identified in many locations throughout the Midlands, and a small number of rock shelters were also identified (Kee 1990).

As part of the analysis of the distribution of sites throughout the Midlands, Kee (1990) divided the Midlands into seven separate landscape divisions. These are Aeolian lunettes, coastal dunes and beaches, estuaries, lakes (uplands and lowlands), lowland hills and plains, upland hills and plains and rivers. The highest number of sites were identified in the Aeolian lunettes and coastal dunes, accounting for around 50% of the total number of sites recorded in the Midlands. Between 20 and 30 Aboriginal sites were recorded in each of the other five landscape divisions. Kee (1990) is of the opinion that the observed pattern of distribution accurately reflects true differences or variations in site densities throughout these different landscape divisions, and is not merely a product of skewed visibility or survey coverage.

Kee (1990) also noted a distinct difference in the distribution of site types within the Midlands Region, which she believes is also suggestive of differences in occupation patterns throughout the region. For example, the sites recorded around the margins of Lake Dulverton comprise mostly artefact scatters and rock shelters. Some of these sites are quite large (in terms of artefact numbers) and suggest intensive occupation. In contrast, the sites associated with the Aeolian lunettes were mostly small campsites located adjacent to lagoons, and are interpreted as being the product of short-term visitations to the area by small groups of people exploiting the resources of these lagoons and the associated hinterland areas.

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One of the features of Kee's (1990) investigations is that the vast majority of sites identified as part of the field survey were recorded within ploughed farm paddocks, where the surface visibility is improved and the soils have been churned. This pattern of site location highlights the importance of good surface visibility in identifying sites during field surveys and demonstrates how varying conditions of surface visibility can potentially skew the results of survey investigations. Kee (1990) does not adequately address this factor in her assessment. It is plausible that the factor of surface visibility variations could be a major contributor to the pattern of site distribution observed for the Midlands, with site densities being highest in the Aeolian dunes and coastal areas where surface visibility is improved and lowest in the Riverine and Uplands areas where surface visibility is poor. The only way to adequately determine how accurate the perceived pattern of site distribution is in the Midlands region would be through extensive sub-surface investigations within the various landscape divisions.

The summary interpretation provided by Kee (1990) for the observed archaeological record of the Midlands Region is that the areas with observed higher site and artefact densities correlate with areas where there is an increase in available resources, making these areas attractive for human habitation, and facilitating prolonged periods of occupation. Those areas with lower site and artefact densities also correlate with areas of decreased resource availability, resulting in shorter, less frequent occupation of these areas by small groups of people.

Taking into account historic records for the region, Kee (1990) presents a seasonal model of occupation for the Midlands Region. This model involves the movement of Aboriginal people around inland resource-rich zones such as lagoons and lakes in the spring and early summer months, with summertime spent on the north coast areas. It is suggested that the winter months may have been spent in the inland parts of the Uplands where there was good soil drainage.

Kee (1987, 1991)

Kee (1987, 1991) undertook the most comprehensive archaeological survey to date, of the North East Region of Tasmania. The early part of the study, including establishing the research aims and methodology, was carried out by Cosgrove and involved a regional investigation of the prehistoric archaeological resources in North East Tasmania. Kee subsequently took over the project, completing the aims of the research, which was to identify the selection criteria used in prehistoric settlement and determine the densities of sites in different environments. It was hoped that these results might give predictive capabilities to archaeological resources within the region.

The study area comprised 9 700km^2 in the North East of Tasmania and was bordered to the north and east by the coastline between Scamander and Stony Head, to the west by the watershed of the Pipers River, Tamar River and South Esk River and to the south by Fingal Bay. The investigation was based entirely upon a systematic survey (no sub-surface investigations were undertaken), which comprised just over 0.5% of the entire study area. Data was collected on the type, characteristics, artefact variability and location of sites across the landscape.

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The study area was divided into major landforms, which were then stratified into two environments: coastal and inland. The line between coastal and inland was arbitrarily defined at 1km from the shore. Due to logistical issues, it was not possible to sample each landform proportionately given access, surface visibility, land use and so on. The hill landforms in particular were unable to be surveyed.

The following seven different landform divisions were made based on topography and environment:

- Coastal dunes;
- Coastal plains;
- Coastal low hills;
- Offshore Islands;
- Plains;
- Low hills;
- Hills.

A total of 230 sites are reported on in the study, only 189 of which were identified in the specific survey; previously recorded sites on the Register of the National Estate and the TASI site index were also included. Marked differences were clearly identified between the use of various landforms within the region and in particular between coastal and inland environments. The outcomes of the research and the predictive models generated are summarised by environment and landform below and in Table 1.

Inland environments were found to contrast with coastal areas in having considerably lower densities of sites but comprising larger assemblages and a wider range of artefact types present, dominated by heavily utilized and retouched classes. This may be the product of either proximity to raw materials causing raw material provisioning inland, or due to the need to perform a wider range of tasks in exploiting terrestrial resources inland, or both. The general sparsity of sites in inland areas is argued to be indicative of dispersed and short-term exploitation of a wide range of terrestrial resources (and hence the need for a more diversified toolkit). However significant differences were found to exist between landform types in inland environments; these are summarized below.

Table 1: Predicted site types, densities and composition for North East Tasmania (data based on Kee's 1991 survey results).

Landform	Predicted No of Sites per km^2	Types of Sites (in order of frequency)	Predicted no of artefacts per site	Raw Materials	Assemblage Composition (predominantly)
Coastal Dunes	6	Middens, Scatters	17.1	Quartz, volcanics, silcrete	Unretouched
Coastal Plains	30	Middens, Scatters	2.4	Quartz, cherty hornfels, quartzite	Unretouched
Coastal Low Hills	12.6	Middens, Scatters	2.4	Quartz, cherty hornfels	Unretouched, some retouched present

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Offshore Islands	3.9	Scatters	26.6	Quartz, chalcedony	Unretouched and retouched
Plains	1.6	Isolated finds, Scatters	8.5	Quartz, cherty hornfels, quartzite	Unretouched and retouched
Low Hills	2.5	Scatters, isolated finds, middens	1.5	Quartz, cherty hornfels, quartzite	Retouched
Hills	0.2	Isolated finds, scatters	108*	Quartz	Retouched

* Based on Kee's data of only 5 assemblages.

Mark Moore, Aboriginal Archaeology of Dry Sclerophyll Forest Conservation Reserves in Eastern Tasmania, 1997

Mark Moore (1997a and b) undertook an archaeological assessment of a sample of dry sclerophyll forest in eastern Tasmania in an attempt to determine Recommended Areas for Protection (RAPs) in Tasmanian State Forest. The study involved a survey, site recording and lithic analysis for a range of sample sites. Over 380km of transects were surveyed within 34 forest blocks across eastern Tasmania (Moore 1997a:9). A total of 95 sites plus 5 'continuous' artefact scatters were recorded during the project (Moore 1997a:9).

The lithic analysis was based on technology, but no statistical analysis was attempted. Results were compared to experimental knapping studies (Moore 1997a:10). Moore identified duplex soils in particular as having the potential to conceal sites and therefore cautioned that in such environments surface survey alone may not be sufficient for site identification (Moore 1997a:13). Both small and large artefact scatters are identified by Moore as being of potential scientific significance when subject to lithic analysis (Moore 1997a:13).

Moore (1997a:13) suggests that 86% of the sites he identified in RAPs would have been located by following survey prescriptions outlined in the APZ guidelines. However, Moore (1997:13) adds that sites of high archaeological significance were found across all zones, not merely in zones predicted to be of High archaeological potential.

Ten of the 34 zones surveyed by Moore (1997a) are of particular relevance to the current study area. These zones are all in the region surrounding the study area, from Lefroy and Emu Ground in the north through to the mouth of the Tamar River (Moore 1997a:22). The two units closest to the study area are Lefroy and Den Ranges, and Moore (1997a:22) also surveyed a unit concentrated on the southern reaches of Pipers River.

In Moore's study, 40% of the recorded sites were isolated artefacts, while 26% of recorded sites were classified as small artefact scatters defined as 'several flakes from one or more reduction events scattered within a small area' (Moore 1997a:38, 40). 'Extended artefact scatters' that typically contained more artefacts and artefact types distributed across a broad area comprised 7% of the total number of recorded sites (Moore 1997a:41). 8% of sites were

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recorded as quarries ('toolstone quarries') (Moore 1997a:42). Other site types recorded by Moore (1997a:43) were middens and rock shelters.

Moore (1997a:73) surveyed 27.5km in the Tippogoree Hills and recorded 4 artefact scatters and 2 isolated artefacts. 23.5km was surveyed at Lefroy with 2 artefact scatters and 1 isolated artefact identified. No sites were recorded from the 8.7km of survey transects walked at the Den Range, nor were any sites recorded at Emu Ground where 5km of survey transects were walked. The section surveyed by Moore (1997a:73) at Pipers River did not result in any sites being recorded, despite the 10.2km of survey transect. Four isolated artefacts were recorded in the parcel surveyed (26.4km total transects) at Prossers Forest, some 50km south of the Back Creek study area at the mouth of the Tamar estuary. Five isolated artefacts and 6 artefact scatters were recorded at Trevallyn, where Moore surveyed 9.2km, and 3 isolated artefacts and 4 artefact scatters were recorded at the Cliff Grounds Reserve near Launceston (from 10.5km of survey transects). No sites were recorded in the final survey parcel in the vicinity of Weavers Creek where 1.7km was surveyed (Moore 1997a:73). The importance of the Tamar estuary is indicated by these results, as is the predominance of isolated artefacts and artefact scatters in the site types for the region.

Moore (1997b:40) summarised research into Tasmanian stone tool production. He explains that the raw material was quarried from surface exposures and cores were 'roughed out' at the quarry site. The material was then 'exported' and carried by the clan for internal use or for trade. The clan carried cores as they travelled and struck flakes to modify into tools as required. As tools such as scrapers became blunt they were resharpened through 'rejuvenation' techniques. Moore claims from his review of recorded Tasmanian sites that cores were 'used up' for rapidly than formal tools, which were carried for extended periods. People, therefore, needed regular access to quarry sites. The wealth of stone resources available in Tasmania, however, meant that people did not need to undertake the recycling of materials or extensive reduction of tools (Moore 1997b:41).

Moore (1997b:41) identified ten quarries within the Dry Sclerophyll forest of the east coast. Moore (1997b:66) argues that in Tasmania there is evidence of a two-pronged method of stone tool procurement. The first was based on the opportunistic acquirement of cores from cobbles that would be carried long distances and heavily reduced. These sites ranged from the exploitation of beach cobbles and gravels through to dolerite and hornfels exposures in the ranges.

Moore (1997b:63) concludes that the majority of artefacts located in Dry Sclerophyll forests in eastern Tasmania are unmodified flakes resulting from core reduction by people as needed during travel across the landscape. These cores were usually small and may have had some minimal reduction before being transported. Moore (1997b) argues that most raw material is derived from cobbles extracted from fluvial or colluvial gravel deposits (Moore 1997b:64). Reduction was usually by heavy percussion blows, and both unmodified flakes and cores were used as tools for cutting and scraping (Moore 1997b:64). At Waterhouse Point in the northeast, Moore (1997b:64) identified a bipolar quartz industry, as well as evidence of bipolar chert flakes.

The second method was the planned, 'logistical', visits to specialised quarry sites such as hornfels and dolerite exposures for the express purpose of acquiring material from which to

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flake large scrapers (Moore 1997b:66). Production of large scrapers did not occur so haphazardly across the landscape, as it required specialised resources, in particular hornfels (Moore 1997b:64). The need to acquire these specialised stone resources (which were not as common as cobble deposits) required planning and ventures by the entire clan group for the purpose of acquiring the stone material. This archaeological interpretation fits with the ethnographic evidence discussed in Section 3.2.

This two-pronged system resulted in what Moore (1997b:71) terms a 'low cost, low-risk encounter procurement strategy.' Transported cores were frequently used and replaced opportunistically, while scrapers were heavily reduced as the raw material for scraper production was sourced only a few times a year. Thus, the tools were highly flexible, especially cores which could be used for multiple cutting tasks as well as to produce flakes (Moore 1997b:71). Scraper blanks were also fashioned into a range of tool types (Moore 1997b:84). Moore (1997b:85) argues that the procurement of specialised large scraper blanks began around 6000 years BP, around the time of Holocene population expansion and as an adaptation to maximising time available to spend on procuring food.

Moore (1997b:67) presents a picture of what the basic Tasmanian Aboriginal toolkit may have looked like at any one time:

> *The transported Aboriginal lithic toolkit probably included several scrapers in various states of resharpening, several small cores in various states of reduction, a small hammerstone for core reduction and scraper rejuvenation, several unmodified flakes which proved highly useful for cutting tasks, and perhaps a ballywine stone.*
>
> (Moore 1997b:67)

4.2 Registered Aboriginal Sites in the Vicinity of the Study Area

As part of Stage 1 of the present assessment, a search was carried out on Aboriginal Heritage Register (AHR) to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the Deloraine Bauxite Mine Project study area.

The search shows that there is a total of 20 registered Aboriginal sites that are situated within a 10km radius of the study area (search results provided by Joel Williams from AHT on 1-09-2022). Eight of these sites are classified as isolated artefacts and the remaining 12 are classified as artefact scatters. None of these registered sites are situated within the bounds of the study area.

Table 2: Registered Aboriginal sites in a 10km radius of the Deloraine Bauxite Mine Project study area (based on the results of the AHR search dated 1-09-2022).

AH Number	Site Type	Locality	Grid Reference Easting (GDA94)	Grid Reference Northing (GDA94)
10358	Isolated Artefact	Selbourne	487441	5413122
10359	Isolated Artefact	Selbourne	487203	5412865
10360	Isolated Artefact	Selbourne	487342	5413285
11546	Artefact Scatter	Selbourne	486823	5412477
11547	Artefact Scatter	Selbourne	486731	5412550
11557	Isolated Artefact	Weetah	470956	5409061
11581	Isolated Artefact	Frankford	478896	5417719
4000	Artefact Scatter	Reedy Marsh	477912	5416944
4001	Artefact Scatter	Reedy Marsh	477952	5416744

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4002	Artefact Scatter	Reedy Marsh	478612	5415884
4003	Artefact Scatter	Reedy Marsh	477612	5417284
4004	Artefact Scatter	Reedy Marsh	475312	5415984
4005	Artefact Scatter	Reedy Marsh	476412	5415284
4006	Isolated Artefact	Reedy Marsh	476412	5415384
5294	Isolated Artefact	Westbury	482412	5403583
5504	Isolated Artefact	Frankford	477412	5419284
5505	Artefact Scatter	Frankford	478012	5417984
5562	Artefact Scatter	Exton	476412	5402283
7031	Artefact Scatter	Parkham	474912	5417184
8285	Artefact Scatter	Westbury	484812	5406283

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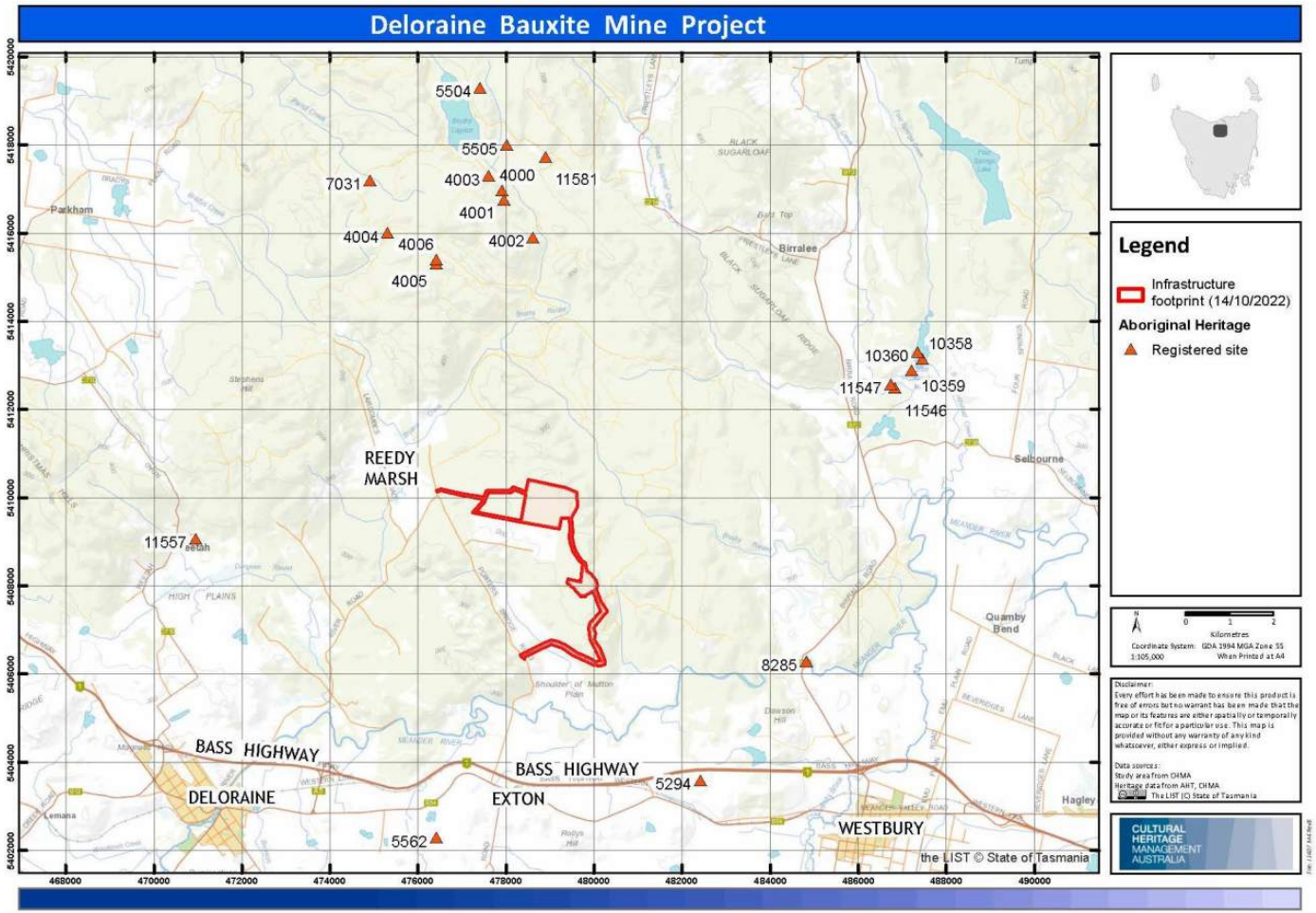

Figure 6: Topographic map showing the location of registered Aboriginal sites located within a 10km radius of the study area (based on the results of the AHR search dated 1-09-2022).

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5.0 Predictive Modelling

5.1 Introduction to Predictive Modelling

Predictive modelling, in an archaeological context, is a fairly straightforward concept and has been utilised by archaeologists in Australia for a number of years as a tool for undertaking research into Aboriginal heritage sites. In summary, predictive modelling involves the collation of information generated from previous archaeological research in a given region and using this information to establish patterns of Aboriginal site distributions within the landscape of that particular region. Based on perceived patterns of site distribution, archaeologists can then make predictive statements regarding the potential for various Aboriginal site types to occur within certain landscape settings and can make preliminary assessments regarding the potential archaeological sensitivity of landscape types within a given region.

5.2 Predictive Models; Strengths and Weaknesses

It should be acknowledged that most, if not all predictive models have a number of potential inherent weaknesses, which may serve to limit their value. These include, but may not be limited to the following:

1) The accuracy of a predictive model is directly influenced by the quality and quantity of available site data and information for a given region. The more data available and the greater the quality of that data, the more likely it is that an accurate predictive model can be developed.
2) Predictive modelling works very well for certain types, most particularly isolated artefacts and artefact scatters, and to a lesser extent scarred trees. For other site types, it is far more difficult to accurately establish distribution patterns and therefore make predictive modelling statements. Unfortunately, these site types are generally the rarer site types (in terms of frequency of occurrence) and are therefore generally the most significant sites.
3) Predictive modelling (unless it is very sophisticated and detailed) will generally not take into account micro-landscape features within a given area. These micro features may include (but are certainly not limited to) slight elevations in the landscape (such as small terraces) or small soaks or drainage depressions that may have held water. These micro features have been previously demonstrated to occasionally be focal points for Aboriginal activity.
4) Predictive modelling to a large extent is often predicated on the presence of watercourses. However, in some instances, the alignment of these watercourses has changed considerably over time. As a consequence, the present alignment of a given watercourse may be substantially different to its alignment in the past. The consequence of this for predictive modelling (if these ancient watercourses are not taken into account) is that predicted patterns of site distributions may be greatly skewed.

5.3 A Predictive Model of Site Type Distribution for the Study Area

The findings of previous archaeological investigations undertaken in the general vicinity of the study area, together with the results of the AHR search, indicate that by far the most likely site types that will be encountered during the current assessment will be artefact scatters and isolated artefacts. The following provides a definition for the site types likely to

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be encountered in the study area and a general predictive statement for their distribution across the study area.

As discussed in section 4.1 of this report, other Aboriginal site types have been recorded in the Northern Tasmanian Region, but not in the general surrounds of the study area. These include shell midden sites, Aboriginal stone quarries and Aboriginal rock shelters. Shell middens are unlikely to occur within the study area due to being 38kms from the nearest saltwater estuary or coastline along the Bass Strait. The underlying geology across the northern section primarily consists of Cenozoic cover sequences consisting of ferricrete, silcrete, laterite and derived lag deposits. The southern section of the study area consists of a dolerite bedrock. These stone materials present in both sections were generally not well suited for aboriginal artefact manufacturing and as such it is highly unlikely that Aboriginal stone quarries will be present in the study area. Dolerite is also not conducive to the formation of rock overhangs and as such Aboriginal rock shelters are not likely to be present.

Artefact Scatters and Isolated artefacts

Definition

Isolated artefacts are defined as single-stone artefacts. Where isolated finds are closer than 50 linear metres to each other they should generally be recorded as an artefact scatter. Artefact scatters are usually identified as a scatter of stone artefacts lying on the ground surface. For the purposes of this project, artefact scatters are defined as at least 2 artefacts within 50 linear metres of each other. Artefacts spread beyond this can be best defined as isolated finds.

It is recognised that this definition, while useful in most instances, should not be strictly prescriptive. On some large landscape features, for example, sites may be defined more broadly. In other instances, only a single artefact may be visible, but there is a strong indication that others may be present in the nearby sediments. In such cases, it is best to define the site as an Isolated Find/Potential Archaeological Deposit (PAD).

Artefact scatters can vary in size from two artefacts to several thousand, and may be representative of a range of activities, from sporadic foraging through to intensive camping activity. In rare instances, campsites that were used over a long period of time may contain stratified deposits, where several layers of occupation are buried one on top of another.

Site Distribution Patterns:

Previous archaeological research in the region has identified the following pattern of distribution for this site type.

- The majority of artefact scatters are located in close proximity to a watercourse, on relatively level and well-drained ground.
- Larger open artefact scatters (representing more intensive activity, such as regular camp areas), tend to be located on level, elevated landscape features, close to (within 500m) major watercourses. The most common areas are the elevated basal slopes of hills, the level spines of spurs (around the termination point of the spur), or on elevated sand bodies.

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- Sites in the Midlands are likely to occur at the intersection of the hilly country with the plains. Sheltered valleys at the base of ridgelines have been noted as having an increased likelihood of containing archaeological sites.
- Site and artefact densities on the lower-lying flood plains of watercourses tend to be comparatively lower. This may be reflective of the fact these low-lying areas were less favoured as camp locations, due to such factors as rising damp and vulnerability to flooding; and
- Site and artefact densities also tend to be comparatively lower in areas away from watercourses.
- Site and artefact densities are comparatively lower in moderate to steeply sloping terrain.
- Isolated artefacts may be found distributed across the landscape.

Predictive Statement:

The proposed Deloraine Bauxite Mine Project area is situated on a hill, 320m above the surrounding plains. The study area the terrain is characteristically flat to moderately undulating plantation land. The more gentle slope gradients occur throughout the northeast and northwest sections of the study area, where gradients range between 5º to 10º. In the southern sections of the study area, the slope gradients increase to between 10º to 25º, with the steepest slopes present along the main access track following a natural ridge line. The closest watercourses to the northern section of the study area are an unnamed tributary running off Brushy Creek Rivulet approximately 400m to the southeast and an unnamed tributary running Bryan's Creek approximately 750m to the southwest.

Applying the broad regional pattern of site distribution to the study area, it is anticipated that the density of sites (artefact scatters and isolated artefacts), and the density of artefacts associated with these sites would generally be expected to be low to very low. If sites are present in the study area, they are likely to be isolated artefacts or small artefact scatters, representing sporadic hunting and travelling through this landscape. These sites are most likely to be present in those parts of the study area where the slope gradient decreases to below 5º. Higher-density artefact scatters, representing more intensive activities such as interim campsites are unlikely to occur in the study area.

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6.0 Survey Coverage of the Study Area

Survey Coverage and Surface Visibility

Survey coverage refers to the estimated portion of a study area that has been visually inspected during a field survey. Surface Visibility refers to the extent to which the actual soils of the ground surface are available for inspection. There are a number of factors that can affect surface visibility, including vegetation cover, surface water and the presence of introduced gravels or materials. Figure 7 provides a useful guide for estimating surface visibility.

The field survey was undertaken by Shay Hannah (CHMA archaeologist), Vernon Graham (Senior Aboriginal Heritage Officer) and Kieran Graham (Trainee Heritage Officer), over a period of 2 days (11-10-2022 – 12-10-2022). The field team walked a total of 32km of survey transects. In the plantation rows where clearing had been undertaken, the average width of each transect was 10m. Within the access tracks, the average width of each transect was 5m. Table 4 provides the total transects walked for each section and figure 8 shows the alignment of the survey transects walked by the field team.

The survey transects were predominantly focused within the plantation and access tracks within the Deloraine Bauxite Mine Project footprint. Surface visibility within the plantation ranged from between <10% and 80%, with the average being 80%, which is in the high range. Surface visibility within the graded access tracks corridors ranged between <10% and 50%, with the average being 25%. Improved surface visibility was found along the ungraded access tracks which ranged from 50% and 100%, with the average being 80%. Vegetation cover was the main impediment to visibility.

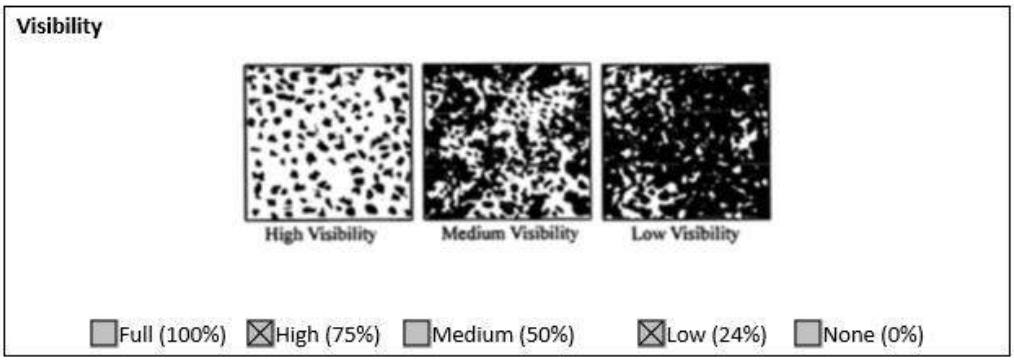

Figure 7: Guidelines for the estimation of surface visibility.

Effective Coverage

Variations in both survey coverage and surface visibility have a direct bearing on the ability of a field team to detect Aboriginal heritage sites, particularly site types such as isolated artefacts and artefact scatters (which are the site types most likely to occur in the study area). The combination of survey coverage and surface visibility is referred to as effective survey coverage. Table 3 presents the estimated effective survey coverage achieved during the course of the survey assessment. The effective coverage is estimated to have been around 200,965.75m². This level of effective coverage is assessed as being adequate for the purposes of determining the potential extent, nature and distribution of Aboriginal cultural heritage sites in the study area.

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Table 3: Effective Survey Coverage achieved across the surveyed areas.

Area Surveyed	Survey Transects	Estimated Surface Visibility	Effective Survey Coverage
Plantation Rows	22130m x 10m= 221,300m^2	80%	177,040m^2
Graded Access Tracks	5819m x 5m= 29,095m^2	25%	7273.75m^2
Ungraded Access Tracks	4163m x 5m= 20,815m^2	80%	16,652m^2
Total	**271,210m^2**		**200,965.75m^2**

Plate 8: View north showing surface visibility at 80% within the plantation rows within the study area.

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Plate 9: View northeast showing surface visibility at 25% on a graded access track within the study area.

Plate 10: View southwest showing surface visibility of 80% along an ungraded access track within the study area.

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Plate 11: Show southwest showing an area of <10% surface visibility within the study area.

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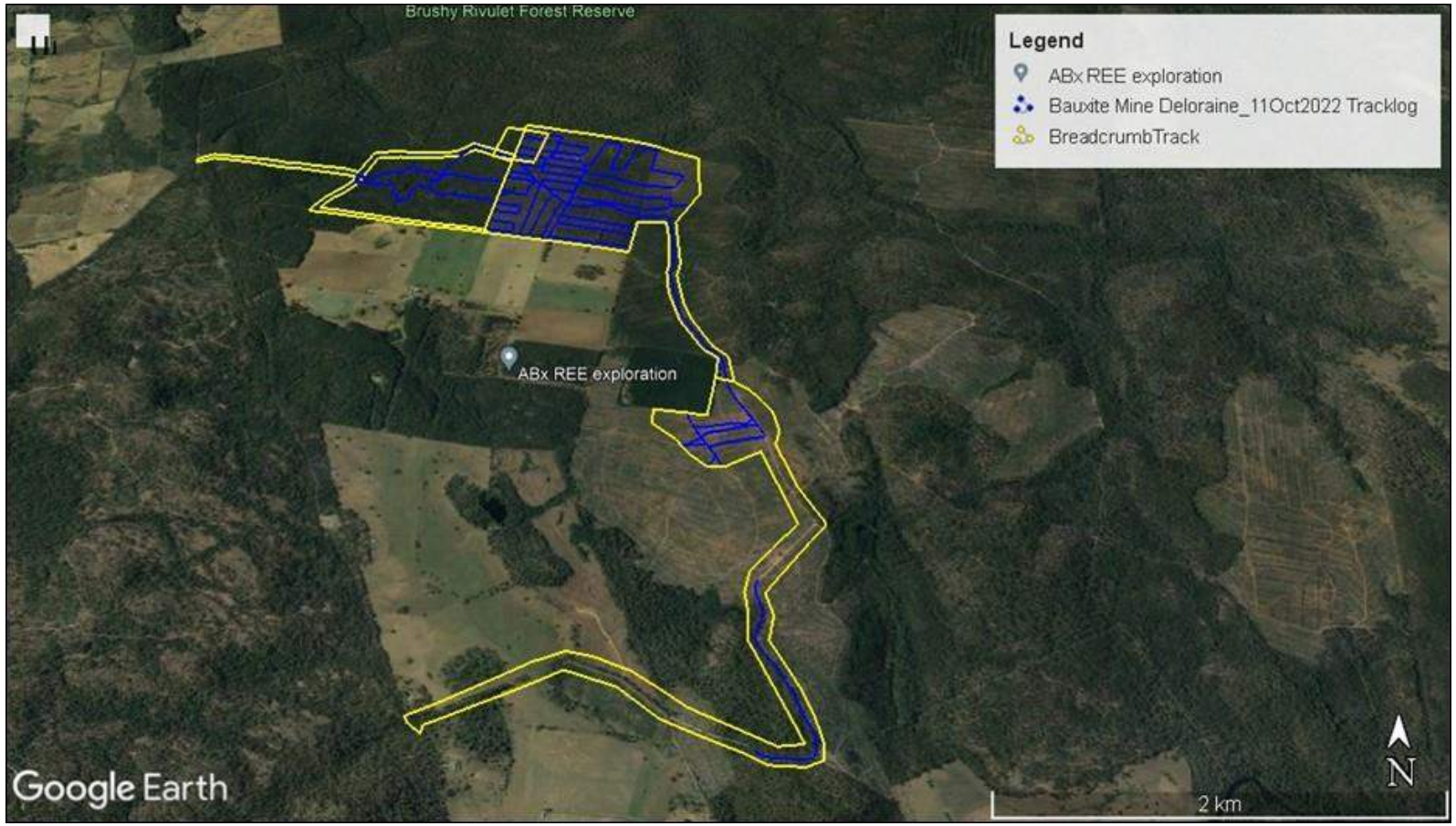

Figure 8: Aerial image showing survey transects walked by the field team across the study area.

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7.0 Survey Results and Discussion

The field survey assessment resulted in the identification and recording of three Aboriginal heritage sites within the proposed Deloraine Bauxite Mine Project footprint.

Site AH14114 is comprised of one cream-coloured quartzite flake situated within a plantation row. The artefact was located on a raised mound with 20° slopes between two depressions associated with plantation re-planting within flat terrain. The site is located 1.73km northeast of an unnamed tributary associated with the Meander River. Despite an extensive search no additional artefacts associated with AH14114 were identified in this area. Surface visibility within the site and immediate surrounds was 80%, however, there was regrowth vegetation and debris from harvesting that did restrict surface visibility to a small degree. AH14114 is situated in a heavily disturbed context, with the site having been impacted by the clearing and harvesting activities of current and previous logging activity. Any additional undetected artefact deposits associated with the site are expected to have been impacted to some extent. Given some constraints in surface visibility (particularly outside the plantation rows), it cannot be stated with certainty that there are no additional undetected artefacts associated with site AH14114. However, all indications are that artefact densities are likely to be low to very low.

AH14115 is comprised of one grey-coloured quartzite flake situated within a plantation row. The artefact was located within a depression between two raised mounds with 20° slopes associated with plantation re-planting in terrain on a gentle slope of 5°. The site is located 1.4km southeast of an unnamed tributary associated with Bryans Creek. Despite an extensive search no additional artefacts associated with AH14115 were identified in this area. Surface visibility within the site and immediate surrounds was 80%, however, there was regrowth vegetation and debris from harvesting that did restrict surface visibility to a small degree. AH14115 is situated in a heavily disturbed context, with the site having been impacted by the clearing and harvesting activities of current and previous logging activity. Any additional undetected artefact deposits associated with the site are expected to have been impacted to some extent. Given some constraints in surface visibility (particularly outside the plantation rows), it cannot be stated with certainty that there are no additional undetected artefacts associated with site AH14115. However, all indications are that artefact densities are likely to be low to very low.

AH14116 is comprised of one cream-coloured chert flake situated within a plantation row. The artefact was located on a raised mound with 20° slopes between two depressions associated with plantation re-planting within flat terrain. The site is located 1.21km southeast of an unnamed tributary associated with Bryans Creek. Despite an extensive search no additional artefacts associated with Isolated Artefact 3 were identified in this area. Surface visibility within the site and immediate surrounds was 80%, however, there was regrowth vegetation and debris from harvesting that did restrict surface visibility to a small degree. AH14116 is situated in a heavily disturbed context, with the site having been impacted by the clearing and harvesting activities of current and previous logging activity. Any additional undetected artefact deposits associated with the site are expected to have been impacted to some extent. Given some constraints in surface visibility (particularly outside the plantation rows), it cannot be stated with certainty that there are no additional undetected artefacts associated with site AH14116. However, all indications are that artefact densities are likely to be low to very low.

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Table 3 provides the summary details for site AH14114, AH14115 and AH14116 with Figure 9 showing the location of these sites recorded during the current survey. The detailed site description is provided in Appendix 2.

Further Discussions

Besides the three abovementioned sites and their associated artefacts, no additional Aboriginal sites, suspected features or specific areas of elevated archaeological potential were identified during the survey assessment of the Deloraine Bauxite Mine Project footprint. The field survey was also able to confirm that there are no stone resources identified within the study area that would be suitable for stone artefact manufacturing. Nor are there any sizeable rock outcrops occurring within the study area, and therefore there is no potential for Aboriginal rock shelters to be present.

As discussed in section 6, surface visibility across the surveyed areas was variable, with averages ranging between 20% to 80%. Whilst the survey coverage for the field program was an estimated 271,210m², effective coverage was decreased to around 200,965.75m². Given these constraints, it cannot be stated with certainty that there are no undetected Aboriginal heritage sites present across the surveyed areas. However, the survey results strongly indicate that site and artefact densities across the study area are likely to be low to very low. If undetected sites are present they are most likely to be isolated artefacts or small artefact scatters, representing sporadic Aboriginal activity. It should be noted that there are no specific landscape features present within the study area footprint, where there would be an elevated likelihood for sites or artefact densities to be present. The findings of this assessment and the interpretations of these findings are generally consistent with the observations made by Kee (1991) and Moore (1997) for the Northern and North-Eastern regions.

The findings of previous regional archaeological investigations undertaken in indicate that site densities are generally significantly lower compared with coastal regions. However, there does appear to be a distinct increase in site and artefact densities around the margins of the natural lakes and marshes in the region, particularly around Brushy Lagoon which is 7.6km northwest of the study area. The study area is situated away from these larger water bodies and therefore site densities would be expected to be lower away from the major resource zones, reflecting more sporadic activity.

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Table 4: Summary details for Aboriginal sites AH14114, AH14115 and AH14116.

Site Name	Grid Reference	Site Type	Site Description
AH14114	E 478481 N 5409690	Isolated Artefact	One cream quartzite flake located on a raised mound with 20° slopes within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14115	E 478820 N 5410133	Isolated Artefact	One dark-grey quartzite flake located within a depression within plantation land on a gentle slope of 5°. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14116	E 478669 N 5410255	Isolated Artefact	One cream chert flake located on a raised mound with 20° slopes within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.

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Figure 9: Aerial image showing the location of the three Aboriginal sites recorded during the survey assessment of the study area.

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8.0 Site Significance Assessments

The following provides an outline of the processes used to assess the significance of any cultural heritage sites that were identified during the course of the assessment.

8.1 Assessment Guidelines

There are several different ways of defining types of significance, and many practitioners have developed their own system of significance assessment. However, as Sullivan and Pearson (1995) point out, there seems to be a general advantage in using a set of criteria which is already widely accepted. In Australia, cultural significance is usually assessed against the Burra Charter guidelines and the Australian Heritage Commission guidelines (ICOMOS 1988, 1999).

8.2 The Burra Charter

Under the guidelines of the Burra Charter 'cultural significance' refers to the 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' of a 'place' (ICOMOS 1999:2). The guidelines to the Burra Charter comment:

"Although there are a variety of adjectives used in definitions of cultural significance in Australia, the adjectives 'aesthetic', 'historic', 'scientific' and social' ... can encompass all other values".

The following provides the descriptions given for each of these terms.

Aesthetic Value

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and materials of the fabric; the smells and sounds associated with the place and its use (Marquis-Kyle & Walker 1992).

Historic Value

A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment (Marquis-Kyle & Walker 1992).

Scientific Value

The scientific or research value of a place will depend upon the importance of the data involved or its rarity, quality or representativeness and on the degree to which the place may contribute further substantial information.

A site or a resource is said to be scientifically significant when its further study may be expected to help current research questions. That is, scientific significance is defined as research potential (Marquis-Kyle & Walker 1992).

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Social Value

The social value of a place is perhaps the most difficult value for heritage professionals to substantiate (Johnston 1994). However, social value is broadly defined as 'the qualities for which a place has become a focus of spiritual, political, natural or other cultural sentimental to a majority or minority group' (ICOMOS 1988:30). In What is Social Value, Johnston (1994) has provided a clear definition of social value:

"Social value is about collective attachment to places that embody meaning important to a community, these places are usually community owned or publicly accessible or in some other way 'appropriated' into people's daily lives. Such meanings are in addition to other values, such as the evidence of valued aspects of history or beauty, and these meanings may not be apparent in the fabric of the place, and may not be apparent to the disinterested observer". (Johnston 1994:10)

Although encompassed within the criterion of social value, the spiritual value of a place is a new addition to the Burra Charter (ICOMOS 1999:1). Spiritual value is predominantly used to assess places of cultural significance to Indigenous Australians.

The degree to which a place is significant can vary. As Johnston (1994:3) has stated when trying to understand significance a 'variety of concepts [are] used from a geographical comparison ('national', 'state', 'local') to terms such as 'early', 'rare', or 'seminal''. Indeed, the Burra Charter clearly states that when assessing historic significance, one should note that for:

"any given place the significance will be greater where evidence of the association or event survives in situ, or where the setting are substantially intact, than where it has been changed or evidence does not survive". (ICOMOS 1988:29)

8.3 Significance Criteria Relevant to Indigenous Sites

Indigenous heritage sites and places may have educational, tourism and other values to groups in society. However, their two principal values are likely to be in terms of their cultural/social significance to Aboriginal people and their scientific/archaeological significance. These are the two criteria that are commonly used in establishing the significance of Aboriginal sites. The following provides an explanation of these criteria.

1) Aboriginal Cultural / Social Significance

This relates to the value placed upon a site or suite of sites by the local or regional Aboriginal community. The identification and assessment of those sites that are significant to Aboriginal people is a matter for Aboriginal people. This assessment can only be made by the appropriate Aboriginal representatives of the relevant communities.

2) Scientific (Archaeological) Significance

Archaeological significance values (or scientific values) generally are assessed on the potential of a site or place to generate knowledge through archaeological research or knowledge. Bowdler (1984) states that the scientific significance should be assessed according to timely and specific research questions (research potential) and site representativeness.

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Research potential entails the potential of a site or suite of sites for scientific research and excavation. This is measured in terms of a site's ability to provide information on aspects of Aboriginal culture. In this respect, the contents of a site and their state of preservation are important considerations.

Representativeness takes account of how common a site type is (Bowdler 1984). That is, it allows sites to be evaluated with reference to the known archaeological record within the given region. The primary goal of cultural resource management is to afford the greatest protection to a representative sample of sites throughout a region. The corollary of a representative site is the notion of a rare or unique site. These sites may help to understand the patterning of more common sites in the surrounding area, and are therefore often considered of archaeological significance. The concept of a rarity cannot be easily separated from that of representativeness. If a site is determined to be rare, then it will by definition be included as part of the representative sample of that site type.

The concepts of both research potential and representativeness are ever-changing variables. As research interests shift and archaeological methods and techniques change, then the criteria for assessing site significance are also re-evaluated. As a consequence, the sample of site types which are used to assess site significance must be large enough to account for the change in these variables.

8.4 Summary Significance Ratings for Recorded Sites

Sites AH14114, AH14115 and AH14116 which were recorded during the survey assessment of the proposed Deloraine Bauxite Mine Project footprint, have been assessed and allocated a rating of significance, based on the criteria presented in section 8.2. As discussed in section 8.2, Aboriginal sites are usually assessed in terms of their scientific and social significance. The concepts of Aesthetic significance and Historic significance are rarely applied in the assessment of Aboriginal sites unless there is direct evidence for European/Aboriginal contact activity at the site, or the site has specific and outstanding aesthetic values. However, based on advice received from AHT, aesthetic and historic significance values have also been taken into consideration as part of the assessment of these sites.

A five-tiered rating system has been adopted for the significance assessment; low, low-medium, medium, medium-high and high. Table 5 provides the summary details for the significance ratings of sites AH14114, AH14115 and AH14116.; A more detailed explanation for the assessment ratings is presented in sections 8.5 to 8.7. Section 8.8 provides an assessment of significance in relation to the *Aboriginal Heritage Act 1975* (the Act), Section 9 of this report presents a statement of social significance provided by Vernon Graham for these sites and the study area as a whole.

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Table 5: Summary significance ratings for Aboriginal heritage sites AH14114, AH14115 and AH14116.

AH Number	Site Type	Scientific Significance	Aesthetic Significance	Historic Significance	Social Significance
AH14114	Isolated Artefact	Low	Low	N/A	Medium-High
AH14115	Isolated Artefact	Low	Low	N/A	Medium-High
AH14116	Isolated Artefact	Low	Low	N/A	Medium-High

8.5 Scientific Significance for Recorded Sites

Archaeological (or scientific) significance values generally are assessed on the potential of a site or place to generate knowledge through archaeological research or knowledge. Bowdler (1984) states that the scientific significance should be assessed according to timely and specific research questions (research potential) and site representativeness. Research potential entails the potential of a site or suite of sites for scientific research and excavation. This is measured in terms of a site's ability to provide information on aspects of Aboriginal culture. In this respect, the contents of a site and their state of preservation are important considerations. Representativeness takes account of how common a site type is (Bowdler 1984).

Sites AH14114, AH14115 and AH14116 are classified as Isolated artefacts. Isolated artefacts and artefact scatters are two of the most common site types recorded in the Northern Region, and more broadly, the State of Tasmania (as demonstrated through the AHR search results for this project). As such, the scientific significance of artefact scatters and isolated artefacts usually relates primarily to their research potential as opposed to the rarity of the site type. The potential exception to this is where comparatively rare artefact types (either tool or stone material types) are represented in assemblages.

In this instance, sites AH14114, AH14115 and AH14116 are assessed as being of low scientific significance. The rationale for this assessment is as follows.

1) Isolated artefacts and artefact scatters are common site types in the region and as such rarity is not a consideration.
2) The artefact assemblages associated with the three sites are comprised of stone material types (chert and quartzite) and stone tool types (flakes) that are commonly represented in artefact assemblages across the region. As such, rarity is again not a consideration.
3) Sites AH14114, AH14115 and AH14116 are assessed as having a very limited potential to comprise additional undetected surface and sub-surface artefact deposits. These three sites are also situated in moderate to heavily disturbed contexts, being situated on cleared re-planted plantations surrounded by ungraded and graded vehicle tracks. This means that there is very little potential for intact artefact deposits to be present, which reduces the research potential of the two sites.

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8.6 Aesthetic Significance of Recorded Sites

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and materials of the fabric; the smells and sounds associated with the place and its use (Marquis-Kyle & Walker 1992).

Sites AH14114, AH14115 and AH14116 are situated around the gentle to moderate undulations of plantation land are all in quite heavily disturbed contexts, being situated on cleared re-planted plantation surrounded by ungraded and graded vehicle tracks and areas that have been subject to past land disturbances associated with clearing and other land practices. The aesthetics of the broader northern sections of the study area have been significantly disturbed. Therefore, the landscape setting of sites AH14114, AH14115 and AH14116 is assessed as being of low aesthetic significance.

8.7 Historic Significance of Recorded Sites

A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment (Marquis-Kyle & Walker 1992).

Historic significance is not an attribute often considered when assessing the significance of Aboriginal sites unless there is direct evidence for some form of European/Aboriginal contact activity. In this instance, no such evidence exists for sites AH14114, AH14115 and AH14116. As such the concept of historic significance is not applicable to these sites.

8.8 Significance Under the Aboriginal Heritage Act 1975

In Tasmania, the *Aboriginal Heritage Act 1975* (the Act) is the primary Act for the treatment of Aboriginal cultural heritage. Under Part 1, Section 2(8) of *the Aboriginal Heritage Act 1975*, Aboriginal tradition and significance are defined as follows.

Aboriginal tradition means –

> (a) the body of traditions, knowledge, observances, customs and beliefs of Aboriginal people generally or of a particular community or group of Aboriginal people; and
>
> (b) any such tradition, knowledge, observance, custom or belief relating to particular persons, areas, objects or relationships;

significance, of a relic, means significance in accordance with –

> (a) the archaeological or scientific history of Aboriginal people; or
>
> (b) the anthropological history of Aboriginal people; or
>
> (c) the contemporary history of Aboriginal people; or
>
> (d) Aboriginal tradition.

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In accordance with the *Aboriginal Heritage Standards and Procedures 2018,* Aboriginal heritage assessments in Tasmania have addressed the issue of significance as per the Burra Charter 2013. This approach has been adopted for this assessment (see sections 8.1 to 8.7 above). However, AHT have now advised that in order to ensure compliance with the *Aboriginal Heritage Act 1975* (the Act), assessments are now also to also consider significance and Aboriginal tradition as defined in the Act.

The Act came into effect in 1975, which is several decades before the Burra Charter Guidelines and protocols for determining significance were developed. To a large extent, the definitions of Aboriginal tradition and significance, as defined under Section 2(8) of the Act are covered by the Burra Charter, and have been addressed in this report.

The archaeological or scientific history of Aboriginal people (a) is covered under the concept of Scientific significance. This component of significance, as it relates to sites AH14114, AH14115 and AH14116, have been addressed in detail in sections 8.2, 8.3 and 8.5 of this report.

Aboriginal cultural, social and spiritual significance under the Burra Charter relates to the value placed upon a site or suite of sites by the local or regional Aboriginal community (see sections 8.2 and 8.3 of this report). The definition of Aboriginal tradition, as provided in the Act, is broadly covered under this section of the Burra Charter. As is the anthropological history of Aboriginal people (b), the contemporary history of Aboriginal people (c) and Aboriginal tradition (d).

The notion of Aboriginal cultural, social and spiritual significance, and the assessment of these values is a matter for Aboriginal people and can only be made by the appropriate Aboriginal representatives of the relevant communities. Section 9 of this report presents a statement of cultural/social significance provided by Vernon Graham for the two sites recorded during the current assessment, and the study area as a whole. Vernon Graham is an experienced Aboriginal Heritage Officer, and a respected member of the Tasmanian Aboriginal community, and as such is well placed to provide this statement. In addition, the report has been sent out to a range of Aboriginal communities for review and comment. The results of the consultation program are presented in Appendix 4.

As described in section 3 of this report, the available ethnographic information indicates that the Deloraine Bauxite Mine Project study area is within land traditionally occupied by the Panninher (Norfolk Plains people) of the Northern Midlands Nation.

Sites AH14114, AH14115 and AH14116 are three of a number of Aboriginal sites that have been recorded within this northern region. These sites provide tangible evidence for the occupation of this area by the Panninher people, and they retain a level of significance and importance to the present-day Tasmanian Aboriginal community (see section 9).

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9.0 Consultation with Aboriginal Communities and Statement of Aboriginal Significance

The designated Aboriginal Heritage Officer (AHO) for this project is Vernon Graham. One of the primary roles of the Aboriginal Heritage Officer is to consult with Aboriginal community groups. The main purpose of this consultation process is:

- to advise Aboriginal community groups of the details of the project,
- to convey the findings of the Aboriginal heritage assessment,
- to document the Aboriginal social values attributed to Aboriginal heritage resources in the study area,
- to discuss potential management strategies for Aboriginal heritage sites, and
- to document the views and concerns expressed by the Aboriginal community representatives.

Aboriginal Heritage Tasmania (AHT) has advised that there have been some changes to the accepted approach to Aboriginal community consultation, based on recommendations made by the AHC on 28 April 2017. These changes relate to cases where the AHC consider it may be sufficient for a Consulting Archaeologist (CA) or Aboriginal Heritage Officer (AHO) to consult only with the Aboriginal Heritage Council.

The Council recommended that consultation with an Aboriginal community organisation is not required for a proposed project when:
There are less than 10 isolated artefacts that are not associated with any other nearby heritage; or
The impact of the project on Aboriginal heritage:

- is not significant; or
- will not destroy the heritage; or
- affects only part of the outer approximately 20% of a buffer around a registered site

The CA and AHO will need to demonstrate in Aboriginal heritage reports including map outputs:

- that the proposed impact on the Aboriginal heritage within the project area is not significant and why;
- that the project activity will not destroy the heritage;
- that the proposed impact to the site buffer is not adjacent to a significant component of the registered site polygon.

Three Aboriginal sites were identified during the field survey of the proposed Deloraine Bauxite Mine Project footprint (the study area). A search of the AHR shows that there are no registered Aboriginal sites located within the study area, and it is assessed that there is a low to very low potential for undetected Aboriginal heritage sites to be present.
Because of the recording of three Aboriginal sites in the study area, the decision has been made to distribute this report to a select range of Aboriginal community groups in the north of the State for review and comment. The report has also been provided to AHT for review.

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Vernon Graham has provided a statement of the Aboriginal cultural values attributed to the study area as a whole. This statement is presented below.

Statement of Cultural/Social Significance by Vernon Graham

Aboriginal heritage/relics are not renewable. Hence any cultural heritage values provide a direct link to past occupation undertaken by traditional indigenous ancestors in the region of the project proposal. This provides a story or link for the Aboriginal community today and facilitates the connection to social-cultural heritage values, ethnohistory /story and the relationship pertaining to country. This is an integral part of regaining knowledge so it can be encapsulated and retained by both the individual Aboriginal people and for the Aboriginal community collectively.

We did identify three Aboriginal heritage sites during the survey of the proposed Deloraine Bauxite Mine Project area on Porters Bridge Road. However, no other Aboriginal heritage sites were identified during the survey conducted on 11-10-2022 – 12-10-2022. Based on these results, and my observations made during the field survey, I am satisfied that there is a low to very low potential for other Aboriginal sites to be present in the study area, given the heavily disturbed and rocky nature of the terrain in the study area. Although care must still be taken due to the presence of AH14114, AH14115 and AH14116 within the study area. Therefore, I am satisfied that this proposal poses a minimal risk of impacting Aboriginal heritage values.

Even if the site of the project proposal contains no further evidence of Aboriginal heritage there are always the cultural resources (flora, fauna, aquaculture or any other resource values that the earth may offer) and the living landscape, which highlight the high significance to the Aboriginal cultural heritage values to the country. Parts of the study area, notably the north-western section with the forested areas, are lesser undisturbed, and there are bush tucker resources present in this area that I observed during the survey. This includes tea tree and a range of ferns and native grasses. There is likely to be some impact on these bush tucker resources as part of the development of the Deloraine Bauxite Mine Project.

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10.0 Statutory Controls and Legislative Requirements

The following provides an overview of the relevant State and Federal legislation that applies to Aboriginal heritage within the state of Tasmania.

10.1 State Legislation

In Tasmania, the *Aboriginal Heritage Act 1975* (the Act) is the primary Act for the treatment of Aboriginal cultural heritage. The Act is administered by the Minister for Aboriginal Affairs, through Aboriginal Heritage Tasmania (AHT) in the Department of Premier and Cabinet (DPAC). AHT is the regulating body for Aboriginal heritage in Tasmania and '[n]o fees apply for any application to AHT for advice, guidance, lodgement or permit application'.

The Act applies to 'relics' which are any object, place and/or site that is of significance to the Aboriginal people of Tasmania (as defined in section 2(3) of the Act). The Act defines what legally constitutes unacceptable impacts on relics and a process to approve impacts when there is no better option. Aboriginal relics are protected under the Act and it is illegal to destroy, damage, deface, conceal or otherwise interfere with a relic, unless in accordance with the terms of a permit granted by the Minister. It is illegal to sell or offer for sale a relic, or to cause or permit a relic to be taken out of Tasmania without a permit (section 2(4) qualifies and excludes 'objects made, or likely to have been made, for purposes of sale').

Section 10 of the Act sets out the duties and obligations for persons owning or finding an Aboriginal relic. Under section 10(3) of the Act, a person shall, as soon as practicable after finding a relic, inform the Director or an authorised officer of the find.

It should be noted that with regard to the discovery of suspected human skeletal remains, the *Coroners Act 1995* takes precedence. The *Coroners Act 1995* comes into effect initially upon the discovery of human remains, however once determined to be Aboriginal the *Aboriginal Relics Act* overrides the *Coroners Act.*

In August 2017, the Act was substantively amended and the title changed from the *Aboriginal Relics Act 1975*. As a result, the AHT *Guidelines to the Aboriginal Heritage Assessment Process* were replaced by the *Aboriginal Heritage Standards and Procedures*. The Standards and Procedures are named in the statutory *Guidelines* of the Act issued by the Minister under section 21A of the Act.
Other amendments include:

- An obligation to fully review the Act within three years.
- Increases in maximum penalties for unlawful interference or damage to an Aboriginal relic. For example, maximum penalties (for deliberate acts) are 10,000 penalty units (currently $1.57 million) for bodies corporate other than small business entities and 5,000 penalty units (currently $785,000) for individuals or small business entities; for reckless or negligent offences, the maximum penalties are 2,000 and 1,000 penalty units respectively (currently $314,000 and $157,000). Lesser offences are also defined in sections 10, 12, 17 and 18.
- Prosecution timeframes have been extended from six months to two years.
- The establishment of a statutory Aboriginal Heritage Council to advise the Minister.

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Section 21(1) specifies the relevant defence as follows: "It is a defence to a prosecution for an offence under section 9 or 14 if, in relation to the section of the Act which the defendant is alleged to have contravened, it is proved … that, in so far as is practicable … the defendant complied with the guidelines".

10.2 Commonwealth Legislation

There are also a number of Federal Legislative Acts that pertain to cultural heritage. The main Acts being; *The Australian Heritage Council Act 2003*, *The Aboriginal and Torres Strait Islander Heritage Protection Act 1987* and the *Environment Protection and Biodiversity Conservation Act 1999*

Australian Heritage Council Act 2003 (Comm)

The *Australian Heritage Council Act 2003* defines the heritage advisory boards and relevant lists, with the Act's Consequential and Transitional Provisions repealing the Australian Heritage Commission Act 1975. The Australian Heritage Council Act, like the Australian Heritage Commission Act, does not provide legislative protection regarding the conservation of heritage items in Australia but has compiled a list of items recognised as possessing heritage significance to the Australian community. The Register of the National Estate, managed by the Australian Heritage Council, applies no legal constraints on heritage items included on this list.

***The Aboriginal and Torres Strait Islander Heritage Protection Act 1987*.**

This Federal Act is administered by the Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC) with the Commonwealth having jurisdiction. The Act was passed to provide protection for the Aboriginal heritage, in circumstances where it could be demonstrated that such protection was not available at a state level. In certain instances, the Act overrides relevant state and territory provisions.

The major purpose of the Act is to preserve and protect from injury and desecration, areas and objects of significance to Aborigines and Islanders. The Act enables immediate and direct action for the protection of threatened areas and objects by a declaration from the Commonwealth Minister or authorised officers. The Act must be invoked by, or on behalf of an Aboriginal or Torres Strait Islander or organisation.

Any Aboriginal or Torres Strait Islander person or organization may apply to the Commonwealth Minister for a temporary or permanent 'Stop Order' for the protection of threatened areas or objects of significant indigenous cultural heritage.

The Commonwealth Act 'overrides' State legislation if the Commonwealth Minister is of the opinion that the State legislation (or undertaken process) is insufficient to protect the threatened areas or objects. Thus, in the event that an application is made to the Commonwealth Minister for a Stop Order, the Commonwealth Minister will, as a matter of course, contact the relevant State Agency to ascertain what protection is being imposed by the State and/or what mitigation procedures have been proposed by the land user/developer.

In addition to the threat of a 'Stop Order' being imposed, the Act also provides for the following:

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- If the Federal Court, on application from the Commonwealth Minister, is satisfied that a person has engaged or is proposing to engage in conduct that breaches the 'Stop Order', it may grant an injunction preventing or stopping such a breach (s.26). Penalties for breach of a Court Order can be substantial and may include a term of imprisonment;
- If a person contravenes a declaration in relation to a significant Aboriginal area, penalties for an individual are a fine of up to $10,000.00 and/or 5 years gaol and for a Corporation a fine up to $50,000.00 (s.22);
- If the contravention is in relation to a significant Aboriginal object, the penalties are $5,000.00 and/or 2 years gaol and $25,000.00 respectively (s.22);
- In addition, offences under s.22 are considered 'indictable' offences that also attract an individual fine of $2,000 and/or 12 months gaol or, for a Corporation, a fine of $10,000.00 (s.23). Section 23 also includes attempts, inciting, urging and/or being an accessory after the fact within the definition of 'indictable' offences in this regard.

The Commonwealth Act is presently under review by Parliament and it is generally accepted that any new Commonwealth Act will be even more restrictive than the current legislation.

Environment Protection and Biodiversity Conservation Act 1999 (Comm)

This Act was amended, through the Environment and Heritage Legislation Amendment Act (No1) 2003 to provide protection for cultural heritage sites, in addition to the existing aim of protecting environmental areas and sites of national significance. The Act also promotes the ecologically sustainable use of natural resources, biodiversity and the incorporation of community consultation and knowledge.

The 2003 amendments to the *Environment Protection and Biodiversity Conservation Act 1999* have resulted in the inclusion of indigenous and non-Indigenous heritage sites and areas. These heritage items are defined as:
'indigenous heritage value of a place means a heritage value of the place that is of significance to indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history;

Items identified under this legislation are given the same penalty as actions taken against environmentally sensitive sites. Specific to cultural heritage sites are §324A-324ZB.

Environment and Heritage Legislation Amendment Act (No1) 2003 (Comm)

In addition to the above amendments to the *Environment Protection and Biodiversity Conservation Act 1999* to include provisions for the protection and conservation of heritage, the Act also enables the identification and subsequent listing of items for the Commonwealth and National Heritage Lists. The Act establishes the *National Heritage List*, which enables the inclusion of all heritage, natural, Indigenous and non-Indigenous, and the *Commonwealth Heritage List*, which enables the listing of sites nationally and internationally that are significant and governed by Australia.

In addition to the *Aboriginal and Torres Strait Islander Heritage Protection Act 1987*, amendments made to the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* enables the identification and subsequent listing of indigenous heritage values on the Commonwealth and/or National Heritage Lists (ss. 341D & 324D respectively). Substantial penalties (and, in some instances, gaol sentences) can be imposed on any person who

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damages items on the National or Commonwealth Heritage Lists (ss. 495 & 497) or provides false or misleading information in relation to certain matters under the Act (ss.488-490). In addition, the wrongdoer may be required to make good any loss or damage suffered due to their actions or omissions (s.500).

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11.0 Aboriginal Cultural Heritage Management Plan

Management Recommendations

Heritage management options and recommendations provided in this report are made based on the following criteria.

- Consultation with Vernon Graham (Aboriginal Heritage Officer).
- The legal and procedural requirements as specified in the *Aboriginal Heritage Act 1975* (The Act).
- The results of the investigation as documented in this report; and
- Background research into the extant archaeological and ethnohistoric record for the study area and the surrounding region.

Recommendation 1 (AH14114, AH14115 and AH14116)

Three isolated artefact Aboriginal heritage sites were identified during the field survey inspection of the proposed Deloraine Bauxite Mine Project footprint (sites AH14114, AH14115 and AH14116). All three of these sites are classified as isolated artefacts and are located in the northwest portion of the study area (see Figure 10). The preferred management strategy is to avoid any impacts on these three sites and to protect the sites in situ. The following recommendations apply to these three sites.

- The location of the sites is to be plotted onto the design plans for the Deloraine Bauxite Mine Project footprint.
- Prior to construction commencing in these areas, temporary high visibility protective barricading is to be erected around the identified boundaries of the three sites with a 2m radial buffer applied. Barricading is to remain in place for the duration of construction.
- Construction contractors should be informed of the location of the site and informed that the site is not to be impacted.
- No soil disturbance works are to be carried out within the site boundaries, or within the barricaded zone of the site.
- Barricading is to be removed on completion of construction works for the Deloraine Bauxite Mine.

As specified in section 10.1 of this report, all Aboriginal relics are protected under the *Aboriginal Heritage Act 1975* (The Act). It is illegal to destroy, damage, deface, conceal or otherwise interfere with a relic, unless in accordance with the terms of a permit granted by the Minister. Therefore, if it appears that sites AH14114, AH14115 and AH14116 may be impacted by construction works, then the proponent will need to apply for and obtain a Permit to impact the sites, prior to any works commencing.

Recommendation 2

It is assessed that there is generally a low to very low potential for additional undetected Aboriginal heritage sites to occur within the Deloraine Bauxite Mine Project footprint. However, if, during the course of the proposed works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Appendix 3). A copy of the Unanticipated Discovery Plan should be kept on-site during all ground disturbance and construction work. All construction personnel

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should be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

Recommendation 3

Copies of this report should be submitted to Aboriginal Heritage Tasmania (AHT) for review and comment.

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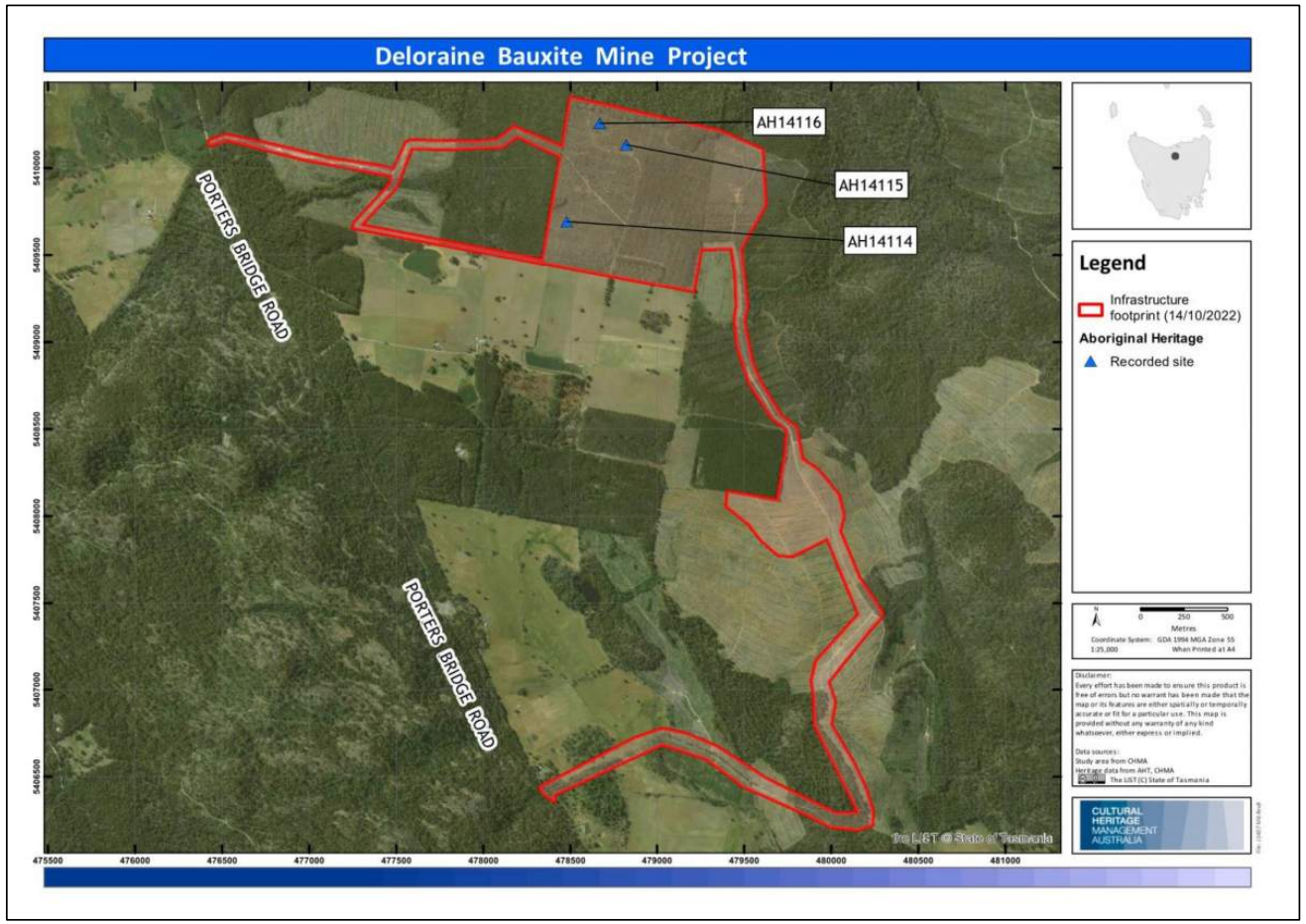

Figure 10: Aerial image showing the location of the three Aboriginal sites recorded during the survey assessment of the study area

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References Cited

Australian ICOMOS. 1988. Guidelines to the Burra Charter.

Australian ICOMOS. 1999. The Burra Charter.

BOM. 2022 Bureau of Meteorology (BOM) website. Accessed May 2022 from <http://www.bom.gov.au/>.

Brown, S. 1986 Aboriginal Archaeological Resources in South East Tasmania. An Overview of the Nature and Management of Aboriginal Sites. National Parks and Wildlife Service, Tasmania. Occasional Paper No.12.

Collins, D. 1971. An Account of the English Colony in New South Wales Vol 2, London 1789-1802. 1971 Facsimile Edition, Adelaide Library Board, South Australia.

Jones, R. 1974. Tasmanian Tribes. Appendix in Tindale, N.B. *Aboriginal Tribes of Australia*. University of California Press.

Jordan, G: *Eucalyptus globulus*: Key to Tasmanian Vascular Plants: University of Tasmania. Accessed 18 October 2022 from <https://www.utas.edu.au/dicotkey/dicotkey/MYRTS/sEucalyptus_globulus.htm>.

Jordan, G: *Pinus radiata*: Key to Tasmanian Vascular Plants: University of Tasmania. Accessed 18 October 2022 from <https://www.utas.edu.au/dicotkey/dicotkey/CONIFERS/sPinus.htm>.

Kee, S. 1987. *North East Tasmanian Archaeological Survey: A Regional Study*. A report to the Department of Lands, Parks and Wildlife and the Australian Heritage Commission.

Kee, S. 1990. *Midlands Aboriginal Archaeological Site Survey*. Occasional Paper No. 26. Department of Parks, Wildlife and Heritage Hobart, Tasmania.

Kee, S. 1991 *Aboriginal archaeological sites in north east Tasmania*. Occasional Paper No. 28. Department of Parks, Wildlife and Heritage. Hobart, Tasmania.

Kelly, J. 1881 *Boat Expeditions Round Tasmania, 1815-16 and 1824*. Reports of the Tasmania House of Assembly No. 107.

Kodela, P: *Acacia ulicifolia*: New South Wales Flora Online: National Herbarium of NSW. Accessed 18 October 2022 from <https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Acacia~ulicifolia>.

List: Land Information System Tasmania. Accessed 18 October 2022 from <https://maps.thelist.tas.gov.au/listmap/app/list/map>.

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Marquis-Kyle P, Walker M, & Australia ICOMOS 1992 The illustrated Burra Charter : making good decisions about the care of important places, Australia ICOMOS Inc. with the assistance of the Australian Heritage Commission, Sydney, N.S.W.

Moore, M. W. 1997a. Aboriginal Archaeology of Dry Sclerophyll Forest Conservation Reserves in Eastern Tasmania: a study of Tasmanian Lithic Technology, Vol. 1: Site Evaluations and Management Recommendations. Unpublished report prepared for Forestry Tasmania.

Moore, M. W. 1997b. Aboriginal Archaeology of Dry Sclerophyll Forest Conservation Reserves in Eastern Tasmania: a study of Tasmanian Lithic Technology, Vol. 2: Research Design and Results. Unpublished report prepared for Forestry Tasmania.

Plomley, N.J.B 1966. *Friendly Mission: The Journals of Augustus Robinson 1829-1834*. Tasmanian Historical Research Association, Hobart.

Plomley, N.J.B. 1983 (ed.). *The Baudin Expedition and the Tasmanian Aborigines 1802.* Blubberhead Press Hobart.

Ryan, L. 2012 *Tasmanian Aborigines: a History Since 1803*. Crow's Nest, NSW: Allen and Unwin.

Wilson, G: Melaleuca ericifolia Sm.: New South Wales Flora Online: National Herbarium of NSW. Accessed 18 October 2022 from <https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Melaleuca~ericifolia>.

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Glossary of Terms

Aboriginal Archaeological Site
A site is defined as any evidence (archaeological features and/or artefacts) indicating past Aboriginal activity, and occurring within a context or place relating to that activity. The criteria for formally identifying a site in Australia vary between States and Territories.

Artefact
A portable object that has been humanly made or modified (see also stone artefact).

Assemblage (lithic)
A collection of complete and fragmentary stone artefacts and manuports obtained from an archaeological site, either by collecting artefacts scattered on the ground surface or by controlled excavation.

Broken Flake
A flake with two or more breakages, but retaining its area of break initiation.

Chert
A highly siliceous rock type that is formed biogenically from the compaction and precipitation of the silica skeletons of diatoms. Normally there is a high percentage of cryptocrystalline quartz. Like chalcedony, chert was valued by Aboriginal people as a stone material for manufacturing stone tools. The rock type often breaks by conchoidal (shell-like) fracture, providing flakes that have hard, durable edges.

Cobble
Water-worn stones that have a diameter greater than 64mm (about the size of a tennis ball) and less than 256mm (the size of a basketball).

Core
A piece of stone, often a pebble or cobble, but also quarried stone, from which flakes have been struck for the purpose of making stone tools.

Core Fragments
A piece of core, without obvious evidence of being a large primary flake.

Cortex
The surface of a piece of stone that has been weathered by chemical and/or physical means.

Debitage
The commonly used term refers to the stone refuse discarded from knapping. The manufacturing of a single implement may result in the generation of a large number of pieces of debitage in an archaeological deposit.

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Flake (general definition)
A piece of stone detached from a nucleus such as a core. A complete or substantially complete flake of lithic material usually shows evidence of hard indenter initiation or occasional bending initiation. The most common type of flake is the 'conchoidal flake'. The flake's primary fracture surface (the ventral or inside surface) exhibits features such as fracture initiation, bulb of force, and undulations and lances that indicate the direction of the fracture front.

Flake fragment
An artefact that does not have areas of fracture initiation, but which displays sufficient fracture surface attributes to allow identification as a stone artefact fragment.

Flake portion (broken flake)
The proximal portion of a flake retaining the area of flake initiation, or a distal portion of a flake that retains the flake termination point.

Flake scraper
A flake with retouch along at least one margin. The character of the retouch strongly suggests shaping or rejuvenation of a cutting edge.

Nodules
Regular or irregular cemented masses or nodules within the soil. Also referred to as concretions and buckshot gravel. Cementing agents may be iron and/or manganese oxides, calcium carbonate, gypsum etc. Normally formed in situ and commonly indicative of seasonal waterlogging or a fluctuating chemical environment in the soil such as; oxidation and reduction, or saturation and evaporation. Nodules can be redistributed by erosion. (See also 'concretion').

Pebble
By geological definition, a waterworn stone is less than 64 mm in diameter (about the size of a tennis ball). Archaeologists often refer to waterworn stones larger than this as pebbles though technically they are cobbles.

Quartz
A mineral composed of crystalline silica. Quartz is a very stable mineral that does not alter chemically during weathering or metamorphism. Quartz is abundantly common and was used by Aboriginal people throughout Australia to make light-duty cutting tools. Despite the often unpredictable nature of fracture in quartz, the flakes often have sharp cutting edges.

Quartzite
A hard silica-rich stone formed in sandstone that has been recrystallised by heat (metaquartzite) or strengthened by slow infilling of silica in the voids between the sand grains (Orthoquartzite).

Retouch (on stone tools)
An area of flake scars on an artefact resulting from intentional shaping, resharpening, or rejuvenation after breakage or blunting of a cutting edge. In resharpening a cutting edge the

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retouch is invariably found only on one side (see also 'indeterminate retouched piece', retouch flake' etc).

Scraper
A general group of stone artefacts, usually flakes but also cores, with one or more retouched edges thought to have been used in a range of different cutting and scraping activities. A flake scraper is a flake with retouch along at least one margin, but not qualifying for attribution to a more specific implement category. Flake scrapers sometimes also exhibit use-wear on the retouched or another edge.

Silcrete
A hard, fine-grained siliceous stone with flaking properties similar to quartzite and chert. It is formed by the cementing and/or replacement of bedrock, weathering deposits, unconsolidated sediments, soil or other material, by a low-temperature Physico-chemical process. Silcrete is essentially composed of quartz grains cemented by microcrystalline silica. The clasts in silcrete bare most often quartz grains but may be chert or chalcedony or some other hard mineral particle. The mechanical properties and texture of silcrete are equivalent to the range exhibited by chert at the fine-grained end of the scale and with quartzite at the coarse-grained end of the scale. Silcrete was used by Aboriginal people throughout Australia for making stone tools.

Site Integrity
The degree to which post-depositional disturbance of cultural material has occurred at a site.

Stone Artefact
A piece (or fragment) of stone showing evidence of intentional human modification.

Stone procurement site
A place where stone materials is obtained by Aboriginal people for the purpose of manufacturing stone artefacts. In Australia, stone procurement sites range on a continuum from pebble beds in watercourses (where there may be little or no evidence of human activity) to extensively quarried stone outcrops, with evidence of pits and concentrations of hammerstones and a thick layer of knapping debris.

Stone tool
A piece of flaked or ground stone used in an activity, or fashioned for use as a tool. A synonym for a stone tool is ‘implement’. This term is often used by archaeologists to describe a flake tool fashioned by delicate flaking (retouch).

Use wear
Macroscopic and microscopic damage to the surfaces of stone tools, resulting from its use. Major use-wear forms are edge fractures, use-polish and smoothing, abrasion, and edge rounding bevelling.

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Appendix 1

Gazetteer of Recorded Sites

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Site Name	Grid Reference	Site Type	Site Description
AH14114	E 478481 N 5409690	Isolated Artefact	One cream quartzite flake located on a raised mound with 20° slopes within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14115	E 478820 N 5410133	Isolated Artefact	One dark-grey quartzite flake located within a depression within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14115	E 478669 N 5410255	Isolated Artefact	One cream chert flake located on a raised mound with 20° slopes within flat plantation land. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.

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Appendix 2

Detailed Descriptions for Aboriginal Heritage Sites

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Site Name: AH14114

Site Type: Isolated Artefact

Grid Reference:

- **E 478481 N 5409690**

Site Description:

AH14114 is located on a raised mound of light red/brown soil with 20° slopes between two depressions associated with plantation re-planting within flat terrain. The site is located 1.73km northeast of an unnamed tributary associated with the Meander River. The site is immediately surrounded by flat to moderately undulating re-planted plantation. Surface visibility within the site and immediate surrounds is 80%.

The artefact recorded at AH14114 consists of a cream-coloured quartzite flake with evidence of retouch and is located on a raised mound with 20° slopes between two depressions where surface visibility is 80%. Besides the isolated quartzite artefact noted above, no additional artefacts were identified.

Given some constraints in surface visibility (particularly regrowth vegetation and debris from harvesting), it can't be stated with certainty that there are no additional undetected artefacts associated with site AH14114. However, all indications are that artefact densities are likely to be low to very low.

Artefact Details:

- Cream quartzite flake dimensions: 45mm x 26mm x 10mm

Plate 12: View north showing the dorsal surface with retouch of the cream-coloured quartzite flake from site AH14114.

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Plate 13: View north showing the dorsal surface of the cream-coloured quartzite flake from site AH14114.

Plate 14: View north showing the ventral surface of the cream-coloured quartzite flake from site AH14114.

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Plate 15: View north showing the location of AH14114.

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Site Name: AH14115

Site Type: Isolated Artefact

Grid Reference:

- **E 478820 N 5410133**

Site Description:

AH14115 is located in a depression of light red/brown soil between two raised mounds with 20° slopes associated with plantation re-planting within terrain on a 5° slope. The site is located 1.4km southeast of an unnamed tributary associated with Bryans Creek. The site is immediately surrounded by flat to moderately undulating re-planted plantation. Surface visibility within the site and immediate surrounds was 80%.

The artefact recorded at AH14115 consists of a grey-coloured quartzite flake located in a depression between two raised mounds with 20° slopes where surface visibility is 80%. Besides the isolated quartzite artefact noted above, no additional artefacts were identified.

Given some constraints in surface visibility (particularly regrowth vegetation and debris from harvesting), it can't be stated with certainty that there are no additional undetected artefacts associated with site AH14115. However, all indications are that artefact densities are likely to be low to very low.

Artefact Details:

- Grey quartzite flake dimensions: 25mm x 25mm x 6mm

Plate 16: View east showing the ventral surface of the grey-coloured quartzite flake from site AH14115.

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Plate 17: View east showing the dorsal surface of the grey-coloured quartzite flake from site AH14115.

Plate 18: View south showing the location of AH14115 on a 5° slope.

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Site Name: AH14116

Site Type: Isolated Artefact

Grid Reference:

- **E 478669 N 5410255**

Site Description:

AH14116 is located on a raised mound of light red/brown soil with 20° slopes between two depressions associated with plantation re-planting within flat terrain. The site is located 1.21 km northeast of an unnamed tributary associated with Bryans Creek. The site is immediately surrounded by flat to moderately undulating re-planted plantation. Surface visibility within the site and immediate surrounds was 80%.

The artefact recorded at AH14116 consists of a cream-coloured chert flake and is located on a raised mound with 20° slopes between two depressions where surface visibility is 80%. Besides the isolated chert artefact noted above, no additional artefacts were identified.

Given some constraints in surface visibility (particularly regrowth vegetation and debris from harvesting), it can't be stated with certainty that there are no additional undetected artefacts associated with site AH14116. However, all indications are that artefact densities are likely to be low to very low.

Artefact Details:

- Cream chert flake dimensions: 30mm x 19mm x 5mm

Plate 19: View southeast showing the ventral surface of the cream-coloured chert flake from site AH14116.

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Plate 20: View southeast showing the dorsal surface of the cream-coloured chert flake from site AH14116.

Plate 21: View south showing the location of AH14116.

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Appendix 3

Unanticipated Discovery Plan

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Unanticipated Discovery Plan

Procedure for the management of unanticipated discoveries of Aboriginal relics in Tasmania

For the management of unanticipated discoveries of Aboriginal relics in accordance with the *Aboriginal Heritage Act 1975* and the *Coroners Act 1995*. The Unanticipated Discovery Plan is in two sections.

Discovery of Aboriginal Relics other than Skeletal Material

Step 1:
Any person who believes they have uncovered Aboriginal relics should notify all employees or contractors working in the immediate area that all earth disturbance works must cease immediately.

Step 2:
A temporary 'no-go' or buffer zone of at least 10m x 10m should be implemented to protect the suspected Aboriginal relics, where practicable. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected Aboriginal relics have been assessed by a consulting archaeologist, Aboriginal Heritage Officer or Aboriginal Heritage Tasmania staff member.

Step 3:
Contact Aboriginal Heritage Tasmania on **1300 487 045** as soon as possible and inform them of the discovery. Documentation of the find should be emailed to **aboriginal@dpac.tas.gov.au** as soon as possible. Aboriginal Heritage Tasmania will then provide further advice in accordance with the *Aboriginal Heritage Act 1975*.

Discovery of Skeletal Material

Step 1:
Call the Police immediately. Under no circumstances should the suspected skeletal material be touched or disturbed. The area should be managed as a crime scene. It is a criminal offence to interfere with a crime scene.

Step 2:
Any person who believes they have uncovered skeletal material should notify all employees or contractors working in the immediate area that all earth disturbance works cease immediately.

