

VINEGAR HILL QUARRY AND STORAGE YARD, LADY BARRON

DEVELOPMENT APPLICATION SUPPORTING INFORMATION



APPLICANT: GARY MORRISON

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Document Status

REV	Author	Review	Date
1	R Barnes C McCoull	R Barnes	27-5-2022
1	R Barnes C McCoull	G Morrison	28-5-2022
2	R Barnes C McCoull	R Barnes	27-8-2022
2	R Barnes C McCoull	G Morrison	28-8-2022

DEFINITION OF TERMS/ABBREVIATIONS

DA	Development Application
Development	The Extractive Industry which includes the quarry, the haul roads associated with the pit and storage yard, and the storage yard where material will be stockpiled (some will be crushed and screened).
DNRE	Department of Natural Resources and Environment
DPIPWE (now DNRE)	Department of Primary Industries, Parks, Water and Environment (now DNRE)
EMPCA	<i>Environmental Management and Pollution Control Act 1994</i>
EMPCS	Environmental Management and Pollution Control System objectives to be found in Schedule 1 of EMPCA
FC	Flinders Council
(the) Land	CT199735/1 which is further refined by the Development layout depicted in Figure 2 .
LUPAA	<i>Land Use Planning and Approvals Act 1993</i>
ML	Mining Lease 2116 P/M (proposed – application pending)
MRT	Mineral Resources Tasmania
QCP	<i>Tasmanian Quarry Code of Practice 2017</i>
Quarry/Pit	The quarry pit associated with the Development where up to 4,999 cubic metres per annum (equivalent is approximately 8,998 tonnes per annum) can be extracted
RMPS	Resource Management and Planning System objectives to be found in Schedule 1 of EMPCA
Storage Yard	The storage yard area associated with the Development, where granite rock and gravel will be stockpiled and some crushed and/or screened (up to 1,000 cubic metres per annum; equivalent is approximately 1,800 tonnes)
SWL	Sound power level (SWL) or acoustic power level is a logarithmic measure of the power of a sound relative to a reference value.
Tasmanian Planning Scheme	Tasmanian Planning Scheme – Flinders
(the) Scheme	Tasmanian Planning Scheme – Flinders island

PREFACE

FUNCTION OF THE DEVELOPMENT APPLICATION SUPPORTING INFORMATION

The documentation has been prepared to support a Development Application by Gary Morrison for the intensification of use of a Quarry (granite rock and gravel), the installation and operation of an ancillary Storage Yard and haul road on land located at 2279 Lady Barron Road, Flinders Island.

The Quarry is to be connected to the Storage Yard area where rock and gravel will be hauled to, stockpiled and some crushed and/or screened (up to 1,000 cubic metres per annum; equivalent is approximately 1,800 tonnes). Up to 4,999 cubic metres (equivalent is approximately 8,998 tonnes) per annum may be extracted and removed from the Land.

The volumes to be extracted and material handled (crushing and/or screening) make the activity a Level 1 per EMPCA.

The environmental management information supplied in this DA is in accordance with the *Extractive Industry Environmental Effects Report Guidelines (2020)*¹ issued by the Tasmanian Environment Protection Authority.

An application for a Mining Lease has been submitted to Mineral Resources Tasmania which has been allocated the number 2117P/M.

The document contains the following components –

- | | |
|--------|--|
| Part A | <i>Information about the proponent</i> of the development including details of their name and contact details and the activity location. |
| Part B | <i>Proposal Description</i> including details of the volume extracted, extraction process, machinery, and equipment to be used and timeframe for the activity. |
| Part C | <i>Planning information</i> for use by the Planning Authority, in this case the Flinders Council, in assessing the development and use against the requirements of the Tasmanian Planning Scheme - Flinders. |
| Part D | <i>Conclusion</i> about the development. |
| Part E | <i>Attachments</i> referenced in the DA. |

¹ Environment Protection Authority (2020) *Extractive Industry Environmental Effects Report*, Environment Protection Authority, Hobart, Tasmania. Attachment 5.

PART A – PROPONENT INFORMATION

Name of proponent	Gary Morrison
Postal address of proponent	2279 Lady Barron Road, Lady Barron TAS 7256
Contact person's details	Gary Morrison 2279 Lady Barron Road, Lady Barron TAS 7255 0418 363 877 gary_morrison@bigpond.com
Consultant engaged to prepare DA	Van Diemen Consulting Pty Ltd Dr Richard Barnes PO Box 1 New Town TAS 7008 0438 588 695 rwbarnes73@gmail.com

PART B - PROJECT DESCRIPTION**B.1 PROPOSED ACTIVITY**

<p>Intensification of an existing activity</p> <p>Figures 1 to 4</p>	<p>The application is for the intensification of an existing activity, an alteration to the access and the introduction of a Storage Yard and associated haul road; an Extractive Industry at Lady Barron Road, Lady Barron.</p> <p>The following Certificates of Title apply –</p> <ul style="list-style-type: none"> • 199735/1.
<p>Material to be extracted</p>	<p>The material extracted is granite derived gravels and rock.</p> <p>Material will continue to be extracted by ripping and excavation with an excavator. There will be no blasting (i.e., no use of explosives). Some rock and gravel will be crushed and/or screened at the Storage Yard to produce an aggregate (none will be crushed or screened at the extraction pit).</p> <p>The activity has a lifespan of at least 20 years if full production levels are achieved every year from the commencement of the activity.</p>
<p>Maximum extraction quantity</p>	<p>4,999 cubic metres per annum (equivalent is approximately 8,998 tonnes per annum). Loose bulk density ratio is approximately 1.8.</p>
<p>Maximum Extraction Area</p> <p>Figure 3A</p>	<p>The Maximum Extraction Area from where gravels and rock will be excavated – approximately 1.6 hectares.</p> <p>A 5 year ‘mine plan’ has been provided however extraction will continue beyond this timeline but will be limited to the Maximum extraction Area. The shape and depth of the Pit beyond Year 5 will be determined by the extraction that has occurred in the previous 5 years (i.e., whether the full amount has been extracted each year).</p>
<p>Maximum processing quantity</p>	<p>Crushing (jaw and cone) and vibratory screening of up to 1,000 cubic metres per annum (1,800 tonnes) of rock/gravel may occur to produce an aggregate of relatively uniform size.</p>
<p>Material extraction and processing</p>	<p>Extraction and processing would be undertaken in the following manner:</p> <ul style="list-style-type: none"> • Stripping of vegetation (native forest and woodland, disturbed native vegetation and fire-affected eucalypt regrowth and scrub) • Clearing and stockpiling of topsoil with an excavator or dozer • Load and cart rock/gravel to the Storage Yard (Figures 2 and 4) where it will be stockpiled and some crushed and/or screened. Gravels and rock may be directly carted from the Quarry to the delivery destination without interim storage at the Storage Yard

	<ul style="list-style-type: none"> • Load gravel. Rock or aggregate (crushed and/or screened granite) into trucks with a wheel loader and then deliver
Transport Figure 2	<p>All traffic would enter and exit from Lady Barron Road, with no trucks traversing the Lady Barron township (except local deliveries to the township or on the eastern side of the township).</p> <p>The local road network is suitable for the traffic movements and size of vehicles and there are adequate sight distances at the proposed Lady Barron Road access.</p>
Stockpiling Figure 4	<p>Gravel and rock will be stored at the Storage Yard.</p>
Major equipment	<p>The equipment likely to be used at some stage (i.e., not all the below listed equipment would be used concurrently) of the Development is as follows (with approximate SWL provided):</p> <ul style="list-style-type: none"> • Vibratory screen, likely Chieftain 1700 – (SWL: 120 (L_{Aeq})) • Crusher (jaw and/or cone), likely Terex Pegson or 1000 Maxtrak – (SWL: 120 (L_{Aeq})) • CASE excavator CX240B (SWL: 102 (L_{Aeq})) • Dozer D7 (SWL: 109 (L_{Aeq})) • Front-wheel loader (SWL: 98 (L_{Aeq})) • Water pump (petrol driven) (SWL: 91-95 (L_{Aeq})) • Transport trucks (medium combination truck) – approx. SWL: 90-100 (L_{Aeq}) • Light vehicles • 15,000L capacity water cart truck (road dampening)
Infrastructure Figures 2, 3A-B and 4	<p>An existing property internal track will be used to access the Quarry. Maintenance activities will continue for culverts, table drains and the track surface (e.g., pothole filling). The existing access to the Quarry directly from Lady Barron township will be closed by the erection of a gate and placement of large rocks to prevent unlawful access to the property.</p> <p>A Storage Yard will be established where stockpiling and material handling (crushing and/or screening) of rock and gravels will occur.</p> <p>Drains, and culverts will be maintained to manage surface water flows. The existing sediment pond downslope of the Quarry will be enlarged.</p>
Proposal timeline	<p>It is anticipated that the activity will commence in the first quarter of the 2022-23 financial year (i.e., July to September 2022).</p>

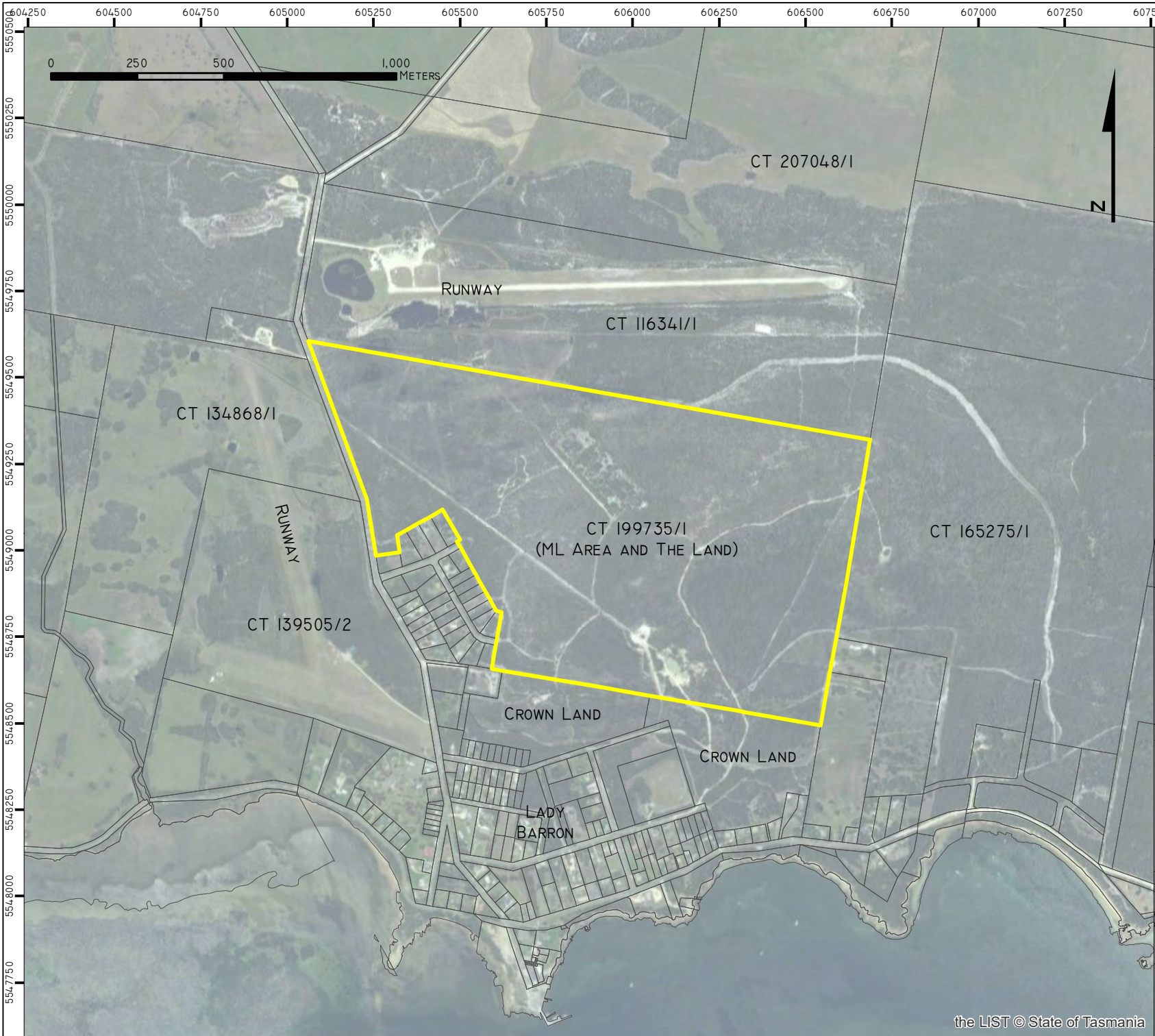
Operating hours	<p>To reduce the likelihood of noise emissions causing environmental harm, particularly with the use of a vibratory screen at the Storage Yard, specific activities associated with the Development will be limited to defined operating hours. These are described below.</p>	
	Activity	Days and Hours of Activity
	Clearing, ripping, carting of material from Pit to Storage Yard	Monday to Friday, 0700 to 1900 hrs Saturday, 0800 to 1600 hrs No activity on Sunday and public holidays (those gazetted statewide)
	Crushing and/or vibratory screening	Monday to Friday, 0900 to 1700 hrs
	Loading and carting of product for delivery	Monday to Friday, 0800 to 1700 hrs Saturday, 0800 to 1600 hrs No activity on Sunday and public holidays (those gazetted statewide)
<p>Given the very low volume of material per annum that can be removed from the Pit and that it is to be operated by the property owner, most (at least 90%) truck movements will be within daylight hours.</p>		