Step 3:
A temporary 'no-go' or buffer zone of at least 50m x 50m should be implemented to protect the suspected skeletal material, where practicable. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected skeletal remains have been assessed by the Police and/or Coroner.

Step 4:
If it is suspected that the skeletal material is Aboriginal, Aboriginal Heritage Tasmania should be notified.

Step 5:
Should the skeletal material be determined to be Aboriginal, the Coroner will contact the Aboriginal organisation approved by the Attorney-General, as per the *Coroners Act 1995*.

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Guide to Aboriginal site types

Stone Artefact Scatters

A stone artefact is any stone or rock fractured or modified by Aboriginal people to produce cutting, scraping or grinding implements. Stone artefacts are indicative of past Aboriginal living spaces, trade and movement throughout Tasmania. Aboriginal people used hornfels, chalcedony, spongelite, quartzite, chert and silcrete depending on stone quality and availability. Stone artefacts are typically recorded as being 'isolated' (single stone artefact) or as an 'artefact scatter' (multiple stone artefacts).

Shell Middens

Middens are distinct concentrations of discarded shell that have accumulated as a result of past Aboriginal camping and food processing activities. These sites are usually found near waterways and coastal areas, and range in size from large mounds to small scatters. Tasmanian Aboriginal middens commonly contain fragments of mature edible shellfish such as abalone, oyster, mussel, warrener and limpet, however they can also contain stone tools, animal bone and charcoal.

Rockshelters

An occupied rockshelter is a cave or overhang that contains evidence of past Aboriginal use and occupation, such as stone tools, middens and hearths, and in some cases, rock markings. Rockshelters are usually found in geological formations that are naturally prone to weathering, such as limestone, dolerite and sandstone

Quarries

An Aboriginal quarry is a place where stone or ochre has been extracted from a natural source by Aboriginal people. Quarries can be recognised by evidence of human manipulation such as battering of an outcrop, stone fracturing debris or ochre pits left behind from processing the raw material. Stone and ochre quarries can vary in terms of size, quality and the frequency of use.

Rock Marking

Rock marking is the term used in Tasmania to define markings on rocks which are the result of Aboriginal practices. Rock markings come in two forms; engraving and painting. Engravings are made by removing the surface of a rock through pecking, abrading or grinding, whilst paintings are made by adding pigment or ochre to the surface of a rock.

Burials

Aboriginal burial sites are highly sensitive and may be found in a variety of places, including sand dunes, shell middens and rock shelters. Despite few records of pre-contact practices, cremation appears to have been more common than burial. Family members carried bones or ashes of recently deceased relatives. The Aboriginal community has fought long campaigns for the return of the remains of ancestral Aboriginal people.

Further information on Aboriginal Heritage is available from:

Aboriginal Heritage Tasmania
Community Partnerships and Priorities
Department of Premier and Cabinet
GPO Box 123 Hobart TAS 7001

Telephone: **1300 487 045**
Email: **aboriginal@dpac.tas.gov.au**
Web: **www.aboriginalheritage.tas.gov.au**

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Tasmanian Government

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Appendix 4

Aboriginal Community Consultation Results

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Palawa Cultural Heritage - Aboriginal Archaeology

Aboriginal Heritage Consultant Re: Aboriginal Cultural Heritage Survey
Cross Cultural Awareness Training, Arts Traditional Crafts & Photography

Vernon Graham
Aboriginal Heritage Consultant
61 Galvin Street
South Launceston

Tasmania 7249

Mob 0417 378

11th December 2022

To whom it may concern,

Re; "ABx Deloraine Bauxite Mine Project, Porters Bridge Road Exton, Aboriginal Heritage Assessment Report Final Draft Version 1."

ABx Group, the proponent, is seeking to establish a Bauxite and Rare Earth Element mine in former forestry land 9km northeast of Deloraine, in the Northern Region of Tasmania. The Bauxite and rare earth element mine will be situated on an approximately 138.86ha area of private forestry plantation land. Shay Hannah the archaeologist for Cultural Heritage Management Australia (CHMA Pty Ltd) and Vernon Graham a Senior Aboriginal Heritage Officer / Consultant have been engaged by the proponent to undertake an Aboriginal heritage assessment for the proposed Deloraine Bauxite Mine Project (the study area), to identify any potential Aboriginal heritage constraints.

We identified three Aboriginal sites during our survey (AH14114, AH14115 and AH14116) with all three sites being Isolated artefacts. We have recommended that, if possible, these sites should be protected and left in-situ. However, if they are likely to be impacted then the artefacts should be salvaged and relocated to a safe location.

Attached is the report re; "*ABx Deloraine Bauxite Mine Project, Porters Bridge Road Exton, Aboriginal Heritage Assessment Report Final Draft Version 1, Hannah. S. & Graham. V., 2022*." Looking forward for any comments within five working days.

Thank You
Sign

Vernon Graham
Senior Aboriginal Heritage Consultant

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Palawa Consultancy; Cross Cultural Awareness Training, Arts Traditional Crafts
Name: Vernon Graham (*Senior Aboriginal Heritage Consultant*)
Email: vernon.graham@gmail.com
Mobile: 0417 378 031

18th December 2022

"ABx Deloraine Bauxite Mine Project, Porters Bridge Road Exton, Aboriginal Heritage Assessment Report Final Draft Version 1."

Organisation	Information Letter Sent	Response To Letter	Meeting Date	Summary of Comments and Feedback
Aboriginal Elders Council of Tasmania (AECT), Launceston	11th December 2022 via email	Verbal in person	12th December 2022 discussions at the Elders Council, L'ton	**Aboriginal Elders Council of Tasmania (AECT),** Launceston, had discussions with Elders Council, they respect the elders past and present, also acknowledge the traditional owners of the land on which we live and the broader Aboriginal community continuing spiritual connection to the land / Mother Earth". They have stated that all Aboriginal heritage / cultural values be protected, managed, regarding the abovementioned.
Hank Horton ("Kooparoona Niara Aboriginal Mob") of the Deloraine	11th December 2022 via email	Via phone & email	12th & 13th December via email & Phone	The **Kooparoona Niara (Mob)** Aboriginal Association, 26th July thanks for the report via email and are happy with your findings regarding the Aboriginal heritage assessment, discussion via phone that all Aboriginal heritage / cultural values be protected and managed. Hank also commented that his family, this is where my Mum and her family were sent to when they were made leave the Islands. I know this area really well, and I know that our families hunted, gathered and lived from the land around that area. Fishing, shooting ETC.
Aboriginal Land Council of Tasmania (ALCT), Launceston	11th December 2022 via email	Via email	12th December at L'ton office	I've communicated with the Aboriginal Land Council of Tasmania (ALCT), Launceston, have stated no comments regarding the Proposal, however if ALCT need to make a point regarding any projects and or development proposals they would!
Tasmanian Aboriginal Centre, Launceston (TAC), Launceston	11th December 2022 in person	Verbal in person at TAC	12th December Verbal re. comments	I have communicated with Tasmanian Aboriginal Centre (TAC), Launceston, have stated no comments and no more reports forwarded to L'ton TAC.
Melythina tiakana warrana (Heart of Country) Aboriginal Corporation (MTWAC), Northeast mob.	11th December 2022 via email	Texted via phone	16th December Texted	Nick Cameron has stated that ***melythina tiakana warrana (Heart of Country) Aboriginal Corporation*** (MTWAC) we had a discussion regarding their boundaries which is the Northeast Coastal Plans Nation that MTWAC represents, from Pipers River to St Helens, this area includes Mount William ranges and extending to Ben Lomond regarding any assessments within the boundaries. Had discussions with Nick regarding the assessment relating to the findings. he said thanks and that all Aboriginal heritage / cultural values should be protected, and managed.

Historic Heritage Assessment

Appendix C

pitt&sherry

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Historic Heritage Assessment

Appendix C

pitt&sherry

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ABx Deloraine Bauxite Mine Project, Porters Bridge Road Exton

Historic Heritage Assessment Report

AUTHOR: Stuart Huys and Shay Hannah
27 Apsley St, South Hobart TAS 7004

CLIENT: Pitt and Sherry

4.12.2022

CULTURAL HERITAGE MANAGEMENT AUSTRALIA

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Report Version Control

Report version	Report distribution	Date of Distribution
Draft Report V1	Zoe Smith (CHMA) for editing	3/12/2022
Draft Report V1	Pitt and Sherry for review	4/12/2022
Final Report V1		

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Executive Summary

Introduction

ABx Group, the proponent, is seeking to establish a Bauxite and Rare Earth Element mine in former forestry land 9km northeast of Deloraine, in the Northern Region of Tasmania. The Bauxite and rare earth element mine will be situated on an approximately 138.86ha area of private forestry plantation land.

The proposed Deloraine Bauxite and Rare Earth Element mine is located adjacent to Porters Bridge Road within the southern section of the study area. The northern section of the study area is adjacent to Porters Bridge Road and River Road in Exton in the Northern Region of Tasmania (see Figures 1-3). The site will be accessed via two existing access tracks into the site, an access track off River Road that leads into the site from the west and an unnamed access track off Porters Bridge Road that provides access to the southern and northern sections of the study area. This access track also connects to other existing access tracks within the study area.

CHMA Pty Ltd has been engaged by the proponent to undertake a historic heritage assessment for the proposed Deloraine Bauxite Mine Project (the study area), to identify any potential historic heritage constraints. This report presents the findings of the historic heritage assessment.

Results of the Search of the Heritage Registers

A search was carried out of a number of historic registers and databases in order to determine the extent of historic sites and features in the vicinity of each of the Deloraine Bauxite Mine Projects study area. Agency databases searched included:

- Australian National Heritage List (NHL)
- The Australian Heritage Database (AHD)
- Tasmanian Heritage Register (THR)
- The Register of the National Estate (RNE)

The search of the various historic heritage registers shows that there are no registered historic sites or places located within a 5km radius of the Deloraine Bauxite Mine Project site. However, no registered sites exist in the immediate vicinity of the Deloraine Bauxite Mine Project site. The detailed search results are presented in section 4.3 of this report.

Survey Results and Statement of Archaeological Potential

The field survey assessment of the Deloraine Bauxite Mine Project study area resulted in the identification of one historic feature, this being a loggers' hut. The loggers' hut is located 370m north of the southern boundary of the study area. The loggers' hut is located within the study area and is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works. The detailed recording and assessment of the loggers' hut are presented in Appendix 2.

Besides the one historic feature described above, no other historic sites or suspected features were identified during the field survey assessment. It is assessed that there is a low potential for undetected historic heritage sites present in the study area. If undetected features are present in the study area, they are likely to be representative of either small-

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scale or large-scale selective logging activity. There is evidence to indicate that more intensive logging activity was carried out in the past within the Exton and Reedy Marsh areas and as such it is very unlikely that more substantive historic heritage features will be present in the study area.

The detailed survey results and discussions are presented in section 5 of this report.

Table i: Summary details for historic heritage sites recorded during the field survey assessment of the Deloraine Bauxite Mine Project

Site Name	Grid Reference (GDA94)	Site Description
Loggers Hut	E478432 N5409806	The site is accessed via Porters Bridge Road and a graded access track and is located 370m north of the southern boundary of the study area. The loggers' hut is likely to be of local significance. The loggers' hut is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

Management Recommendations

Heritage management options and recommendations provided in this report are made based on the following criteria.

- The legal and procedural requirements as specified in section 4 of this report.
- The results of the investigation as documented in this report.
- The results of the Historic heritage register search.

Recommendation 1 (Loggers Hut)

The loggers' hut is located 370m north of the southern boundary of the study area and is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

The loggers' hut is not listed on any of the heritage registers, it is likely to be of local heritage significance. The loggers' hut would not meet the threshold requirements for State or National significance. Likely to be of local significance.

Due to the poor condition of the site, it is recommended that the site be recorded and photographed, no further action is required.

Recommendation 2 (Historic Heritage)

The historic heritage registers search results show that there are no heritage places located within or in the immediate surrounds of the study area that are listed on any of the local, State or National heritage registers. The absence of any registered historic heritage sites within and in the immediate surrounds of the study area indicates that there is a low to very

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low potential for historic heritage features to be present. If there are features present, they are likely to be associated with the early pastoral settlement and logging industry of Exton/Reedy Marsh. Based on the above it is advised that there are no known historic heritage constraints or requirements for the study area.

Recommendation 3 (Unanticipated Discovery Plan for Historic Heritage)

The procedures outlined in Practice Note No 2 issued by the Tasmanian Heritage Council, processes should be followed should any unexpected archaeological features and/or deposits be revealed during development works.

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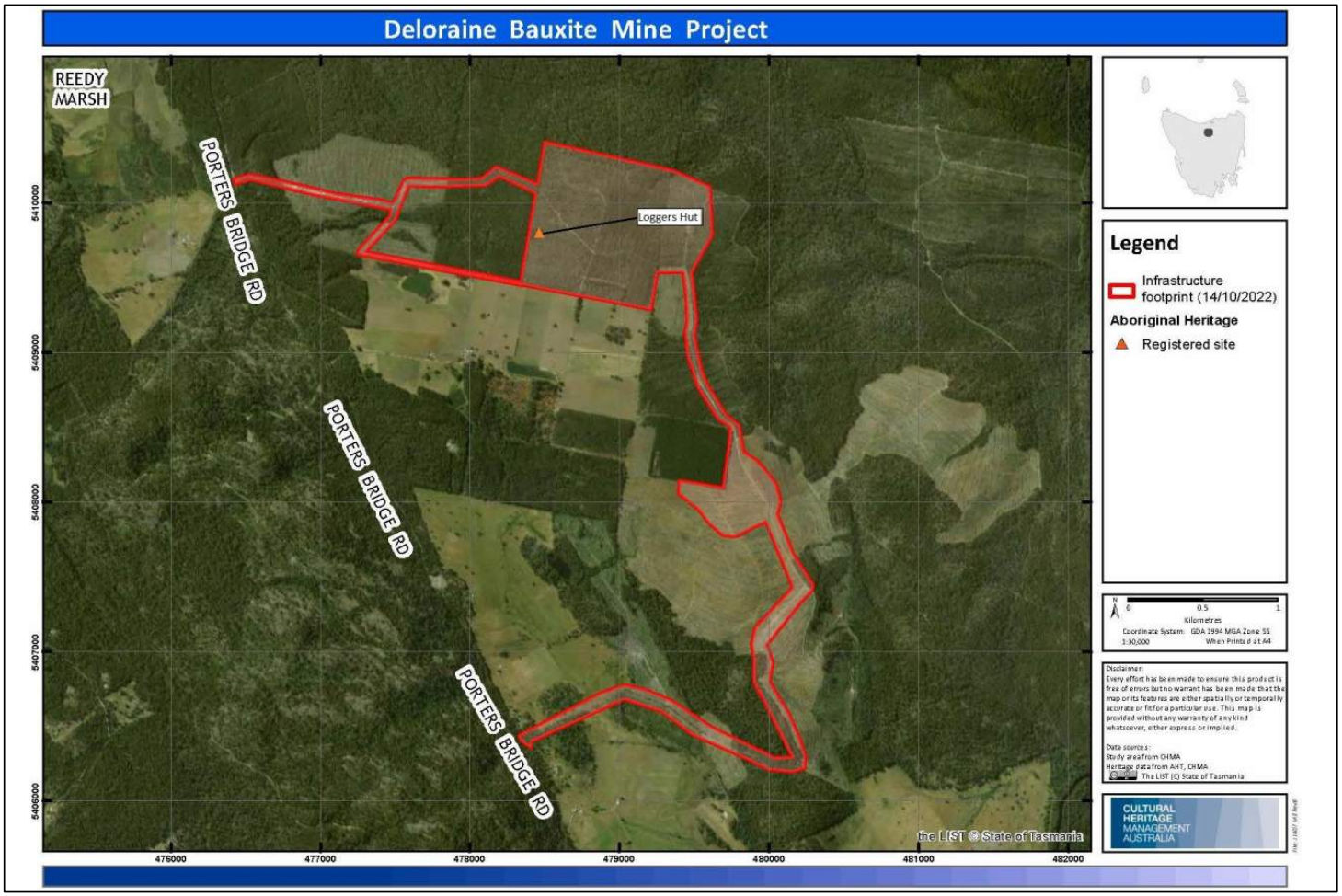

Figure i: Aerial image showing the location of the loggers' hut in relation to the Deloraine Bauxite Mine Project footprint.

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1.0 Project Details

1.1 Project Outline

ABx Group, the proponent, is seeking to establish a Bauxite and Rare Earth Element mine in former forestry land 9km northeast of Deloraine, in the Northern Region of Tasmania. The Bauxite and rare earth element mine will be situated on an approximately 138.86ha area of private forestry plantation land.

The proposed Deloraine Bauxite and Rare Earth Element mine is located adjacent to Porters Bridge Road within the southern section of the study area. The northern section of the study area is adjacent to Porters Bridge Road and River Road in Exton in the Northern Region of Tasmania (see Figures 1-3). The site will be accessed via two existing access tracks into the site, an access track off River Road that leads into the site from the west and an unnamed access track off Porters Bridge Road that provides access to the southern and northern sections of the study area. This access track also connects to other existing access tracks within the study area.

CHMA Pty Ltd has been engaged by the proponent to undertake a historic heritage assessment for the proposed Deloraine Bauxite Mine Project (the study area), to identify any potential historic heritage constraints. This report presents the findings of the historic heritage assessment.

1.2 Aims of the Investigation

The principal aims of the present heritage assessment are as follows.

- Complete a Historic Heritage Assessment for the Deloraine Bauxite Mine Project site (the study area as shown in Figures 1-3). The assessment is to be compliant with both State and Commonwealth legislative regimes.
- To determine the extent of previously identified Historic heritage sites within and in the immediate vicinity of the study area.
- To locate and document historic heritage sites that may be present within the identified bounds of the study area.
- To assess the archaeological sensitivity values of the study area.
- To assess the scientific and cultural values of identified Historic heritage sites.
- To advise on the management of Historic heritage in line with best practice archaeological guidelines.
- Prepare a report which documents the findings of the Historic heritage assessment.

1.3 Project Methodology

A three-stage project methodology was implemented for this historic heritage assessment.

Stage 1 (Pre-Fieldwork Background Work)
Prior to fieldwork being undertaken, the following tasks were completed by CHMA.

The collation of relevant documentation for the project
As part of Stage 1, the following research was carried out and background information was collated for this project.

- A review of the relevant heritage registers and the collation of information pertaining to any registered heritage sites located within the general vicinity of the study area.

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- Maps of the study areas.
- Relevant reports documenting the outcomes of previous heritage studies in the vicinity of the study area.
- Historical literature for the region.
- References to the land use history of the study area.
- GIS Information relating to landscape units present in the study area.
- Geotechnical information for the study area, including soil and geology data.

Stage 2 (Field Work)

Stage 2 entailed the fieldwork component of the assessment. The field survey was undertaken by Shay Hannah (CHMA archaeologist) and Vernon Graham (Senior Aboriginal Heritage Officer), over a period of 2 days (11-10-2022 – 12-10-2022).

The field team walked a total of 32km of survey transects across the proposed Deloraine Bauxite Mine Project footprint, with the average width of each transect being 5m on access tracks and 10m within the plantation sections. As part of the field survey program, additional transects were walked in areas where there was improved surface visibility. Section 3 provides further details as to the survey coverage achieved within the study area.

Stage 3

Stage three of the project involves the production of a Draft and Final Report that includes an analysis of the data obtained from the field survey, an assessment of archaeological sensitivity and management recommendations. The report has been prepared by Shay Hannah from CHMA.

1.4 Project Limitations

Most archaeological investigations are subject to limitations that may affect the reliability of the results. The main constraint to the present investigation was restricted surface visibility due primarily to vegetation cover. At the time of the field survey, surface visibility across the proposed bauxite mine footprint ranged between <10% and 80%, with the estimated average being 70%. Throughout the study area, there was a network of previously graded and ungraded vehicle tracks that provided transects of improved surface visibility. There were also numerous areas where plantation harvesting and clearing were present that provided locates of improved visibility. To offset constrained surface visibility, any areas of improved visibility were inspected in detail. The constraints in surface visibility limited the effectiveness of the survey assessment to some extent. The issue of surface visibility is further discussed in Section 3 of this report.

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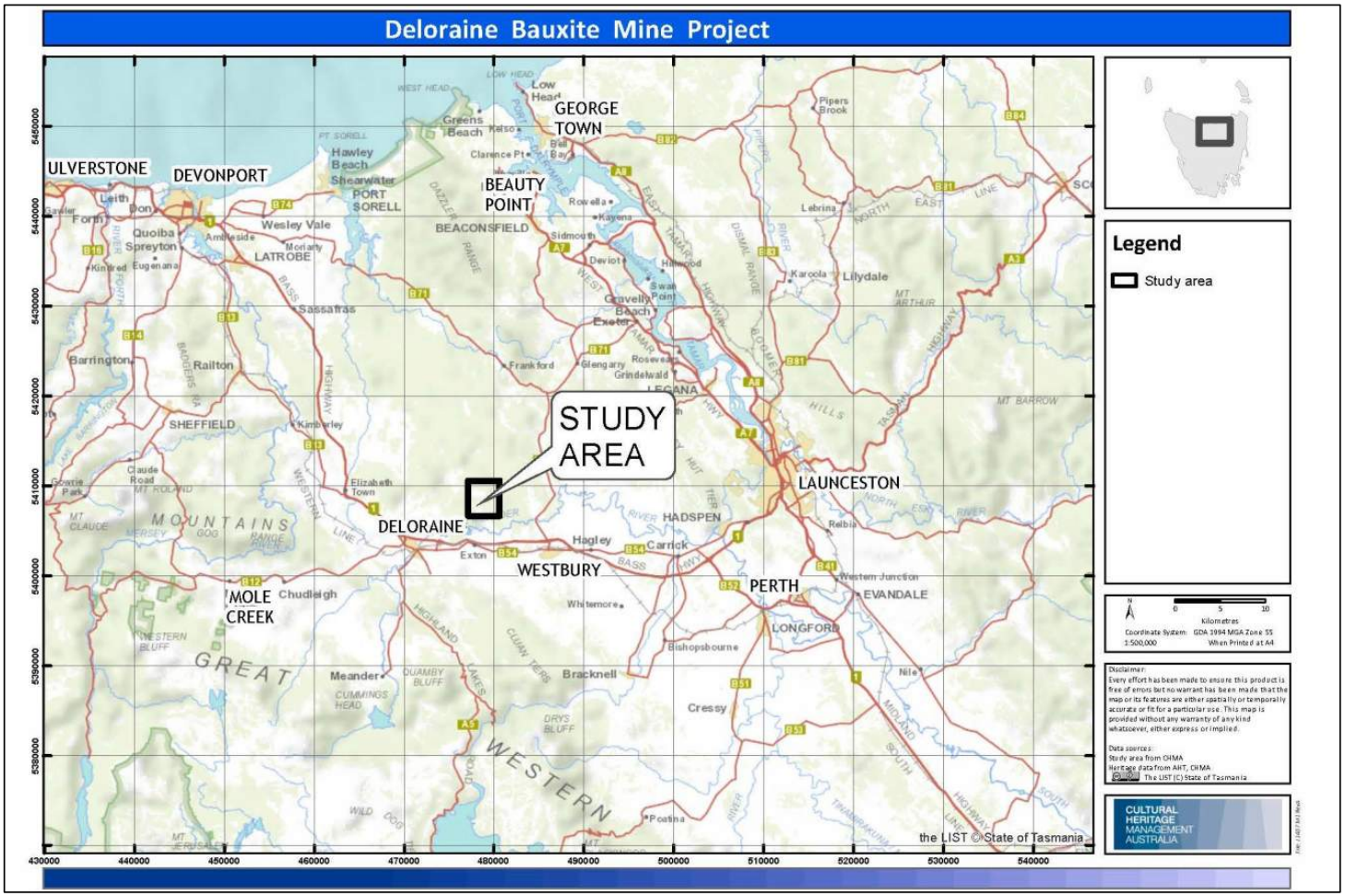

Figure 1: Topographic map showing the location of the study area at Exton/Reedy Marsh in the Northern Region of Tasmania.

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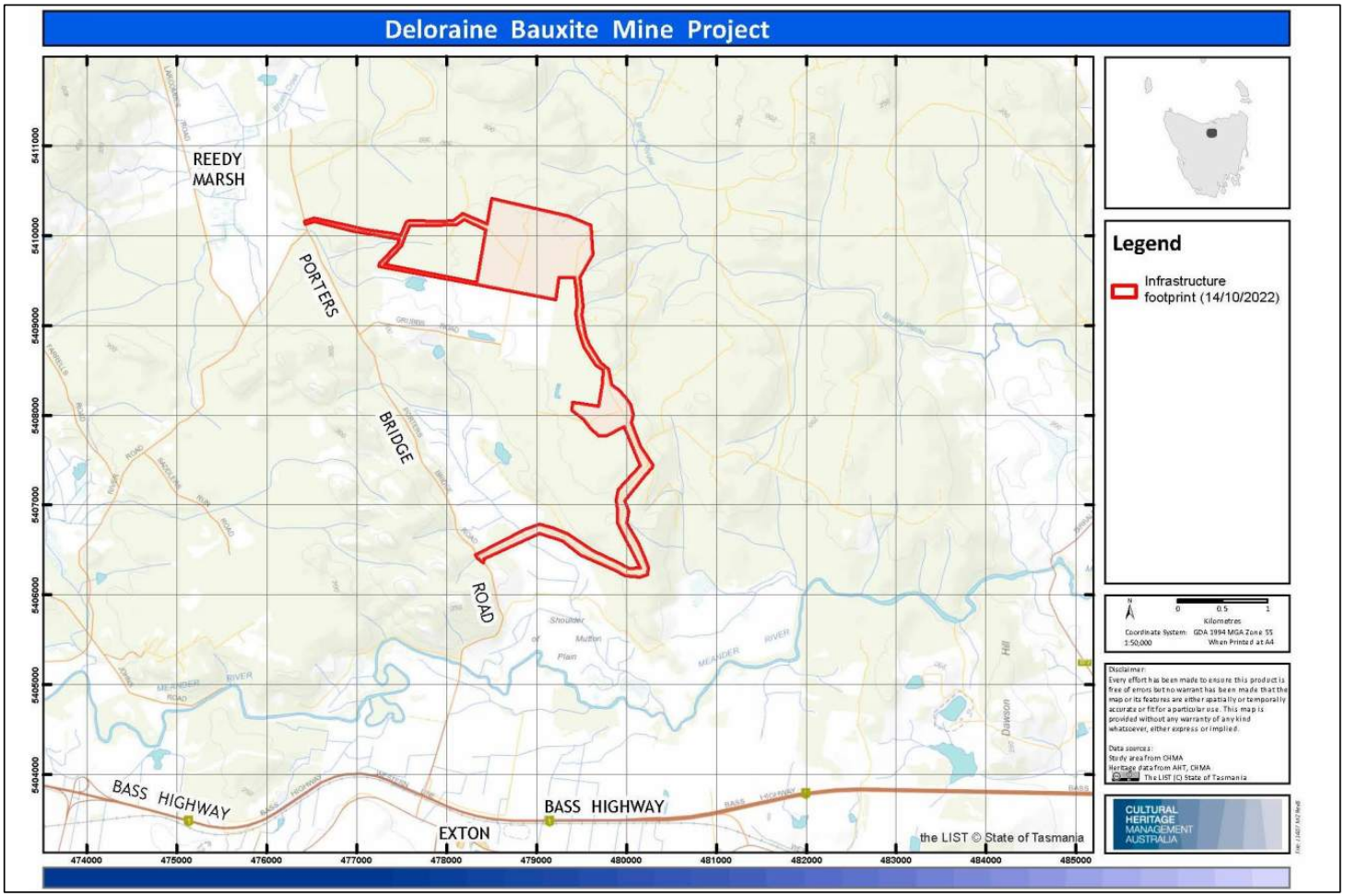

Figure 2: Topographic map showing the landscape setting of the study area.

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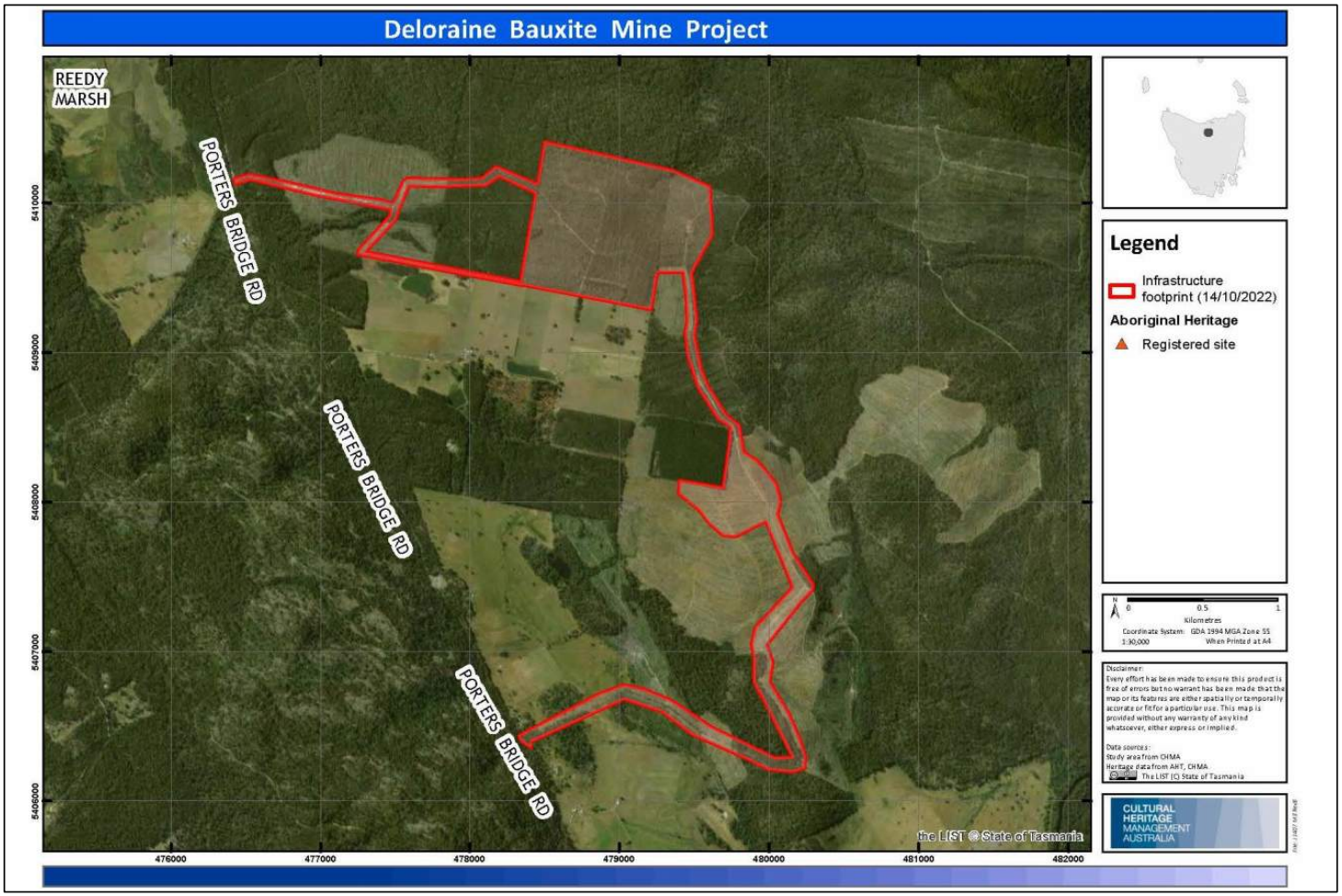

Figure 3: Aerial image showing the boundaries of the study area.

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2.0 Environmental Setting of the Study Area

The proposed Deloraine Bauxite Mine Project area (the study area) covers approximately 138.86ha. The northern sections of the study area are situated 9.65km northeast of Deloraine on a rise of 300m above the surrounding plains, whilst the southern sections of the study area are situated 9.58km northeast of Deloraine, in the Northern Region of Tasmania. Both sections of the study area are on flat to moderately undulating terrain with gradients ranging between 5°–25° (see Plates 1 and 6).

The underlying geology of the study area is divided into two types. The northern sections of the study area primarily consist of Cenozoic cover sequences with ferricrete, silcrete, laterite and derived lag deposits present (see Plate 4). The remaining area of the study area including the southern section consists of Tasmanian Jurassic Dolerite with locally developed granophyre (see Plate 5). The soils within the entire study area consist of a light red-brown clay loam and are shallow to skeletal in depth (see Plate 1) (List 2022).

The access track connecting Porters Bridge Road to the southern sections of the study area is located 1.3km north of the Meander River, which is the largest major water course in this part of the Northern Region. This is a perennial river that runs from west to east direction. There is also an unnamed tributary associated with the Meander River that runs through part of the main southern access track. The northern sections of the study area are located approximately 400m to the southwest of an unnamed tributary running off Brushy Rivulet, 1.73km north of an unnamed tributary associated with the Meander River and approximately 750m southeast of an unnamed tributary running off Bryan's Creek, which runs east to west. These are the only named watercourses in the immediate vicinity of the study area. The access track that links the southern sections to Porters Bridge Road is located 1km north of Shoulder of Mutton Plain which is a floodplain. The northern sections overlook the surrounding floodplain.

The vegetation structure across the majority of both sections of the study area consists of former hardwood plantations of either Silvertop eucalypts (*Eucalyptus nitens*) or Tasmanian Blue Gum (*Eucalyptus globulus*) and softwood plantations of Radiata Pine (*Pinus radiata*) (Jordan 2011; List 2022). Also present within the study area is native regrowth including Bracken Fern (*Pteridium esculentum*), Sagg (*Lomandra longifolia*), Black Wattle saplings (*Acacia mearnsii*) (see Plates 1, 2 and 5). Within the westernmost section of the study area, the vegetation types present include a small standing of Swamp Paper Bark (*Melaleuca ericifolia*) (see Plates 2 and 3) surrounded by mature eucalypts with Cutty Grass (*Gahnia grandis*), Prickly Moses (*Acacia ulicifolia*) and Bracken Fern throughout (Kodela 2002; Wilson 1991).

The entire study area has been intensely disturbed by current and previous logging and clearing activity. A network of previously graded and ungraded vehicle tracks occur throughout the entire study area, particularly around the existing plantation rows and Forico graded access tracks (see Plates 2, 6 and 7). The graded access tracks are divided into two types, those with introduced gravels and those constructed using local gravel. Any historic sites that may be present within these more highly disturbed infrastructure areas will have been either destroyed or heavily impacted.

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The study area has a cool, wet climate typical of northern Tasmania. Rainfall occurs throughout the year; with a mean annual rainfall of 589mm. Rainfall is highest in August and September (64mm – 71mm) and lower from January to February (28 – 31mm). The warmest months of the year are January and February when mean temperatures range from minimums of 10°C to maximums of about 23°C. Winter tends to be cold with mean annual temperatures in the coldest months of June and July ranging from 1.5°C mean minimum to maximum temperatures of about 11°C (BOM 2020).

Plate 1: View east showing the recently cleared and replanted plantation rows.

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Plate 2: View southwest showing one of the existing graded access tracks and the mature regrowth in the study area.

Plate 3: View southwest showing tea tree and other species present within the westernmost section of the study area.

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Plate 4: View southwest showing exposed bedrock present in the northern section of the study area.

Plate 5: View north showing a Dolerite outcrop in the southern section of the study area.

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Plate 6: View northeast showing the Radiata Pine plantation on either side of a main graded access track.

Plate 7: View north showing a graded access track marking the border between plantation land and the Brushy Rivulet Reserve.

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3.0 Survey Coverage of the Study Area

Survey Coverage and Surface Visibility

Survey coverage refers to the estimated portion of a study area that has been visually inspected during a field survey. Surface Visibility refers to the extent to which the actual soils of the ground surface are available for inspection. There are a number of factors that can affect surface visibility, including vegetation cover, surface water and the presence of introduced gravels or materials. Figure 4 provides a useful guide for estimating surface visibility.

The field survey was undertaken by Shay Hannah (CHMA archaeologist), Vernon Graham (Senior Aboriginal Heritage Officer) and Kieran Graham (Trainee Heritage Officer), over a period of 2 days (11-10-2022 – 12-10-2022). The field team walked a total of 32km of survey transects. In the plantation rows where clearing had been undertaken, the average width of each transect was 10m. Within the access tracks, the average width of each transect was 5m. Table 4 provides the total transects walked for each section and figure 8 shows the alignment of the survey transects walked by the field team.

The survey transects were predominantly focused on the plantation and access tracks within the Deloraine Bauxite Mine Project footprint. Surface visibility within the plantation ranged from between <10% and 80%, with the average being 80%, which is in the high range. Surface visibility within the graded access tracks corridors ranged between <10% and 50%, with the average being 25%. Improved surface visibility was found along the ungraded access tracks which ranged from 50% and 100%, with the average being 80%. Vegetation cover was the main impediment to visibility.

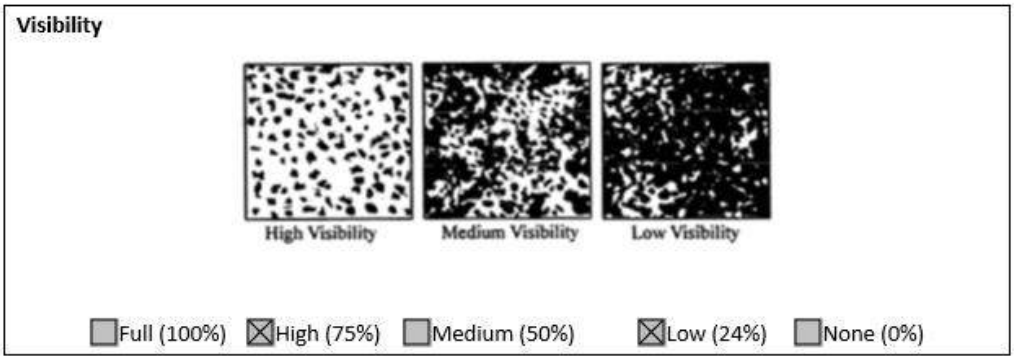

Figure 4: Guidelines for the estimation of surface visibility.

Effective Coverage

Variations in both survey coverage and surface visibility have a direct bearing on the ability of a field team to detect Aboriginal heritage sites, particularly site types such as isolated artefacts and artefact scatters (which are the site types most likely to occur in the study area). The combination of survey coverage and surface visibility is referred to as effective survey coverage. Table 3 presents the estimated effective survey coverage achieved during the course of the survey assessment. The effective coverage is estimated to have been around 200,965.75m². This level of effective coverage is assessed as being adequate for the purposes of determining the potential extent, nature and distribution of Aboriginal cultural heritage sites in the study area.

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Table 1: Effective Survey Coverage achieved across the surveyed areas.

Area Surveyed	Survey Transects	Estimated Surface Visibility	Effective Survey Coverage
Plantation Rows	22130m x 10m= 221,300m^2	80%	177,040m^2
Graded Access Tracks	5819m x 5m= 29,095m^2	25%	7273.75m^2
Ungraded Access Tracks	4163m x 5m= 20,815m^2	80%	16,652m^2
Total	**271,210m^2**		**200,965.75m^2**

Plate 8: View north showing surface visibility at 80% within the plantation rows within the study area.

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Plate 9: View northeast showing surface visibility at 25% on a graded access track within the study area.

Plate 10: View southwest showing surface visibility of 80% along an ungraded access track within the study area.

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Plate 11: Show southwest showing an area of <10% surface visibility within the study area.

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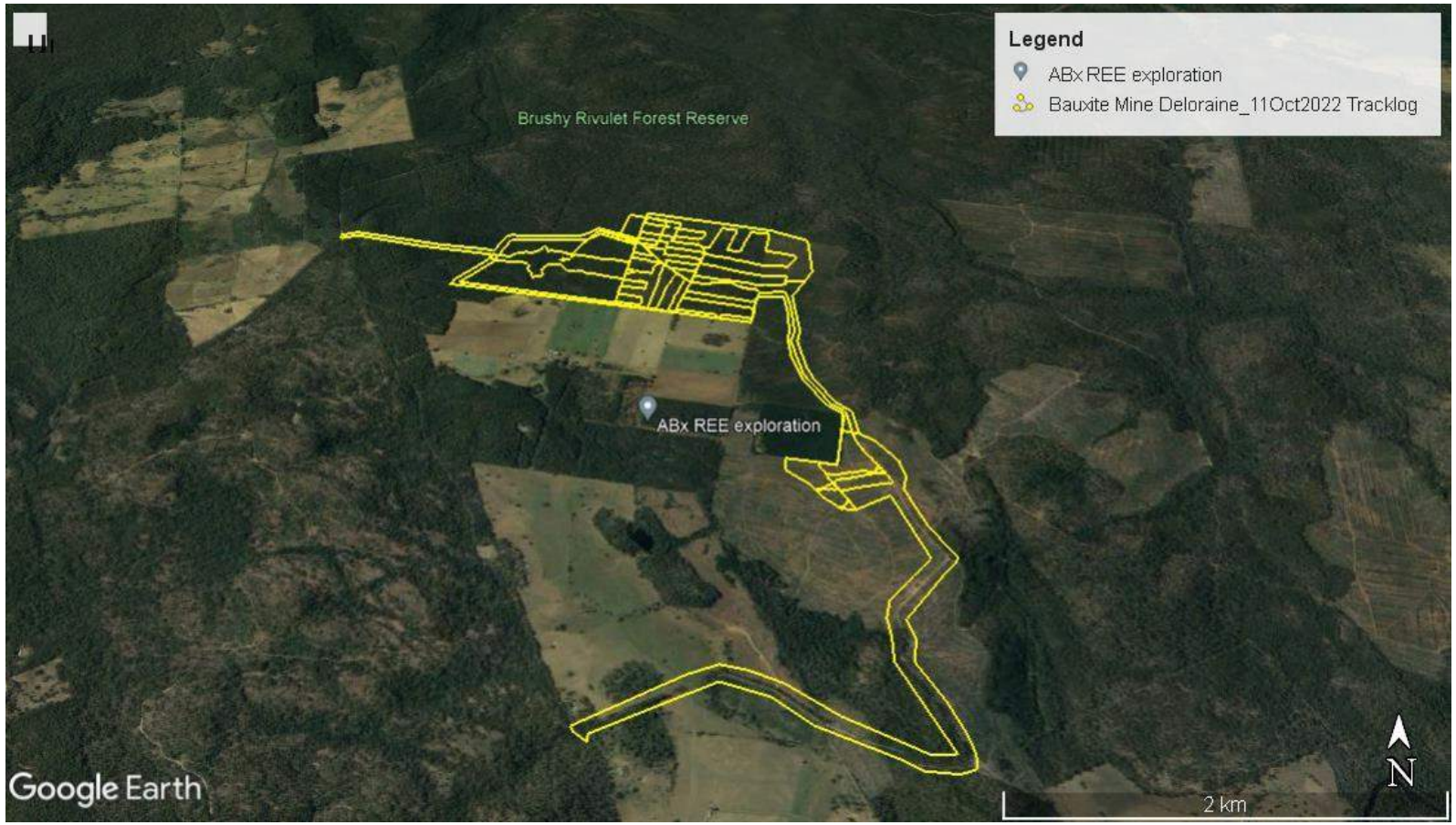

Figure 5: Aerial image showing survey transects walked by the field team across the study area.

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4.0 Historic Heritage Background

4.1 Historic Context

The European settlement of the Meander Valley district, including Deloraine, Exton and Reedy Marsh was haphazard in manner. In the 1810s small farmers, and many emancipated convicts had begun settling in the Norfolk Plains district (the region around what is now Longford). Larger land grants being taken up by wealthier free men pushed the boundaries of European settlement westward towards Hadspen in 1818 and by the 1820s the township of Westbury marked the western boundary of settlement (Davies 2004:9). From the 1830s to the 1840s initial labour on farming estates and developing rural industries was provided by convicts. Convicts were also employed on public works in the region, including the construction of the first bridge in Deloraine, under the charge of Robert Notman (Davies 2004:12).

By the 1850s, settlement of the district saw by free settlers of primarily English, Scottish and Irish origin. In the town of Westbury, it was noted that Irish immigrants were the primary residents. Irish settlers also occupied the Deloraine area and its surround, settling on farming estates and at Reedy Marsh and Tongataboo (Weetah) (Davies 2004:14). Throughout the 1850s and the nineteenth century, more migrants would settle in the district and expansion into previously unoccupied land began with the several *Waste Lands Acts* (1850s–1870s). The *Waste Lands Acts* opened up more of the marginal lands for small-scale farming. In these acts, the small-scale farmers, or selectors, were forced into rougher country and cultivated the land by hand. Small selectors or ‘cocky’ farmers settled at Liffey, Cluan, Jackeys Marsh, Selbourne, Westwood, Christmas Hills and Reedy Marsh (Davies 2004:15–16). The *Waste Lands Acts* (1850s–1870s) began a minor land boom in Tasmania. In 1878 there were 16 holdings of 100 acres or less in the Meander district. By the 1890s the number had risen to 34 holdings of 100 acres or less in the Meander district (Davies 2004:16). Selections of more than 100 acres in the Meander Valley were located at Cheshunt estate, directly north of Deloraine (Davies 2004:16). In 1907, the Closer Settlement scheme saw the break-up of large estates that were believed to tied up by pastoralism to create smaller estates. The scheme was considered a failure (Davies 2004:18).

The increase in population in the district saw the development of commerce and retail within the Meander district. The establishment of post offices in 1865 in Deloraine, Exton and four other towns. By 1901 the postal service had been extended to 29 towns throughout the district (Davies 2004:28). Electronic telegraph services to the district came with the opening of the Launceston and Western Railway in 1871 and by 1901 there were electric telegraph connections in 15 towns and hamlets in the Meander district (Davies 2004:29).

Following World War I, the Soldier Settlement Scheme, which aimed to re-settle returned soldiers on the land, replaced the Closer Settlement Scheme in Tasmania (Davies 2004:18). Whitefoord Hills and Cheshunt estates were acquired and subdivided under the scheme in 1918. In 1923 Deloraine had an estimated 71 soldier settlement allotments, the fifth highest number of any Tasmanian municipality (Davies 2004:18). In 1920 an allotment at Exton was acquired for services homes, but it appears it was never developed and was resold in 1934. The soldier settlement scheme had disastrous consequences. The small sizes of the

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allotments were usually unable to sustain a family and the settlers had little to no farming experience (Davies 2004:18). By 1928 only 800 of the 2000 soldiers originally settled under the scheme in Tasmania, were still on their allotted farms (Davies 2004:18).

Throughout these periods of settlement and agricultural growth in the Meander district, the mining and timber-based industries were also growing. The earliest known slate quarry in the area was recorded in 1829 and lime was being carted to Launceston from Beefeater Hill (4kms from Deloraine) by 1837. From the 1880s onwards, more intensive mining activity occurred in the remote plains and valleys of the district and surrounds. However none of these mines proved to be payable due to transport difficulties brought on by their remote locations (Davies 2004:21). Timber-based industries have been a vital element in the Meander district, including Reedy Marsh, since the mid-nineteenth century. Up until around 1900, the timber-based industries were localised, located in forest areas with small mills that provided essential building materials for homes, farms, bridges and railways and a means of providing a source of heat and power (Davies 2004:22; *Western Tiers* Thursday 24 February 1994:9). After 1900, the timber based industry in the district expanded and began to look outward as transport options improved, leading to the establishment of larger mills, although they continued to be locally operated. After World War II increased mechanisation led to larger centralised enterprises, bringing about the demise of small local mills. The timber-based industries within the Meander district have been under increased pressure since the 1970s (Davies 2004:22).

The twentieth century saw changes and development in the Meander district. The 1920s and 1930s saw a few itinerant hawkers from China and other Asian countries plied the Deloraine area and one Chinese merchant had a shop in the town. These hawkers were also a regular feature within small hamlets within the district, including Roelf Vos, a Dutch immigrant who sold products door to door, before successfully establishing a major supermarket chain (Davies 2004:41). The years after World War II saw an influx of migrants to the Meander district and greater Tasmania and today it is reflected in the diversity of within the region. Agriculture remains an important industry in the twenty-first century, but tourism has also become a significant industry.

4.2 Historic Heritage Assessments Previously Undertaken in the Vicinity of the Study Area

There have been several historic heritage assessments that have previously been undertaken in the general surrounds of the Deloraine Bauxite Mine Project site. These assessments have primarily been focused within the Deloraine township and the Meander Valley district areas and have ranged in scope from Desktop studies to detailed survey assessments. These assessments have resulted in the recording and documentation of a broad range of historic features associated with agriculture and community. Based on the review of the currently available literature, it appears that none of these recorded features are situated within the bounds of the Deloraine Bauxite Mine Project site. The reports reviewed as part of the literature review are presented below.

‘To The Westward’ Meander Valley Heritage Study Stage 1: Thematic History (prepared for Meander Valley Municipal Council, 2004 by Terry, I and K. Evans.)

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Meander Valley Heritage Study Report (prepared for Meander Valley Municipal Council, 2006 by Paul Davies Pty Ltd Architects Heritage Consultants.)

4.3 Results of the Search of the Heritage Registers

A search was carried out of a number of historic registers and databases in order to determine the extent of historic sites and features in the vicinity of the study area. Agency databases searched included:

- Australian National Heritage List (NHL)
- The Australian Heritage Database (AHD)
- Tasmanian Heritage Register (THR)
- The Register of the National Estate (RNE)

The search of the various historic heritage registers shows that there are no registered historic sites or places located within a 5km radius of the Deloraine Bauxite Mine Project site.

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5.0 Survey Results, Statement of Heritage Impacts and Statement of Archaeological Potential

The field survey assessment of the Deloraine Bauxite Mine Project study area resulted in the identification of one historic feature, this being a loggers' hut. The loggers' hut is located 370m north of the southern boundary of the study area (see Figure 6). As such, this site will most likely be directly physically impacted by the Deloraine Bauxite Mine Project. Table 2 provides the summary details for the Loggers Hut. The detailed description is provided in Appendix 2.

Besides the one historic feature described above, no other historic sites or suspected features were identified during the field survey assessment. As discussed in section 4.3, the heritage registers search results show that there are no registered heritage sites or features that are situated within the study area.

As noted in section 3 surface visibility across the proposed bauxite mine footprint ranged between <10% and 80%, with the estimated average being 70%. Throughout the study area, there was a network of previously graded and ungraded vehicle tracks that provided transects of improved surface visibility. There were also numerous areas where plantation harvesting and clearing were present that provided locates of improved visibility. To offset constrained surface visibility, any areas of improved visibility were inspected in detail. The constraints in surface visibility limited the effectiveness of the survey assessment to some extent and it can't be stated that with absolute certainty that there are no additional undetected heritage features present in the study area. If undetected features are present in the study area, they are likely to be representative of either small-scale or large-scale selective logging activity. There is evidence to indicate that more intensive logging activity was carried out in the past within the Exton and Reedy Marsh areas and as such it is very unlikely that more substantive historic heritage features will be present in the study area.

Table 2: Summary details for historic heritage sites recorded during the field survey assessment of the Deloraine Bauxite Mine Project

Site Name	Grid Reference (GDA94)	Site Description
Loggers Hut	E478432 N5409806	The site is accessed via Porters Bridge Road and a graded access track and is located 370m north of the southern boundary of the study area. The loggers' hut is likely to be of local significance. The loggers' hut is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

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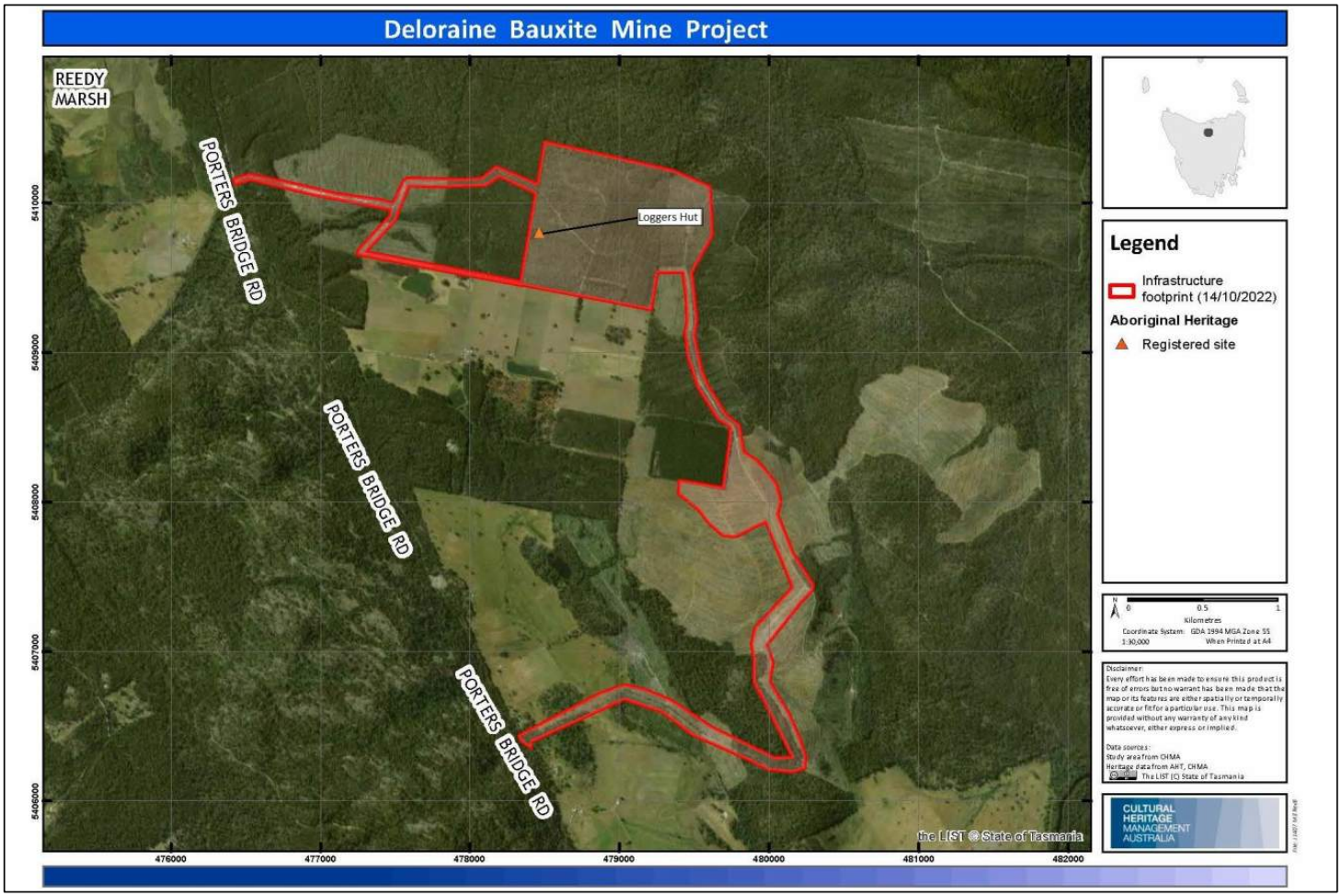

Figure 6: Aerial image showing the location of the loggers' hut in relation to the Deloraine Bauxite Mine Project footprint.

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6.0 Statutory Controls and Legislative Requirements

The following provides a summary overview of the various legislative instruments and statutory requirements relating to historic heritage in Tasmania. The review is presented in order to provide the proponent with a basic understanding of the statutory frameworks and procedures relating to heritage in Tasmania.

6.1 National Conventions

Council of Australian Governments Agreement 1997

In 1997, COAG reached an agreement on Commonwealth, State and local government roles and responsibilities for heritage management. Local government, through the Australian Local Government Association, and the Tasmanian Government were both signatories to this Agreement. The Agreement resulted in the following outcomes:

- Acceptance of a tiered model of heritage management, with the definition of places as being of either, world, national, state or of local heritage significance;
- Nominations of Australian places for the World Heritage List and management of Australia's obligations under the World Heritage Convention would be carried out by the Commonwealth Government;
- A new National Heritage System on one was created in January 2004, comprising the Australian Heritage Council (AHC), National Heritage List (NHL) and Commonwealth Heritage List (CHL);
- The Commonwealth Government, through the Australian Heritage Council, would be responsible for listing, protecting and managing heritage places of national significance;
- State and Territory Governments would be responsible for listing, protecting and managing heritage places of state significance; and
- Local government would be responsible for listing, protecting and managing heritage places of local significance.

Environment Protection and Heritage Council of the Australian and State/Territory Governments 1998

In 1998, the National Heritage Convention proposed a set of common criteria to be used in order to better assess, understand and manage the heritage values of places.

The Environment Protection and Heritage Council of the Australian and State/Territory Governments adopted this as a national set of desirable common criteria (known as the HERCON criteria). The adoption of these criteria by Heritage Tasmania has not yet been formalised. These criteria are also based upon the Burra Charter values. The Common Criteria (HERCON Criteria) adopted in April 2008 are summarised below:

a) *Importance to the course or pattern of our cultural or natural history.*
b) *Possession of uncommon, rare or endangered aspects of our cultural or natural history.*
c) *Potential to yield information that will contribute to an understanding of our cultural or natural history.*
d) *Importance in demonstrating the principal characteristics of a class of cultural or natural places or environments.*
e) *Importance in exhibiting particular aesthetic characteristics*

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f) *Importance in demonstrating a high degree of creative or technical achievement at a particular period.*
g) *Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions.*
h) *Special association with the life or works of a person, or group of persons, of importance in our history.*

These criteria have been endorsed by the Heritage Chairs and Officials of Australia and New Zealand (HCOANZ) in the Supporting Local Government Project document, "Protecting Local Heritage Places: A National Guide for Local Government and Communities" (March 2009).

Burra Charter 1999
Australia ICOMOS (International Council on Monuments and Sites) is the peak body of professionals working in heritage conservation in Australia. The Burra Charter was adopted by Australia ICOMOS in 1979 in Burra, South Australia based on other international conventions. Further revisions were adopted in 1981, 1988 and 1999 to ensure the Charter continues to reflect best practice in heritage and conservation management. The current version of the Australia ICOMOS Burra Charter 1999 is the only version that should be used.

The Burra Charter provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australian ICOMOS members. The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

The Charter recognises the need to involve people in the decision-making process, particularly those that have strong associations with a place. It also advocates a cautious approach to changing heritage places: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

6.2 Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999
The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) provides for the listing of natural, historic or indigenous places that are of outstanding national heritage value to the Australian nation as well as heritage places on Commonwealth lands and waters under Australian Government control.
Once a heritage place is listed under the EPBC Act, special requirements come into force to ensure that the values of the place will be protected and conserved for future generations.
The following heritage lists are established through the EPBC Act:

- *National Heritage List* - a list of places of natural, historic and indigenous places that are of outstanding national heritage value to the Australian nation
- *Commonwealth Heritage List* - a list of natural, historic and indigenous places of significance owned or controlled by the Australian Government.

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- *List of Overseas Places of Historic Significance to Australia* – this list recognises symbolic sites of outstanding historic significance to Australia but not under Australian jurisdiction.

Australian Heritage Council Act 2003
The Australian Heritage Council is a body of heritage experts that replaced the Australian Heritage Commission as the Australian Government's independent expert advisory body on heritage matters when the new Commonwealth Heritage System was introduced in 2004 under amendments to the Environment Protection and Biodiversity and Conservation Act 1999.

The Council plays a key role in the assessment, advice and policy formulation and support of major heritage programs. Its main responsibilities are to assess and nominate places for the National Heritage List and the Commonwealth Heritage List, promote the identification, assessment, conservation and monitoring of heritage; and advise the Minister on various heritage matters.

Protection of Movable Cultural Heritage Act 1986
The PMCH Act regulates the export of cultural heritage objects from Australia. The purpose of the Act is to protect, for the benefit of the nation, objects which if exported would significantly diminish Australia's cultural heritage. Some Australian protected objects of Aboriginal, military heritage and historical significance cannot be granted a permit for export. Other Australian-protected objects may be exported provided a permit or certificate has been obtained.

6.3 State Legislation
Land Use Planning and Approvals Act 1993
This Act (LUPA) is the cornerstone of the State Resource Management and Planning System (RMPS). It establishes the legitimacy of local planning schemes and regulates land use planning and development across Tasmania. With regard to historic heritage, LUPAA requires that planning authorities will work to conserve those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value" [Schedule 1 Part 2(g)].

Resource Planning and Development Commission Act 1997
The Resource Planning and Development Commission (now referred to as the Tasmanian Planning Commission) is responsible for overseeing Tasmania's planning system, approving planning schemes and amendments to schemes and assessing Projects of State Significance. In terms of heritage management, the TPC will consider the establishment of heritage overlays, precincts or areas as part of the creation of planning schemes.

Resource Management and Planning Appeal Tribunal Act 1993
The Resource Management and Planning Appeal Tribunal determine planning appeals and enforce the Acts within the RMPS. The Tribunal plays an important role in the management of heritage places through its determinations on proposed development on, or near to, places of heritage significance.

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Historic Cultural Heritage Act 1995

The *Historic Cultural Heritage Act 1995* (HCH Act) is the key piece of Tasmanian legislation for the identification, assessment and management of historic cultural heritage places. The stated purpose of the HCH Act is to promote the identification, assessment, protection and conservation of places having historic cultural heritage significance and to establish the Tasmanian Heritage Council". The HCH Act also includes the requirements to:

- establish and maintain the Tasmanian Heritage Register (THR);
- provide for a system for a system of approvals for work on places on the Register;
- provide for Heritage Agreements and assistance to property owners;
- provide for protection of shipwrecks;
- provide for control mechanisms and penalties for breaches of the Act.

Under the HCH Act, "conservation" in relation to a place is defined as

- the retention of the historic cultural heritage significance of the place; and
- any maintenance, preservation, restoration, reconstruction and adaption of the place.

The definition of "place" under the HCH Act includes:

- a site, precinct or parcel of land;
- any building or part of a building;
- any shipwreck;
- any item in or on, or historically or physically associated or connected with, a site precinct or parcel of land where the primary importance of the item derives in part from its association with that site, precinct or parcel of land; and
- any equipment, furniture, fittings, and articles in or on, or historically or physically associated or connected with any building or item.

The Act created the Tasmanian Heritage Council (THC), which came into existence in 1997 and operates within the State RMPS. The THC is a statutory body, separate from government, which is responsible for the administration of the HCH Act and the establishment of the Tasmanian Heritage Register (THR), which lists all places assessed as having heritage values of state significance. The THC also assesses works that may affect the heritage significance of places and provides advice to state and local government on heritage matters. The primary task of the THC is as a resource management and planning body, which is focused on heritage conservation issues. Any development on heritage-listed places requires the approval of the THC before works can commence.

Heritage Tasmania (HT), which is part of the Department of Primary Industry, Parks, Water and the Environment, also plays a key role in fulfilling statutory responsibilities under the HCH Act.

HT has three core roles:

- coordinating historic heritage strategy and activity for the State Government;
- supporting the Tasmanian Heritage Council to implement the HCH Act; and
- facilitating the development of the historic heritage register.

In 2013, *Historic Cultural Heritage Act 1995* was amended, with the primary goal of streamlining the approvals process and better align the Heritage Act with the Planning Act. Under the Amendment applicants need only lodge a single Development Application (DA)

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(as opposed to both a Works Application and DA), which will be referred to the Heritage Council by the local planning authority. Heritage Council then has the opportunity to advise the planning authority whether or not it has an interest in the DA and may request further information under s57 of the LUPAA. If the Heritage Council does not have an interest in the DA, it reverts to the status it has under the Scheme or Planning Act. Where Heritage Council does have an interest in the DA, the Council decision must be incorporated into the final permit (or refusal) issued by the local planning authority.

Also included in the amendments is the incorporation of the HERCON significance criteria for assessing the significance of heritage sites. The Heritage Council may enter a place in the Heritage Register if it is satisfied that the place has historic cultural heritage significance by meeting threshold values for one or more of eight individual criteria. Aesthetic characteristics of a place now forms the eighth criterion against which heritage significance may be assessed.

Works to places included in the THR require approval, either through a Certificate of Exemption for works which will have no or negligible impact, or through a discretionary permit for those works which may impact on the significance of the place.

Discretionary permit applications are lodged with the relevant local planning authority. On receipt, the application is sent to the Heritage Council, which will firstly decide whether they have an interest in determining the application. If the Heritage Council has no interest in the matter, the local planning authority will determine the application.

If the Heritage Council has an interest in determining the application, a number of matters may be relevant to its decision. This includes the likely impact of the works on the significance of the place; any representations; and any regulations and works guidelines issued under the HCH Act. The Heritage Council may also consult with the planning authority when making a decision.
In making a decision, the Heritage Council will exercise one of three options: consent to the discretionary permit being granted; consent to the discretionary permit being granted subject to certain conditions; or advise the planning authority that the discretionary permit should be refused. The Heritage Council's decision is then forwarded to the planning authority, which will incorporate the decision into any planning permit

Works Guidelines for Historic Heritage Places
The Tasmanian Heritage Council and Heritage Tasmania have issued Works Guidelines for Historic Heritage Places. The guidelines provide a general reference for the types of works, which may be exempt, or those where a permit will be required. They also define appropriate outcomes for a range of different works and development scenarios. Although specifically designed for places included in the THR, the guidelines provide useful advice for the management of heritage places generally.

6.4 Local Planning Schemes
The *Tasmanian Planning Scheme* came into effect on 22 July 2020 and replaced the former Local Interim Planning Schemes.

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The *Tasmanian Planning Scheme* provides a single planning scheme and a consistent set of rules and requirements in relation to the manner in which all land in Tasmania may be used, developed, protected and conserved. It consists of two parts:

1. **State Planning Provisions** contain the mandatory common rules that are to apply in all municipal areas. For consistency in permit and compliance requirements that must be met by a proposed use or development.
2. **Local Provision Schedule** for each municipal area setting out how the State Planning Provisions are to apply.

The planning scheme supports strategic land use planning for residential, business, agriculture, utilities, environmental and recreational zones. The scheme includes considerations such as natural hazards, local heritage values, natural assets, parking requirements and the protection of road, railway and electricity infrastructure.

Section C6 of the *Tasmanian Planning Scheme* deals specifically with the Local Heritage Code. The stated purpose of the code is to recognise and protect the local historic heritage significance of local places, precincts, landscapes and areas of archaeological potential and significant trees by regulating development that may impact on their values, features and characteristics. This code applies to:

(a) development on land within any of the following, as defined in this code:

(i) a local heritage place;

(ii) a local heritage precinct;

(iii) a local historic landscape precinct; and

(iv) for excavation only, a place or precinct of archaeological potential;

and

(b) the lopping, pruning, removal or destruction of a significant tree as defined in this code.

If a site is listed as a local heritage place and also within a local heritage precinct or local historic landscape precinct, it is only necessary to demonstrate compliance with the standards for the local heritage place unless demolition, buildings and works are proposed for an area of the site outside the identified specific extent of the local heritage place.

This code does not apply to a registered place entered on the Tasmanian Heritage Register.

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7.0 Heritage Management Plan

Management Recommendations

Heritage management options and recommendations provided in this report are made based on the following criteria.

• The legal and procedural requirements as specified in section 4 of this report.

• The results of the investigation as documented in this report.

• The results of the Historic heritage register search.

Recommendation 1 (Loggers Hut)

The loggers' hut is located 370m north of the southern boundary of the study area and is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

The loggers' hut is not listed on any of the heritage registers, although it is likely to be of local heritage significance. The loggers' hut would not meet the threshold requirements for State or National significance.

Due to the poor condition of the site, in-situ conservation is not warranted. It is recommended that the site be recorded and photographed, no further action is required.

Recommendation 2 (Historic Heritage)

The historic heritage registers search results show that there are no heritage places located within or in the immediate surrounds of the study area that are listed on any of the local, State or National heritage registers. It is assessed that there is a low to very low potential for historic heritage features to be present. If there are features present, they are likely to be associated with the early pastoral settlement and logging industry of Exton/Reedy Marsh.

Recommendation 3 (Unanticipated Discovery Plan for Historic Heritage)

The procedures outlined in Practice Note No 2 issued by the Tasmanian Heritage Council, processes should be followed should any unexpected archaeological features and/or deposits be revealed during development works.

A summary of the Unanticiapted Discovery Plan processes for historic heritage is presented in section 8.

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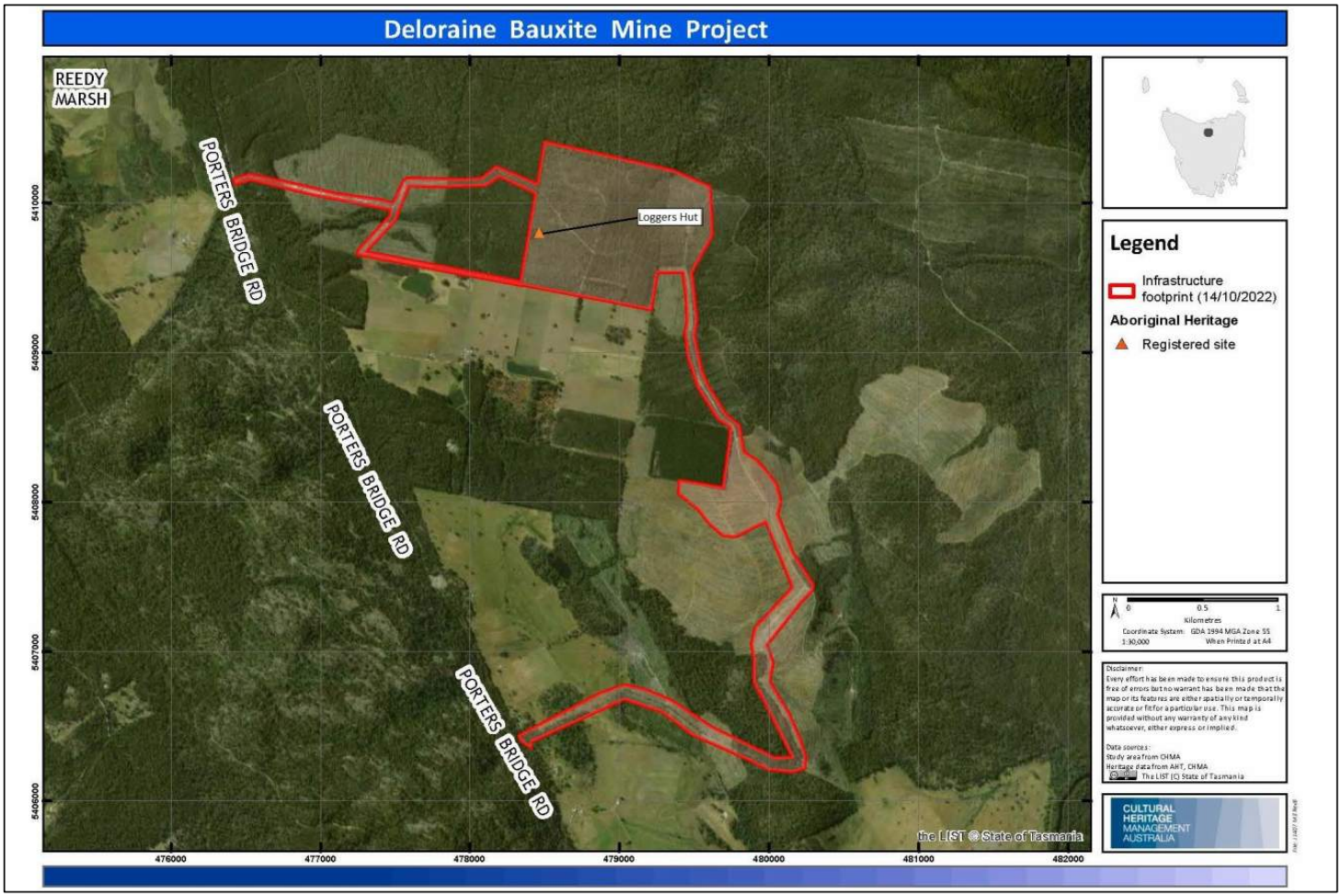

Figure 7: Aerial image showing the location of the loggers' hut in relation to the Deloraine Bauxite Mine Project footprint.

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8.0 Unanticipated Discovery Plan

The following text describes the proposed method for dealing with unanticipated discoveries of heritage features or objects during the proposed Palmerston Battery Project development. The plan provides guidance to project personnel so that they may meet their obligations with respect to heritage legislation. Please Note: There are two different processes presented for the mitigation of these unanticipated discoveries. The first process applies to the discovery of all cultural heritage objects or features, with the exception of skeletal remains (burials). The second process applies exclusively to the discovery of skeletal remains (burials).

Discovery of Heritage Objects or Features

Step 1

If any person believes that they have discovered or uncovered a heritage object or feature, the individual should notify any machinery operators that are working in the general vicinity of the area that earth disturbance works should stop immediately.

Step 2

A buffer protection zone of 5m x 5m should be established around the suspected heritage find. No unauthorised entry or earth disturbance will be allowed within this 'archaeological zone' until such time as the suspected heritage find has been assessed, and appropriate mitigation measures have been carried out.

Step 3

A qualified heritage consultant should be engaged to assess the suspected heritage find. As a first step in the process, the heritage consultant should contact Heritage Tasmania, the Heritage Council and the Local Council and notify them of the find. The heritage consultant will ensure that Heritage Tasmania, the Heritage Council and the Local Council are consulted throughout the assessment process.

Step 4

If the heritage find is a movable object, then the find should be recorded, photographed and a decision should be made as to whether the object should be re-located to a designated Keeping Place. If the find is an unmovable heritage object or feature, then the find should be recorded and photographed and a HIA and HMP developed for the feature. This should be then submitted to Heritage Tasmania, the Heritage Council and the Local Council for review and advice.

Possible outcomes may necessitate:

a. An amendment to the design of the development
b. Carrying out of archaeological excavations prior to the re-commencement of works
c. Archaeological monitoring and recording during works
d. Preparation (and implementation) of a strategy to ensure communication of the new information to the community.
e. A combination of the above.

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Discovery of Skeletal Material

Step 1:
Call the Police immediately. Under no circumstances should the suspected skeletal material be touched or disturbed. The area should be managed as a crime scene. It is a criminal offence to interfere with a crime scene.

Step 2:
Any person who believes they have uncovered skeletal material should notify all employees or contractors working in the immediate area that all earth disturbance works cease immediately.

Step 3:
A temporary 'no-go' or buffer zone of at least 50m x 50m should be implemented to protect the suspected skeletal material, where practicable. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected skeletal remains have been assessed by the Police and/or Coroner.

Step 4:
If it is suspected that the skeletal material is Aboriginal, Aboriginal Heritage Tasmania should be notified.

Step 5:
Should the skeletal material be determined to be Aboriginal, the Coroner will contact the Aboriginal organisation approved by the Attorney-General, as per the *Coroners Act 1995*.

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References Cited

BOM. 2022 Bureau of Meteorology (BOM) website. Accessed May 2022 from <http://www.bom.gov.au/>.

Jordan, G: *Eucalyptus globulus*: Key to Tasmanian Vascular Plants: University of Tasmania. Accessed 18 October 2022 from <https://www.utas.edu.au/dicotkey/dicotkey/MYRTS/sEucalyptus_globulus.htm>.

Jordan, G: *Pinus radiata*: Key to Tasmanian Vascular Plants: University of Tasmania. Accessed 18 October 2022 from <https://www.utas.edu.au/dicotkey/dicotkey/CONIFERS/sPinus.htm>.

Kodela, P: *Acacia ulicifolia*: New South Wales Flora Online: National Herbarium of NSW. Accessed 18 October 2022 from <https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Acacia~ulicifolia>.

List: Land Information System Tasmania. Accessed 18 October 2022 from <https://maps.thelist.tas.gov.au/listmap/app/list/map>.

Mountain Huts Preservation Society Inc: Hills Hut. Accessed 20 November 2022 from <https://www.mountainhuts.com.au/mhps-projects/hills-hut/>.

Paul Davies Pty Ltd Architects Heritage Consultants 2006 Meander Valley Heritage Study Report. Unpublished report prepared for Meander Valley Municipal Council.

Terry, I and K. Evans 2004 'To The Westward' Meander Valley Heritage Study Stage 1: Thematic History. Unpublished report prepared for Meander Valley Municipal Council.

Wilson, G: Melaleuca ericifolia Sm.: New South Wales Flora Online: National Herbarium of NSW. Accessed 18 October 2022 from <https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Melaleuca~ericifolia>.

Western Tiers Thursday 24 February 1994 pg.9.

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Appendix 1

Gazetteer of Recorded Sites

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Summary details for historic heritage sites recorded during the field survey assessment of the Deloraine Bauxite Mine Project.

Site Name	Grid Reference (GDA94)	Site Description
Loggers Hut	E478432 N5409806	The site is accessed via Porters Bridge Road and a graded access track and is located 370m north of the southern boundary of the study area. The loggers' hut is likely to be of local significance. The loggers' hut is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

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Appendix 2

Detailed Descriptions for Historic Heritage Sites

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Site Name: Loggers hut

Grid Reference:

- **E 478432 N 5409806**

Site Description:

The loggers' hut is located 370m north of the southern boundary of the study area and is immediately surrounded by eucalypt forest and bracken fern. The hut consists of a corrugated iron roof, a corrugated iron chimney and fireplace, one surviving window and hardwood timber cladding, most likely sourced locally. The hut is approximately 4m x 5m and is in very poor condition

An exact date of construction was unable to be ascertained, however, a surviving contemporary example known as Hills Hut, built in 1960 by Bruce Hill, provides a date range of c.1940 to c.1960 for the loggers' hut (Mountain Huts Preservation Society Inc 2022).

The site is assessed as being of low-medium significance on a local level. The site would not meet the threshold for State significance.

The loggers' hut is likely to be directly impacted by the proposed Deloraine Bauxite Mine Project works.

There are no features associated with the loggers' hut that would warrant in-situ conservation. Record and photograph, after that no further action required has been deemed the most appropriate mitigation strategy for this site.

Plate 12: View northwest showing the loggers hut and associated features.

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Traffic Impact Assessment

Appendix D

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DL130 Bauxite Mine

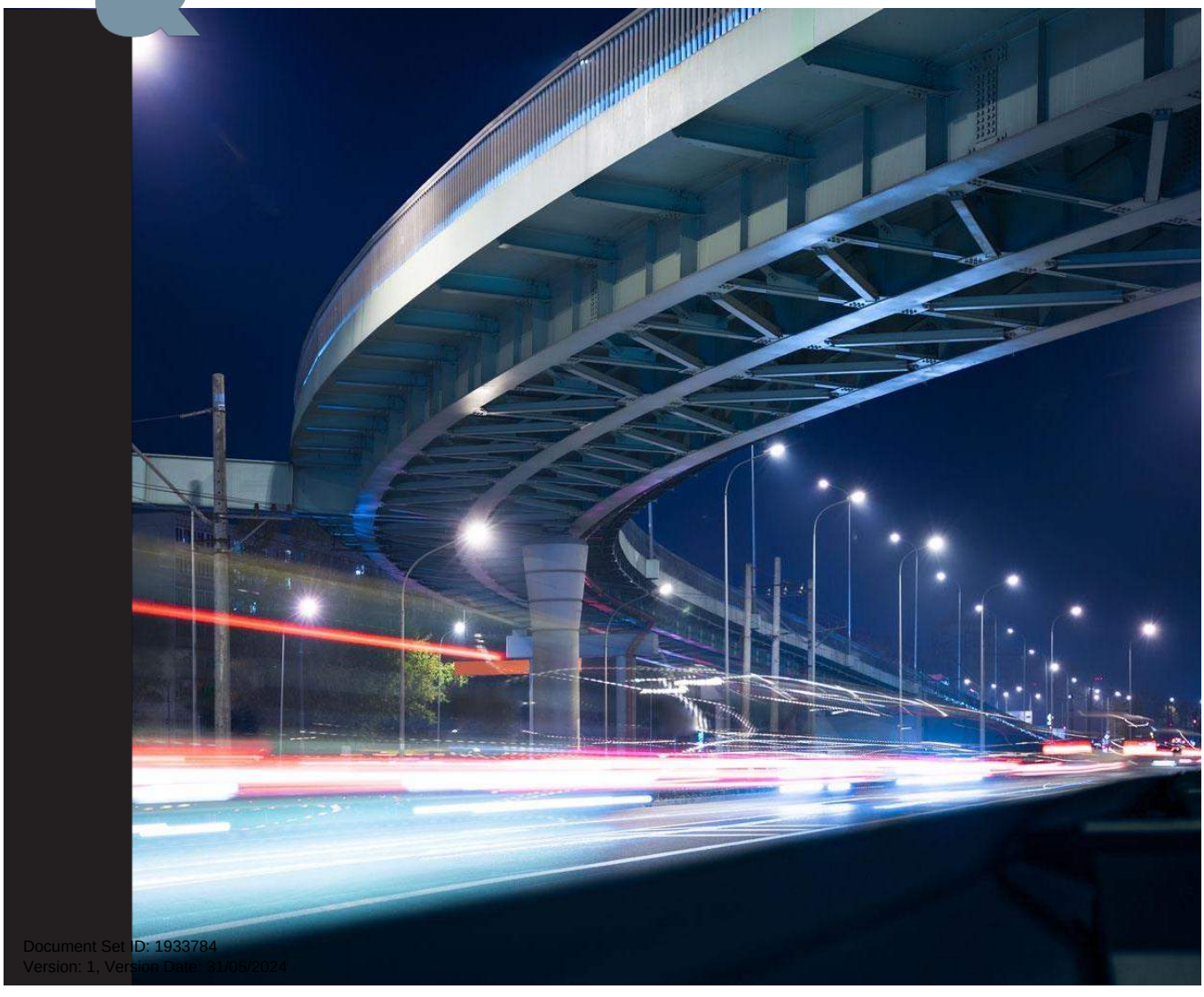
Traffic Impact Assessment

Prepared for
ABx Group Limited

Client representative
Nathan Towns

Date
30 April 2024

Rev04



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Prepared by — Nicholas Ashlin		**Date —** 30 April 2024
Reviewed by — Rebekah Ramm		**Date —** 30 April 2024
Authorised by — Ross Mannering		**Date —** 30 April 2024

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
00	Traffic Impact Assessment	NPA	LA	RLR	03/11/2022
01	Traffic Impact Assessment	NPA	LA	LA	2/10/2023
02	Traffic Impact Assessment (addressing Council RFI)	NPA	LA	RLR	21/12/2023
03	Traffic Impact Assessment (addressing Council RFI)	LA	RLR	RSM	26/02/2024
04	Traffic Impact Assessment (minor amendment)	NPA	RLR	RSM	30/04/2024

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1. Introduction

1.1 Project background

ABx Group Limited (ABx) is proposing to develop a bauxite mine located off Porters Bridge Road near Reedy Marsh, approximately 5km north of Exton. The bauxite mine will be located within multiple land parcels and is proposed to be accessed via an existing Forico internal haul road.

The mine will extract bauxite using surface mining techniques. Bauxite is the ore used for the following:

- Refining into alumina which is electro-smelted to make aluminium
- Used as a source of aluminium and iron for cement production; and
- Used as a source of aluminium and iron for manufacture of superphosphate fertiliser, supplying strength and dust reduction properties.

ABx has commissioned pitt&sherry to undertake an assessment of the traffic impacts associated with operation of the proposed bauxite mine as part of an Environmental Impact Statement (EIS) to support the Development Application (DA).

ABx has recently completed its operations and final rehabilitation at the Bald Hill Bauxite Project located 6 km northwest of Campbell Town. The Bald Hill Mining Lease ML 1961P/M has been surrendered without conditions. At the Bald Hill Bauxite Project, ABx honoured its paramount corporate policy, namely:

> ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it. We only operate where welcomed.

The project proposes to quarry bauxite rock, screen it to size and ship it via either Bell Bay Port or Burnie Port to alumina refineries, cement factories and fertiliser manufacturing plants in China, India, SE Asia and Australasia.

1.2 Traffic Impact Assessment scope

This report has been prepared with reference to the *Tasmanian Planning Scheme – Meander Valley* (Planning Scheme) and in accordance with the Department of State Growth's (State Growth's) *Traffic Impact Assessment Guidelines (August 2020)* and details the findings of the traffic assessment undertaken for the proposed development.

1.3 Experience of project team

This report has been prepared by suitably qualified persons in accordance with the *Austroads Guide to Traffic Management – Part 12 (2016).* The relevant experience of the project team is detailed below.

1.3.1 Nicholas Ashlin

Nicholas is a highly productive Roads and Traffic Engineer with three years' experience in both traffic analysis and road safety assessments. He has been involved in a wide variety of transport infrastructure projects from small commercial developments through to large transport infrastructure projects. Nicholas is a qualified road safety auditor and is proficient in the use of GIS which he utilises effectively to communicate technical analysis outputs in a form suitable for stakeholders.

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1.3.2 Leenah Ali-Lavroff

Leenah has over eight years' experience in the field of traffic and transport and has worked on a diverse range of projects across Australia. Leenah is efficient at undertaking traffic and transport assessments. She has a keen interest in road safety and is a qualified Senior Road Safety Auditor and Safe Systems Assessor. Her understanding of Australian Standards, Austroads Guidelines and familiarity with local Planning Schemes and Standard Drawings solidifies her role as a versatile and knowledgeable professional in the field.

1.3.3 Rebekah Ramm

Rebekah has almost ten years' experience primarily in the area of transport engineering and planning. Rebekah has been involved in leading transport engineering teams for several large transport planning assessment projects and has extensive experience in preparing Traffic Impact Assessments for a range of projects including large and small residential developments as well as mixed use and commercial developments.

1.3.4 Ross Mannering

Ross has over 20 years' experience in transport infrastructure design, project management, road safety, traffic engineering and stakeholder engagement which has been acquired through his involvement in a wide variety of transport infrastructure and traffic engineering projects. This experience, combined with his extensive technical knowledge, enables Ross to optimise the design of traffic and transport infrastructure projects and to undertake comprehensive assessments of development proposals. Ross' services are also frequently sought to provide expert witness advice on traffic engineering matters associated with planning appeals. He also holds Senior Road Safety Auditor accreditation with VicRoads.

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2. Existing conditions

2.1 Site location

As discussed, the site is located across multiple properties, approximately 8km north-east of Deloraine, near Reedy Marsh. It has a land use classification of 20.0 Rural Zone and 21.0 Agriculture Zone under the Planning Scheme and is primarily used by Forico. Surrounding land uses include further 20.0 Rural Zone to the east and west, 21.0 Agriculture Zone to the south and 23.0 Environmental Management Zone to the north.

2.2 Site access

The site will continue to be accessed from the existing access point on Porters Bridge Road, approximately 2km south of the mine site and 3km north of Exton.

The existing site access is approximately 19m wide at its intersection with Porters Bridge Road and is at an angle of approximately 25 degrees to northbound traffic travelling along Porters Bridge Road. The site access has a weathered seal and steepens as it approaches Porters Bridge Road. Dense vegetation is located along both sides of Porters Bridge Road in the vicinity of the site access. No turn lanes are provided along Porters Bridge Road at the site access. It is noted that vehicles primarily turn right in and left out of the access. The access is currently used by Forico haul trucks.

The site and existing access are shown below in Figure 1.

It is noted that two other access points further north on Porters Bridge Road were initially tabled as potential alternatives. However, as the site access is both existing and currently caters for vehicles like those expected to access the site, it was discerned that the existing access is the preferred access, noting also the better condition of the existing internal haul road from this access as compared to those further north.

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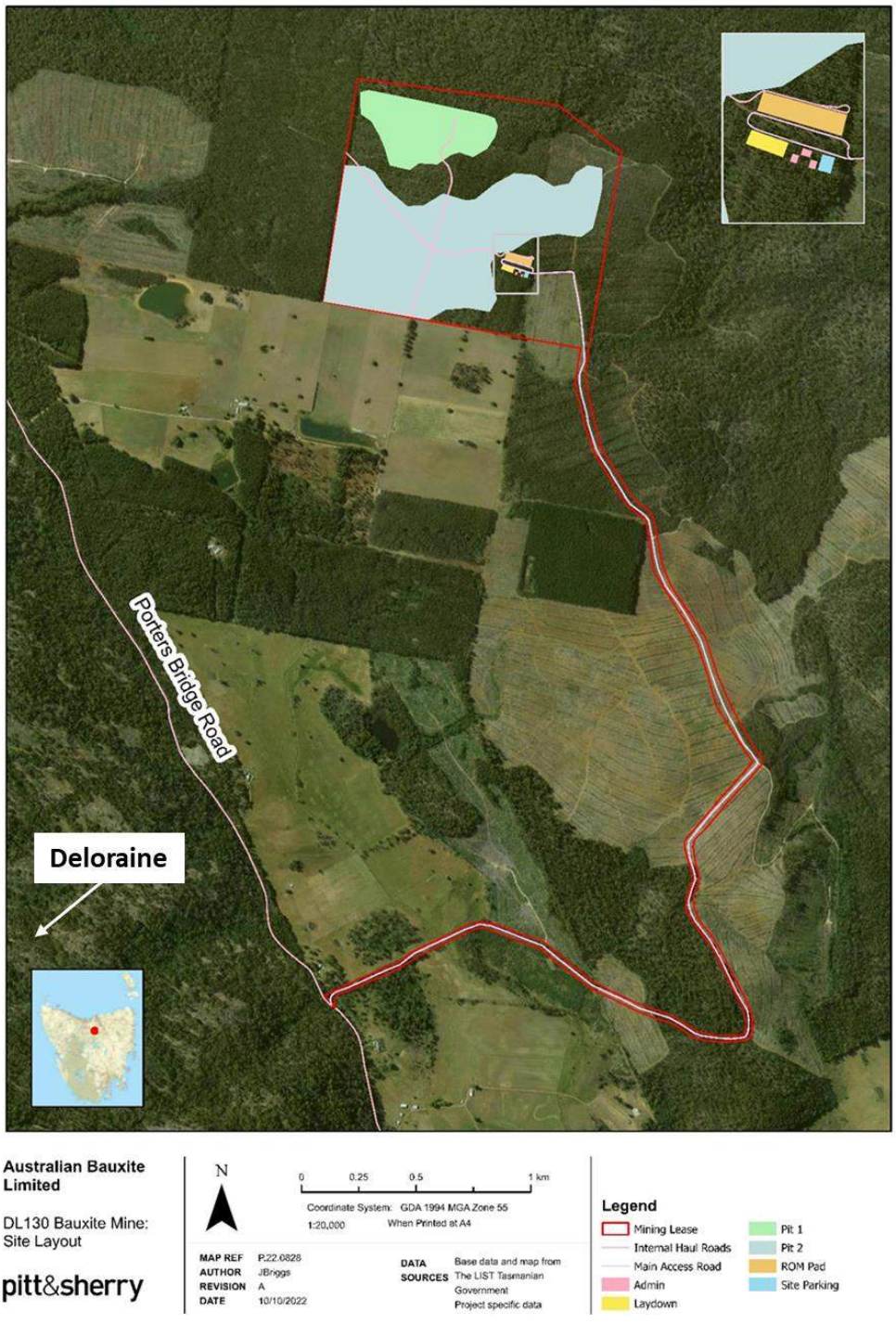

Figure 1: Site location

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2.3 Surrounding road network

2.3.1 Porters Bridge Road

Porters Bridge Road (shown in Figure 2 and Figure 3) is a Meander Valley Council (Council) owned two-way local road[1]. It operates primarily in a north-south direction from Meander Valley Road at Exton to River Road at Reedy Marsh. Four bridges are located along Porters Bridge Road south of the site access, the northernmost of which is a one-way bridge over the Meander River.

Porters Bridge Road is subject to the Tasmanian Sealed Rural Road Default Speed Limit of 100km/h.

It is understood that the road is currently used by a number of users as follows:

- WALTERS - WALTERS CONTRACTING PTY LTD - hard rock quarry; major user year-round
- CREZZCO - CRESSWELLS TRANSPORT PTY LTD - hard rock quarry; major user year-round
- FORICO - FORICO PTY LTD - forestry, plantation management and harvesting; major road user during harvesting, minor/mid-range user year-round; and
- Private landowners - major users year-round for agricultural and residential purposes.

A traffic counter located approximately 1km north of the Meander Valley Road/ Porters Bridge Road intersection found that 67% of vehicles travelled at between 70km/h and 100km/h along the road. Approximately 14% of vehicles travelled slower than this, and 19% of vehicles travelled faster. It is noted that based on measurements taken on site in the vicinity of the site access on Wednesday 7 February 2024, vehicles were recorded to be travelling at 50km/h – 70km/h. This is due to the width, horizontal and vertical geometry and sight distance along the road in the vicinity of the site compared to at the counter located on a wide, straight section of Porters Bridge Road with good sight distance.

Porters Bridge Road is expected to carry approximately 110 vehicles per day[2], of which 17% are heavy vehicles.

Road widths were recorded at several locations along Porters Bridge Road between the Meander Valley Road/ Porters Bridge Road intersection and the site access. The locations were chosen as points where the road could visibly be noted to reduce in width. The measured widths are presented in Table 1 below noting that Chainage 0.0 refers to the Meander Valley Road/ Porters Bridge Road intersection.

Table 1: Recorded road widths

Location (chainage km)	Road width
0.0 (Meander Valley Road/ Porters Bridge Road intersection)	7.2m
0.5	6.5m
0.8	5.7m
1.7 (Meander River Bridge)	4.8m
1.9	6.1m
2.2	5.7m
2.5	5.4m
2.7	5.3m
3.3 (site access)	5.6m

[1] Based on theLIST Road Centrelines Layer

[2] Based on traffic counts completed by Council in 2015. These were increased to 2023 volumes based on an annual compounding growth rate of 1.9% discerned from historic traffic growth at Station 2025255, and accounting for the estimated daily delivery rate of the Porters Bridge Road Quarry, as detailed in the 2097 P/M Porters Bridge Road, Exton Traffic Impact Assessment.

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While Porters Bridge Road does not provide any shoulders, centreline or edge line, it does provide an approximately 0.5m wide verge on both sides of the road at various locations. While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass.

Due to the dense vegetation along the road combined with the horizontal and vertical geometry of the road, there are multiple locations in which stopping sight distance (SSD) is limited.

Overall, the road width along Porters Bridge Road currently does not comply with the LGAT Standards Drawings (TSD-R02-v3) requirements for a road carrying similar vehicle volumes and heavy vehicle percentage. The SSD along the road also does not comply with contemporary requirements. However, given the existing operation and available crash history along the road, the road is considered to operate safely and efficiently.

Figure 2: Porters Bridge Road - facing south

Figure 3: Porters Bridge Road - facing north

2.3.2 Meander Valley Road

Meander Valley Road is a State Growth owned road and is classified as a Category 5 road in the State Road Hierarchy and spans from Deloraine to Travellers Rest where it connects to the Bass Highway. It is a two-way road with a single lane in each direction and operates primarily in an east-west direction. Meander Valley Road is approved for use by Truck & Dog Trailer Combinations.

Meander Valley Road has a speed limit of 80km/h at the Meander Valley Road/ Porters Bridge Road intersection. As of 2023, Meander Valley Road is expected to carry approximately 1,830 vehicles per day[3], of which 11% are heavy vehicles.

2.4 Surrounding intersections

Meander Valley Road/ Porters Bridge Road sign-controlled give-way T-intersection (shown below in Figure 4) is located approximately 0.4km west of Exton and 3.0km south of the site access. No turning treatments are provided at the intersection.

[3] Based on counts from State Growth's Tasmania traffic data website at Station 2025255 and applying a compounding annual growth rate based on historic counts.

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Figure 4: Meander Valley Road / Porters Bridge Road sign controlled give-way T-intersection

2.5 Heavy vehicle route network

The Tasmanian Truck & Dog Trailer Combination Network in the vicinity of the site (below in Figure 5) shows that the Bass Highway and Meander Valley Road are approved for such combinations. Meander Valley Road, between Westbury and the Bass Highway on-ramp from Meander Valley Road has not been assessed for Truck & Dog Trailer Combinations.

Figure 5: Tasmanian Truck & Dog Trailer Combination Network in the vicinity of the site

Note that a Truck & Dog Trailer Combination has a maximum length of 25m, 4.3m overall height and a 60.5 tonne gross mass.

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2.6 Traffic volumes

State Growth has provided Average Annual Daily Traffic (AADT) data via the Tasmania traffic data website for the surrounding road network, collected in 2022. To estimate 2023 traffic data, a compounding growth rate of 1.9% per year has been applied to the available traffic data, determined based on historic annual growth at the same location. As such, Meander Valley Road is expected to carry approximately 1,830 vehicles per day as of 2023.

Based on the data, it was also noted that the weekday AM peak hour occurs between 8:00am and 9:00am and the PM peak hour occurs between 3:00pm and 4:00pm, both of which align with school drop-off and pick-up.

2.6.1 Existing traffic volumes

If a 50:50 split is assumed between vehicles travelling east or west along Meander Valley Road to/ from Porters Bridge Road, with a peak to daily ratio of 1:10 on Porters Bridge Road, traffic volumes during the AM and PM peak period are expected to be as shown in Figure 6 and Figure 7 at the Meander Valley Road/ Porters Bridge Road intersection.

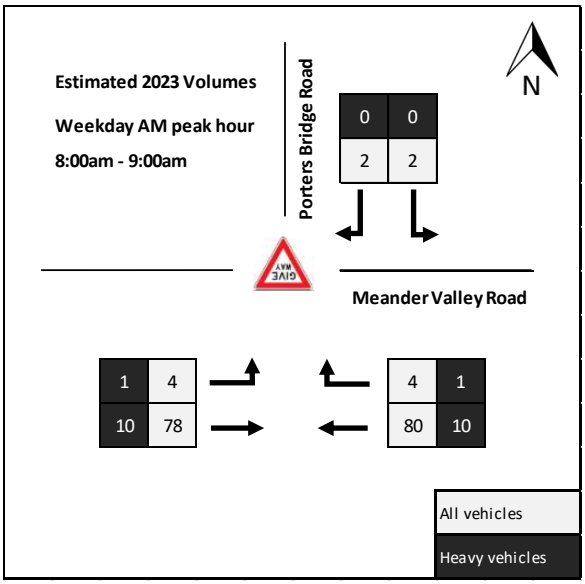

Figure 6: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 weekday AM peak hour

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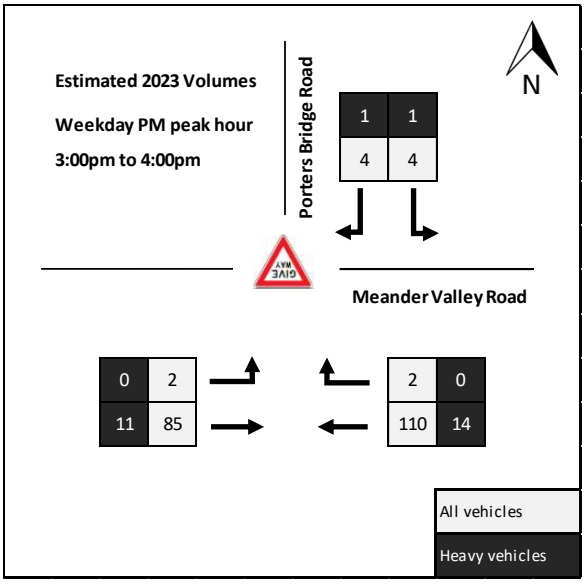

Figure 7: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 weekday PM peak hour

2.6.2 Future traffic volumes

Should the development not proceed, 2033 traffic volumes at the Meander Valley Road/ Porters Bridge Road intersection, assuming a compounding growth rate of 1.9%, are expected to be as follows in Figure 8 and Figure 9.

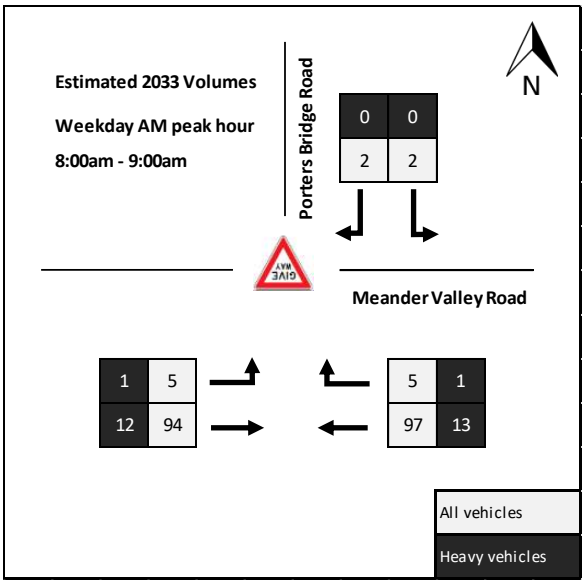

Figure 8: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2033 weekday AM peak hour (no development)

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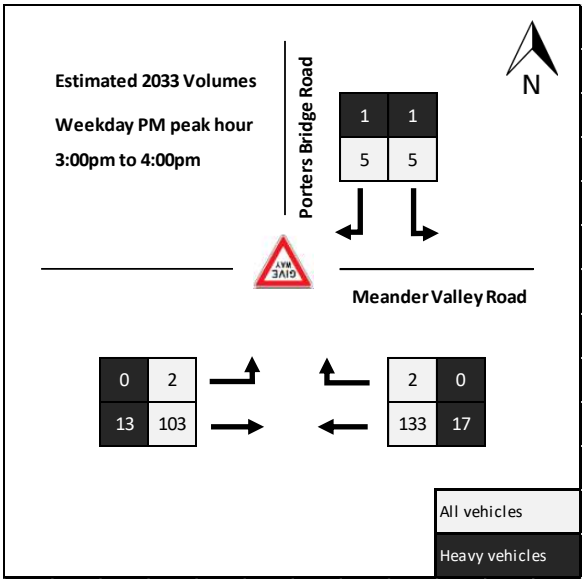

Figure 9: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2033 weekday PM peak hour (no development)

2.7 Road safety

2.7.1 Crash history

State Growth has provided crash data along the full extent of Porters Bridge Road. One crash was recorded in the most recent 10-year period and involved a light vehicle colliding with a dark coloured cow that was on the road at night. The crash caused property damage only.

An additional crash was included in a Council RFI, which described a 180 – Off Carriageway Right Bend crash involving a light vehicle and a Truck & Dog Trailer Combination. It was alleged that the light vehicle, travelling north on Porters Bridge Road was likely travelling at excessive speed around a corner with limited sight distance causing it to enter the opposing lane. To avoid the approaching light vehicle, the Truck & Dog Trailer Combination, travelling southbound, swerved left, causing its rear trailer to exit the carriageway and roll down the bank into trees.

The crash history denotes that there are no crash patterns of concern along Porters Bridge Road, however rhetoric surrounding the limited road width and vehicle speed around corners with limited sight distance was provided as part of the Council RFI. Considerations to limit the risk of crashes is provided in Table 9 of this report.

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3. Development proposal

3.1 Overview

The project proposes to quarry bauxite rock using surface mining techniques via two pits located within Forico-owned land parcels near Reedy Marsh. The quarried materials will then be transported to either Bell Bay Port or Burnie Port and shipped to alumina refineries, cement factories and fertiliser manufacturing plants across Australasia.

ABx is proposing to produce approximately 56,000 tonnes of bauxite per annum over a period of 20 or 30 years from the site.

Mining will initially commence at Pit 1, with preparation and development for Pit 2 commencing whilst Pit 1 is being extracted. Mining will be occurring on a campaign basis due to demand.

The mine will comprise two working pits, all-weather internal haul roads, multiple temporary stockpiles, run-off and silt catchment structures, an equipment laydown area with fuel storage, an all-weather haul road from Porters Bridge Road to a laydown area for trucks, a demountable site office and amenities building, and a parking area.

The proposed site layout is shown in Figure 10.

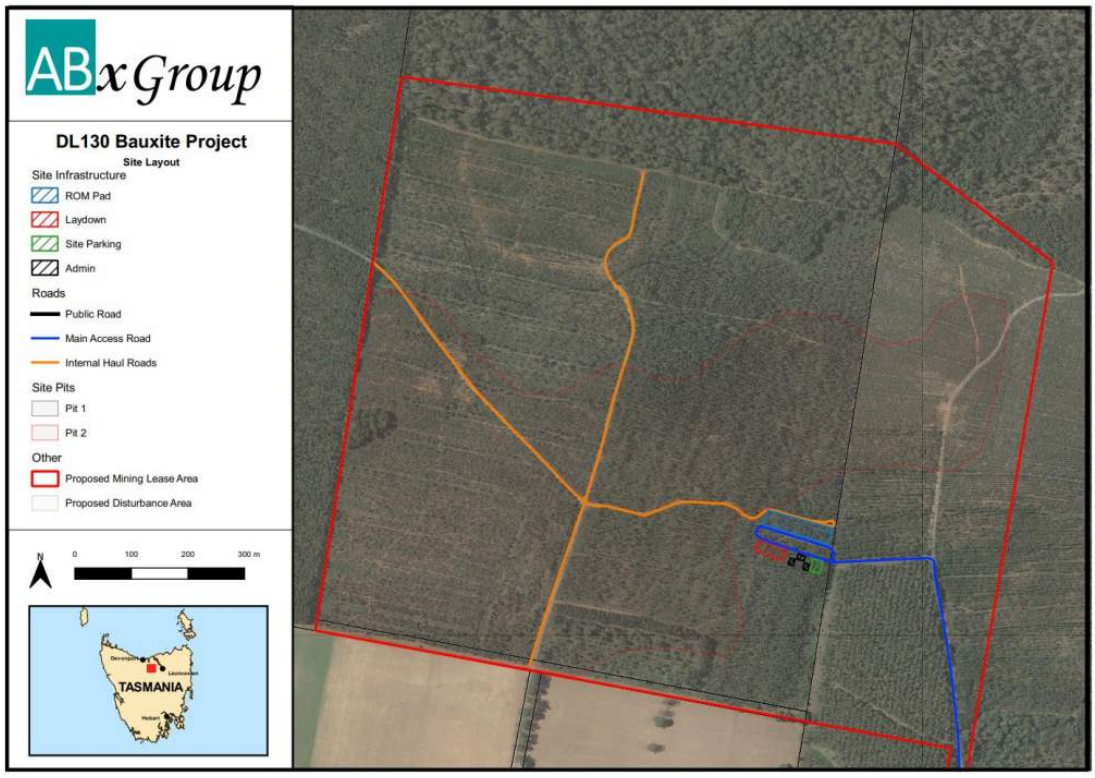

Figure 10: Site plan

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3.2 Staff and operation

Staff are expected to be sourced locally from Deloraine and surrounds, and their roles on site will include working as machine operators or mine supervisors. Other project personnel will attend site as necessary, and will include geological, engineers, environmental scientists or engineers, management and administrative personnel. The total on-site staff numbers will vary across the year due to the campaign-style operation of the mine. Campaigns are expected to last for 3 to 4 months each year.

Rosters are planned to be day shifts only and are 10 hours in length Monday to Friday, 7:00am to 5:00pm and 8 hours on Saturdays, 8:00am to 4:00pm.

There are expected to be a maximum of 12 staff on site in total during operating hours, all of whom will start at 7:00am and finish at 5:00pm, Monday to Friday, and on Saturdays, 8:00am to 4:00pm. This includes 6 operators, 2 managers, 2 technical staff and a maximum of 2 other project personnel.

Transport of ore to the port will be by a trucking contracting company. A maximum of 78 truck movements per day are anticipated during campaigns.

3.3 Vehicle access and circulation

3.3.1 Staff vehicles

All staff vehicles will access and exit the site via the existing site access. Routes taken to access the site by staff vehicles will depend on their origin. Within the site, light vehicles will travel to the site loading/ administration area using the internal haul road from Porters Bridge Road.

3.3.2 Heavy vehicles

All heavy vehicles will access and exit the site via the existing all-weather internal haul road; however, it is expected that only haul trucks (Truck & Dog Trailer Combinations) responsible for transporting bauxite from the proposed mine to the Bell Bay Port and/ or Burnie Port, will persistently access and egress the site for the extent of the mine's lifespan.

Haul trucks will travel to and from the site via one of three main routes which may be used interchangeably throughout the project lifespan based on timeliness, location of roadworks, etcetera. The routes may also vary slightly in the vicinity of Porters Bridge Road based on similar factors; however, haul trucks will only utilise Truck & Dog Trailer Combination approved routes to Meander Valley Road. The three main routes are as follows:

- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the East Tamar Highway to the Batman Highway via the underpass south of Long Reach, turning left onto the West Tamar Highway at Loira, turning right onto Frankford Road at Exeter, turning left onto Birralee Road south-east of Frankford, turning right onto Meander Valley Road at Westbury and finally turning right onto Porters Bridge Road at Exton
- Bell Bay Port, turning right onto the East Tamar Highway via Bell Bay Road, exiting the Midland Highway to the Bass Highway via the underpass east of Prospect, exiting the Bass Highway east of Westbury onto Meander Valley Road and finally turning right onto Porters Bridge Road at Exton; and
- Burnie Port, turning right onto Edwardes Street, turning left onto the Bass Highway, exiting the Bass Highway at Bowerbank Link, turning left onto Meander Valley Road and finally turning left onto Porters Bridge Road.

All three routes, other than Porters Bridge Road itself and the section of Meander Valley Road between Westbury and the Bass Highway on ramp are approved for Truck & Dog Trailer Combination use under the Tasmanian Government's Tasmanian Heavy Vehicle network maps and are shown below in Figure 11.

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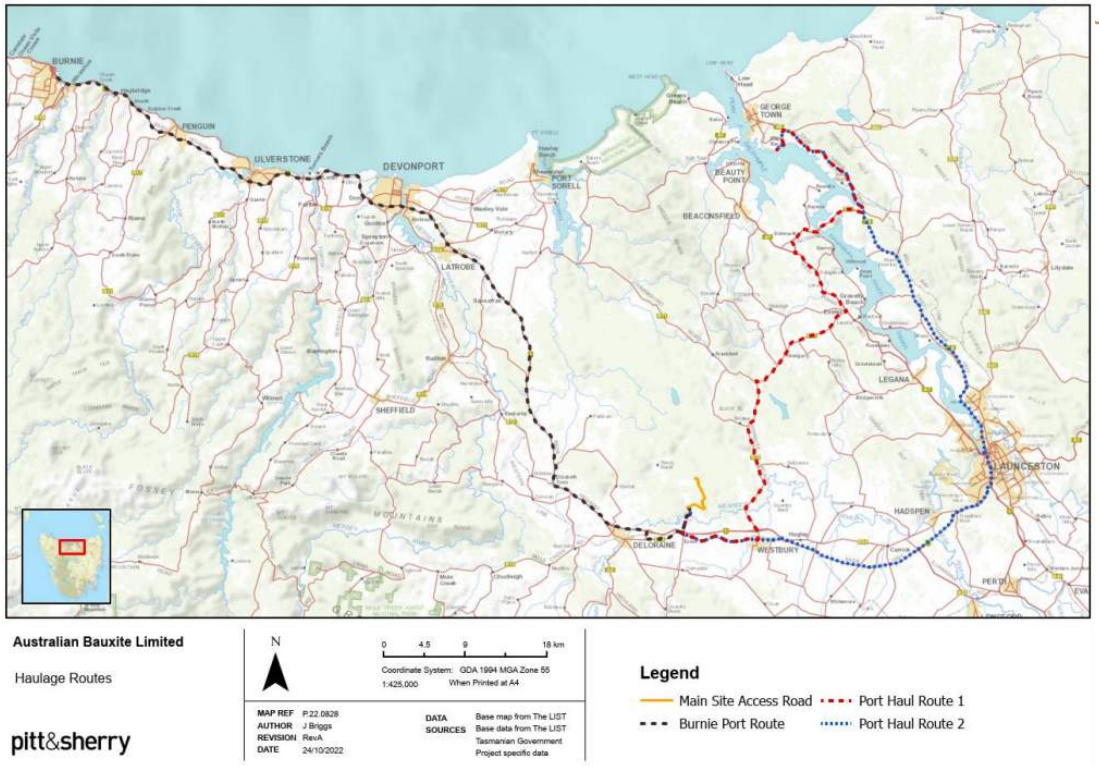

Figure 11: Transport route of heavy vehicles

3.4 Parking

Staff are expected to park alongside the site loading/ administration area.

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4. Transport assessment

4.1 Traffic Impact Assessment

4.1.1 Traffic generation

The traffic generation has been calculated based on the expected operation of the development. ABx has provided the following information which specifies vehicle movements on a typical day of operation post development of the bauxite mine.

- A maximum of 12 staff on site at any time; the staff will remain on site for a full day and will most likely access the site by car. It is not expected staff will leave site during lunch break; and
- A maximum of 78 Truck & Dog Trailer Combination movements per day are expected at the site, used to transport mined bauxite. Site access and egress is to be evenly dispersed throughout operating hours.

Using the above information and assuming all staff arrive prior to the start time of 7:00am and depart after the finish time of 5:00pm on weekdays (i.e., arrive before the AM peak hour and depart after the PM peak hour), the traffic generation for the proposed development during the AM and PM peak hours is calculated to be:

- 0 light vehicles (0 light vehicle movements); and
- 8 Truck & Dog Trailer Combination (8 heavy vehicle movements).

The site is also anticipated to generate service vehicles which range from light to heavy vehicles (machinery, equipment maintenance, contractors, fuel tankers, etc). Based on operation of similar sites, these vehicles are equivalent to a maximum of 10% of the daily vehicle generation and are generated sporadically but generally not generated during the peak hour.

The overall traffic volumes on Porters Bridge Road and Meander Valley Road in the vicinity of the proposed mine site are expected to increase by 112 vehicles per day during the mining stage of the proposed bauxite mine.

4.1.2 Traffic distribution and directional split

As previously noted, locally sourced workers will travel to site from surrounding townships.

It has been assumed that light vehicles will access the site between 6:00am and 7:00am in the morning, prior to the 7:00am start time, and egress from the site between 5:00pm and 6:00pm, after the 5:00pm finish time.

It has been assumed that Truck & Dog Trailer Combinations will access and egress the site consistently throughout the day from 7:00am to 5:00pm.

4.1.3 Post development traffic volumes

The expected traffic volumes during the AM and PM peak hours post development (assuming the development is completed in 2023), are shown below in Figure 12 and Figure 13.

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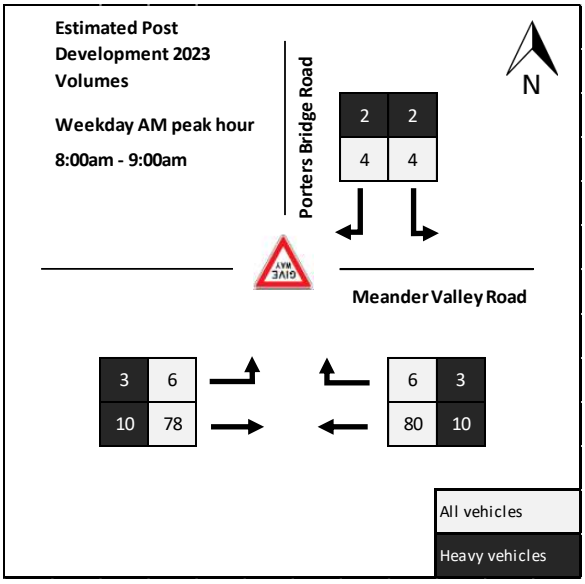

Figure 12: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 post development weekday AM peak hour

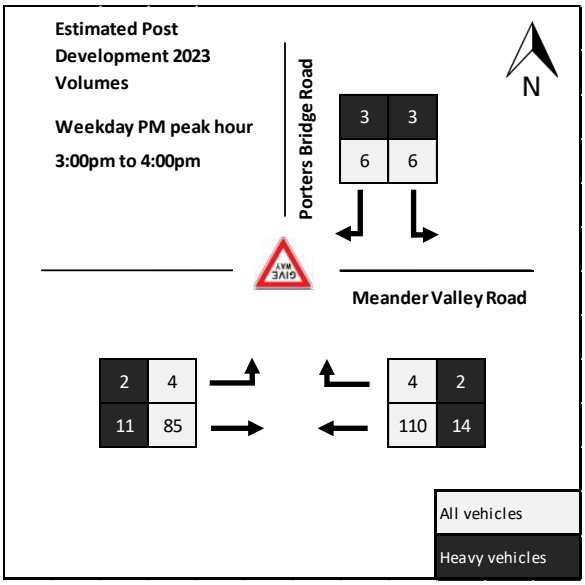

Figure 13: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2023 post development weekday PM peak hour

4.1.4 Post development traffic operation

Traffic modelling software

The operation of the intersection has been modelled using SIDRA Intersection 9.1 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). It is generally accepted that LOS D or better is an acceptable level of operation. Table 2 shows the criteria that SIDRA Intersection adopts in assessing the LOS.

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Table 2: SIDRA Intersection Level of Service (LOS) criteria

LOS	Delay per Vehicle (secs)		
	Signals	Roundabout	Sign Control
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

Network layout

The geometry of the Meander Valley Road/ Porters Bridge Road intersection has been modelled with reference to aerial imagery obtained from TheList, which informed the width and length of trafficable lanes, as well as overall intersection layout. Note that of the heavy vehicles on Porters Bridge Road, 100% have been assumed to be large trucks (semi-trailers, truck & dog trailers) to be conservative.

The geometry of the Meander Valley Road/ Porters Bridge Road intersection is shown below in Figure 14.

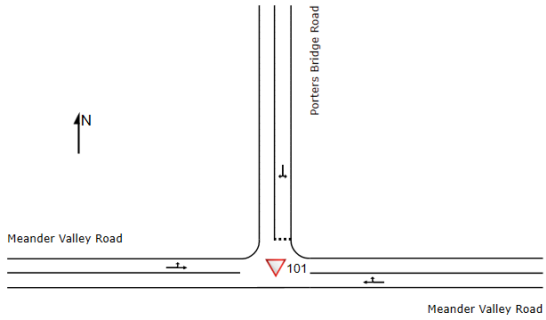

Figure 14: Geometric layout - Meander Valley Road/ Porters Bridge Road intersection

Traffic modelling results

A summary of the traffic modelling results at the Meander Valley Road/ Porters Bridge Road intersection for degree of saturation, average delay and 95th percentile queue for the post development weekday peak hour is provided below in Table 3. Detailed results are provided in Appendix B.

Table 3: SIDRA Intersection traffic modelling results – post development

Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
AM peak hour	East: Meander Valley Road	0.06	1	1	A
	North: Porters Bridge Road	0.01	11	1	B

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Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
	West: Meander Valley Road	0.05	1	0	A
	All	**0.06**	**1**	**1**	**A**
PM peak hour	East: Meander Valley Road	0.07	0	1	A
	North: Porters Bridge Road	0.02	12	1	B
	West: Meander Valley Road	0.05	0	0	A
	All	**0.07**	**1**	**1**	**A**

Based on the above, the Meander Valley Road/ Porters Bridge Road intersection will operate at an overall LOS A post development, with acceptable delays and queues.

4.1.5 30-years post development traffic volumes and operation

As ABx are proposing to extract bauxite from the site for 20-30 years, traffic has been modelled for the 30-years post development (2053) scenario, assuming the compounding annual traffic growth rate on both Porters Bridge Road and Meander Valley Road is 1.9% per year. Note that vehicle volumes travelling to and from the site have not been increased, as they are expected to stay consistent for the development's lifespan.

The expected traffic volumes during the AM and PM peak hours 30-years post development (assuming the development is completed in 2023), are shown below in Figure 15 and Figure 16.

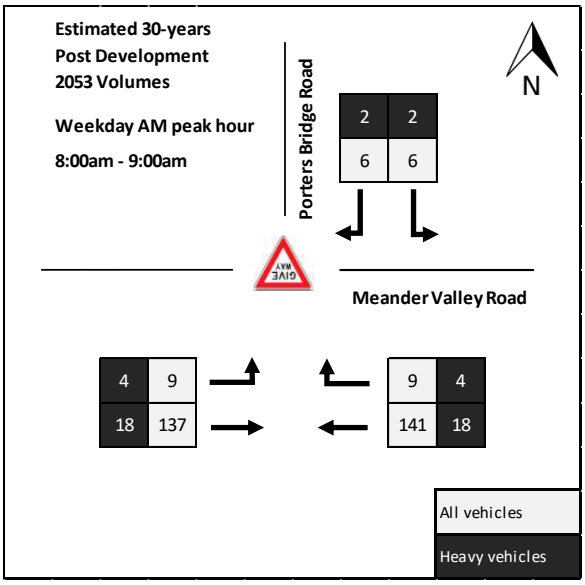

Figure 15: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2053 30-years post development weekday AM peak hour

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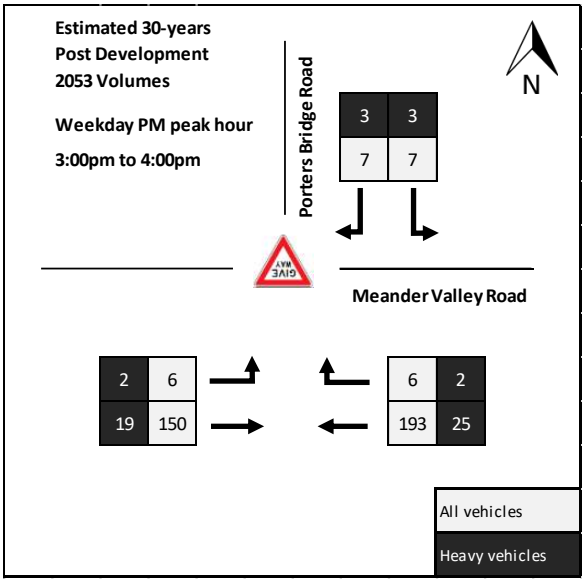

Figure 16: Meander Valley Road/ Porters Bridge Road intersection traffic volumes – estimated 2053 30-years post development weekday PM peak hour

Traffic modelling results

A summary of the traffic modelling results at the Meander Valley Road/ Porters Bridge Road intersection for degree of saturation, average delay and 95th percentile queue for the 30-years post development weekday peak hour is provided below in Table 4. Detailed results are provided in Appendix C.

Table 4: SIDRA Intersection traffic modelling results – 30-years post development

Peak	Approach	Degree of Saturation	Average Delay (secs)	95th Percentile Queue (m)	LOS
AM peak hour	East: Meander Valley Road	0.10	1	1	A
	North: Porters Bridge Road	0.02	11	1	B
	West: Meander Valley Road	0.09	1	0	A
	All	**0.10**	**1**	**1**	**A**
PM peak hour	East: Meander Valley Road	0.12	0	1	A
	North: Porters Bridge Road	0.03	13	1	B
	West: Meander Valley Road	0.09	0	0	A
	All	**0.12**	**1**	**1**	**A**

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Based on the above, the Meander Valley Road/ Porters Bridge Road intersection will operate at an overall LOS A 30-years post development, with acceptable delays and queues.

4.1.6 Traffic impact

Porters Bridge Road

Based on the development, overall traffic volumes on Porters Bridge Road are expected to increase from approximately 110 vehicles per day to 222 vehicles per day (as of 2023). As these are still low volumes, representing approximately one movement every two to three minutes during peak periods, the traffic impact on Porters Bridge Road is expected to be minimal. As shown above, post development and 30-years post development, the overall level of service at the Meander Valley Road/ Porters Bridge Road intersection for the Porters Bridge Road approach is expected to be LOS A post development and 30-years post development.

Meander Valley Road

Based on the development, overall traffic volumes on Meander Valley Road are expected to increase from approximately 1830 vehicles per day to 1942 vehicles per day (as of 2023). This represents just over a 5% increase in traffic volumes on the road, which is expected to be negligible with respect to the overall operation of the road.

4.1.7 Road Safety

As the existing road width along Porters Bridge Road currently does not comply with the LGAT Standards Drawings (TSD-R02-v3) requirements and the SSD along the road also does not comply with contemporary requirements, there is an increased likelihood of safety issues as a result of the additional traffic generated by the proposed development.

In order to assess the safety implications of the additional traffic volumes post development, a risk analysis as presented in Table 9 has been undertaken.

The risk analysis has been completed as per the Safe System approach which underpins the Tasmanian Government's *Towards Zero – Tasmanian Road Safety Strategy 2017-2026* and represents a shift away from traditional reactive approaches to road safety infrastructure. The analysis has taken into consideration the procedures set out in the *AUSTROADS Guide to Road Safety Part 6: Road Safety Audit* (AGRS6). The potential road safety problems identified have been ranked as follows:

A risk based on the **likelihood** of a crash occurring as a result of the deficiency together with the potential **severity** of that crash.

The risk ratings adopted are:

- Extreme
- High
- Medium
- Low; and
- Negligible.

Table 5 to Table 8 below show the risk rating process and how to respond to it. Figure 17 shows the 'Severity Guidance Sheet', reproduced from AGRS6, showing the severity of different crashes as a function of speed.

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Table 5: Likelihood of a crash (AGRS6)

Frequency	Description
Almost Certain	Once per quarter
Likely	Once per quarter to once per year
Possible	Once per year to once every three years
Unlikely	Once every three years to once every seven years
Rare	Less than once every seven years

Table 6: Likely severity of a crash (AGRS6)

Severity	Description
Fatal	Death at scene or within 30 days of the crash
Serious	Admitted to hospital
Moderate	Major first aid and/or presents to hospital (not admitted)
Minor	Minor first aid
Insignificant	Property damage

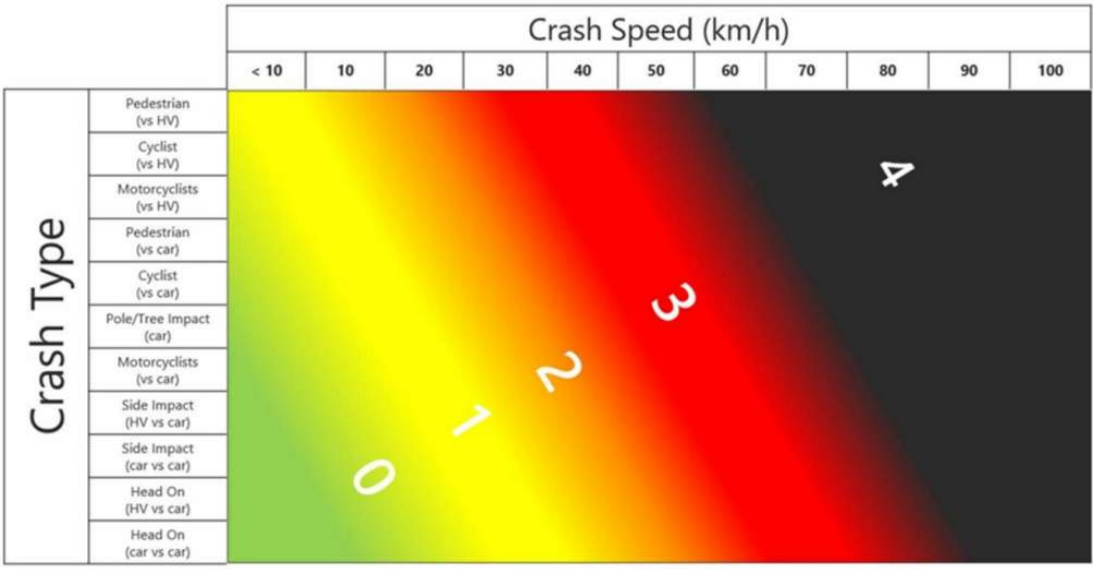

Figure 17: Severity Guidance Sheet (AGRS6)

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Table 7: Austroads RSA Risk Matrix (AGRS6)

	Insignificant	Minor	Moderate	Serious	Fatal
Almost Certain	Medium	High	High	Extreme (FSI)	Extreme (FSI)
Likely	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
Possible	Low	Medium	High	High (FSI)	Extreme (FSI)
Unlikely	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
Rare	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

**Note: FSI = Fatal and Serious Injuries*

Table 8: Treatment approach (AGRS6)

Risk	Suggested treatment approach
Extreme	Must be corrected regardless of cost.
High	Should be corrected or the risk significantly reduced, even if the treatment costs is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate but not high.
Low	Should be corrected or the risk reduced if the treatment cost is low.
Negligible	No action required

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Table 9: Risk analysis – Porters Bridge Road

Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
The existing road width does not comply with the LGAT Standard Drawings (TSD-R02-v3) requirements for a road carrying similar vehicle volumes and heavy vehicle percentage. With the increased traffic volumes, the limited road width may result in difficulties for vehicles to pass each other increasing the risk of side swipe crashes.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass as required.	Vegetation trimming along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection) along the road reservation should be undertaken to ensure vehicles have better sight distance and can reduce speed for an oncoming vehicle. – *(Council)* Monitor the road noting some widening may also be considered at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection to allow two vehicles to pass each other. – *(Council)*	Unlikely Insignificant **Negligible**
The width of the bridge crossing Meander River is such that it only supports one way traffic flow. There is no signage or line marking denoting which direction of vehicles get priority. With the increased traffic volumes generated by the proposed development, this may result in an increased likelihood of head on crashes as two vehicles attempt to cross the bridge at the same time.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road).	The priority on the one-way bridge should be clarified by installing a give-way sign and line marking for one direction of traffic (preferably northbound traffic gives way due to existing available pull over area). – *(Council)* Vegetation within the road reserve in the vicinity of the bridge should be trimmed back to improve sight distance around horizontal curves to the north and south. – *(Council)*	Unlikely Insignificant **Negligible**
Due to the horizontal and vertical geometry of the road, there are multiple locations in which SSD is limited, particularly around curves. With the increased traffic volumes, the limited SSD may result in an increased likelihood of crashes at the curves should vehicles traverse onto the opposing travel lane.	Unlikely Minor **Low**	Within tolerable limits	The existing crash history along the road does not identify any crash patterns of concern along Porters Bridge Road. The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass.	Vegetation trimming along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection) should be undertaken to ensure vehicles have better sight distance and can reduce speed for an oncoming vehicle. – *(Council)* Monitor the road noting some widening may also be considered at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection to allow two vehicles to pass each other. – *(Council)* Consider installing line marking at curves. – *(Council)* Consider installing Chevron Alignment Markers and advisory speed signage along the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection. – *(Council)*	Unlikely Insignificant **Negligible**
There are numerous unprotected hazards (power poles, trees, embankments) adjacent to the roadway or within the runout area. With the increased traffic volumes, the likelihood of vehicles running off road into these unprotected hazards is also increased.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generation by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). Drivers will generally become familiar with the road environment.	Vegetation trimming within the road reserve, along the verges and on approach to curves (particularly at the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection), should be undertaken to reduce the number of unprotected hazards adjacent to the roadway or within the runout area. – *(Council)* Consider installing Chevron Alignment Markers and advisory speed signage along the curve 2.5km from the Meander Valley Road/ Porters Bridge Road intersection. – *(Council)*	Unlikely Insignificant **Negligible**

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Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
The proposed development will increase the number of heavy vehicles travelling along Porters Bridge Road. This will increase the likelihood of a crash involving a heavy vehicle.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). There is signage along the road and in the vicinity of the site access currently to advise the road is used by heavy vehicles.	Straighten the Trucks Crossing or Entering signage located to the north the site access such that it faces the road. – *(ABx)* Clean the sign to remove any dirt on the surface of the sign. – *(ABx)* Consider installing another Trucks Crossing or Entering sign to the south the site access. – *(ABx)*	Unlikely Minor **Low**
There are four bridge structures located along Porters Bridge Road. There is a risk that there may be structural issues on the bridge structures due to a potential increase in the loads of the proposed vehicles exceeding the current load carrying capacity.	Possible Minor **Medium**	Within tolerable limits	It is expected that the proposed vehicles will be operating at a similar weight and configuration to the trucks currently generated by current road users. While the development will generate additional traffic, the structural capacity of the bridge structure is not impacted by the proposed number of vehicle movements. It is expected that the proposed vehicle loads and configurations are the same as those currently on the road.	Limit the weights of the proposed vehicles to match the vehicle configurations of the existing trucks using Porters Bridge Road. – *(ABx)* If additional loads are required, then a simple load assessment can be undertaken to compare the potential load effects of the increased vehicles and the expected load capacity of the individual structures. – *(ABx)*	Unlikely Minor **Low**
The site access may not be suitable for the proposed traffic generation resulting in an increased crash risk for vehicles exiting the site.	Possible Minor **Medium**	Within tolerable limits	The site access is existing and heavy vehicles currently use the site access. Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction. When turning out of the site access, Truck & Dog Trailer Combinations do require use of the majority of the width of Porters Bridge Road. Should Truck & Dog Trailer Combinations enter and exit the site access concurrently, entering trucks will need to wait approximately 40m south of the site access until the exiting truck has completed its manoeuvre. This will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required. This is considered suitable and relatively low risk given the anticipated available sight distance, truck driver site familiarity and low risk of such an occurrence (one movement generated every two to three minutes during development peak periods along Porters Bridge Road).	The existing site access should be resealed for a minimum of 30m directly off Porters Bridge Road to allow continued safe ingress and egress to the site for the extent of the mine life. The resealed access should comply with the requirements of AS 2890.2 which includes a sealed width of minimum 19m at its intersection with Porters Bridge Road and a maximum grade of 5% extending along the minimum sealed width of 30m. The seal should be designed taking into consideration the pavement requirements to withstand the pressures of heavy vehicles. – *(ABx)* Remove vegetation north of the site access (as discussed in Section 4.2.2 of this report) to improve sight distance to southbound traffic. – *(ABx)* Monitor the verges in the vicinity of the site access as some pavement strengthening may be required along the verge at the site access. – *(ABx)*	Unlikely Minor **Low**
Truck & Dog Trailer Combinations should only ingress the site via a right turn from Porters Bridge Road to the site access and egress the site via a left turn from the site access onto Porters Bridge Road. There is a risk that Truck & Dog Trailer Combinations may try to egress the site via a right turn.	Rare Minor **Negligible**	Within tolerable limits	The movement restriction will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required.	Consider installing signage highlighting the movement restriction. – *(ABx)*	Rare Minor **Negligible**

Risk Analysis Finding	Level of Risk	Safe System Energy	Comments	Recommendations *(Responsible Party)*	Residual Level of Risk
Existing line marking along Porters Bridge Road is faded which may result in vehicles failing to notice the line marking and traversing onto the opposing lane. The increased traffic volumes will increase the risk of a head-on crash.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generation by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). In sections where the line marking is faded, the road is generally wide enough to support two way traffic flow.	It is recommended to repaint the faded line marking. – *(Council)*	Rare Minor **Negligible**
The existing bridge safety barriers installed do not comply with contemporary requirements. Increased traffic volumes may increase the likelihood of crashes with the bridge safety barrier, which may not perform sufficiently in the event of a crash.	Unlikely Minor **Low**	Within tolerable limits	The additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). Note that where the existing bridge safety barriers do not meet contemporary requirements (Chainage 0.2 to 0.3), Porters Bridge Road is generally 7.2m wide.	Consider upgrading the safety barriers as part of Council's road/asset upgrade program such that they meet contemporary requirements. – *(Council)*	Unlikely Minor **Low**
There are a number of potholes present along the existing road surface. The condition of potholes may worsen with increased traffic volumes, increasing crash risk and damage to vehicles when struck. The presence of the potholes may also increase the rate at which the road surface deteriorates.	Unlikely Minor **Low**	Within tolerable limits	It is understood that the road is currently used by other, similar users: • WALTERS – WALTERS CONTRACTING PTY LTD – hard rock quarry; major user year-round • CREZZCO – CRESSWELLS TRANSPORT PTY LTD – hard rock quarry; major user year-round • FORICO – FORICO PTY LTD – forestry, plantation management and harvesting; major road user during harvesting, minor/mid-range user year-round, and • Private landowners – major users year-round for agricultural and residential purposes. While the development will generate additional traffic, the additional traffic generated by the proposed development is low (one movement every two to three minutes during development peak periods along Porters Bridge Road). The trucks generated will be of a similar weight and configuration to the trucks currently travelling on the road. Given the weight, configuration and low number of trucks generated, the rate at which the road surface deteriorates is not anticipated to be significantly accelerated.	Monitor and fix potholes as required along the road as part of Council's regular road maintenance program. – *(Council)*	Unlikely Minor **Low**
The trucks crossing or entering sign located to the north of the site access (shown in Figure 20) has fallen over. This may result in a vehicle missing the sign and increase the risk of a vehicle-truck crash, particularly with the increased traffic generation as a result of the development.	Unlikely Minor **Low**	Within tolerable limits	Existing signage has fallen over. The sign is suitable with reference to size, condition, type and location.	Straighten the Trucks Crossing or Entering signage such that it faces the road. Clean the sign to remove any dirt on the surface of the sign. – *(ABx)*	Unlikely Minor **Low**

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Should recommendations outlined above be implemented, it is anticipated that the residual level of risk along Porters Bridge Road will be low which is consistent with the level of risk currently present on Porters Bridge Road.

It is also noted that based on the assessment above, the site access is at the preferred location as it is currently used by heavy vehicles and provides little increase to risk post implementation of recommendations.

4.1.8 Construction Traffic Impact

Although details for the construction phases of the proposed development is currently not confirmed, it is anticipated that construction will be completed over a 2-week period.

The following heavy vehicles are anticipated to be generated during the construction phase:

- 10x truck and dog movements per day
- 1x cement truck per week
- 2x hot mix trucks per week
- 5x equipment transport trucks per week
- 1x cherry picker; and
- 1x truck and woodchipper.

In addition to the above heavy vehicles, approximately 8 light vehicles are also anticipated to be generated per day.

Overall, the traffic generated during the construction phase is less than or similar to the post development traffic volumes. Based on the assessment presented in this report for post development and 10-years post development traffic volumes, the Meander Valley Road/Porters Bridge Road intersection is expected to operate at an overall LOS A during construction, with acceptable delays and queues.

As the largest vehicles used during construction will be Truck & Dog Trailer Combinations, should recommendations outlined in this report in Table 9 be implemented, it is anticipated that the residual level of risk along Porters Bridge Road will be low which is consistent with the level of risk currently present on Porters Bridge Road.

4.2 Site access assessment

4.2.1 Intersection layouts

Clause 5.1 of the *Australian Standard AS/NZS2890.2:2018 Off-street commercial vehicle facilities* (AS 2890.2) states that "*Swept paths shall be used to check that the paths of vehicles travelling in the forward direction when negotiating access driveways and circulations roadways, can be accommodated within the proposed roadway".*

Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction. When turning out of the site access, Truck & Dog Trailer Combinations require most of the width of Porters Bridge Road. However, this is considered adequate given the traffic volume along Porters Bridge Road combined with the sight distance anticipated at the site access following vegetation trimming (as discussed in Section 4.2.2 of this report).

Should Truck & Dog Trailer Combinations enter and exit the site access concurrently, entering trucks will need to wait 40m south of the site access until the exiting truck has completed its manoeuvre. This will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required. This is considered suitable and relatively low risk given the anticipated available sight distance, truck driver site familiarity and low risk of such an occurrence. It is also noted that the entering truck may need to traverse the verge, but this is also considered suitable given the low frequency of this occurring.

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Completed swept paths are included in Appendix D.

It is recommended that the existing site access is resealed for a minimum of 30m directly off Porters Bridge Road to allow continued safe ingress and egress to the site for the extent of the mine life. The resealed access should comply with the requirements of AS 2890.2 which includes a sealed width of minimum 19m at its intersection with Porters Bridge Road and a maximum grade of 5% extending along the minimum sealed width of 30m. The seal should be designed taking into consideration the pavement requirements to withstand the pressures of heavy vehicles.

Note that Truck & Dog Trailer Combinations should only ingress the site via a right turn from Porters Bridge Road to the site access and egress the site via a left turn from the site access onto Porters Bridge Road. Although this movement restriction will be communicated via a Traffic Management Plan which is circulated to all persons travelling to and from the site, including visitors as required, consideration may be given to install signage highlighting this movement restriction.

4.2.2 Sight distance assessment

Site access

A site visit was undertaken by pitt&sherry staff on Wednesday 21 September 2022 and on Wednesday 7 February 2024. During the site visit, the sight distances from the site access to vehicles travelling along Porters Bridge Road were measured. The sight distances were measured in accordance with AS 2890.2 Figure 3.3, which provides sight distance requirements for commercial vehicle traffic entering a public road from an access driveway. This is more conservative than the requirements for light vehicle traffic, due to the increased time required for acceleration and braking for heavy vehicles.

It was noted during the site visit, vehicles were recorded to be travelling at 50km/h – 70km/ past the site despite the 100km/h speed limit. The sight distance has, however, been assessed against the sight distance requirement for vehicles travelling at 100km/h, which is considered conservative.

The SISD requirements and the observed sight distance at the site accesses are shown below in Table 10.

Table 10: Sight distance assessment of Porters Bridge Road/ site access junction

Direction of Vehicle Travel on Porters Bridge Road	**Speed**	**Sight Distance Requirement**	**Available Sight Distance**	**Meets Requirements**
		AS 2890.2		**AS 2890.2**
Northbound	100km/h	139m (5s gap)	150m	Yes
Southbound	100km/h		~150m*	Yes

*With removal of vegetation between the site access and the curve in Porters Bridge Road to the north.

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Based on the above, the sight distance at the existing access to both northbound and southbound vehicles meets the requirements of AS 2890.2, should vegetation located north of the site access on the eastern side of Porters Bridge Road, be removed (see required clearing in Figure 18)

Please note that this requires some vegetation removal within the bounds of the road reserve and of 340 Porters Bridge Road as shown, the latter of which will require consultation with property owners. Ongoing maintenance of this vegetation trimming will also be required.

Note that the provision of Trucks Crossing or Entering signage both south of the Meander River Bridge for vehicles travelling northbound, and just north of the site access for vehicles travelling southbound (as shown in Figure 19 and Figure 20) provides additional warning of trucks on Porters Bridge Road, further warning vehicles to drive cautiously. However, as noted in Table 9, this sign has fallen over and as such it is recommended that this sign be straightened such that it faces the road.

The grade of the site access, should recommendations provided in Table 9 be implemented, is not expected to have a significant impact on the time it would take a truck to accelerate when entering Porters Bridge Road from the site access.

Figure 18: Approximate extent of vegetation clearing required

Photos of the sight distance from the site access are also shown below in Figure 21 and Figure 22.

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Figure 19: Trucks Crossing or Entering signage - south of Meander River Bridge

Figure 20: Trucks Crossing or Entering signage – north of site access

Figure 21: Sight distance from site access - to southbound vehicles

Figure 22: Sight distance from site access - to northbound vehicles

4.3 Car parking assessment

4.3.1 Parking requirement

The Planning Scheme requires the following parking provision:

- One car parking space per every two employees; and
- No motorcycle parking spaces for uses that require 0 to 20 car parking spaces.

As a result, the site requires:

- 6 light vehicle parking spaces; and
- 0 motorcycle spaces.

Note that the site is also required to provide sufficient area such that heavy vehicles can park.

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4.3.2 Parking provision

As determined above, the site requires 6 light vehicle parking spaces. As the site layout is high-level at the current stage of the project, there are no marked car parking spaces. However, the site is large and as such there is expected to be sufficient space for vehicles to park.

4.4 Vehicle turning

Detailed site plans have not been provided. All vehicles are required to enter and exit the site in a forward direction. Due to the size of the site, it is expected there will be sufficient space for vehicles to turn around on site.

Vehicle turning paths should be assessed once detailed design plans for the site are prepared.

4.5 Turn lane requirements

4.5.1 Meander Valley Road/ Porters Bridge Road intersection

The *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* specifies warrants for providing left and right turn treatments at unsignalised intersections where the cost of the intersection upgrade is considered impractical. These warrants apply to two-lane two-way roads. Figure 23 below shows the volumes of traffic at intersections subject to a speed limit between 70km/h and 100km/h which would warrant turn treatments.

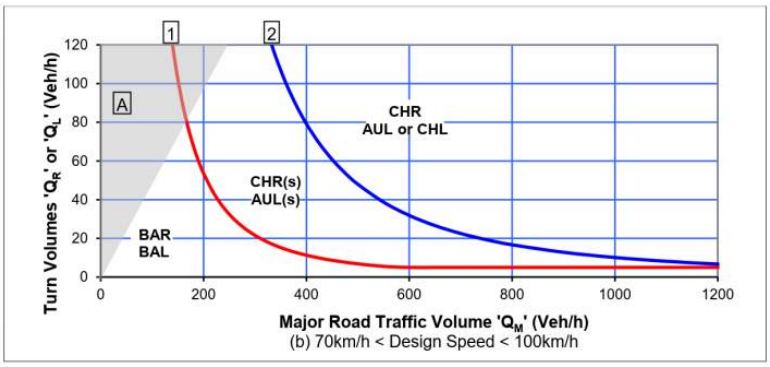

Figure 23: Warrants for turn treatments on major roads at unsignalised intersections

Based on the traffic volumes determined in this report, the expected opposing movements to the turning vehicles at the Meander Valley Road/ Porters Bridge Road intersection are shown in Table 11.

Table 11: Opposing movements to turning vehicles – Meander Valley Road/ Porters Bridge Road intersection

Scenario	Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
		QM Right	QM Left		
Existing	AM	183	88	5	5
	PM	222	96	2	2
No Development 2033	AM	222	106	6	6
	PM	268	116	2	2
	AM	187	88	9	9

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Scenario	Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
		QM Right	QM Left		
Post Development 2023	PM	226	96	6	6
Post Development 2033	AM	327	155	13	13
	PM	372	169	8	8

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided under all assessed scenarios. However, based on the fact that there are currently no turn lanes provided at the Meander Valley Road/ Porters Bridge Road intersection combined with no crash patterns of concern, the existing layout with no turn lanes is considered suitable.

As the traffic generated by the proposed development is minimal (one movement every two to three minutes during development peak periods), providing no turn treatments is considered suitable for the post development scenario.

4.5.2 Site access

Based on the traffic volumes determined in Section 4.1.4 of this report, the expected opposing movements to the right turning vehicles into the site are shown in Table 12.

Table 12: Opposing movements to turning vehicles – site access

Peak Hour	QM (veh/ hr)		QR (veh/ hr)	QL (veh/ hr)
	QM Right	QM Left		
AM	12	4	4	0
PM	12	8	4	0

Based on the assessment of opposing movements above, the warrants suggest that BAR and BAL turn lanes should be provided, however based on the limited turning volumes into the site access and the through volumes along Porters Bridge Road, the lack of turn treatments for other access along the site and the limited crash history, the provision of turn lanes is expected to be excessive. As such, the existing arrangement, providing no turn treatments, is expected to be suitable.

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5. Planning scheme assessment

5.1 Parking and Sustainable Transport Code

5.1.1 Use Standards

The proposed development has been assessed against the Use Standards of the Planning Scheme's Parking and Sustainable Transport Code, shown below.

Table 13: Parking and Sustainable Transport Code - Use Standards

C2.5.1 Car parking numbers	
Objective: That an appropriate level of car parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan; b) the site is contained within a parking precinct plan and subject to Clause C2.7; c) the site is subject to Clause C2.5.5; or d) it relates to an intensification of an existing use or development or a change of use where: i. the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or ii. the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on-site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.	**Can comply with Acceptable Solution A1** As the site is large, there is expected to be sufficient space to provide 6 car parking spaces. As such, the development can comply with Acceptable Solution A1.

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C2.5.2 Bicycle parking numbers	
Objective: That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Bicycle parking spaces must: a) be provided on the site or within 50m of the site; and b) be no less than the number specified in Table C2.1.	**Complies with Acceptable Solution A1** As the site is not required to provide bicycle parking as per Table C2.1, the development complies with Acceptable Solution A1.

C2.5.3 Motorcycle parking numbers	
Objective: That the appropriate level of motorcycle parking is provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site motorcycle parking spaces for all uses must: a) be no less than the number specified in Table C2.4; and b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.	**Complies with Acceptable Solution A1** As the site is not required to provide motorcycle parking as per Table C2.4, the development complies with Acceptable Solution A1.

C2.5.4 Loading bays	
Objective: That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.	**Can comply with Acceptable Solution A1** The warrant for loading bays may be determined once detailed design plans are provided. As the site is large, there is expected to be sufficient space to provide loading bays as required. As such, the development can comply with Acceptable Solution A1.

C2.5.5 Number of car parking spaces within the General Residential Zone and Inner Residential Zone
Objective: To: a) facilitate the reuse of existing non-residential buildings within the General Residential Zone and Inner Residential Zone; and b) to not cause an unreasonable impact on residential amenity by the car parking generated by that reuse.

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Acceptable Solution/ Performance Criteria	Comment
Acceptable Solution A1 Within existing non-residential buildings in the General Residential Zone and Inner Residential Zone, on-site car parking is not required for: a) Food Services uses up to 100m² floor area or 30 seats, whichever is the greater; and b) General Retail and Hire uses up to 100m² floor area, provided the use complies with the hours of operation specified in the relevant Acceptable Solution for the relevant zone.	**Not Applicable** As the site is not located with the General Residential Zone or Inner Residential Zone, Acceptable Solution A1 is not applicable.

5.1.2 Development Standards

The proposed development has been assessed against the Development Standards of the Planning Scheme's Parking and Sustainable Transport Code, shown below.

Table 14: Parking and Sustainable Transport Code - Development Standards

C2.6.1 Construction of parking areas	
Objective: That parking areas are constructed to an appropriate standard.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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. **Performance Criteria 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.	**Complies with Acceptable Solution A1** As all parking, access ways, manoeuvring and circulation spaces will be constructed with a durable all-weather seal and are either drained to the public stormwater system or contained within the site, the development complies with part a and b of Acceptable Solution A1. As the site is zoned as Rural Zone and Agriculture Zone under the Planning Scheme, the development is not required to provide a spray seal, asphalt, concrete pavers or equivalent material.

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C2.6.2 Design and layout of parking areas	
Objective: That parking areas are designed and laid out to provide convenient, safe and efficient parking.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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 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.* **Acceptable Solution A1.2** Parking spaces provided for use by persons with a disability must satisfy the following: a) be located as close as practicable to the main entry point to the building; b) be incorporated into the overall car park design; and c) be designed and constructed in accordance with *Australian/ New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.*	**Can comply with Acceptable Solution A1.1** Whether parking, access ways, manoeuvring and circulation spaces comply with requirements of the Planning Scheme or AS 2890.1 may be determined once detailed design plans are provided. The site's topography and size are such that the site can comply with Acceptable Solution A1.1. **Acceptable Solution A1.2 is not applicable** As DDA accessible spaces are not required for the development, Acceptable Solution A1.2 is not applicable.

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C2.6.3 Number of accesses for vehicles	
Objective: That: a) access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses; b) accesses do not cause an unreasonable loss of amenity of adjoining uses; and c) the number of accesses minimise impacts on the streetscape.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of accesses provided for each frontage must: a) be no more than 1; or b) no more than the existing number of accesses, whichever is the greater.	**Complies with Acceptable Solution A1** As the site is utilising an existing access to Porters Bridge Road, it complies with Acceptable Solution A1.
Acceptable Solution A2 Within the Central Business Zone or in a pedestrian priority street no new access is provided unless an existing access is removed.	**Acceptable Solution A2 is not applicable** As the site is not located within the Central Business Zone or on a pedestrian priority street, Acceptable Solution A2 is not applicable.

C2.6.4 Lighting of parking areas within the General Business Zone and Central Business Zone	
Objective: That parking and vehicle circulation roads and pedestrian paths within the General Business Zone and Central Business Zone, which are used outside daylight hours, are provided with lighting to a standard which: a) enables easy and efficient use; b) promotes the safety of users; c) minimises opportunities for crime or anti-social behaviour; and d) prevents unreasonable light overspill impacts.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 In car parks within the General Business Zone and Central Business Zone, parking and vehicle circulation roads and pedestrian paths serving 5 or more car parking spaces, which are used outside daylight hours, must be provided with lighting in accordance with Clause 3.1 “Basis of Design” and Clause 3.6 “Car Parks” in *Australian Standard/New Zealand Standard AS/NZS 1158.3.1:2005 Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P) lighting – Performance and design requirements.*	**Acceptable Solution A1 is not applicable** As the site is not located within the General Business Zone or Central Business Zone, Acceptable Solution A1 is not applicable.

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C2.6.5 Pedestrian access	
Objective: That pedestrian access within parking areas is provided in a safe and convenient manner.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution 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. **Acceptable Solution 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.	**Acceptable Solution A1.1 is not applicable** As the development requires fewer than 10 car parking spaces, Acceptable Solution A1.1 is not applicable. **Acceptable Solution A1.2 is not applicable** As the development is not providing DDA accessible parking spaces, Acceptable Solution A1.2 is not applicable.

C2.6.6 Loading bays	
Objective: That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The area and dimensions of loading bays and access way areas must be designed in accordance with *Australian Standard AS 2890.2–2002, Parking facilities, Part 2: Off-street commercial vehicle facilities*, for the type of vehicles likely to use the site.	**Can comply with Acceptable Solution A1** The warrant for loading bays may be determined once detailed design plans are provided. As the site is large, there is expected to be sufficient space to provide loading bays as required in accordance with AS 2890.2. As such, the development can comply with Acceptable Solution A1.
Acceptable Solution A2 The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with *Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities - Off-street commercial vehicle facilities.*	**Can comply with Acceptable Solution A2** As discussed, vehicle turning paths for Truck & Dog Trailer Combinations should be assessed once detailed design plans for the site are prepared. As the site is large, there is expected to be sufficient space to provide circulation roadways in accordance with AS 2890.2. As such, the development can comply with Acceptable Solution A2.

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C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone	
Objective: That parking for bicycles are safe, secure and convenient, within the General Business Zone and Central Business Zone.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Bicycle parking for uses that require 5 or more bicycle spaces in Table C2.1 must: a) be accessible from a road, cycle path, bicycle lane, shared path or access way; b) be located within 50m from an entrance; c) be visible from the main entrance or otherwise signed; and d) be available and adequately lit during the times they will be used, in accordance with Table 2.3 of *Australian/New Zealand Standard AS/NZS 1158.3.1: 2005 Lighting for roads and public spaces - Pedestrian area (Category P) lighting - Performance and design requirements.*	**Acceptable Solution A1 is not applicable** As the development is not required to provide bicycle parking, Acceptable Solution A1 is not applicable.
Acceptable Solution A2 Bicycle parking spaces must: a) have dimensions not less than: i. 1.7m in length; ii. 1.2m in height; and iii. 0.7m in width at the handlebars; b) have unobstructed access with a width of not less than 2m and a gradient not steeper than 5% from a road, cycle path, bicycle lane, shared path or access way; and *c)* include a rail or hoop to lock a bicycle that satisfies *Australian Standard AS 2890.3-2015 Parking facilities -- Part 3: Bicycle parking.*	**Acceptable Solution A2 is not applicable** As the development is not required to provide bicycle parking, Acceptable Solution A2 is not applicable.

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.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas must be located behind the building line of buildings, excluding if a parking area is already provided in front of the building line.	**Acceptable Solution A1 is not applicable** As the development is not located within any of the zones outlined, Acceptable Solution A1 is not applicable. Parking areas, will however, be located behind the building line.

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5.2 Road and Railways Assets Code

5.2.1 Use Standards

The proposed development has been assessed against the Use Standards of the Planning Scheme's Road and Railway Assets Code, shown below.

Table 15: Road and Railways Assets Code - Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: a) a new junction; b) a new vehicle crossing; or c) a new level crossing. **Acceptable Solution A1.2** For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority. **Acceptable Solution A1.3** For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority. **Acceptable Solution A1.4** 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. **Acceptable Solution A1.5** Vehicular traffic must be able to enter and leave a major road in a forward direction. **Performance Criteria P1** 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;	**Acceptable Solution A1.1, A1.2 and A1.3 are not applicable** As Porters Bridge Road is not a Category 1 road or limited access road, Acceptable Solution A1.1 is not applicable. As the development is not proposing a new access, Acceptable Solutions A1.2 and A1.3 are not applicable. **Can comply with Acceptable Solution A1.5** As vehicular traffic is expected to be able to enter and exit the site in a forward direction, the development complies with Acceptable Solution A1.5. **Satisfies Performance Criteria P1 in place of Acceptable Solution A1.4** As the number of heavy vehicles per day accessing the existing site access will increase by more than 5 vehicle movements per day, the development cannot comply with Acceptable Solution A1.4. The development does however satisfy the Performance Criteria in place of Acceptable Solution A1.4 as follows: a) As per the assessment and recommendations presented within this report, the traffic generated by the proposed development is not anticipated to significantly impact the safety or operation of the surrounding road network (subject to the recommendations presented within his report being implemented) b) As per assessment presented within this report, Porters Bridge Road is considered suitable for use by the heavy vehicles anticipated to be generated (subject to the recommendations

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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.

presented within this report being implemented). Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations are able to navigate the intersection in a forward direction

c) As discussed within this report, Porters Bridge Road is considered suitable for use by Truck & Dog Trailer Combinations (subject to the recommendations presented within his report being implemented). The generated traffic volumes are low (one movement every two to three minutes during development peak periods along Porters Bridge Road) and is not anticipated to significantly impact the safety or operation of Porters Bridge Road

d) Porters Bridge Road is subject to low traffic volumes as it primarily provides access to Forico-owned land, several residential properties and two quarries. As such, the traffic flow of the road is not anticipated to be impacted as a result of the development. The 100km/h speed limit along Porters Bridge Road is typical of rural roads. However, as discussed, vehicles were recorded to be travelling at 50km/h – 70km/h. in the vicinity of the site access

e) No alternative access to Porters Bridge Road is provided as part of the development

f) As discussed, much of the heavy vehicle volumes generated by the site will only be present during 3 to 4 months each year, and are required from an operational perspective to increase efficiency of material transportation

g) This Traffic Impact Assessment report outlines that the traffic generated by the development is not expected to have an adverse effect on the safety and operation of the site access and Porters Bridge Road (subject to the recommendations presented within his report being implemented). Although details for the construction phases of the proposed development is currently not confirmed, based on anticipated traffic generation during construction, the development is not expected to have an adverse effect on the safety and

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operation of the site access and Porters Bridge Road during construction, and

h) Written advice has been received from Council in the form of an RFI and has been addressed in this report.

5.2.2 Development Standards

The proposed development has been assessed against the Development Standards of the Planning Scheme's Road and Railways Assets Code, shown below.

Table 16: Road and Railways Assets Code - Development Standards

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area	
Objective: To minimise the effects of noise, vibration, light and air emissions on sensitive uses within a road or railway attenuation area, from existing and future major roads and the rail network.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Unless within a building area on a sealed plan approved under this planning scheme, habitable buildings for a sensitive use within a road or railway attenuation area, must be: a) within a row of existing habitable buildings for sensitive uses and no closer to the existing or future major road or rail network than the adjoining habitable building; b) an extension which extends no closer to the existing or future major road or rail network than: i. the existing habitable building; or ii. an adjoining habitable building for a sensitive use; or c) located or designed so that external noise levels are not more than the level in Table C3.2 measured in accordance with Part D of the *Noise Measurement Procedures Manual, 2nd edition, July 2008*.	**Acceptable Solution A1 is not applicable** As the development does not propose any buildings for sensitive uses, Acceptable Solution A1 is not applicable.

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C3.7.1 Subdivision for sensitive uses within a road or railway attenuation area	
Objective: To minimise the effects of noise, vibration, light and air emissions on lots for sensitive uses within a road or railway attenuation area, from existing and future major roads and the rail network.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A lot, or a lot proposed in a plan of subdivision, intended for a sensitive use must have a building area for the sensitive use that is not within a road or railway attenuation area. **Performance Criteria P1** A lot, or a lot proposed in a plan of subdivision, intended for sensitive uses within a road or railway attenuation area, must be sited, designed or screened to minimise the effects of noise, vibration, light and air emissions from the existing or future major road or rail network, having regard to: a) the topography of the site; b) any buffers created by natural or other features; c) the location of existing or proposed buildings on the site; d) the frequency of use of the rail network; e) the speed limit and traffic volume of the road; f) any noise, vibration, light and air emissions from the rail network or road; g) the nature of the road; h) the nature of the intended uses; i) the layout of the subdivision; j) the need for the subdivision; k) any traffic impact assessment; l) any mitigating measures proposed; m) any recommendations from a suitably qualified person for mitigation of noise; and n) any advice received from the rail or road authority.	**Acceptable Solution A1 is not applicable** As the development does not propose any buildings for sensitive uses, Acceptable Solution A1 is not applicable.

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6. Conclusion

An assessment of the traffic impacts associated with the proposed development of a bauxite mine located off Porters Bridge Road near Reedy Marsh has been prepared in accordance with the department of State Growth's Publication *Traffic Impact Assessment Guidelines (August 2020)* and with reference to the *Tasmanian Planning Scheme – Meander Valley*. The results of the assessment are summarised below:

- State Growth has provided crash data along the full extent of Porters Bridge Road for the most recent 10-year period. The crash history denotes that there are no crash patterns of concern along Porters Bridge
- The traffic impact on Porters Bridge Road as a result of the traffic generated by the proposed development is expected to be minimal post development and 30-years post development and the level of service at the Meander Valley Road/ Porters Bridge Road intersection for the Porters Bridge Road approach is expected to be LOS B post development and 30-years post development
- The traffic impact on Meander Valley Road is expected to be negligible with respect to the overall operation of the road
- While the additional traffic generated by the proposed development may impact the amenity of the road with consideration to vehicle travel speeds and the need to pass heavy vehicles more often, the generated traffic volumes are low (one movement every two to three minutes during development peak periods along Porters Bridge Road) and subject to the recommendations presented within this report in Table 9 being implemented, is not anticipated to significantly impact the safety or operation of the surrounding road network
- Although detail for the construction phases of the proposed development is currently not confirmed, based on anticipated traffic generation during construction, the development is not expected to have an adverse effect on the safety and operation of the site access and Porters Bridge Road during construction
- Based on swept path assessment undertaken for the Porters Bridge Road/ site access junction, Truck & Dog Trailer Combinations can navigate the intersection in a forward direction
- Sight distances from the site access to vehicles travelling along Porters Bridge Road met the relevant requirements of AS 2890.2 for access driveways for a minimum 5s gap, should vegetation located north of the site access on the eastern side of Porters Bridge Road, be removed. Note that this requires the removal of vegetation within the road reserve, as well as within 340 Porters Bridge Road. This sight distance assessment takes into consideration the increased time required for acceleration and braking for heavy vehicles
- The existing arrangement of no provision of turn lanes is considered suitable for both the Meander Valley Road/ Porters Bridge Road intersection and the site access; and
- As the site is large, there is expected to be sufficient space for vehicles travelling to and from the site to park; and
- As the site is large, there is expected to be sufficient space for vehicles enter the site in a forward direction, turn around, and exit the site in a forward direction.