B.2 LOCATION AND PLANNING CONTEXT

Location and Access Figures 1 and 2	The application is for the Development at Lady Barron Road, Lady Barron TAS 7255. Access is from Lady Barron Road.
The Land Figures 1 and 2	CT199735/1 which is further refined by the Development layout depicted in Figure 2 . The physical extraction of gravel/rock will occur in that portion of the Land described as the Maximum Extraction Area depicted in Figure 3A .
Land Title Figure 1	The following Certificates of Title apply – <ul style="list-style-type: none"> • 199735/1
Planning Scheme	Tasmanian Planning Scheme – Flinders
Land zoning and overlays	Zoning

Figures 5A and 5B	<ul style="list-style-type: none"> • Rural Zone <p>Overlays intersected by part or all the Development –</p> <ul style="list-style-type: none"> • Scenic Protection Area (haul road and Storage Yard only) • Priority Vegetation Area (part of extraction pit only) • Low landslip hazard band (part of extraction pit only)
Use Class and Permissibility	<p>The activity is consistent with the <i>Extractive Industry</i>² Use Class. Extractive Industry is a Permitted Use in the Rural Zone.</p> <p>The volumes to be extracted and material handled (screening) make the activity a Level 1 permissible activity within the meaning of EMPCA.</p>
Mining Lease Figure 1	2116P/M (application pending)
Mining Lease area	109.5 hectares
Maximum Disturbed Area	3 hectares excluding roads and tracks

² 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.



14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE I: LOCATION OF VINEGAR HILL QUARRY AND STORAGE YARD

TASMAP:
FISHER
5954

LGA:
FLINDERS

- MINING LEASE
- LAND TITLES (THE LIST)

BASE DATA BY TASMAP. © STATE OF TASMANIA
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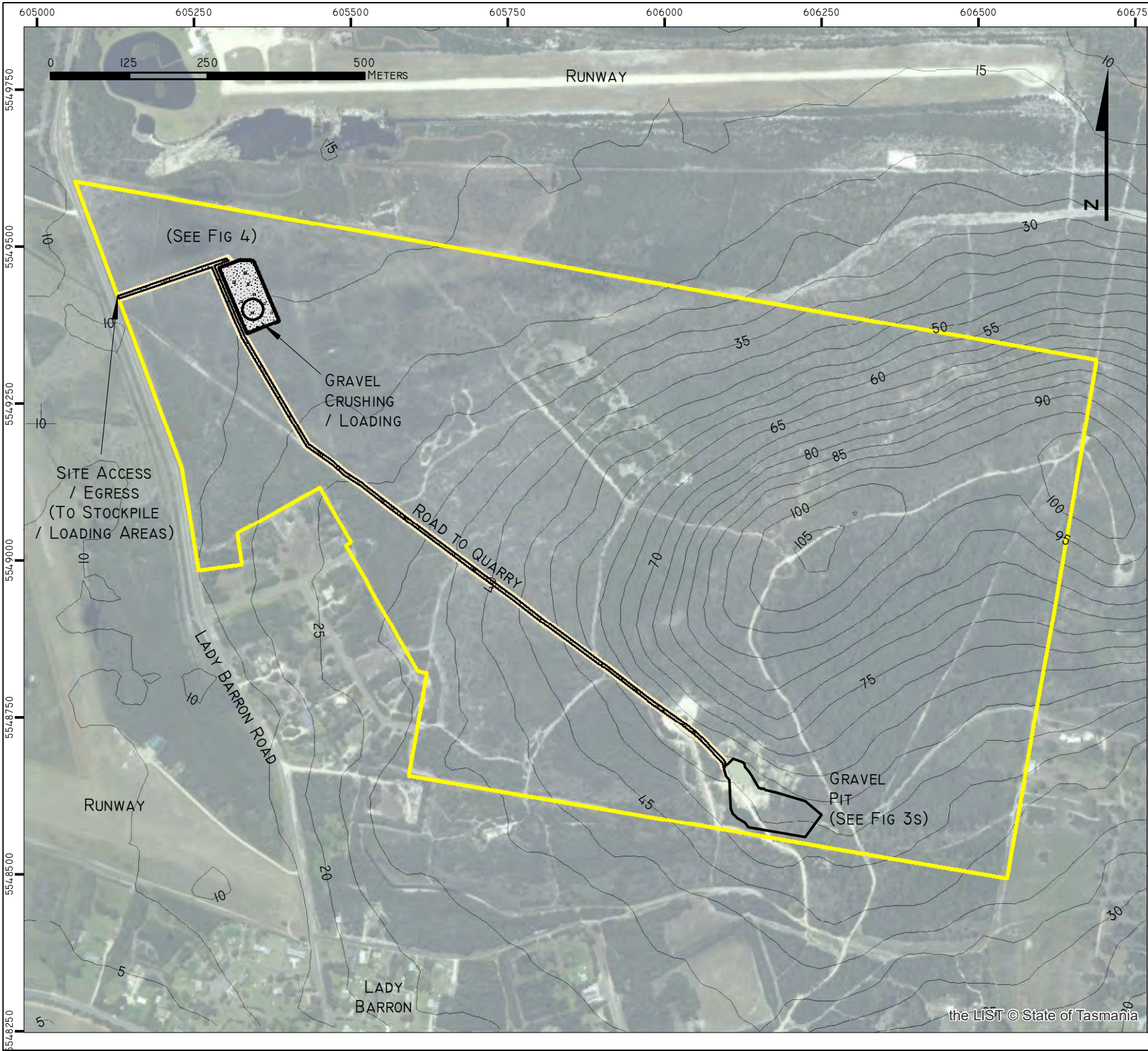
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PO Box 1 NEW TOWN TAS 7008



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CLIENT:
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DATE: 12 MAY 2022



14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE 2: LOCATION OF VINEGAR HILL QUARRY AND STORAGE YARD ON THE LAND

TASMAR:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

BASE DATA BY TASMAR. © STATE OF TASMANIA
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DATE: 13 MAY 2022

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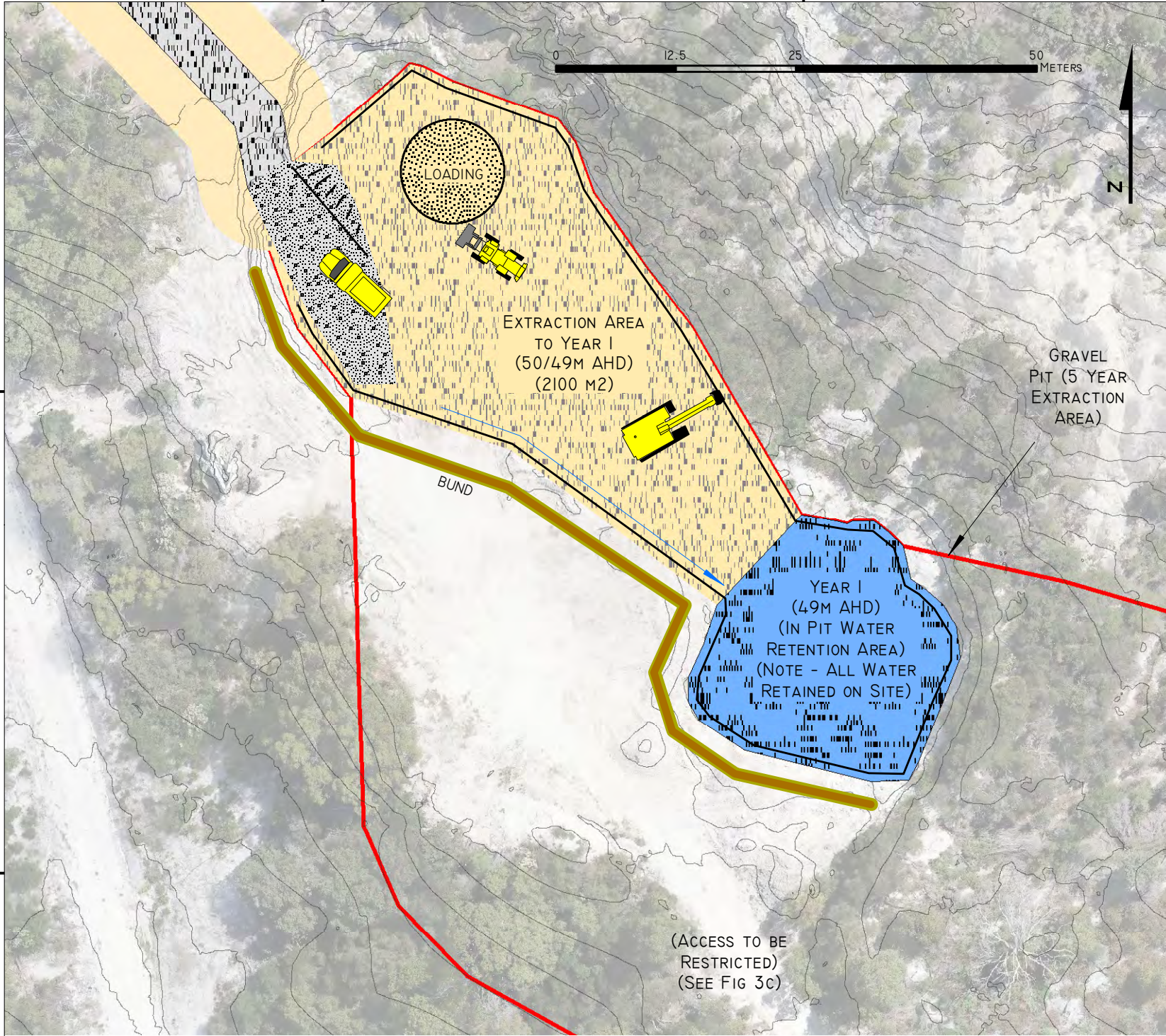
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5548600



(ACCESS TO BE RESTRICTED) (SEE FIG 3C)

14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE 3A: ROPOSED MINING AREAS - GRAVEL (TO YEAR I)

TASMAP: FISHER 5954

LGA: FLINDERS

Mining Lease symbol

NOTE: EXTRACTION VOLUME 4999 M3 PA

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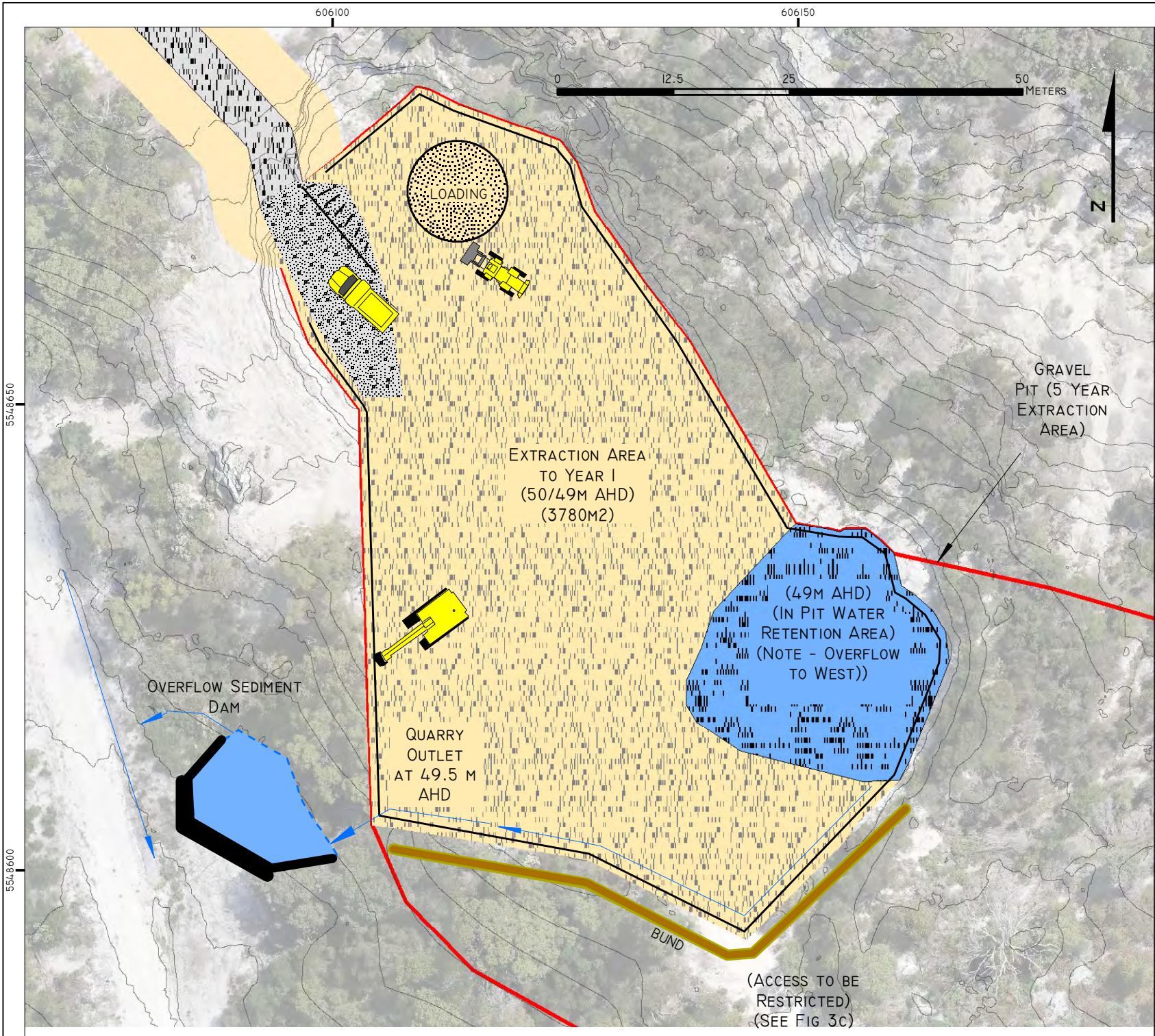
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DATE: 14 MAY 2022



14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE 3B: ROPOSED MINING AREAS - GRAVEL (TO YEAR 2)

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

NOTE:
EXTRACTION VOLUME
4999 M3 PA

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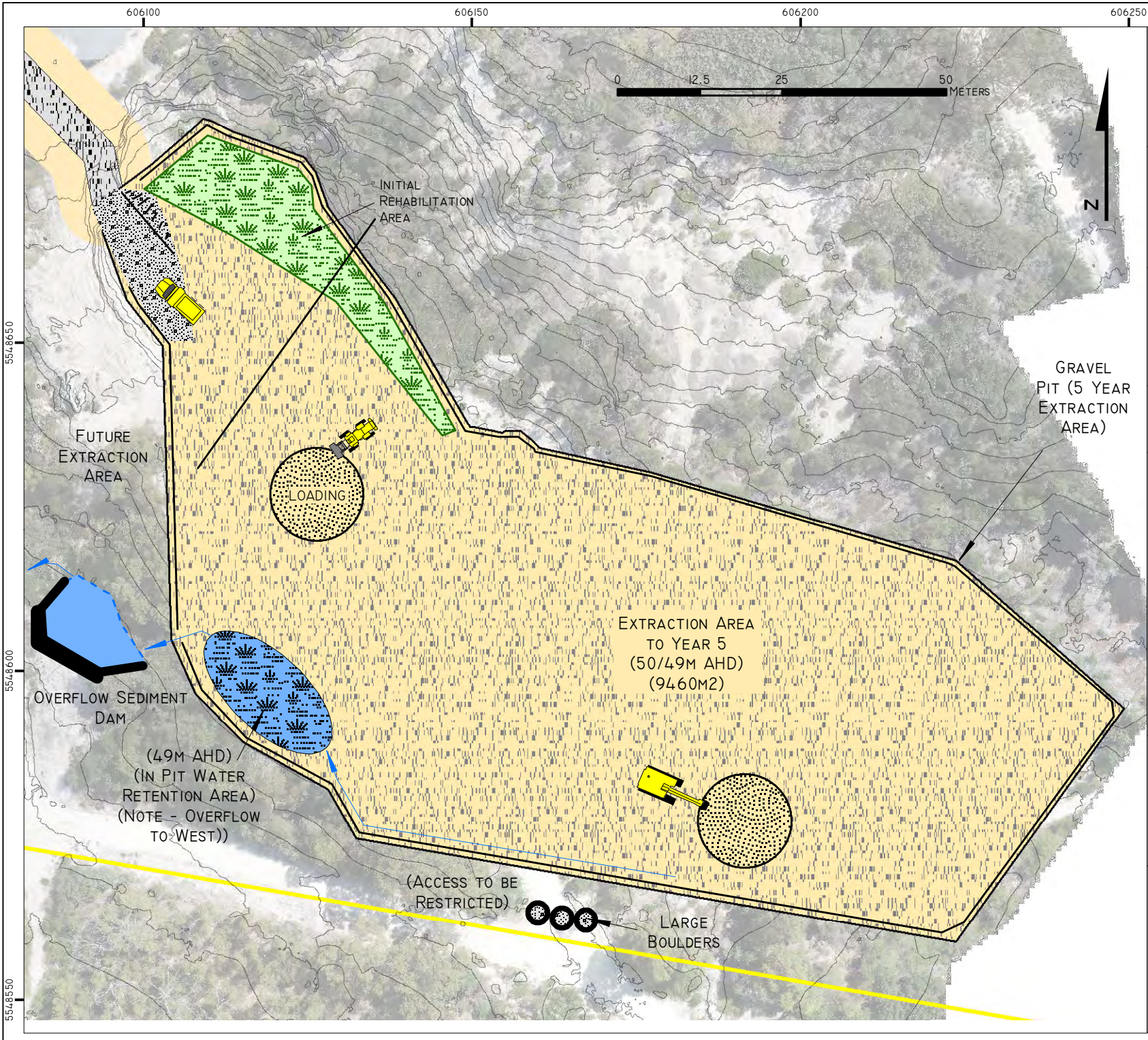


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CLIENT:
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DATE: 15 MAY 2022

(ACCESS TO BE RESTRICTED)
(SEE FIG 3C)



14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE 3C: ROPOSED MINING AREAS - GRAVEL (TO YEAR 5)

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

NOTE:
EXTRACTION VOLUME
4999 M3 PA

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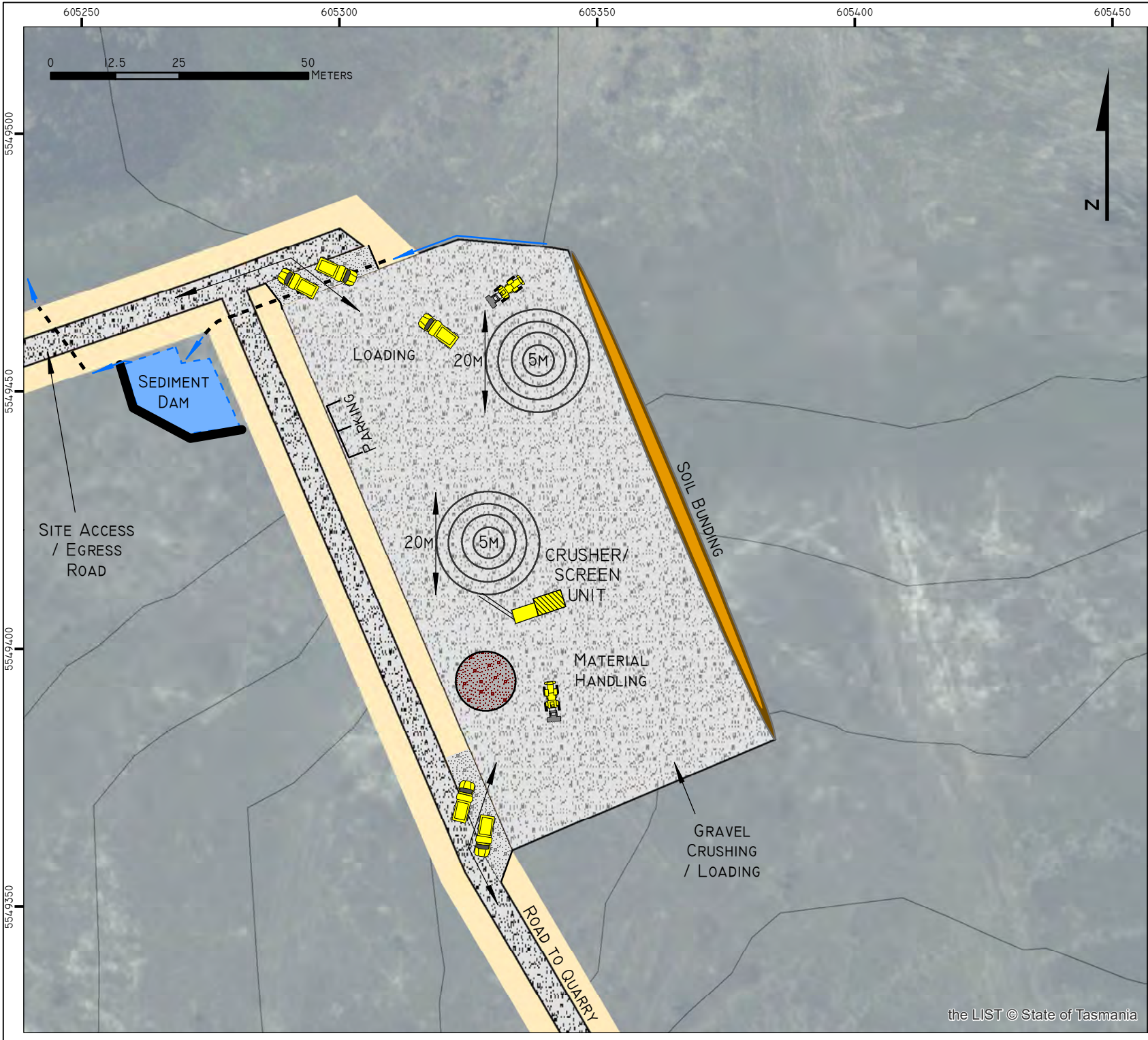
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DATE: 16 MAY 2022



14.2.1 - March 2023

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DA - QUARRY AND STORAGE YARD

FIGURE 4: STOCKPILE AND MATERIAL HANDLING PADS

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

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GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: 17 MAY 2022

B.3 RATIONALE FOR PROPOSAL AND ALTERNATIVES

Rationale	<p>The gravel has been extracted from the pit since the early 1980's and has been used in various applications including landscaping and shed/road base. The gravel (and rock) is also suitable for use in construction (including concrete production), road works, and for infrastructure associated with agricultural operations (e.g., cattle laneways, around sheds).</p> <p>The decomposed nature of the gravels and coarse rock underneath (including small to large boulders) means drill/blast is not required.</p>
Alternatives	<p>No alternatives were considered because the gravel/rock resource is spatially constrained to the area identified. The pit is existing and has a proven resource.</p>