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Site Plans

Appendix A

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure
- ROM Pad
- Laydown
- Site Parking
- Admin

Roads
- Public Road
- Main Access Road
- Internal Haul Roads

Site Pits
- Pit 1
- Pit 2

Other
- Proposed Mining Lease Area
- Proposed Disturbance Area

N

0 100 200 300 m

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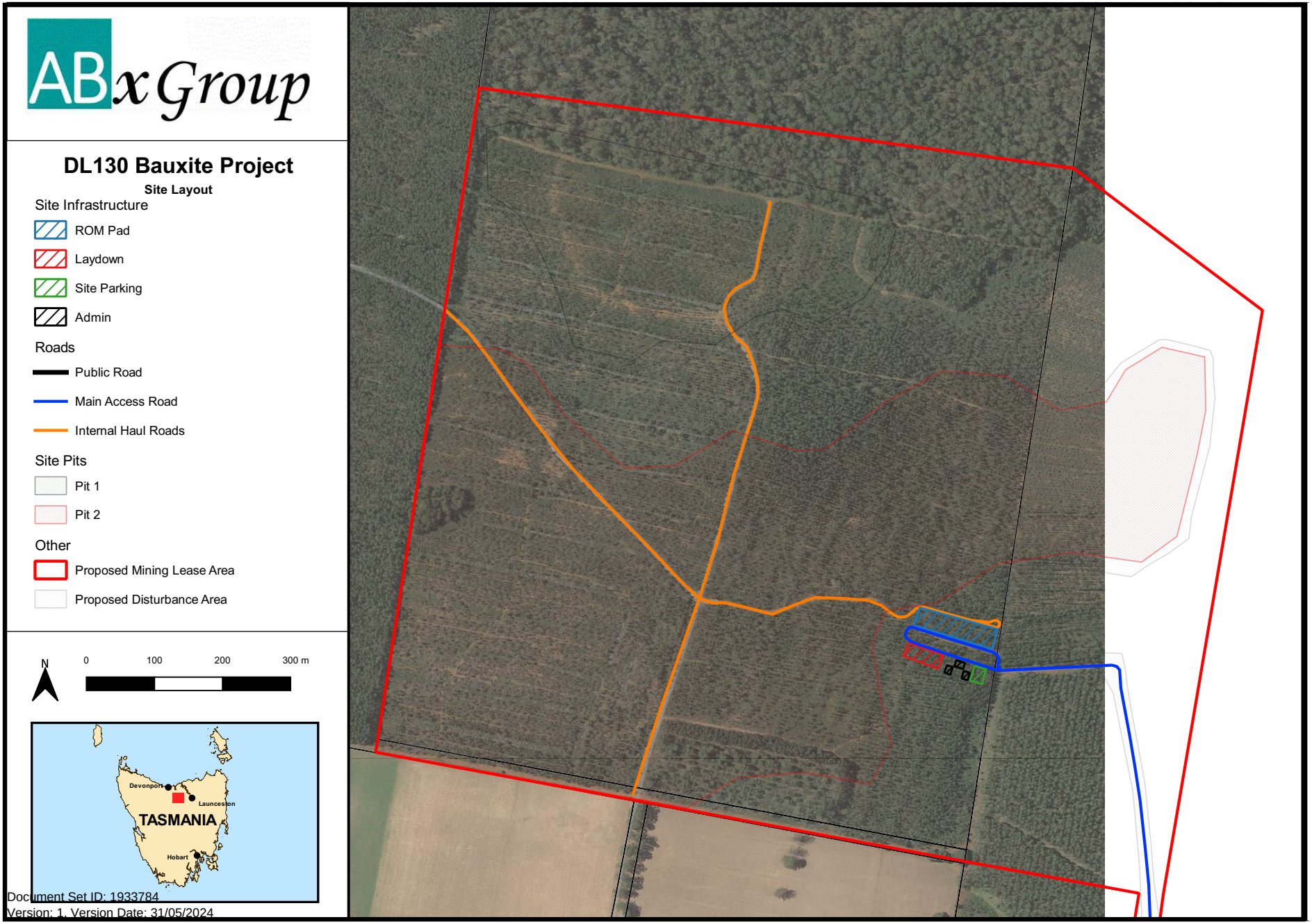

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure

- ROM Pad
- Laydown
- Site Parking
- Admin

Roads

- Public Road
- Main Access Road
- Internal Haul Roads

Site Pits

- Pit 1
- Pit 2

Other

- Proposed Mining Lease Area
- Proposed Disturbance Area

N

0 100 200 300 m

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ABx Group

DL130 Bauxite Project

Site Layout

Site Infrastructure

- ROM Pad
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Roads

- Public Road
- Main Access Road
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Site Pits

- Pit 1
- Pit 2

Other

- Proposed Mining Lease Area
- Proposed Disturbance Area

N

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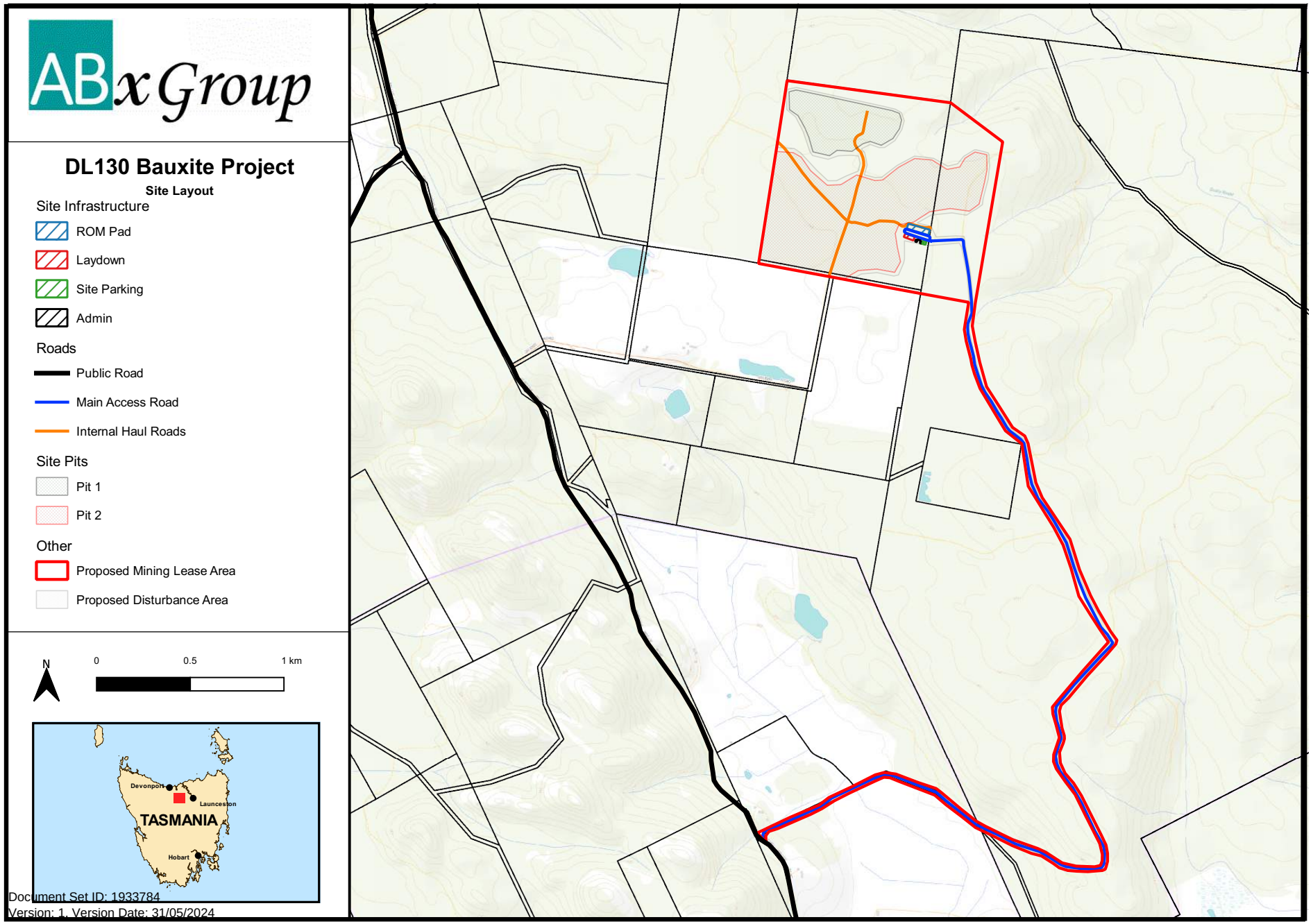

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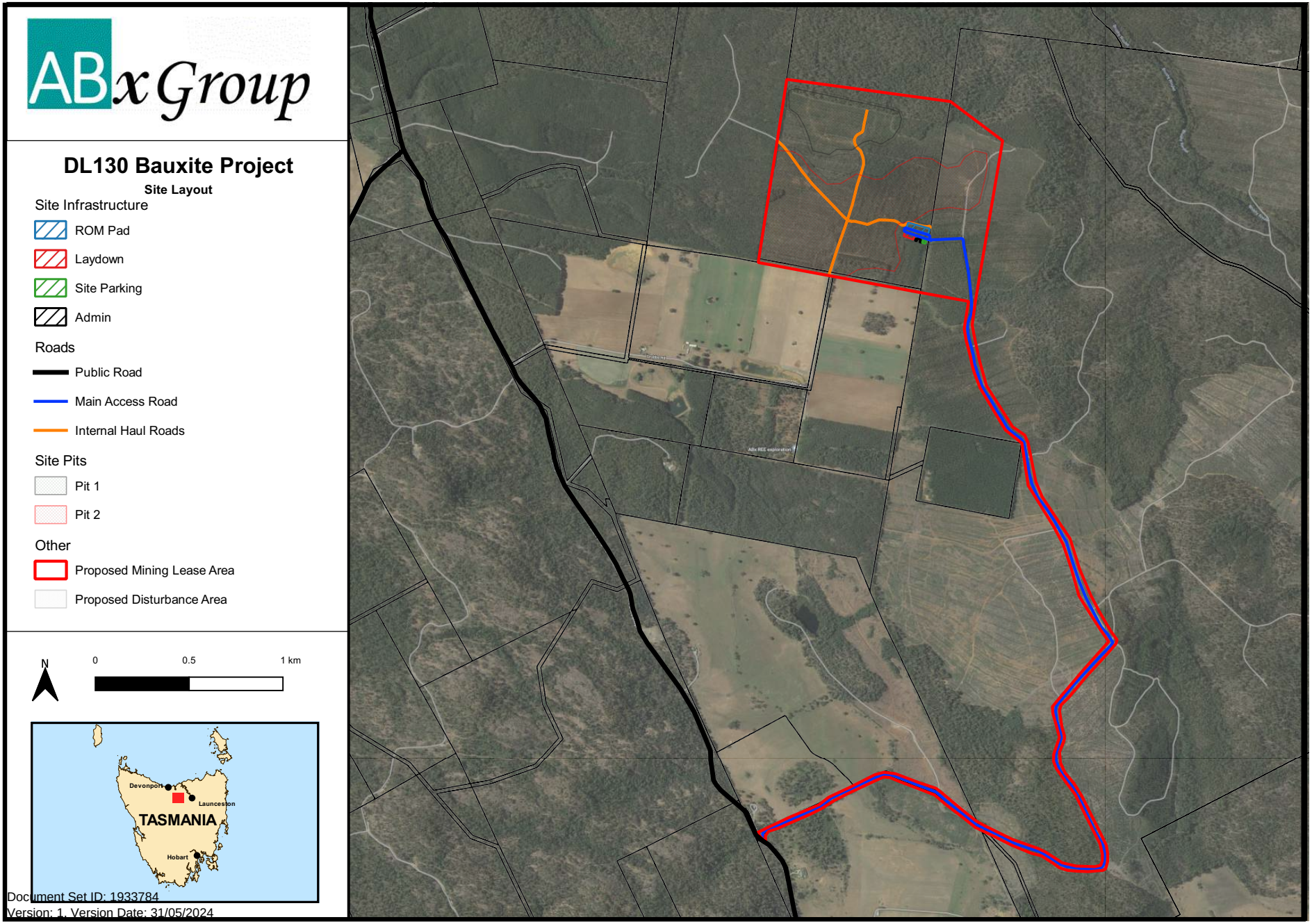

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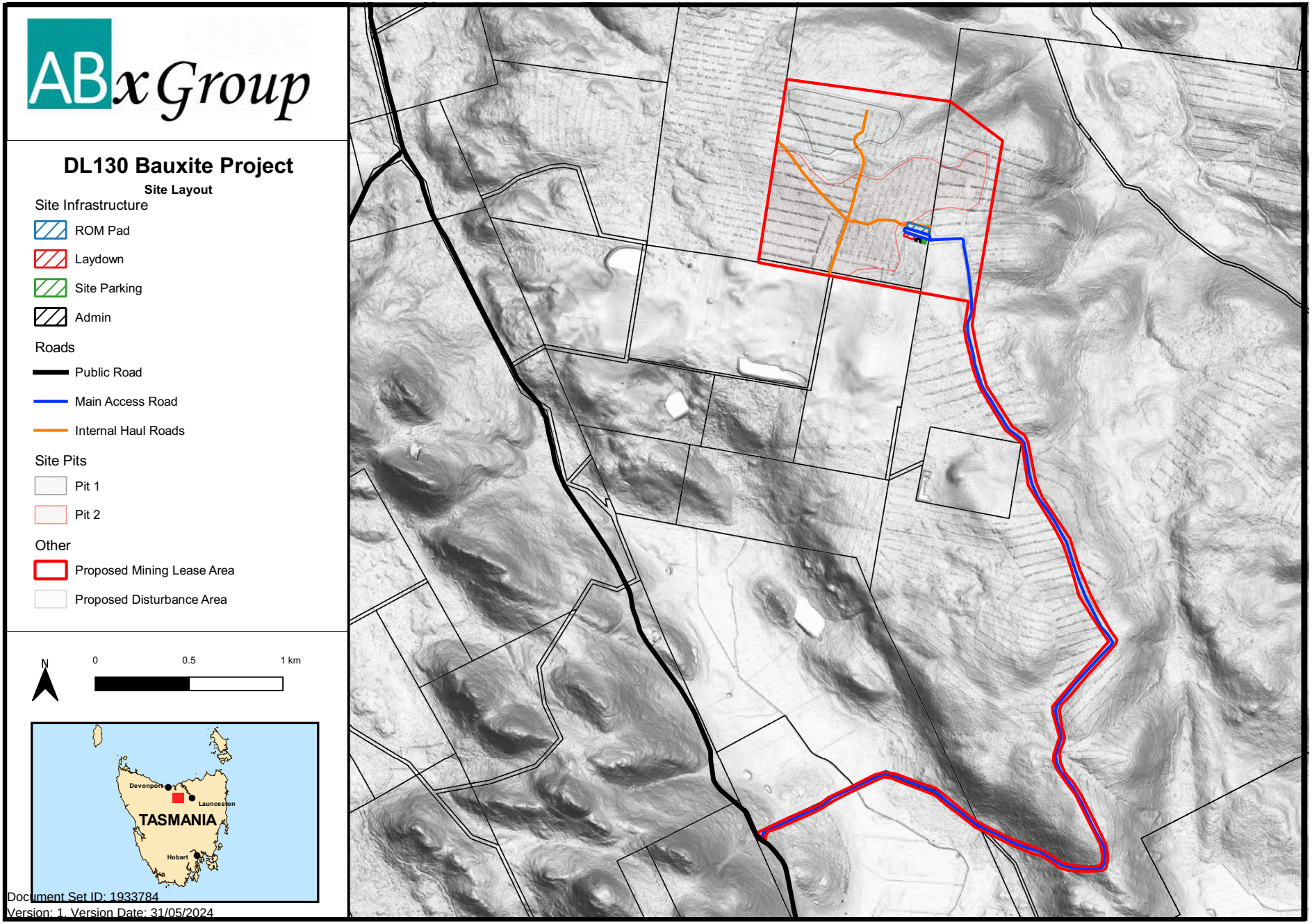

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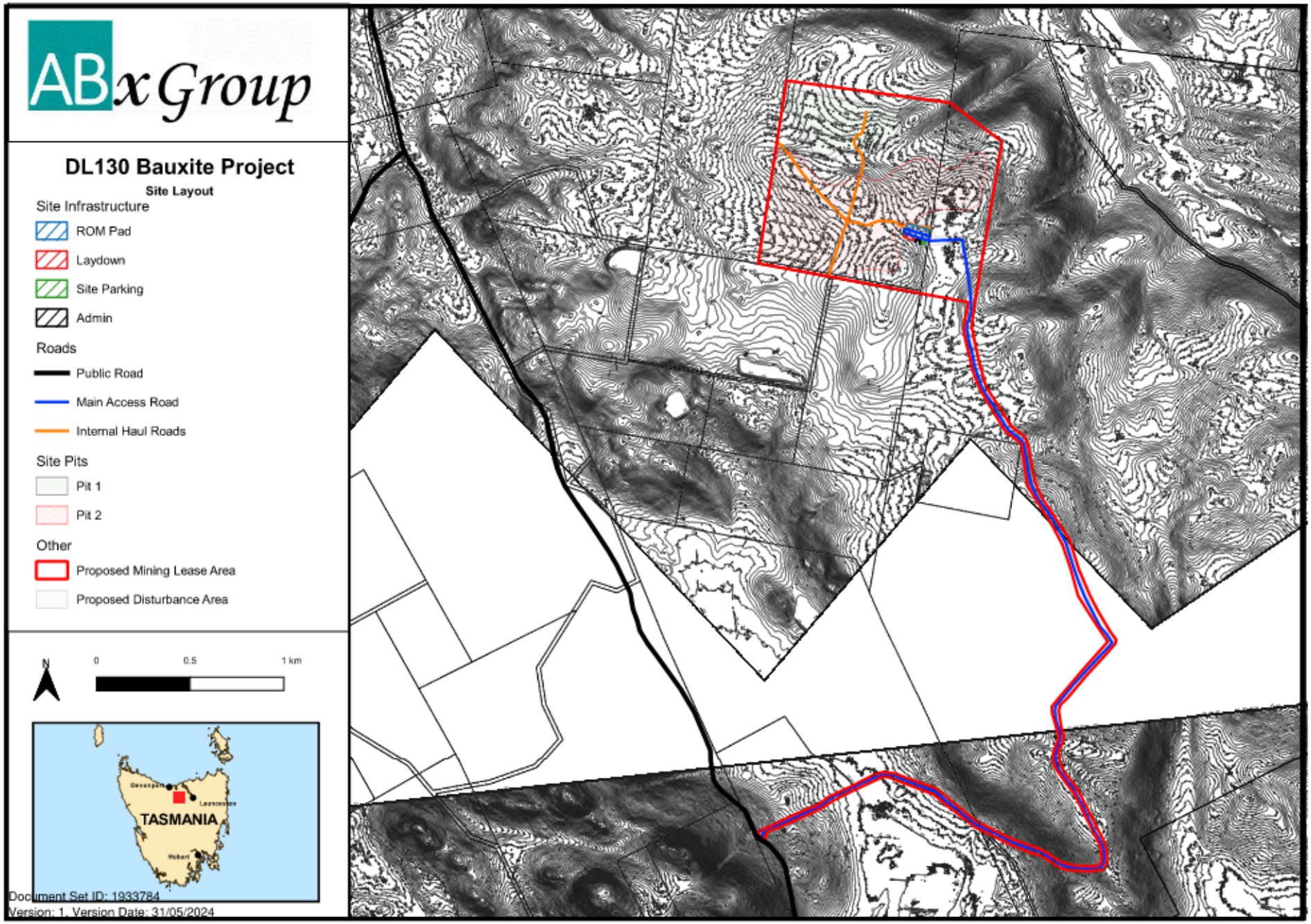

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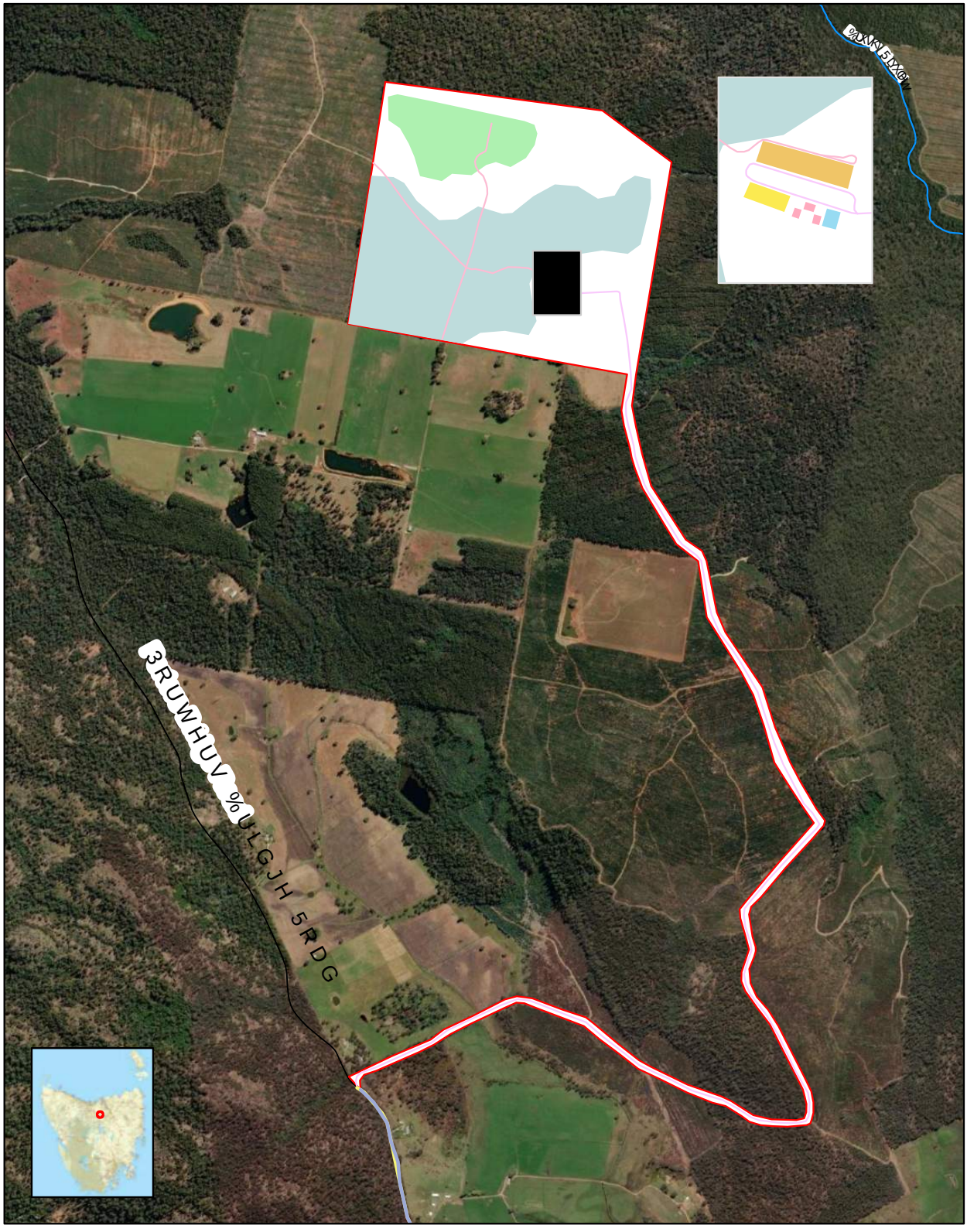

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SIDRA Analysis – post development

Appendix B

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MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - PD AM Peak (Site Folder: General)]

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Meander Valley Road/ Porters Bridge Road - PD AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	84	13.0	84	13.0	0.057	0.0	LOS A	0.1	0.8	0.07	0.07	0.07	79.0
6	R2	All MCs	6	50.0	6	50.0	0.057	10.9	LOS B	0.1	0.8	0.07	0.07	0.07	59.7
Approach			91	15.6	91	15.6	0.057	0.8	NA	0.1	0.8	0.07	0.07	0.07	77.2
North: Porters Bridge Road															
7	L2	All MCs	4	50.0	4	50.0	0.013	10.4	LOS B	0.0	0.7	0.28	0.62	0.28	51.4
9	R2	All MCs	4	50.0	4	50.0	0.013	11.8	LOS B	0.0	0.7	0.28	0.62	0.28	50.8
Approach			8	50.0	8	50.0	0.013	11.1	LOS B	0.0	0.7	0.28	0.62	0.28	51.1
West: Meander Valley Road															
10	L2	All MCs	6	50.0	6	50.0	0.052	8.0	LOS A	0.0	0.0	0.00	0.05	0.00	55.7
11	T1	All MCs	82	13.0	82	13.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	79.5
Approach			88	15.6	88	15.6	0.052	0.6	NA	0.0	0.0	0.00	0.05	0.00	77.1
All Vehicles			187	17.2	187	17.2	0.057	1.1	NA	0.1	0.8	0.05	0.08	0.05	75.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - PD PM Peak (Site Folder: General)]

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Meander Valley Road/ Porters Bridge Road - PD PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	116	13.0	116	13.0	0.071	0.0	LOS A	0.1	0.5	0.04	0.04	0.04	79.4
6	R2	All MCs	4	50.0	4	50.0	0.071	10.3	LOS B	0.1	0.5	0.04	0.04	0.04	60.3
Approach			120	14.3	120	14.3	0.071	0.4	NA	0.1	0.5	0.04	0.04	0.04	78.6
North: Porters Bridge Road															
7	L2	All MCs	6	50.0	6	50.0	0.021	10.5	LOS B	0.1	1.1	0.31	0.63	0.31	51.1
9	R2	All MCs	6	50.0	6	50.0	0.021	12.4	LOS B	0.1	1.1	0.31	0.63	0.31	50.5
Approach			13	50.0	13	50.0	0.021	11.5	LOS B	0.1	1.1	0.31	0.63	0.31	50.8
West: Meander Valley Road															
10	L2	All MCs	4	50.0	4	50.0	0.054	7.9	LOS A	0.0	0.0	0.00	0.03	0.00	56.0
11	T1	All MCs	89	13.0	89	13.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.6
Approach			94	14.7	94	14.7	0.054	0.4	NA	0.0	0.0	0.00	0.03	0.00	78.2
All Vehicles			226	16.4	226	16.4	0.071	1.0	NA	0.1	1.1	0.04	0.07	0.04	76.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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SIDRA Analysis – 30-years post development

Appendix C

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MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - 30-years PD AM Peak (Site Folder: 30-years PD)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - 30-years PD AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	148	13.0	148	13.0	0.099	0.0	LOS A	0.2	1.4	0.08	0.08	0.08	78.9
6	R2	All MCs	9	50.0	9	50.0	0.099	14.4	LOS B	0.2	1.4	0.08	0.08	0.08	59.7
Approach			158	15.2	158	15.2	0.099	0.9	NA	0.2	1.4	0.08	0.08	0.08	77.4
North: Porters Bridge Road															
7	L2	All MCs	6	33.0	6	33.0	0.021	10.2	LOS B	0.1	0.8	0.36	0.65	0.36	55.0
9	R2	All MCs	6	33.0	6	33.0	0.021	12.7	LOS B	0.1	0.8	0.36	0.65	0.36	54.5
Approach			13	33.0	13	33.0	0.021	11.4	LOS B	0.1	0.8	0.36	0.65	0.36	54.8
West: Meander Valley Road															
10	L2	All MCs	9	50.0	9	50.0	0.090	8.0	LOS A	0.0	0.0	0.00	0.04	0.00	55.8
11	T1	All MCs	144	13.0	144	13.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	79.5
Approach			154	15.3	154	15.3	0.090	0.5	NA	0.0	0.0	0.00	0.04	0.00	77.5
All Vehicles			324	15.9	324	15.9	0.099	1.1	NA	0.2	1.4	0.06	0.08	0.06	76.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Meander Valley Road/ Porters Bridge Road - 30-years PD PM Peak (Site Folder: 30-years PD)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Meander Valley Road/ Porters Bridge Road - 30-years PD PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Meander Valley Road															
5	T1	All MCs	203	13.0	203	13.0	0.122	0.0	LOS A	0.1	0.7	0.04	0.04	0.04	79.4
6	R2	All MCs	6	33.0	6	33.0	0.122	12.0	LOS B	0.1	0.7	0.04	0.04	0.04	65.4
Approach			209	13.6	209	13.6	0.122	0.4	NA	0.1	0.7	0.04	0.04	0.04	78.9
North: Porters Bridge Road															
7	L2	All MCs	7	43.0	7	43.0	0.031	11.0	LOS B	0.1	1.4	0.42	0.68	0.42	51.3
9	R2	All MCs	7	43.0	7	43.0	0.031	15.5	LOS C	0.1	1.4	0.42	0.68	0.42	50.8
Approach			15	43.0	15	43.0	0.031	13.2	LOS B	0.1	1.4	0.42	0.68	0.42	51.0
West: Meander Valley Road															
10	L2	All MCs	6	33.0	6	33.0	0.094	7.6	LOS A	0.0	0.0	0.00	0.02	0.00	60.9
11	T1	All MCs	158	13.0	158	13.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	79.6
Approach			164	13.8	164	13.8	0.094	0.3	NA	0.0	0.0	0.00	0.02	0.00	78.7
All Vehicles			388	14.8	388	14.8	0.122	0.8	NA	0.1	1.4	0.04	0.06	0.04	77.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Swept paths

Appendix D

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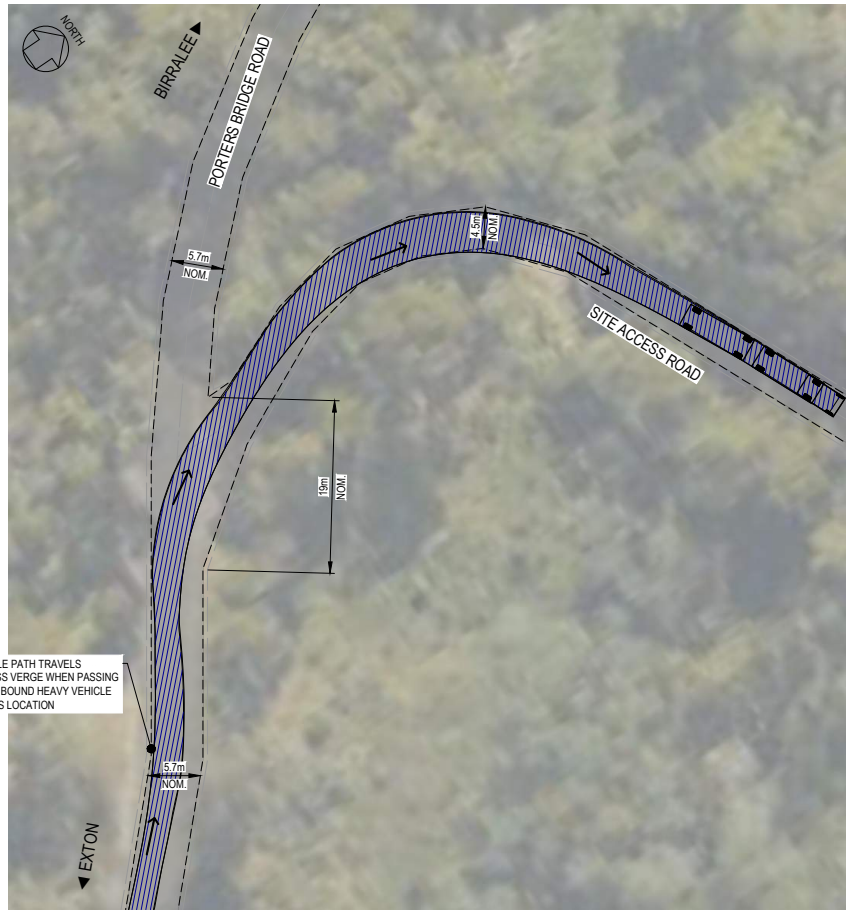
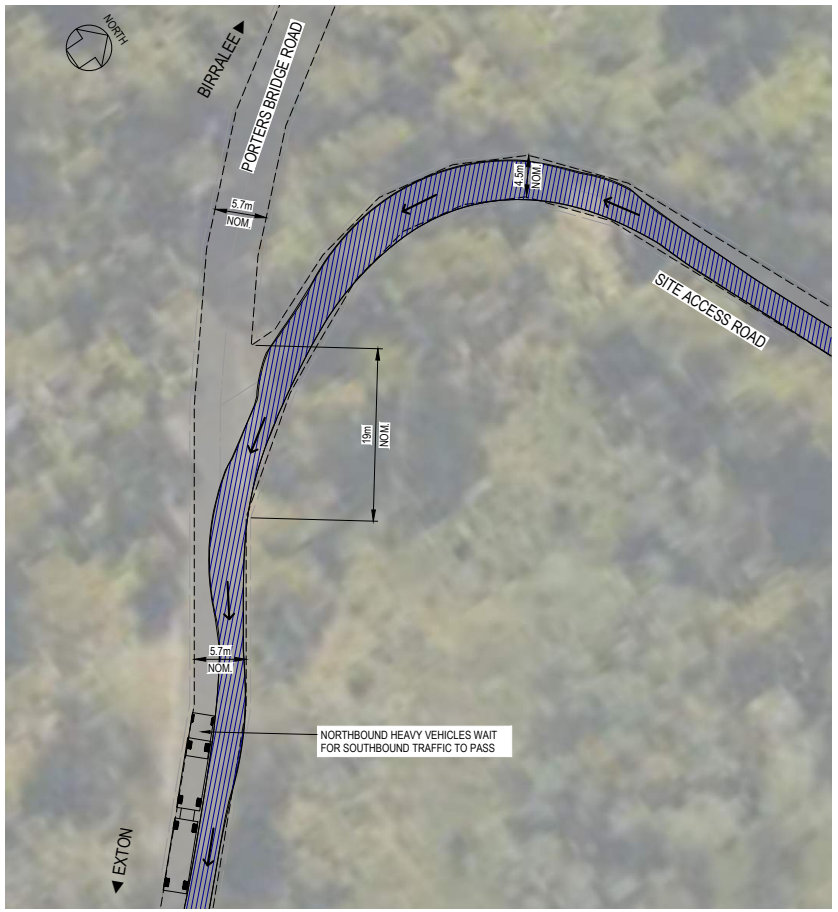
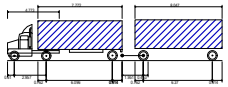


NORTHBOUND VEHICLE
SCALE 1:500



SOUTHBOUND VEHICLE
SCALE 1:500

TRUCK & DOG COMBINATION



Overall Length	19.812m
Overall Width	2.591m
Overall Body Height	3.753m
Min Body Ground Clearance	0.407m
Max Track Width	2.591m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	13.716m

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	VEHICLE SIZE UPDATED	MM	LAL	LAL	14/02/2024
		MM	NA	LAL	20/12/2023

APPROVED
ORIGINAL COPY ON FILE "e" SIGNED BY
SIGNED
DATE

SCALE (PLOTTED FULL SIZE) 1:500m (A3)
SHEET SIZE A3
5 0 5 10 15 20
SCALE IN METRES - 1:500

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CLIENT ABX GROUP LIMITED
PROJECT BAUXITE PROJECT TRAFFIC ASSESSMENT
STATUS PRELIMINARY

DRAWING TITLE VEHICLE SWEPT PATHS TRUCK & DOG (19.8m)
DATUMS: AHD / MGA
CLIENT No.: ~
DRAWING No. S-P.22.0828-00-DRG-CIV-1101
REVISION A
PRINT IN COLOUR
Feb. 14, 24 - 15:20:30 Name: S-P.22.0828-00-DRG-CIV-1101.dwg

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DL130 Bauxite Mine Traffic Impact Assessment

Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

Phone 1300 748 874
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Located nationally —
Melbourne
Sydney
Brisbane
Hobart
Launceston
Newcastle
Devonport

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Stormwater Management Plan

Appendix E

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DL130 Bauxite Project

Stormwater Management Plan

Prepared for
ABx Group

Client representative
Nathan Towns

Date
3 October 2023

Rev02

Document Set ID: 1933784
Version: 1, Version Date: 31/05/2024

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Prepared by — Luis Henrique		**Date —**17 August 2023
Reviewed by — Martin Jacobs		**Date —** 17 August 2023
Authorised by — Rob Casimaty		**Date —** 17 August 2023

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Revision History					
Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
A	Stormwater Management Plan	LH	MJ	RC	07/03/2023
B	Stormwater Management Plan	LH	JH	RC	22/3/2023
00	Issue for Client	LH	JH	RC	21/6/2023
01	Final with EPA feedback	LH	JH	RC	17/08/2023
02	Final addressing comments	LH	EM	RC	02/10/2023

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1. Background

ABX proposes to develop the DL130 Bauxite Mine, near Deloraine in Northern Tasmania. pitt&sherry has been engaged to assist with the preparation of an Environmental Effects Report (EER) in support of a submission to the Environment Protection Authority (EPA) for statutory approvals. EPA has provided guidance about what needs to be included in the EER. This report addresses the EER Guidelines that relate to the potential impacts and management of the site stormwater, which include the following:

- Description of potential impacts on the receiving environment and mitigation measures to avoid or reduce them
- Description of the management measures to control surface water and the potential for erosion and sediment loss
- Measurements of distance from the activity to the nearest waterbody
- Identification of the relevant design features of the stormwater infrastructure such as drains and sediment basins; and
- Compliance with the *State Policy in Water Quality Management 1997.*

The approximate boundaries of the proposed mining are shown in Figure 1 below. Pits 1 and 2 are approximately 50 ha and 13 ha respectively, or a total of about 63 ha, which will be operated over a period of 20 to 30 years. The land is currently used for forestry.

Figure 1: Proposed mining area (Pit 1, Pit 2 (dark blue)); roads (black); cadastral parcel (white), 1m contour

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2. Existing drainage

Figure 2 shows terrain derived from the 2021 2m and 2014 1m DEM LiDAR acquired from the ELVIS web portal of Geoscience Australia. The terrain has been used to identify drainage lines and creek lines around the site. According to the terrain, the mining areas do not intersect creeks.

The entire area of Pit 2 and approximately half of the area of Pit 1 (eastern half) discharge runoff to hillslopes above Brushy Rivulet The western area of Pit 1 discharges runoff into forest areas with no obvious nearby creeks or rivulets.

There is currently no significant drainage infrastructure at the site, such as cut-off drains, that could divert runoff from the tributary channels to Brushy Rivulet.

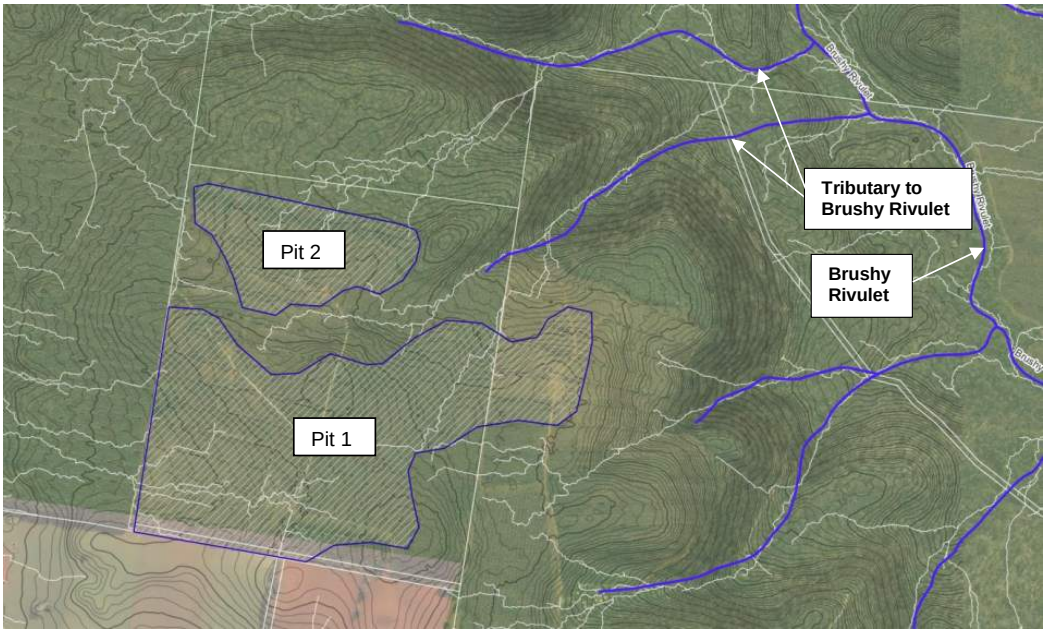

Figure 2: Proposed mining area (Pit 1/2 (dark blue)); Brushy Rivulet and tributaries (blue); Overland flow paths (light white) derived from LiDAR, Cadastral parcels (white), 1m contour

3. Hydrologic and hydraulic assessment

A hydrologic and hydraulic analysis was undertaken in accordance with the procedures recommended by Australian Rainfall and Runoff 2019 (ARR19). Rainfall data included the Intensity Frequency Duration (IFD) and median pre-burst depths obtained from the Bureau of Meteorology website. The temporal patterns were the Southern Slopes ensemble.

The analysis has been undertaken in the software package DRAINS which estimated stormwater flows by hydrological modelling. The loss model was depression storage and the routing model used the time-area method. The hydraulic model in DRAINS was used to estimate the required capacity of the drainage system.

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4. Proposed infrastructure

The proposed mining area Pit 1 has been subdivided into four stages, which could occur simultaneously as ABx intends to exploit the land in 20-hectare area groups. This assessment adopts a conservative approach in estimating the location and sizes of the sediment basins and cut-off drains, by treating each stage separately.

Figure 3**Error! Reference source not found.** below shows the Pit 1 (Stage 4/5/6/7) and Pit 2 stage subdivision (Stages 1/2/3, 9 to 13) and respective areas in hectares.

4.1 Sediment basin location

Several sediment basins are proposed to receive runoff discharging from each stage, as shown in Figure 3.

- Stages 1 and 2 discharge into the same sediment basin;
- Stages 4, 5, 6 and 7 discharge into the same sediment basin;
- Stages 11 and 12 discharge into the same sediment basin;
- Stages 3, 8, 9, 10 and 13 have individual sediment basins
- Stages 4 and 5, have two sediment basins each (Basins 4.1, 4.2, 5.1, and 5.2).

Sediment basins catering for more than a single stage shall not be rehabilitated until completion of all the stages discharging into it.

A cut-off drain along the downstream boundary of Stage 12 has been proposed to convey and discharge runoff into the Stage 11 sediment basin.

4.2 Progression of mining operations within each stage

Each stage is considered separately and the following measures will be followed:

- Mining operations within each stage will start on the upper slopes and progress down the slope towards the sediment basins, as indicated in Figure 3. Progressing each stage in this way will reduce the need to construct drainage channels to convey water from the operating area to the sediment basin. Clean run-off from undisturbed stages must be diverted around disturbed, working areas by cut-off drains by cut-off drains; and
- Bunds at the downstream end of each stage direct runoff into sediment basins.

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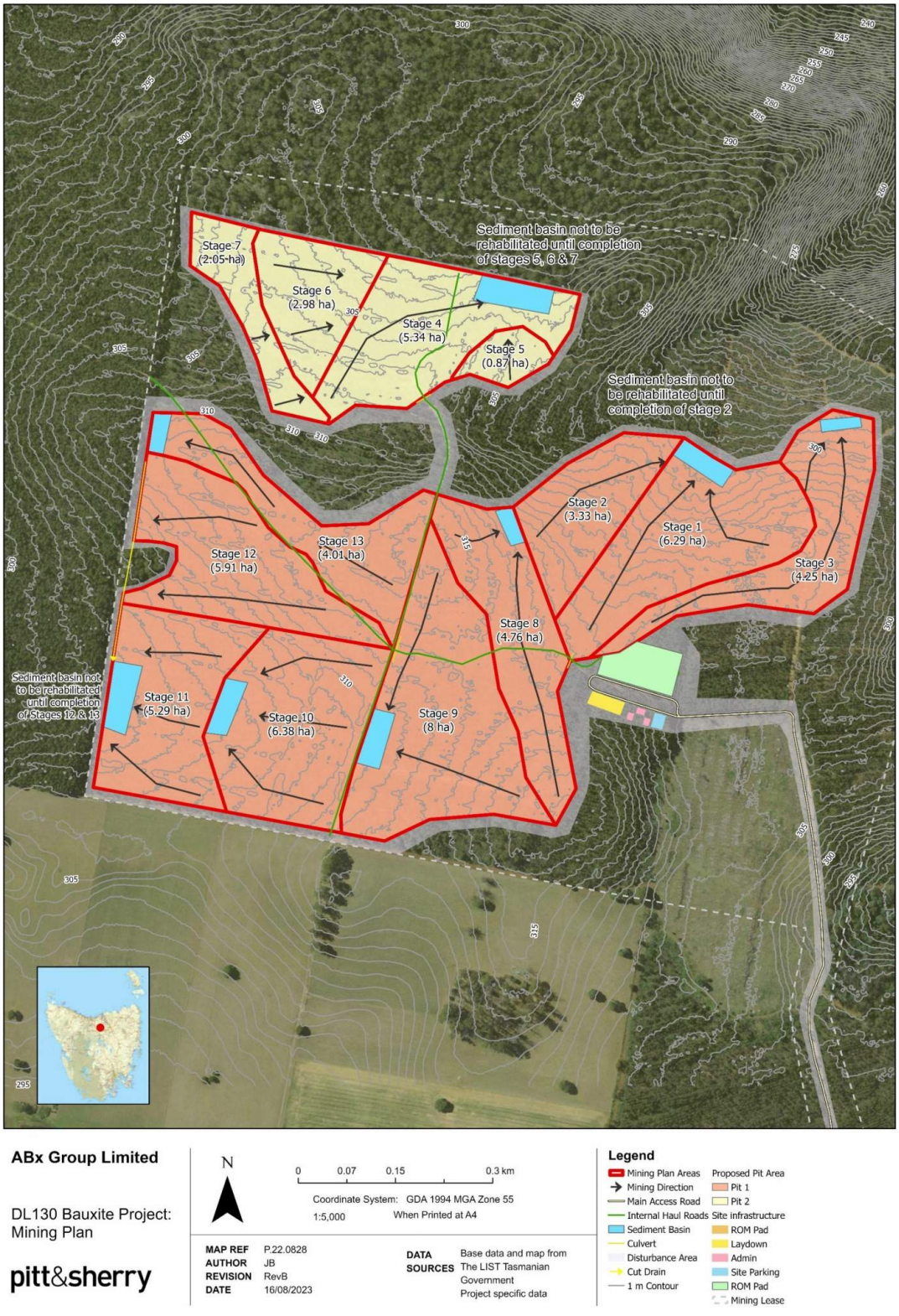

Figure 3: Mining and stormwater management plan

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4.3 Sizing of critical elements

4.3.1 Sediment basin

The sediment basins have been designed using the methodology prescribed by IECA Best Practice Erosion and Sediment Control 2018. Soil particle information was not available at the time of writing. Type D basins are proposed because of the site characteristics and multiple inflow locations.

The Type D sediment basin is governed by a minimum required volume. The operation of the sediment basin normally relies on chemical treatment to precipitate sediment. The settling pond volume must be dewatered to the bottom of the settling zone prior to a rainfall event that is likely to produce runoff.

The size of the sediment basin is based on the following equation:

$$Vs = 10\ R(Y\%,5\text{-day}) \cdot Cv \cdot A$$

where Vs = settling volume
A = effective catchment area connected to the basin
R (Y%,5-day) = Y%, 5-day rainfall depth (mm)
Cv = volumetric runoff coefficient

And $R(Y\%,5\text{-day}) = K1 \cdot I(1\text{in }1\text{yr}, 5\text{-day}) + K2$

where K1 = constant
K2 = constant
I (1 in 1yr, 5-day) = Average rainfall intensity for a 1 in 1 year ARI, 5-day storm (mm/hr)

The constants K1 and K2 have been selected to represent basins that have a design life greater than 6 months and do not discharge to sensitive receiving waters. The design rainfall intensity has been selected from the IFD depths for the catchment centroid from the Bureau of Meteorology (BoM).

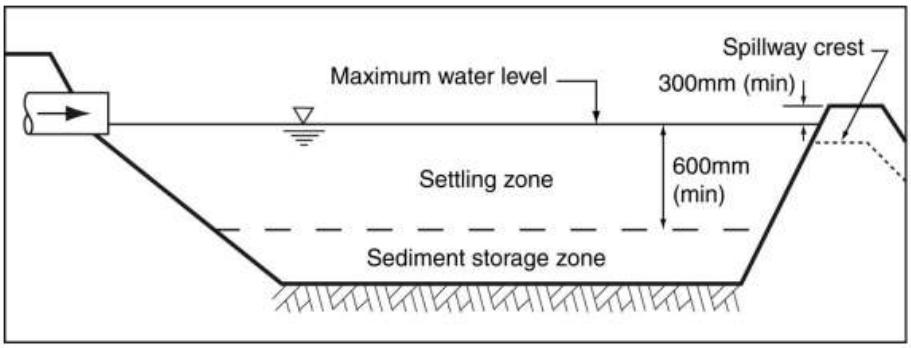

Figure 4: Type D - settling zone and sediment storage zone, figure from AustIECA (best practices for erosion control)

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Table 1: Sediment basin design Type D

Proposed Sediment Basin	**BASIN 1**	**BASIN 3**	**BASIN 4**	**BASIN 8**	**BASIN 9**	**BASIN 10**	**BASIN 11**	**BASIN 13**
Catchment area (ha)	9.62	4.25	11.24	4.76	8.00	6.38	11.20	4.01
I (1yr, 5-day) - mm/hr	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
K1 (constant)	17	17	17	17	17	17	17	17
K2 (constant)	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Cv (volumetric runoff coefficient)	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
R (1 in 1year, 5-day rainfall depth) - mm	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
Vs (volume of settling zone) - m3	1659	733	1939	822	1399	1125	1939	694
Bottom of sediment storage zone								
Width - m	27.4	17.2	29.8	18.4	24.9	22.0	29.8	16.6
Length - m	85.7	55.1	93.1	58.7	78.2	69.6	93.1	53.5
Bottom of settling zone								
Width - m	29.2	19.0	31.6	20.2	26.7	23.8	31.6	18.4
Length - m	87.5	56.9	94.9	60.5	80.0	71.4	94.9	55.3
Top of settling zone								
Width - m	32.8	22.6	35.2	23.8	30.3	27.4	35.2	22.0
Length - m	91.1	60.5	98.5	64.1	83.6	75.0	98.5	58.9
Top of crest								
Width - m	34.6	24.4	37.0	25.6	32.1	29.2	37.0	23.8
Length - m	92.9	62.3	100.3	65.9	85.4	76.8	100.3	60.7

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4.3.2 Cut-off drains and culverts

The sizes of cut-off drains and culverts provide flow capacity for a 5% AEP rainfall event. Cut-off drains are used to divert clean water around sediment basins and to direct sediment-laden stormwater to sediment basins.

Proposed drains connect to sediment basins at only one side of the basin. Where the drainage channels connect to sediment basins, they should:

- Have a gradient of no more than 1%
- Be widened up to 5m; and
- Have rock lining at the base of the basin.

Table 2: Cut-off drain design

	Cut-off Drains
Bottom width - m	0.50
Depth – m	1.00
Batter slope ratio	1:3

Figure 3 shows the culvert locations under the internal haul roads. In these locations, at some point during the mining operation cut-off drains will be constructed, and a transverse culvert is necessary. Below are the culvert details:

- Culvert under internal haul road: 450 mm RCP, class 4, 600 mm minimum cover.

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5. Site sediment and erosion control operation

Site sediment and erosion control operations will include:

- Marking out the initial excavation area, and collecting the topsoil by loader and excavator. Silt fences will be placed at the base of each cleared area, and runoff conveyed to the sediment basins via cut-off drains
- Construction of cut-off drains between the upstream undisturbed areas and the excavated areas so that the 'clean-stormwater' is diverted from the mining area
- Use of check dams to limit erosion at the bottom of cut-off drains. The check-dams will be aligned 'tip-to-toe' and dished in the middle
- Protecting stockpiles from erosion. Temporary silt fences will be utilised at the downstream face to prevent the transport of any eroded material. Minor contour banks or cut-off drains will be placed upstream to prevent runoff from eroding the base of the stockpile
- As the excavation progresses, maintaining and adapting remediation measures for erosion and sediment control as required; and
- Including storage zones in the sediment basins, which collect and hold settled sediment between periods of maintenance (desilting). Inlets to the bottom of the basin will be rock-lined to prevent scouring. The minimum storage zone volume recommended for a Type D basin is 50% of the settling volume. De-silting operations will need to be more frequent if a lesser storage volume is provided. De-silting operations may be less frequent if a greater storage volume is provided.

Preliminary estimates of the sizes of the sediment basins indicates that it is feasible to construct and maintain them throughout the mining operation.

6. Discussion & recommendations

The excavation area is divided between Pit 1 and Pit 2, with the former operated under a nine-stage subdivision and the latter subdivided into four stages. Each stage area varies from approximately 0.87 ha to 8 ha. Excavation will start in Pit 1 (Stage 1).

Some of the catchment areas do not flow naturally to their sediment basins. These areas will be kept in an undisturbed condition until mining operations commence in them. Mining excavations will proceed as described in 4.2 to manage stormwater drainage, reducing the need for deep cut-off drains or additional sediment basins.

Upslope runoff from undisturbed areas will be diverted from the mining area so that clean stormwater does not get contaminated with sediment from mining operations.

The location of Stage 5 sediment basins is likely to impact rural roads. The mining operation is up to a 20-year period, and the significance of the impact is currently unknown. The issue may be managed by repositioning the sediment basins and installing culverts under the roads.

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7. EPA requirements

The requirements of the Environmental Effects Report (EER) Guidelines are tabulated in Table 3 with responses.

Table 3: EER Guidelines requirements and responses

EER Guideline requirements (Part C – Item 2: Water Quality)	**Response**
Description of the potential impacts to receiving environment (surface water, groundwater, drinking water, stock water, and irrigation as relevant).	Refer to the EER.
Describe the management measures that will be employed to control surface water and reduce the potential for erosion and sediment loss. Control measures include minimisation of areas of disturbance; minimisation of stormwater ingress and sediment mobilisation through the use of perimeter drains, cut-off drains and bunding; sediment basins or stilling areas to capture entrained sediment; and swales, rock filters, wetlands or vegetated discharge zones to remove fine suspended sediment.	Surface water management measures are based on drainage, sediment, and erosion control. The drainage arrangement with cut-off drains and bunds both diverts 'clean-stormwater' from the mining area and conveys sediment-laden stormwater to the sediment basin. The sediment control is achieved by retaining the active mining area stormwater in the sediment basin. The retained stormwater will be either treated and discharged to the environment or used on-site to water roads, stockpiles, and the mining area to control dust. In addition, silt fences installed at the bottom of each catchment and stockpiles to trap sediment near its source. Erosion control is achieved by diverting stormwater from stockpiles, creating check-dams in cut-off drains where needed and rock lining the drain inlet to basin bottom. See Section 5 of this report for more details.
Identify the dimensions, capacity, and other relevant design features of key stormwater infrastructure such as drains and sediment basins, with reference to design rainfall frequency (average recurrence interval) and intensity. For sediment basins provide the sediment capture particle size, settling volume and surface area calculations and design rationale.	See Section 4.3 of this report for detailed information

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DL130 Bauxite Project

Stormwater Management Plan

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Noise Impact Assessment

Appendix F

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DL130 Bauxite Mine

Noise Impact Assessment

Prepared for
ABx Group Limited

Client representative
Nathan Towns

Date
2 October 2023

Rev 02

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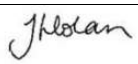
Reviewed by — Douglas Ford		**Date** — 26/08/2023
Authorised by — Jess Holan		**Date** — 26/08/2023

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Revision History					
Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
A	Draft for Internal review	A Seen	D Ford	J Holan	20/2/23
B	Draft for Client Review	A Seen	D Ford	J Holan	20/2/23
C	Updated noise model	A Seen	D Ford	J Holan	14/4/23
00	Final issue	A Seen	D Ford	J Holan	18/4/23
01	Added crusher usage	A Seen	D Ford	J Holan	06/06/23
02	Minor noise source detail changes	A Seen	D Ford	J Holan	23/08/23

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Executive Summary

This noise assessment has been prepared to support an Environmental Effects Report (EER) for the proposed DL130 Bauxite Mine to be operated by ABx Group Limited (ABx) and located on Porters Bridge Road, near Exton.

The mining operation will involve the surface extraction and on-site screening of the ore, before despatching it by truck to the Port of Bell Bay for export. The proposed production rate is estimated to be up to 56,000 tonnes per year.

Noise emissions were modelled using SoundPLAN environmental noise modelling software. The level of the predicted noise emissions from the proposed mine at nearby residences meets the Quarry Code of Practice 2017 daytime noise limit.

On this basis it may be concluded that nearby residents will not suffer from environmental harm or have their amenity adversely effected by noise emissions from the proposed mine.

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1. Introduction

This noise assessment has been prepared to support an Environmental Effects Report (EER) for the proposed DL130 Bauxite Mine to be operated by ABx and located on Porters Bridge Road, near Exton as shown in Figure 1 below.

The mining operation will involve the surface extraction and on-site screening of the ore, before despatching it by truck to the Port of Bell Bay or Port of Burnie for export. The proposed production rate is estimated to be up to 56,000 tonnes per year.

The site is located on Porters Bridge Road, approximately 6 kilometres North of the Bass Highway and the township of Exton. The mine is located on the edge of a eucalyptus plantation in an area surrounded by bush and farmland. The nearest sensitive receiver is a rural residence located approximately 800 metres southwest of the site, with several other residences located further away to the west and south of the mine. The only other significant noise source in the area is the Exton Quarry operated by Cresswells Transport approximately 2 kilometres southwest of the site. The surrounding area, including all residences within a nominal 3km radius are shown in Figure 1 below.

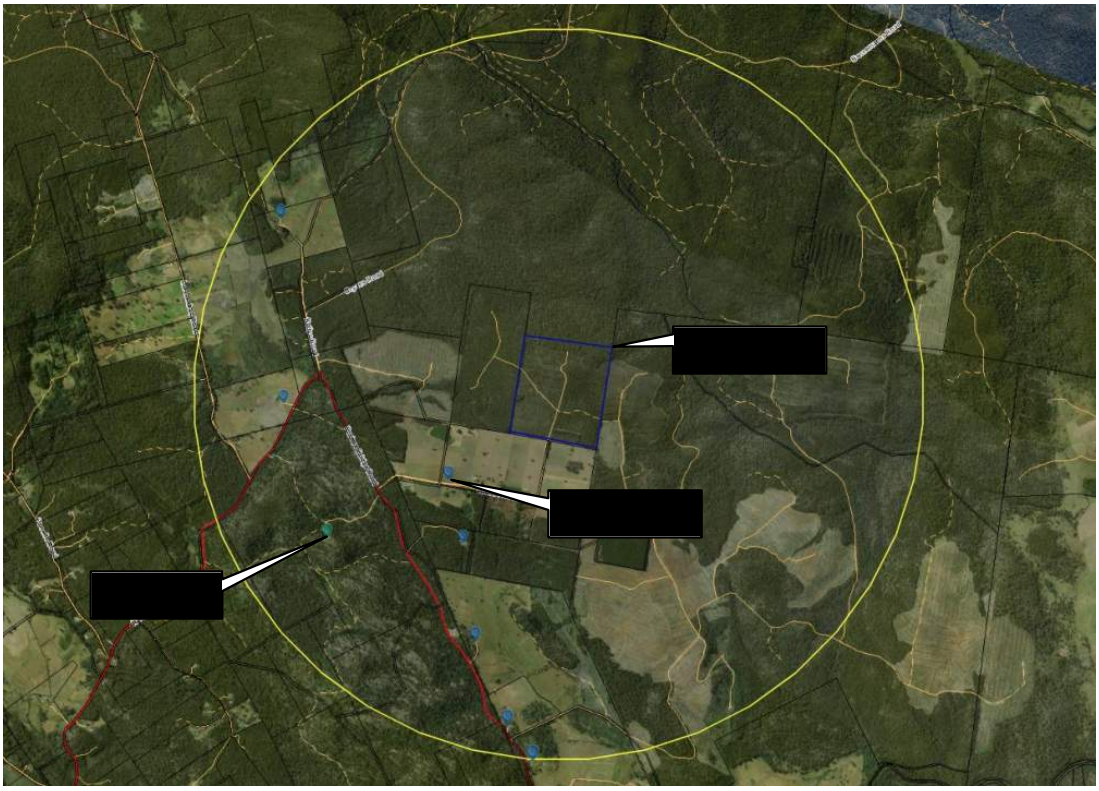

Figure 1: DL130 Bauxite Mine site (Blue) and surrounding area, including nearby residences (blue pins), existing major noise sources (green pins) and 3km radius (yellow). Basemap source: theList.

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2. Description of Operations

Shallow surface excavation is the proposed primary extraction method on-site, with an average expected depth of excavation of approximately 7 metres. Mining operations will occur during a 10-hour daytime shift, with an estimated production rate of up to 56,000 tonnes per annum over a 20 to 30 year lifespan. Once extraction works are complete the site will be rehabilitated.

Clearing of topsoil will be undertaken using a bulldozer, with the ore then extracted using an excavator and transported to the ROM pad by haul trucks for screening. Once screened the material will be loaded into trucks and taken to the Port of Bell Bay for export. At the end of each campaign a mobile crusher will be brought on site to process oversized material accumulated from the screens.

The site contains two pits, Pit 2 the smaller pit in the north of the site and Pit 1, covering a larger expanse in the southern area of the site. An access road connects the site to a point on Porters Bridge Road, approximately 3 kilometres North of Exton. The layout of the site and access road route are shown in Figure 2, below.

Figure 2: Mining lease layout (left) and access road (right)

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3. Noise Assessment

3.1 Noise Criteria

The Tasmanian *Quarry Code of Practice* provides criteria for assessing noise emissions from quarrying operations at nearby sensitive receivers. Noise from quarrying and associated activities, when measured at any neighbouring sensitive receiver must not exceed the greater of:

- The $L_{A90,10min}$ plus 5 dB(A) excluding noise from the quarry; or
- 45 dB(A) during the daytime (0700 to 1900), when measured as an $L_{aeq,10min}$.

These criteria are consistent with acoustic indicator levels in the Tasmanian *Environmental Protection Policy (Noise)*, 2009 for various daytime residential activities. The proposed mine will only operate during daytime hours. Noise monitoring was not undertaken as part of this assessment, so the 45 dB(A) level will be used as the assessment criterion.

3.2 Noise Sources

Table 1 below shows details of the sound power levels used to characterise the noise sources. As specific makes and models of equipment have yet to be confirmed for the project, sound power levels are based on noise measurements of equivalent equipment made recently at various Tasmanian industrial and quarrying sites by pitt&sherry. No blasting is proposed.

Noise measurements were made using a Rion NL-42 sound pressure meter, mounted on a tripod. All measurements were made in accordance with the Tasmanian DEPHA *Noise Measurement Procedures Manual*, 2008. One third octave spectra for the sound power levels (derived from the original measurements) are listed in Appendix A.

Table 1: Equipment sound power levels.

Noise Source	Description	Quantity	Nominal Height Above Ground – m	Sound Power Level – dB(A)
Excavator	CAT342DL (Nom 48t)	3	2	107.4
Loader	CAT966H (Nom 35t)	2	2	102.6
Trucks	Volvo (Nom 40t)	2	2	103.9
Mobile Screen	Powerscreen Chieftain 1400	2	2	109.2
Generator	Generic	1	1.5	92.5
Bulldozer	D8 or similar	1	2	110.0
Service Truck	Generic (Nom 35t)	1	2	103.9
Light Vehicles	Generic	2	0.5	75.0
Mobile Crusher & Excavator	Terex/Finlay J1175 & CAT 342DL Excavator	1	2	120.2

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4. Noise Modelling

4.1 Methodology and Assumptions

Noise modelling was carried out in accordance with the Tasmanian DEPHA *Noise Measurement Procedures Manual*, 2008. Noise level calculations were implemented using SoundPLAN 8.2 environmental noise modelling software. Modelling assumptions and settings include:

- The ISO 9613-2 noise calculation standard was used within SoundPLAN. This standard incorporates "worst case" meteorological conditions for noise propagation
- Terrain topography was obtained from 5 metre elevation data sourced from the ELVIS online elevation database. No modifications to the digital ground model have been made to account for quarrying or stockpiles
- A ground absorption factor was set to 60% soft for the entire modelling area, reflecting the existing environment.
- The excavators, bulldozer, loaders, screens and crusher have been modelled as single point sources, located 2 metres above ground level; and
- Light vehicle and truck movements have been represented by line sources (1.5 m above ground level) representing typical travel paths around the site.

Two scenarios have been modelled:

- One scenario covering normal operations including material extraction with an excavator, mobile screen, loader and bulldozer located in the southwestern corner of Pit 2, another excavator, mobile screen and loader located in the northern area of Pit 2 and a loader and dispatch trucks and a generator located at the ROM Pad; and
- A second scenario covering crushing of oversized material at the end of each campaign, with only a mobile crusher, excavator, loader and dispatch trucks, located approximately 270 metres west of the site access point.

Figure 3, below shows the layout of the SoundPLAN noise model, including the location of the equipment modelled (shown as red dots/lines) and the receivers (shown as yellow dots).

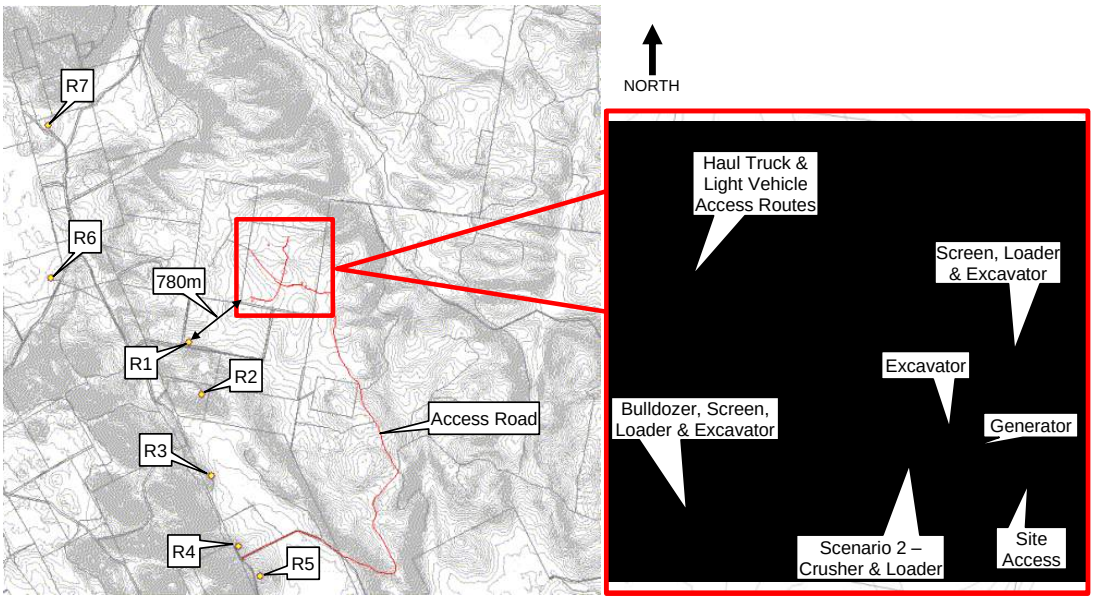

Figure 3: SoundPLAN Noise Model with a closeup of the mine site (right), Including the position of the mobile crusher and loader in Scenario 2.

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4.2 Intrusive or Dominant Noise Characteristics

Various characteristics of noise can increase the level of annoyance that is caused. These include Tonality, Impulsiveness, Modulation and Low Frequency content. Tonality is where particular frequency bands or "Tones" are present within the noise, such as the "whine" of a circular saw. Impulsiveness is where noise has rapid large changes in amplitude such as gunshots or jackhammers. Modulation is where the noise level cycles up and down rapidly. Low frequency noise is considered a problem when there is significant energy in the 20 Hz to 250 Hz frequency range.

When mining operations are in progress the noise generated contributes to some portion of the ambient noise at nearby residences, with traffic and natural noise making up the remainder. Traffic noise is relatively free from these characteristics, although low levels of tonality and low frequency noise are usually present. Whilst some impulsiveness is detected from mining equipment when in close proximity, these effects are well attenuated over distance and are minimal at the nearest residences.

The one third octave spectrum results from the noise modelling identified several tonal bands at the residential receivers. Using the methodology of the Tasmanian *Noise Measurement Guidelines*, 2008, penalties between 1.0 and 3.3 dB(A) have been applied. A 5 dB(A) correction was also required for low frequency noise.

4.3 Noise Modelling Results

The predicted levels of noise emissions from the mine, at residential premises within 3 km of the site are shown below in Table 2 below. None of the results exceed the 45 dB(A) Quarry Code of Practice limit for daytime operation, also noting that conservative weather conditions are assumed within the model. The results include the required penalties for low frequency and tonality, calculated at each receiver.

Table 2: SoundPLAN Results for proposed mining operations.

Location	Distance from Site Boundary – m	Scenario 1 – Normal Operations - dB(A)	Scenario 2 – Mobile Crusher – dB(A)
R1 - 620 Porters Rd	780	43.7	44.8
R2 - 550 Porters Rd	1200	40.4	40.5
R3 - 420 Porters Rd	2110	36.0	36.1
R4 - 340 Porters Rd	2895	39.0	33.2
R5 - 304 Porters Rd	3170	35.3	32.6
R6 - 875 River Road	2275	34.8	34.0
R7 - 114 Kellys Rd	2700	32.8	32.5

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5. Mitigation Measures

As the noise levels are calculated to be below the Quarry Code of Practice daytime guideline level, no specific noise mitigation measures are required. The following “good practice” noise mitigation measures are to be adopted to ensure that noise emissions from mining activities meet the calculated levels:

- All plant and equipment will be maintained in good order at all times, especially noise control equipment such as mufflers and exhaust pipes
- Noise control issues will be considered carefully when selecting new plant or equipment or engaging contractors to carry out work onsite
- An on-site speed limit of 40 km/h will be observed
- All heavy vehicle based on site will use broad band style reversing beacons
- Unnecessary noises such as “dropped loads” or scraping loader buckets on the ground will be avoided
- When processing oversize material, the mobile crusher and loader should be located no further southwest than the position indicated in Figure 3, approximately 270 metres west of the site access point; and
- To ensure that sound levels do not exceed at the nearest sensitive receptor, rock crushing will not occur at the time of other mining activities such as screening.

6. Conclusions

The level of the predicted noise emissions from the proposed ABx DL130 bauxite mine meets the Quarry Code of Practice daytime noise limit and is consistent with the EPP (Noise). On this basis it may be concluded that nearby residents will not suffer from environmental harm or have their amenity adversely effected by the noise emissions from the mine.

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Noise Source 1/3 Octave Spectra

Appendix A

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Equipment sound power levels and A weighted 1/3 octave sound power levels

Equipment:	Excavator	Loader	Mobile Screen	Bull Dozer	Haul & Service Trucks	Crusher & Excavator
Model:	CAT 342DL Excavator	CAT 966H Wheel Loader	Powerscreen Chieftain 1400	CAT D8	Generic Truck	Terex/Finlay J1175 Mobile Jaw crusher & CAT 342DL Excavator
Total Sound Power Level :	107.4	102.6	109.2	110.0	103.9	120.2
A Weighted Spectrum – dB(A)						
12.5 Hz	28.0	78.3	-33.2	29.6	16.4	36.7
16 Hz	32.7	76.3	-15.5	38.8	21.3	48.9
20 Hz	37.2	74.6	0.5	49.4	29.9	48.8
25 Hz	46.2	78.3	4.5	55.9	44.9	54.2
31.5 Hz	61.0	76.4	23.3	62.6	45.9	65.4
40 Hz	71.2	82.0	46.4	69.2	54.1	72.4
50 Hz	69.5	91.0	54.0	76.0	68.1	81.0
63 Hz	79.7	94.3	63.3	88.0	65.9	89.5
80 Hz	81.3	98.2	65.8	92.5	70.7	93.8
100 Hz	81.4	90.9	67.9	98.2	73.9	100.5
125 Hz	84.4	88.8	67.1	91.2	76.4	99.3
160 Hz	88.5	86.5	72.0	90.1	81.8	100.5
200 Hz	87.5	86.4	79.6	91.5	82.2	102.6
250 Hz	90.6	85.0	84.2	91.6	83.4	102.3
315 Hz	90.4	84.0	89.0	94.9	85.9	101.2
400 Hz	91.4	85.8	92.0	97.6	87.9	106.0
500 Hz	96.1	86.4	95.6	98.5	91.1	108.9
630 Hz	98.8	86.8	95.6	96.4	92.2	112.1
800 Hz	98.9	85.9	96.7	99.0	94.0	111.0
1 kHz	96.3	86.1	98.6	100.1	94.9	109.8
1.25 kHz	98.2	85.0	104.4	99.2	96.4	110.0
1.6 kHz	97.1	88.5	99.9	99.5	95.7	110.3
2 kHz	95.6	83.3	97.9	99.2	93.3	109.0
2.5 kHz	97.2	81.7	98.8	98.8	91.9	108.5
3.15 kHz	94.9	80.5	96.6	97.3	90.4	107.0
4 kHz	91.1	79.7	95.0	96.0	88.2	104.9
5 kHz	86.1	76.1	91.7	94.4	85.8	101.8
6.3 kHz	81.1	74.2	85.3	91.1	82.5	98.2
8 kHz	76.8	72.8	79.2	90.1	79.4	94.3
10 kHz	72.1	71.6	73.5	85.1	76.3	89.8
12.5 kHz	66.4	70.6	65.6	80.7	71.6	84.0
16 kHz	59.0	68.6	56.3	75.6	65.6	77.5
20 kHz	47.6	62.3	41.0	65.5	55.5	66.5

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DL130 Bauxite Mine

Noise Impact Assessment

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DL130 Bauxite Project

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Report to Support a Planning Permit Application

DL130 Bauxite Project

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TRAFFIC ENGINEERING ADVICE – REVIEW OF DL 130 BAUXITE MINE TIA, PORTERS BRIDE ROAD.

This report reviews the TIA prepared by Pitt & Sherry 30th April 2024 for the proposed Bauxite Mine at 2142 P/M off Porters Bridge Road.

TIA Review

1- Introduction

- Technical references not listed.

2- Existing Conditions

2.2 Site access

- Porters Bridge Road / access road to 2142 P/M junction.
  - Reported junction angle 25 degrees.
  - Junction angle is outside Austroads Guidelines of 70-to-90-degree range.

2.3 Surrounding Road Network

2.3.1 – Porters Bridge Road

- Table 1 has an omission where road width reduces to 4.8m North of the Bridge.

Table 1

Location (chainage km)	Road width
0.0 (Meander Valley Road/ Porters Bridge Road intersection)	7.2m
0.5	6.5m
0.8	5.7m
1.7 (Meander River Bridge)	4.8m
1.9	6.1m
1.95 to 2.15 (150m section road width is 4.8m)	
2.2	5.7m
2.5	5.4m
2.7	5.3m
3.3 (site access)	5.6m

2.6 Traffic Volumes

- Inferred Porters Bridge Road AADT is 140 vpd (2023).
- Lack of traffic count survey data for Porters Bridge Road.
- Suspect Porters Bridge Road AADT is 150 - 200 vpd (2025)

3- Development Proposal

- Proposal estimated to generate 112 vpd
- Higher daily traffic during campaigns and with service provider visits i.e 120 vpd

4- Transport Assessment

4.1 Traffic Assessment

- 4.1.6 states that traffic will increase from 110 vpd to 222 vpd. This is inconsistent with other parts of the report and underestimates the current traffic. 300vpd is likely.
- 4.1.7 states that existing standard of Porters Bridge Road does not meet LGAT TSD-R02-V3 standard as is.

- Risk Assessment (Table 9) does not recommend road widening even where existing road is clearly deficient and 4.8m wide. **(Major Issue)**
- Risk assessment recommends line marking and vegetation clearing

4.2 Site Access Assessment

4.2.1- Intersection layouts – Sealing the approach to Porters Bridge Rd is recommended which is not sufficient to overcome traffic safety issues with the junction layout. **(Major Issue)**

4.2.2 – Sight Distance Assessment
Should use speed environment not speed limit to determine access sight distance required. For speed environment of 70km/h SISD is 151m and SSD is 85m.

4.5 Turn Lane Requirements

4.5.1 – Meander Valley Road / Porters Bridge Road junction has a simple layout which is adequate with additional traffic from proposal as traffic turning and through volumes are low in terms of traffic capacity.

5- Planning Scheme Assessment

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Acceptable solution A1.4: *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
(b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road; and

The proposal increases traffic by 112 vpd. Allowable increase for *other* road is 40 vpd.

A1.4 is not satisfied.

Performance Criteria P1: *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 TIA suggests that P1 is satisfied but this view is not supported as the following issues have not been considered:

- The substandard nature of the road for two-way flow between large heavy vehicles e.g. opposed truck & dog trailers, which comprises some 50% of traffic (AADT of some 300 vpd) which is narrow (typically 4.8 to 5.5m wide seal).
- Existing pavement depth and subgrade CBR.

The road is not considered safe and efficient with the proposal unless the road is upgraded to sealed rural road standard S4 (LGAT standard drawing TSD-R02-V3) **(Major Issue)**

6- Conclusion

Dot point 4 (see below) of the TIA conclusion is not supported. The road standard is well outside guidelines with the proposal. **(Major Issue)**

- While the additional traffic generated by the proposed development may impact the amenity of the road with consideration to vehicle travel speeds and the need to pass heavy vehicles more often, the generated traffic volumes are low (one movement every two to three minutes during development peak periods along Porters Bridge Road) and subject to the recommendations presented within this report in Table 9 being implemented, is not anticipated to significantly impact the safety or operation of the surrounding road network

TCS Comments

- The existing Porters Bridge Road / Access Road junction to 2142 P/M is substandard in terms of junction layout with approach angle of some 25 degrees. The junction should be approximately square i.e. 70-90 degrees to the priority road. The works would require some junction relocation, earthworks and tree & vegetation removal to achieve suitable standard and sight distance. **(Major Issue)**

- The estimated traffic generation appears low. The P&S TIA indicates 14 vph (2023) at peak times on Porters Bridge Road which infers and AADT of 140vpd. Section 4.1.6 of the report states AADT is 110 vpd (2023). Estimated Porters Bridge Rd AADT appears too low.

- Section 4.1.7 states that Porters Bridge Road does not comply with TSD–R02-V3 and presents a risk assessment (Table 9) which contains no road widening recommendations despite:

    - Increase in traffic of 112 vpd, including 78 heavy veh. vpd.

    - Substandard curves in terms of sight distance and width.

    - Narrow road width 4.8m to 5.5m range.

    - Road too narrow to support centreline marking with 5.5m being an absolute minimum seal width to support a road centreline. On truck routes a centreline on a 5.5m wide road results in accelerated edge break and overall deterioration of the road. More than 6m of seal width is required to support a centreline on a haul road and wider still on bends.

    - Unknown pavement depth & insitu subgrade CBR. The road may be susceptible to pavement failure due to the heavy vehicle loading introduced by the proposal. Especially between the accesses to 2097 P/M and 2142 P/M where the road narrows to 4.8m for part of the way and evidence of minimal pavement width and depth. Pavement depth and subgrade CBR do not appear to be considered in the TIA.

    (Major Issue)

In summary the TIA significantly underestimates the impact of the proposal on Porters Bridge Road, especially between the mining lease accesses to 2097 P/M and 2142 P/M which is already substandard. The proposal is expected to have a major impact on Porters Bridge Road between the mining lease accesses. Pavement widening, strengthening and delineation will be required for safe and efficient operation of the substandard section given the high proportion & volume of heavy vehicles.

Assessor Credentials

Richard Burk is a qualified Traffic and Civil Engineer with over 38 years of experience with State and Local Government in the Roads and Traffic industry in Tasmania. Visit www.trafficandcivil.com.au .

Yours sincerely

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TRAFFIC & CIVIL SERVICES

PORTERS BRIDGE ROAD
BAUXITE QUARRY IMPACT REVIEW
EXTON

APRIL 2025

Porters Bridge Road
Bauxite Quarry Impact Review
Exton

- Draft #3
- April 2025

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1. Introduction

1.1 Background

MVC has requested a Quarry Impact Review to understand existing road conditions and inform decision making on what road upgrade and traffic management requirements may be necessary due to the proposed ABX bauxite mine off Porters Bridge Road.

1.2 Objectives

This review is a means for assisting in the planning and design of sustainable development that considers:

- Traffic safety and capacity
- Equity and social justice
- Economic efficiency
- The environment and future development.

This review considers the impact of the proposal on projected traffic volumes by 2034.

1.3 Scope of Mining Lease Review (MLR)

This review considers in detail the impact of the proposed quarry on Porters Bridge Road which provides access to:

- Mining lease 2142 P/M - Proposed Bauxite Mine (ABX)

1.4 References

- RTA Guide to Traffic Generating Development 2002
- Austroads Guide Road Design Part 4A: Unsignalised & Signalised Intersections 2021
- Guide to Traffic Management Part 6: Intersections, Interchanges & Crossings 2020.
- LGAT Standard Drawings
- Ausroads Safe System Assessment Guidelines
- DL 130 Bauxite Mine TIA (pitt & sherry March 2024)
- 2097 P/M Quarry Expansion TIA (TCS April 2021)

1.5 Statement of Qualifications and Experience

This TIA has been prepared by Richard Burk, an experienced and qualified traffic engineer in accordance with the requirements of the Department of State Growth's guidelines and Council's requirements.
Richard Burk is an experienced and qualified traffic engineer with:

- 38 years professional experience in road and traffic engineering industry
    - Director Traffic and Civil Service Pty Ltd since May 2017.
    - Manager Traffic Engineering at the Department of State Growth until May 2017.
    - Previous National committee membership with Austroads Traffic Management Working Group and State Road Authorities Pavement Marking Working Group
- Certified Professional Engineer with Engineers Australia
- Master of Traffic, Monash University, 2004
- Post Graduate Diploma in Management, Deakin University, 1995
- Bachelor of Civil Engineering, University of Tasmania, 1987

Richard Burk

BE (Civil) M Traffic Dip Man. MIE Aust CPEng

Director Traffic and Civil Services Pty Ltd

1.6 Glossary of Terms

AADT	Annual Average Daily Traffic - The total number of vehicles travelling in both directions passing a point in a year divided by the number of days in a year.
Acceleration Lane	An auxiliary lane used to allow vehicles to increase speed without interfering with the main traffic stream. It is often used on the departure side of intersections.
Access	The driveway by which vehicles and/or pedestrians enter and/or leave the property adjacent to a road.
ADT	Average Daily Traffic – The average 24-hour volume being the total number of vehicles travelling in both directions passing a point in a stated period divided by the stared number of days in that period.
Austroads	The Association of Australian and New Zealand road transport and traffic authorities and includes the Australian Local Government Association.
Delay	The additional travel time experiences by a vehicle or pedestrian with reference to a vase travel time (e.g. the free flow travel time).
DSG	Department of State Growth – The Tasmanian Government Department which manages the State Road Network.
GFA	Gross Floor Area
Intersection Kerb	The place at which two or more roads meet or cross. A raised border of rigid material formed at the edge of a carriageway, pavement or bridge.
km/h	Kilometres per hour
Level of Service	An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions. It is usually defined in terms of the convenience of travel and safety performance.
m	Metres
Median	A strip of road, not normally intended for use by traffic, which separates carriageways for traffic in opposite directions. Usually formed by painted lines, kerbed and paved areas grassed areas, etc.
Movement	A stream of vehicles that enters from the same approach and departs from the same exit (i.e. with the same origin and destination).
Phase	The part of a signal cycle during which one or more movements receive right-of -way subject to resolution of any vehicle or pedestrian conflicts by priority rules. A phase is identified by at least one movement gaining right-of-way at the start of it and at least one movement losing right-of-way at the end of it.

Sight Distance	The distance, measured along the road over which visibility occurs between a driver and an object or between two drivers at specific heights above the carriageway in their lane of travel.
Signal Phasing	Sequential arrangement of separately controlled groups of vehicle and pedestrian movements within a signal cycle to allow all vehicle and pedestrian movements to proceed.
SISD	Safe Intersection Sight Distance – The sight distance 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 and to decelerate to a stop before reaching the collision point.
Speed	Distance travelled per unit time.
85th Percentile	The speed at which 85% of car drivers will travel slower and 15% will travel faster. A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian traffic demands.
Traffic-actuated Control	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian tragic demands.
Traffic Growth Factor	A factor used to estimate the percentage annual increase in traffic volume.
Trip	A one-way vehicular movement from one point to another excluding the return journey. Therefore, a vehicle entering and leaving a land use is counted as two trips. (RTA Guide to Traffic generating Developments).
Turning Movement	The number of vehicles observed to make a particular turning movement (left or right turn, or through movement) at an intersection over a specified period.
Turning Movement Count	A traffic count at an intersection during which all turning movements are recorded.
Vehicle Actuated Traffic Signals	Traffic signals in which the phasing varies in accordance with the detected presence of vehicles on the signal approaches.
vpd	vehicles per day – The number of vehicles travelling in both directions passing a point during a day from midnight to midnight.
vph	vehicles per hour – The number of vehicles travelling in both directions passing a point during an hour.