B.4 DESCRIPTION OF EXISTING SITE AND SURROUNDS

Land Use	<p>The current land use is a mixture of native vegetation, previously cleared land (ex-vineyard and dam – proposed to be a sand extraction pit under a different development application), water infrastructure (Taswater easements that contain pipelines and a holding tank for Lady Barron township) and the existing gravel pit.</p> <p>The land is subject to fuel reduction burns conducted by the Tasmanian Fire Service (the most recent in 2016) to provide fire protection to the Lady Barron township.</p> <p>Surrounding land use is agriculture (mainly livestock grazing), a waste transfer station operated by the Flinders Council, water treatment plant operated by TasWater, an airstrip/landing facility (Murray Holloway Airfield – grass runway), Lady Barron Aerodrome to the north and residential/rural residential use (e.g., Vinegar Hill Drive and Moonbird Road) and the nearby Lady Barron township.</p>
Topography and watercourses Figure 2	<p>The main portion of the Land where extraction activities are to occur is formed by a gentle east-west oriented slope. The maximum elevation of the area affected by extraction is 55 to 60 m AHD.</p> <p>There are no defined natural watercourses (ephemeral or perennial) within the Land. The gravels/rock to be extracted are well drained.</p>
Geology Figure 6	<p>The granites are of Devonian age typical of the Furneaux Group. There is a sporadic skeletal topsoil (a gravelly to coarse sandy mix with intermittent loam soil of variable depth and leaf litter layer).</p>
Land Capability	<p>The Land Capability is not recorded by DPIPW however the granitic gravels (and intermittent loam soil) are likely to qualify as Land Class 6 given their apparent very low nutrient content, sparse to absent topsoil and no available irrigation supply.</p>

Climate

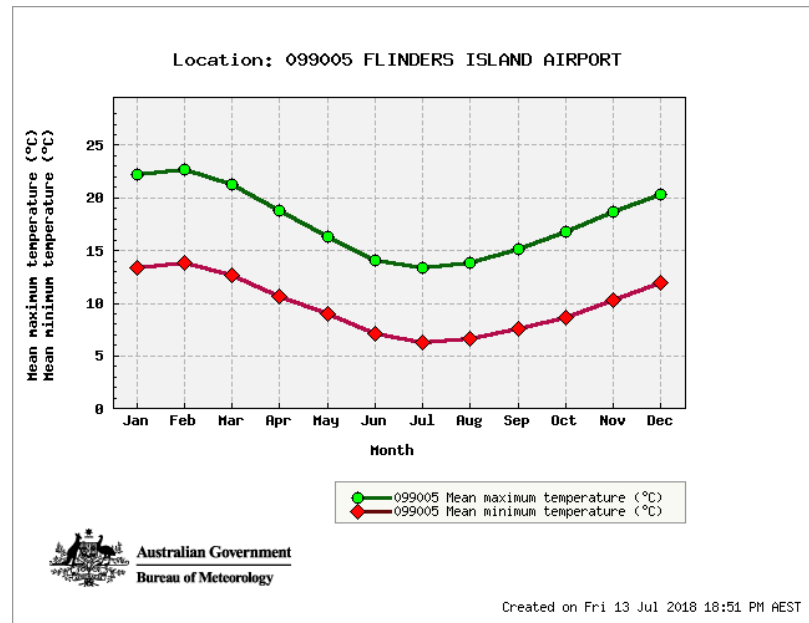
The station details for the Flinders Island Airport weather station are -

- **Site number:** 099005
- **Latitude:** 40.09 °S **Longitude:** 148.00 °E
- **Elevation:** 9 m

The Development occurs in a region with cool winters and warm summers (Graph 1), with most precipitation occurring in the winter and spring period (Graph 2).

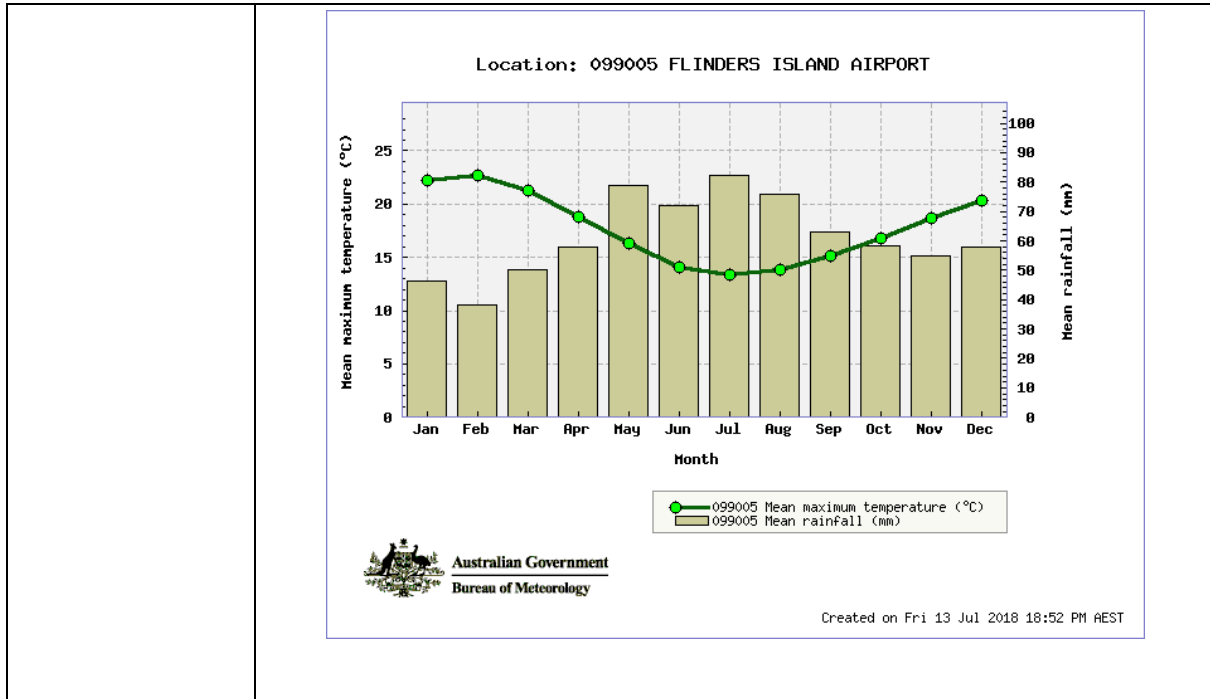
Graph 1. Mean minimum and maximum temperature for Flinders Island Airport

Source: Bureau of Meteorology 2018



Graph 2. Mean annual rainfall and mean maximum temperature for Flinders Island Airport

Source: Bureau of Meteorology 2018



B.4 SITE LAYOUT AND INFRASTRUCTURE

The layout of the Pit to Year 5 is shown in **Figures 3A and 3B**, with the Maximum Extraction Area shown in **Figure 2**.

Pit Management

Vegetation will be removed and mulched/stored as areas are needed for gravel/rock extraction.

Little vegetation exists around the immediate Pit due to past workings. The area 'open' (disturbed without rehabilitation) will be minimised to reduce the likelihood of erosion (wind and water), visual impacts and the potential colonisation of bare ground by undesirable plant species. The Pit currently has an existing water retention area which naturally drains over time through the underlying coarse gravels, with no water leaving the Pit that falls within it.

Topsoil will be salvaged as the Pit expands and stored separately in bunds around the Pit to ensure it remains 'clean' for use in future rehabilitation works. The soils are skeletal in parts, so the necessary storage capacity required for the topsoil and overburden is expected to be low. The topsoil will be grassed using a pasture grass mix comparable to that in adjacent pastures – this will enable the bund to be used for stock grazing and also maintain the biological functionality of the topsoil before it is used for rehabilitation.

Access and haul road

The existing track/road and a new section of 'to be built track' will enable access from the Pit to the Storage Yard (**Figures 2 and 4**). The new section will be constructed in accordance with the Forest Practices Code.

The property access is onto Lady Barron Road (a sealed road). The access will be constructed per the Standard Drawing TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A' (Drawing: TSD-R05-v2) in **Attachment 2**. A seal (2 coat spray seal) will be applied from the current seal on Lady Barron Road in 25m of the new unsealed road.

Line of sight distances are more than 180 m in both directions given the section of road is relatively straight and flat.

The traffic generated is seasonal, with most truck movements occurring in the spring to autumn months when construction related materials are most needed. For example, concrete production and works for road repairs (e.g., internal farm laneways) are far less likely to occur in the cooler wetter winter months, and wet early spring months.

Based on the full extraction per annum, 4,999 cubic metres, this equates to approximately 8,998 tonnes at a conversion ratio of 1.8. Based on delivery loads of 15 tonne per load, this equates to approximately 600 truckloads per annum. There would be a maximum of 10 truckloads delivered per day (20 traffic movements per day) with an average of 5 truckloads per day.

The loading and carting of product is proposed to occur on: Monday to Friday, 0800 to 1700 hrs, Saturday, 0800 to 1600 hrs and no activity on Sunday and public holidays (those gazetted statewide). Based on the maximum number of truckloads per day with 15 tonnes per load, carting could occur on approximately 50 days per annum.

Storage Yard

A Storage Yard will be constructed to receive gravel/rock from the Pit (**Figure 4**). It will be stored at the Storage Yard and some (up to 1,000 cubic metres per annum) will be crushed/screened to produce a uniform grade aggregate for specific applications (e.g., concrete production, use in road base, cattle laneways, walking tracks or paths, landscaping purposes or picnic/public recreation facility locations). The Storage Yard may operate on days when the Pit is not being operated, and vice versa, because the loading and carting of product is independent of its extraction from the Pit. Two car spaces will be provided at the Storage Yard.

Sediment pond and associated drainage

Drains, and culverts will be installed on the road to manage surface water flows.

Drains will be installed around the Storage Yard to direct surface waters that may be polluted by sediment to a sediment pond (see **Figures 3B and 4**) for treatment prior to discharge to the environment.

The Pit has an existing water retention area (see **Figure 3A**) which naturally empties over time through the coarse gravels, with no water leaving the Pit that falls within it. The free draining nature of the gravels being extracted, and area generally, means that there is scant existing surface drainage. At Year 2 onwards, a sediment pond will need to be installed (see **Figure 3B**) so that overflow water can drain from the Pit to aid further extraction to the south and south-east.

Amenities

No amenities are proposed.

B.5 EXTRACTION PLAN

B.5.1 EXTRACTION PLAN

The extraction program to Year 5 is shown in **Figures 3A and 3B**. The Mine Plan is for 5 years after which a new plan will need to be approved by Mineral Resources Tasmania. The extraction of gravel and rock will occur in the area identified as the Maximum Quarry Area as shown in **Figure 3B**, and it is that area that approval is sought for the gravel and rock to be removed under the LUPAA issued permit.

A 5 year ‘mine plan’ has been provided (**Figures 3A to 3C**) however extraction will continue beyond this timeline but will be limited to the Maximum Extraction Area. The shape and depth of the Pit beyond Year 5 will be determined by the extraction that has occurred in the previous 5 years (i.e., whether the full amount has been extracted each year).

The life of the Development is at least 20 years given the volume of resource available.

B.5.2 EXTRACTION METHODS

The operation includes the following activities:

- Vegetation removal. Some vegetation will be mulched, and stockpiled adjacent to the Pit for future rehabilitation works,

- Surface site preparation by topsoil (intermittent loam soil of variable depth) removal and stockpiling for future rehabilitation works,
- Excavation and ripping of rock and gravel, loading into trucks and transport to the Storage Yard,
- Crushing and/or screening (mechanised/vibratory) of up to 1,000 cubic metres at the Storage Yard (**not** at the Pit) to produce a uniform aggregate material,
- Stockpiling of material (material handled and not) in the Storage Yard,
- loading trucks with wheel loader from the Storage Yard, and the
- transport of materials by truck.

B.6 QUARRY CODE OF PRACTICE

The Quarry Code of Practice (QCP) was developed by the Environment Protection Authority to further the objectives of Tasmania's Resource Management and Planning System, which seeks to provide for sustainable development of Tasmania's resources.

The QCP comprises elements for both the proposed use and development of land for extractive purposes as well as ongoing environmental management. The sections of the code are not in themselves legally enforceable. They are intended to encourage operators to achieve good environmental performance without the need to resort to legislative enforcement mechanisms.

B.6.1 PURPOSE

The QCP is not a Code of Practice for the purposes of Sections 23A(4) and 102(2)(d) of EMPCA, which refer to Codes of Practice made and approved in accordance with EMPCA regulations. Rather, the QCP documents acceptable environmental guidelines for quarrying to:

- promote industry self-regulation,
- provide information for planning authorities on the assessment and control of quarries under LUPAA and EMPCA,
- provide the basis for uniform planning scheme standards,
- further the objectives of Tasmania's Resource Management and Planning System, which seeks to provide sustainable development of Tasmania's resources,
- assist in compliance with the *Mineral Resources Development Act 1995* (MRDA) and provide an assessment standard for mining leases,
- increase general community awareness about environmental management within the industry, and
- assist operators in the operation and rehabilitation of quarries.

B.6.2 ADOPTION OF THE CODE BY PROPONENT

The acceptable standards of the QCP will be adopted by the proponent where they are relevant to the activity and alternative arrangements not described in this document. For example, operating hours are outside those recommended in the QCP.

Standard measures to be adopted from the QCP include for example, drainage control measures, sediment pond sizing and location, and stripping and stockpiling of topsoil for future use in rehabilitation (to native vegetation like the surrounds).

B.6.3 COMPLAINTS REGISTER

In accordance with the principles of the QCP, an on-site complaints response procedure (Complaints Register) will be established and used. Complaints of relevance to the Development will be recorded in the Complaints Register. Details of investigation and actions undertaken in relation to each complaint will also be recorded in the register. The Register would be provided to the Council upon request.

B.7 ENVIRONMENTAL LEGISLATION, STANDARDS, COES OF PRACTICE AND GUIDELINES

The Proponent will conduct the Development in compliance with relevant legislation, policies, codes of practice, and standards.

B.7.1 LEGISLATION AND REGULATIONS

Legislation includes –

- *Environmental Management and Pollution Control Act 1994 (EMPCA)*
- *Land Use Planning and Approvals Act 1993*
- *Mineral Resources Development Act 1995*
- *Road and Jetties Act 1935*
- *State Policies and Projects Act 1993*
- *Local Government (Highways) Act 1982*
- *Nature Conservation Act 2002*
- *Forest Practices Act 1985 and Forest Practices Regulations 2017*

Relevant regulations made under EMPCA include –

- *Environmental Management and Pollution Control (General) Regulations 2017*
- *Environmental Management and Pollution Control (Noise) Regulations 2016*

B.7.2 STATE POLICIES

State Policies (made under the *State Policies and Projects Act 1993*) include –

- State Policy on Water Quality Management 1997
- State Coastal Policy 1996
- State Policy of the Protection of Agricultural land 2009

B.7.3 ENVIRONMENT PROTECTION POLICIES

Relevant Environment Protection Policies (EPP's)

EPPs are designed specifically to give effect to the objectives of EMPCA and define environmental objectives with programs to achieve them. The following EPPs have been made:

- Environment Protection Policy (Air Quality) 2004
- Environment Protection Policy (Noise) 2009

B.7.4 RELEVANT GUIDELINES

Guidelines relevant to the Development include –

Document/Name	Focus/Content	Publisher
Tasmanian Quarry Code of Practice, 3 rd Edition, May 2017	Provides detailed guidelines for the quarry industry covering planning through to site rehabilitation.	Tasmanian EPA (2017)
Decommissioning & Rehabilitation Plan (DRP) A guideline for the Tasmanian mining industry	A guideline for the preparation of a decommissioning and rehabilitation plan for the Tasmanian mining industry.	Tasmanian EPA (2011)
Bunding and Spill Management Guidelines	Provides guidance on best practice environmental management to operators of activities likely to store and handle environmentally hazardous substances.	Tasmanian EPA (2015)
Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania.	These guidelines establish a standard for washdown and a guide to prescribing its application where codes of practice or other environmental management plans are not in place.	DPIPWE (2015)

PART C – PLANNING SCHEME INFORMATION

C.1 CATEGORISATION OF USE/DEVELOPMENT

The Development is consistent with the definition of *Extractive Industry* in the Scheme –

‘... 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.’

C.2 ZONING

C.2.1 ZONE

The land upon which the Development occurs is within the Rural Zone of the Scheme (**Figure 5A**). Extractive Industry is a Permitted use in the Rural zone.

C.2.2 ZONE PURPOSE

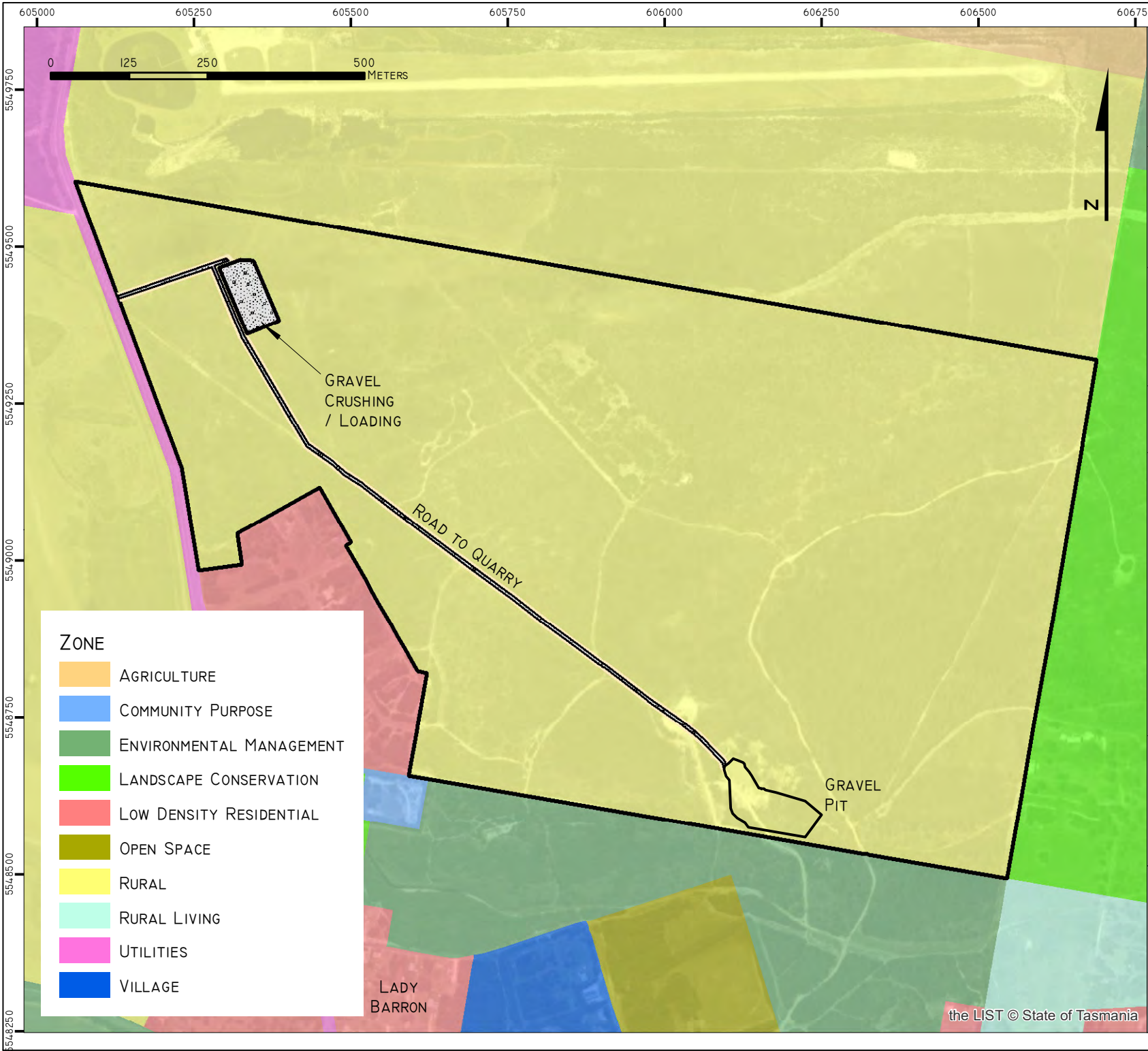
The purpose of the Rural Zone is:

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.

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.



ZONE	
	AGRICULTURE
	COMMUNITY PURPOSE
	ENVIRONMENTAL MANAGEMENT
	LANDSCAPE CONSERVATION
	LOW DENSITY RESIDENTIAL
	OPEN SPACE
	RURAL
	RURAL LIVING
	UTILITIES
	VILLAGE

14.2.1 - March 2023

FIFD PTY LTD

DA - QUARRY AND STORAGE YARD

FIGURE 5A: ZONE MAP
MAP - TASMANIAN PLANNING SCHEME - FLINDERS

TASMAP:
FISHER
5954

LGA:
FLINDERS

MINING LEASE

BASE DATA BY TASMAP. © STATE OF TASMANIA
BASE IMAGE BY TASMAP. © STATE OF TASMANIA

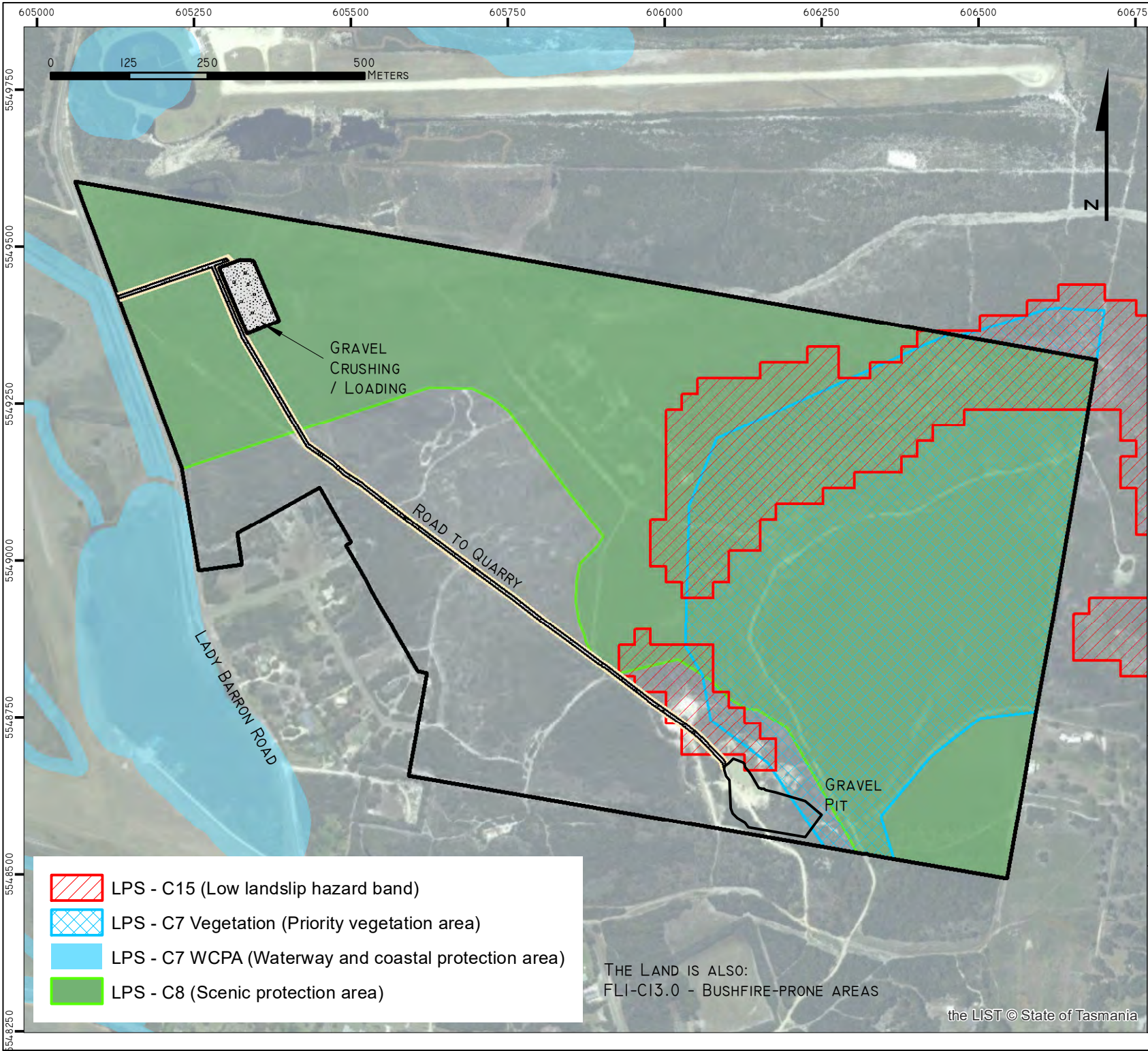
an Diemen CONSULTING
PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: 27 MAY 2022