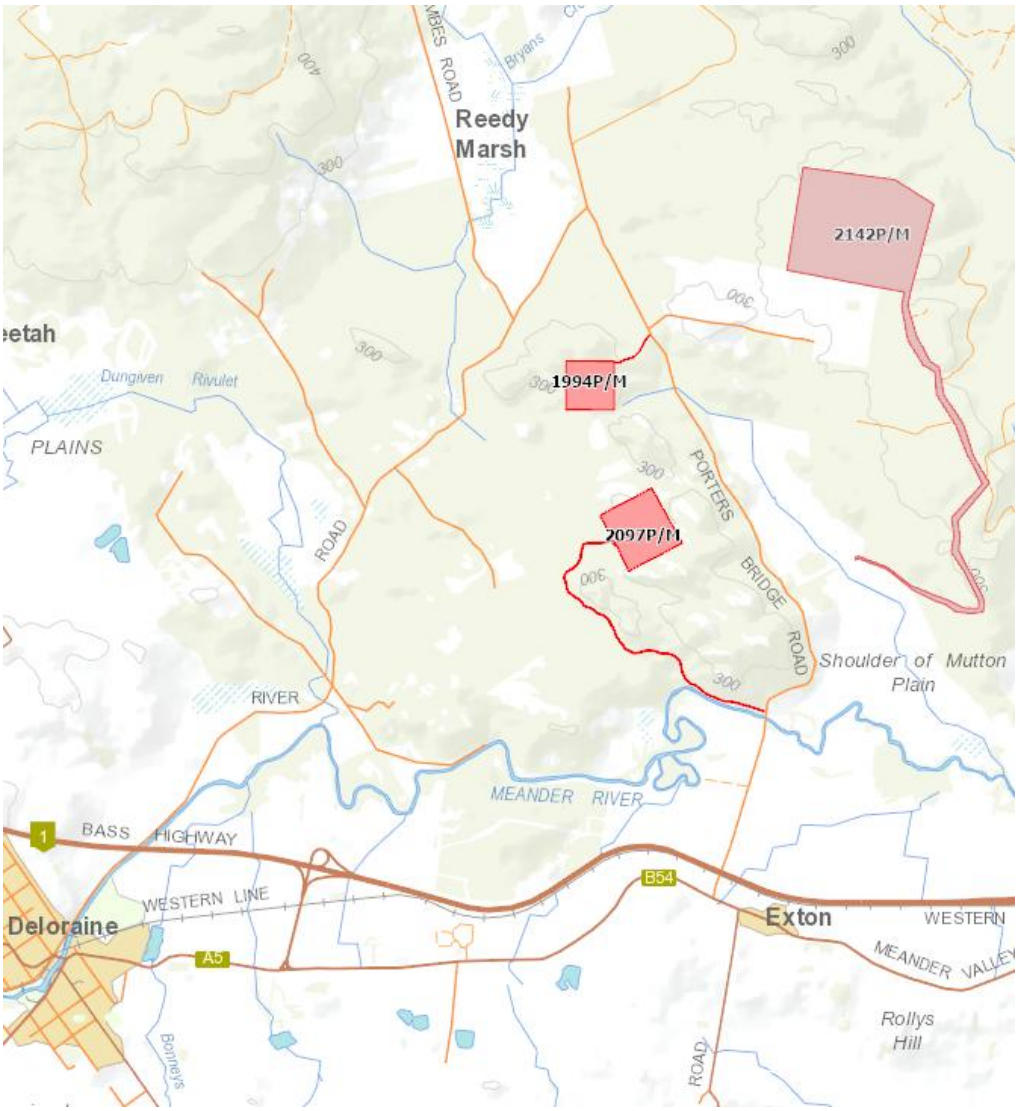
1.7 Site Specific Glossary of Terms

SSA	Safe System Assessment
MVC	Meander Valley Council

2. Site Description

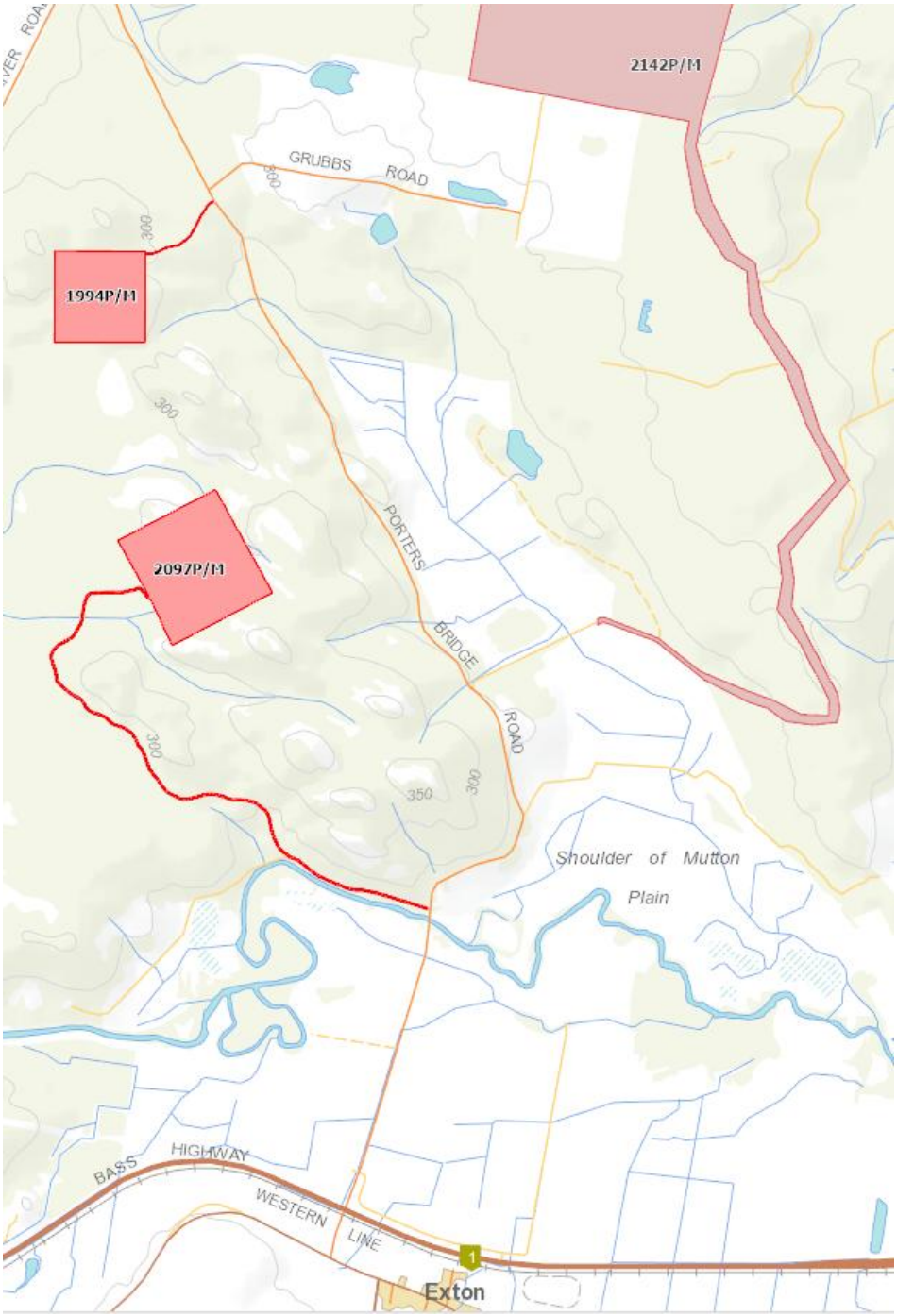
Figures 1 & 2 shows the mining lease locations with respect to Porters Bridge Road which is a sealed rural Council Road.

Figure 1 – Mining Lease locations on Porters Bridge Road



Source: The List, DPIPWE

Figure 2 – Mining Lease locations on Porters Bridge Road.



Source: The List, DPIPWE

3. Potential Quarry Operations

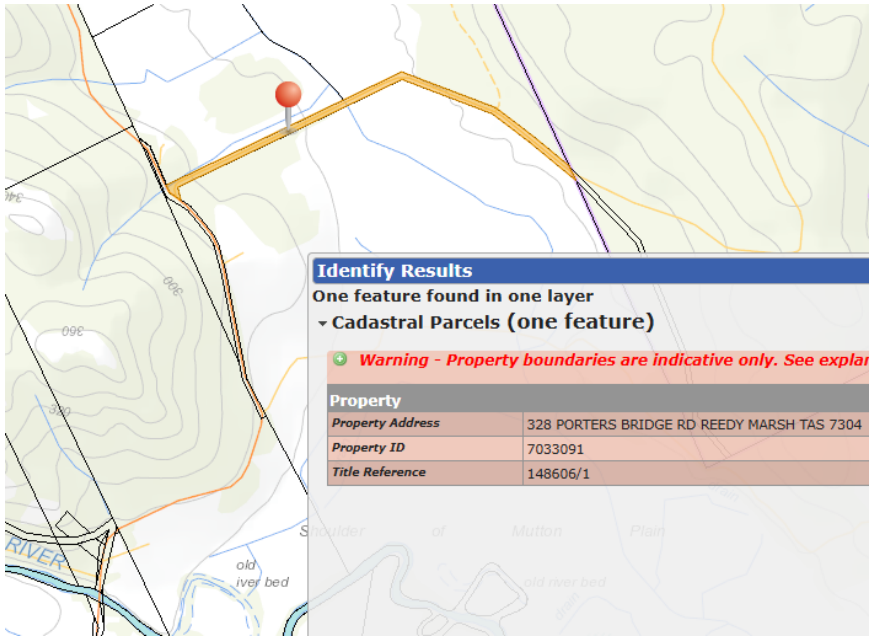
3.1 Forecast Mining Lease operation by 2034

Mining lease 2142 P/M - Proposed Bauxite Mine (ABX) will typically operate primarily with truck and dog trailer transport. Operation is forecast to increase from 0 (2024) to 56 KTonne / Annum as per pitt & sherry TIA. Figures 3-5 show the proposed access and property.

Figure 3 – Proposed Mining Lease 2142P/M accessed from Porters Bridge Road

Source: The List, DPIPWE

Figure 4 – 328 Porters Bridge Road



Source: The List, DPIPWE

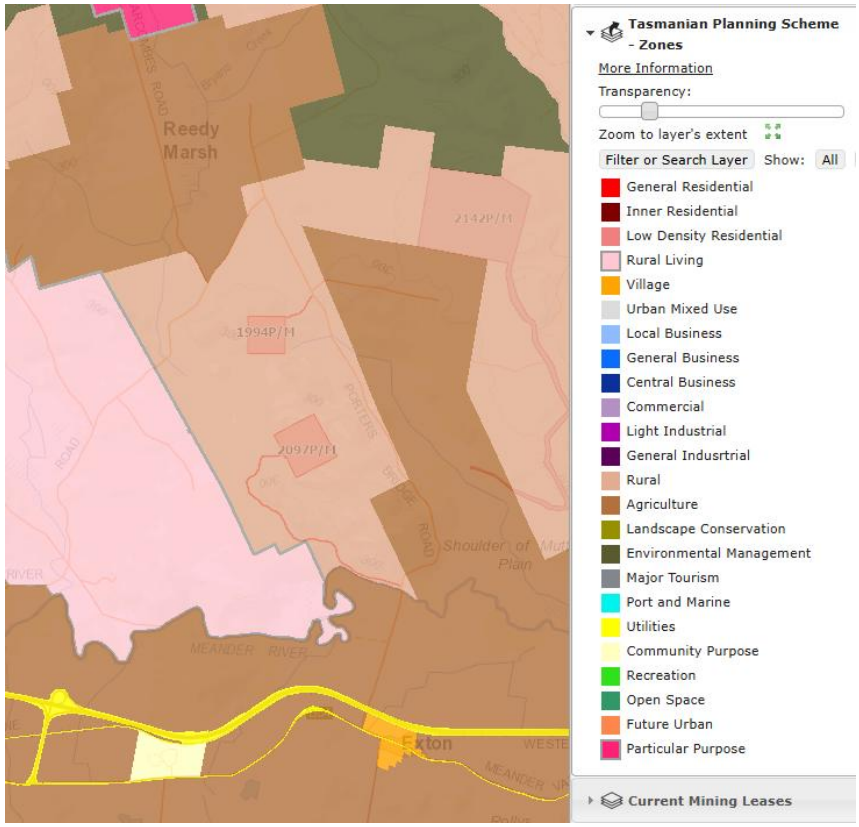
Figure 5 – Porters Bridge Road access to 328 Porters Bridge Road

Source: The List, DPIPWE

3.2 Tasmanian Planning Scheme – Meander Valley

The proposed development involves land currently zoned Rural in accordance with the Tasmanian Planning Scheme shown in Figure 6.

Figure 6 – Mining Lease sites are within the Rural zone



Source: The List, DPIPWE

3.3 Local Road Network Objectives

MVC is the authority responsible for the Council Road network impacted by the quarry operations. MVC objectives are to maintain traffic safety and capacity for relevant road users.

In the case of Porters Bridge Road, the relevant road users are:

- Light & heavy vehicles related to mining and non-mining land use
- Public transport (possible school bus services)
- Cyclists & Motorcycles

No provisions are intended for pedestrians as the road has a rural access function in a rural area remote from pedestrian activity.

4. Existing Conditions

4.1 Transport Network

The greater transport system adjacent to Porters Bridge Road and Exton consists of state and council roads as shown in Figure 1. The mining leases have access to the State Road network via Porters Bridge Road.

4.2 Tasmanian 26m B Double network (Westbury to Deloraine)

Bass Highway and Meander Valley Road are part of the Tasmanian 26m B Double Network between Deloraine and Westbury is shown in Figure 7. Porters Bridge Road is not part of the Tasmanian 26m B Double Network and caters for General Access which includes allows 19m Truck & Triaxle Trailer and 25m Truck & Dog Trailer transport with a maximum mass of 62 Tonne. Vehicles exceeding this length or mass are subject to NHVR permit approvals

Figure 7 – Tasmanian 26m B Double network in the vicinity of Exton

4.3 Porters Bridge Road (Grubbs Road to Bass Hwy)

Porters Bridge Road is a sealed rural access road in the Council Road hierarchy with an estimated AADT of 200 vpd and the Rural Default Speed Limit of 100 km/h applies. The average travelling speed is estimated at 70km/h. Porters Bridge Road is a two-way road which varies in width and standard. The seal width varies between 6.7 and 4.8m between the Bass Highway Overpass and Mining Lease 2142 P/M.

Overall, the road is characteristically S3 standard with localised restrictions in width.

The 2.8km road has minimal delineation with some guideposts and has been assessed in the following homogeneous sections:

- Bass Highway Overpass to 2097 P/M access (1.3km)
- 2097PM access to side road on bend (0.7km)
- Side road on bend to proposed Bauxite Quarry access (0.8km) 2142 P/M

See Appendix A showing the nature of each of the above sections. Appendix E shows more detail on the nature of the first two sections.

4.3.1 Porters Bridge Road Overpass of the Bass Highway

The Porters Bridge Road Overpass of the Bass Highway is a DSG structure numbered SG497 with a trafficable width face to face of kerb of 7.5m and has T44 Bridge Design Loading which may not support 26m B Double operation. Figures 8 and 9 show the overpass layout and cross section.

Figure 8 –Aerial view of Porters Bridge Road overpass of the Bass Highway

Source: The List, DPIPWE

Figure 9 – South bound approach to Porters Bridge Rd overpass of the Bass Hwy

4.3.2 Porters Bridge Road Slab Linked Culvert

The Porters Bridge Road Slab Linked Culvert is a Meander Valley Council structure numbered MEAN 386 with a trafficable width face to face of kerb of 7.0m.

Design Loading is unclear and may not support 26m B Double operation. Figures 10 and 11 show the culvert layout and cross section.

Figure 10 –Aerial view of Porters Bridge Road slab linked culvert.

Source: The List, DPIPWE

Figure 11 – South bound approach to Porters Bridge Rd slab linked culvert.

4.3.3 Porters Road Bridge

Porters Bridge is a Meander Valley Council structure numbered MEAN 1259 with a trafficable width face to face of kerb of 5.0m.

Design Loading is SM 1600 which indicates the structure can support 26m B Double operation. Figures 12-14 show the bridge layout and cross section.

Figure 12 – North bound approach to Porters Bridge

Make signage consistent with Appendix C on Southern approach to Bridge.

Figure 13 – North bound approach to Porters Bridge

Figure 14 – Side view of Porters Bridge

4.3.4 Walters Quarry 2097 P/M access

The access has a simple junction layout designed to cater for quarry operation design vehicles. Figures 15 shows access in relation to the Porters Road Bridge MEAN 1259. This is a concentration point for existing heavy vehicle activity.

Figure 15 –Aerial view of the Porters Bridge Road / Quarry Access

Source: The List, DPIPWE

4.4 Traffic Activity

Porters Bridge Road (at Meander Valley Road junction)

- AADT: 200 vpd (2024) with estimated 50% Commercial Vehicles
- Compound Annual Growth 0.0%
- Estimated AADT: 200 vpd (2034) without proposal

4.5 Crash History

The Department of State Growth is supplied with reported crashes by Tasmania Police. The Department maintains a crash database from the crash reports which is used to monitor road safety, identify problem areas and develop improvement schemes.

The 5-year reported crash history is summarised for Porters Bridge Road in Figures 17-18. The crash histories provide no evidence of a crash propensity.

Figure 17 – 5 Year crash history on Porters Bridge Road

Crash Id	Description	Date	Time	Severity	Light	Speed Limit	Location	Units
49970883	167 - Animal (not ridden)	18-Apr-2019	21:00	PDO	Night	80	Porters Bridge Road	LV

Figure 18 – 5 Year crash locations on Porters Bridge Road

4.6 Porters Bridge Road Safety Review

The following issues were identified from site inspection:

4.6.1 Bass Highway Overpass to 2097 P/M (1.3km)

- Minimal delineation
- Seal width reduces to 5.5m
- Steep road drop offs to roadside drains
- Narrow Bridge (MEAN 1259)

4.6.2 2097 PM to side road on bend (0.7km)

- Substandard curves without warning signs
- Seal width reduces to 4.8m
- Roadside hazards in the form of large diameter trees beside the road
- Roadside hazards in the form of large diameter trees impinging on the road
- Pavement failures with unknown pavement depth.
- Prevalent roadkill

4.6.3 Side road on bend to prop. Bauxite Quarry access (0.8km) 2142P/M

- Substandard curves without warning signs
- Seal width of 5.5m
- Prevalent roadkill

In summary the following overall observations are made:

- The existing road is unsuitable from 2097 P/M to 2142 P/M for proposed use
- The existing road standard is typically LGAT rural road standard S3.
- Porters Bridge Road shows no evidence of a crash propensity from review of 5 year reported crash history.

4.7 Porters Bridge Road Safe System Assessment.

Porters Bridge Road has been assessed in accordance with the Austroads Safe System assessment framework.

This framework involves consideration of exposure, likelihood and severity to yield a risk framework score. High risk crash types and vulnerable road user crash types are assessed for each site and aggregated to provide an overall crash risk. Crash risk is considered in terms of three components:

- Exposure (is low where low numbers of through and turning traffic) i.e.1 out of 4.
- Likelihood (is low where the infrastructure standard is high) i.e. 1 out of 4.
- Severity (is low where the speed environment is low) i.e. 1 out of 4.

The Austroads Safe System Assessment process enables the relative crash risk of an intersection or road link to be assessed. Vulnerable Road users are considered along with the most common crash types.

The crash risk score is an indicator of how well the road satisfies the *safe system objective which is for a forgiving road system where crashes do not result in death or serious injury.*

The crash risk scores for Porters Bridge Road before and after proposed road upgrade work is summarised in Figure 19. See Appendix B for assessment details. Figure 20 indicates the relationship between SSA score and overall crash risk.

Figure 19 – SSA scores for Porters Bridge Road

Porters Bridge Road Link	Road Standard (Seal)	SSA Without Roadworks	Road Standard	SSA With Roadworks	Estimated SSA Crash Risk Reduction (%)
Bass Hwy Overpass to Walters Quarry	6.0 to 5.5m	69	**S4**	60	13
Walters Quarry to side road on bend	6.0 to 4.8m	96	**S4**	60	37
Side road at bend to Bauxite Quarry	5.5m Seal	78	**S4**	60	23

S4 - 6m seal, 0.9m gravel shoulders with 0.5m verges & B3 Barrier line for delineation

Figure 20 – SSA score relationship with overall crash risk

<40/448 Very low risk score

(40-80)/ 448 Low risk score

(80-180)/448 Moderate to high risk score

>180/448 High risk score

Road Standard S4 is required to significantly reduce crash risk between heavy vehicles and other road users. S4 provides the road width and clearance required for heavy commercial vehicles approaching each other to pass.

Heavy commercial vehicles i.e. trucks with trailers track wider than the physical dimensions of the truck and trailer due to offset tracking.

Offset tracking between the truck and trailer occurs due to the length of the overall vehicle and gravity that rends to pushes trailers away from the road centreline because of the road crossfall, which is typically 3 to 4% on straight roads. The crossfall is required for road drainage.

Road widening is also applied on bends in the road design process due to the effective vehicle width on bends, especially for long vehicles e.g. semitrailers and buses.

5. Traffic Generation and Assignment

This section of the report estimates how traffic generated by the proposal is distributed within the adjacent road network now and ten years future.

5.1 Traffic Growth

Assumed background traffic compound annual growth of:

- Meander Valley Road: 2.3 % based on DSG traffic data
- Porters Bridge Road: 0%

5.2 Trip Generation and Assignment

Current and estimated Quarry Operation levels and traffic generation resulting on each section of the road are summarised in Figure 21.

Figure 21 – Estimated Trip Generation and AADT on Porters Bridge Road

Link	Section	Quarry Operation (KTonne)		AADT (vpd)					% Commerical Vehicles
				Non Quarry	Quarry		Total		
		2024	Prop.	2024	2024	Prop.	2024	Prop.	
2097 P/M 2142 P/M 1994 P/M		50 0 22.5	 56 		40* 0 25	 112** 			
Bass Highway to 2097 P/M (1.3km)	0 to 300m Nth of Bass Hwy 300 to 1100m Nth of Bass Hwy Porters Bridge 2097 P/M	72.5	128.5	180	65	112	245	**357**	49.6
2097 P/M to side road on bend (0.7km)	0 to 150m Nth of 2097 P/M 150 to 350m Nth of 2097 P/M 350 to 650m Nth of 2097 P/M Side road bend	22.5	78.5	180	25	112	205	**317**	43.2
Side road on bend to 2142 P/M	(0.8km)	22.5	78.5	160	25	112	185	**297**	46.1

* TIA (TCS - 2021)
** TIA (P& S - 2024)

The AADT's indicated in Figure 21 are estimates and provide a guide to Average Daily Traffic (ADT) (vehicles per day) expected on the road. Annual Average Daily Traffic (AADT) may be less than ADT due to seasonal variations in operations.

ADT adopted for proposed mine to reflect traffic exposure during mining campaigns.

6. Impact on Road Network

6.1 Impact of traffic generated by the proposal.

6.1.1 Bass Highway to Walters Quarry (1.3km)

- **Porters Bridge Road Overpass of the Bass Highway**

The proposed truck and dog trailer combinations will have minimal impact. This structure can support 26m B Double operation.

- **800m Southern approach to Slab Linked Culvert**

This section has a 5.5m seal width (S3 standard) and is too narrow to support potential future truck traffic i.e 357 vpd with some 49.6% heavy commercial vehicles which requires S4 standard.

- **Porters Bridge Road Slab Linked Culvert**

The proposed truck and dog trailer combinations will have minimal impact. This structure may not support 26m B Double operation.

- **Porters Bridge**

This bridge has a trafficable width of 5.1m which is too narrow to support two-way truck traffic flow. The structure can support 26m B Double operation in terms of bearing capacity. Give Way signage on the Southern approach is recommended so that laden traffic from local quarries has right of way.

6.1.2 Walters Quarry access to side road on bend (0.7km)

This road has a 250m section typically 4.8m wide with the balance of the road some 5.5m wide and too narrow to support proposed operation.

6.1.3 Side road on bend to Bauxite Quarry access (0.8km)

This section typically has a 5.5m seal width too narrow to support proposed operation.

6.2 Impacts on road users.

Proposal increases exposure to quarry transport operation for all road users. Increase in traffic of 112vpd North of 2097 P/M, to 317 vpd with 43.2% commercial vehicles.

- **Light Vehicles** – Exposure to quarry traffic South of 2097 P/M is moderate.
- **Public Transport** - Minimal impact.
- **Heavy Vehicles** - Heavy vehicle operators exposed to increase in quarry traffic.
- **Cyclists** - Increases exposure to quarry traffic but cyclist activity very low.
- **Motorcyclists** - Increases exposure to quarry traffic but motorcyclist activity low.

6.3 Environmental impacts

No applicable environmental impacts were identified in relation to:

- Noise, vibration or visual impact
- Community severance, pedestrian amenity
- Hazardous loads, air pollution or ecological impacts
- Heritage and Conservation

6.4 Key Road Safety and Capacity improvement objectives

From review of 5 year reported crash history, on site road safety review and forecast quarry operation increases on Porters Bridge Road between Meander Valley Road and the proposal the following objectives have been identified:

6.4.1 Road widening to support road function

The existing road is too narrow to support two-way traffic flow with proposed quarry traffic operation. Suitable road width consistent with LGAT standard S4 is recommended based on increased AADT and % commercial vehicles.

6.4.2 Road delineation improvements to support road function

The existing roads have negligible delineation provided by occasional guideposts only. Delineation improvements are recommended to:

- Reduce head on and / or leaving the road crash risk
- Separate approaching traffic due to prevalence of bends & crests in the alignment
- Improve ability to read the road at night.
- Reduce crash risk for vulnerable road users (cyclists and motorcyclist)

6.4.3 Provision of road signage to the Australian Standard

Provide regulatory & warning signs to inform road users of road conditions where warranted.

6.4.4 Roadside Hazard removal

Treat roadside hazards by hazard removal or suitable mitigations.

6.4.5 Pavement strengthening

Suitably strengthen road pavement where necessary to cater for forecast traffic loading.

6.5 Road Safety and Capacity improvement strategy

6.5.1 Road widening

Sealed rural council road standards as described in LGAT standard Drawing TSD – R02 are referenced. Figure 22 summarises recommended road standards from TSD-R02 for the various sections of Porters Bridge Road.

Figure 22 – Proposed Porters Bridge Road Standard

Link	Section	Quarry Operation (KTonne)		AADT (vpd)					Sealed Rural Road Standard			
				Non Quarry	Quarry		Total					
		2024	Prop.	2024	2024	Prop.	2024	Prop***	Existing (m)			Target Code
2097 P/M		50			40*				Seal	Shoulder	Code	
2142 P/M		0	56		0	112**						
1994 P/M		22.5			25							
Bass Highway to 2097 P/M (1.3km)	0 to 300m Nth of Bass Hwy	72.5	128.5	180	65	112	245	357	> 6	0.5	S3	S4
	300 to 1100m Nth of Bass Hwy								5.5	0.5	S3	
	Porters Bridge								5.1	NA	< S3	
	2097 P/M								6	0.5	S4	
2097 P/M to side road on bend (0.7km)	0 to 150m Nth of 2097 P/M	22.5	78.5	180	25	112	205	317	6	0.5	S3	S4
	150 to 350m Nth of 2097 P/M								4.8	0.5	S2	
	350 to 650m Nth of 2097 P/M								5.5	0.5	S3	
	Side road bend #								6	0.5	S3	
Side road on bend to 2142 P/M	(0.8km)	22.5	78.5	160	25	112	185	297	5.5	0.5	S3	S4

Sealed Rural Council Road Code from LGAT Standard Drawing TSD-R02

Road Code	AADT (vpd)	Seal (m)	Gravel Shoulder (m)	Verge (m)
S4	300 to 2000	6	0.9	0.5

* TIA (TCS - 2021)

** TIA (P& S - 2024)

*** High % Commerical Vehicles estimated at 50%

S4 is considered the minimum acceptable road width for truck & dog trailer operation on Council Roads i.e trafficable width of 7.8m.

 # Additonal width is required at horizontal curves in accordance with Austroads Guide to Road Design.

6.5.2 Road widening rationale

From risk management principles, crash risk increases with increased exposure i.e increase vehicle numbers and increased % heavy commercial vehicles especially where roads are narrow and there is very little margin for error.

The proposal significantly increases vehicle numbers, particularly heavy commercial vehicle numbers where the existing road is narrow and constrained an typically of standard varying between S2 and S3.

Accordingly, to support the proposal the road standard needs to be improved commensurately. S4 is the appropriate road standard for the expected operations.

Road Standard S4 significantly reduces crash risk between heavy vehicles and other road users. S4 provides the road width and clearance required for heavy commercial vehicles approaching each other to pass.

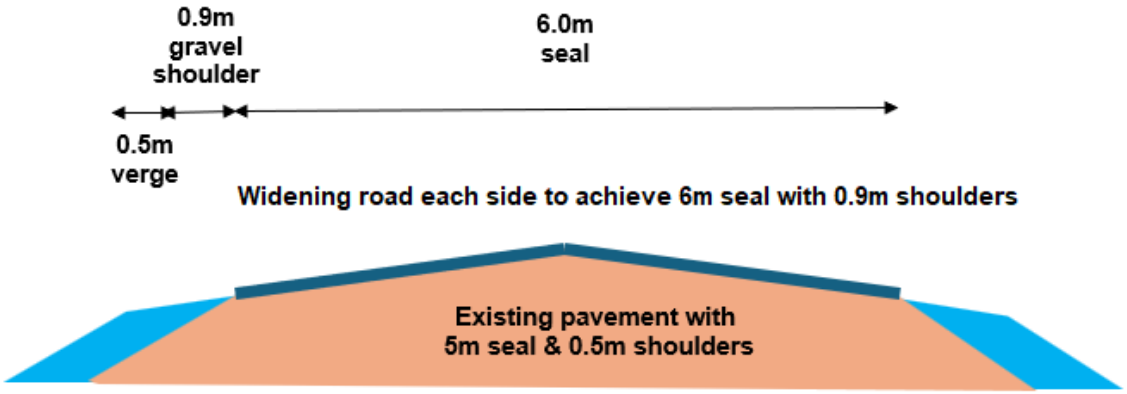
Heavy commercial vehicles i.e. trucks with trailers, track wider than the physical dimensions of the individual truck and trailer due to offset tracking.

Offset tracking between the truck and trailer occurs due to the length of the overall vehicle, linkage and effect of gravity that tends to push trailers away from the road centreline because of the road crossfall, which is typically 3 to 4% on straight roads. The crossfall is required for road drainage.

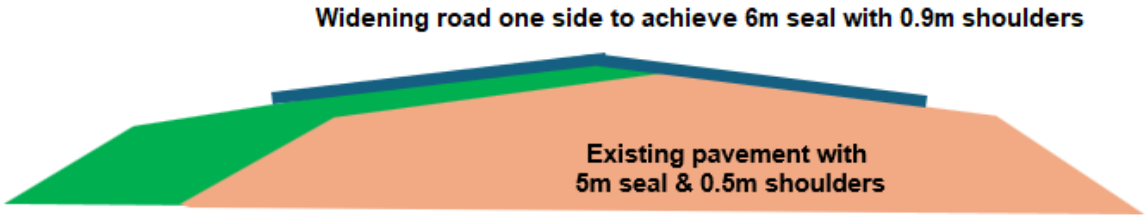
In addition to standard section S4 road widening should also be applied on bends in the road design process due to effective vehicle widths on bends, especially for long vehicles e.g. semitrailers and buses. The chassis of long vehicles midway between the axles can be over the centreline of the road unless curve widening is applied.

Options to upgrade Porters Bridge Road to Achieve S4 standard are shown in Figure 23. The options described in Figure 23 do not allow for pavement overlay to achieve the required pavement depth and would need to be adjusted accordingly.

Figure 23 – Potential Porters Bridge Road Upgrade Methods



This treatment is considered for the 800m staight section from chainge 300 to 1100 as there are culverts the with headwall either side of the road and some deep roadside drains that may be an issue .



This treatment is considered for the 700m section from chainge 1400 to 2100 as there are major trees and a fence line on the same side and the other side could be excavated to achieve the required widening.

6.5.3 Road delineation

Pavement marking with B3 Barrier Line and guideposts is recommended as there are no suitable overtaking opportunities and barrier line is an effective device for guiding traffic to trach appropriately along the road especially where there is a high percentage of trucks using the road, crests in the road and no other delineation for road users at night. A seal width of 6m is required to support installation of a B3 Barrier Line.

6.5.4 Improve road signage

Warning Signs

- Curve & Advisory Speed signs on substandard bends
- Truck Warning signs on approaches to Quarry accesses, see Appendix C
- Dusk to Dawn Wildlife Warning Signs, see Appendix D.

Regulatory Signs

- Australian Standard signage and pavement markings for Porters Bridge Southern approach, see Appendix C.
- Consider 70km/h Speed Limit for Porters Bridge Road

6.5.5 Treat Roadside Hazards

- Remove trees impinging on the trafficable width of the road. The trafficable width of the road includes the shoulders. Trees with trunks outside the trafficable width can still be within the trafficable width of the road where branches intrude over the shoulder and or seal of the road.
- Clear sight lines at bends to improve forward sight distance. This may involve vegetation removal.

6.5.6 Provide pavement strengthening

With increased pavement loading the bearing capacity of the road needs to be checked to determine pavement depth and insitu subgrade CBR.

Insitu CBR and pavement depth are unknown and would require pot holing by a geotechnical consultant to establish. Subject to results of geotechnical assessment, pavement overlay may be required if the subgrade CBR is low and/or the pavement depth is thin.

7. Tas. Planning Scheme – Meander Valley

Road and Railway Assets Code C3

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Acceptable Solution A1.1 – **Not applicable** as the relevant roads are not Category 1.

Acceptable Solution A1.2 – *For a road, excluding a Category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.*

Not applicable as the development site has a current access. **A1.2 is satisfied.**

Acceptable Solution A1.3 **– Not applicable** as no rail network is involved.

Acceptable solution A1.4: *Vehicular traffic to and from the site, using and existing vehicle crossing or private level crossing will not increase by more than:*

(a) The amounts in Table C3.1

(b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road; and

A1.4 is not satisfied from Table C3.1 as proposal involves more than 5 vehicle movements per day for vehicles longer than 5.5m in length.

Performance Criteria P1: *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.

(a) The increase in traffic due to the proposal is some 112 vpd with some 80% being commercial vehicles. Proposed improvements for affected roads and junctions include:

- upgrading the road standard from LGAT rural road standards S2 & S3 to standard S4
- application of curve widening at bends consistent with Austroads Guide to Road Design
- removal of roadside hazards

(b) The nature of the traffic generated by the use:

Traffic generated will be truck and dog trailer combinations to some 25m in length and some light vehicle activity due to staff.

Estimated traffic generation is some 34 light vehicles and 78 heavy commercial vehicles (typically truck and dog trailer combinations) i.e a total of 112 vpd.

Existing and estimated future traffic is summarised in Figure 22.

(c) the nature of the road:

Most of the road network utilised by the proposal is part of the Tasmanian 26m B Double Network and considered fit for purpose i.e Bass Highway, Meander Valley Road west of Exton on ramp to the Bass Hwy and William Street.

General Access roads include Porters Bridge Road and Meander Valley Road (3.4km East of Exton to William Street) and are considered as follows:

Porters Bridge Road

- Characteristic sealed road width of > 6m South of 2097 P/M requiring minor widening to achieve LGAT Rural Road Standard S4.
- Narrow sealed road width to a minimum of 4.8m with suspected thin pavement between 2097 P/M and 2142 PM requiring substantial pavement widening and strengthening to achieve LGAT Rural Road Standard S4
- Bass Hwy Overpass with trafficable width of 7.5m with 26m B Double load bearing capacity (SM 1600 Design Loading)
- Slab linked culver structure with 7m trafficable width
- Porters Bridge with trafficable road width of 5.0m with 26m B Double load bearing capacity (SM 1600 Design Loading). This bridge is signed as a one lane bridge as the trafficable width is less than 5m and there is a high estimated percentage of commercial traffic i.e. 50%.

Meander Valley Road (3.4km East of Exton to William Street)

- This state road is considered fit for purpose for General Access.

Meander Valley Road/ William Street intersection, Westbury

- This intersection is part of the Tas. 26m B Double network for movements north and east of the intersection. 19m truck & trailer movements between the Western & Northern legs of the intersection are accommodated by the existing intersection.

(d) the speed limit and traffic flow of the road:

- The default Sealed Rural Road Speed Limit of 100km/h applies however the speed environment is estimated at 70km/h.
- Existing and projected traffic activity levels on the impacted roads are in the low range in terms of impact on traffic capacity.
- The substantial increase in commercial vehicle operation however means substantial increase in axle loading on the road impacts bearing capacity of the road. Pavement strengthening will likely be required subject to insitu CBR assessment.

(e) any alternative access to a road:

There is no viable alternative access

(f) the need for the use.

The use is required for supply of product to market from the 2142P/M mining lease.

(g) any traffic impact assessment; and

This TIA finds no reason to disallow the proposal subject to road widening to LGAT Rural Road standard S4, see Appendix A, including curve widening on bends and pavement strengthening between the 2097 P/M & 2142 P/M and signage requirements.

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

No rail infrastructure is impacted by the proposal.

In summary sections of Porters Bridge Road have been identified requiring:

- pavement widening
- curve widening
- pavement strengthening and
- warning signage.

It is considered that the proposed roadworks, see Appendix A, will adequately treat the identified issues. **P1 is satisfied.**

A1.5: Vehicular traffic must be able to enter and leave a major road in a forward direction.
A1.5 is satisfied.

8. Recommendations and Conclusions

This traffic impact assessment has been prepared to assess the impact of the proposed Bauxite quarry on Porters Bridge Road, Exton. MVC has requested a Quarry Impact Review to inform decision making on what road upgrade and traffic management requirements will be necessary on Porters Bridge Road comparing existing conditions with proposed additional traffic which would be predominately heavy commercial vehicles.

From review of 5 year reported crash history, on site road safety review and Safe System Assessment the following objectives for Porters Bridge Road have been identified:

- Road widening to support road function
- Pavement strengthening based on results of geotechnical investigation
- Road delineation to support road function
- Warning and Regulatory signage to the Australian Standard
- Roadside hazard removal

The following strategies were identified to achieve the above objectives:

8.1 Road widening

Widen road consistent with LGAT standard for sealed rural roads, see Figure 24.

Figure 24 – Proposed Porters Bridge Road Standard

Link	Section	Quarry Operation (KTonne)		AADT (vpd)					Sealed Rural Road Standard			
				Non Quarry	Quarry		Total					
		2024	Prop.	2024	2024	Prop.	2024	Prop***	Existing (m)			Target
2097 P/M		50			40*				Seal	Shoulder	Code	Code
2142 P/M		0	56		0	112**						
1994 P/M		22.5			25							
Bass Highway to 2097 P/M (1.3km)	0 to 300m Nth of Bass Hwy	72.5	128.5	180	65	112	245	357	> 6	0.5	S3	S4
	300 to 1100m Nth of Bass Hwy								5.5	0.5	S3	
	Porters Bridge								5.1	NA	< S3	
	2097 P/M								6	0.5	S4	
2097 P/M to side road on bend (0.7km)	0 to 150m Nth of 2097 P/M	22.5	78.5	180	25	112	205	317	6	0.5	S3	S4
	150 to 350m Nth of 2097 P/M								4.8	0.5	S2	
	350 to 650m Nth of 2097 P/M								5.5	0.5	S3	
	Side road bend #								6	0.5	S3	
Side road on bend to 2142 P/M	(0.8km)	22.5	78.5	160	25	112	185	297	5.5	0.5	S3	S4

Sealed Rural Council Road Code from LGAT Standard Drawing TSD-R02

Road Code	AADT (vpd)	Seal (m)	Gravel Shoulder (m)	Verge (m)	% Commerical Vehicles
S4	300 to 2000	6	0.9	0.5	> 10%

* TIA (TCS - 2021)

** TIA (P& S - 2024)

*** High % Commerical Vehicles estimated at 50%

S4 is considered the minimum acceptable road width for truck & dog trailer operation on Council Roads i.e trafficable width of 7.8m.

 # Additonal width is required at horizontal curves in accordance with Austroads Guide to Road Design.

8.2 Road delineation

The widening affords the opportunity to install B3 Barrier Line (continuous white line) and guideposts. B3 line marking is recommended as there are no suitable overtaking opportunities and barrier line is an effective device for guiding traffic to track appropriately along the road especially where there is a high percentage of trucks using the road, crests in the road and no other delineation for road users at night.

8.3 Road signage

Warning Signs

- Retrofit curve warning signs with advisory speeds on substandard bends
- Retrofit Truck Warning signs on approaches to Quarry accesses, see Appendix C.
- Dusk to Dawn Wildlife Warning Sign, see Appendix D.

Regulatory Signs

- Australian Standard signage and pavement markings for Porters Bridge Southern approach, see Appendix C.
- Council could consider lowering the Porters Bridge Road speed limit to 70km/h if necessary to mitigate future traffic safety issues that may arise.

8.4 Roadside Hazards

- Remove trees impinging on the trafficable width of the road.
- Clear sight lines at bends to improve forward sight distance.

8.5 Pavement strengthening

Insitu CBR and pavement depth are unknown and would require pot holing by a geotechnical consultant to establish. Subject to results of geotechnical assessment, pavement overlay may be required if the subgrade CBR is low and/or the pavement depth is thin.

8.6 Impact of proposed strategies on crash risk

The impact of the above strategies is estimated to reduce crash risk on Porters Bridge Road as summarised in Figure 25.

Figure 25 – Impact of proposed strategy on crash risk

Porters Bridge Road Link	Road Standard (Seal)	SSA Without Roadworks	Road Standard	SSA With Roadworks	Estimated SSA Crash Risk Reduction (%)
Bass Hwy Overpass to Walters Quarry	6.0 to 5.5m	69	**S4**	60	13
Walters Quarry to side road on bend	6.0 to 4.8m	96	**S4**	60	37
Side road at bend to Bauxite Quarry	5.5m Seal	78	**S4**	60	23

S4 - 6m seal, 0.9m gravel shoulders with 0.5m verges & B3 Barrier line for delineation

8.7 Quarry expansion trigger

The Bauxite proposal justifies road widening targets for Porters Bridge Road as follows:

- Bass Hwy to 2097 P/M - upgrade to S4 standard
- 2097 P/M to 2142 P/M - upgrade to S4 standard

The upgrade of the section of Porters Bridge Road from 2097 P/M to 2142 P/M yields the best crash risk reduction when considering proposed additional traffic generation as this section of road is narrow with isolated pavement failures emerging. Treatment of this section is ranked the highest priority, though the Bass Hwy to Walters quarry section has more traffic.

8.8 Porters Bridge Road Recommendations:

- The section of road between 2097 P/M and 2142 P/M requires pavement strengthening based on results of Geotechnical investigations of pavement depth and insitu subgrade CBR.

- Widen road to LGAT Rural Road Code standard S4, see Appendix A, as follows

    - Bass Hwy to 2097 P/Ms – minor road widening
    - 2097 P/M to 2142 P/M – pavement widening and strengthening including application of curve widening to bends in accordance with Austroads Guide to Road Design Part 3.

    The upgrade of the section of Porters Bridge Road from the 2097 P/M to 2142 P/M yields the best crash risk reduction as this section of road is narrow with isolated pavement failures emerging. Treatment of this section is ranked the highest priority, though the Bass Hwy to 2097 P./M section has more traffic.

- Delineate the widened road with B3 Barrier Line and Guideposts

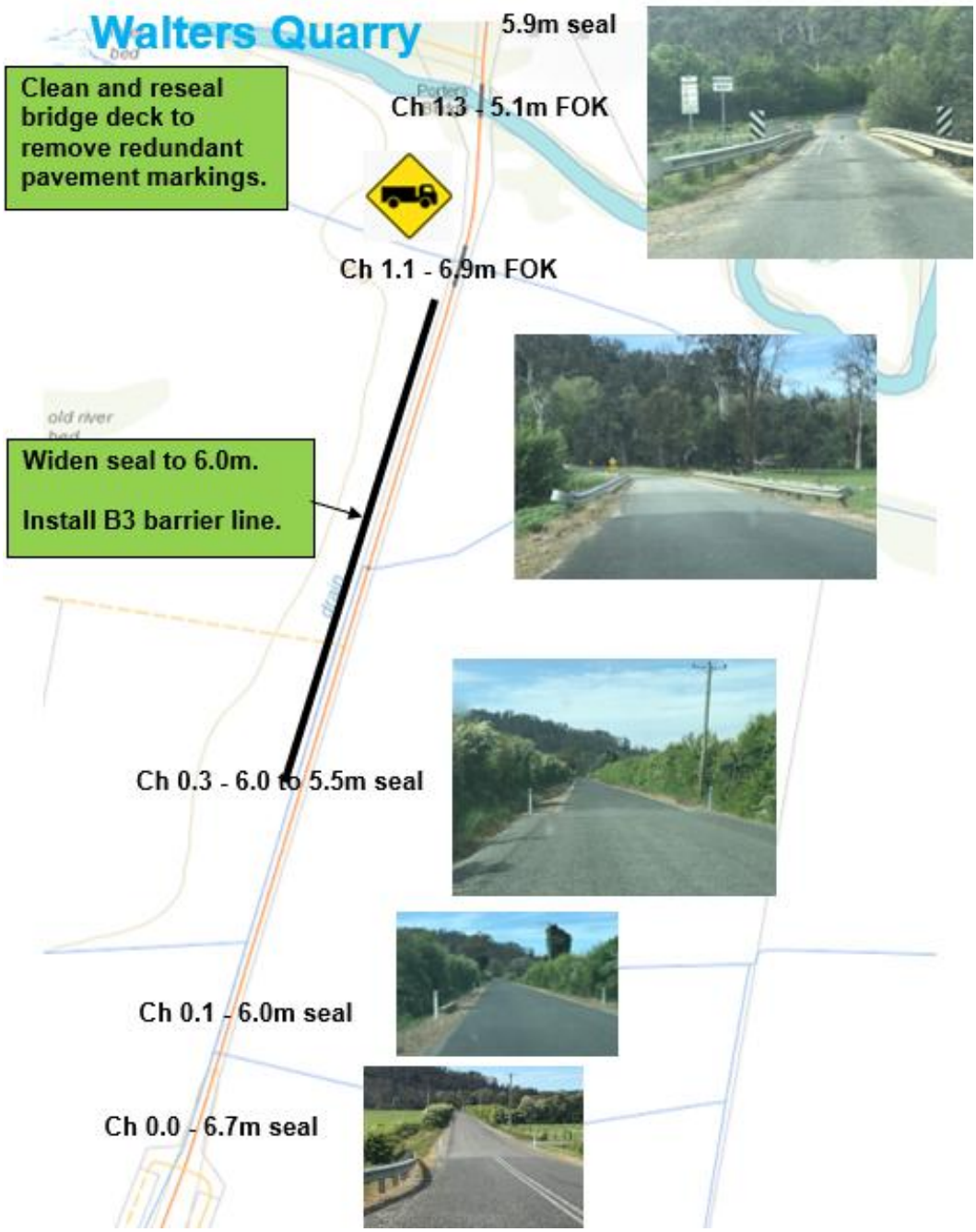
- Install Warning and Regulatory signage to the Australian Standard
  - Curve Warning & Advisory Speed signs, see Appendix A
  - Truck Warning signs on approaches to Quarry accesses, see Appendix C
  - Dusk to Dawn Wildlife Warning Signs, see Appendix D
  - Australian Standard signage and pavement markings for Porters Bridge, see Appendix C

- Remove tree hazards, see Appendix A

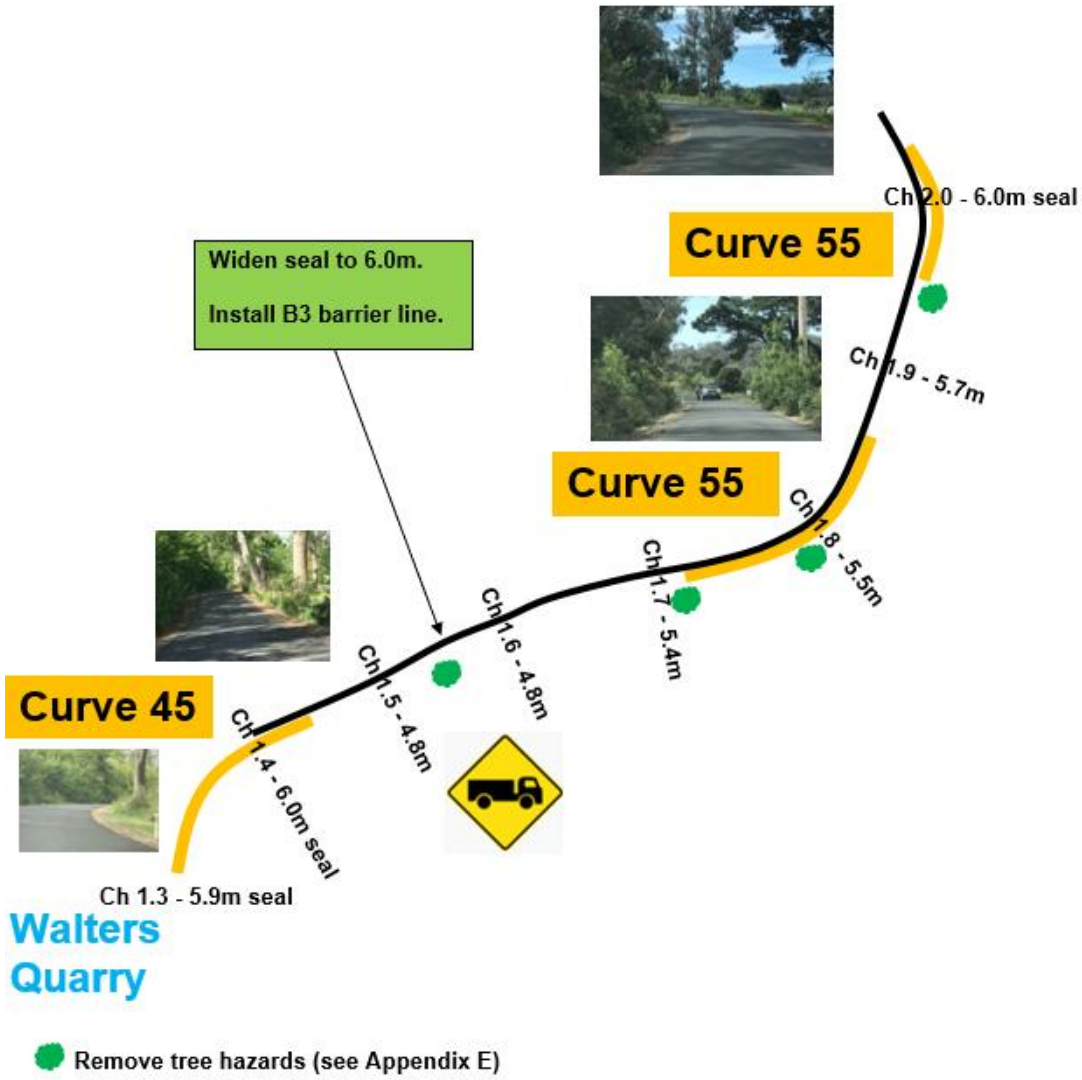
Appendices

Appendix A - Porters Bridge Rd Concept Plans

Appendix A.1 – Bass Highway to Walters Quarry (1.3km)



Appendix A.2 – Walters Quarry to side road (0.7km)



Appendix A.3 – Side road to proposed Bauxite Quarry (0.8km)

Appendix B - Safe System Assessments

2034 without roadworks

Safe System Assessment — **Porters Bridge Road (Bass Hwy Overpass to Walters Quarry) 2034 without treatment**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 732vpd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	400vpd at Walters Quarry access, no crashes	552vpd commerical vehicles, no crashes	Occassional pedestrian activity at Porters Bridge, no crashes	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score /4	1	1	1	1	1	1	1	
Likelihood	Justification	Straight road alignment, seal width varies 6.0 - 5.5 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Straight road alignment, seal width varies 6.0 - 5.5 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Simple junction layout to suit design vehicle movements e.g truck and dog trailer	Straight road alignment, seal width varies 6.0 - 5.5 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Non standard pedestrian way marked on Porters Bridge	Straight road alignment, seal width varies 6.0 - 5.5 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Straight road alignment, seal width varies 6.0 - 5.5 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	
	Score /4	3	3	2	3	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score /4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	9	9	6	9	12	12	12	69

Safe System Assessment — **Porters Bridge Road (Walters Quarry to side road bend) 2034 without treatment**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	**Justification (AADT 332vpd)**	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	30vpd at side road, no crashes	152vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score /4	1	1	1	1	1	1	1	
Likelihood	**Justification**	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Simple junction layout for farm vehicle access	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	Road alignment with gentle bends, seal width varies 6.0 -4.8 - 6.0m, unmade 0.5m shoulders, negligible delineation, roadside hazards	
	Score /4	4	4	4	4	4	4	4	
Severity	**Justification (100km/h speed limit, 70km/h speed environment)**	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score /4	3	3	3	3	4	4	4	**Total /448**
Product	**Total Score /64**	**12**	**12**	**12**	**12**	**16**	**16**	**16**	**96**

Safe System Assessment **Porters Bridge Road (Side road bend to Bauxite Quarry access) 2034 without treatment**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 312pd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	112vpd at quarry access, no crashes	152vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score / 4	1	1	1	1	1	1	1	
Likelihood	Justification	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	Simple junction layout for Bauxite Quarry	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	Road alignment with gentle bends, 5.5m seal width, 0.5m shoulders, negligible delineation	
	Score / 4	4	4	3	3	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score / 4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	12	12	9	9	12	12	12	78

Safe System Assessment **Porters Bridge Road (Bauxite Quarry to Cresswell Quarry) 2034 without treatment**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 200vpd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	40vpd at quarry access, no crashes	40vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score / 4	1	1	1	1	1	1	1	
Likelihood	Justification	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Simple junction layout for farm vehicle access	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	
	Score / 4	3	3	3	3	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score / 4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	9	9	9	9	12	12	12	72

2034 with road upgraded

Safe System Assessment — **Porters Bridge Road (Bass Hwy Overpass to Walters Quarry) 2034 with road upgraded.**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 732vpd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	400vpd at Walters Quarry access, no crashes	552vpd commerical vehicles, no crashes	Managed pedestrian activity at Porters Bridge	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score /4	1	1	1	1	1	1	1	
Likelihood	Justification	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Simple junction layout to suit design vehicle movements e.g truck and dog trailer	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	
	Score /4	2	2	2	2	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score /4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	6	6	6	6	12	12	12	60

Safe System Assessment — **Porters Bridge Road (Walters Quarry to side road bend) 2034 with road upgraded**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 332vpd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	30vpd at side road, no crashes	152vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score / 4	1	1	1	1	1	1	1	
Likelihood	Justification	6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	6m seal with 0.5m gravel shoulders and B3 centreline	6m seal with 0.5m gravel shoulders and B3 centreline	6m seal with 0.5m gravel shoulders and B3 centreline	6m seal with 0.5m gravel shoulders and B3 centreline	6m seal with 0.5m gravel shoulders and B3 centreline	
	Score / 4	2	2	2	2	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score / 4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	6	6	6	6	12	12	12	60

TRAFFIC & CIVIL SERVICES

Safe System Assessment **Porters Bridge Road (Bauxite Quarry to Cresswell Quarry) 2034 with road upgraded**

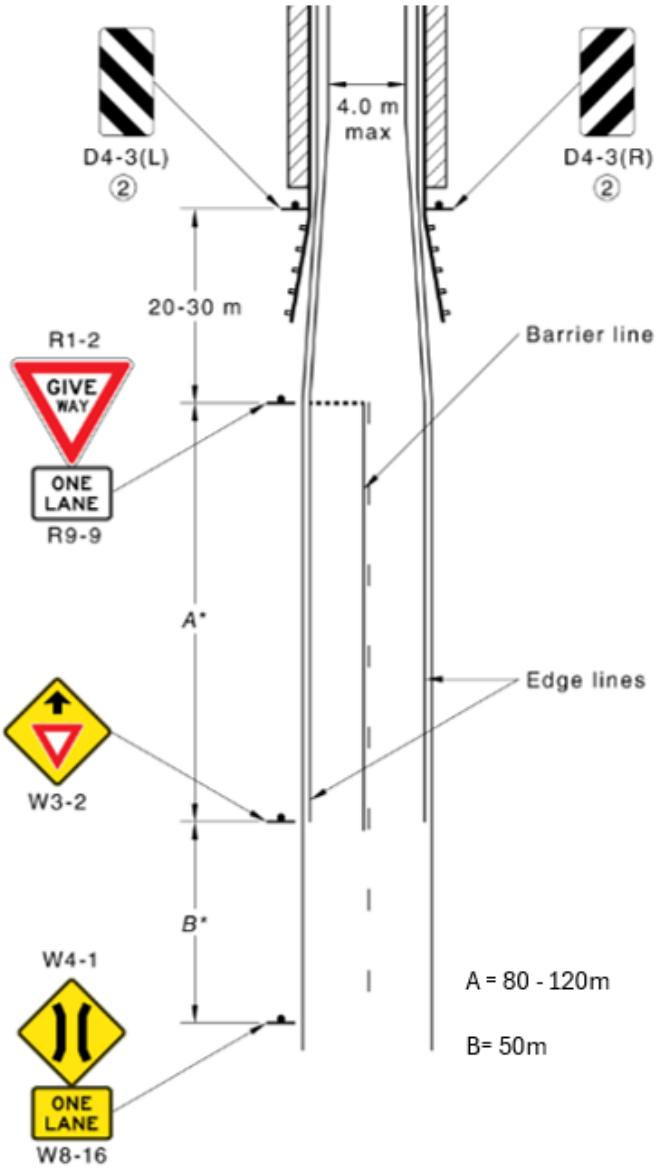
		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	**Justification (AADT 200vpd)**	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	40vpd at quarry access, no crashes	40vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score /4	1	1	1	1	1	1	1	
Likelihood	**Justification**	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Simple junction layout for farm vehicle access	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	Straight road alignment, 5.5m seal width, 0.5m shoulders, negligible delineation	
	Score /4	3	3	3	3	3	3	3	
Severity	**Justification (100km/h speed limit, 70km/h speed environment)**	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score /4	3	3	3	3	4	4	4	**Total /448**
Product	**Total Score /64**	**9**	**9**	**9**	**9**	**12**	**12**	**12**	**72**

Safe System Assessment **Porters Bridge Road (Side road bend to Bauxite Quarry access) 2034 with road upgraded**

		Run-off-road	Head-on	Intersection	Truck Route	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 312pd)	Low traffic volume, no crash propensity	Low traffic volume, no crash propensity	112vpd at quarry access, no crashes	152vpd commerical vehicles, no crashes	Negligiblea activity	Low cyclist volumes, no crashes	Low traffic volume, no crashes	
	Score / 4	1	1	1	1	1	1	1	
Likelihood	Justification	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Simple junction layout for Bauxite Quarry	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	Straight road alignment, 6m seal with 0.5m gravel shoulders and B3 centreline	
	Score / 4	2	2	2	2	3	3	3	
Severity	Justification (100km/h speed limit, 70km/h speed environment)	Moderate speed	Moderate speed	Moderate speed	Moderate speed	High speed for pedestrians	High speed for cyclists	High speed for motor cyclists	
	Score / 4	3	3	3	3	4	4	4	Total /448
Product	Total Score /64	6	6	6	6	12	12	12	60

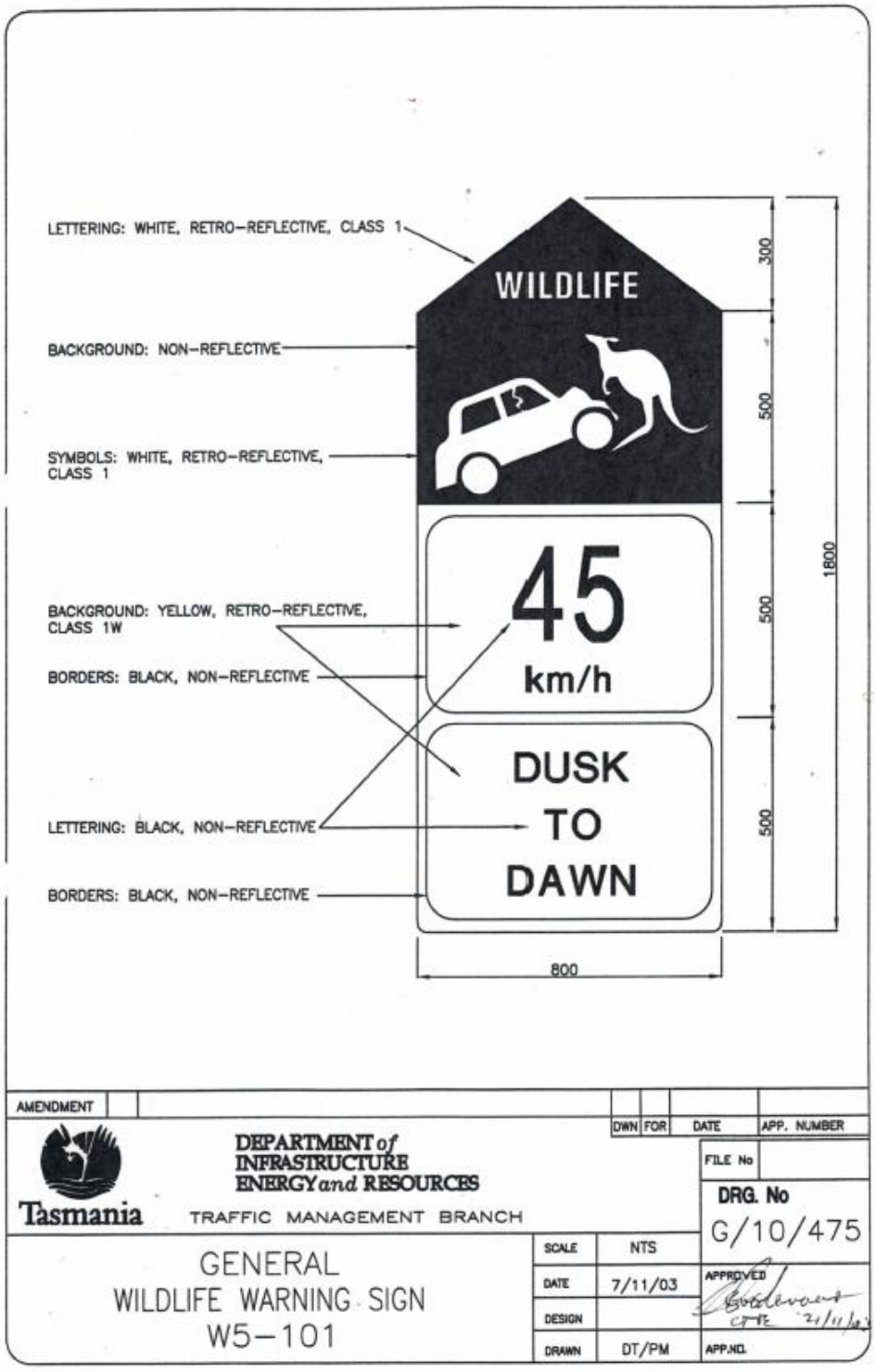
Appendix C - Signs

Australian Standard For two- way road with one way bridge with high % trucks and aadt > 200vpd and bridge width < 5.5m.



Australian Standard Trucks Entering warning sign W5-22B.

Appendix D - Dusk to Dawn Wildlife Warn. Sign


LETTERING: WHITE, RETRO-REFLECTIVE, CLASS 1
BACKGROUND: NON-REFLECTIVE
SYMBOLS: WHITE, RETRO-REFLECTIVE, CLASS 1
BACKGROUND: YELLOW, RETRO-REFLECTIVE, CLASS 1W
BORDERS: BLACK, NON-REFLECTIVE
LETTERING: BLACK, NON-REFLECTIVE
BORDERS: BLACK, NON-REFLECTIVE
WILDLIFE
45
km/h
DUSK
TO
DAWN
300
500
500
500
1800
800
AMENDMENT
DWN
FOR
DATE
APP. NUMBER
Tasmania
DEPARTMENT of INFRASTRUCTURE ENERGY and RESOURCES
TRAFFIC MANAGEMENT BRANCH
FILE No
DRG. No
G/10/475
GENERAL
WILDLIFE WARNING SIGN
W5-101
SCALE
NTS
DATE
7/11/03
DESIGN
DRAWN
DT/PM
APPROVED
APP.NO.

Appendix E - Site Photos

Appendix E.1 – Looking South 100m from Bass Hwy

8m clearance face to face of kerb with 6m seal

Appendix E.2 – Looking North 300m from Bass Hwy

Seal width changes from 6.0m to 5.5m.

Appendix E.3 – Looking North 100m from Walters Quarry

Seal width 6.0m.

Appendix E.4 – Looking North 200m from Walters Quarry

Remove tree, seal width 4.8m.

Appendix E.5 – Looking South 200m from Walters Quarry

Appendix E.6 – Looking North 300m from Walters Quarry

Seal width 4.8m.

Appendix E.7 – Looking North 400m from Walters Quarry

Remove tree,
seal width 5.4m.

Appendix E.8 – Looking North 500m from Walters Quarry

Seal width 5.5m.

Appendix E.9 – Looking South 500m from Walters Quarry

Remove tree,
seal width 5.5m.

Appendix E.10 – Looking North 600m from Walters Quarry

Seal width 5.5m.

Appendix E.11 – Looking North 650m from Walters Quarry

Remove tree, seal width 5.7m.

Appendix E.12 – Looking North 700m from Walters Quarry

Seal width 6.0m.

Appendix E.13 – Looking North 1.1km from Walters Quarry

Pavement failures.
Seal width 5.5m.

pitt&sherry

Pitt & Sherry (Operations) Pty Ltd
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Located nationally —
Melbourne
Sydney
Brisbane
Hobart
Launceston
Newcastle
Devonport

Memo

To Meander Valley Council

From ABx Group Limited

Date 1 May 2025

RE **Traffic Management Plan – Porters Bridge Road**

1. Introduction

ABx Group Limited (ABx) is proposing to develop a bauxite mine located off Porters Bridge Road near Reedy Marsh, approximately 5km north of Exton. The bauxite mine will be located within multiple land parcels and is proposed to be accessed via an existing Forico internal haul road.

The mine will extract bauxite using surface mining techniques. The bauxite will be sold to third parties and used as

- A source of aluminium and iron for cement production; and
- A source of aluminium and iron for manufacture of superphosphate fertiliser, supplying strength and dust reduction properties.

Traffic Impact

A Traffic Impact Assessment was provided to Meander Valley Council (Council) and detailed the proposed impact of the development on the surrounding road network. The report discerned, among other things, that Porters Bridge Road is narrow, and has a number of horizontal curves and crests along its length that limit stopping sight distance (SSD).

Porters Bridge Road is estimated to currently carry approximately 110 vehicles per day[1], of which 17% are heavy vehicles. Currently, there are expected to be 12 vehicles utilising Porters Bridge Road during AM and PM peak hours, respectively.

The proposed development is expected to generate the following traffic per day during brief campaigns only:

- A maximum of 24 light vehicle movements; and
- A maximum of 78 Truck & Dog Trailer Combination movements.

[1] Based on traffic counts completed by Council in 2015 south of the Meander River Bridge. These were increased to 2023 volumes based on an annual compounding growth rate of 1.9% discerned from historic traffic growth at Station 2025255, and accounting for the estimated daily delivery rate of the Porters Bridge Road Quarry, as detailed in the 2097 P/M Porters Bridge Road, Exton Traffic Impact Assessment.

The proposed development is expected to generate 8 vehicles during each of the existing AM and PM peak hours.

This results in a total of 20 vehicles utilising Porters Bridge Road during each peak hour during campaigns.

Basis of Traffic Management Plan

Council are concerned about the impact that the increased traffic generation caused by the proposed development might have on the safety of Porters Bridge Road.

During a meeting convened on 4 March 2025 between ABx and Council, it was proposed that temporary traffic management could be implemented during initial campaigns in place of any immediate road upgrades. It was further outlined that upgrades to Porters Bridge Road would be required in the longer-term. The following campaign lengths and volumes of bauxite are envisaged during the first three years of quarry operation:

- Year 1: 5 weeks – 22,000 tonnes
- Year 2: 6 weeks – 28,000 tonnes; and
- Year 3: 8 weeks – 36,000 tonnes.

Council are proposing to upgrade Porters Bridge Road in the future, currently assumed to be prior to Year 3. Following upgrade of Porters Bridge Road, temporary traffic management would not be required during the brief campaigns.

2. Traffic Management Objectives

The objectives of the proposed Temporary Traffic Management Plan are:

- To limit the likelihood of conflict between vehicles travelling in opposing directions in narrow sections of Porters Bridge Road, south of the proposed site access; and
- To not substantially increase the time it takes for vehicles to travel along Porters Bridge Road.

3. Porters Bridge Road

Porters Bridge Road (shown in Figure 1 and Figure 2) is a Meander Valley Council (Council) owned two-way local road[2]. It operates primarily in a north-south direction from Meander Valley Road at Exton to River Road at Reedy Marsh. Four bridges are located along Porters Bridge Road south of the site access, the northernmost of which is a one-way bridge over the Meander River.

Porters Bridge Road is subject to the Tasmanian Sealed Rural Road Default Speed Limit of 100km/h, although vehicles generally travel slower than this due to the narrow road width and horizontal and vertical geometry.

It is understood that the road is currently used by a number of users:

- WALTERS - WALTERS CONTRACTING PTY LTD - hard rock quarry; major user year-round
- CREZZCO - CRESSWELLS TRANSPORT PTY LTD - hard rock quarry; major user year-round
- FORICO - FORICO PTY LTD - forestry, plantation management and harvesting; major road user during harvesting, minor/mid-range user year-round; and
- Private landowners - major users year-round for agricultural and residential purposes.

A traffic counter, in 2015, located approximately 1km north of the Meander Valley Road/ Porters Bridge Road intersection found that 67% of vehicles travelled at between 70km/h and 100km/h along the road. Approximately 14% of vehicles travelled slower than this, and 19% of vehicles travelled faster. It is noted that, based on measurements taken on site in the vicinity of the site access on Wednesday 7 February 2024, vehicles were recorded to be travelling at 50km/h – 70km/h. This is due to the width, horizontal and vertical geometry and sight distance along the road in the vicinity of the site compared to at the counter located on a wide, straight section of Porters Bridge Road with good sight distance.

Road widths were recorded at several locations along Porters Bridge Road between the Meander Valley Road/ Porters Bridge Road intersection and the site access. The locations were chosen as points where the road could visibly be noted to reduce in width. The measured widths are presented in Table 1 below noting that Chainage 0.0 refers to the Meander Valley Road/ Porters Bridge Road intersection.

Table 1: Recorded road widths

Location (chainage km)	Road width
0.0 (Meander Valley Road/ Porters Bridge Road intersection)	7.2m
0.5	6.5m
0.8	5.7m
1.7 (Meander River Bridge)	4.8m
1.9	6.1m
2.2	4.8m
2.5	5.4m
2.7	5.3m
3.3 (site access)	5.6m

[2] Based on theLIST Road Centrelines Layer

While Porters Bridge Road does not provide any shoulders, centreline or edge line, it does provide an approximately 0.5m wide verge on both sides of the road at various locations. While the verges aren't suitable for being driven over on a regular basis, they are suitable for a vehicle to slow down and traverse on to allow an oncoming vehicle to pass. They are also expected to be suitable for the erection of temporary traffic signage.

Due to the dense vegetation along the road combined with the horizontal and vertical geometry of the road, there are multiple locations in which SSD is limited.

Overall, the road width along Porters Bridge Road currently does not comply with the LGAT Standards Drawings (TSD-R02-v3) requirements for a road carrying similar vehicle volumes and heavy vehicle percentage. The SSD along the road also does not comply with contemporary requirements. However, given the existing operation and available crash history along the road, the road is considered to operate safely and efficiently.

Figure 1: Porters Bridge Road - facing south

Figure 2: Porters Bridge Road - facing north

4. Crash history

State Growth has provided crash data along the full extent of Porters Bridge Road. One crash was recorded in the most recent 10-year period and involved a light vehicle colliding with a dark coloured cow that was on the road at night. The crash caused property damage only.

An additional crash was included in a Council RFI, which described a type 180 – Off Carriageway Right Bend crash involving a light vehicle and a Truck & Dog Trailer Combination. It was alleged that the light vehicle, travelling north on Porters Bridge Road was likely travelling at excessive speed around a corner with limited sight distance causing it to enter the opposing lane. To avoid the approaching light vehicle, the Truck & Dog Trailer Combination, travelling southbound, swerved left, causing its rear trailer to exit the carriageway and roll down the bank into trees.

The crash history denotes that there are no crash patterns of concern along Porters Bridge Road, however rhetoric surrounding the limited road width and vehicle speed around corners with limited sight distance was provided as part of the Council RFI.

5. Traffic Control Measures

To meet the traffic management objectives, it is proposed to operate the traffic management with a shuttle flow arrangement for approximately 1.3km between chainage 2.0 and chainage 3.3 on Porters Bridge Road[3]. The proposed shuttle flow extent is shown in Figure 3.

A Traffic Guidance Scheme (TGS) has been designed and attached in this TMP for the proposed shuttle flow arrangement. The following operation is proposed:

- The shuttle flow operation hours will be Monday to Friday from 6:30am to 5:30pm and on Saturdays between 7:30am and 4:30pm (unless employees leave the site earlier). The shuttle flow operation hours extend for 30 minutes before and after truck movements to allow for setup and shutdown time
- The shuttle flow would be signed at a 60km/h speed limit, consistent with the speed at which vehicles currently utilising Porters Bridge Road would be expected to negotiate the proposed section of Porters Bridge Road
- Portable Traffic Control Devices (PTCDs) in the form of Portable Traffic Signal Systems (PTSSs) will be installed to facilitate the shuttle flow. Traffic Controller/s will also be present to operate/ manually modify the operation of the PTSSs as necessary
- Those who access 304 Porters Bridge Road via two existing driveways ('SORRENTO PARK' - 304 PORTERS BRIDGE RD EXTON TAS 7303 and 190/ 190A PORTERS BRIDGE RD EXTON TAS 7303) will be required to communicate to traffic controllers via UHF radio or similar on egress from properties.

  Communication via radio will ensure vehicles exiting don't travel opposing the shuttle flow, noting sight distance to both ends of the shuttle flow arrangement will not be provided.

  A UHF radio will be provided to those property owners to enable communication with traffic management personnel. Relevant training will be provided to those property owners to ensure they know how to communicate effectively with traffic management personnel. Signs are not proposed along the private property accesses
- The expected queues as a result of the shuttle flow arrangement have been conservatively assumed to be 80m at either end from the PTCD location (worst-case scenario that three prime movers with truck and dog trailers turn onto Porters Bridge Road within a ~3-minute period, plus a light vehicle). Generally, queues are anticipated to be much shorter (10m) and the traffic management has been designed for the standard shorter queues
- To reduce the extent of signage on approach to the southern end of the temporary traffic management arrangement, it is proposed that a 60km/h speed limit sign is erected as the first temporary speed limit sign for northbound vehicles, within the multi-message sign after the Meander Valley Bridge. Although non-standard due to dropping directly from 100km/h to 60km/h, it is noted that vehicles generally travel significantly slower than 100km/h over the one-way bridge, and thus dropping the speed to 60km/h without utilisation of an 80km/h speed limit sign or of a 60km/h ahead speed limit sign is expected to be appropriate; and
- Due to the extent of the shuttle flow being approximately 1.3km, repeater speed limit signs will be required to be installed at a minimum of 500m intervals.

It should be noted that, due to the road widths outlined above in Table 1, which exceed 5.5m between the Meander Valley Road intersection (chainage 0.0) and chainage 2.0, other than at the Meander River Bridge, traffic management for this extent is not expected to be necessary. A 5.5m road width is anticipated to be sufficient for vehicle passing, as it previously has been. SSD is generally sufficient along the section of Porters Bridge Road between Chainage 0 and Chainage 2.0.

[3] Chainage 0.0 begins at the Meander Valley Road/ Porters Bridge Road intersection.

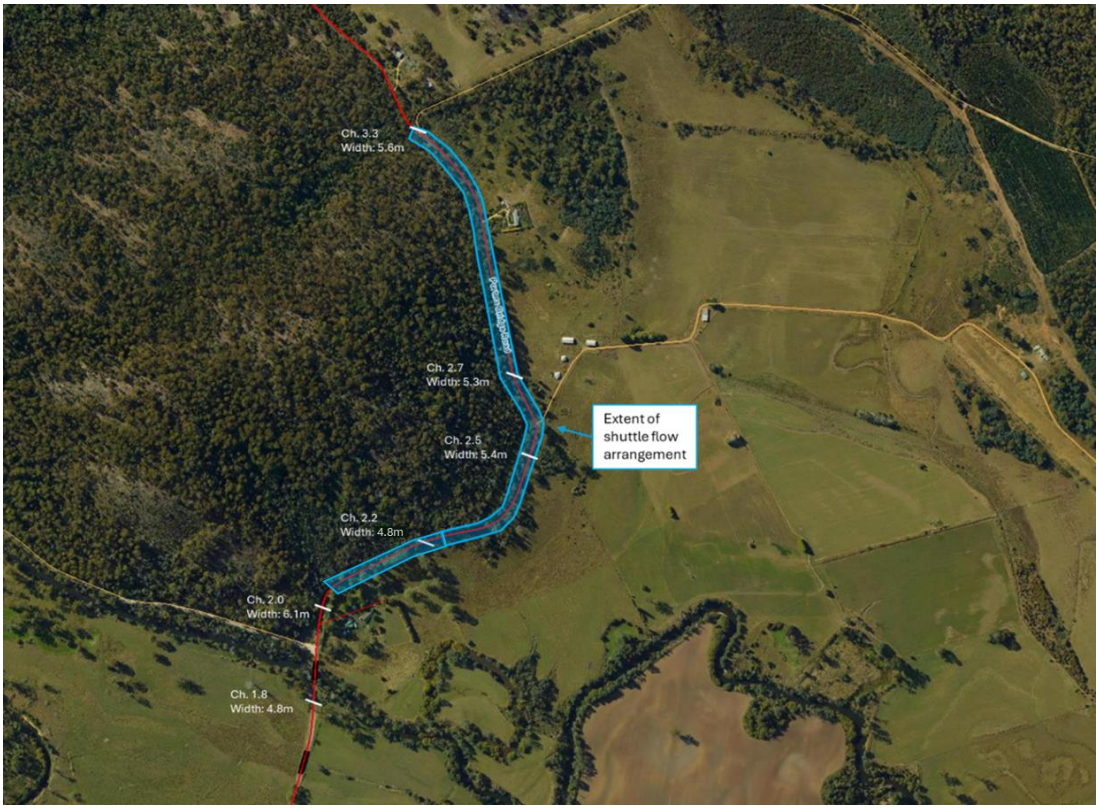

Figure 3: Approximate extent of proposed shuttle flow arrangement

5.1 Preferred use of PTCDs

In accordance with the *Austroads Guide to Temporary Traffic Management Part 3* (AGTTM Part 3), a risk assessment must be undertaken for the use of PTCDs.

The use of PTCDs is expected to be a preferred solution based on the following:

- Narrow road and verge width provides limited protection for traffic controllers – as such use of PTCD's is expected to provide significantly improved safety; and
- The lack of complexity of the traffic management solution at this location is expected to be monotonous for traffic controller, and thus they may become less perceptive over time.

6. Traffic flow analysis

6.1 Traffic modelling results

The expected operation of the 1.3km shuttle flow has been modelled using SIDRA Intersection software. Table 2 summarises the traffic modelling results.

Table 2: Traffic Modelling Results

Porters Bridge Road	Travel Speed	Shuttle Flow Length (m)	Average Delay (s)	Longest Delay (s)	95th Percentile Queue (m)
Northbound	60km/h	1300	97	190	10
Southbound			97	190	10

For additional detail of the traffic modelling results, see SIDRA outputs attached.

6.2 Temporary Traffic Signal Phasing

The optimum traffic signal phasings for each location are shown in Table 3.

Table 3: Optimum Traffic Signal Timing

Porters Bridge Road	Travel Speed	Green Time (s)	Red Time After (s)	Yellow Time (all phases) (s)
Northbound	60km/h	10	81	4
Southbound		10	81	

7. Efficiency and monitoring

The above traffic modelling results show delays and queues for a system that is effectively unmonitored and operates on a timer.

Shuttle flow operations, particularly delays, can be improved if the system is monitored and green time given when and where there is demand.

8. Safety Measures

Temporary traffic management personnel will be stationed at a safe location behind PTCDs and appropriately tapered delineators to ensure they are protected from circulating vehicles.

9. Implementation and resources

The shuttle flow arrangement should be installed, monitored and operated by a suitably qualified traffic control provider in accordance with the attached TGS. Minor site-specific modifications may be made on site by an approved implementer to improve location/ visibility of signage as appropriate.

Signs and PTCDs should be erected/ installed at the start of each day, and removed at the end of each day. This is also expected to limit the likelihood of signage being damaged or stolen.

10. Communications

10.1 Stakeholder identification

The following stakeholders have been identified as being impacted by the construction works and would, therefore, require information as part of the communications plan:

- Residents, landowners and business owners of Porters Bridge Road (within or north of the proposed extent of the shuttle flow arrangement), Grubbs Road and Kellys Road; and
- Meander Valley Council.

Stakeholders include the following:

- MEANDER VALLEY COUNCIL
- NRE TAS & PARKS AND WILDLIFE SERVICE
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- [redacted]
  - [redacted]
- FORICO - FORICO PTY LTD; and

- [redacted]

Stakeholders will be informed of traffic management arrangement four weeks prior to the commencement of campaigns. Stakeholders will again be notified one week before the beginning of each campaign.