14.2.1 - March 2023

FIFD PTY LTD

DA - QUARRY AND STORAGE YARD

FIGURE 5B: CODE OVERLAYS
MAP - TASMANIAN PLANNING
SCHEME - FLINDERS

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

BASE DATA BY TASMAP. © STATE OF TASMANIA
BASE IMAGE BY TASMAP. © STATE OF TASMANIA





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PO Box 1 New Town TAS 7008



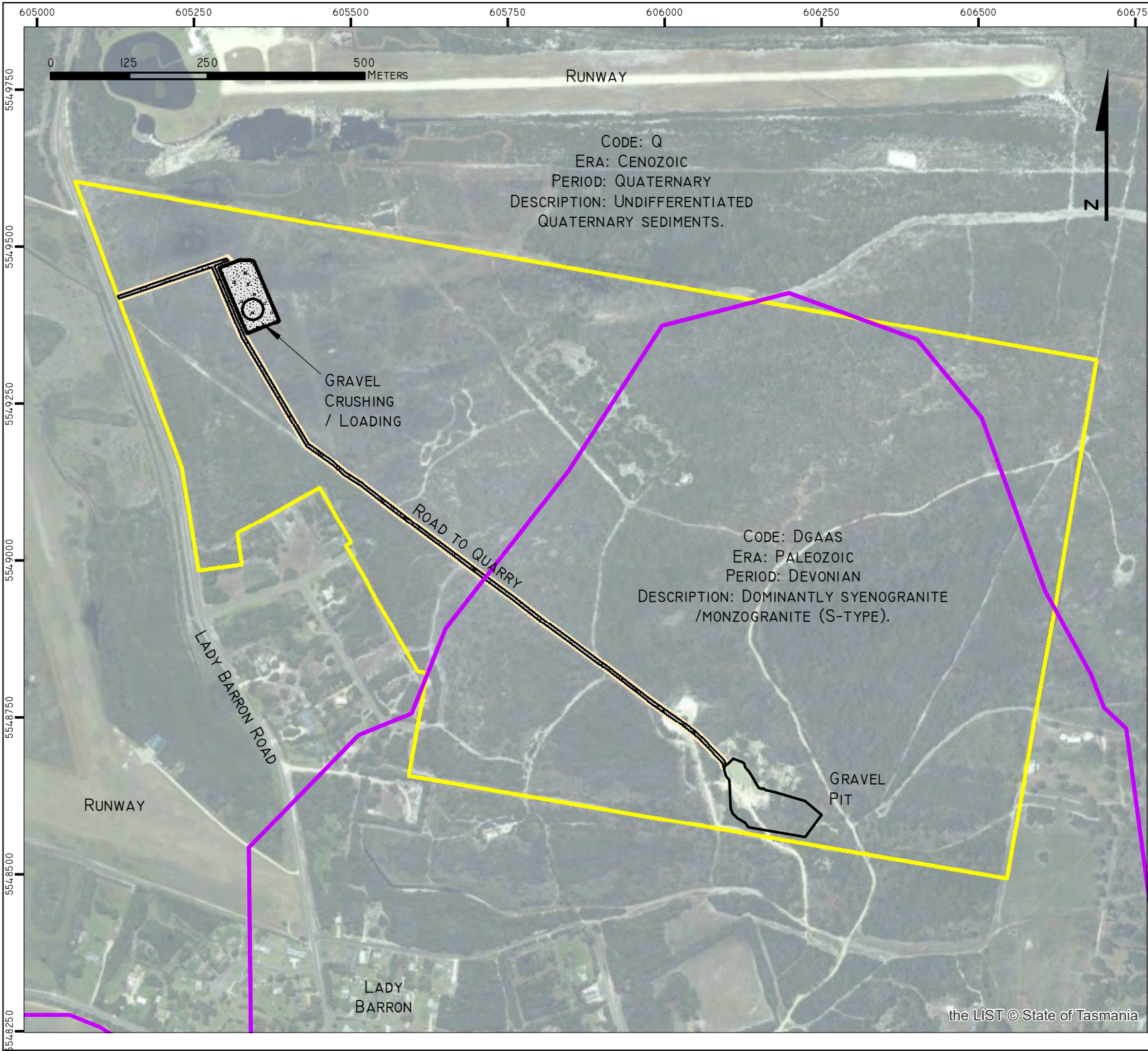
DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: ~~28~~ MAY 2022

-  LPS - C15 (Low landslip hazard band)
-  LPS - C7 Vegetation (Priority vegetation area)
-  LPS - C7 WCPA (Waterway and coastal protection area)
-  LPS - C8 (Scenic protection area)

THE LAND IS ALSO:
FLI-C13.0 - BUSHFIRE-PRONE AREAS



14.2.1 - March 2023

FIFD PTY LTD

DA - QUARRY AND STORAGE YARD

FIGURE 6: GEOLOGY (1:250,000 - MRT) AROUND THE DEVELOPMENT AREA

TASMAR: FISHER 5954

LGA: FLINDERS

- GEOLOGY (1:250,000)
- MINING LEASE

BASE DATA BY TASMAR. © STATE OF TASMANIA
BASE IMAGE BY TASMAR. © STATE OF TASMANIA

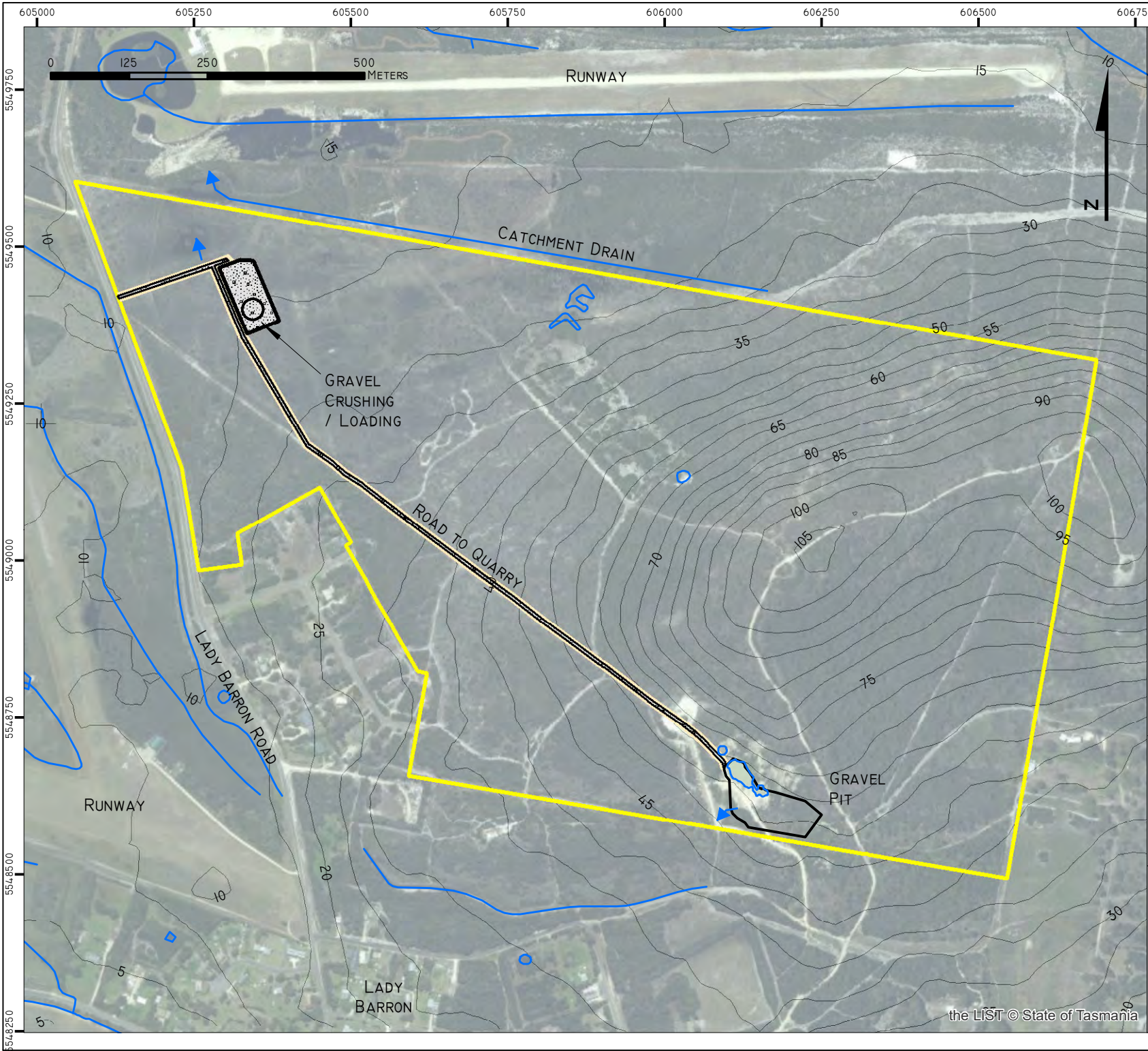
an Diemen CONSULTING
PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT: FIFD PTY LTD

DATE: 29 MAY 2022



14.2.1 - March 2023

FIFD PTY LTD

DA - QUARRY AND STORAGE YARD

FIGURE 7: DRAINAGE FROM THE LAND

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

BASE DATA BY TASMAP. © STATE OF TASMANIA
BASE IMAGE BY TASMAP. © STATE OF TASMANIA

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PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: 30 MAY 2022

C.2.3 Use Standards

The following Use Standards were considered.

20.3.1 Discretionary use

Objective:	<p>That the location, scale and intensity of a use listed as Discretionary:</p> <ul style="list-style-type: none"> (a) is required for operational reasons; (b) does not unreasonably confine or restrain the operation of uses on adjoining properties; (c) is compatible with agricultural use and sited to minimise conversion of agricultural land; and (d) is appropriate for a rural location and does not compromise the function of surrounding settlements. 	<p>Assessment of Development against Provision</p>
Acceptable Solution	Performance Criterion	
<p>A1</p> <p>A use listed as Discretionary, excluding Residential, is for an alteration or extension to an existing use, if:</p> <ul style="list-style-type: none"> (a) the gross floor area does not increase by more than 30% from that existing at the effective date; and (b) the development area does not increase by more than 30% from that existing at the effective date. 	<p>P1</p> <p>A use listed as Discretionary, excluding Residential, must require a rural location for operational reasons, having regard to:</p> <ul style="list-style-type: none"> (a) the nature, scale and intensity of the use; (b) the importance or significance of the proposed use for the local community; (c) whether the use supports an existing agricultural use; (d) whether the use requires close proximity to infrastructure or natural resources; and (e) whether the use requires separation from other uses to minimise impacts. 	<p>Provision not relevant, Extractive Industry is a Permitted Use in the Use Class Table for the Zone.</p> <p>No assessment required.</p>

<p>A2 No Acceptable Solution.</p>	<p>P2 A use listed as Discretionary must not confine or restrain existing use on adjoining properties, having regard to:</p> <ul style="list-style-type: none"> (a) the location of the proposed use; (b) the nature, scale and intensity of the use; (c) the likelihood and nature of any adverse impacts on adjoining uses; (d) whether the proposed use is required to support a use for security or operational reasons; and (e) any off site impacts from adjoining uses. 	
<p>A3 No Acceptable Solution.</p>	<p>P3 A use listed as Discretionary, located on agricultural land, must minimise conversion of agricultural land to non-agricultural use and be compatible with agricultural use, having regard to:</p> <ul style="list-style-type: none"> (a) the nature, scale and intensity of the use; (b) the local or regional significance of the agricultural land; and (c) whether agricultural use on adjoining properties will be confined or restrained. 	
<p>A4 No Acceptable Solution.</p>	<p>P4 A use listed as Discretionary, excluding Residential, must be appropriate for a rural location, having regard to:</p> <ul style="list-style-type: none"> (a) the nature, scale and intensity of the proposed use; (b) whether the use will compromise or distort the activity centre hierarchy; (c) whether the use could reasonably be located on land zoned for that purpose; (d) the capacity of the local road network to accommodate the traffic generated by the use; and (e) whether the use requires a rural location to minimise impacts from the use, such as noise, dust and lighting. 	

C.2.4 Development Standards for Buildings and Works**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.	Assessment of Development against Provision
Acceptable Solution	Performance Criterion	
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.	Provision not relevant, no buildings are proposed. No assessment required.

20.4.2 Setbacks

Objective:	That the siting of buildings minimises potential conflict with use on adjoining sites.		Assessment of Development against Provision
Acceptable Solution	Performance Criterion		
A1 Buildings must have a setback from all boundaries of:	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:		Provision not relevant, no buildings are proposed. No assessment required.

Vinegar Hill Quarry and Storage Yard – Development Application Supporting Information

<p>(a) not less than 5m; or</p> <p>(b) if the setback of an existing building is within 5m, not less than the existing building.</p>	<p>(a) the bulk and form of the building;</p> <p>(b) the nature of existing use on the adjoining properties;</p> <p>(c) separation from existing use on the adjoining properties; and</p> <p>(d) any buffers created by natural or other features.</p>	
<p>A2</p> <p>Buildings for a sensitive use must be separated from an Agriculture Zone a distance of:</p> <p>(a) not less than 200m; or</p> <p>(b) if an existing building for a sensitive use on the site is within 200m of that boundary, not less than the existing building.</p>	<p>P2</p> <p>Buildings for a sensitive use must be sited so as not to conflict or interfere with an agricultural use within the Agriculture Zone, having regard to:</p> <p>(a) the size, shape and topography of the site;</p> <p>(b) the prevailing setbacks of any existing buildings for sensitive uses on adjoining properties;</p> <p>(c) the location of existing buildings on the site;</p> <p>(d) the existing and potential use of adjoining properties;</p> <p>(e) any proposed attenuation measures; and</p> <p>(f) any buffers created by natural or other features.</p>	<p>Provision not relevant, no sensitive use is proposed.</p> <p>No assessment required.</p>

20.4.3 Access for new dwellings

Objective:	That new dwellings have appropriate vehicular access to a road maintained by a road authority.	<p>Assessment of Development against Provision</p>
<p>Acceptable Solution</p>	<p>Performance Criterion</p>	
<p>A1</p>	<p>P1</p>	<p>Provision not relevant, no dwelling is proposed.</p>

<p>New dwellings must be located on lots that have frontage with access to a road maintained by a road authority.</p>	<p>New dwellings must have legal access, by right of carriageway, to a road maintained by a road authority that is appropriate, having regard to:</p> <ul style="list-style-type: none"> (a) the number of users of the access; (b) the length of the access; (c) the suitability of the access for use by the occupants of the dwelling; (d) the suitability of the access for emergency services vehicles; (e) the topography of the site; (f) the construction and maintenance of the access; (g) the construction, maintenance and usage of the road; and (h) any advice from a road authority. 	<p>No assessment required.</p>
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C.3 CODES

Table 1 provides a summary of which Codes apply to the Development.

The location of overlays associated with Codes relative to the Development are presented in **Figure 5B**.

Table 1. Development applicable Codes in the *Tasmanian Planning Scheme – Flinders*

Code Number and Name	Application to the Development
C1.0 Signs	Not applicable; no signage proposed.
C2.0 Parking and Sustainable Transport	Applies
C3.0 Road and Railway Assets	Applies
C4.0 Electricity Transmission Infrastructure Protection	Not applicable; use and development not within the stipulated buffer areas
C5.0 Telecommunications	Not applicable; no telecommunications infrastructure is proposed.
C6.0 Local Historic Heritage	Not applicable; use or development of land is not: a) within a Heritage Precinct; b) a local heritage place; or c) a place of identified archaeological significance.
C7.0 Natural Assets	Applies; Priority Vegetation overlay intersected (part).
C8.0 Scenic Protection	Applies; Scenic Protection Overlay intersected (part).
C9.0 Attenuation	Applies
C10.0 Coastal Erosion Hazard	Not applicable; use and development not within a coastal erosion hazard area.
C11.0 Coastal Inundation Hazard	Not applicable; use and development not within a coastal inundation hazard area.
C12.0 Flood-Prone Areas Hazard	Not applicable; sensitive use or conversion of a building into a habitable building are not proposed.
C13.0 Bushfire-Prone Areas	Not applicable; not a hazardous or vulnerable use and subdivision not proposed.
C14.0 Potentially Contaminated Land	Not applicable; sensitive use is not proposed.

C15.0 Landslip Hazard	Applies; Development intersects Low Hazard Band overlay.
C16.0 Safeguarding of Airports	Not applicable; use and development is not a sensitive use within an airport noise exposure area; and development within an airport obstacle limitation area.

C.3.1 APPLICABLE CODES

As noted in **Table 1**, the following Codes apply –

- C2.0 Parking and Sustainable Transport Code
- C3.0 Road and Railway Assets Code
- C7.0 Natural Assets
- C8.0 Scenic Protection
- C9.0 Attenuation
- C15.0 Landslip Hazard

C2.0 Parking and Sustainable Transport Code

The purpose of the Parking and Sustainable Transport Code is:

- 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.

Unless stated otherwise in a particular purpose zone, or sub-clause C2.2.2, C2.2.3 or C2.2.4, this code applies to all use and development.

Clause 2.5.3, 2.5.4 and 2.5.5 do not apply as the Use Class is **Extractive Industry**.

Use Standards

Clause 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	Comments in relation to Development
A1	<p>The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if:</p> <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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: $N = A + (C - B)$ <p>N = Number of on-site car parking spaces required</p> <p>A = Number of existing on-site car parking spaces</p> <p>B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1</p> <p>C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.</p> 	<p>Complies.</p> <p>It is likely that there would be a single staff member or two staff members (including the owner) operating the extraction and processing of material.</p> <p>The delivering of material is likely to be done by a staff member or contractors engaged to deliver material.</p> <p>One car parking space meets the parking requirements for Extractive Industry in Table C2.1 (based on 2 employees).</p> <p>However, 2 formal car parking spaces will be provided at the Storage Yard (see Figure 4).</p>

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	Comments in relation to Development
A1	Bicycle parking spaces must: <ul style="list-style-type: none"> (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. 	<p>Provision not relevant.</p> <p>There are no bicycle parking requirements for Extractive Industry in Table C2.1.</p>

Development StandardsC2.6.1 Construction of parking areas

Objective:	That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.	
	Performance Criterion	Comments in relation to Development
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: <ul style="list-style-type: none"> (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. 	<p>Complies with P1.</p> <p>The Storage Yard will be formed of a compacted hard base material (such as sand, rock and/or gravel) to provide a suitable surface for the movement of trucks and machinery, and storage of gravels/rock extracted from the pit.</p> <p>The low relief topography of the land where the Storage yard is to be installed is conducive to minimising earthworks and controlling drainage via spoon drains and the final treatment of surface waters for sediment removal by a suitably sized sediment pond.</p> <p>Sediment will not be transported off the site because a sediment pond will be installed and maintained for the life of the Development. Perimeter drains and internal Storage Yard drains will assist with draining and directing surface flows to the sediment pond for sediment removal.</p> <p>The hardstand surface, crushing/screening and unsealed road access may generate dust, but this can be managed by the application of water when conditions are dry or windy. There is a large distance between the Storage Yard, Pit, and haul road and the nearest sensitive use.</p>

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.	
	Performance Criterion	Comments in relation to Development
	<p>P1</p> <p>All parking, access ways, manoeuvring and circulation spaces must be designed and readily identifiable to provide convenient, safe and efficient parking, having regard to:</p> <ul style="list-style-type: none"> (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: Offstreet commercial vehicle facilities. 	<p>Complies with P1.</p> <p>The road/track connecting Pit and Storage Yard exists, for the most part, where it follows an existing track/easement. It provides a suitable all-weather surface for the movement of trucks and machinery. A new section of road will be constructed where the existing track continues to Lady Barron Road, with the new road continued to the Storage Yard (see Figure 2).</p> <p>The low relief topography of the land where the Storage Yard is proposed to be installed is conducive to minimising earthworks and controlling drainage via spoon drains and a sediment pond.</p> <p>Traffic generation rates onto Lady Barron Road are low.</p> <p>Only truck drivers familiar with the site will be used to collect and deliver product. The site is not open to the public so there would be no persons attending the land that are not familiar with the access and haul road route.</p> <p>The access is onto Lady Barron Road which is the main arterial road connecting Whitemark and Lady Barron.</p> <p>Two parking spaces at the Storage Yard will be delineated with signage and road markers. Informal parking areas will be delineated by signage only.</p>

C2.6.3 Number of accesses for vehicles

Objective:	<p>That:</p> <ul style="list-style-type: none"> (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	Comments in relation to Development
	<p>A1</p> <p>The number of accesses provided for each frontage must:</p> <ul style="list-style-type: none"> (a) be no more than 1; or (b) no more than the existing number of accesses, 	<p>Complies.</p> <p>The access will be the only access from the frontage of CT 199735/1 meaning that there is not more than 1.</p>

whichever is the greater.	
A2 Within the Central Business Zone or in a pedestrian priority street no new access is provided unless an existing access is removed.	Provision not relevant. The Development is not within the Central Business Zone.

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:	
	<ul style="list-style-type: none"> (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	Comments in relation to Development
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.	Provision not relevant. There are no relevant zones present.

C2.6.5 Pedestrian access

Objective:	That pedestrian access within parking areas is provided in a safe and convenient manner.	
	Acceptable Solution	Comments in relation to Development
A1.1	Uses that require 10 or more car parking spaces must: <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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 	Provision not relevant. There is no requirement to provide 10 or more car parking spaces nor a parking area containing accessible car parking spaces for use by persons with a disability.

<p>(b) be signed and line marked at points where pedestrians cross access ways or parking aisles.</p> <p>A1.2</p> <p>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.</p>	
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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	Comments in relation to Development
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: Offstreet commercial vehicle facilities, for the type of vehicles likely to use the site.	<p>Provisions not relevant.</p> <p>There is no requirement to provide loading bays.</p>
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 Offstreet commercial vehicle facilities.	

C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone

Objective:	That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.	
	Acceptable Solution	Comments in relation to Development
A1	<p>Bicycle parking for uses that require 5 or more bicycle spaces in Table C2.1 must:</p> <ul style="list-style-type: none"> (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. 	<p>Provisions not relevant.</p> <p>The development and use associated with the Development is not in the applicable zone.</p>

<p>A2</p> <p>Bicycle parking spaces must:</p> <ul style="list-style-type: none"> (a) have dimensions not less than: <ul style="list-style-type: none"> (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. 	
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Clause 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	Comments in relation to Development
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.	<p>Provision not relevant.</p> <p>The Development is not in the Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone, General Business Zone, or Central Business Zone.</p>
A2	<p>Within the Central Business Zone, on-site parking at ground level adjacent to a frontage must:</p> <ul style="list-style-type: none"> (a) have no new vehicle accesses, unless an existing access is removed; (b) retain an active street frontage; and (c) not result in parked cars being visible from public places in the adjacent roads. 	

C3.0 Road and Rail Assets Code

The purpose of this provision is to:

- 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.