10.2 Communication plan

In addition to the background information regarding the development, the key messages conveyed to stakeholders will focus on the following likely questions:

For how long will the shuttle flow be implemented for?

The shuttle flow is anticipated to be in place for a 5 week period during October/ November 2025, and a 6 week period during March/ April 2026.

What will be the impact to the surrounding road network?

During the shuttle flow operation period, the following additional traffic volumes are expected on weekdays:

- Between 6:30am and 7:00am – up to 12 light vehicles (for staff) are expected to travel northbound on Porters Bridge Road
- Between 5:00pm and 5:30pm – up to 12 light vehicles (for staff) are expected to travel southbound on Porters Bridge Road
- Between 7:00am and 5:00pm, approximately 8 additional trucks are expected to travel on Porters Bridge Road per hour (or one additional truck every 7-8 minutes)

What are the working hours?

The shuttle flow operation hours will be Monday to Friday from 6:30am to 5:30pm and on Saturdays between 7:30am and 4:30pm (unless employees leave the site earlier). The shuttle flow operation hours extend for 30 minutes before and after truck movements to allow for setup and shutdown time.

Who can I contact if I have any questions?

To be confirmed following engagement of an accredited traffic control contractor.

10.3 Delivery method

The following delivery method for the communications plan is expected:

- Residents, landowners and business owners – letter drop
- Meeting convened between ABx, the traffic management contractor and residents of 'SORRENTO PARK' - 304 PORTERS BRIDGE RD EXTON TAS 7303 and 190/ 190A PORTERS BRIDGE RD EXTON TAS 7303; and
- Meander Valley Council – email including a copy of the communication materials that have been provided to the other stakeholders.

Should there be a need to make any changes to the traffic management arrangement, the communications plan should be reviewed and updated accordingly, including distribution of additional communications materials if needed.

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Important information about your report

In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. The Report may only be used and relied on by the Client for the purpose set out in the Report. Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, is the responsibility of the Client or such third parties.

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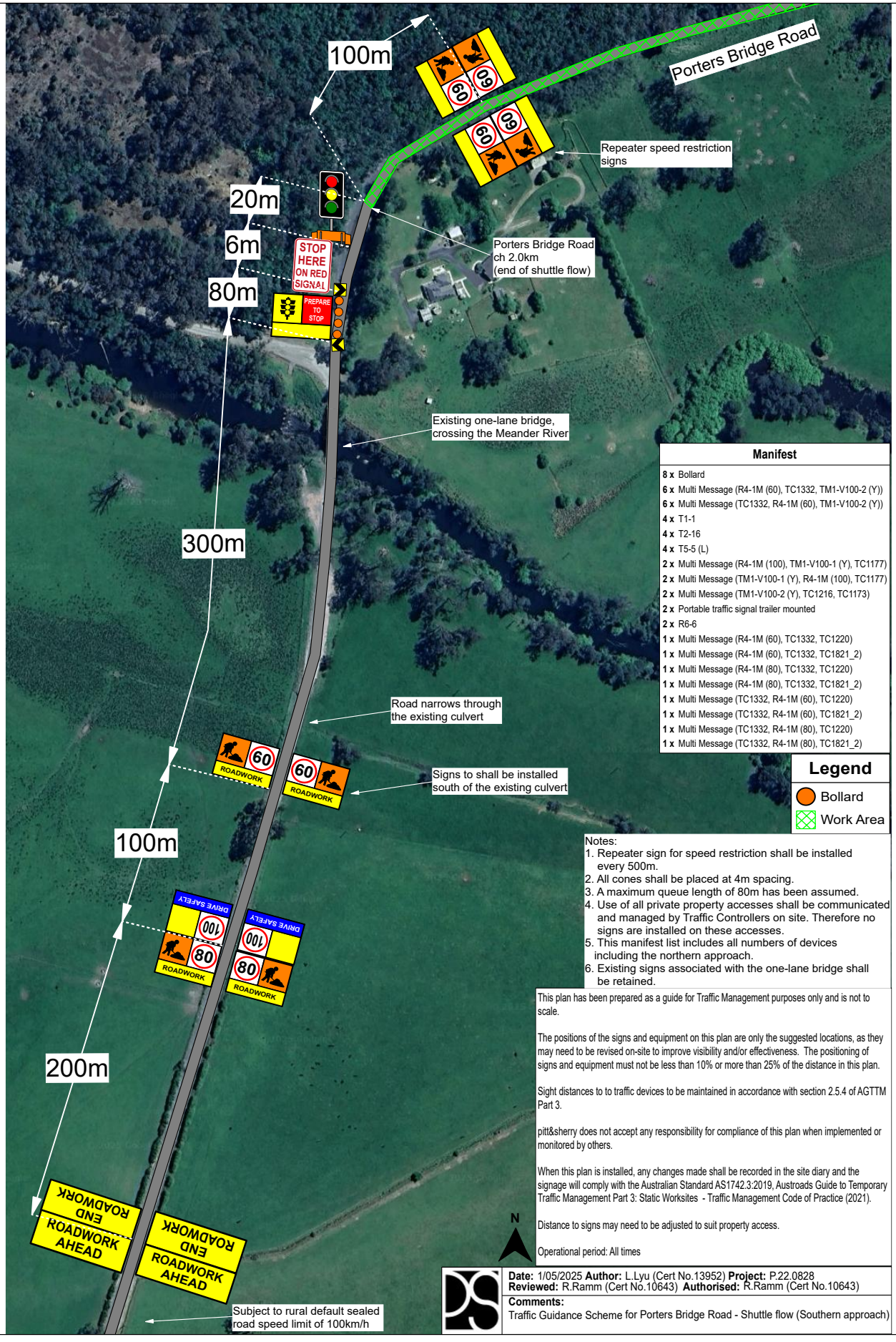

Manifest

8 x	Bollard
6 x	Multi Message (R4-1M (60), TC1332, TM1-V100-2 (Y))
6 x	Multi Message (TC1332, R4-1M (60), TM1-V100-2 (Y))
4 x	T1-1
4 x	T2-16
4 x	T5-5 (L)
2 x	Multi Message (R4-1M (100), TM1-V100-1 (Y), TC1177)
2 x	Multi Message (TM1-V100-1 (Y), R4-1M (100), TC1177)
2 x	Multi Message (TM1-V100-2 (Y), TC1216, TC1173)
2 x	Portable traffic signal trailer mounted
2 x	R6-6
1 x	Multi Message (R4-1M (60), TC1332, TC1220)
1 x	Multi Message (R4-1M (60), TC1332, TC1821_2)
1 x	Multi Message (R4-1M (80), TC1332, TC1220)
1 x	Multi Message (R4-1M (80), TC1332, TC1821_2)
1 x	Multi Message (TC1332, R4-1M (60), TC1220)
1 x	Multi Message (TC1332, R4-1M (60), TC1821_2)
1 x	Multi Message (TC1332, R4-1M (80), TC1220)
1 x	Multi Message (TC1332, R4-1M (80), TC1821_2)

Legend

- Bollard
- Work Area

Notes:
1. Repeater sign for speed restriction shall be installed every 500m.
2. All cones shall be placed at 4m spacing.
3. A maximum queue length of 80m has been assumed.
4. Use of all private property accesses shall be communicated and managed by Traffic Controllers on site. Therefore no signs are installed on these accesses.
5. This manifest list includes all numbers of devices including the northern approach.
6. Existing signs associated with the one-lane bridge shall be retained.

This plan has been prepared as a guide for Traffic Management purposes only and is not to scale.

The positions of the signs and equipment on this plan are only the suggested locations, as they may need to be revised on-site to improve visibility and/or effectiveness. The positioning of signs and equipment must not be less than 10% or more than 25% of the distance in this plan.

Sight distances to to traffic devices to be maintained in accordance with section 2.5.4 of AGTTM Part 3.

pitt&sherry does not accept any responsibility for compliance of this plan when implemented or monitored by others.

When this plan is installed, any changes made shall be recorded in the site diary and the signage will comply with the Australian Standard AS1742.3:2019, Austroads Guide to Temporary Traffic Management Part 3: Static Worksites - Traffic Management Code of Practice (2021).

Distance to signs may need to be adjusted to suit property access.

Operational period: All times

Date: 1/05/2025 **Author:** L.Lyu (Cert No.13952) **Project:** P.22.0828
Reviewed: R.Ramm (Cert No.10643) **Authorised:** R.Ramm (Cert No.10643)

Comments:
Traffic Guidance Scheme for Porters Bridge Road - Shuttle flow (Southern approach)

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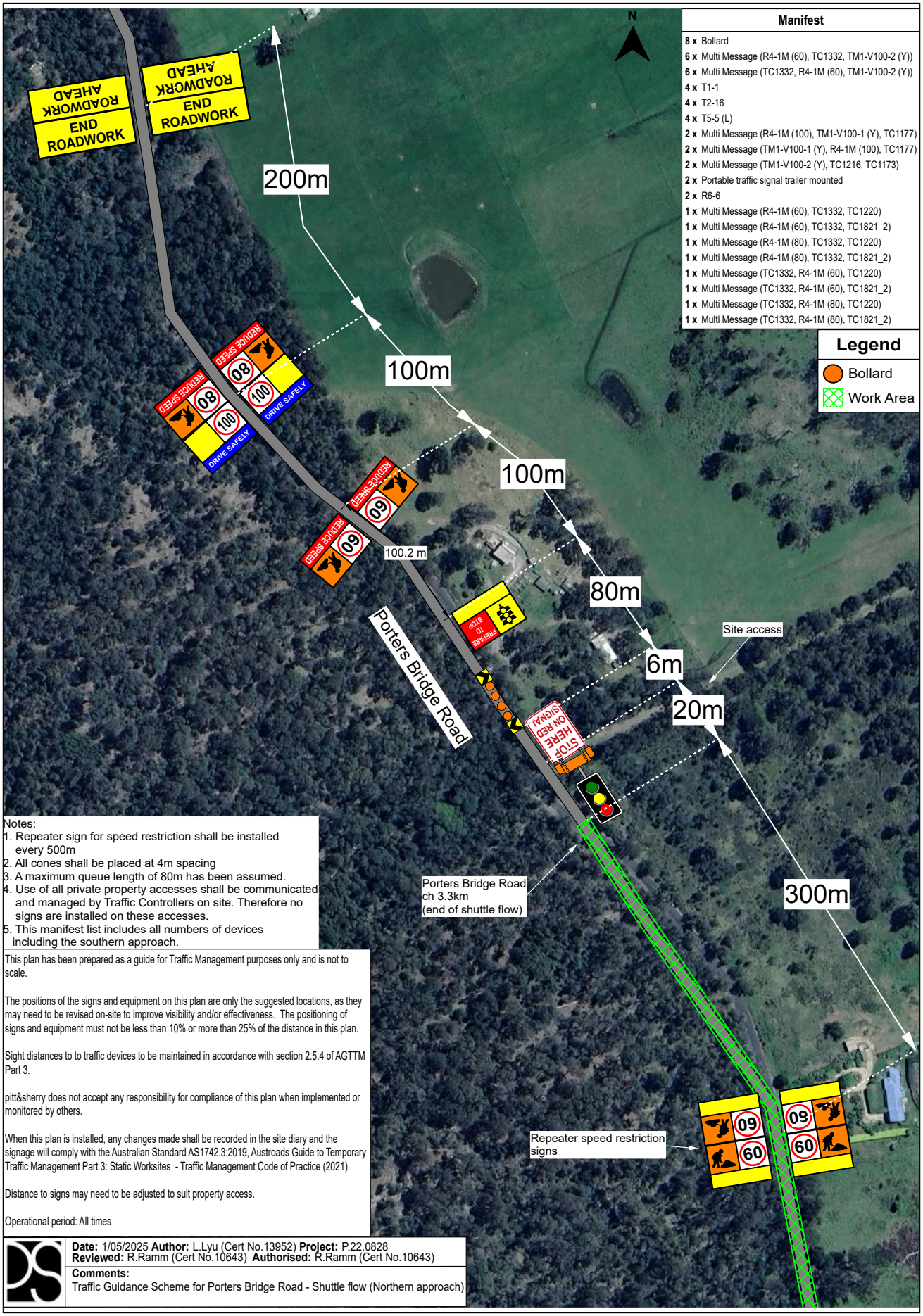

Notes:
1. Repeater sign for speed restriction shall be installed every 500m
2. All cones shall be placed at 4m spacing
3. A maximum queue length of 80m has been assumed.
4. Use of all private property accesses shall be communicated and managed by Traffic Controllers on site. Therefore no signs are installed on these accesses.
5. This manifest list includes all numbers of devices including the southern approach.

This plan has been prepared as a guide for Traffic Management purposes only and is not to scale.

The positions of the signs and equipment on this plan are only the suggested locations, as they may need to be revised on-site to improve visibility and/or effectiveness. The positioning of signs and equipment must not be less than 10% or more than 25% of the distance in this plan.

Sight distances to to traffic devices to be maintained in accordance with section 2.5.4 of AGTTM Part 3.

pitt&sherry does not accept any responsibility for compliance of this plan when implemented or monitored by others.

When this plan is installed, any changes made shall be recorded in the site diary and the signage will comply with the Australian Standard AS1742.3:2019, Austroads Guide to Temporary Traffic Management Part 3: Static Worksites - Traffic Management Code of Practice (2021).

Distance to signs may need to be adjusted to suit property access.

Operational period: All times

Date: 1/05/2025 **Author:** L.Lyu (Cert No.13952) **Project:** P.22.0828
Reviewed: R.Ramm (Cert No.10643) **Authorised:** R.Ramm (Cert No.10643)

Comments:
Traffic Guidance Scheme for Porters Bridge Road - Shuttle flow (Northern approach)

Environment Protection Authority

GPO Box 1550 HOBART TAS 7001 Australia

Enquiries: Michael Gay
Phone: 0472 662 765
Email: Michael.Gay@epa.tas.gov.au
Web: www.epa.tas.gov.au
Our Ref: D25-35168

ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

Jonathan Harmey
General Manager
Meander Valley Council
PO Box 102
WESTBURY TAS 7303

By Email Only: mail@mvc.tas.gov.au

Dear Jonathan Harmey,

ENVIRONMENTAL ASSESSMENT DECISION
PERMIT APPLICATION (PA 24/0052)
ABx4 PTY LTD – DL130 BAUXITE PROJECT QUARRY, REEDY MARSH

I am writing to you about the above permit application, which was referred to the Board of the Environment Protection Authority (the Board) for assessment under the *Environmental Management and Pollution Control Act 1994* (EMPCA) and received on 31 August 2023.

The Board's environmental impact assessment of the application is now complete. All supporting information and any relevant comments received from the public and government agencies were taken into account.

In accordance with section 25(5)(a) of EMPCA, I am notifying Meander Valley Council that the conditions and restrictions in the enclosed 'Permit Part B', including the definitions in Schedule 1 and the associated attachments, must be contained in any permit granted by Council for the application under the *Land Use Planning and Approvals Act 1993* (LUPAA). Permit Part B is attached as a PDF file to this letter.

A copy of the Environmental Assessment Report (EAR) detailing the Board's reasons for requiring the conditions or restrictions in Permit Part B is available on the EPA website at: https://epa.tas.gov.au/business-industry/assessment/proposals-assessed-by-the-epa/abx-group-limited-dl-130-bauxite-project-reedy-marsh. The EAR does not form part of the permit.

Next steps

In accordance with section 25(2)(e) of EMPCA, section 57(6) of LUPAA now applies. Council must decide to grant or refuse the permit within 42 days after receiving this notification, subject to any further period agreed under section 57(6A) or 58(2A) of LUPAA and the receipt of additional information sufficient to satisfy a requirement under section 54 of LUPAA.

To satisfy the requirements of section 25(8) of EMPCA, the Council must:

- not include any other condition or restriction which is inconsistent with, or which extends the operation of, any conditions or restrictions which the Board requires to be contained in the permit; and
- notify the Board of its decision to grant or refuse to grant a permit; and
- at the same time as it notifies the applicant of its decision on the application, provide the EAR to the applicant by a link to the EAR in the Council's letter to the applicant and to anyone who made representations.

Suggested permit format

It is suggested that Council:

- call the Council's portion of the permit 'Part A';
- include a condition in 'Part A' along the lines of 'The person responsible for the activity must comply with the conditions contained in Schedule 2 of Permit Part B, which the Board of the Environment Protection Authority (EPA) requires the planning authority to include in the permit, pursuant to section 25(5) of the *Environmental Management and Pollution Control Act 1994*', and
- attach the enclosed Permit Part B to the permit, including Schedules 1, 2 and 3 and any attachments.
- provide the EPA with a full copy of the final permit (including all attachments).

It is the Board's preference that the Environmental Effects Report (EER) document is not included as part of the permit, as that document may contain information which is inconsistent with the EPA Board's conditions and this may lead to confusion by the permit holder regarding their regulatory responsibilities. It can also lead to the permit document itself being a large and unwieldy document which can be difficult for regulatory and compliance staff to audit and regulate against on an ongoing basis.

However, if Council deems it necessary for an EER document to be included as part of the Council's conditions, it is recommended that text is included in the conditions to make it clear that the conditions in Part A (Council's conditions/restrictions) and Part B (EPA Board's conditions/restrictions) must be complied with where there is inconsistency with the EER. Example text could be: "*the use and/or development must be carried out as shown on the endorsed plans and described in the endorsed documents; a) EER, dated xxx; to the satisfaction of the Council, unless provided for otherwise by the conditions contained below in either Part A (Council's conditions) or Part B (EPA Board's conditions). The Part A (Council's conditions) and Part B (EPA Board's conditions) prevail to the extent of any inconsistency with the EER*".

I understand Council will advise the applicant and any representors of their appeal rights in relation to its decision.

If you have any queries regarding the above, please contact the officer nominated at the head of this correspondence.

Yours sincerely

Andrew Paul
CHAIRPERSON, ENVIRONMENT PROTECTION AUTHORITY

Encl. Environmental Assessment Report, including Permit Part B (Permit Conditions – Environmental no. 11390)

Cc. Brenton Josey, Planning Section, Meander Valley Council – planning@mvc.tas.gov.au

Environmental Assessment Report

ABx4 Pty Ltd

DL130 Bauxite Project

Quarry

Reedy Marsh

March 2025

ENVIRONMENT PROTECTION AUTHORITY

Environmental Assessment Report

Proponent	ABx4 Pty Ltd
Proposal	DL130 Bauxite Project Quarry
Location	Reedy Marsh
Class of Assessment	2A
PCE no.	11390
Permit Application No.	PA 24/0052 (Meander Valley)
myDAS Folder No.	22/9483
myDAS Document No.	D25-37460

Assessment Process Milestones

Date	Milestone
16 November 2022	Notice of Intent lodged
22 December 2022	Guidelines Issued
21 August 2023	Permit Application submitted to Council
31 August 2023	Referral received by the Board
1 June 2024	Start of public consultation period
18 June 2024	End of public consultation period
16 July 2024	Additional information (Supplement) requested
14 November 2024	Additional information (Supplement) submitted to the Board
20 February 2025	Date draft conditions issued to proponent
7 March 2025	Statutory period for assessment ends

Glossary/Acronyms

Term	Detail
AMD	Acid and metalliferous drainage
ANZECC	Australian and New Zealand Environment Conservation Council – *Guidelines for Fresh and Marine Water Quality 2000*
ANZG	*Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018*
Board	Board of the Environment Protection Authority
CAS	Conservation Assessment Section – NRE Tasmania
DAD	*Eucalyptus amygdalina* forest and woodland on dolerite
DOB	*Eucalyptus obliqua* dry forest
DOV	*Eucalyptus ovata* forest and woodland
WOB	*Eucalyptus obliqua* forest with broad-leaf shrubs
DA	Development Application
EC	Electrical Conductivity
EER	Environmental Effects Report
EIA	Environmental Impact Assessment
EMPCA	*Environmental Management and Pollution Control Act 1994*
EMPCS	Environmental Management and Pollution Control System
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
GHG	Greenhouse Gases
IECA	International Erosion Control Association's *Best Practice Erosion and Sediment Control 2018* documents
LUPAA	*Land Use Planning and Approvals Act 1993*
ML	Mining Lease
NAF	Non-acid Forming
NATA	National Association of Testing Authorities
NC Act	*Nature Conservation Act 2002*
NOI	Notice of Intent
NRE	Department of Natural Resources and Environment Tasmania
ORP	Oxidation-reduction potential

Report Summary

This report is an environmental assessment of the DL130 Bauxite Project Quarry by ABx4 Pty Ltd.

The proposal involves shallow surface excavation of 50,000 m^3 of bauxite ore per year with screening of 40,000 m^3 per year and crushing of 1,000 m^3 per year to produce bauxite ore, low-grade bauxite and clay. Due to the characteristics of the resource at least 20% of the ore is not expected to require processing (screening). The quarry will operate on a campaign basis for a period of 3 to 4 months per year with the life of the operation anticipated to be up to 20 years.

This report has been prepared based on information provided in the permit application, Environmental Effects Report (EER) and Supplement to the EER. Relevant government agencies and the public were consulted, and their submissions considered as part of the assessment.

Appendix 1 contains details of matters raised by the public and referral agencies during the consultation process.

Appendix 2 contains a table of the proponent's proposed management measures.

Appendix 3 contains the environmental permit conditions for the proposal.

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1. Approval Process

The Board of the Environment Protection Authority (the Board) received a Notice of Intent for this proposal on 16 November 2022.

An application for a permit under the *Land Use Planning and Approvals Act 1993* (LUPAA) in relation to the proposal was submitted to Meander Valley Council on 21 August 2023.

This proposal is defined as a 'level 2 activity' under clauses 5(a) and 6(a)(ii), Schedule 2 of the *Environmental Management and Pollution Control Act 1994* (EMPCA), being a quarry extracting up to 50,000 cubic metres and processing up to 40,000 cubic metres of material per year.

Section 25(1) of EMPCA required Council to refer the application to the Board of the Environment Protection Authority (the Board) for assessment under the Act. The application was received by the Board on 31 August 2023.

The Board required that information to support the proposal be provided in the form of an Environmental Effects Report (EER), prepared in accordance with the Guidelines issued by the Board on 22 December 2022. Several drafts of the EER were submitted to EPA for review against the Guidelines before it was finalised and accepted on behalf of the Board on 3 November 2023.

The EER was released for public inspection for 14 days on 1 June 2024. Advertisements were placed in The Examiner and on the EPA website. The EER was also referred to relevant government agencies for comment. Eighty-six (86) representations were received.

On 16 July 2024, the Manager, Assessments under delegation from the Board requested that the proponent submit additional information to address matters raised during the public consultation period. Satisfactory additional information, in the form of a Supplement to the EER, was submitted by the proponent on 20 February 2025.

2. SD Objectives and EIA Principles

The proposal must be considered by the Board in the context of the objectives of the Resource Management and Planning System of Tasmania (RMPS), and the Environmental Management and Pollution Control System (EMPCS). Both sets of objectives are specified in Schedule 1 of EMPCA.

The functions of the Board are to administer and enforce the provisions of EMPCA, and to use its best endeavours to further the RMPS and EMPCS objectives. The Board must assess the proposal in accordance with the Environmental Impact Assessment Principles defined in Section 74 of EMPCA.

3. The Proposal

The main characteristics of the proposal are summarised below. A detailed description of the proposal is provided in Section 2, Part B of the EER.

Activity

The proposed activity includes shallow surface excavation of 50,000 m³ of bauxite ore per year with screening of up to 40,000 m³ per year of material and crushing of 1,000 m³ per year or oversized material. A minimum of 20% of the ore is not expected to require processing (screening). No blasting is proposed. Products include bauxite ore, low-grade bauxite and clay. The quarry will operate on a campaign basis for 3 to 4 months per year. The life of the operation is anticipated to be up to 20 years.

The proposal is situated on an active private pine plantation managed by Forico Pty Ltd (refer Figure 1). The Activity Area was harvested and replanted in 2022. The proposed land use after extraction will remain softwood plantation.

There are two 'pits' proposed which are further broken down into thirteen stages of extraction (refer Figure 2 below).

Extraction of material will be by excavators in 30 m wide panels, which will be progressed in a series of 1-2 m benches to an average depth of 7 m below the existing ground surface. The existing landform will be largely retained with a slight overall lowering of the topography (i.e. the maximum extraction depth will be towards the top of the ridgeline, with shallower extraction occurring downslope).

The proposal includes a maximum disturbed area of 2 ha within the active 'stage' of extraction and a further 10 ha of land required for other aspects of the activity e.g. stormwater infrastructure (drains, sediment basins etc.), the laydown area, roadways, administration / ablution blocks, screening / crushing area, stockpiling and grading / blending areas.

Other activities undertaken as part of the activity include crushing, screening, carting of material, stockpile creation, weed management, refueling / maintenance of vehicles, plant and equipment.

Each stage will be worked from the top down and progressively rehabilitated. Upon completion of rehabilitation of each stage, it will be handed back to the land manager Forico Pty Ltd for continued use as a pine plantation.

Location and planning context

Location	Off Porters Bridge Road, Reedy Marsh, approximately 10 km north-east of Deloraine as shown in Figure 1.
Land zoning	Rural except the initial 1.4 km of the access road which is zoned agricultural.
Land tenure	Private freehold.
Mining lease	2142P/M application is currently being assessed by Mineral Resources Tasmania (MRT).
Lease area	The proposed mining lease (ML) covers approximate 149 ha.
Bond	A bond is yet to be set. MRT will determine an appropriate bond as part of their assessment of the ML application.

Activity Area

Land Use	Currently dominated by intensively managed softwood plantation managed by Forico Pty Ltd. The Activity Area is part of a larger area managed by Forico on highly modified land largely dominated by *Pinus radiata* plantations.
Topography	Project area is located at an elevation of approximately 300 m AHD and the topography is gradually sloping down to the north-east. The proposed stages are on

	slightly more elevated ground and the administrative infrastructure is proposed to be located at approximately 310 m AHD.
Geology	Jurassic dolerite (tholeiitic) with locally developed granophyre. The area is overlain by Cenozoic cover sequences of ferricrete, silicrete, laterite and derived lag deposits.
Soils	Soils consist of light red-brown clay loam and are shallow in depth. No acid-sulphate soils are mapped in the area.
Hydrology	A minor tributary of Brushy Rivulet is located within the Activity Area but not within the area of the two pits. Groundwater presence has not been conclusively confirmed but, if present, may occur on average at 6 m below ground surface.
Natural Values	The Activity Area is dominated by softwood plantation with associated road networks. Native vegetation is present largely as remnants associated with the road network. There is a 4.8 ha area of dry eucalypt woodland to the north of Pit 2. The ephemeral watercourse that passes under the access road may provide habitat for frog species including the green and gold frog.

Regional information

Climate	Rainfall is approximately 1,040 mm per year. Wind direction is predominantly north-easterly.
Surrounding land zoning, tenure and uses	Brushy Rivulet Conservation Area is located to the north of the Activity Area. To the north-east is Permanent Timber Production Zoned land. Land surrounding the Activity Area is otherwise predominately zoned for agriculture. The closest residence is located approximately 800 m south-west of the Activity Area boundary (Figure 3).
Species of conservation significance	*Eucalyptus ovata* forest and woodland (listed as a threatened vegetation community under the *Nature Conservation Act 2022* (NC Act)) and *Pimelea curviflora var. gracilis* (threatened flora species under the *Threatened Species Act (*TSP Act*) 1995*) are present along the access road. No fauna species listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the TSP Act are known from database information to occur within the study area. No threatened fauna species were identified during natural value surveys.

Proposed infrastructure

Major equipment	Conventional quarry equipment will be used for operations including three excavators, two loaders, two haul trucks, two mobile screening units, a bulldozer, a service truck and three light vehicles.
Other infrastructure	Infrastructure requirements include access to Porters Bridge Road (existing), demountable office and amenities building, all weather haul road to loading area for trucks, equipment laydown area with fuel storage, run-off and sediment management structures.

Inputs

Water	A water truck will be used for dust suppression. Water will be sourced from a TasWater fill-point at either Deloraine or Westbury. Water may also be sourced from nearby landowners subject to agreement or sediment basins if appropriate. Potable water will be trucked to the Activity Area and stored in holdings tanks and may be supplemented with rainwater from building roofs.
Energy	No permanent power supply or connection to grid electricity will be required. One generator will be used for the demountable administration buildings.

Wastes and emissions

Liquid	Acid and metalliferous drainage (AMD) potential is considered to be very low.

Atmospheric	Dust emissions may be generated from construction, extraction, processing of material, stockpiles / disturbed areas and traffic on unsealed roads within the Activity Area.
Solid	General refuse, such as lunch wrappers, cardboard, and maintenance items will be removed from the Activity Area for disposal at municipal facilities.
Controlled wastes	Sewage will be produced at the amenities building and removed for disposal at appropriate municipal facilities.
Noise	Noise may be generated from construction activities, extraction, crushing / screening of material, and vehicles moving within and on / off the Activity Area.
Greenhouse gases	Equipment and the generator are diesel powered. Transport of excavated material will generate greenhouse gases.

Construction, commissioning and operations

Proposal timetable	Once approval is obtained construction will involve minor upgrades to the access road (1-2 weeks), construction and set-up of administration buildings and laydown area (1-2 weeks) and constructing drains and sediment basins. Commissioning will be minimal and limited to the mobile screening plant, and erosion and sediment controls.
Operating hours (ongoing)	0700 to 1700 hours Monday to Friday 0800 to 1600 hours Saturday Operating on a campaign basis 3-4 months per year.

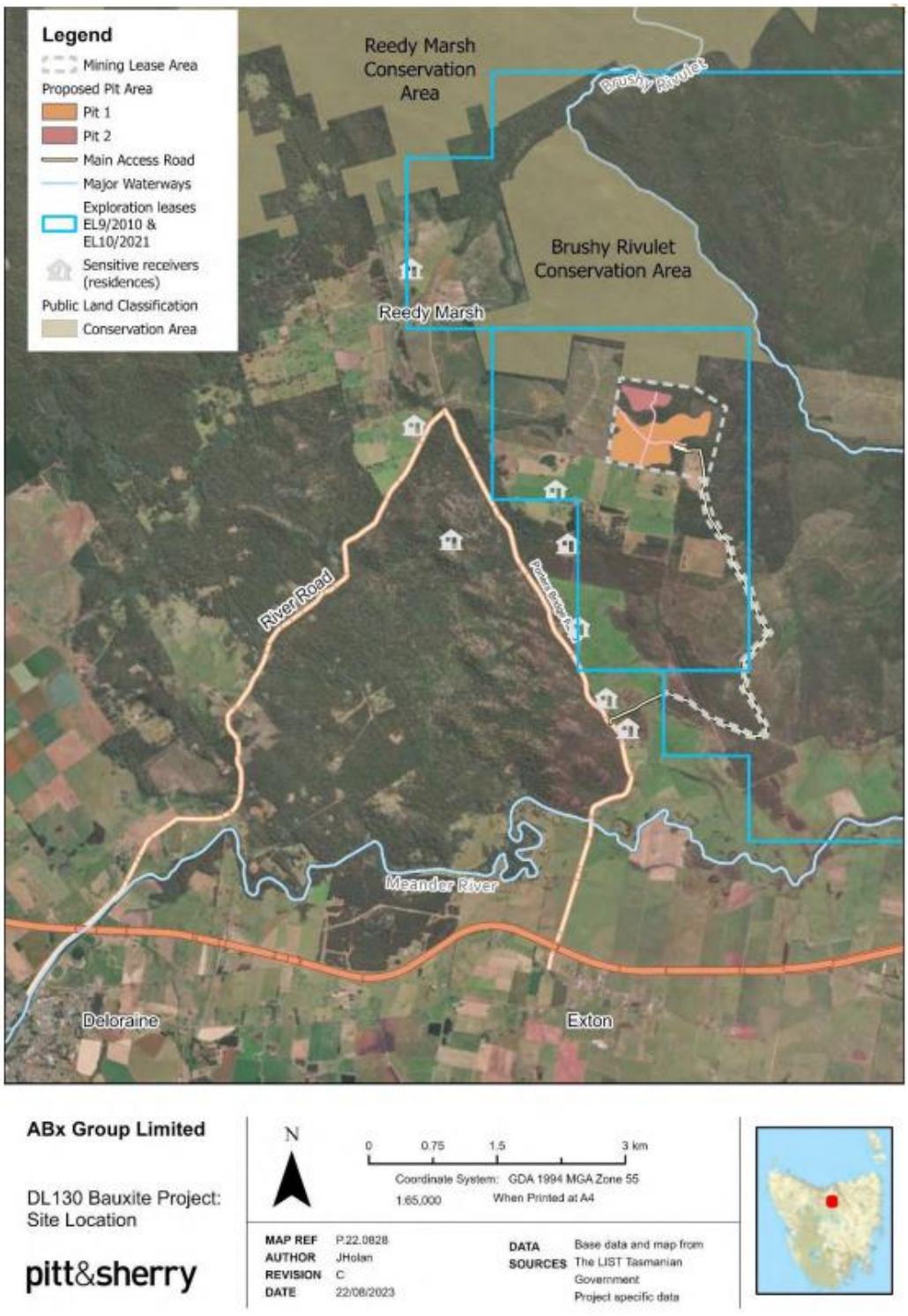

Figure 1: Proposed location (Figure 1 of the EER)

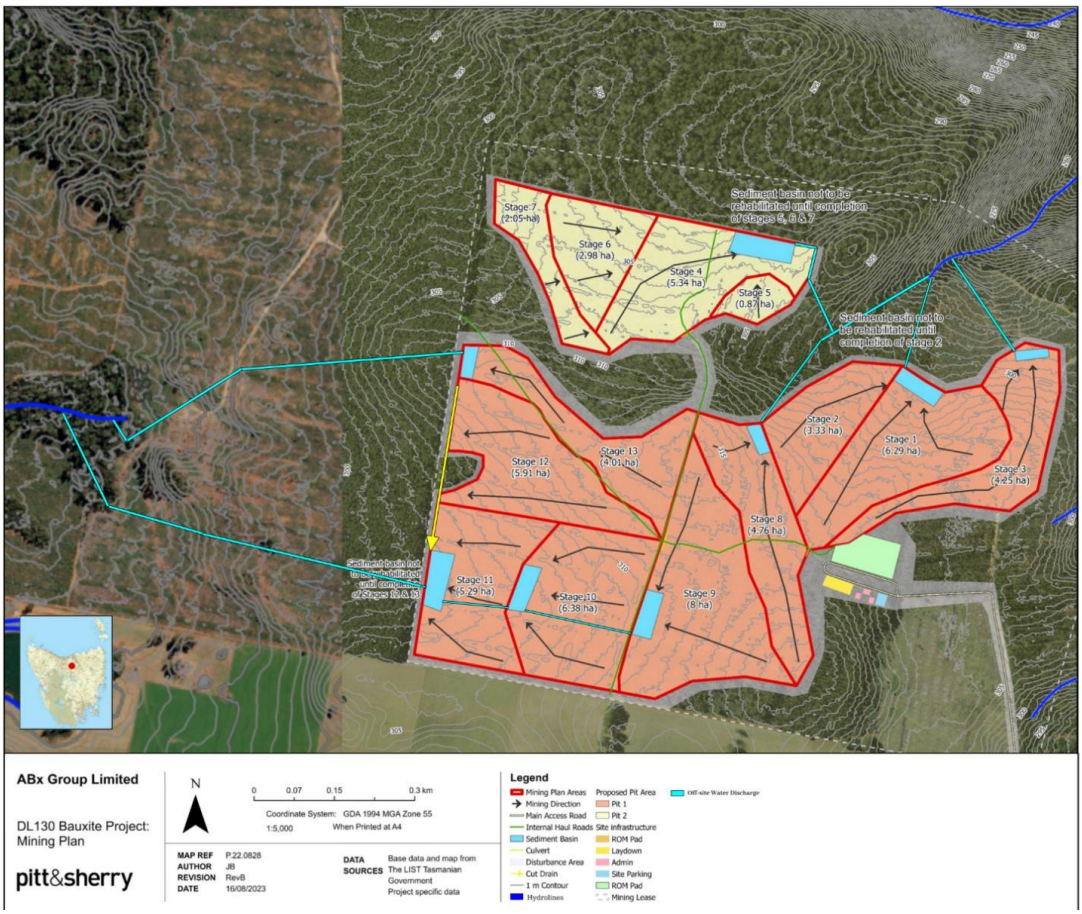

Figure 2: Mining and Stormwater Management Plan (Figure 3 of the Stormwater Management Plan)

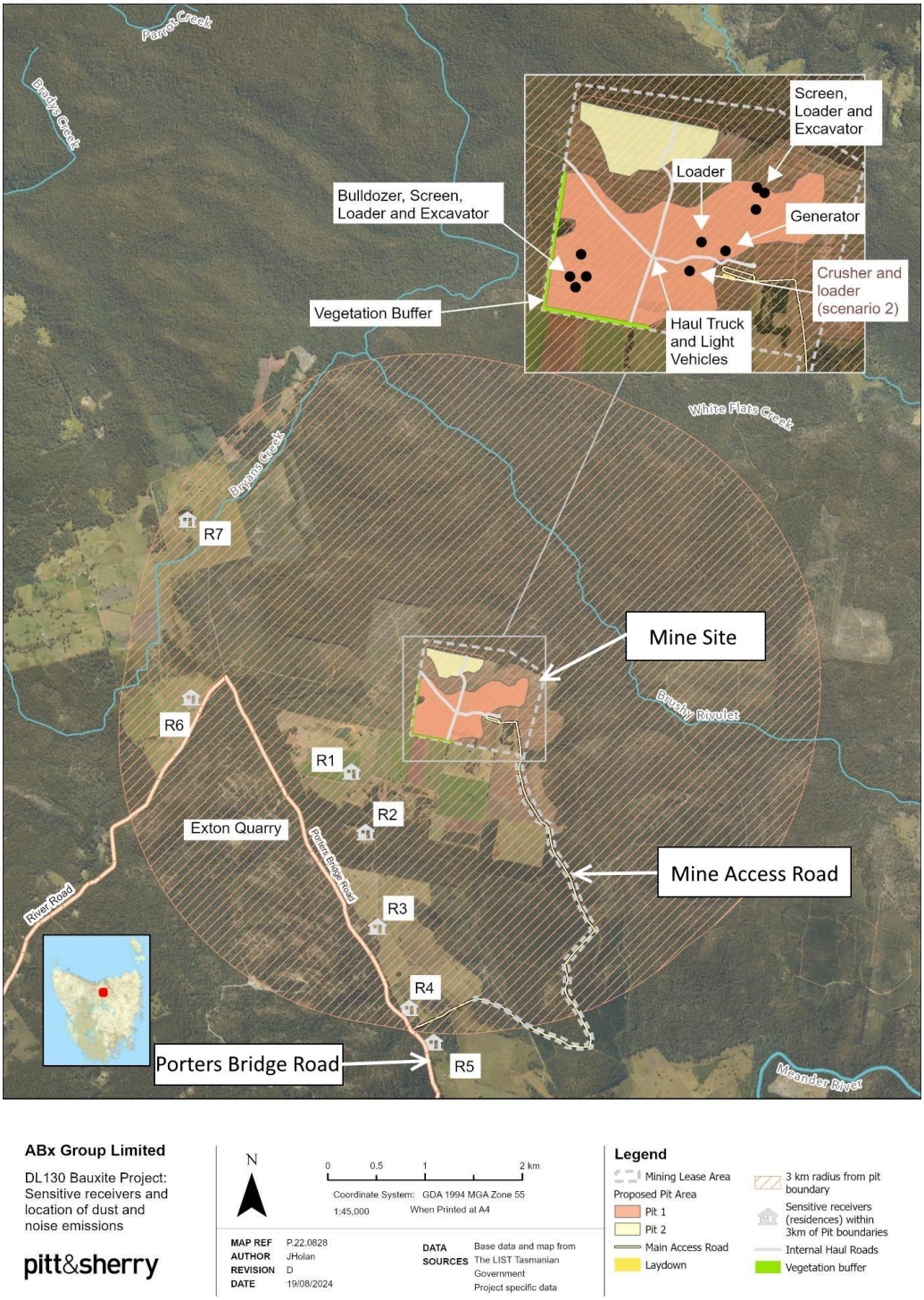

Figure 3: Locations of noise and dust producing equipment and sensitive receivers within 3 km of the pit boundaries (Figure 1 of the preliminary Dust Management Plan).

4. Project Rationale and Alternatives

According to the EER, the Reedy Marsh bauxite deposit is critical to ensure continuity of supply to market. The main product will be cement grade bauxite which, when used in cement manufacture, reduces the amount of cement needed per tonne of concrete thereby reducing overall carbon dioxide emissions.

An alternative deposit was considered at Fingal, but the landowners did not support the proposal, and the development costs were substantially higher.

The project will generate 12 operational jobs that will be sourced from Deloraine and the local surrounds. A hauling contractor will transport the product to either Bell Bay Port or the Port of Burnie.

5. Public and Agency Consultation

Eight-six (86) public submissions were received during the public consultation period. The main environmental issues raised were:

- Air quality – health impacts from dust (inhalation and ingestion)
- Water quality – contamination and sedimentation of waterways
- Natural values – roadkill, threatened flora and fauna
- Weed and disease management
- Noise emissions
- Acid and metalliferous drainage

The EER was also referred to several government agencies with an interest in the proposal. Comments were received from the following:

- Conservation Assessments Section, Natural Resources and Environment Tasmania
- Parks and Wildlife Services, Natural Resources and Environment Tasmania
- Department of Health and Human Services
- Mineral Resources Tasmania
- TasWater
- Meander Valley Council

The following individuals also provided specialist advice on the EER:

- Regulatory Officer, Environment Protection Authority
- Scientific Officer (Air), Environment Protection Authority
- Scientific Officer (Water), Environment Protection Authority

Appendix 1 of this report contains a summary of the public and government agency submissions received.

The Supplement to the EER prepared by the proponent provides a response to relevant environmental issues raised during public consultation.

6. Evaluation of Environmental Issues

The following environmental issues are considered relevant to the proposal and have been evaluated in this section:

1. Air Quality
2. Water Quality
3. Noise Emissions
4. Natural Values
5. Weed and Disease Management
6. Waste Management, Dangerous Goods and Environmentally Hazardous Substances
7. Decommissioning and Rehabilitation

General conditions

The following general conditions will be imposed on the activity:

G1 Activity Area

G2 Access to and awareness of conditions and associated documents

G3 Incident response

G4 Proposed change to activity

G5 Change of responsibility

G6 Change of ownership

G7 Complaints register

G8 Quarry Code of Practice

G9 Amendment of required plan and reports

G10 Notification prior to commencement

G11 Annual Environmental Review

6.1 Issue 1: Air Quality

6.1.1 Potential impacts

The primary air emission of concern at the quarry is dust but may also include emission of greenhouse gases from plant and equipment that is used to undertake the activity.

Various activities undertaken at the quarry have the potential to produce dust, including excavation of topsoil and product, crushing and screening, stockpiles, movement of machinery, loading and carting of product, and use of internal gravel roads by vehicles. If not managed appropriately, these activities have the potential to cause environmental nuisance beyond the boundary of the Activity Area.

The proposed quarry is located approximately 6 km north of Exton and the Bass Highway with rolling topography that generally slopes down to the southeast. The Activity Area is surrounded primarily by farmland and bushland. The bushland is comprised of mixed uses such as environmental living, conservation areas and covenants as well as public and private forestry.

There are seven sensitive receptors within 3 km of the extractive area. The nearest sensitive receptor to the extractive area is approximately 800 m to the southwest (R1 in Figure 3). There are two sensitive receptors located 120 m north and 260 m south of the intersection between Porters Bridge Road and the quarry access road (R4 and R5 in Figure 3). All other sensitive receptors are more than 1 km from the Activity Area to the northeast, west and south.

The EER states that the dominant wind direction is likely to be from the northwest and north based on data from the Launceston meteorological station. However, meteorological data from the Sheffield meteorological station and EPA's Blanket station at Deloraine both suggest prevailing winds are likely to be from the north, northwest and southeast with some component from the west. The most likely area of impact would be the receptors to the south (under northerly winds) and northwest (under south easterly winds). Frequency of winds from the northeast and east is low so it is anticipated that impacts to the west and southwest are less likely.

6.1.2 Management measures proposed in EER

According to the EER dust generated from the activity will be managed in accordance with Section 7.5 of the *Quarry Code of Practice 2017* as well as the *Environment Protection Policy (Air Quality) 2004*.

The EER states that the following mitigation measures will minimise the generation of dust and emissions during construction and operations:

- Excavation of topsoil will not be undertaken during periods of extended dry, windy weather.
- Most soils require at least 30% ground cover to prevent wind erosion. Where practical, a minimum of at least 50% ground cover will be maintained across any given stage area during mining operations. Where this is unachievable, soils will be stored in locations protected from wind and other forms of erosion and in a configuration that keeps the soil viable during storage.
- Vehicle speed limits within the Activity Area will be restricted to 40 km/h to minimise dust generation.
- Haul roads, including the main access road, stockpiles and crusher drop points will be watered whenever required to prevent dust generation by vehicles. A water cart will be kept permanently in the Activity Area during campaigns. Watering will be commenced immediately whenever dust generation is observed by the Activity Area managers.
- Water for dust suppression will also be sourced off-site at the TasWater fill-point in Deloraine or Westbury. Water may alternatively be sourced from nearby landholders if an agreement is reached. Potable water will be transported to the Activity Area by tanker and stored in holding tanks, which could be supplemented by building roof runoff collection.
- Water may also be sourced from sediment ponds for dust suppression.
- When processing oversize material, the mobile crusher and loader will be located no further south or west than the position indicated in Figure 3.

- Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a 'stage' at any one time. The 10 ha of service areas will also be managed for dust suppression using water carts during dry periods.
- If campaign breaks last more than 2 months, the excavation panels will either be rehabilitated before the end of the campaign or will be temporarily covered with excavated material to minimise dust production.
- Vehicle exhaust emissions will be minimised by ensuring that all equipment is properly maintained and operated; and
- Outside of active campaigns the Activity Area manager will monitor weather conditions and visit the Activity Area regularly to ensure any dust generated does not cause environmental nuisance. If weather conditions are likely to cause dust emissions, mitigation measures (such as watering haul roads with a water cart) will be implemented.

In response to the representations made by members of the public (detailed below), a Dust Management Plan (DMP) was requested as a supplement to the EER. The DMP provides more detail on the mitigation measures proposed in the EER and also states that:

- Trucks leaving the Activity Area will either be fitted with a tarpaulin cover or be wetted down with an overhead spray bar to be located near the ROM pad.
- Any drill rigs required will be fitted with appropriate dust suppression systems and kept in good repair at all times.
- The access road will be maintained in good condition to minimise the potential for dust emissions.
- Any rock crushing will be restricted to the location shown in Figure 2 and will have sprinklers or water sprays fitted to suppress dust emissions if required.
- The 10 ha of disturbed area for service areas also includes areas currently under rehabilitation or mined out areas waiting to be rehabilitated.
- Areas not being actively extracted will remain under Forico's control and the *Pinus radiata* planted by Forico in 2022 will continue to grow, providing an additional buffer for containing dust emissions.
- Once rehabilitation of each stage has been completed it will be returned to Forico to manage as part of their wider plantation estate.
- In addition to maintaining appropriate cover of stockpiles, sprinklers may be used if necessary to supress dust emissions.
- Existing trees in the buffer zones around the edges will be retained and fast-growing vegetation will be planted if required to provide a windbreak for minimising dust emissions.
- Nearby residents will be kept informed of proposed campaign dates and contact details for the Activity Area manager to report any issues.
- All complaints will be reported to the EPA, logged on a complaints register and investigated, documented and mitigated promptly.
- The preliminary DMP will be reviewed once a permit is granted to incorporate any additional details required in the permit conditions. The DMP will then be reviewed regularly and updated when necessary.
- Staff and contractors will be made aware of the DMP and its requirements.

6.1.3 Public and agency comment

59 representations raised concerns around dust, particularly the potential for human health impacts by inhalation and ingestion (through consuming home grown produce and drinking water from rainwater tanks containing dust from roofs etc.). Representations also raised concerns about the potential for impacts on

local waterways, native flora and fauna, livestock and contamination of honey harvested by local beekeepers.

The Department of Health's Public Health Servies (PHS) provided comment on the advertised EER. PHS noted that dust produced by the activity has the potential to be respirable and would be considered a nuisance, capable of causing non-specific airway symptoms such as coughs, mucus production, throat irritation and wheezing, if it impacted sensitive receptors.

PHS noted that while the EER had identified dust as a potential issue and proposed some mitigation strategies, the Proponent had not quantified the likelihood for the activity to cause environmental nuisance at or beyond the boundary (e.g. through modelling). PHS recommend that the Proponent be open and responsive to any dust complaints received, and to liaise with the EPA about ambient air quality monitoring at sensitive receptors.

PHS also requested further information, in the form of a Dust Management Plan, before a decision was made by the EPA Board. The purpose of the DMP was to assess whether the proposed dust mitigation measures outlined in section 3.1.3 of the EER will adequately minimise generation and migration of dust produced by the activity so as to not adversely impact on neighbouring sensitive receptors.

The draft supplementary Dust Management Plan provided by the Proponent was provided to PHS for review. They responded noting the contents of the DMP, that ongoing compliance with the DMP will be the remit of the EPA and that no further information was required.

6.1.4 Evaluation

It is understood that plantation trees will remain in situ in each stage until extraction is to occur. According to the preliminary Dust Management Plan following completion of mining in each stage it will be rehabilitated back to a condition suitable for continued forestry use and Forico will then continue to manage it as part of their wider plantation estate.

Section 2.1.4 of the EER sets out the proposed schedule for extraction, which suggests that extraction of the stages closest to the nearest sensitive receptor (i.e. stages 9, 10 & 11) will occur from around years 11 to 17. This means that as extraction stages are progressed closer to sensitive receptors vegetation will continue growing, providing additional shelter from wind and acting as dust barrier to help retain any dust emissions within the Activity Area.

The preliminary DMP indicates that a 10 m buffer will be maintained from the Activity Area boundary and that any vegetation within these buffers will be retained. It also states that additional fast-growing vegetation will be planted along the southern and western boundary of the Activity Area to help create and maintain the windbreak that acts as a dust barrier and reduces wind speeds on the Activity Area (see Figure 1 of the preliminary DMP). When the stages on the southern and western boundary are ready for extraction the vegetative buffer should be well established which will help reduce wind speeds to retain dust emissions from the Activity Area.

While the proposal includes a maximum disturbed area of 12 ha, it is important to note that active extraction is restricted to a maximum of 2 ha to be disturbed at any given time. The remaining 10 ha is comprised of service areas including access/internal roads, laydown areas, stormwater infrastructure (drains, sediment ponds etc.), the administration block, and the screening, stockpiling and grading/blending areas.

The EER indicates that rehabilitation will be undertaken progressively to ensure that the disturbed area is minimised and the 2 ha maximum disturbed area at any given time is not exceeded. This will minimise the areas from which dust emissions may arise in each stage as material is extracted.

Condition **DC1** requires any disused section of the Activity Area to be rehabilitated concurrently with extractive activities, it also specifies that the maximum disturbed area at any given time must not exceed 12 ha and that the active extraction area for must not exceed 2 ha at any given time.

The EER states that given the distances to the nearest sensitive receptors, the terrain, vegetation, scale of the activity, and the frequency and duration of the operational campaigns, effective control of dust emissions will be achievable.

While this statement is generally supported, appropriate management of dust emissions will be required to ensure that environmental nuisance is not caused at the nearest sensitive receptors. Therefore, a suite of conditions will be imposed to ensure that the mitigation measures proposed are implemented, but also to allow flexibility to ensure management measures remain effective and adaptable.

Standard condition **A1** requires that any vehicles carrying loads containing material which may blow, or spill, must be equipped with effective control measures to prevent escape of the material from vehicles when they leave the Activity Area or travel on public roads.

Condition **A2** is a standard condition requiring that dust emissions must be controlled to the extent necessary to prevent environmental nuisance beyond the boundary of the Activity Area.

Condition **A3** is a standard condition requiring dust emissions from areas of the Activity Area used by vehicles be controlled by dampening or by other effective measures. Standard condition **A4** requires that any dust produced by the operation of crushing and/or screening plant must be controlled to the extent necessary to prevent environmental nuisance using methods such as water sprays, dust extraction equipment or enclosures.

As detailed above, a preliminary Dust Management Plan (DMP) was provided as part of the Supplement to the EER.

The preliminary DMP states that dust monitoring such as use of dust deposition gauges (DDGs) is not proposed. The preliminary DMP states that due to the nature of the operation and location within a largely plantation forestry setting, the results of quantitative dust monitoring are unlikely to provide information that would be useful in the day to day or long-term management of dust.

This conclusion is not supported. The installation of DDGs, especially in the early stages of operation is likely to have several benefits, including:

- Assurance that dust emissions are being monitored to ensure that environmental nuisance is not being caused by the activity at the nearest sensitive receptors.
- Provision of background data on dust levels before the quarry is operational.
- Demonstrating compliance at the Activity Area boundary from the beginning of the operation to ensure appropriate dust management measures are in place before extraction occurs in the areas closest to the nearest sensitive receptors.
- In the event a complaint(s) is received, data can be used to determine if the activity has contributed to the dust emission or whether it may be from another source e.g. forestry or agricultural. Having background data will also assist this process.

Condition **A5** requires a revised Dust Management Plan to be submitted to the Director for approval within 30 days of the conditions taking effect. The revised DMP must also be prepared in accordance with any guidelines provided by the Director. Once approved by the Director the condition requires the Proponent to act in accordance with the DMP. The condition enables the person responsible to submit a revised DMP for approval to provide some flexibility in achieving the aims of the DMP.

Condition **A6** requires development of a Dust Monitoring Program to be submitted to the Director for approval within 30 days of the conditions taking effect. The program must also be prepared in accordance with any guidelines provided by the Director and be undertaken in accordance with a method approved by the Director. The condition specifies that background dust monitoring must be undertaken for a period of three months prior to the commencement of operations and that dust monitoring must also continue upon commencement of operations. Once approved by the Director the condition requires the Proponent to act in accordance with the program.

The Air Specialist notes that it is preferable for background monitoring to be undertaken during the summer period to represent the worst-case scenario during drier conditions. As a minimum, the program should include the use of at least two dust deposition gauges, one near the southern boundary of the main extractive area (i.e. near stages 10 and 11) and another between the access road and the residence located to the south of the access road, being the locations most likely to be impacted by nuisance dust.

In the event that dust complaints are received, updates to the Dust Management Plan or Dust Monitoring Program to include additional mitigation measures or additional monitoring may be required.

Condition **M1** requires any samples or measurements required by the permit conditions to be taken by a person with training, experience and knowledge of the appropriate procedures. The condition also requires the integrity of samples to be maintained and sample analysis to be conducted by a testing facility accredited by NATA, or another approved testing facility.

The condition also requires records of methods employed, results of sample analysis, measurements taken and records of equipment maintenance to be retained for a period of at least three years and that any testing equipment must be maintained in accordance with the manufacturer's specifications.

6.1.5 Conditions

The proponent will be required to comply with the following conditions:

DC1 Progressive rehabilitation

A1 Covering of vehicles

A2 Control of dust emissions

A3 Dust emissions from traffic areas

A4 Control of dust emissions from crushing and screening plant

A5 Dust Management Plan

A6 Dust Monitoring Program

M1 Samples and measurements for monitoring purposes

6.2 Issue 2: Water Quality

6.2.1 Potential impacts

The EER included a Stormwater Management Plan as Appendix E. A revised Stormwater Management Plan was requested as part of the Supplement to provide further details on management of stormwater.

A number of the activities have the potential to be sources of pollutants (e.g. sediments, fuel/oil, and other chemicals) that may impact surface and groundwater quality if not managed appropriately. These include crushing, screening, carting of material, stockpile creation, weed management, potential use of coagulants/flocculants on water, and refueling / maintenance of vehicles, plant and equipment.

The proposed extractive stages are located on a broad north-south ridge at an elevation of approximately 300 m above heigh datum (AHD). The Activity Area drains predominantly to the northeast via two minor tributaries (approximately 200 m from the closest stage) of the Brushy Rivulet, which then travels approximately 10 km in a southeasterly direction where it drains into the Meander River. A small portion of the Activity Area in the southwest corner drains to the west onto private land, which subsequently drains to Bryans Creek, some 2.5 km west of the Activity Area through a series of drainage lines / depressions (refer Figures 2 and 4).

As shown in Figure 2 the sediment basins associated with various stages are proposed to discharge at six locations (i.e. from sediment basins), which effectively report to three main drainage areas. The overland discharge area to the northeast of Pit 2 eventually reports to two tributaries of Brushy Rivulet and the other overland discharge areas are located along the western boundary of the Activity Area onto private land which eventually reports to Bryans Creek through a series of drainage lines / depressions.

The Stormwater Management Plan provided as a supplement to the EER states that an agreement is not currently in place with the landowner to the west to discharge onto their land and that discussions with this landowner are ongoing. As a contingency, the Stormwater Management Plan includes an option to pump water from the western sediment basins (i.e. for stages 9 to 13) to one of the other sediment basins that discharge to the northeast. This would only occur if an agreement with the landowner could not be reached, eliminating the need to discharge onto their land (refer to section 6.4 of the Stormwater Management Plan for further details of this contingency).

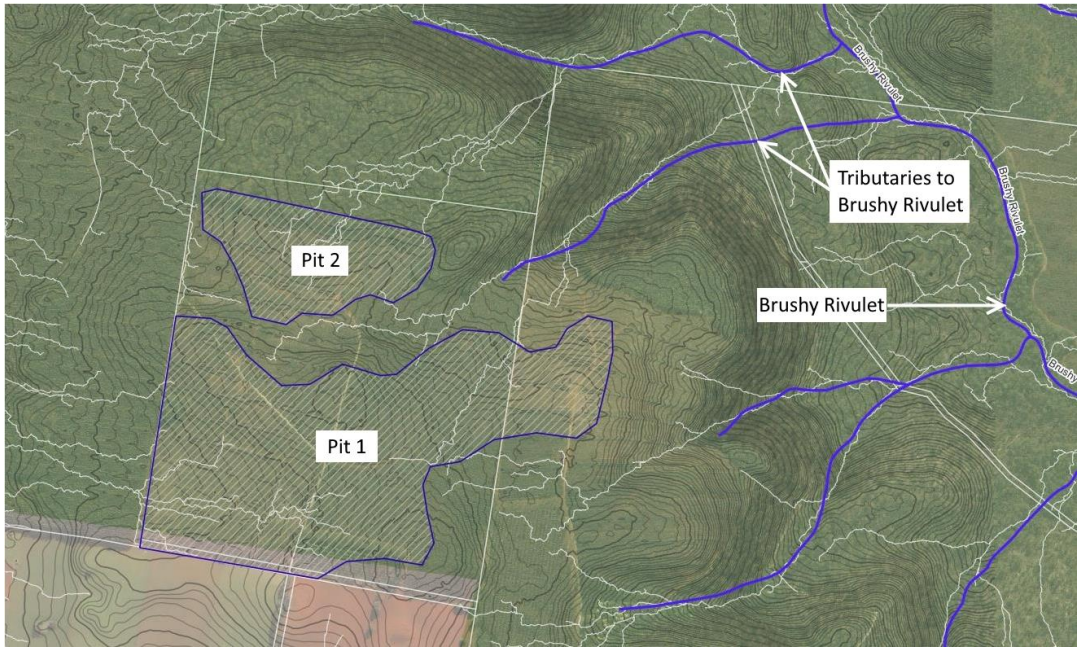

Figure 4: Proposed mining area, tributaries (blue); overland flow paths (light white) and cadastral parcels (white) (Figure 2 of the Stormwater Management Plan).

Particle size distribution and erodibility

The Stormwater Management Plan provides details on particle size distribution and soil erodibility based on site sampling. The findings indicate soils are reasonably homogenous across the Activity Area with nearly all samples being dominated by silty gravel and one sample classified as low plasticity clay (with gravel). These soil types are classified as having a low to medium erodibility potential but may create turbid runoff if disturbed due to the release of silt particles. The geology is not associated with dispersibility or erodibility.

Metal leachability tests

Section 4.2 of the Stormwater Management Plan provides leachability testing from drill samples of the ore and basement materials. The results were compared to the *Australian and New Zealand guidelines for fresh and marine water quality 2018* (ANZG) criteria for 95% species protection. While most of the metals reported leachable concentrations either below the laboratory reporting limits or the adopted criteria, there were reported concentrations at or above the 95% species protection criteria:

- One nickel and one zinc sample each reported maximum concentrations at the criteria;
- Aluminium and copper reported maximum concentrations marginally above the criteria (1.38 and 1.07 times respectively); and
- Chromium reported maximum concentrations at 8.6 times the criteria, but below the 80% species protection criteria.

The procedures used under laboratory conditions reflect worst case and that based on the proposed stormwater management infrastructure and processes, these concentrations are unlikely to occur in stormwater runoff from the Activity Area.

Acid and metalliferous drainage potential

Section 3.6.2 of the EER considers the potential for acid and metalliferous drainage (AMD) and states that AMD is typically generated by the oxidation of sulphides, particularly pyrite. High sulphur bauxites have a higher potential for producing AMD, with high sulphur bauxites defined as containing more than 0.70% sulphur.

The EER notes that assay test work undertaken on over 1400 samples from the Activity Area show that the ore is considered to be low sulphur bauxite, with an average sulphur (as sulphur trioxide SO_3) content of 0.25%.

The EER also notes that the bauxite includes neutralising elements such as calcium and magnesium and that it is expected the overall chemistry of the bauxite will be slightly alkaline and non-acid forming (NAF). This means that the geology naturally provides a buffer which would neutralise small amounts of acid if generated.

The EER states AMD from the activity is therefore not likely to pose a significant risk to surface or ground water.

Groundwater

The EER notes that the 'wet clay' samples identified during subsurface investigations have not been confirmed as representing groundwater, but that as a precautionary approach it has been assumed to represent groundwater.

The EER states that extraction depth will maintain a 1 m buffer above the assumed groundwater level to reduce the risk of intercepting groundwater. The EER notes that the bauxite is not expected to be significantly leachable as discussed above, which limits the potential for impacts on groundwater.

Nevertheless, the EER also states that in the event groundwater is intercepted, it will be captured and directed to the relevant sediment basin(s), which will be periodically tested for pH, assisting the detection of any potential risks to groundwater and informing any remedial actions that may be required, as detailed in section 3.6.3 of the EER.

Proposed stormwater management infrastructure and management processes

Based on the results of the erodibility classification and leachability testing a hydrologic and hydraulic assessment was undertaken to determine appropriate infrastructure to manage the expected stormwater flows in and around the proposed activity (refer to section 6 of the Stormwater management Plan).

The infrastructure proposed includes eight sediment basins designed in accordance with the methodology prescribed by the International Erosion Control Association's *Best Practice Erosion and Sediment Control 2018* documents (IECA) (refer to Figure 2 for locations). Section 6.3 of the Stormwater Management Plan provides calculations for the minimum size requirement for each basin. The inlet to each basin will be rock lined to prevent erosion with discharge by a stabilised spillway with features to reduce the risk of erosion.

In order to maintain sufficient capacity in the sediment basins, operational procedures outlined in the EER include dewatering of the sediment basins before any storm event likely to produce runoff. The dewatering system proposed will be either by pump, siphon or floating decant. The EER also states that water may be retained between storm events for use in dust suppression.

The Stormwater Management Plan states that extraction will commence on the upper slope of each stage, progressing downslope towards the sediment basin which will allow stabilisation and rehabilitation of the upper slopes to commence once extraction has concluded in those areas. This will minimise the amount of sediment laden runoff reporting to the sediment basin and minimise the risk of erosion.

Should monitoring (visual or sampling) identify high turbidity, section 8 of the SMP sets out contingency measures that may be used including installing debris screens and riser outlet pipes and / or using chemical additives such as coagulants and/or flocculants.

Operational and environmental monitoring

Section 9.2 of the Stormwater Management Plan details the proposed operational and environmental monitoring to be undertaken. Prior to controlled discharges (by pump) of water from a sediment basin, water quality will be sampled to determine compliance with the following:

- Post-storm de-watering – 90th percentile suspended solids (TSS) concentration not exceeding 50 mg/L (as per IECA); and
- pH in the range of 6.5 to 7.5 (as per the ANZG as it is more stringent that the IECA criteria).

The Stormwater Management Plan states that whenever possible, water samples collected from the sediment basin will be tested in a laboratory before discharge to ensure that the suspended solid content is below the recommended criteria. It also notes that sufficient sampling will be conducted to enable a site-specific calibration between suspended solids concentrations (mg/L) and NTU turbidity readings. This will allow utilisation of turbidity meters to determine when water quality is likely to have reached the equivalent of 50 mg/L TSS.

Should sampling show the specified water quality objective criteria are not being met, appropriate chemical treatment will likely be required, as detailed in section 8 of the Stormwater Management Plan.

In addition to the operational monitoring of the sediment basins detailed above, the Stormwater Management Plan also proposes to undertake environmental monitoring when sediment basins are actively discharging (refer to section 9.2.2 of the Stormwater Management Plan). The purpose of this monitoring is to detect any potential impacts to the identified waterways in the event of an uncontrolled discharge:

- Sampling of stormwater will be conducted as early as possible once discharge occurs from a sediment basin.
- Sampling will be by grab sampling of the discharge water, as close as possible to the basin(s) discharge point.
- All discharging basins will be sampled concurrently, if more than one basin is discharging.
- Water quality parameters including pH, dissolved oxygen, oxidation reduction potential (ORP), colour, conductivity and temperature will be recorded for each sample collected.

- Samples will be sent to a National Association of Testing Authorities (NATA) accredited laboratory and will be analysed for eight heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, zinc, mercury) and aluminium.
- Analytical results will be compared to the ANZG 95% species protection criteria and ANZECC criteria, as detailed in Table 4 of the Stormwater Management Plan.
- If the specified criteria are exceeded, subsequent discharges will also include sampling at:
  - the most downstream point of the tributary into which the stormwater is being discharged; and
  - Brushy Rivulet, upstream and downstream of the tributary junction point.
- If stormwater discharge concentrations exceed the upstream concentrations in Brushy Rivulet, an assessment will be completed to determine whether modification of the stormwater management measures are required to improve stormwater discharge quality.

6.2.2 Management measures proposed in EER

According to the EER the hydrologic and hydraulic assessment adopts a conservative approach in estimating the location and size of each sediment basin and the cut-off drains by treating each stage separately. Section 3.2.3 of the EER notes that the characteristics of these sediment basins will ensure that best practice is used to minimise any potential impacts to the receiving environments, including:

- Designing basins using the methodology prescribed in IECA;
- Development of type D basins, due to the Activity Area characteristics and multiple inflow locations. Preliminary estimates of the sizes of the sediment basins indicates that it is feasible to construct and maintain them throughout the life of the activity; and
- Quarrying activity within each stage will start on the upper slope, progressing towards the sediment basin at the lowest elevation of each stage. Rehabilitation of the disturbed land will occur simultaneously, commencing on the upper slopes, then down towards the sediment basins, as shown in Figure 2.

The EER notes that drainage and erosion control from screening and crushing activities will be managed in accordance with Section 7.9 of the *Quarry Code of Practice 2017*.

According to the EER sediment and erosion control management measures will include:

- Placement of silt fences at the base of each cleared area with runoff conveyed to the sediment basins via cut-off drains / bunds.
- Construction of cut off drains between the upstream undisturbed areas and the excavated areas to enable clean stormwater to be diverted from disturbed areas.
- Construction of check dams at the bottom of cut off drains to limit potential for erosion.
- The use of sediment basins to capture and treat sediment laden stormwater from within extraction areas.
- Protection of stockpiles from erosion, including establishing vegetative cover and installation of temporary silt fences at the downstream face to prevent erosion of material. In addition, minor contour banks or cut-off drains will be placed upstream to prevent runoff eroding the base of stockpiles.
- Maintaining and adapting (if necessary) the erosion and sediment control measures as excavation of each pit progresses.
- Progressive rehabilitation will be carried out concurrently with extraction in each stage, with a maximum of 2 ha of operational area disturbed within a pit at any one time.
- Where breaks between campaigns will last more than 1-2 months, the excavation panels will either be rehabilitated before the end of the campaign or will be covered with excavated material to minimise runoff.

- Runoff from any storage zones will be captured and treated by a sediment basin during operations and between campaigns.
- Scouring at the inlet to each sediment basin will be prevented by rock lining the base of the basin at the inlet location.
- Extraction depth will maintain a 1 m buffer above the assumed groundwater level and a geologist will be at the Activity Area to observe excavation within 1 m of the assumed groundwater depths to identify signs of groundwater and minimise the likelihood of intercepting groundwater.
- If groundwater is intercepted, it will be channelled along drainage lines to a sediment basin.
- Monitoring of sediment basins will be carried out on a routine basis to monitor pH, ORP, EC, DO, colour, and temperature.
- If low pH values are recorded regularly, treatment of sediment basins will be required (e.g. adding lime).

In addition to the commitments made in the EER, the revised Stormwater Management Plan provided as a Supplement to the EER also includes the following additional sediment and erosion control operations:

- Marking out of the initial excavation areas and collecting the topsoil by loader and excavator.
- Installation of silt fences at the base of each cleared area with runoff conveyed to the sediment basins by cut-off drains.
- Construction of cut-off drains between the upstream undisturbed areas and the excavated areas so that the 'clean stormwater' is diverted from the extraction area.
- The check-dams will be aligned 'tip-to-toe' and dished in the middle.
- Maintain and adapt remediation measures for erosion and sediment control as excavation progresses.
- Include storage zones in the sediment basins, which collect, and hold settled sediment between periods of maintenance (desilting).
- Rock lining the bottom of the inlets to the basins to prevent scouring.
- Maintain the minimum storage zone volume recommended for a Type D basin, being 50% of the settling volume. Lesser or greater volumes will correspondingly increase or decrease the frequency of de-silting required to maintain the required volume.

Section 9.1 of the Stormwater Management Plan also sets out the proposed inspection and maintenance requirements which are designed to keep stormwater management infrastructure working effectively.

Section 9.2 of the Stormwater Management Plan details the proposed operational and environmental monitoring to be undertaken. The SMP includes additional analysis of samples for eight heavy metals and aluminum.

The EER also states that an AMD Contingency Plan will be developed to ensure appropriate procedures have been developed and can be implemented effectively in the unlikely event that AMD is suspected or confirmed.

6.2.3 Public and agency comment

53 public representations were received in relation to the potential for negative impacts on water quality within Brushy Rivulet and the Meander River from stormwater runoff generated by the activity, including contamination and sedimentation. Three representations also raised concerns in relation to the potential for impacts to groundwater from AMD that may be generated by the activity.

6.2.4 Evaluation

The conclusions made in the EER and Stormwater Management Plan relating to erodibility, leachability, acid mine drainage and groundwater are noted and supported. In addition, the proposed stormwater infrastructure, including the management processes and contingency measures outlined are considered appropriate for the type and scale of extraction proposed.

Based on the information provided, uncontrolled discharge of stormwater is not anticipated to occur frequently and usually only during significant and / or prolonged storm events. During these storm events there will be significant dilution through runoff from the surrounding areas, and also turbidity inputs from surrounding forestry and agricultural areas reporting to Brushy Rivulet and the Meander River.

It is noted that the revised Stormwater Management Plan has incorrectly applied the ANZG 2018 in applying a default guideline value (DGV) for total chromium of 4.3 µg/L, by combining the chromium III (Cr (III)) and chromium VI (Cr (VI)) DGVs. The ANZG freshwater DVG for Cr (VI) is set as 1 µg/L, which means the highest reported concentration exceeds the Cr (VI) DVG by 37 times.

The Water Specialist made the following points in relation to the potential risks from chromium to receiving waters:

- The activity is located a significant distance from any identifiable waterway. While in wet weather, water may pool, there is no evidence of direct overland flow from the Activity Area to receiving waters. The nearby creeks are groundwater fed.
- The testing undertaken was under controlled conditions. In reality, chromium will tend to bind to entrained solids and not be bioavailable.
- The DVG is the 95%ile confidence value for dissolved chromium and 10 samples from across the site were analysed, including half from basement material, which adds to the conservative nature of the assessment.
- The results of analysis are considered indicative of the natural geology, there are no chemical processes associated with the proposal which would concentrate chromium.
- Chromium III is known to be less toxic than Cr (VI) and is less likely to be bioavailable due to its low solubility. Notwithstanding, as there is not a suitable toxicant guideline value for Chromium III, the value for Cr (VI) of 1 ug/L has been used for reference, for analysis of risk in this assessment.
- Whilst a dilution factor of 37 may appear significant, stormwater will only discharge from the Activity Area in an uncontrolled manner during significant storm events. There is ample distance for removal of contaminants through binding to particulate and sediment settling prior to discharging to receiving waters. There is also likely to be significant initial dilution prior to discharge from sediment basins during significant storm events.

The Water Specialist concluded that based on the information provided and the points above, there is minimal risk to receiving waters from any discharge of stormwater subject to application of the proposed stormwater management as detailed in the Stormwater Management Plan.

As mentioned above, the proposed method of discharge is by controlled pumping to overland flow within vegetated areas that have a minimum distance of 200 m between the closest discharge point and the mapped tributaries. This allows for infiltration to ground and under normal discharge conditions (via the pumped dewatering system) it is not anticipated that significant runoff would directly reach these tributaries.

Nevertheless, the Proponent does have an obligation to ensure that environmental harm to the surrounding environment is minimised and will be required to monitor when discharges occur, whether that be before dewatering a sediment basin, during uncontrolled discharges during significant storm events, or at any other time discharge occurs.

The proposed installation and maintenance of perimeter cut off drains to prevent clean stormwater from entering the extractive areas is supported. To reflect these commitments, standard condition **SW1** requires construction of perimeter cut off drains / bunds and any other stormwater management infrastructure required (such as sediment ponds) to ensure stormwater is managed appropriately.

SW2 is a standard condition requiring all reasonable measures to be implemented to ensure solids entrained in stormwater are retained within the Activity Area, and that any polluted stormwater discharged from the Activity Area is first collected and treated to the extent necessary to prevent environmental harm or nuisance. It also requires that any discharge does not degrade the visual quality of any receiving waters.

While the resource is expected to have a low likelihood of AMD generation based on low sulphur content, the EER proposes to include monitoring of pH in the sediment basin monitoring program (as outlined in the Stormwater Management Plan). Low pH results may be indicative of AMD forming material and would require further investigation. Although the EER commits to the development of an AMD Contingency Plan, the risk of AMD formation is low and the relatively simple extractive method means that standard measures to manage pH would be applied to mitigate any environmental impacts, such as adding lime to the sediment basins. It is considered that any AMD contingency measures could be incorporated into a revised Stormwater Management Plan if required.

Condition **SW3** requires that the activity be undertaken in accordance with the approved Stormwater Management Plan. This includes design and maintenance of proposed stormwater infrastructure, operational and environmental monitoring, and implementation of any contingency measures, if required based on monitoring results. **SW3 (3)** requires the Plan to be reviewed every five years, and when required by the Director, to ensure the plan remains contemporary and effective.

The Stormwater Management Plan has proposed a total suspended solids limit not exceeding 50 mg/L and has committed to undertaking sufficient sampling to enable a site-specific calibration between total suspended solids (TSS) and NTU turbidity readings to enable field analysis. It is considered appropriate to include a 60 maximum NTU limit based on the recommendations in IECA. This will allow for quick field-based assessment of turbidity in real time prior to a correlation being made between TSS and NTU turbidity readings. TSS can only be determined by laboratory analysis and thus there is likely to be a significant delay between the sample collection and obtaining results, which is not useful for managing stormwater in real time.

Condition **SW4** requires that when outflow from any sediment basin is visibly turbid a turbidity measurement must be undertaken and that if turbidity exceeds 60 NTU an investigation into the possible causes of the exceedance must be conducted and a report provided to the Director.

When sufficient data to make a correlation between TSS and NTU turbidity readings has been collected, the condition enables a case to be put to the Director to consider amendment of this limit based on site-specific conditions.

Condition **M1** described under Key Issue 1: Air Quality is also relevant to water quality.

Based on the information provided in the EER and EER Supplement (including the Stormwater Management Plan) the likelihood of encountering groundwater during operations is low due to the shallow depth of the extractive pits. The risk of impacts to groundwater through ingress of contaminated surface water can be adequately managed through surface water management as described in the EER and EER Supplement. No specific groundwater conditions are therefore imposed.

6.2.5 Conditions

The proponent will be required to comply with the following conditions:

SW1 Perimeter drains or bunds

SW2 Stormwater

SW3 Stormwater Management Plan

SW4 Investigation trigger level

6.3 Issue 3: Noise Emissions

6.3.1 Potential impacts

According to the EER the surrounding area is comprised mostly of farmland and bushland with the Bass Highway located approximately 6 km to the south. The EER also notes that the Exton Quarry and Porters Bridge Road Quarry are located approximately 1.9 km and 2.5 km southwest of the activity respectively. A noise impact assessment was prepared for the proposal and is contained in Appendix F of the EER.

There are seven sensitive receptors within 3 km of the extractive area. The nearest sensitive receptor is a rural residence located approximately 800 m to the southwest (R1 in Figure 3). There are also two sensitive receptors located 120 m north and 260 m south of the intersection between Porters Bridge Road and the quarry access road (R4 and R5 in Figure 3). All other sensitive receptors are more than 1 km from the Activity Area to the northwest, west and south.

The EER states that the following equipment will produce noise emissions:

- a bulldozer
- three excavators
- two loaders
- a mobile crusher
- two mobile screens
- a generator service truck
- two haul trucks
- three light vehicles

The following activities will occur as part of the proposal and will generate noise emissions:

- clearing of topsoil using a bulldozer for each extractive stage;
- extraction of resource (up to 50,000 m^3 per year) by excavators;
- carting material from each stage to either the processing area (if processing is required) or directly offsite using the internal haul / access roads;
- screening material (up to 40,000 m^3 per year if required);
- loading material into trucks (if processing was required) for transport to external stakeholders;
- truck movements and other use of ancillary equipment associated with quarry operations; and
- crushing any oversized material (approximately 1,000 m^3 per year if required).

The quarry will operate on a campaign basis three to four months each year with approximately 78 truck movements occurring each day during a campaign. The EER states that the proposed hours of operation are 0700 to 1700 hours on weekdays and 0800 to 1600 hours on Saturdays.

Noise modelling was undertaken using SoundPLAN modelling software with sound power levels based on noise measurements of equivalent equipment at various Tasmanian industrial and quarrying sites, in the absence of site-specific equipment. Two scenarios were modelled with the results presented in Table 1.

- Normal operations (Scenario 1): including material extraction with an excavator, mobile screen, loader and bulldozer located in the southwestern corner of Stage 2, another excavator, mobile screen and loader located in the northern area of Stage 2 and a loader and dispatch trucks and generator located at the ROM pad.
- Mobile crusher (Scenario 2): including crushing of oversized material at the end of each campaign, with only a mobile crusher, excavator, loader and dispatch trucks, located approximately 270 metres west of the access road (as shown in Figure 3).

Location	Distance from Site Boundary – m	Scenario 1 – Normal Operations - dB(A)	Scenario 2 – Mobile Crusher – dB(A)
R1 - 620 Porters Rd	780	43.7	44.8
R2 - 550 Porters Rd	1200	40.4	40.5
R3 - 420 Porters Rd	2110	36.0	36.1
R4 - 340 Porters Rd	2895	39.0	33.2
R5 - 304 Porters Rd	3170	35.3	32.6
R6 - 875 River Road	2275	34.8	34.0
R7 - 114 Kellys Rd	2700	32.8	32.5

Table 1: SoundPLAN results (Table 2 of the Noise Assessment, Appendix F of the EER).

The two scenarios will not operate concurrently and the mobile crusher will only be operated once extractive activities have concluded.

Predicted noise emissions from the activity at sensitive receptors were determined to be just under the 45 dB(A) daytime noise limit specified in the Quarry Code of Practice. The EER also noted that worst case (conservative) weather conditions were used in the modelling and that penalties were included for low frequency and tonality, thus making the predictions conservative.

The EER states that traffic impacts (transport of the product from the Activity Area and light vehicle movements) were included in the modelling.

The EER concludes that the noise emissions from the proposed activity meet the Quarry Code of Practice daytime noise limits and are consistent with the *Environment Protection Policy (Noise) 2009* and not anticipated to result in environmental nuisance at sensitive receptors.

6.3.2 Management measures proposed in EER

The EER notes no specific noise mitigation measures are required, but proposes the following measures as good practice:

- Maintaining plant and equipment in good order;
- Consideration of noise emissions when selecting plant and equipment;
- Implementing a 40 km/hr speed limit within the Activity Area;
- Use of broad band styler reversing beepers within the Activity Area;
- Minimising drop heights and scraping of loader buckets on the ground;
- The mobile crusher should not be located any further west or southwest than the position indicated in Figure 3 of the EER; and
- No crushing will occur outside of the proposed hours of operation.

6.3.3 Public and agency comment

34 representations raised concern regarding the noise impacts from the proposed quarry and quarry traffic on residences within the vicinity of the proposal and to the community of Reedy Marsh.

6.3.4 Evaluation

The operational hours proposed are in keeping with the acceptable standard outlined in the Quarry Code of Practice and condition **N1** is imposed to ensure these operational hours are adhered to. The results of the noise impact assessment presented in the EER suggest that noise emissions should be below the 45

dB(A) daytime noise limit specified in the Quarry Code of Practice. Condition **N2** sets the noise emission limits that are applied to the activity, consistent with the Quarry Code of Practice.

Should any complaints be received, condition **N3** requires the Director to be notified within 24 hours. Although modelling suggests noise impacts are unlikely, the level of public concern regarding noise is high and it is prudent to impose conditions requiring additional noise surveys if required. Condition **N4** requires a noise survey to be undertaken if any process or equipment changes at the quarry which could substantially alter the character or increase the volume of noise emissions from the Activity Area. **N4 (1.2)** specifies that a noise survey must be completed where the Director is of the opinion that a noise survey is required (for example if complaints suggest further investigations are warranted).

Condition **N5** sets the minimum requirements for developing a noise survey method, which must be approved by the Director, and requires a noise survey report to be submitted to the Director once the survey has been completed.

6.3.5 Conditions

The proponent will be required to comply with the following conditions:

N1 Operating hours

N2 Noise emission limits

N3 Noise complaints

N4 Noise survey requirements

N5 Noise Survey Method and Reporting

6.4 Issue 4: Natural Values

6.4.1 Potential impacts

Activities associated with operation of a quarry have the potential to disturb, injure or kill threatened fauna or flora species and vegetation communities if not managed appropriately.

The EER notes that the Activity Area is largely dominated by softwood plantation that was harvested and replanted in 2022, with native vegetation present mostly as remnants associated with the road access corridor and 4.8 ha of dry eucalypt woodland (DOB) occurring on the northern boundary (refer Figure 5). The EER states that the access road corridor does not require widening and will only require periodic maintenance (pruning) to maintain the existing access route for heavy vehicles.

The Natural Values Assessment (NVA – Appendix A of the EER) indicates that there is an area of *Eucalyptus ovata* forest and woodland (DOV), listed as threatened under the *Nature Conservation Act 2002* (NC Act) located at the access road junction with Porters Bridge Road. The NVA states that this community can equate to Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*E. ovata / E. brookeriana*) listed as a threatened ecological community (critically endangered) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The EER states that the DOV community will not be disturbed, except for light pruning to improve sight distances at the access road junction with Porters Bridge Road. The EER also states that the DOB community located along the northern boundary of the activity area will not be disturbed and this is reflected in the staging plan (refer Figure 2).

The NVA identified three slender curved riceflower plants (*Pimelea curviflora* var. *curviflora*), listed under the *Threatened Species Protection Act 1995* (TSP Act), within a disturbed margin of the access road corridor (see Figure 10b of the NVA). The EER states that as these plants were identified on the road margin, they can be easily avoided and commits to a barrier / fence to be installed to prevent accidental disturbance. The EER goes on to state that prior to any access road upgrades, which are anticipated to be minimal, a preclearance survey for this species will be undertaken to confirm no other individuals are present.

The NVA notes that the activity area supports, to some degree, potential habitat for a number of threatened fauna species including *Sarcophilus harrisii* (Tasmanian devil), *Dasyurus maculatus subsp. maculatus* (spotted-tailed quoll), *Dasyurus viverrinus* (eastern quoll), *Perameles gunnii* (eastern barred bandicoot), *Aquila audax* subsp. *fleayi* (Tasmanian wedge-tailed eagle), *Haliaeetus leucogaster* (white-bellied sea-eagle), *Lathamus discolor* (swift parrot), *Tyto novaehollandiae* (Tasmanian masked owl), and *Litoria raniformis* (green and gold frog).

No sightings or evidence (e.g. dens) of the above-mentioned species were identified during field surveys.

Scattered stringybark trees (*Eucalyptus obliqua*) within the DOB community may be suitable as nesting habitat for the swift parrot and Tasmanian masked owl. The DOV community identified near the access road junction was also considered to be suitable foraging habitat for the swift parrot.

The NVA considered that the activity area has limited potential to support den sites for the marsupial carnivores and eastern barred bandicoot, but that there is potential for opportunistic foraging to occur.

While four recorded wedge-tailed eagle nests are located in the vicinity, only one (NRD #193) is located within 1000 m of the activity area, 540 m to the southwest of the access road intersection with Porters Bridge Road (refer Figure 6). The NVA notes that while modelling shows the first 400-500 m of the access road could be visible from the nest, the modelling does not consider vegetation, which would effectively obscure the access road from the nest.

The NVA also notes that the area generally only has marginal nesting habitat for white-bellied sea eagles due to lack of suitable trees and significant waterbodies.

The NVA found that there was potential habitat for the green and gold frog within the activity area where an ephemeral watercourse runs under the access road approximately 750 m from the junction with Porters Bridge Road.

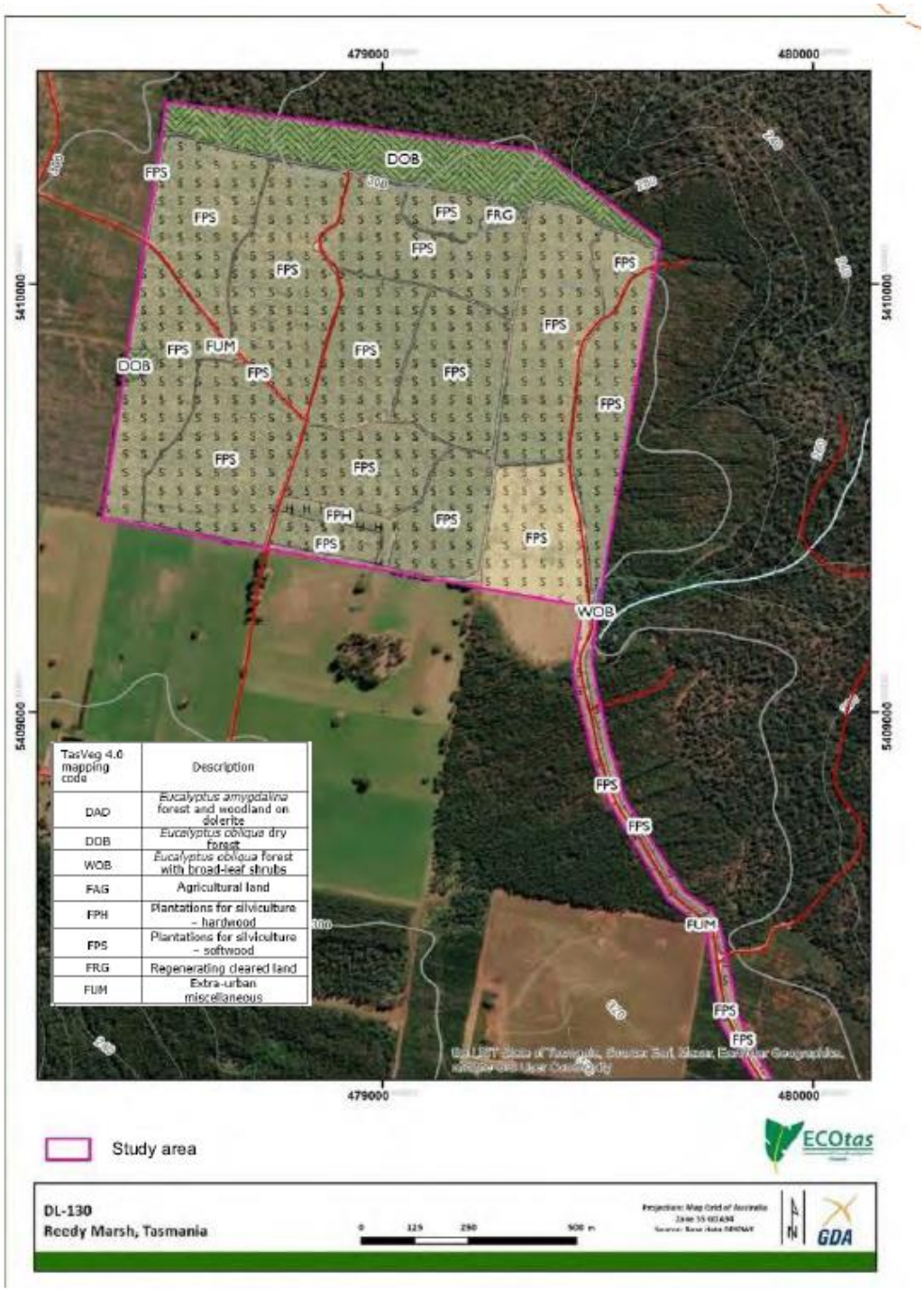

Figure 5: Vegetation communities (Figure 9 of the EER).

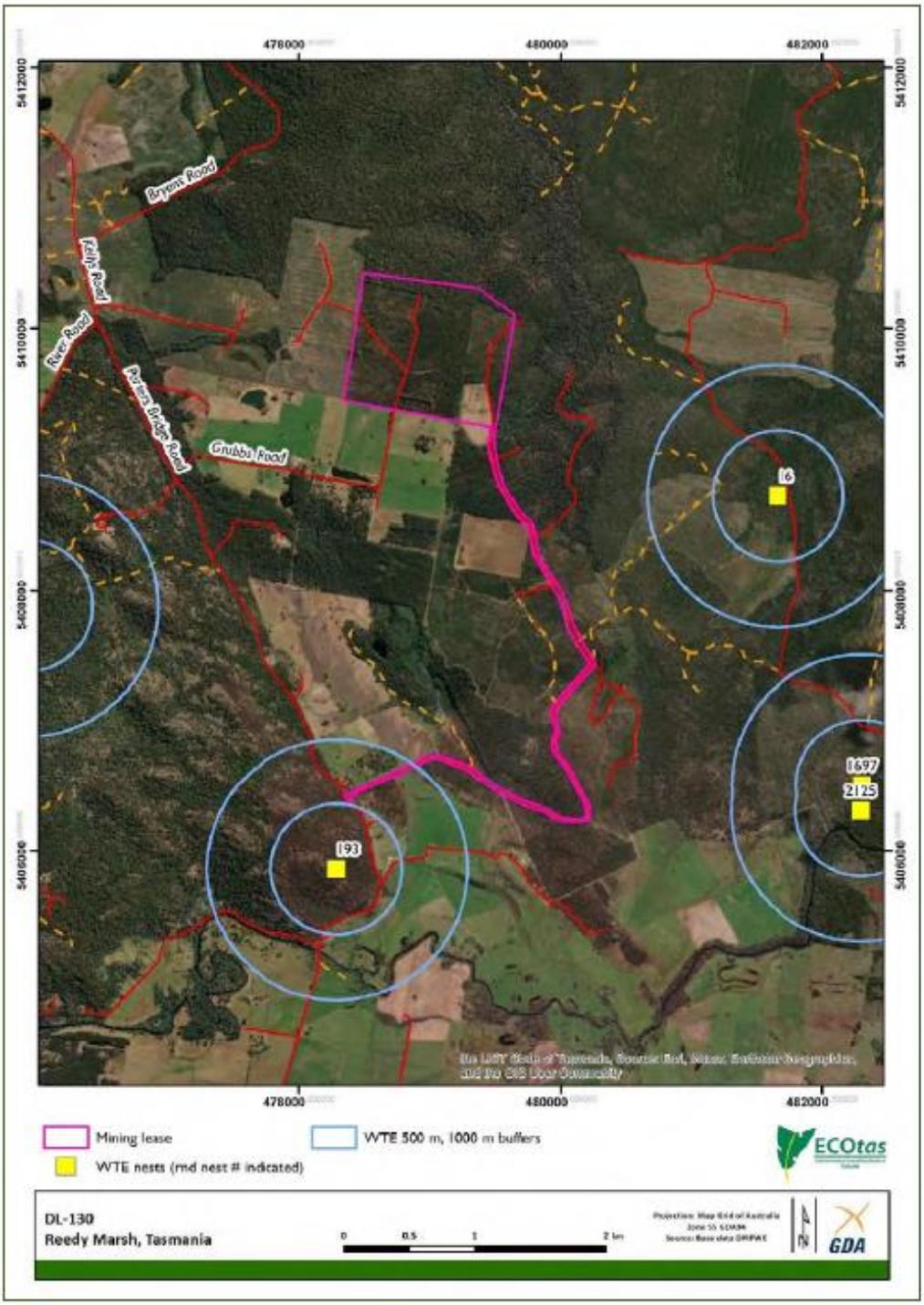

Figure 12. Known wedge-tailed eagle nests relative to the study area (500 m and 1,000 m buffers surrounding known nests indicated)

Figure 6: Known Wedge-tailed Eagle nests (Figure 12 of Appendix A to the EER).

6.4.2 Management measures proposed in EER

The EER states that to minimise potential impacts on the DOV community, weeds will be prevented from spreading into the community, a barrier/fence will be installed to prevent accidental disturbance, and the current drainage regime will be maintained or improved where required.

The EER states that prior to any access road upgrades, which are anticipated to be minimal, a preclearance survey for the species will be undertaken to confirm no other slender curved riceflower plants individuals are present.

According to the EER preclearance surveys for Tasmanian devil and spotted-tailed quoll dens will be undertaken. The EER also notes that if any potential den sites for the Tasmanian devil are recorded in the activity area and exclusion zones cannot be established, the dens will be monitored and managed in accordance with the Tasmanian Devil Guidelines with any dens that cannot be avoided requiring a permit to take under the *Nature Conservation Act, 2002*.

Roadkill mitigation measures will be implemented in accordance with the Tasmanian Devil Guidelines, including:

- Placing speed limits on the access road between dusk and dawn;
- Cartage will only occur during daylight hours;
- Installing advisory signage; and
- Providing education and awareness training for drivers.

The EER notes that as the current nest survey will likely be older than the two years prescribed by the *Guidelines for Natural Values Surveys – Terrestrial Development Proposals 2015* when development occurs, a new nest survey will be required within the modelled potential habitat. The EER also notes that ground surveys should be practical given the relatively small areas of potential nesting habitat mapped and easy to traverse terrain.

The EER states that the DOV and DOB vegetation communities will not be disturbed as part of the proposal and therefore potential impacts to the swift parrot and Tasmanian masked owl can be avoided.

The EER includes the following measures to protect nearby waterways and potential green and gold frog habitat:

- Runoff will be managed, contained and treated as detailed in the revised Stormwater Management Plan provided as a supplement to the EER.
- The ephemeral stream on the access road will be reassessed by an ecologist at the time of development as neighbouring activities have been observed during the assessment period to indicate that the waterways may no longer be potential habitat for the species; and
- If the ephemeral stream is still deemed to be potential habitat, and the road becomes degraded through the course of a campaign, drainage measures such as silt fences will be installed to ensure water quality is not adversely impacted.

6.4.3 Public and agency comment

60 of the representations expressed concerns around the potential impacts on vegetation communities, flora and fauna species from clearing of vegetation.

37 of the representations expressed concerns about potential impacts on the Brushy Rivulet Conservation Area located north of and adjacent to the proposal.

27 of the representations expressed concerns in relation to the potential for the proposal to impact on wildlife from increased traffic (i.e. roadkill).

25 Representations raised concerns regarding the proposed use of Rural zoned land for quarrying purposes, with this land being classed as Prime Agricultural land.

The Conservation Assessment Section (CAS) of NRE Tasmania supported the findings of the Natural Values Assessment and provided the following specific comments relevant to the proposal:

- Given the small amount of vegetation likely to be cleared for the access road, there is a very low risk of any threatened flora being within the road detour area and a survey of the proposed road detour is not necessary.
- A survey for new eagle nests within a 1 km line of sight from the development footprint is supported. Searches for the presence of nests should be undertaken outside of the breeding season management constraint period (July to January, inclusive).

6.4.4 Evaluation

The recommendation that the areas identified adjacent to the access road corridor as comprising *Eucalyptus ovata* forest and woodland (DOV) be excluded from disturbance and managed by way of instituting a barrier fence or similar is supported.

Condition **FF1** requires that the interface between the activity area and the DOV community be delineated with a fence or similar method approved by the Director so that no disturbance of the DOV community occurs beyond the fence. Condition **FF1** also requires the activity to be undertaken in a manner that does not cause degradation, including sedimentation, of the DOV community.

In addition, the recommendation in the NVA that the three specimens of *Pimelea curviflora* var. *curviflora* (slender curved riceflower) be excluded from disturbance, preferably by a fence or similar barrier during road maintenance or upgrade works is also supported. Condition **FF2** requires the activity to be conducted in a manner that does not cause degradation or disturbance to the area(s) identified as being inhabited by this species. Based on the requirement for exclusion fencing and the advice from CAS, no further surveys for slender curved riceflower are required.

A number of representations expressed concern about the clearance of vegetation. The EER clearly states that neither the DOB or DOV vegetation communities will be cleared and that the only clearance of vegetation will be of the softwood plantation trees already planted and trimming / minor removal (excluding DOV) of vegetation along the access road to maintain safe access for heavy vehicles.

Similarly, as there is no clearance of the DOB community proposed, which is located between 'Pit 2' and the Brushy Rivulet Conservation Area, there are not anticipated to be any significant impacts to the Conservation Area from the proposal. Condition **FF3** requires that the interface between the activity area and the DOB community be delineated with a fence or similar method approved by the Director and that no disturbance of the DOB community occurs beyond the fence.

While there is potential habitat identified for the marsupial carnivores and the eastern barred bandicoot, the previous use as a softwood plantation means the areas to be extracted is already highly disturbed having been harvested and replanted in 2022. While the EER demonstrates there is unlikely to be a significant impact on these species, the commitment to a pre-clearance survey for Tasmanian devil and spotted-tailed quoll dens is supported. This is required by condition **FF4**.

Similarly, the activity is not proposing to operate outside the standard operating hours specified in the Quarry Code of Practice and the EER also specifically states that carting material will only occur during daylight hours, meaning that during winter and autumn even though the operational hours may be within the night-time period (defined as one hour prior to sunset to one hour after sunrise), no cartage will occur during those times. The road-kill risks to fauna are therefore considered minimal.

Representations note that a new eagle nest (#3462) was recorded in June 2024, which was not considered in the NVA. This new nest is located approximately 40 m north of the nest (#193) which was identified and discussed in the NVA. While the addition of this nest is considered unlikely to significantly impact the conclusions of the NVA, the commitment to undertake a revised eagle nest survey is supported given the time that will have elapsed since the original survey was completed. CAS advised that the survey should be carried out by at least one trained assessor outside of the breeding season management constraint period (July to January inclusive). The nest survey is required by condition **FF5**.

Water quality is considered and discussed further under Key Issue 2, which contains a number of commitments and conditions designed to minimise any potential for impacts on water quality on and off the Activity Area. These measures will minimise the potential for any impacts on the green and gold frog if present and any other aquatic biota within the nearby waterways.

Conditions relating to weeds and diseases (see Issue 5), and waste management and hazardous substances (see Issue 6) are also considered relevant and will help manage any potential risks to natural values on and off the Activity Area.

It is noted that the majority of the Activity Area is within an area mapped as having Class 3 land capability on LISTmap, which is defined as Prime Agricultural Land under the *State Policy on the Protection of Agricultural Land 2009*. However, Principle 4 of the State Policy does make provision for allowing extractive uses on Prime Agricultural Land and, while Principle 10 of the Policy restricts new plantation forestry development, it is noted that the Activity Area has previously been converted to softwood plantation and will be returned to this use after extraction. Plantation forestry is also identified as an agricultural use in Clause 7 Definitions of the Policy.

6.4.5 Conditions

The proponent will be required to comply with the following conditions:

FF1 Protection of *Eucalyptus ovata* forest and woodland (DOV)

FF2 Protection of *Pimelea curviflora* var. *curviflora* (slender curved riceflower)

FF3 Protection of *Eucalyptus obliqua* dry forest (DOB)

FF4 Tasmanian devil (*Sarcophilus harrisii*) and spotted-tailed quoll (*Dasyurus maculatus maculatus*) den survey

FF5 Tasmanian wedge-tailed eagle (*Aquila audax subsp. fleayi*) nest survey

6.5 Issue 5: Weed and Disease Management

6.5.1 Potential impacts

The movement of vehicles, plant, and equipment have the potential to introduce or spread weeds and diseases to, from or around the Activity Area if not managed appropriately. Product stockpiles can also be contaminated with weeds or diseases which may then be transported to other areas if not managed appropriately.

The EER indicates that the Activity Area is almost entirely comprised of managed softwood plantation which was recently harvested and replanted in late 2022 by Forico (land manager).

The EER states that English broom (*Cytisus scoparius*), Spanish heath (*Erica lusitanica*), gorse (*Ulex europaeus*) and blackberry (*Rubus* sp.) are all present within the Activity Area and are declared weeds under the *Biosecurity Regulations 2022*. The EER notes that there is an extensive gorse infestation mainly along the access route.

6.5.2 Management measures proposed in EER

The EER states that weeds will be managed to minimise the potential for spread to surrounding forestry and agricultural land and the adjacent Brushy Rivulet Conservation Area. Key management measures include:

- Hygiene protocols for machinery, vehicles and personnel entering the Activity Area.
- A weed and disease hygiene management plan developed and implemented for the activity to minimise the risk of further infestations to the Activity Area, and to prevent the spread of the declared and environmental weeds off the Activity Area.
- All external haul trucks will remain on all-weather roads; and
- Wash down procedures will be implemented for all earthmoving equipment.

The EER also states that to ensure the Activity Area remains free of *Phytophthora cinnamomi* (PC), the access road and internal tracks will be maintained in good condition and be well drained to ensure minimal pooling of water. The risk of introduction of any freshwater pathogens, such as chytrid fungus to the Activity Area will also be minimised by these management measures.

The EER notes that the operational policy is to not transport or purchase soils to minimise the risk of introducing further weeds or diseases to the Activity Area.

6.5.3 Public and agency comment

Three representations expressed concerns with the potential to introduce PC to the Brushy Rivulet Conservation Area located downslope of the proposed quarry.

CAS supported the commitment to develop a weed and disease hygiene management plan, and the implementation of hygiene protocols and wash down procedures for machinery, vehicles and personnel entering the Activity Area.

6.5.4 Evaluation

While the EER states that there was no symptomatic field evidence of pathogens within the Activity Area, the inclusion of a machinery washdown policy is supported to ensure that the activity area remains free of diseases. This is supported by condition **OP1** which requires that, prior to entering the activity area, machinery must be washed in accordance with the Weed and Disease Guidelines.

It is noted there are extensive weed infestations particularly along the access road, and that ongoing management of these infestations will be critical in ensuring operations do not further spread these infestations. The commitment to develop a Weed and Disease Management Plan is supported and is required to be submitted to the Director for approval under condition **OP2**. Once approved the person responsible is required to act in accordance with the plan.

6.5.5 Conditions

The proponent will be required to comply with the following conditions:

OP1 Machinery washdown

OP2 Weed & Disease Management Plan

6.6 Issue 6: Waste Management, Dangerous Goods and Environmentally Hazardous Substances

6.6.1 Potential impacts

Solid wastes from the activity could cause environmental nuisance or harm if not suitably stored or disposed of. Inappropriate storage, handling and disposal of environmentally hazardous substances including fuels and oils, has the potential to contaminate soil, surface water and groundwater.

The EER identifies two main waste streams from the operation, being general refuse (i.e. food scraps / wrappers) and sewage (collected in mobile toilets with blackwater tanks).

Use of hazardous substances, particularly liquids, will be required at the quarry. Fuel, oils and lubricants are used to operate and maintain machinery, and although they won't be stored at the quarry, they will be brought to the Activity Area when required.

It is also anticipated that due to the abundance of invasive weeds that the weed management program will likely include a spraying program, where chemicals related to weed spraying will be used and / or stored within the Activity Area.

6.6.2 Management measures proposed in EER

The EER states the following mitigation measures for solid waste management:

- All waste materials will be disposed of at an approved facility, in accordance with EPA and / or Meander Valley Council requirements.
- Rubbish bins will be provided with lids at appropriate locations around the Activity Area and all staff will be required to avoid littering and collect and bin any rubbish they observe on the Activity Area.
- Refuse will be periodically taken to an approved waste disposal facility; and
- Wastes will be reused and recycled where possible.

The EER states the following mitigation measure for liquid waste management:

- All ablution blocks will be temporary and will contain black water storage tanks which will be emptied or removed by a suitably qualified waste disposal contractor for sewage disposal to the municipal wastewater treatment plant.

The EER includes the following mitigation measures for dangerous goods and environmentally hazardous materials:

- The fuel tanker will:
    - be located within a bunded area (with 110% capacity of the tank) when it is within the Activity Area for refuelling; and
    - carry appropriate fuel clean up equipment.
- An appropriate spill kit(s) will be permanently located at the office.
- Refuelling and lubrication will be undertaken away from any freestanding water.
- Maintenance and repair facilities and the workshop will be appropriately designed and operated in order to contain and clean up any spills that may occur.
- Oil spill absorption materials will be used immediately for clean-up if there are any spills.
- If there are any residual contaminated soils evident outside the bunded area after a spill and clean up, it will be excavated immediately and taken for disposal or treatment at an appropriately licensed facility.
- All workers will be trained to respond to spills and leaks.
- The EPA will be notified as soon as possible of any spills; and

- All equipment will be properly maintained with regular servicing to prevent ongoing oil or fuel leaks.

Furthermore, the EER also states that any refuelling and equipment repairs will be undertaken in the designated laydown facility which will be appropriately designed, bunded and equipped to contain and clean any spills that may occur.

The EER indicates that the fuel storage and transport requirements of the *Dangerous Goods (Road and Rail Transport) Act 2010* and *Work Health and Safety Act 2012* will be met.

6.6.3 Public and agency comment

No public representations or agency submissions were received in relation to waste management, dangerous goods and environmentally hazardous materials.

6.6.4 Evaluation

The proposed management of solid and liquids wastes is generally supported and considered appropriate. The activity is required to operate in accordance with the Quarry Code of Practice, which specifies waste standards, through condition **G8.** No specific waste management conditions are considered necessary.

Condition **H1** requires appropriate spill kits to be kept within the activity area and maintained in functional condition. Conditions **H2** and **H3** require hazardous materials to be contained and managed appropriately to prevent contamination of soil, groundwater, and waterways.

Standard information items **LO1** and **OI1** are included to ensure the proponent is aware of legislation relating to storage and handling of dangerous goods and substances, and best practice in relation to waste management.

Based on the information provided in the EER, the management measures proposed and the inclusion of the above conditions, it is considered that the potential risks from waste, dangerous goods and environmentally hazardous substances can be appropriately managed to limit the potential for environmental harm or nuisance to occur.

6.6.5 Conditions

The proponent will be required to comply with the following conditions:

H1 Spill kits

H2 Storage and handling of hazardous materials

H3 Handling of hazardous materials – mobile

Other information included in the permit:

LO1 Storage and handling of dangerous goods, explosives, and dangerous substances

OI1 Waste management hierarchy

6.7 Issue 7: Decommissioning and Rehabilitation

6.7.1 Potential impacts

Temporary or permanent cessation of quarrying operations have the potential to cause ongoing impacts to the environment if rehabilitation is not managed appropriately. Rehabilitation is necessary to ensure the long-term stability of the Activity Area, prevent erosion and sedimentation, reduce uncontrolled dust emissions, and minimise the potential for establishment of weeds, diseases or pathogens.

According to the EER the final land use, as agreed with the landowner is to return the land to softwood plantation timber production.

The EER states that decommissioning will include cleaning and preparation of portable infrastructure and equipment (demountable offices, ablution block, mobile plant) for removal. Access roads will remain in place for the landowner to use in managing plantation activities.

According to the EER, rehabilitation of extractive stages will be undertaken progressively with all disturbed areas being rehabilitated on mine closure. All waste rock material, screened fines and topsoil will be used during rehabilitation. The EER notes that some vegetation will establish naturally as stockpiled topsoil will be removed and managed in a way that preserves seeds and nutrients.

A maximum of 2 ha will be open for extraction purposes at any one time with progressive rehabilitation undertaken as soon as practicable after extraction is completed.

The EER notes that given the method of extraction required for extracting the resource (shallow surface excavation up to 7 m depth), there will be minimal alteration of the landform. The stormwater infrastructure will also be decommissioned following rehabilitation, with natural surface flows reinstated, reducing the risk of water ponding and potential for erosion.

6.7.2 Management measures proposed in EER

The EER states that decommissioning and rehabilitation will be ongoing and carried out in accordance with Section 8 of the Quarry Code of Practice.

The EER notes that the main areas of focus for decommissioning and rehabilitation will include:

- infrastructure located on the eastern side of the activity area (e.g. demountable offices / toilets, car park and laydown area, workshop and hydrocarbon storage area, ore stockpile area, water tanks (potable and non-potable), ROM pad (high-grade ore and low-grade ore), cut off drains, sumps and sediment basins;
- resource / excavation areas; and
- access and haul roads.

Rehabilitation will follow the principles below:

- Rehabilitation of areas disturbed as part of the activity will be in accordance with appropriate post-mining land uses (i.e. continued softwood plantation) and will be clearly defined in a closure plan;
- Consultation with relevant stakeholders will be undertaken;
- Progressive rehabilitation will be undertaken over the life of the activity, where appropriate;
- Monitoring of rehabilitation success will be based on agreed criteria with the relevant stakeholders;
- Implementation of appropriate technologies / methods to help improve rehabilitation techniques and reduce the potential for environmental impacts; and
- Development of designs for appropriate landforms that will behave and evolve in a predictable manner, according to the design principles established.

6.7.3 Public and agency comment

No public representations or agency submissions were received in relation to decommissioning and rehabilitation.

6.7.4 Evaluation

The proposed guiding principles, general measures outlined in the EER and supplementary information and commitment to undertake decommissioning and rehabilitation in accordance with the Quarry Code of Practice are all generally supported.

While the EER states there will be a maximum of 2 ha open for active extraction purposes, an additional 10 ha of land will comprise the amenities (e.g. offices, laydown area, roads, drains, ponds etc.) and areas waiting to be, or actively undergoing rehabilitation.

Condition **DC1** requires that worked out or disused areas of the activity area must be rehabilitated concurrently with other extractive activities occurring within the activity area in accordance with the QCP and sets the maximum area of disturbed land allowed within the Activity Area at any given time at 12 ha (**DC1(2.1)**). The condition also restricts the maximum area for active extraction at any given time to 2 ha (**DC1(2.2)**), noting that this limit is included within the 12-ha set for the entire activity by **DC1(2.1)**.

Conditions **DC2** and **DC3** set out the requirements for when either temporary suspension or permanent cessation of quarrying activities are proposed. Permanent cessation also triggers condition **DC4** which requires submission of a Decommissioning and Rehabilitation Plan for the Director's approval. Condition **DC5** sets out the broad steps that must be undertaken upon permanent cessation of the activity, including implementation of an approved DRP.

Condition **DC6** requires surface soils to be removed before opening new areas of the quarry and stockpiled separately for future use in rehabilitation. Furthermore, the stockpiles must be protected from erosion and other disturbance.

6.7.5 Conditions

The proponent will be required to comply with the following conditions:

DC1 Progressive rehabilitation

DC2 Temporary suspension of activity

DC3 Notification of cessation

DC4 DRP requirements

DC5 Rehabilitation following cessation

DC6 Stockpiling of surface soil

7. Issues not assessed by the Board

The following issues have been raised during the assessment process but are not the responsibility of the Board under the EMPCA. These may be issues which are more appropriately addressed by another regulatory agency.

1. Heritage (European and Aboriginal)
2. Traffic impacts on Porters Bridge Road and surrounds
3. *State Policy on the Protection of Agricultural Land, 2009*

7.1 Issue 1: Heritage

Historic Heritage

The EER states the Activity Area has been intensely disturbed by logging and clearing activities. One historic feature, a logger's hut, was identified during the heritage field survey. The hut is located 370 m north of the south-western corner of the Activity Area adjacent to Stage 12. The heritage assessment notes that the hut is in poor condition and likely to be of local significance but not State or Nationally significant. The hut area has been excluded from the mining area.

Aboriginal Heritage

The EER states three Aboriginal sites were identified during a field assessment. These sites comprise isolated artefacts. The Aboriginal Heritage Assessment recommended that, if possible, these sites should be protected and left in-situ but, if they are likely to be impacted, the artefacts should be salvaged and relocated to a safe location.

7.2 Issue 2: Traffic impacts on Porters Bridge Road and surrounds

Traffic Impacts

The EER states that traffic volumes in the vicinity of the Activity Area are expected to increase by 102 vehicles (78 truck and dog trailer movements and 24 light vehicle movements) per day during quarry campaigns. Traffic is proposed travel along Porters Bridge Road and then Meander Valley Road before following three possible routes to either Bell Bay Port or Burnie Port. The EER Traffic Impact Assessment states that during the morning and afternoon peak hours, approximately 8 heavy vehicles per hour are expected to access or egress the Activity Area. The Traffic Impact Assessment states this is considered to represent minimal additional traffic volumes on Porters Bridge Road and Meander Valley Road.

The potential noise impacts from traffic movements are discussed in Key Issue: 3 Noise.

8. Report Conclusions

This assessment has been based on the information provided by the proponent, ABx4 Pty Ltd, in the case for assessment (the EER), and additional information provided (Supplement).

This report incorporates specialist advice provided by EPA scientific and regulatory staff, the Department of Natural Resources and Environment Tasmania, and other government agencies, and considers issues raised in public submissions.

It is concluded that:

1. the RMPS and EMPCS objectives have been duly and properly pursued in the assessment of the proposal; and
2. the assessment of the proposal has been undertaken in accordance with the Environmental Impact Assessment Principles; and
3. the proposal is capable of being managed in an environmentally acceptable manner such that it is unlikely that the RMPS and EMPCS objectives would be compromised, provided that the Permit Conditions – Environmental No. 11390 appended to this report are imposed and duly complied with.

9. Report Approval

Environmental Assessment Report and conclusions, including environmental conditions, adopted:

Andrew Paul

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

Meeting date: 4 March 2025

10. References

Pitt & Sherry (2023) DL130 Bauxite Project Environmental Effects Report (dated 3 October 2023), prepared for ABx Group Ltd by Pitt & Sherry.

Pitt & Sherry (2025) Supplement to DL130 Environmental Effects Report (dated 17 February 2025), prepared for ABx Group Ltd by Pitt & Sherry.

11. Appendices

Appendix 1 Summary of public and agency submissions

Appendix 2 Table of proponent management measures

Appendix 3 Permit conditions – Environmental no. 11390

Appendix 1: Summary of public and agency submissions

Table 2: Matters raised during public consultation period

Representation No. / Agency	Comments and Issues	Further Information Requested
59 representations / Public Health Services	Many representations have raised concerns regarding the impacts of air quality to sensitive receivers within the vicinity of the proposal and to the broader community of Reedy Marsh from an increase in bauxite dust generated by quarrying activities. There are specific concerns regarding the health implications of bauxite dust suggesting that it is toxic, carcinogenic and can cause respiratory illnesses/issues in persons. Some representations have raised additional concerns around the generation of bauxite dust contaminating rainwater tanks and contaminating / covering homegrown gardens impacting on local produce being grown and consumed in the Reedy Marsh area. Public Health Services have provided the following comment in relation to the health implications of bauxite dust: Dust generated from activities associated with the DL130 bauxite project has the potential to be respirable and would be considered a nuisance, capable of causing non-specific airway symptoms such as cough, mucus production, throat irritation, and wheezing if it impacted sensitive receptors. Public Health Services requested further information, in the form of a Dust Management Plan. The purpose of a Dust Management Plan is to ensure that any dust generated is controlled on site, thereby ensuring neighbouring sensitive receptors are not adversely impacted.	The following additional information is required: • A Dust Management Plan detailing the mitigation measures that will be implemented to prevent dust leaving the site boundary, specifically at the south edge of the site during quarry plan stages 10 and 11. There is direct line of sight from the closest sensitive receiver located at 620 Porters Bridge Road to the extraction point proposed for quarry plan stages 10 and 11, with no topographical or vegetative barrier in between. The proposed direction of quarrying may provide a visual and physical barrier to the west, however, the southern edge of the quarry may be visible for the duration of these two stages (years 13-15 & years 15-17) for the period of the campaign (3-4 months per year). Therefore, further information in the form of a dust management plan is required on how dust emissions will be managed during this stage of quarrying to prevent dust leaving the site boundary in this location, including consideration of avoiding potential health impacts from dust. Additional mitigation measures may include but not be limited to, relocating the mobile equipment further from the site boundary, creating a berm on the southern end of the site with several rows of plantation trees to the south of the berm, or revegetating the southern side of the berm with native species.
53 Representations	Concerns have been raised regarding the impacts of water quality from increased contamination and sedimentation by surface water runoff to the surrounding environment, specifically the Brushy Rivulet Conservation Area and waterways on and near the proposed site including the Brushy Rivulet and Meander River. Further concerns have been raised regarding the impacts to groundwater and the potential for Acid and metalliferous drainage (AMD) to occur from the proposed pit excavation on site.	The following additional information is required, with the information to also then inform an updated Stormwater Management Plan: • The off-site water discharge locations from the proposed settlement ponds have not been adequately addressed. Identify the off-site discharge locations of water from the proposed sediment ponds to the receiving environment. • Particle size distribution (PSD) of the soils. • The results of soil erodibility classification testing to IECA standards.

Representation No. / Agency	Comments and Issues	Further Information Requested
		• A contingency plan to lower turbidity before off-site discharge (i.e. floc and drop) to the receiving environment. • Other potential contaminants of concern associated with metal loads off site have not been investigated. The results of water leachability tests are required to clarify if this is a risk to water quality off-site discharges. • A new monitoring schedule, as a table including parameters and frequency plus appropriate proposed discharge limits. Contingency planning and actions to manage inflows of groundwater into the extraction areas and the exposure of bedrock that contains granophyre's which could contain AMD sulphide minerals.
60 Representations	Concerns have been raised regarding the impacts to native flora and fauna and threatened flora and fauna from the proposed quarry, specifically in relation to the clearance of vegetation and threatened vegetation communities.	Sufficient information was received in the EER relating to this matter and no further information was requested.
37 Representations	Concerns have been raised regarding the impacts to the Brushy Rivulet Conservation Area located north of the quarry site, specifically the impacts from dust and water run-off generated by quarrying activities to flora and fauna within the conservation area.	These matters are also covered by the above requested additional information (i.e. the dust management plan and revised stormwater management plan).
34 Representations	Concerns have been raised regarding the noise impacts from the proposed quarry and quarry traffic to residences within the vicinity of the proposed site and to the community of Reedy Marsh.	Sufficient information was received in the EER relating to this matter and no further information was requested.
27 Representations	Concerns have been raised regarding the impacts to roadkill along the quarry access road and Porters Bridge Road from increased traffic movements generated by the quarry.	Sufficient information was received in the EER relating to this matter and no further information was requested.
3 Representations	Concerns have been raised regarding the risk of the spread of weeds and disease from the quarry proposal.	Sufficient information was received in the EER relating to this matter and no further information was requested.
3 Representations	Concerns have been raised regarding the impacts to Climate Change from the operation of a quarry in the area for 20-30 years, specifically in relation to intensified weather activities such as strong winds and increased rainfall/flooding in the area.	No further information requested. Not considered within the EPA Board's area of responsibility.
22 Representations	Concerns have been raised regarding the impacts to local vegetation and soil	These matters are also covered by the above requested additional information (i.e. the dust

Representation No. / Agency	Comments and Issues	Further Information Requested
	degradation from increased dust and sedimentation generated by the quarry.	management plan and revised stormwater management plan).
1 Representation	One representation raised concerns around the impacts to the Loggers Hut that has been identified on the proposed site.	No further information requested. Not considered within the EPA Board's area of responsibility.
28 Representations	Concerns have been raised regarding the proponent's lack of community consultation for the proposal and the advertising timeframe to submit representations.	No further information requested. The advertising period is set by the requirements of S.27G of EMPCA.
60 Representations	60 representations have raised concerns regarding the impacts to road safety from increased heavy traffic traversing Porters Bridge Road as a result of increased quarrying traffic in the Reedy Marsh area.	No further information requested. Not considered within the EPA Board's area of responsibility.
38 Representations	Some representations raised the issue of ongoing costs to ratepayers for the maintenance roads (including Porters Bridge Road) that will be utilised by increased quarry traffic.	No further information requested. Not considered within the EPA Board's area of responsibility.
37 Representations	Concerns have been raised regarding impacts to the amenity and liveability of Reedy Marsh for residents as a result of the quarry.	No further information requested. Not considered within the EPA Board's area of responsibility.
25 Representations	Concerns have been raised regarding the proposed use of Rural zoned land for quarrying purposes, with this land being classed as Prime Agricultural land.	Sufficient information was received in the EER relating to this matter and no further information was requested.
21 Representations	Concerns have been raised regarding the impacts to tourism and local businesses in the area if the quarry is approved for operation.	No further information requested. Not considered within the EPA Board's area of responsibility.
30 Representations	Concerns have been raised questioning the viability of the ABx4 Pty Ltd company and their lack of social licence to operate in the Reedy Marsh area.	No further information requested. Not considered within the EPA Board's area of responsibility.
13 Representations	Some representations have raised concerns regarding the devaluation to property in Reedy Marsh as a result of the quarry being approved.	No further information requested. Not considered within the EPA Board's area of responsibility.
8 Representations	Concerns have been raised regarding the limited jobs that will be created from the proposed quarry lifespan of 20-30 years.	No further information requested. Not considered within the EPA Board's area of responsibility.

Appendix 2: Table of proponent management measures

Table 2: Proponent management measures (Table 11 of EER)

Number	Action	Timing
Air quality		
1	Rehabilitation will be carried out progressively during extraction with a maximum of 2 ha of operational area disturbed at any one time.	Ongoing from Project commencement
2	During campaign breaks lasting more than 1-2 months, the excavation panels will either be rehabilitated prior to the end of the campaign or will be covered with excavated material to minimise dust production.	During campaign breaks
3	Excavation of topsoil will not be undertaken during periods of extended dry and windy weather.	Ongoing from Project commencement
4	Where practical a minimum 50% ground cover will be maintained across a given resource area during mining operations. Where this is unachievable, soils will be stored in locations protected from wind and other forms of erosion in a configuration that keeps the soil viable during storage.	Ongoing from Project commencement
5	Outside of campaigns the site manager will monitor weather conditions and visit the Activity Area regularly to ensure any dust generated will not cause environmental nuisance. If weather conditions are likely to cause dust emissions, mitigation measures (such as watering haul roads with a water cart) will be implemented.	During campaign breaks
6	Rock crushing will occur in the north-east corner of the Project Area to ensure dust from crushing does not travel to the nearest residence (located to the south west of the Property).	Ongoing from Project commencement
7	Vehicle speed limits within the Activity Area will be restricted to 40 km/h to minimise dust generation.	Ongoing from Project commencement
Water quality		
8	Following the stormwater plan.	Ongoing from Project commencement
9	Rehabilitation will be carried out progressively during the extraction with a maximum of 2 ha of operational area within a stage at any one time.	Ongoing from Project commencement
10	During breaks lasting more than 1-2 months between campaigns, the excavation panels will either be rehabilitated prior to the end of the campaign or will be covered with excavated material to minimise runoff.	Ongoing from Project commencement during campaign breaks
11	Implementing temporary silt fences at the downstream face to prevent transport of material.	Ongoing from Project commencement
12	Ensuring routine monitoring of sediment basins to monitor pH, ORP, EC, DO, colour, and temperature.	Ongoing from Project commencement
Noise emissions		
13	Ensuring all plant and equipment will be maintained and in good order at all times, especially noise control equipment such as mufflers and exhaust pipes.	Ongoing from Project commencement

Number	Action	Timing
14	Considering noise control issues carefully when selecting new plant or equipment or engaging contractors to carry out work within the Activity Area.	Ongoing from Project commencement
15	Ensuring all heavy vehicles based in the Activity Area use broad band style reversing beacons.	Ongoing from Project commencement
16	Avoiding unnecessary noises such as "dropped loads" or scraping loader buckets on the ground.	Ongoing from Project commencement
Natural values		
17	Threatened vegetation community, *Eucalyptus ovata* forest and woodland, will be excluded from any disturbance by: • Installing barrier fencing or similar • Preventing the spread of weeds into the community; and • Maintaining the current drainage regime.	Ongoing from Project commencement
18	Avoiding clearance of the DOB to the north of Pit 2.	During Pit 2 operations
19	Excluding the threatened Slender curved riceflower plants occurring on the road margins from disturbance through installing barrier fencing or similar.	Ongoing from Project commencement
20	A preclearance survey for marsupial carnivore dens.	Prior to Project commencement
21	Roadkill mitigation measures, including: • Speed limits on the access road between dusk and dawn • Installing advisory signage; and • Providing education and awareness training for drivers.	Ongoing from Project commencement
22	A preclearance eagle nest survey within the modelled potential habitat within a minimum of 500 m from the proposed operational areas (and likely within 1 km line-of-sight of such areas).	Prior to Project commencement
23	Ensuring runoff is managed by implementing silt fencing on the side of tracks and around development that is in close proximity to water sources to protect aquatic fauna.	Ongoing from Project commencement
Weeds, pests and pathogens		
24	Developing a formal Weed and Pathogen Management Plan.	Ongoing from Project commencement
25	Maintaining appropriate hygiene protocols, including wash down procedures for vehicles entering and exiting the Project Area.	Ongoing from Project commencement
26	Ensuring the area remains free of PC and freshwater pathogens by maintaining puddle free access roads, internal tracks and quarrying areas.	Ongoing from Project commencement
Waste		
27	Quarried solid waste material that is not of sufficient grade for blending will be used to rehabilitate the stages followed by being covered in topsoil.	Ongoing from Project commencement
28	Ensuring waste is disposed of to an appropriately approved or licensed facility, in accordance with EPA and/or Meander Valley Council requirements.	Ongoing from Project commencement

Number	Action	Timing
29	Ensuring rubbish bins (with lids) are located at appropriate locations across the Activity Area with staff required to avoid littering and collect any rubbish observed across the Project Area.	Ongoing from Project commencement
30	Removing waste regularly to maintain good housekeeping practices.	Ongoing from Project commencement
31	Ensuring liquid waste from temporary ablution blocks is emptied/removed by a suitably qualified waste disposal contractor for sewage disposal and taken to the municipal wastewater treatment plant.	Ongoing from Project commencement
32	Ensuring the pH of water collected in the sediment basins is monitored and if low pH is detected regularly, treatment for AMD will be implemented.	Ongoing from Project commencement
33	Developing an AMD contingency plan which will incorporate dosing the sediment basins with lime or another appropriate medium.	Ongoing from Project commencement
34	Ensuring disturbed areas are covered as soon as practicable to prevent exposure and erosion of the remaining profile.	Ongoing from Project commencement
Environmentally hazardous materials		
35	Ensuring the fuel storage and transport requirements of the *Dangerous Substances (Safe Handling) Act 2005* are met (as outlined).	Ongoing from Project commencement
36	Ensuring fuel and oil brought to the Activity Area are stored in an appropriately designed and operated bunded area.	Ongoing from Project commencement
37	Refuelling and repair of equipment is undertaken in a designated laydown area that is appropriately designed, bunded and equipped to contain and clean any spills that may occur.	Ongoing from Project commencement
38	Maintaining a sediment pond with hydrocarbon separator to remove potential hydrocarbon contamination from the laydown area.	Ongoing from Project commencement
Environmental impacts of traffic		
39	Ensuring only minimal upgrades to roads occur (filling potholes, minor trimming).	Ongoing from Project commencement
40	Installing sediment fences around waterways.	Ongoing from Project commencement
41	Maintaining current road drainage conditions.	Ongoing from Project commencement
42	Limiting cartage to and from the Project Area to within daylight hours.	Ongoing from Project commencement
43	Limiting vehicle speed between dusk and dawn.	Ongoing from Project commencement
44	Ensuring drivers are educated on safe driving practices.	Ongoing from Project commencement

Appendix 3: Permit conditions – Environmental no. 11390

PERMIT PART B
PERMIT CONDITIONS - ENVIRONMENTAL No. 11390

Issued under the *Environmental Management and Pollution Control Act 1994*

Activity: **The operation of a quarry with materials handling (crushing, screening) (ACTIVITY TYPE: Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals))**
DL130 BAUXITE PROJECT QUARRY, OFF PORTERS BRIDGE ROAD REEDY MARSH TAS 7304

The above activity has been assessed as a level 2 activity under the *Environmental Management and Pollution Control Act 1994*.

Acting under Section 25(5)(a)(i) of the EMPCA, the Board of the Environment Protection Authority has required that this Permit Part B be included in any Permit granted under the *Land Use Planning and Approvals Act 1993* with respect to the above activity.

Municipality: **MEANDER VALLEY**
Permit Application Reference: **PA 24/0052**
EPA file reference: **22/9483**

Date conditions approved: 07 March 2025

Signed: _____

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

DEFINITIONS

Unless the contrary appears, words and expressions used in this Permit Part B have the meaning given to them in **Schedule 1** of this Permit and in the EMPCA. If there is any inconsistency between a definition in the EMPCA and a definition in this Permit Part B, the EMPCA prevails to the extent of the inconsistency.

ENVIRONMENTAL CONDITIONS

The person responsible for the activity must comply with the conditions contained in **Schedule 2** of this Permit Part B.

INFORMATION

Attention is drawn to **Schedule 3**, which contains important additional information.

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

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Attachments

Attachment 1: Activity Area (modified: 14/02/2025 14:58).... 1 page
Attachment 2: Mapped DOV vegetation community (modified: 17/02/2025 14:40)....1 page
Attachment 3: Mapped DOB vegetation community (modified: 17/02/2025 14:35)....1 page

Schedule 1: Definitions

In this Permit Part B:-

50,000 cubic metres is considered equivalent to 70,000 tonnes.

Aboriginal Relic has the meaning described in section 2(3) of the *Aboriginal Heritage Act 1975*.

active extraction means when ground is being disturbed by machinery for the purposes of extracting material.

Activity means any environmentally relevant activity (as defined in Section 3 of EMPCA) to which this document relates, and includes more than one such activity.

Activity Area means the area to be used for the Activity when these conditions take effect, as depicted in Attachment 1.

Authorized Officer means an authorized officer under section 20 of EMPCA.

Background Noise Level is the level that is exceeded 90% of the time for each measurement interval when measured in the absence of the subject site noise. Background noise is described using the $L_{A90,T}$ descriptor.

Control Location (Noise) means a location chosen to represent the general ambient sound without contribution from noise sources at the activity.

Director means the Director, Environment Protection Authority holding office under section 18 of EMPCA and includes a delegate or person authorised in writing by the Director to exercise a power or function on the Director's behalf.

Dominant or Intrusive Noise Characteristics means any noise characteristic that contributes to a noise being considered louder than would be indicated by the A-weighted sound pressure level measured, or that exacerbates nuisance or harm caused by the noise.

DRP means Decommissioning and Rehabilitation Plan.

EMPCA means the *Environmental Management and Pollution Control Act 1994*.

Environmental Harm and **Material Environmental Harm** and **Serious Environmental Harm** each have the meanings ascribed to them in Section 5 of EMPCA.

Environmental Nuisance has the meanings ascribed to it in Section 3 of EMPCA.

Environmentally Hazardous Material means any substance or mixture of substances of a nature or held in quantities which present a reasonably foreseeable risk of causing serious or material environmental harm if released to the environment and includes fuels, oils, waste and chemicals but excludes sewage.

EPA Board means the Board of the Environment Protection Authority established under section 13 of EMPCA and includes a delegate or person authorised in writing by the EPA Board to exercise a power or function on the EPA Board's behalf.

Guide to Eagle Nest Searching and Nest Activity Checks means the document titled *Guide to Eagle Nest Searching and Nest Activity Checks*, by the Environment Protection Authority, dated May 2023, and any amendments to or substitution of this document.

Maximum Disturbed Area means the area disturbed to facilitate the activity and includes but is not limited to; vegetation disturbance, soil disturbance, access roads, hardstand, working area, vehicle parking and infrastructure (i.e. buildings, site office, sheds etc).

Noise Measurement Procedures Manual means the document titled *Noise Measurement Procedures Manual*, by the Department of Environment, Parks, Heritage and the Arts, dated July 2008, and any amendment to or substitution of this document.

Noise Sensitive Premises means residences and residential zones (whether occupied or not), schools, hospitals, caravan parks and similar land uses involving the presence of individual people for extended periods, except in the course of their employment or for recreation.

Non-Trivial Environmental Incidents means an incident requiring the person responsible to implement actions to control or respond to the incident to minimise environmental harm and/or nuisance.

Normal Ambient Noise refers to the ambient noise of the receiver location in the absence of the subject site noise. Ambient noise level is measured in L_{Aeq}.

Person Responsible is any person who is or was responsible for the environmentally relevant activity to which this document relates and includes the officers, employees, contractors, joint venture partners and agents of that person, and includes a body corporate.

Planning Authority means the Council(s) for the municipal area(s) in which the Activity Area is situated.

Pollutant has the meaning ascribed to it in section 3 of EMPCA.

Quarry Code of Practice means the document of this title published by the Environment Protection Authority in May 2017, and includes any subsequent versions of this document.

Reporting Period means the 12 months ending on 31 December of each year.

Stormwater means water runoff as a consequence of a rainfall event, whether surface flow, piped flow, or flow within conduits, including any contaminants collected by the water during its passage.

Stormwater Management Plan means the document titled *DL130 Bauxite Project - Stormwater Management Plan*, by Pitt & Sherry, dated 24 January 2025, and any amendments to or substitution of this document.

Threatened Species means has the meaning ascribed in the *Threatened Species Act 1995.*

Weed means a plant species that has, or is likely to have, an adverse impact on the environment because of the introduction, spread or increase in population size of the species in an area; and includes a declared weed as defined in the *Biosecurity Act 2019* and subordinate regulations.

Weed And Disease Guidelines means the document titled *Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania*, by the Department of Primary Industries, Parks, Water and Environment, dated March 2015, and any amendment to or substitution of this document.

Schedule 2: Conditions

Maximum Quantities

Q1 Regulatory limits

1 The activity must not exceed the following limits :

1.1 40,000 cubic metres per year of rocks, ores or minerals processed.

1.2 50,000 cubic metres per year of rock or gravel extracted.

General

G1 Activity Area

The activity must be confined to the Activity Area.

G2 Access to and awareness of conditions and associated documents

A copy of these conditions and any associated documents referred to in these conditions must be held in a location that is known to and accessible to the person responsible for the activity. The person responsible for the activity must ensure that all persons who are responsible for undertaking work within the Activity Area, including contractors and sub-contractors, are familiar with these conditions to the extent relevant to their work.

G3 Incident response

If an incident causing or threatening environmental nuisance, serious environmental harm or material environmental harm from pollution occurs in the course of the activity, then the person responsible for the activity must immediately take all reasonable and practicable action to minimise any adverse environmental effects from the incident.

G4 Proposed change to activity

1 The person responsible must notify the Director in writing prior to implementing any change to the activity authorised by this document that may cause or increase the emission of a pollutant or which may result in environmental harm or environmental nuisance (even temporarily). A change includes, but is not limited to, any of the following:

1.1 an increase in the discharge of a pollutant, or the location of its discharge.

1.2 the construction, installation, alteration or removal of any structure or equipment used in the course of carrying out the activity.

1.3 any clearance of native vegetation or earthworks.

1.4 a change in the quantity or characteristics of materials used in carrying out the activity.

2 The notification must be in an approved form and include the following:

2.1 details of the proposed change;

2.2 an assessment of the environmental impacts that may result from the change;

2.3 any relevant approvals held by the person responsible; and

2.4 any advice from the relevant planning authority to the effect that approval is not required.

3 The person responsible must provide additional information as requested by an Authorized Officer.

4 The proposed change must not be implemented until the Director has confirmed in writing that they are satisfied that no other approval or variation of this document is required.

5 For the avoidance of doubt, a notification of a proposed change under this provision is not required if the proposed change is part of a referral to the EPA Board for assessment under sections 24, 25 or 27 of EMPCA.

G5 Change of responsibility

If the person responsible for the activity intends to cease to be responsible for the activity, that person must notify the Director in writing of the full particulars of any person who will become the person responsible for the activity, before such cessation.

G6 Change of ownership

If the owner of the Activity Area changes or is to change, then, as soon as reasonably practicable but no later than 30 days after becoming aware of the change or intended change in the ownership of the Activity Area, the person responsible must notify the Director in writing of the change or intended change of ownership.

G7 Complaints register

1 A public complaints register must be maintained. The public complaints register must, as a minimum, record the following detail in relation to each complaint received in which it is alleged that environmental harm (including an environmental nuisance) has been caused by the activity:

1.1 the date and time at which the complaint was received;

1.2 contact details for the complainant (where provided);

1.3 the subject matter of the complaint;

1.4 any investigations undertaken with regard to the complaint; and

1.5 the manner in which the complaint was resolved, including any mitigation measures implemented.

2 Complaint records must be retained for a period of at least 3 years.

G8 Quarry Code of Practice

Unless otherwise required by these conditions or required in writing by the Director, the activity (or activities) undertaken within the Activity Area must comply with the Acceptable Standards provisions of the *Quarry Code of Practice.*

G9 Amendment of required plans and reports

1 The plans and reports required by these conditions must be amended to address any matter required by the Director, as advised by notice in writing.

2 Amended plans and reports must be resubmitted within the timeframe that the Director specifies.

G10 Notification prior to commencement

The Director must be notified in writing of the commencement of operations at least 14 days before that occurs.

G11 Annual Environmental Review

1 Unless otherwise specified in writing by the Director, a publicly available Annual Environmental Review for the activity must be submitted to the Director each year within three months of the end of the reporting period. Without limitation, each Annual Environmental Review must include the following information:

1.1 a statement by the General Manager, Chief Executive Officer or equivalent for the activity acknowledging the contents of the Annual Environmental Review;

1.2 subject to the *Personal Information Protection Act 2004*, a list of all complaints received from the public during the reporting period concerning actual or potential environmental harm or environmental nuisance caused by the activity and a description of any actions taken as a result of those complaints;

1.3 details of environment-related procedural or process changes that have been implemented during the reporting period;

1.4 a summary of the amounts (tonnes or litres) of both solid and liquid wastes produced and treatment methods implemented during the reporting period. Initiatives or programs planned to avoid, minimise, re-use, or recycle such wastes over the next reporting period should be detailed;

1.5 details of all non-trivial environmental incidents and/or incidents of non compliance with these conditions that occurred during the reporting period, and any mitigative or preventative actions that have resulted from such incidents;

1.6 a summary of the monitoring data and record keeping required by these conditions. This information should be presented in graphical form where possible, including comparison with the results of at least the preceding reporting period. Special causes and system changes that have impacted on the parameters monitored must be noted. Explanation of significant deviations between actual results and any predictions made in previous reports must be provided;

1.7 identification of breaches of limits specified in these conditions and significant variations from predicted results contained in any relevant EIS or EMP, an explanation of why each identified breach of specified limits or variation from predictions occurred and details of the actions taken in response to each identified breach of limits or variance from predictions;

1.8 a list of any issues, not discussed elsewhere in the report, that must be addressed to improve compliance with these conditions, and the actions that are proposed to address any such issues;

1.9 a summary of fulfilment of environmental commitments made for the reporting period. This summary must include indication of results of the actions implemented and explanation of any failures to achieve such commitments; and

1.10 a summary of any community consultation and communication undertaken during the reporting period.

Atmospheric

A1 Covering of vehicles
Vehicles carrying loads containing material which may blow or spill must be equipped with effective control measures to prevent the escape of the materials from the vehicles when they leave the Activity Area or travel on public roads. Effective control measures may include tarpaulins or load dampening.

A2 Control of dust emissions
Dust emissions from within the Activity Area must be controlled to the extent necessary to prevent environmental nuisance beyond the boundary of the Activity Area.

A3 Dust emissions from traffic areas
Dust emissions from areas of the Activity Area used by vehicles must be limited or controlled by dampening or by other effective measures.

A4 Control of dust emissions from crushing and screening plant

1 Dust produced by the operation of all crushing and/or screening plant must be controlled by the use of one or more of the following methods to the extent necessary to prevent environmental nuisance:

1.1 the installation of fixed water sprays at all crushers and/or screening plant and at all necessary points where processed material changes direction due to belt transfer;

1.2 the installation of dust extraction equipment at all crushers and/or screening plant and at all necessary points where processed material changes direction due to belt transfer;

1.3 the enclosure of the crushing and/or screening plant and the treatment of atmospheric emissions by dust extraction equipment; or

1.4 any other method that has been approved in writing by the Director.

A5 Dust Management Plan

1 Unless otherwise approved by the Director in writing, within thirty (30) days of the date on which these conditions take effect, a revised Dust Management Plan must be submitted to the Director for approval. The plan is to have the aim of ensuring that dust emissions are managed to prevent environmental harm or nuisance at or beyond the boundary of the Activity Area. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 Unless otherwise approved by the Director in writing, the plan must be consistent with Section 3.1 of the EER and supplementary preliminary Dust Management Plan.

3 The plan must be prepared in accordance with any guidelines provided by the Director.

4 Without limitation, the plan must include details of the following:

4.1 a table containing all of the major commitments made in the plan;

4.2 an implementation timetable for key aspects of the plan; and

4.3 a reporting program to regularly advise the Director of the results of the plan.

5 Once approved the person responsible must act in accordance with the approved plan.

6 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

7 Unless otherwise approved by the Director in writing, the plan must be reviewed:

7.1 Every five (5) years from the date of approval of the most recent plan; and

7.2 Where the Director is of the opinion that the plan requires review within a specified timeframe.

A6 Dust Monitoring Program

1 Unless otherwise approved by the Director in writing, within thirty (30) days of the date on which these conditions take effect, a Dust Monitoring Program must be submitted to the Director for approval. The program is to have the aim of monitoring dust emissions at the boundary of the Activity Area to ensure that dust emissions are managed to prevent environmental harm or nuisance at or beyond the boundary of the Activity Area. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The program must be prepared in accordance with any guidelines provided by the Director.

3 Dust monitoring must be undertaken in accordance with a method approved in writing by the Director, as may be amended from time to time with written approval of the Director.

4 Unless otherwise approved by the Director in writing:

4.1 Background dust monitoring must occur for a minimum period of three (3) months prior to the commencement of operations; and

4.2 Dust monitoring must continue upon commencement of operations.

5 Once approved the person responsible must act in accordance with the approved program.

6 The person responsible may apply to the Director to vary or substitute the program. Any variation or substitution of the program approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

7 Unless otherwise approved by the Director in writing, the program must be reviewed:

7.1 Every five (5) years from the date of approval of the most recent program; and

7.2 Where the Director is of the opinion that the program requires review within a specified timeframe.

Decommissioning And Rehabilitation

DC1 Progressive rehabilitation

1 Unless otherwise approved by the Director in writing, worked out or disused sections of the Activity Area must be rehabilitated concurrently with extractive activities on other sections of the Activity Area. Progressive rehabilitation must be carried out in accordance with the relevant provisions of the *Quarry Code of Practice*, unless otherwise approved in writing by the Director.

2 Unless otherwise approved by the Director in writing:

2.1 The maximum disturbed area of land at any given time without rehabilitation must not exceed 12 hectares; and

2.2 The maximum area for active extraction must not exceed 2 ha at any given time.

DC2 Temporary suspension of activity

1 Within 30 days of becoming aware of any event or decision which is likely to give rise to the temporary suspension of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to suspend or has suspended.

2 During temporary suspension of the activity the Activity Area must be managed and monitored by the person responsible for the activity to ensure that emissions from the Activity Area do not cause serious environmental harm, material environmental harm or environmental nuisance.

3 If required by the Director, a Care and Maintenance Plan for the activity must be submitted to the Director for approval, by a date specified in writing by the Director. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

3.1 The plan must be prepared in accordance with any guidelines provided by the Director.

3.2 Once approved the person responsible must act in accordance with the approved Care and Maintenance Plan.

3.3 The person responsible may apply to the Director to vary or substitute the Care and Maintenance Plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

4 Unless otherwise approved in writing by the Director, if the activity on the Activity Area has substantially ceased for 2 years or more, rehabilitation of the Activity Area must be carried out in accordance with the requirements of these conditions as if the activity has permanently ceased.

DC3 Notification of cessation

Within 30 days of becoming aware of any event or decision which is likely to give rise to the permanent cessation of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to cease or has ceased.

DC4 DRP requirements

1 Unless otherwise approved in writing by the Director, a Decommissioning and Rehabilitation Plan (DRP) for the activity must be submitted for approval to the Director within 30 days of the Director being notified of the planned cessation of the activity. The DRP must be prepared in accordance with any guidelines provided by the Director. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The person responsible may apply to the Director to vary or substitute the DRP. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with affect from the date specified in the notice.

DC5 Rehabilitation following cessation

1 Following permanent cessation of the activity, and unless otherwise approved in writing by the Director, the Activity Area must be rehabilitated including:

1.1 stabilisation of any land surfaces that may be subject to erosion;

1.2 removal or mitigation of all environmental hazards or land contamination, that might pose an ongoing risk of causing environmental harm; and

1.3 decommissioning of any equipment that has not been removed.

2 Where a Decommissioning and Rehabilitation Plan (DRP) has been approved by the Director, decommissioning and rehabilitation must be carried out in accordance with that plan.

3 The person responsible may apply to the Director to vary or substitute the DRP. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

DC6 Stockpiling of surface soil

Prior to commencement of extractive activities on any portion of the Activity Area, surface soils must be removed in that portion of the Activity Area to be disturbed by the conduct of the activity and stockpiled for later use in rehabilitation of the Activity Area. Topsoil must be kept separate from other overburden and protected from erosion or other disturbance.

Flora And Fauna

FF1 Protection of Eucalyptus ovata forest and woodland (DOV)

1 The interface between the access road corridor and the DOV community, as identified in Attachment 2, must be delineated with a fence or similar method approved in writing by the Director within thirty (30) days of the date on which these conditions take effect;

2 Unless otherwise approved in writing by the Director:

2.1 there must be no disturbance of the vegetation beyond this fence; and

2.2 the activity must be conducted in a manner that does not cause degradation or disturbance to the DOV community.

FF2 Protection of Pimelea curviflora var. curviflora (slender curved riceflower)

Unless otherwise approved in writing by the Director, the activity must be conducted in a manner that does not cause degradation or disturbance (including sedimentation) to the areas identified in Appendix A of the EMP as being inhabited by the species slender curved riceflower.

FF3 Protection of Eucalyptus obliqua dry forest (DOB)

1 The interface between 'Pit 2' and the DOB community, as identified in Attachment 3, must be delineated with a fence or similar method approved in writing by the Director within thirty (30) days of the date on which these conditions take effect;

2 Unless otherwise approved in writing by the Director:

2.1 there must be no disturbance of the vegetation beyond this fence; and

2.2 the activity must be conducted in a manner that does not cause degradation or disturbance to the DOB community.

FF4 Tasmanian devil (Sarcophilus harrisii) and spotted-tailed quoll (Dasyurus maculatus maculatus) den survey

1 At least thirty (30) days prior to the commencement of operations, or by a date otherwise specified in writing by the Director, a survey of the area to be disturbed for Tasmanian devil and spotted-tailed quoll dens must be conducted.

2 The person(s) conducting the survey must be appropriately qualified in the identification of the species and its habitat.

3 A report outlining the findings of the survey must be submitted to the Director.

3.1 If any dens will be adversely impacted by the activity, this must be brought to the attention of the Department which administers the *Threatened Species Protection Act 1995* prior to such impact occurring.

3.2 This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

FF5 Tasmanian wedge-tailed eagle (Aquila audax subsp. fleayi) nest survey

1 Unless otherwise approved in writing by the Director:

1.1 no more than 12 months prior to the commencement of operations, a survey for nests of the Tasmanian wedge-tailed eagle must be undertaken between February and June within the Activity Area and within 1 km of the boundary of the Activity Area.

1.2 eagle nest searches should be undertaken in accordance with the *Guide to Eagle Nest Searching and Nest Activity Checks*.

1.3 a report outlining the findings of the survey must be submitted to the Director for approval within thirty (30) days of the survey being undertaken.

2 Works including vegetation clearance must not commence without written approval from the Director.

Hazardous Substances

H1 Spill kits

Spill kits appropriate for the types and volumes of materials handled within the Activity Area must be kept in appropriate locations and maintained in a functional condition to assist with the containment of spilt environmentally hazardous materials.

H2 Storage and handling of hazardous materials

1 Unless otherwise approved in writing by the Director, environmentally hazardous materials held within the Activity Area must be:

1.1 stored within maintained and functional impervious bunded areas, spill trays or other containment systems; and

1.2 managed to prevent unauthorised discharge, emission or deposition of pollutants:

1.2.1 to soils within the boundary of the Activity Area in a manner that is likely to cause serious or material environmental harm;

1.2.2 to groundwater;

1.2.3 to waterways; or

1.2.4 beyond the boundary of the Activity Area.

H3 Handling of hazardous materials - mobile

1 Where mobile containment of environmentally hazardous materials is utilised for the fuelling or servicing of mobile or fixed plant within the Activity Area, all reasonable measures must be implemented to prevent unauthorised discharge, emission or deposition of pollutants:

1.1 to soils within the boundary of the Activity Area in a manner that is likely to cause serious or material environmental harm;

1.2 to groundwater;

1.3 to waterways; or

1.4 beyond the boundary of the Activity Area.

2 Reasonable measures may include spill kits, spill trays/bunds or absorbent pads, and automatic cut-offs on any pumping equipment.

Monitoring

M1 Samples and measurements for monitoring purposes

1 Any sample or measurement required under these conditions must be taken and processed in accordance with the following:

1.1 sampling and measuring must be undertaken by a person with training, experience, and knowledge of the appropriate procedure;

1.2 the integrity of samples must be maintained prior to delivery to a testing facility;

1.3 sample analysis must be conducted by a testing facility accredited by the National Association of Testing Authorities (NATA), or a testing facility approved in writing by the Director, for the specified test;

1.4 details of methods employed in taking samples and measurements and results of sample analysis, and measurements must be retained for at least three (3) years after the date of collection; and

1.5 sampling and measurement equipment must be maintained and operated in accordance with manufacturer's specifications and records of maintenance must be retained for at least three (3) years.

Noise Control

N1 Operating hours

1 Unless otherwise approved in writing by the Director, activities associated with the extraction of rock, gravel, sand, clay or minerals; heavy vehicles entering/leaving the Activity Area; loading of product; and crushing/screening, must not be undertaken outside the hours of 0700 hours to 1700 hours on weekdays and 0800 hours to 1600 hours on Saturdays.

2 Notwithstanding the above paragraph, activities must not be carried out on Sundays, and public holidays that are observed Statewide (Easter Tuesday excepted).

N2 Noise emission limits

1 Noise emissions from the Activity Area at any noise sensitive premises in other ownership and expressed as the equivalent continuous A-weighted sound pressure level must not exceed:

1.1 45 dB(A) between 0700 hours and 1900 hours (Day time); and

1.2 40 dB(A) between 1900 hours and 2200 hours (Evening time); and

1.3 35 dB(A) between 2200 hours and 0700 hours (Night time).

2 Where the combined level of noise from the activity and the normal ambient noise exceeds the noise levels stated above, this condition will not be considered to be breached unless the noise emissions from the activity are audible and exceed the background noise level by at least 5 dB(A).

3 The time interval over which noise levels are averaged must be 10 minutes or an alternative time interval specified in writing by the Director.

4 Noise emissions from the site should not contain any dominant or intrusive noise characteristics when measured or observed at any noise sensitive premises as assessed in accordance with the *Noise Measurement Procedures Manual*. Where noise emissions from the site contain any dominant or intrusive noise characteristics at any noise sensitive premises, measured noise levels must be adjusted for tonality, impulsiveness, modulation and low frequency in accordance with the *Noise Measurement Procedures Manual*.

5 All methods of measurement must be in accordance with the *Noise Measurement Procedures Manual*.

N3 Noise complaints

In the event that a noise complaint is received in relation to the Activity Area, the complaint must be reported to the Director within 24 hours.

N4 Noise survey requirements

1 Unless otherwise approved in writing by the Director, a noise survey must be completed:

1.1 within six (6) months after any change to the activity which is likely to substantially alter the character or increase the volume of noise emitted from the Activity Area; and

1.2 Where the Director is of the opinion that a noise survey must be completed within a specified timeframe.

N5 Noise Survey Method and Reporting

1 Noise surveys must be undertaken in accordance with a survey method approved in writing by the Director, as may be amended from time to time with written approval of the Director.

2 Without limitation, the survey method must address the following:

2.1 measurements must be carried out at day, evening and night times (where applicable) at each location; and

2.2 measurement locations, and the number thereof, must be specified, with one location established as a control location (noise).

3 Measurements and data recorded during the survey must include:

3.1 operational status of noise producing equipment and throughput of the activity;

3.2 subjective descriptions of the sound at each location;

3.3 details of meteorological conditions relevant to the propagation of noise; and

3.4 the equivalent continuous (L_{eq}) and L_1, L_{10}, L_{50}, L_{90} and L_{99} A-weighted sound pressure levels measured over a period of 10 minutes or an alternative time interval specified by the Director.

4 A noise survey report must be forwarded to the Director within 30 days from the date on which the noise survey is completed

5 The noise survey report must include the following:

5.1 the results and interpretation of the measurements required by these conditions;

5.2 a map of the area surrounding the activity with the boundary of the Activity Area, measurement locations, and noise sensitive premises clearly marked on the map;

5.3 any other information that will assist with interpreting the results and whether the activity is in compliance with these conditions and EMPCA; and

5.4 recommendations of appropriate mitigation measures to manage any noise problems identified by the noise survey.

Operations

OP1 Machinery washdown

Prior to entering the Activity Area, machinery must be washed in accordance with the Weed and Disease Guidelines, or any subsequent revisions of that document.

OP2 Weed & Disease Management Plan

1 Within three (3) months of the date on which these conditions take effect, or by a date otherwise specified in writing by the Director, a Weed & Disease Management Plan must be submitted to the Director for approval. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The plan must be consistent with the Weed and Disease Guidelines.

3 Once approved the person responsible must act in accordance with the approved plan.

4 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

Stormwater Management

SW1 Perimeter drains or bunds

Perimeter cut-off drains, or bunds, must be constructed at strategic locations within the Activity Area to prevent surface run-off from entering the area used or disturbed in carrying out the activity. All reasonable measures must be implemented to ensure that sediment transported along these drains, or bunds, remains within the Activity Area.

SW2 Stormwater

1 Polluted stormwater that will be discharged from the Activity Area must be collected and treated prior to discharge to the extent necessary to prevent serious or material environmental harm, or environmental nuisance.

2 Notwithstanding the above, all stormwater that is discharged from the Activity Area must not carry pollutants such as sediment, oil and grease in quantities or concentrations that are likely to degrade the visual quality of any receiving waters outside the Activity Area.

3 All reasonable measures must be implemented to ensure that solids entrained in stormwater are retained within the Activity Area. Such measures may include appropriately sized and maintained sediment settling ponds or detention basins.

SW3 Stormwater Management Plan

1 Unless otherwise specified in these conditions, the activity must be undertaken in accordance with the approved Stormwater Management Plan.

2 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

3 Unless otherwise approved by the Director in writing, the plan must be reviewed:

3.1 Every five (5) years from the date of approval of the most recent plan; and

3.2 Where the Director is of the opinion that the plan requires review within a specified timeframe.

SW4 Investigation trigger level

1 Unless otherwise specified in writing by the Director, when the outflow from any sediment basin associated with the activity is visibly turbid, a turbidity measurement must be undertaken.

2 Unless otherwise specified in writing by the Director, if the turbidity measured at a sediment basin outflow exceeds 60 NTU then an investigation into the possible causes of the exceedance must be conducted and a report summarising the outcomes of all such investigations submitted to the Director within three months of the initial detection of the exceedance.

Schedule 3: Information

Legal Obligations

LO1 Storage and handling of dangerous goods, explosives and dangerous substances

1 The storage, handling and transport of dangerous goods, explosives and dangerous substances must comply with the requirements of relevant State Acts and any regulations thereunder, including:

1.1 *Work Health and Safety Act 2012* and subordinate regulations;

1.2 *Explosives Act 2012* and subordinate regulations; and

1.3 *Dangerous Goods (Road and Rail Transport) Act 2010* and subordinate regulations.

LO2 EMPCA

The activity must be conducted in accordance with both the conditions in this document and the obligations of the *Environmental Management and Pollution Control Act 1994* (EMPCA) and subordinate regulations. The conditions of this document do not replicate legislated obligations; therefore, you should ensure you are aware of your obligations under EMPCA and subordinate regulations.

LO3 Aboriginal relics requirements

1 Aboriginal relics, objects, sites, places and human remains regardless of whether they are located on public or private land, are protected under the *Aboriginal Heritage Act 1975*.

2 Unanticipated discoveries of Aboriginal heritage must be reported to Aboriginal Heritage Tasmania on **1300 487 045** as soon as possible.

LO4 MRDA

Operations must be undertaken in accordance with a mining plan approved by the Director of Mines and a Mining Lease issued under the *Mineral Resources Development Act 1995* (MRDA).

Other Information

OI1 Waste management hierarchy

1 Wastes should be managed in accordance with the following hierarchy of waste management:

1.1 waste should be minimised, that is, the generation of waste must be reduced to the maximum extent that is reasonable and practicable, having regard to best practice environmental management;

1.2 waste should be re-used or recycled to the maximum extent that is practicable; and

1.3 waste that cannot be re-used or recycled must be disposed of at a waste depot site or treatment facility that has been approved in writing by the relevant planning authority or the Director to receive such waste, or otherwise in a manner approved in writing by the Director.

OI2 Notification of incidents under section 32 of EMPCA

Where a person is required by section 32 of EMPCA to notify the Director of the release of a pollutant, the Director can be notified by telephoning **1800 005 171** (a 24-hour emergency telephone number).

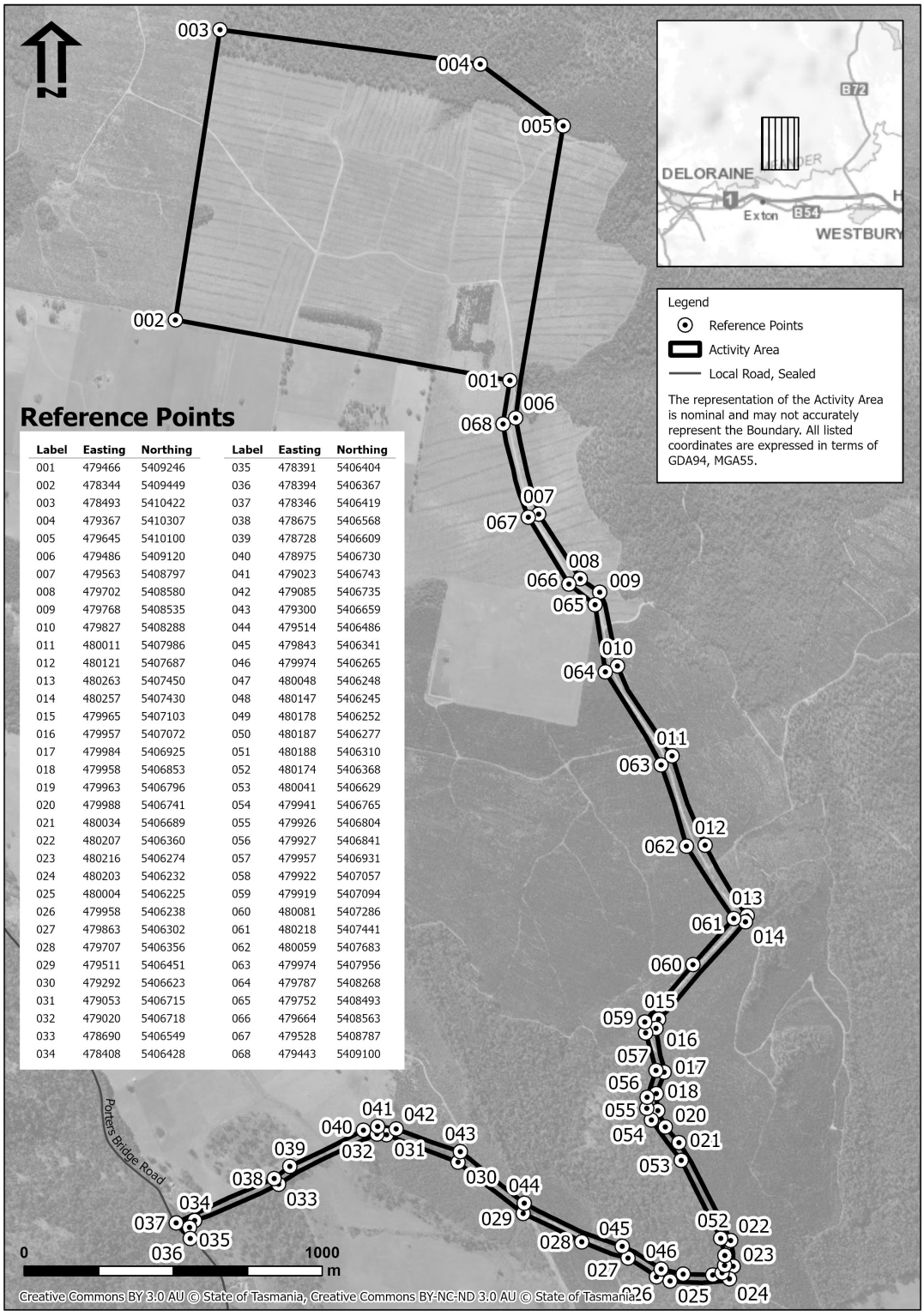
OI3 Release of Relevant Information

Under the provisions of section 23AA of EMPCA relevant information relating to monitoring of environmental impacts required under these conditions may be subject to publishing or public release by the Director.

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

Attachment 1: Activity Area



Reference Points

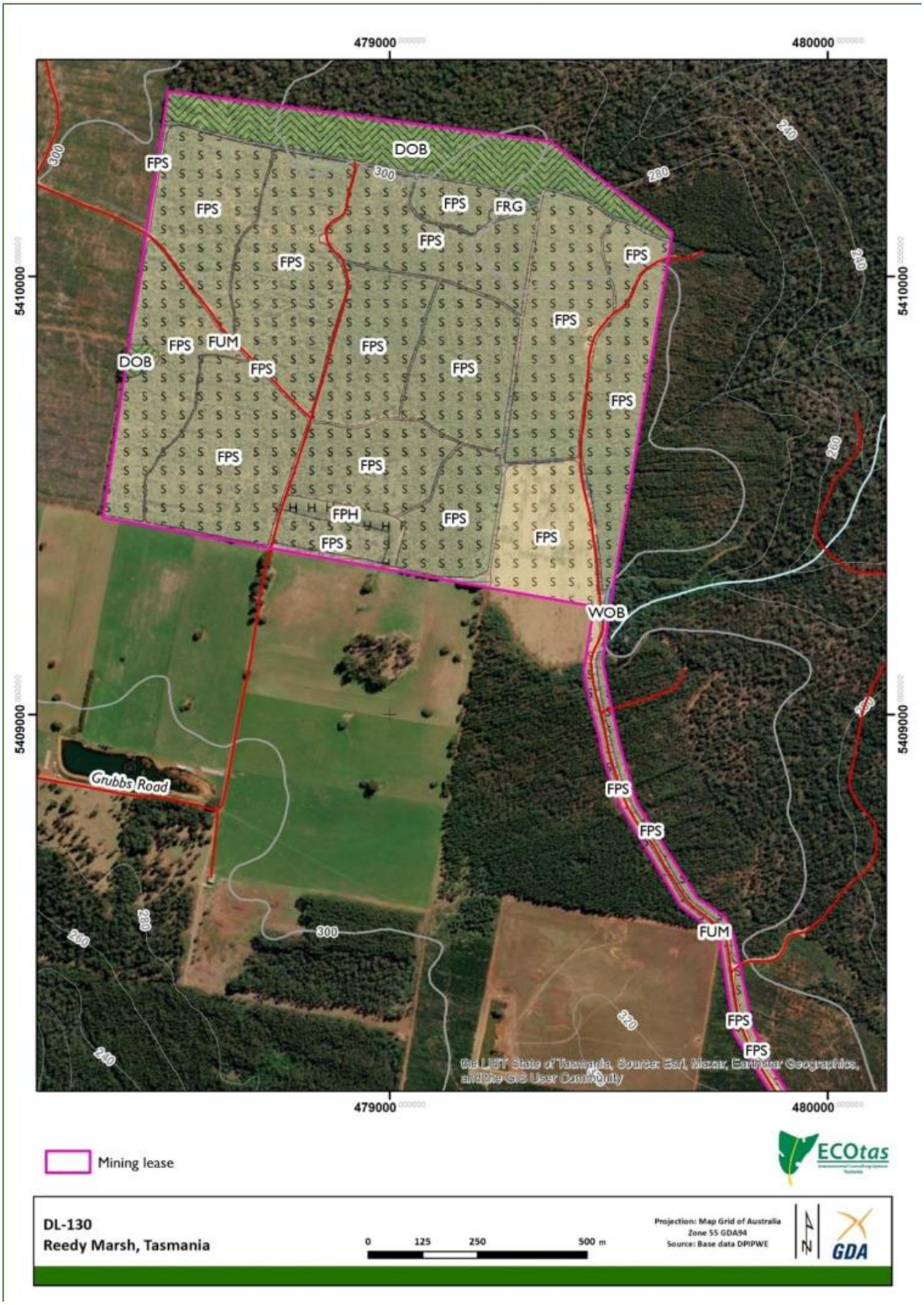
Label	Easting	Northing	Label	Easting	Northing
001	479466	5409246	035	478391	5406404
002	478344	5409449	036	478394	5406367
003	478493	5410422	037	478346	5406419
004	479367	5410307	038	478675	5406568
005	479645	5410100	039	478728	5406609
006	479486	5409120	040	478975	5406730
007	479563	5408797	041	479023	5406743
008	479702	5408580	042	479085	5406735
009	479768	5408535	043	479300	5406659
010	479827	5408288	044	479514	5406486
011	480011	5407986	045	479843	5406341
012	480121	5407687	046	479974	5406265
013	480263	5407450	047	480048	5406248
014	480257	5407430	048	480147	5406245
015	479965	5407103	049	480178	5406252
016	479957	5407072	050	480187	5406277
017	479984	5406925	051	480188	5406310
018	479958	5406853	052	480174	5406368
019	479963	5406796	053	480041	5406629
020	479988	5406741	054	479941	5406765
021	480034	5406689	055	479926	5406804
022	480207	5406360	056	479927	5406841
023	480216	5406274	057	479957	5406931
024	480203	5406232	058	479922	5407057
025	480004	5406225	059	479919	5407094
026	479958	5406238	060	480081	5407286
027	479863	5406302	061	480218	5407441
028	479707	5406356	062	480059	5407683
029	479511	5406451	063	479974	5407956
030	479292	5406623	064	479787	5408268
031	479053	5406715	065	479752	5408493
032	479020	5406718	066	479664	5408563
033	478690	5406549	067	479528	5408787
034	478408	5406428	068	479443	5409100

Attachment 2: Mapped DOV vegetation community

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

Attachment 3: Mapped DOB vegetation community



ENVIRONMENT PROTECTION AUTHORITY

PERMIT PART B
PERMIT CONDITIONS - ENVIRONMENTAL No. 11390

Issued under the *Environmental Management and Pollution Control Act 1994*

Activity: **The operation of a quarry with materials handling (crushing, screening) (ACTIVITY TYPE: Crushing, grinding, milling or separating into different sizes (rocks, ores or minerals))**
DL130 BAUXITE PROJECT QUARRY, OFF PORTERS BRIDGE ROAD REEDY MARSH TAS 7304

The above activity has been assessed as a level 2 activity under the *Environmental Management and Pollution Control Act 1994*.

Acting under Section 25(5)(a)(i) of the EMPCA, the Board of the Environment Protection Authority has required that this Permit Part B be included in any Permit granted under the *Land Use Planning and Approvals Act 1993* with respect to the above activity.

Municipality: **MEANDER VALLEY**
Permit Application Reference: **PA 24/0052**
EPA file reference: **22/9483**

Date conditions approved: 07 March 2025

Signed: _____

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

DEFINITIONS

Unless the contrary appears, words and expressions used in this Permit Part B have the meaning given to them in **Schedule 1** of this Permit and in the EMPCA. If there is any inconsistency between a definition in the EMPCA and a definition in this Permit Part B, the EMPCA prevails to the extent of the inconsistency.

ENVIRONMENTAL CONDITIONS

The person responsible for the activity must comply with the conditions contained in **Schedule 2** of this Permit Part B.

INFORMATION

Attention is drawn to **Schedule 3**, which contains important additional information.

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

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Attachments

Attachment 1: Activity Area (modified: 14/02/2025 14:58).... 1 page
Attachment 2: Mapped DOV vegetation community (modified: 17/02/2025 14:40)....1 page
Attachment 3: Mapped DOB vegetation community (modified: 17/02/2025 14:35)....1 page

Schedule 1: Definitions

In this Permit Part B:-

50,000 cubic metres is considered equivalent to 70,000 tonnes.

Aboriginal Relic has the meaning described in section 2(3) of the *Aboriginal Heritage Act 1975*.

active extraction means when ground is being disturbed by machinery for the purposes of extracting material.

Activity means any environmentally relevant activity (as defined in Section 3 of EMPCA) to which this document relates, and includes more than one such activity.

Activity Area means the area to be used for the Activity when these conditions take effect, as depicted in Attachment 1.

Authorized Officer means an authorized officer under section 20 of EMPCA.

Background Noise Level is the level that is exceeded 90% of the time for each measurement interval when measured in the absence of the subject site noise. Background noise is described using the $L_{A90,T}$ descriptor.

Control Location (Noise) means a location chosen to represent the general ambient sound without contribution from noise sources at the activity.

Director means the Director, Environment Protection Authority holding office under section 18 of EMPCA and includes a delegate or person authorised in writing by the Director to exercise a power or function on the Director's behalf.

Dominant or Intrusive Noise Characteristics means any noise characteristic that contributes to a noise being considered louder than would be indicated by the A-weighted sound pressure level measured, or that exacerbates nuisance or harm caused by the noise.

DRP means Decommissioning and Rehabilitation Plan.

EMPCA means the *Environmental Management and Pollution Control Act 1994*.

Environmental Harm and **Material Environmental Harm** and **Serious Environmental Harm** each have the meanings ascribed to them in Section 5 of EMPCA.

Environmental Nuisance has the meanings ascribed to it in Section 3 of EMPCA.

Environmentally Hazardous Material means any substance or mixture of substances of a nature or held in quantities which present a reasonably foreseeable risk of causing serious or material environmental harm if released to the environment and includes fuels, oils, waste and chemicals but excludes sewage.

EPA Board means the Board of the Environment Protection Authority established under section 13 of EMPCA and includes a delegate or person authorised in writing by the EPA Board to exercise a power or function on the EPA Board's behalf.

Guide to Eagle Nest Searching and Nest Activity Checks means the document titled *Guide to Eagle Nest Searching and Nest Activity Checks*, by the Environment Protection Authority, dated May 2023, and any amendments to or substitution of this document.

Maximum Disturbed Area means the area disturbed to facilitate the activity and includes but is not limited to; vegetation disturbance, soil disturbance, access roads, hardstand, working area, vehicle parking and infrastructure (i.e. buildings, site office, sheds etc).

Noise Measurement Procedures Manual means the document titled *Noise Measurement Procedures Manual*, by the Department of Environment, Parks, Heritage and the Arts, dated July 2008, and any amendment to or substitution of this document.

Noise Sensitive Premises means residences and residential zones (whether occupied or not), schools, hospitals, caravan parks and similar land uses involving the presence of individual people for extended periods, except in the course of their employment or for recreation.

Non-Trivial Environmental Incidents means an incident requiring the person responsible to implement actions to control or respond to the incident to minimise environmental harm and/or nuisance.

Normal Ambient Noise refers to the ambient noise of the receiver location in the absence of the subject site noise. Ambient noise level is measured in L_{Aeq}.

Person Responsible is any person who is or was responsible for the environmentally relevant activity to which this document relates and includes the officers, employees, contractors, joint venture partners and agents of that person, and includes a body corporate.

Planning Authority means the Council(s) for the municipal area(s) in which the Activity Area is situated.

Pollutant has the meaning ascribed to it in section 3 of EMPCA.

Quarry Code of Practice means the document of this title published by the Environment Protection Authority in May 2017, and includes any subsequent versions of this document.

Reporting Period means the 12 months ending on 31 December of each year.

Stormwater means water runoff as a consequence of a rainfall event, whether surface flow, piped flow, or flow within conduits, including any contaminants collected by the water during its passage.

Stormwater Management Plan means the document titled *DL130 Bauxite Project - Stormwater Management Plan*, by Pitt & Sherry, dated 24 January 2025, and any amendments to or substitution of this document.

Threatened Species means has the meaning ascribed in the *Threatened Species Act 1995.*

Weed means a plant species that has, or is likely to have, an adverse impact on the environment because of the introduction, spread or increase in population size of the species in an area; and includes a declared weed as defined in the *Biosecurity Act 2019* and subordinate regulations.

Weed And Disease Guidelines means the document titled *Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania*, by the Department of Primary Industries, Parks, Water and Environment, dated March 2015, and any amendment to or substitution of this document.

Schedule 2: Conditions

Maximum Quantities

Q1 Regulatory limits

1 The activity must not exceed the following limits :

1.1 40,000 cubic metres per year of rocks, ores or minerals processed.

1.2 50,000 cubic metres per year of rock or gravel extracted.

General

G1 Activity Area

The activity must be confined to the Activity Area.

G2 Access to and awareness of conditions and associated documents

A copy of these conditions and any associated documents referred to in these conditions must be held in a location that is known to and accessible to the person responsible for the activity. The person responsible for the activity must ensure that all persons who are responsible for undertaking work within the Activity Area, including contractors and sub-contractors, are familiar with these conditions to the extent relevant to their work.

G3 Incident response

If an incident causing or threatening environmental nuisance, serious environmental harm or material environmental harm from pollution occurs in the course of the activity, then the person responsible for the activity must immediately take all reasonable and practicable action to minimise any adverse environmental effects from the incident.

G4 Proposed change to activity

1 The person responsible must notify the Director in writing prior to implementing any change to the activity authorised by this document that may cause or increase the emission of a pollutant or which may result in environmental harm or environmental nuisance (even temporarily). A change includes, but is not limited to, any of the following:

1.1 an increase in the discharge of a pollutant, or the location of its discharge.

1.2 the construction, installation, alteration or removal of any structure or equipment used in the course of carrying out the activity.

1.3 any clearance of native vegetation or earthworks.

1.4 a change in the quantity or characteristics of materials used in carrying out the activity.

2 The notification must be in an approved form and include the following:

2.1 details of the proposed change;

2.2 an assessment of the environmental impacts that may result from the change;

2.3 any relevant approvals held by the person responsible; and

2.4 any advice from the relevant planning authority to the effect that approval is not required.

3 The person responsible must provide additional information as requested by an Authorized Officer.

4 The proposed change must not be implemented until the Director has confirmed in writing that they are satisfied that no other approval or variation of this document is required.

5 For the avoidance of doubt, a notification of a proposed change under this provision is not required if the proposed change is part of a referral to the EPA Board for assessment under sections 24, 25 or 27 of EMPCA.

G5 Change of responsibility

If the person responsible for the activity intends to cease to be responsible for the activity, that person must notify the Director in writing of the full particulars of any person who will become the person responsible for the activity, before such cessation.

G6 Change of ownership

If the owner of the Activity Area changes or is to change, then, as soon as reasonably practicable but no later than 30 days after becoming aware of the change or intended change in the ownership of the Activity Area, the person responsible must notify the Director in writing of the change or intended change of ownership.

G7 Complaints register

1 A public complaints register must be maintained. The public complaints register must, as a minimum, record the following detail in relation to each complaint received in which it is alleged that environmental harm (including an environmental nuisance) has been caused by the activity:

1.1 the date and time at which the complaint was received;

1.2 contact details for the complainant (where provided);

1.3 the subject matter of the complaint;

1.4 any investigations undertaken with regard to the complaint; and

1.5 the manner in which the complaint was resolved, including any mitigation measures implemented.

2 Complaint records must be retained for a period of at least 3 years.

G8 Quarry Code of Practice

Unless otherwise required by these conditions or required in writing by the Director, the activity (or activities) undertaken within the Activity Area must comply with the Acceptable Standards provisions of the *Quarry Code of Practice.*

G9 Amendment of required plans and reports

1 The plans and reports required by these conditions must be amended to address any matter required by the Director, as advised by notice in writing.

2 Amended plans and reports must be resubmitted within the timeframe that the Director specifies.

G10 Notification prior to commencement

The Director must be notified in writing of the commencement of operations at least 14 days before that occurs.

G11 Annual Environmental Review

1 Unless otherwise specified in writing by the Director, a publicly available Annual Environmental Review for the activity must be submitted to the Director each year within three months of the end of the reporting period. Without limitation, each Annual Environmental Review must include the following information:

1.1 a statement by the General Manager, Chief Executive Officer or equivalent for the activity acknowledging the contents of the Annual Environmental Review;

1.2 subject to the *Personal Information Protection Act 2004*, a list of all complaints received from the public during the reporting period concerning actual or potential environmental harm or environmental nuisance caused by the activity and a description of any actions taken as a result of those complaints;

1.3 details of environment-related procedural or process changes that have been implemented during the reporting period;

1.4 a summary of the amounts (tonnes or litres) of both solid and liquid wastes produced and treatment methods implemented during the reporting period. Initiatives or programs planned to avoid, minimise, re-use, or recycle such wastes over the next reporting period should be detailed;

1.5 details of all non-trivial environmental incidents and/or incidents of non compliance with these conditions that occurred during the reporting period, and any mitigative or preventative actions that have resulted from such incidents;

1.6 a summary of the monitoring data and record keeping required by these conditions. This information should be presented in graphical form where possible, including comparison with the results of at least the preceding reporting period. Special causes and system changes that have impacted on the parameters monitored must be noted. Explanation of significant deviations between actual results and any predictions made in previous reports must be provided;

1.7 identification of breaches of limits specified in these conditions and significant variations from predicted results contained in any relevant EIS or EMP, an explanation of why each identified breach of specified limits or variation from predictions occurred and details of the actions taken in response to each identified breach of limits or variance from predictions;

1.8 a list of any issues, not discussed elsewhere in the report, that must be addressed to improve compliance with these conditions, and the actions that are proposed to address any such issues;

1.9 a summary of fulfilment of environmental commitments made for the reporting period. This summary must include indication of results of the actions implemented and explanation of any failures to achieve such commitments; and

1.10 a summary of any community consultation and communication undertaken during the reporting period.

Atmospheric

A1 Covering of vehicles
Vehicles carrying loads containing material which may blow or spill must be equipped with effective control measures to prevent the escape of the materials from the vehicles when they leave the Activity Area or travel on public roads. Effective control measures may include tarpaulins or load dampening.

A2 Control of dust emissions
Dust emissions from within the Activity Area must be controlled to the extent necessary to prevent environmental nuisance beyond the boundary of the Activity Area.

A3 Dust emissions from traffic areas
Dust emissions from areas of the Activity Area used by vehicles must be limited or controlled by dampening or by other effective measures.

A4 Control of dust emissions from crushing and screening plant

1 Dust produced by the operation of all crushing and/or screening plant must be controlled by the use of one or more of the following methods to the extent necessary to prevent environmental nuisance:

1.1 the installation of fixed water sprays at all crushers and/or screening plant and at all necessary points where processed material changes direction due to belt transfer;

1.2 the installation of dust extraction equipment at all crushers and/or screening plant and at all necessary points where processed material changes direction due to belt transfer;

1.3 the enclosure of the crushing and/or screening plant and the treatment of atmospheric emissions by dust extraction equipment; or

1.4 any other method that has been approved in writing by the Director.

A5 Dust Management Plan

1 Unless otherwise approved by the Director in writing, within thirty (30) days of the date on which these conditions take effect, a revised Dust Management Plan must be submitted to the Director for approval. The plan is to have the aim of ensuring that dust emissions are managed to prevent environmental harm or nuisance at or beyond the boundary of the Activity Area. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 Unless otherwise approved by the Director in writing, the plan must be consistent with Section 3.1 of the EER and supplementary preliminary Dust Management Plan.

3 The plan must be prepared in accordance with any guidelines provided by the Director.

4 Without limitation, the plan must include details of the following:

4.1 a table containing all of the major commitments made in the plan;

4.2 an implementation timetable for key aspects of the plan; and

4.3 a reporting program to regularly advise the Director of the results of the plan.

5 Once approved the person responsible must act in accordance with the approved plan.

6 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

7 Unless otherwise approved by the Director in writing, the plan must be reviewed:

7.1 Every five (5) years from the date of approval of the most recent plan; and

7.2 Where the Director is of the opinion that the plan requires review within a specified timeframe.

A6 Dust Monitoring Program

1 Unless otherwise approved by the Director in writing, within thirty (30) days of the date on which these conditions take effect, a Dust Monitoring Program must be submitted to the Director for approval. The program is to have the aim of monitoring dust emissions at the boundary of the Activity Area to ensure that dust emissions are managed to prevent environmental harm or nuisance at or beyond the boundary of the Activity Area. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The program must be prepared in accordance with any guidelines provided by the Director.

3 Dust monitoring must be undertaken in accordance with a method approved in writing by the Director, as may be amended from time to time with written approval of the Director.

4 Unless otherwise approved by the Director in writing:

4.1 Background dust monitoring must occur for a minimum period of three (3) months prior to the commencement of operations; and

4.2 Dust monitoring must continue upon commencement of operations.

5 Once approved the person responsible must act in accordance with the approved program.

6 The person responsible may apply to the Director to vary or substitute the program. Any variation or substitution of the program approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

7 Unless otherwise approved by the Director in writing, the program must be reviewed:

7.1 Every five (5) years from the date of approval of the most recent program; and

7.2 Where the Director is of the opinion that the program requires review within a specified timeframe.

Decommissioning And Rehabilitation

DC1 Progressive rehabilitation

1 Unless otherwise approved by the Director in writing, worked out or disused sections of the Activity Area must be rehabilitated concurrently with extractive activities on other sections of the Activity Area. Progressive rehabilitation must be carried out in accordance with the relevant provisions of the *Quarry Code of Practice*, unless otherwise approved in writing by the Director.

2 Unless otherwise approved by the Director in writing:

2.1 The maximum disturbed area of land at any given time without rehabilitation must not exceed 12 hectares; and

2.2 The maximum area for active extraction must not exceed 2 ha at any given time.

DC2 Temporary suspension of activity

1 Within 30 days of becoming aware of any event or decision which is likely to give rise to the temporary suspension of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to suspend or has suspended.

2 During temporary suspension of the activity the Activity Area must be managed and monitored by the person responsible for the activity to ensure that emissions from the Activity Area do not cause serious environmental harm, material environmental harm or environmental nuisance.

3 If required by the Director, a Care and Maintenance Plan for the activity must be submitted to the Director for approval, by a date specified in writing by the Director. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

3.1 The plan must be prepared in accordance with any guidelines provided by the Director.

3.2 Once approved the person responsible must act in accordance with the approved Care and Maintenance Plan.

3.3 The person responsible may apply to the Director to vary or substitute the Care and Maintenance Plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

4 Unless otherwise approved in writing by the Director, if the activity on the Activity Area has substantially ceased for 2 years or more, rehabilitation of the Activity Area must be carried out in accordance with the requirements of these conditions as if the activity has permanently ceased.

DC3 Notification of cessation

Within 30 days of becoming aware of any event or decision which is likely to give rise to the permanent cessation of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to cease or has ceased.

DC4 DRP requirements

1 Unless otherwise approved in writing by the Director, a Decommissioning and Rehabilitation Plan (DRP) for the activity must be submitted for approval to the Director within 30 days of the Director being notified of the planned cessation of the activity. The DRP must be prepared in accordance with any guidelines provided by the Director. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The person responsible may apply to the Director to vary or substitute the DRP. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with affect from the date specified in the notice.

DC5 Rehabilitation following cessation

1 Following permanent cessation of the activity, and unless otherwise approved in writing by the Director, the Activity Area must be rehabilitated including:

1.1 stabilisation of any land surfaces that may be subject to erosion;

1.2 removal or mitigation of all environmental hazards or land contamination, that might pose an ongoing risk of causing environmental harm; and

1.3 decommissioning of any equipment that has not been removed.

2 Where a Decommissioning and Rehabilitation Plan (DRP) has been approved by the Director, decommissioning and rehabilitation must be carried out in accordance with that plan.

3 The person responsible may apply to the Director to vary or substitute the DRP. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

DC6 Stockpiling of surface soil

Prior to commencement of extractive activities on any portion of the Activity Area, surface soils must be removed in that portion of the Activity Area to be disturbed by the conduct of the activity and stockpiled for later use in rehabilitation of the Activity Area. Topsoil must be kept separate from other overburden and protected from erosion or other disturbance.

Flora And Fauna

FF1 Protection of Eucalyptus ovata forest and woodland (DOV)

1 The interface between the access road corridor and the DOV community, as identified in Attachment 2, must be delineated with a fence or similar method approved in writing by the Director within thirty (30) days of the date on which these conditions take effect;

2 Unless otherwise approved in writing by the Director:

2.1 there must be no disturbance of the vegetation beyond this fence; and

2.2 the activity must be conducted in a manner that does not cause degradation or disturbance to the DOV community.

FF2 Protection of Pimelea curviflora var. curviflora (slender curved riceflower)

Unless otherwise approved in writing by the Director, the activity must be conducted in a manner that does not cause degradation or disturbance (including sedimentation) to the areas identified in Appendix A of the EMP as being inhabited by the species slender curved riceflower.

FF3 Protection of Eucalyptus obliqua dry forest (DOB)

1 The interface between 'Pit 2' and the DOB community, as identified in Attachment 3, must be delineated with a fence or similar method approved in writing by the Director within thirty (30) days of the date on which these conditions take effect;

2 Unless otherwise approved in writing by the Director:

2.1 there must be no disturbance of the vegetation beyond this fence; and

2.2 the activity must be conducted in a manner that does not cause degradation or disturbance to the DOB community.

FF4 Tasmanian devil (Sarcophilus harrisii) and spotted-tailed quoll (Dasyurus maculatus maculatus) den survey

1 At least thirty (30) days prior to the commencement of operations, or by a date otherwise specified in writing by the Director, a survey of the area to be disturbed for Tasmanian devil and spotted-tailed quoll dens must be conducted.

2 The person(s) conducting the survey must be appropriately qualified in the identification of the species and its habitat.

3 A report outlining the findings of the survey must be submitted to the Director.

3.1 If any dens will be adversely impacted by the activity, this must be brought to the attention of the Department which administers the *Threatened Species Protection Act 1995* prior to such impact occurring.

3.2 This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

FF5 Tasmanian wedge-tailed eagle (Aquila audax subsp. fleayi) nest survey

1 Unless otherwise approved in writing by the Director:

1.1 no more than 12 months prior to the commencement of operations, a survey for nests of the Tasmanian wedge-tailed eagle must be undertaken between February and June within the Activity Area and within 1 km of the boundary of the Activity Area.

1.2 eagle nest searches should be undertaken in accordance with the *Guide to Eagle Nest Searching and Nest Activity Checks*.

1.3 a report outlining the findings of the survey must be submitted to the Director for approval within thirty (30) days of the survey being undertaken.

2 Works including vegetation clearance must not commence without written approval from the Director.

Hazardous Substances

H1 Spill kits

Spill kits appropriate for the types and volumes of materials handled within the Activity Area must be kept in appropriate locations and maintained in a functional condition to assist with the containment of spilt environmentally hazardous materials.

H2 Storage and handling of hazardous materials

1 Unless otherwise approved in writing by the Director, environmentally hazardous materials held within the Activity Area must be:

1.1 stored within maintained and functional impervious bunded areas, spill trays or other containment systems; and

1.2 managed to prevent unauthorised discharge, emission or deposition of pollutants:

1.2.1 to soils within the boundary of the Activity Area in a manner that is likely to cause serious or material environmental harm;

1.2.2 to groundwater;

1.2.3 to waterways; or

1.2.4 beyond the boundary of the Activity Area.

H3 Handling of hazardous materials - mobile

1 Where mobile containment of environmentally hazardous materials is utilised for the fuelling or servicing of mobile or fixed plant within the Activity Area, all reasonable measures must be implemented to prevent unauthorised discharge, emission or deposition of pollutants:

1.1 to soils within the boundary of the Activity Area in a manner that is likely to cause serious or material environmental harm;

1.2 to groundwater;

1.3 to waterways; or

1.4 beyond the boundary of the Activity Area.

2 Reasonable measures may include spill kits, spill trays/bunds or absorbent pads, and automatic cut-offs on any pumping equipment.

Monitoring

M1 Samples and measurements for monitoring purposes

1 Any sample or measurement required under these conditions must be taken and processed in accordance with the following:

1.1 sampling and measuring must be undertaken by a person with training, experience, and knowledge of the appropriate procedure;

1.2 the integrity of samples must be maintained prior to delivery to a testing facility;

1.3 sample analysis must be conducted by a testing facility accredited by the National Association of Testing Authorities (NATA), or a testing facility approved in writing by the Director, for the specified test;

1.4 details of methods employed in taking samples and measurements and results of sample analysis, and measurements must be retained for at least three (3) years after the date of collection; and

1.5 sampling and measurement equipment must be maintained and operated in accordance with manufacturer's specifications and records of maintenance must be retained for at least three (3) years.

Noise Control

N1 Operating hours

1 Unless otherwise approved in writing by the Director, activities associated with the extraction of rock, gravel, sand, clay or minerals; heavy vehicles entering/leaving the Activity Area; loading of product; and crushing/screening, must not be undertaken outside the hours of 0700 hours to 1700 hours on weekdays and 0800 hours to 1600 hours on Saturdays.

2 Notwithstanding the above paragraph, activities must not be carried out on Sundays, and public holidays that are observed Statewide (Easter Tuesday excepted).

N2 Noise emission limits

1 Noise emissions from the Activity Area at any noise sensitive premises in other ownership and expressed as the equivalent continuous A-weighted sound pressure level must not exceed:

1.1 45 dB(A) between 0700 hours and 1900 hours (Day time); and

1.2 40 dB(A) between 1900 hours and 2200 hours (Evening time); and

1.3 35 dB(A) between 2200 hours and 0700 hours (Night time).

2 Where the combined level of noise from the activity and the normal ambient noise exceeds the noise levels stated above, this condition will not be considered to be breached unless the noise emissions from the activity are audible and exceed the background noise level by at least 5 dB(A).

3 The time interval over which noise levels are averaged must be 10 minutes or an alternative time interval specified in writing by the Director.

4 Noise emissions from the site should not contain any dominant or intrusive noise characteristics when measured or observed at any noise sensitive premises as assessed in accordance with the *Noise Measurement Procedures Manual*. Where noise emissions from the site contain any dominant or intrusive noise characteristics at any noise sensitive premises, measured noise levels must be adjusted for tonality, impulsiveness, modulation and low frequency in accordance with the *Noise Measurement Procedures Manual*.

5 All methods of measurement must be in accordance with the *Noise Measurement Procedures Manual*.

N3 Noise complaints

In the event that a noise complaint is received in relation to the Activity Area, the complaint must be reported to the Director within 24 hours.

N4 Noise survey requirements

1 Unless otherwise approved in writing by the Director, a noise survey must be completed:

1.1 within six (6) months after any change to the activity which is likely to substantially alter the character or increase the volume of noise emitted from the Activity Area; and

1.2 Where the Director is of the opinion that a noise survey must be completed within a specified timeframe.

N5 Noise Survey Method and Reporting

1 Noise surveys must be undertaken in accordance with a survey method approved in writing by the Director, as may be amended from time to time with written approval of the Director.

2 Without limitation, the survey method must address the following:

2.1 measurements must be carried out at day, evening and night times (where applicable) at each location; and

2.2 measurement locations, and the number thereof, must be specified, with one location established as a control location (noise).

3 Measurements and data recorded during the survey must include:

3.1 operational status of noise producing equipment and throughput of the activity;

3.2 subjective descriptions of the sound at each location;

3.3 details of meteorological conditions relevant to the propagation of noise; and

3.4 the equivalent continuous (L_{eq}) and L_1, L_{10}, L_{50}, L_{90} and L_{99} A-weighted sound pressure levels measured over a period of 10 minutes or an alternative time interval specified by the Director.

4 A noise survey report must be forwarded to the Director within 30 days from the date on which the noise survey is completed

5 The noise survey report must include the following:

5.1 the results and interpretation of the measurements required by these conditions;

5.2 a map of the area surrounding the activity with the boundary of the Activity Area, measurement locations, and noise sensitive premises clearly marked on the map;

5.3 any other information that will assist with interpreting the results and whether the activity is in compliance with these conditions and EMPCA; and

5.4 recommendations of appropriate mitigation measures to manage any noise problems identified by the noise survey.

Operations

OP1 Machinery washdown

Prior to entering the Activity Area, machinery must be washed in accordance with the Weed and Disease Guidelines, or any subsequent revisions of that document.

OP2 Weed & Disease Management Plan

1 Within three (3) months of the date on which these conditions take effect, or by a date otherwise specified in writing by the Director, a Weed & Disease Management Plan must be submitted to the Director for approval. This requirement will be deemed to be satisfied only when the Director indicates in writing that the submitted document adequately addresses the requirements of this condition.

2 The plan must be consistent with the Weed and Disease Guidelines.

3 Once approved the person responsible must act in accordance with the approved plan.

4 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

Stormwater Management

SW1 Perimeter drains or bunds

Perimeter cut-off drains, or bunds, must be constructed at strategic locations within the Activity Area to prevent surface run-off from entering the area used or disturbed in carrying out the activity. All reasonable measures must be implemented to ensure that sediment transported along these drains, or bunds, remains within the Activity Area.

SW2 Stormwater

1 Polluted stormwater that will be discharged from the Activity Area must be collected and treated prior to discharge to the extent necessary to prevent serious or material environmental harm, or environmental nuisance.

2 Notwithstanding the above, all stormwater that is discharged from the Activity Area must not carry pollutants such as sediment, oil and grease in quantities or concentrations that are likely to degrade the visual quality of any receiving waters outside the Activity Area.

3 All reasonable measures must be implemented to ensure that solids entrained in stormwater are retained within the Activity Area. Such measures may include appropriately sized and maintained sediment settling ponds or detention basins.

SW3 Stormwater Management Plan

1 Unless otherwise specified in these conditions, the activity must be undertaken in accordance with the approved Stormwater Management Plan.

2 The person responsible may apply to the Director to vary or substitute the plan. Any variation or substitution of the plan approved by the Director, by notice in writing, replaces the earlier approval with effect from the date specified in the notice.

3 Unless otherwise approved by the Director in writing, the plan must be reviewed:

3.1 Every five (5) years from the date of approval of the most recent plan; and

3.2 Where the Director is of the opinion that the plan requires review within a specified timeframe.

SW4 Investigation trigger level

1 Unless otherwise specified in writing by the Director, when the outflow from any sediment basin associated with the activity is visibly turbid, a turbidity measurement must be undertaken.

2 Unless otherwise specified in writing by the Director, if the turbidity measured at a sediment basin outflow exceeds 60 NTU then an investigation into the possible causes of the exceedance must be conducted and a report summarising the outcomes of all such investigations submitted to the Director within three months of the initial detection of the exceedance.

Schedule 3: Information

Legal Obligations

LO1 Storage and handling of dangerous goods, explosives and dangerous substances

1 The storage, handling and transport of dangerous goods, explosives and dangerous substances must comply with the requirements of relevant State Acts and any regulations thereunder, including:

1.1 *Work Health and Safety Act 2012* and subordinate regulations;

1.2 *Explosives Act 2012* and subordinate regulations; and

1.3 *Dangerous Goods (Road and Rail Transport) Act 2010* and subordinate regulations.

LO2 EMPCA

The activity must be conducted in accordance with both the conditions in this document and the obligations of the *Environmental Management and Pollution Control Act 1994* (EMPCA) and subordinate regulations. The conditions of this document do not replicate legislated obligations; therefore, you should ensure you are aware of your obligations under EMPCA and subordinate regulations.

LO3 Aboriginal relics requirements

1 Aboriginal relics, objects, sites, places and human remains regardless of whether they are located on public or private land, are protected under the *Aboriginal Heritage Act 1975*.

2 Unanticipated discoveries of Aboriginal heritage must be reported to Aboriginal Heritage Tasmania on **1300 487 045** as soon as possible.

LO4 MRDA

Operations must be undertaken in accordance with a mining plan approved by the Director of Mines and a Mining Lease issued under the *Mineral Resources Development Act 1995* (MRDA).

Other Information

OI1 Waste management hierarchy

1 Wastes should be managed in accordance with the following hierarchy of waste management:

1.1 waste should be minimised, that is, the generation of waste must be reduced to the maximum extent that is reasonable and practicable, having regard to best practice environmental management;

1.2 waste should be re-used or recycled to the maximum extent that is practicable; and

1.3 waste that cannot be re-used or recycled must be disposed of at a waste depot site or treatment facility that has been approved in writing by the relevant planning authority or the Director to receive such waste, or otherwise in a manner approved in writing by the Director.

OI2 Notification of incidents under section 32 of EMPCA

Where a person is required by section 32 of EMPCA to notify the Director of the release of a pollutant, the Director can be notified by telephoning **1800 005 171** (a 24-hour emergency telephone number).

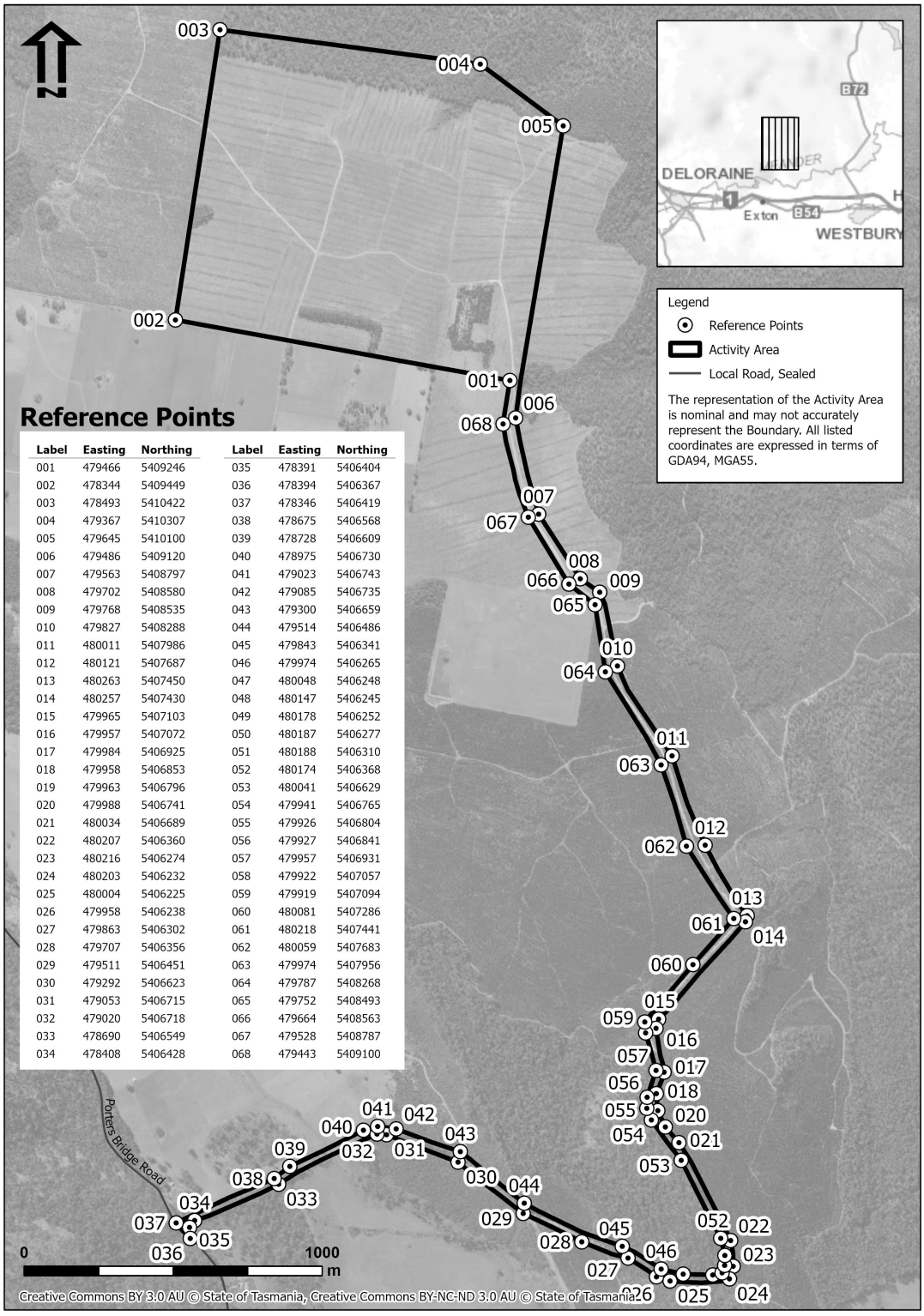
OI3 Release of Relevant Information

Under the provisions of section 23AA of EMPCA relevant information relating to monitoring of environmental impacts required under these conditions may be subject to publishing or public release by the Director.

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

Attachment 1: Activity Area



Reference Points

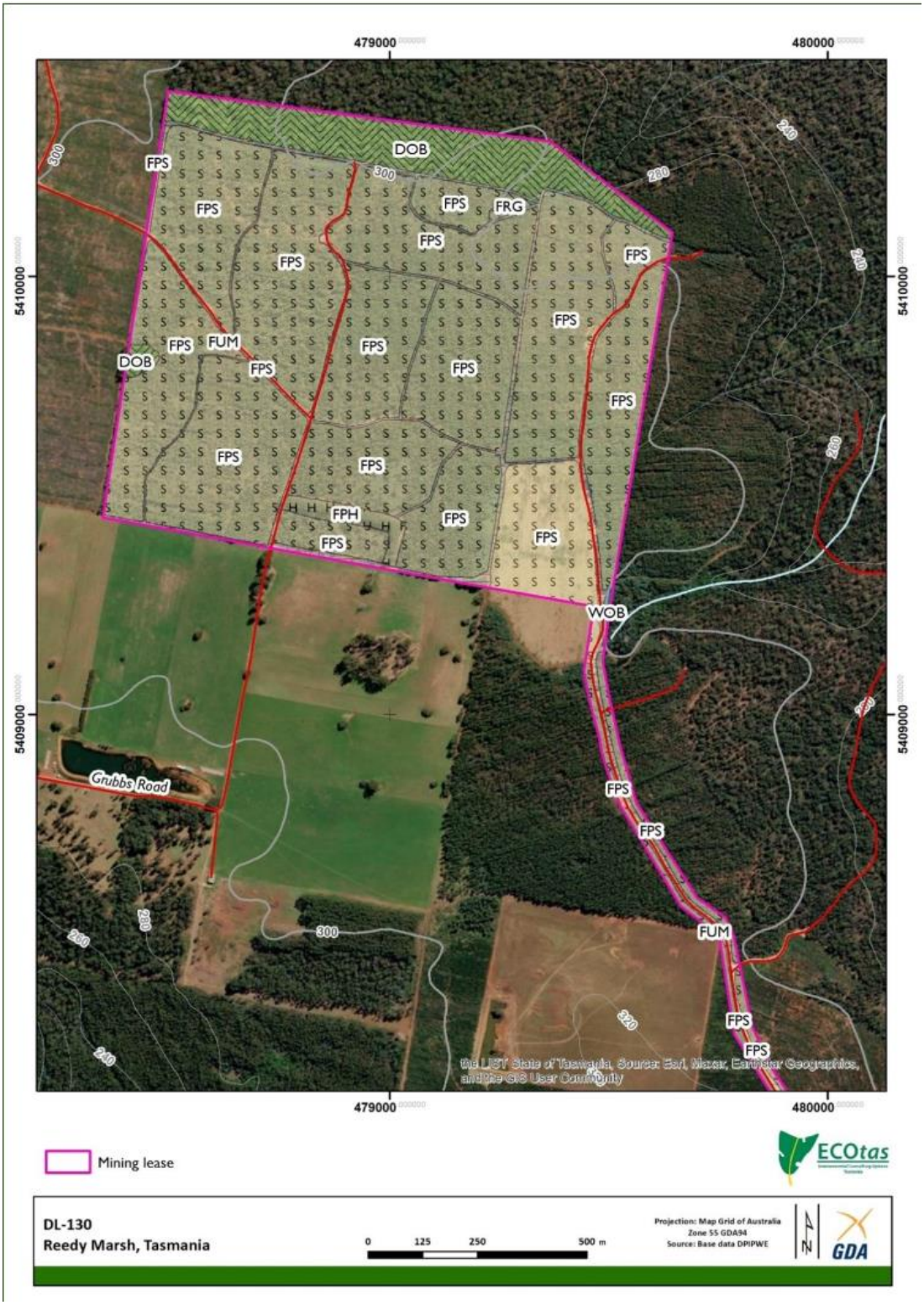
Label	Easting	Northing	Label	Easting	Northing
001	479466	5409246	035	478391	5406404
002	478344	5409449	036	478394	5406367
003	478493	5410422	037	478346	5406419
004	479367	5410307	038	478675	5406568
005	479645	5410100	039	478728	5406609
006	479486	5409120	040	478975	5406730
007	479563	5408797	041	479023	5406743
008	479702	5408580	042	479085	5406735
009	479768	5408535	043	479300	5406659
010	479827	5408288	044	479514	5406486
011	480011	5407986	045	479843	5406341
012	480121	5407687	046	479974	5406265
013	480263	5407450	047	480048	5406248
014	480257	5407430	048	480147	5406245
015	479965	5407103	049	480178	5406252
016	479957	5407072	050	480187	5406277
017	479984	5406925	051	480188	5406310
018	479958	5406853	052	480174	5406368
019	479963	5406796	053	480041	5406629
020	479988	5406741	054	479941	5406765
021	480034	5406689	055	479926	5406804
022	480207	5406360	056	479927	5406841
023	480216	5406274	057	479957	5406931
024	480203	5406232	058	479922	5407057
025	480004	5406225	059	479919	5407094
026	479958	5406238	060	480081	5407286
027	479863	5406302	061	480218	5407441
028	479707	5406356	062	480059	5407683
029	479511	5406451	063	479974	5407956
030	479292	5406623	064	479787	5408268
031	479053	5406715	065	479752	5408493
032	479020	5406718	066	479664	5408563
033	478690	5406549	067	479528	5408787
034	478408	5406428	068	479443	5409100

Attachment 2: Mapped DOV vegetation community

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

Attachment 3: Mapped DOB vegetation community



CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 March 2025

13. Development and Regulatory Services

13.1. 2025-26 Animal Management Fees and Charges

File Reference S01-01-002

Report Author Wade Hateley
Team Leader Compliance and Regulation

Authorised By Krista Palfreyman
Director Development and Regulatory Services

Decision Sought Approval of the animal management fees and charges for the 2025-26 financial year.

Vote Simple majority

Recommendation

That Council, pursuant to section 205 of the *Local Government Act 1993*, adopts the animal management fees and charges for the 2025-26 financial year as listed below:

Registration	Regular Fee (*GST inclusive)	If paid by 31 July 2025
Lifetime Domestic Dog not Desexed	$460.00	Not Applicable
Lifetime Domestic Dog Desexed	$160.00	Not Applicable
Domestic Dog not Desexed	$80.00	$60.00
Domestic Dog Desexed	$31.00	$21.00
Working/Hunting Dog (on production of suitable evidence by applicant)	$31.00	$21.00
Racing Greyhound (on production of suitable evidence of registration with TGRB)	$31.00	$21.00
Purebred (for breeding on production of suitable evidence of registration with TCA)	$52.00	$41.00
Pensioner's Dog (one dog per pension card)	$31.00	$21.00
Guide Dog/Hearing Dog/Assistance Dog (on production of suitable evidence by applicant)	Nil	Nil
Dangerous Dog Initial Registration	$620.00	Not Applicable
Dangerous Dog Ongoing Registration	$315.00	Not Applicable

Registration	Regular Fee (*GST inclusive)	If paid by 31 July 2025
Guard Dog	$80.00	$60.00
New annual registration applications may receive a 50% discount if received after 1 March 2026 subject to approval (only applicable where a dog was not required to be registered prior to 1 March 2026).		
Transfer of annual renewal registration from another Tasmanian Council (on provision of proof of current registration).		$0.00
Other		**Fee (*GST inclusive)**
Renewal of Kennel Licence		$58.00
New Kennel Licence Application		$157.00
Fee to make a nuisance dog complaint		$35.00
Dangerous Dog Collar		$65.00*
Dangerous Dog Sign		$73.00*
Microchipping Fee		$54.00
Impounding Fee		$64.00
Impounding Fee – second time and subsequent occasions		$105.00
Daily Maintenance Fee – weekday		$31.00*
Daily Maintenance Fee – weekend		$70.00*
Replacement Lifetime Tag		$10.00

Report

The purpose of this report is for Council to adopt the animal management fees and charges for the 2025-26 financial year. The animal management fees and charges are determined at the May Council Meeting in order that the 2025-26 fees can be published by the end of the first week in June and dog registration renewals issued.

The current fees set by Council for the 2024-25 financial year are set out in Table 1 below:

Registration	Regular Fee (*GST inclusive)	If paid by 31 July 2024
Lifetime Domestic Dog not Desexed	$450.00	Not Applicable
Lifetime Domestic Dog Desexed	$155.00	Not Applicable
Domestic Dog not Desexed	$78.00	$59.00
Domestic Dog Desexed	$30.00	$20.00
Working/Hunting Dog (on production of suitable evidence by applicant)	$30.00	$20.00

Registration	Regular Fee (*GST inclusive)	If paid by 31 July 2024
Racing Greyhound (on production of suitable evidence of registration with TGRB)	$30.00	$20.00
Purebred (for breeding on production of suitable evidence of registration with TCA)	$50.00	$40.00
Pensioner's Dog (one dog per pension card)	$30.00	$20.00
Guide Dog/Hearing Dog/Assistance Dog (on production of suitable evidence by applicant)	Nil	Nil
Dangerous Dog Initial Registration	$610.00	Not Applicable
Dangerous Dog Ongoing Registration	$305.00	Not Applicable
Guard Dog	$78.00	$59.00
New annual registration applications may receive 50% discount if received after 1 March subject to approval.		
Transfer of annual renewal registration from another Tasmanian Council (on provision of proof of current registration).		$0.00
Other		**Fee(*GST inclusive)**
Renewal of Kennel Licence		$56.00
New Kennel Licence Application		$152.00
Fee to make a nuisance dog complaint		$30.00
Dangerous Dog Collar		$60.00*
Dangerous Dog Sign		$71.00*
Microchipping Fee		$52.00
Impounding Fee		$62.00
Impounding Fee – second time and subsequent occasions		$104.00
Daily Maintenance Fee – weekday		$30.00*
Daily Maintenance Fee – weekend		$63.00*
Replacement Lifetime Tag		$10.00

Table 1: 2024-25 Animal Management Fees and Charges

The Council continues to run a comprehensive service in this program. The Meander Valley Council is one of the few remaining Local Government authorities in the region that provides a 24/7 call out service.

In order for the program to continue to provide the same level of service to the community, it is recommended that the dog registration fees and charges are increased and that these increases reflect the Council's Cost Index (CCI) for 2025. The CCI is prepared by the Local Government Association of Tasmania (LGAT) and captures the cost increases associated with the delivery of Local Government services, recognising that the Consumer Price Index alone does not reflect cost increases across the range of the Council's services.

The CCI for 2025 is 3.13%. It is recommended that the majority of fees are increased by CCI and rounded to the nearest dollar. There will continue to be a discounted amount charged if the fee is paid prior to 31 July 2025.

The recommended animal management fees and charges for the 2025-26 financial year are provided in Table 2 below:

Registration	**Regular Fee (*GST inclusive)**	**If paid by 31 July 2025**
Lifetime Domestic Dog not Desexed	$460.00	Not Applicable
Lifetime Domestic Dog Desexed	$160.00	Not Applicable
Domestic Dog not Desexed	$80.00	$60.00
Domestic Dog Desexed	$31.00	$21.00
Working/Hunting Dog (on production of suitable evidence by applicant)	$31.00	$21.00
Racing Greyhound (on production of suitable evidence of registration with TGRB)	$31.00	$21.00
Purebred (for breeding on production of suitable evidence of registration with TCA)	$52.00	$41.00
Pensioner's Dog (one dog per pension card)	$31.00	$21.00
Guide Dog/Hearing Dog/Assistance Dog (on production of suitable evidence by applicant)	Nil	Nil
Dangerous Dog Initial Registration	$620.00	Not Applicable
Dangerous Dog Ongoing Registration	$315.00	Not Applicable
Guard Dog	$80.00	$60.00
New annual registration applications may receive a 50% discount if received after 1 March 2026 subject to approval (only applicable where a dog was not required to be registered prior to 1 March 2026).		
Transfer of annual renewal registration from another Tasmanian Council (on provision of proof of current registration).		$0.00

Other	Fee (*GST inclusive)
Renewal of Kennel Licence	$58.00
New Kennel Licence Application	$157.00
Fee to make a nuisance dog complaint	$35.00
Dangerous Dog Collar	$65.00*
Dangerous Dog Sign	$73.00*
Microchipping Fee	$54.00
Impounding Fee	$64.00
Impounding Fee – second time and subsequent occasions	$105.00
Daily Maintenance Fee – weekday	$31.00*
Daily Maintenance Fee – weekend	$70.00*
Replacement Lifetime Tag	$10.00

Table 2: Recommended 2025-26 Animal Management Fees and Charges

The recommended animal management fees and charges for the 2025-26 financial year were discussed with Councillors at the Workshop held on 29 April 2025.

Attachments

Nil

Strategy

Supports the objectives of Council's strategic future direction

5. Delivering responsible leadership and governance

See Meander Valley Community Strategic Plan 2024-34. ***Click here*** or visit ***https://www.meander.tas.gov.au/plans-reports*** to visit.

Policy

Not applicable

Legislation

Local Government Act 1993: section 205

Dog Control Act 2000

Consultation

Not applicable

Budget and Finance

If approved, the proposed increase in fees will be factored into the 2026 budget to ensure that the animal management function can be delivered in a sustainable manner.

Risk Management

Not applicable

Alternate Motion

Council can adopt the recommended fee structure with amendments.

13.2. 2025-26 Environmental Health Fees and Charges

File Reference	S12-03-001
Report Author	Madeline McKinnell Team Leader Environmental Health
Authorised By	Krista Palfreyman Director Development and Regulatory Services
Decision Sought	Approval of the environmental health fees and charges for the 2025-26 financial year.
Vote	Simple majority

Recommendation

That Council, pursuant to section 205 of the *Local Government Act 1993*, adopts the environmental health fees and charges for the 2025-26 financial year as listed below:

Food Business Annual Registration/Renewal of Registration (Except for bona fide not for profit organisations)	**Fees/Charges (*GST inclusive)**
P3	$72.00
P1 and P2	$214.00
New food business annual registration applications and renewals may receive pro-rata discount subject to approval of Director Development and Regulatory Services.	
Late fee if application for renewal not received by 31 July 2025	$64.00
Additional inspections due to non-compliance	$146.00*
Temporary Food Stall Registration (Except for bona fide not for profit organisations)	**Fees/Charges (*GST inclusive)**
One day event	$44.00
Two-day event	$62.00
Three-to-five-day event	$88.00
Late fee if not received before event	$52.00

Public Health	Fees/Charges (*GST inclusive)
Place of Assembly Licence – Public events, 1 day	$92.00
Place of Assembly Licence – Public events, greater than 1 day	$291.00
Registration of Private Water Supplier/Water Carrier	$123.00
Other *Public Health Act 1997* Licencing/Registration including: Public Health Risk Activity Operator Licence, or Registration of Regulated System	$123.00
Request for inspection and written reports on food premises for prospective purchasers	$146.00*

Report

The purpose of this report is for Council to adopt the environmental health fees and charges for the 2025-26 financial year. The environmental health fees and charges are determined at the May Council Meeting in order that the 2025-26 fees can be published by the end of May to enable registration renewals to be issued in June.

The current fees set by Council for the 2024-25 financial year are set out in Table 1 below *(Note: licence fees required by legislation do not include GST)*:

Food Premises (Except for bona fide not for profit organisations) Annual Registration/Renewal of Registration	Fees/Charges (*GST inclusive)
P3	$70.00
P1 and P2	$207.00
New food business annual registration applications and renewals may receive pro-rata discount subject to approval of Director Development and Regulatory Services.	
Late fee if application for renewal not received by 31 July	$62.00
Additional inspections due to non-compliance	$141.00*
Temporary Food Stall Registration (Except for bona fide not for profit organisations)	**Fees/Charges (*GST inclusive)**
One day event	$43.00
Two-day event	$60.00
Three-to-five-day event	$85.00
Late fee if not received before event	$50.00

Public Health	Fees/Charges (*GST inclusive)
Place of Assembly Licence – Public events, 1 day	$89.00
Place of Assembly Licence – Public events, greater than 1 day	$282.00
Registration of Private Water Supplier	$119.00
Other premises requiring licencing under *Public Health Act 1997*	$119.00
Request for inspection and written reports on food premises for prospective purchasers	$141.00*

Table 1: 2024-25 Environmental Health Fees and Charges

In order for the program to continue to provide the same level of service to the community, it is recommended that the environmental health fees are increased and that the fee increase reflects the Council's Cost Index (CCI) for 2025. The CCI is prepared by the Local Government Association of Tasmania (LGAT) and captures the cost increases associated with the delivery of Local Government services, recognising that the Consumer Price Index alone does not reflect cost increases across the range of the Council's services.

The CCI for 2025 is 3.13%. It is recommended that fees are increased by CCI and rounded to the nearest dollar. The recommended environmental health fees and charges for the 2025-26 financial year are provided in Table 2 below:

Food Business Annual Registration/Renewal of Registration (Except for bona fide not for profit organisations)	Fees/Charges (*GST inclusive)
P3	$72.00
P1 and P2	$214.00
New food business annual registration applications and renewals may receive pro-rata discount subject to approval of Director Development and Regulatory Services.	
Late fee if application for renewal not received by 31 July 2025	$64.00
Additional inspections due to non-compliance	$146.00*
Temporary Food Stall Registration (Except for bona fide not for profit organisations)	**Fees/Charges (*GST inclusive)**
One day event	$44.00
Two-day event	$62.00
Three-to-five-day event	$88.00
Late fee if not received before event	$52.00

Public Health	Fees/Charges (*GST inclusive)
Place of Assembly Licence – Public events, 1 day	$92.00
Place of Assembly Licence – Public events, greater than 1 day	$291.00
Registration of Private Water Supplier/Water Carrier	$123.00
Other *Public Health Act 1997* Licencing/Registration including: Public Health Risk Activity Operator Licence, or Registration of Regulated System	$123.00
Request for inspection and written reports on food premises for prospective purchasers	$146.00*

Table 2: Recommended 2025-26 Environmental Health Fees and Charges

The categories of food premises listed in the environmental health fees and charges reflect the Tasmanian Food Business Risk Classification System (TFBRCS). Based on the national food safety risk profiling framework, food businesses are to be classified into five categories according to the types of food handled by the business, together with the size and method of its food handling activities.

The TFBRCS also includes food businesses that are classified as P3-N or P4, largely businesses handling or processing non-potentially hazardous foods. As in previous years, it is proposed that food businesses classified as P3-N or P4 are not included in the Council's fees and charges.

It is recommended that the Council continues a pro-rata discount to the food business annual registration and renewal fees. This is suggested to allow an application that is received in the later part of the financial year, to have the annual fee reduced subject to Director approval. This may also be utilised with seasonal sporting clubs that may only operate their food business for part of the year.

The recommended environmental health fees and charges were discussed with Councillors at the Workshop held on 29 April 2025.

Attachments

Nil

Strategy

Supports the objectives of Council's strategic future direction

5. Delivering responsible leadership and governance

See Meander Valley Community Strategic Plan 2024-34. ***Click here*** or visit ***https://www.meander.tas.gov.au/plans-reports*** to visit.

Policy

Not applicable

Legislation

Local Government Act 1993: section 205

Public Health Act 1997

Food Act 2003

Consultation

Not applicable

Budget and Finance

If approved, the proposed increase in fees will be factored into the 2026 budget to ensure that the environmental health function can be delivered in a sustainable manner.

Risk Management

Not applicable

Alternate Motion

Council can adopt the recommended fee structure with amendments.

14. Corporate Services

14.1. Audit Panel Minutes - 25 March 2025

File Reference	S13-12-013
Report Author	Anthea Rooney Governance Officer
Authorised By	Craig Davies Director Corporate Services
Decision Sought	Receipt of the Minutes of the Audit Panel Meeting held on 25 March 2025.
Vote	Simple majority

Recommendation

That Council receives the Minutes of the Audit Panel Meeting held on 25 March 2025 as provided (Attachment 1).

Report

The purpose of this report is for Council to receive the Minutes of the Council's Audit Panel Meeting held on 25 March 2025.

The Minutes of the Meeting have been reviewed and confirmed by the Audit Panel Chair Andrew Gray. The Minutes are provided for Council's information (Attachment 1) as required under the Council's Audit Panel Charter.

Attachments

1. Audit Panel Minutes - 25 March 2025 [**14.1.1** - 14 pages]

Strategy

Supports the objectives of Council's strategic future direction
5: innovative leadership and community governance.

See Meander Valley Community Strategic Plan 2024-34. ***Click here*** or visit ***https://www.meander.tas.gov.au/plans-reports*** to view.

Policy

This recommendation fulfils the requirements outlined in the Council's Audit Panel Charter confirmed at the July 2022 Council Meeting.

Legislation

Local Government Act 1993: sections 85, 85A and 85B

Consultation

Not applicable

Budget and Finance

Not applicable

Risk Management

Not applicable

Alternate Motion

Not applicable

Meander Valley Council
Working Together

MINUTES

AUDIT PANEL

Tuesday, 25 March 2025

Time 9.30am

Location Council Chambers
26 Lyall Street
Westbury, Tasmania

Telephone 6393 5300

Present

Andrew Gray (Chair)
Ken Clarke (Attended Remotely)
Councillor Ben Dudman

In Attendance

Craig Davies (Acting General Manager/Director Corporate Services)
Krista Palfreyman (Director Development and Regulatory Services)
David Murray (Director Infrastructure Services)
Justin Marshall (Team Leader Finance)
Rob Little (Asset Management Coordinator)
Averil Hill (Workplace Health and Safety Officer)
Jessica O'Grady (Financial Audit Tasmanian Audit Office) (Attended Remotely)
Chloe Bellchambers (Financial Audit Tasmanian Audit Office) (Attended Remotely)
Anthony Kempnich (Manager Governance and Legal)
Linda Coull (Executive Assistant)

Apologies

Jonathan Harmey (General Manager)

Absent

Councillor John Temple
Matthew Millwood (Director Works)

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Order of Business and External Presentations

External Presentations

Chloe Bellchambers and Jessica O'Grady from the Tasmanian Audit Office attended the Meeting. Chloe Bellchambers addressed Agenda Item 8 and provided background information on Meander Valley Council's Financial Audit Strategy for the Year Ending 30 June 2025. It was noted a further updated would be provided by the Tasmanian Audit Office later this year.

1 Opening of Meeting and Apologies

The Chair, Andrew Gray, opened the Meeting at 9.30am and noted an apology from Jonathan Harmey (General Manager)

2 Declaration of Pecuniary Interests

No Audit Panel members declared any Pecuniary Interests or Conflicts of Interest.

3 Confirmation of Previous Minutes

Recommendation

That the Minutes of the Meander Valley Council Audit Panel Meeting held on 17 December 2024 be confirmed as a true and correct record.

Carried

4 Outstanding Issues From Previous Meetings

4.1 Outstanding Items From Previous Meetings

Date of Meeting	*Agenda Item*	*Requested Action*	*Resp Off*	*Status Update - Resolution*
25 Mar 2025	*Agenda Item 5.3* Enterprise Agreement Bargaining	Include as an Agenda Item until a new Agreement is in place.	AR	Master template updated to include requested Agenda Item.
25 Mar 2025	*Agenda Item 7.1* Consider Any Available Audit Reports	Completion of Public Liability Insurance Audit Report.	AH	Report will be available for June Audit Panel Meeting.
25 Mar 2025	*Agenda Item 7.1* Consider Any Available Audit Reports	Discussion regarding the Council's resourcing for audit and recommendation progression.	CD	Discussion at June Audit Panel Meeting.
25 Mar 2025	*Agenda Item 8.2* Consider any Performance Audit Reports that will be Undertaken by the Tasmanian Audit Office and Address Implications for the Council	Council's End of Financial Year Asset Management Reports for 2024-25 to be provided to the Audit Panel.	DM/ RL	Updated Asset Capitalisation Report will be provided at the September Audit Panel Meeting.
25 Mar 2025	*Agenda Item 10.2(iii)* Review of the Council's Records	Include as an Agenda Item in June Audit Panel Agenda.	CD	Report to be tabled at June Audit Panel Meeting.

Note: Items highlighted in red denote completion and subsequent deletion from the table.

5 Governance and Strategy

5.1 Review 10-Year Financial Plan

Responsible Officer: Craig Davies (Acting General Manager/Director Corporate Services)

The next full review of the LTFP is scheduled for 2026 when the Council will prepare the 10-year Financial Management Strategy for 2027-36. It was also noted that assessment is underway for the ERP tender.

5.2 Review Financial Management Strategy (Sustainability)

Responsible Officer: Craig Davies (Acting General Manager/Director Corporate Services)

The Panel noted that the Council's Financial Management Strategy is due for an update in the 2027 financial year.

5.3 Review Preliminary Budget Parameters and Assumptions

Responsible Officer: Craig Davies (Acting General Manager/Director Corporate Services)

The Council's Officers are commencing development of the 2025-26 budget estimates which will be workshopped with the elected members from May to June 2025.

An update was provided on the current Enterprise Agreement Bargaining process and it was suggested that a standing Agenda Item be included in the Audit Panel Agenda until the Agreement is finalised.

5.4 Review of Policies and Procedures

Responsible Officer: Anthea Rooney (Governance Officer)

Policies

The following Policies have been actioned:
Policy No. 4: Governance Charter (New Policy – adopted at 21 January 2025 Council Meeting)

Policy No. 5: Managing Unreasonable Conduct by Customers (New Policy – adopted at 21 January 2025 Council Meeting)

Policy No. 15: Vehicle Crossings (Review of Policy – renamed from Driveway Crossovers – adopted at 21 January 2025 Council Meeting)

Policy No. 76: Enabling Industrial Land Development (Review of Policy – adopted at 21 January 2025 Council Meeting)

Policy No. 87: Hadspen Urban Growth Area Development (Review of Policy – adopted at 21 January 2025 Council Meeting)

Policy No. 93: Managing Public Appeals and Fundraising (Removal of Policy – adopted at 21 January 2025 Council Meeting)

Policy No. 94: Facility Sponsorship and Advertising (Review of Policy – adopted at 11 February 2025 Council Meeting)

Review Policy No. 11: Public Open Space Contributions to incorporate the intent of Policy No. 85: Open Space and discontinue Policy No. 85: Open Space (Review and Discontinuation of Policies – adopted at 11 March 2025 Council Meeting)

The following Policies are due for renewal:

Policy No. 49: Media Communications (August 2024)

Policy No. 82: Community Grants and Sponsorship Fund (July 2024)

Procedures

The following Procedure was reviewed:

Public Interest Disclosure Procedure (adopted at 12 November 2024 Council Meeting)

Other Strategic Documents

Renewed Customer Service Charter (adopted at 21 January 2025 Council Meeting)

The Strategic Review of Landfill Operations (the Strategy) was undertaken in late 2024 and presented to Council at the January 2025 Meeting. Council endorsed the recommendations from the Strategy which will result in the closure of the Westbury site in June 2025 followed by closure of the landfill Deloraine site around 2028. The Council will progressively adopt a Regional Waste Model and transport to either Launceston or Dulverton. The financial modelling and risk analysis within the Strategy were compelling and the recommendations were overwhelmingly supported by Councillors.

6 Financial and Management Reporting

6.1 Review Most Current Results and Report Any Relevant Findings to Council

Responsible Officer: Justin Marshall (Team Leader Finance)

The Financial Report for the period ended 28 February 2025 was discussed. Income is tracking as expected and it is noted that revenue from property sales will be delayed into the 2026 financial year. Expenditure is slightly below budget for this time of the year, however, expected receipt of grant funding will alter budget reporting expectations.

6.2 Review Any Business Unit or Special Financial Reports

Responsible Officer: Justin Marshall (Team Leader Finance)

Nothing to report this Quarter.

7 Internal Audit

7.1 Consider Any Available Audit Reports

Responsible Officer: Averil Hill (Workplace Health and Safety Officer)

In terms of this quarter (January to April) the audit schedule has been paused as the public liability insurance audit is ongoing, which will be available for the June Audit Panel Meeting.

In terms of the Risk Audit conducted in July to September 2024 an action plan has been agreed to by the Executive Management Team and will be implemented as soon as practicable.

7.2 Review Management's Implementation of Audit Recommendations

Responsible Officer: Averil Hill (Workplace Health and Safety Officer)

The Panel noted internal action plans. The Executive Management Team actively review collective actions on a monthly basis. An additional question was asked as to the role of the Workplace Health and Safety Officer within the Council – in terms of independence, ability for direct report capabilities, time spent on conducting internal audits and reporting role in terms of duality. It was noted that resourcing is proving an issue and current budget discussions will consider additional resources.

7.3 Review the Adequacy of Internal Audit Resources for Consideration in the Council's Annual Budget and Review of Performance Indicators

Responsible Officer: Craig Davies (Director Corporate Services)

The Panel noted that the quality of work being produced by Averil Hill (Workplace Health and Safety Officer) has been of a consistently high quality and has provided relevant recommendations for the Council to action.

8 External Audit

8.1 Consider Any Available Audit Reports

Responsible Officer: Justin Marshall (Team Leader Finance)

No further discussion required.

8.2 Consider any Performance Audit Reports that will be Undertaken by the Tasmanian Audit Office and Address Implications for the Council

Responsible Officer: Justin Marshall (Team Leader Finance)

The Panel noted that the Management of Landfill Performance Audit being undertaken by the Tasmanian Audit Office is ongoing. The Meander Valley Council is not a participant in the current ongoing audit process.

Robert Little (Asset Management Coordinator) discussed the 2023-24 Asset Capitalisation Report. An updated report will be provided at the September Audit Panel Meeting.

9 Risk Management and Compliance

9.1 Monitor Ethical Standards and Any Related Party Transactions to Determine the Systems of Control are Adequate and Review How Ethical and Lawful Behaviour and Culture is Promoted Within the Council

Responsible Officer: Jonathan Harmey (General Manager)

Conflict of Interest Declaration forms have been completed by all Directors and Councillors.

Confidentiality Agreements are completed by all staff at commencement of employment and again during the annual performance review process.

The Council induction process also includes printed materials and face to face training on the ethical standards expected of Council employees.

9.2 Review the Procedure for the Council's Compliance With Relevant Laws, Legislation and the Council's Policies

Responsible Officer: Anthony Kempnich (Manager Governance and Legal)

The Council does not have a structured approach to legislative compliance reviews, however, current controls are:

- internal audit;
- notice of changes to State Government legislation as a prompt to review processes;
- review dates on policies to prompt a review against current legislation; and
- mandated references to legislation in relevant Council documentation.

9.3 Review Internal, Anti-Fraud and Anti-Corruption Management Controls

Responsible Officer: Anthony Kempnich (Manager Governance and Legal)

A Fraud and Corruption Control review was undertaken in 2024 by Marsh. Corrective actions have been documented for implementation. Feedback on the maturity of the Council's current controls was positive.

9.4 Review Delegation Processes and Exercise of These

Responsible Officer: Anthony Kempnich (Manager Governance and Legal)

Governance completed the delegated authority for all relevant government instruments in 2024. The Delegations Register and Authorised Officers Register are included for information. Further information on the documentation of delegations is available as required.

9.5 Monitor Any Major Claims of any Instances of Suspected Cases of Fraud or Other Illegal and Unethical Behaviour

Responsible Officer: Anthea Rooney (Governance Officer)

Nothing to report this Quarter.

9.6 Oversee the Investigation of Any Instances of Suspected Cases of Fraud or Other Illegal and Unethical Behaviour

Responsible Officer: Anthony Kempnich (Governance Officer)

Nothing to report this Quarter.

9.7 Review Tendering Arrangements and Advise Council

Responsible Officer: David Murray (Director Infrastructure Services)

The Code for Tenders and Contracts (required under section 333B of the *Local Government Act 1993*) was reviewed and adopted by Councillors at the 11 February 2024 Council Meeting. Nothing further to report at this Meeting.

10 Other Business

10.1 Review Issues Relating to National Competition Policy

Responsible Officer: Craig Davies (Director Corporate Services)

Nothing to report this Quarter.

10.2 Other Business

Responsible Officer: Craig Davies (Director Corporate Services)

i. Election of Councillor

Following the resignation of Councillor Deborah White (for personal reasons), a recount was conducted by the Tasmanian Electoral Commission and Councillor Christine Cronshaw was elected. Councillor Cronshaw has commenced her role.

ii. Review of Excess Leave Balances

The Executive Management Team conducts a formal review of staff leave balances on a monthly basis to ensure that the appropriate leave plans are in place to manage excess balances.

iii. Review of the Council's Records

It was requested that an Agenda Item be included in the June Audit Panel Agenda for review the Council's records concerning payment of personal legal fees for Councillors' activities that maybe considered personal expenses.

11 Next Meeting

The next Meeting of the Meander Valley Audit Panel is scheduled for 9.30am on Tuesday, 24 June 2025.

12 Meeting Closure

There being no further business, the Chair closed the Meeting at 10.45am.

15. Infrastructure Services

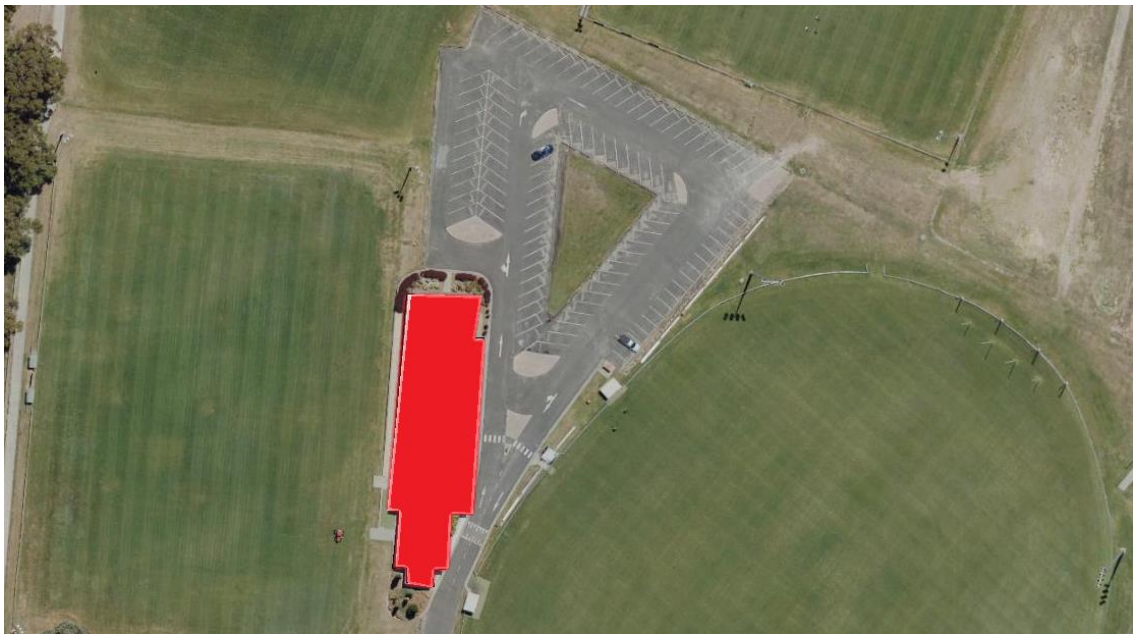
15.1. Lease - Prospect Vale Sports Park

File Reference	S20-01-004
Report Author	Karl Boss-Walker Team Leader Community Facilities and Recreation
Authorised By	David Murray Director Infrastructure Services
Decision Sought	Approval of the lease to the Prospect Park Sports Club.
Vote	Absolute majority

Recommendation

That Council, by absolute majority, pursuant to section 179 of the *Local Government Act 1993*:

1. leases the Ray Johnstone Centre clubroom site (site map below) making up a portion of the property at 2 Harley Parade, Prospect Vale – CT 143138/1, to Prospect Park Sports Club ABN 29095938602.



2. notes that section 178 of the *Local Government Act 1993* will not apply as the lease is for a period less than five years.

3. authorises the General Manager to enter into a formal lease under the following terms:
    a. the term shall be for two years;
    b. with a further option of two years by mutual agreement;
    c. the lease amount shall be $8,000 per annum (including GST) (plus CPI) and selected outgoings (electricity);
    d. tenant shall continuously maintain:
        i. buildings in good and reasonable order in accordance with responsibilities detailed in the lease; and
        ii. public liability insurance of at least $20 million.
    e. all remaining terms to be determined by the General Manager.
    f. any right, option or discretion exercised by the Council under the lease may be exercised by the General Manager.

Report

The Prospect Park Sports Club (the Club) has existed in its current form since 2005 and consists of the Launceston Touch Association, Prospect Hawks Junior Football Club, Southern Raiders Junior Soccer Club and Northern Tasmanian Football Umpires Association, though these member clubs have much longer histories. The combined memberships of these Clubs is approximately 1,500 making this venue Meander Valley Council's highest usage venue. The cooperation shown by its constituent clubs is a fine example of what can be achieved when working together.

The lease total has been set in accordance with Policy No. 56: Sport and Recreation Venues Pricing. The Council has been satisfied with the Club's tenure and a valuable recreation option is provided to the community. The terms of the proposed new lease have been negotiated by the Council's Officer with the Club. Maintenance requirements remain largely unchanged. The Club will be charged $8,000 annually with increases in line with CPI. This is consistent with the Council's Policy and hence, other facilities and users. The total value of CT 143138/1 was assessed to be $475,000 – land and capital improvements of $2,100,000.

Some outgoings (such as industrial waste, water and sanitary bin servicing) have historically been on charged to the Club, but these services have now been included in the lease price with the exception of electricity. If an additional service is provided, the price will be negotiated at the time. Member Clubs will still pay ground fees and electricity for light usage.

The Club has previously used the maintenance discount from Policy 56, but this will not form part of the new lease as it is net neutral in cost to both sides, whilst adding administrative burden.

Attachments

Nil

Strategy

Supports the objectives of Council's strategic future direction

1. Cultivating a diverse, unified and empowered community

See Meander Valley Community Strategic Plan 2024-34. ***Click here*** or visit ***https://www.meander.tas.gov.au/plans-reports*** to visit.

Policy

Policy No. 56: Sport and Recreation Venues Pricing

Legislation

Local Government Act 1993: section 179

Consultation

Consultation has occurred with the Prospect Park Sports Club.

Budget and Finance

The proposed lease is expected to return a similar user fee amount from the Club to the Council.

Risk Management

Not applicable

Alternate Motion

Council can refer the matter to Workshop for further discussion.

15.2. 2025-26 Deloraine Waste Facility (Weighbridge Pricing)

File Reference	S12-02-002
Report Author	Craig Davies Director Corporate Services
Authorised By	Jonathan Harmey General Manager
Decision Sought	Approval of the Deloraine Waste Facility weighbridge pricing model.
Vote	Simple majority

Recommendation

That Council, pursuant to section 205 of the *Local Government Act 1993*, adopts the Deloraine Waste Facility weighbridge fees and charges for the 2025-26 financial year as listed below:

Proposed Pricing Model (inc. GST)	
General Waste Minimum Charge <40kg	**$7.20**
General Waste per Tonne (40kg or more)	**$180.00**
Green Waste Minimum Charge <40kg	**$5.40**
Green Waste per Tonne (40kg or more)	**$135.00**

Report

In May 2024, Council approved the *Waste Resource Recovery Strategy 2024-2033* which included confirmation of the implementation of a weighbridge at Deloraine and the transition to weight-based pricing.

There are a number of factors that make this challenging as the Council attempts to balance reasonable community outcomes against its fiscal responsibility to manage the waste function for the long term:

- the existing pricing scheme has very low minimum fees for entry points services (bags and bins) compared to other regional sites
- the current pricing for green waste is set at 50% of the general waste price with a low minimum entry price
- future waste management models will be based on transporting waste out of region at market rates per tonne (which means the pricing model needs to broadly align with the market).

- the pricing must also be broadly in line with the market to avoid incentives for residents of other municipalities to use the Deloraine site.
- many residents outside of the major towns do not receive weekly waste services to their door so are more reliant on public sites for household waste disposal.

The Meander Valley Council is one of the only remaining Councils in Tasmania that operate its own landfill sites and equally one of the few who do not currently use a weighbridge as the driver for pricing of waste. Recent strategic decisions around the long-term management of waste have dictated the need to move to weight-based pricing and a range of options have been assessed.

Proposed Meander Valley Council Pricing Model

The Council is looking to introduce an option that meets a range of criteria:

- similar price per tonne to other regional facilities.
- incentive pricing for sorted green waste over general/mixed to promote sustainable behaviours.
- low minimum charge to ease transition from existing scheme.
- managing community expectations around reasonable pricing.

The Council is proposing a rate of $180 per tonne for general/mixed waste, applied using the following pro-rata charges:

- A minimum charge of $7.20 for the first 39kg
- A charge of $3.60 for each 20kg increment above the minimum weight (39kg)

Green waste would be priced at 75% of the general rate with the same minimum volume and pro-rata pricing.

User Breakdown

Based on the six months of user data, the Council can look further at the practical impacts on site users.

There were 5,031 general waste entries during this period, under the proposed model:

- 2,558 of these or 51% would be paying the $7.20 minimum charge.
- 3,797 of these or 75% would be paying less than the current car rate of $21.50.
- 4,344 of these or 86% would be paying less than the current trailer rate of $38.50.

There were 1,312 green waste entries, under the proposed model:

- 341 of these or 26% would be paying the $5.40 minimum charge.
- 618 of these 47% would be paying less than the current car rate of $10.75.
- 924 of these 70% would be paying less than the current trailer rate of $19.25.

The table below summarises the modelled pricing of all site visits for the second half year to December 2024 by cost band.

All Waste									
DOCKET DATE	$0 - $10	$10 - $20	$20 - $30	$30 - $40	$40 - $60	$60 - $80	$80- $100	> $100	Grand Total
July	494	223	101	36	45	23	7	29	958
August	427	163	84	49	56	22	13	15	829
September	446	260	126	63	74	19	14	29	1031
October	499	244	144	73	72	24	13	36	1105
November	567	262	125	73	60	24	11	17	1139
December	603	328	141	75	70	22	12	20	1271
Grand Total	2558	1034	526	299	299	114	58	133	6333
	40%	16%	8%	5%	5%	2%	1%	2%	100%

The majority of the impact of the fee increase will be for high volume users. Currently, the trailer fee is capped at $38.50 and the data shows 219 instances with trailers where the proposed fee would exceed the $38.50 current cap.

Proposed Mitigation for Impact of Price Increases

The Council acknowledges the impact this transition will have on users of the Deloraine Waste Facility and the potential increase in fees payable by some users. To assist with the transition, the Council is proposing an amendment to the framework for issuing waste management vouchers. In recognition of the increase to the minimum charge the Council is proposing to increase the number of vouchers issued to ratepayers at the beginning of the financial year but recalibrate these to align with the new minimum charge. For the 2025-26 year, six vouchers will be issued to ratepayers with a nominal value of $7.20 each, redeemable at any of the Council's waste management sites or the Launceston Waste Centre at Remount Road.

Attachments

Nil

Strategy

Supports the objectives of Council's strategic future direction

2. Valuing and protecting our natural environment
5. Delivering responsible leadership and governance

See Meander Valley Community Strategic Plan 2024-34. ***Click here*** or visit ***https://www.meander.tas.gov.au/plans-reports*** to visit.

Policy

Waste Resource Recovery Strategy 2024-33

Legislation

Local Government Act 1993

Consultation

Weight-based pricing models for Deloraine were discussed by Councillors at the April workshop.

Budget and Finance

Council manages the waste function, encompassing kerbside collection and waste management sites on a cost recovery basis. The proposed fees have been calculated with reference to the total cost of managing Council's waste management responsibilities.

Risk Management

The Council's medium term strategy is to provide waste transfer facilities within the municipality and transfer waste to regional facilities. The relevant regional facilities utilise weight based pricing mechanism which is in contrast the existing volume based model currently employed by the Council. Future financial sustainability of the waste function is highly dependent on the successful transition to weight-based pricing that aligns broadly with industry standards.

Alternate Motion

Council can adopt the recommendation with amendments.

16. Motion to Close Meeting

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 15(1)

Recommendation
That Council, by absolute majority, pursuant to the *Local Government (Meeting Procedures) Regulations 2015,* closes the Meeting to the public for discussion of the Agenda Items listed below:

16.1 Confirmation of Closed Minutes

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 34(2)

16.2 Leave of Absence Applications

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 15(2)(h) applications by Councillors for a leave of absence

16.3 2025-26 Capital Works Program Project Approval

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 15(2) (d) regarding contracts, and tenders, for the supply of goods and services and their terms, conditions, approval and renewal.

16.4 Visit Northern Tasmania Membership Agreement

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 15(2) (d) regarding contracts, and tenders, for the supply of goods and services and their terms, conditions, approval and renewal.

16.5 End of Closed Session and Release of Public Information

Refer to Local Government (Meeting Procedures) Regulations 2015: Regulation 15(8)

To be determined in Closed Council.

17. Close of Meeting