This code applies to a use or development that:

- (a) will increase the amount of vehicular traffic or the number of movements of vehicles longer than 5.5m using an existing vehicle crossing or private level crossing;
- (b) will require a new vehicle crossing, junction or level crossing; or
- (c) involves a subdivision or habitable building within a road or railway attenuation area if for a sensitive use.

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.	
	Performance Criterion	Comments in relation to Development
	<p>P1</p> <p>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:</p> <ul style="list-style-type: none"> (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. 	<p>Complies with P1.</p> <p>Lady Barron Road is sealed.</p> <p>The access will be reconstructed per the Standard Drawing TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A' (Drawing: TSD-R05-v2) in Attachment 2.</p> <p>A seal (2 coat spray seal) will be applied from the current seal on Lady Barron Road in 25m of the property internal unsealed road.</p> <p>Line of sight distances are more than 180 m in both directions given the section of road is relatively straight and flat.</p> <p>The traffic generated is seasonal, with most truck movements occurring in the spring to autumn months when construction related materials are most needed. For example, concrete production and works for road repairs (e.g., internal farm laneways) are far less likely to occur in the cooler wetter winter months, and wet early spring months.</p>

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.	
	Performance Criterion	Comments in relation to Development
A1	<p>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:</p> <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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 <i>Noise Measurement Procedures Manual, 2nd edition, July 2008</i>. 	<p>Provision not relevant.</p> <p>No habitable buildings for sensitive use are proposed.</p>

C7.0 Natural Assets Code

The purpose of the Natural Assets Code is:

- C7.1.1 To minimise impacts on water quality, natural assets including native riparian vegetation, river condition and the natural ecological function of watercourses, wetlands and lakes.
- C7.1.2 To minimise impacts on coastal and foreshore assets, native littoral vegetation, natural coastal processes and the natural ecological function of the coast.
- C7.1.3 To protect vulnerable coastal areas to enable natural processes to continue to occur, including the land ward transgression of sand dunes, wetlands, saltmarshes and other sensitive coastal habitats due to sea-level rise.
- C7.1.4 To minimise impacts on identified priority vegetation.

C7.1.5 To manage impacts on threatened fauna species by minimising clearance of significant habitat.

Supporting Information – ecological assessment

Information about the biodiversity values on the Mining Lease is provided in **Attachment 3**.

Use Standards

There are no Use Standards in this code.

Development Standards

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area

Objective:	That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.	
	Performance Criterion	Comments in relation to Development
A1	Buildings and works within a waterway and coastal protection area must: <ul style="list-style-type: none"> (a) be within a building area on a sealed plan approved under this planning scheme; (b) in relation to a Class 4 watercourse, be for a crossing or bridge not more than 5m in width; or (c) if within the spatial extent of tidal waters, be an extension to an existing boat ramp, car park, jetty, marina, marine farming shore facility or slipway that is not more than 20% of the area of the facility existing at the effective date. 	Not relevant. No buildings are proposed, and works are not proposed in a waterway and coastal protection area.
A2	Buildings and works within a future coastal refugia area must be located within a building area on a sealed plan approved under this planning scheme.	Not relevant. No buildings are proposed, and works are not proposed in a waterway and coastal protection area.
A3	Development within a waterway and coastal protection area or a future coastal refugia area must not involve a new stormwater point discharge into a watercourse, wetland or lake.	Not relevant. No development is proposed in a waterway and coastal protection area.
A4		Not relevant.

Dredging or reclamation must not occur within a waterway and coastal protection area or a future coastal refugia area.	No dredging or reclamation is proposed.
A5 Coastal protection works or watercourse erosion or inundation protection works must not occur within a waterway and coastal protection area or a future coastal refugia area.	Not relevant. No coastal protection works, or watercourse erosion or inundation protection works are proposed.

C7.6.2 Clearance within a priority vegetation area

Objective:	That clearance of native vegetation within a priority vegetation area: <ul style="list-style-type: none"> (a) does not result in unreasonable loss of priority vegetation; (b) is appropriately managed to adequately protect identified priority vegetation; and (c) minimises and appropriately manages impacts from construction and development activities. 	
	Performance Criterion	Comments in relation to Development
P1.1	<p>Clearance of native vegetation within a priority vegetation area must be for:</p> <ul style="list-style-type: none"> (a) an existing use on the site, provided any clearance is contained within the minimum area necessary to be cleared to provide adequate bushfire protection, as recommended by the Tasmanian Fire Service or an accredited person; (b) buildings and works associated with the construction of a single dwelling or an associated outbuilding; (c) subdivision in the General Residential Zone or Low Density Residential Zone; (d) use or development that will result in significant long term social and economic benefits and there is no feasible alternative location or design; (e) clearance of native vegetation where it is demonstrated that on-going pre-existing management cannot ensure the survival of the priority vegetation and there is little potential for long-term persistence; or (f) the clearance of native vegetation that is of limited scale relative to the extent of priority vegetation on the site. 	<p>Complies with (c).</p> <p>The overlay intersected is at the eastern edge of the Pit.</p> <p>The Maximum Extraction Extent only encompasses a small fraction of the Priority vegetation overlay on the site (Figure 5B).</p> <p>The clearance of native vegetation is of limited scale relative to the extent of priority vegetation on the site. Hence, (f) is satisfied.</p>
P1.2	<p>Clearance of native vegetation within a priority vegetation area must minimise adverse impacts on priority vegetation, having regard to:</p>	<p>Complies.</p> <p>The clearance of vegetation minimises the impact to the priority vegetation area.</p>

<ul style="list-style-type: none"> (a) the design and location of buildings and works and any constraints such as topography or land hazards; (b) any particular requirements for the buildings and works; (c) minimising impacts resulting from bushfire hazard management measures through siting and fire-resistant design of habitable buildings; (d) any mitigation measures implemented to minimise the residual impacts on priority vegetation; (e) any on-site biodiversity offsets; and (f) any existing cleared areas on the site. 	<p>No buildings are proposed.</p> <p>No bushfire hazard management measures are required nor proposed.</p> <p>Works include the excavation of the ground to access rock and gravels as is normal for an extractive industry use. The Mining Lease constrains the area open (disturbed without rehabilitation) and also the area that can be quarried.</p> <p>The vegetation adjacent to the Pit will remain undisturbed by the works, and water management will be via a sediment pond and formal outflow to ensure that water discharge and sedimentation impacts are negligible. The sediment pond and its overflow are to an area not within the priority vegetation overlay.</p> <p>No on-site biodiversity offsets are proposed given the negligible impact to the priority vegetation overlay by the Development.</p>
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C8.0 Scenic Protection Code

The purpose of this provision is to:

C8.1.1 To recognise and protect landscapes that are identified as important for their scenic values.

This code applies to development on land within a scenic protection area or scenic road corridor and only if within the following zones:

- (a) Rural Living Zone;
- (b) Rural Zone;
- (c) Agriculture Zone;
- (d) Landscape Conservation Zone;
- (e) Environmental Management Zone; or
- (f) Open Space Zone.

Supporting Information – scenic value assessment

Information about the scenic values on the Mining Lease is provided in **Attachment 3**. The Code relevant locations are where the existing track/road intersects the overlay (between the Pit and Storage Yard) and at the Storage Yard and associated roads (**Figure 5B**).

Development Standards

C8.6.1 Development within a scenic protection area

Objective:	<p>That:</p> <p>(a) destruction of vegetation does not cause an unreasonable reduction of the scenic value of a scenic protection area; and</p> <p>(b) buildings and works do not cause an unreasonable reduction of the scenic value of a scenic protection area.</p>
Performance Criterion	Comments in relation to Development
<p>P1.1</p> <p>Destruction of vegetation within a scenic protection area must not cause an unreasonable impact on the scenic value of a scenic protection area, having regard to:</p> <p>(a) the nature of the vegetation to be removed;</p> <p>(b) the area of vegetation to be removed;</p> <p>(c) the topography of the site;</p> <p>(d) any visual impact on a skyline;</p> <p>(e) the nature of the reduction of the scenic value; and</p> <p>(f) the purpose of any management objectives identified in the relevant Local Provisions Schedule.</p>	<p>Complies with P1.</p> <p>Scenic information and imagery about Vinegar Hill is provided in Attachment 3.</p> <p>The Development intersects the overlay in two locations; on the flats in the north-western corner of the title, and a small section where the track will be used for truck and machinery movements.</p> <p>The site is a gentle north-south oriented slope (see Figure 2).</p> <p>No impact will occur on the skyline.</p>
<p>P1.2</p> <p>Buildings or works within a scenic protection area must not cause an unreasonable reduction of the scenic value of a scenic protection area, having regard to:</p> <p>(a) the topography of the site;</p> <p>(b) the location of, and materials used in construction of, driveways or access tracks;</p> <p>(c) proposed reflectance and colour of external finishes;</p> <p>(d) design and proposed location of the buildings or works;</p>	<p>Complies with P1.2</p> <p>Scenic information and imagery about Vinegar Hill is provided in Attachment 3.</p> <p>Earth-based materials will be used to construct the internal haul road and Storage Yard. The site is relatively flat to slightly sloping surface to the north naturally provides a means to direct water to drains and the sediment pond at the northern edge of the Storage Yard.</p> <p>No buildings are proposed so the reflectance and colour of external finishes is not relevant.</p> <p>No impact will occur on the skyline.</p>

<p>(e) the extent of any cut or fill required;</p> <p>(f) any visual impact on a skyline;</p> <p>(g) any existing or proposed screening; and</p> <p>(h) the purpose of any management objectives identified in the relevant Local Provisions Schedule.</p>	<p>Screening vegetation (other than that needing to be removed for the establishment of the reconstructed access) along the edge of Lady Barron Road is to be unaffected by the Development.</p> <p>The management objectives of the location won't be compromised by the small scale and intensity of the Development, and its occurrence on relatively flat ground which cannot be seen from vantage points around the south-east and south of the island, and even as far away as Martins Hill.</p>
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C8.6.2 Development within a scenic road corridor

Objective:	<p>That:</p> <p>(a) destruction of native vegetation or exotic vegetation does not cause an unreasonable loss of scenic value of scenic road corridors; and</p> <p>(b) buildings and works do not cause an unreasonable loss of the scenic value of scenic road corridors.</p>	
	Performance Criterion	Comments in relation to Development
	<p>A1</p> <p>Destruction of exotic trees with a height more than 10m, native vegetation, or hedgerows within a scenic road corridor must not be visible from the scenic road.</p>	<p>Provision not relevant.</p> <p>No scenic road corridor is intersected by the Activity.</p>
	<p>A2</p> <p>Buildings or works within a scenic road corridor must not be visible from the scenic road.</p>	

C9.0 Attenuation Code

The purpose of this provision is to:

- C9.1.1 To minimise adverse impacts on the health, safety and amenity of sensitive use from activities which have the potential to cause emissions.
- C9.1.2 To minimise the likelihood for sensitive use to conflict with, interfere with, or constrain, activities which have the potential to cause emissions.

This code applies to:

- (a) activities listed in Tables C9.1 and C9.2;

(b) sensitive uses; and

(c) subdivision if it creates a lot where a sensitive use could be established, within an attenuation area.

Supporting Information – environmental noise assessment

Tarkarri Engineering Pty Ltd was engaged to prepare an environmental noise assessment for the proposed quarry (and storage pad) as well as the sand extraction pit proposed for the Land. The report is in **Attachment 4**.

Use Standards

C9.5.1 Activities with potential to cause emissions

Objective:	That an activity with potential to cause emissions is located so that it does not cause an unreasonable impact on an existing sensitive use.	
	Performance Criterion	Comments in relation to Development
	<p>P1</p> <p>An activity listed in Tables C9.1 or C9.2 must not cause:</p> <p>(a) an unreasonable loss of amenity or unreasonable impacts on health and safety of a sensitive use which is existing, or has a planning permit; or</p> <p>(b) unreasonable impacts on land within the relevant attenuation area that is in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone, having regard to:</p> <p>i. operational characteristics of the activity;</p> <p>ii. scale and intensity of the activity;</p> <p>iii. degree of hazard or pollution that may be emitted from the activity;</p> <p>iv. hours of operation of the activity;</p> <p>v. nature of likely emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste;</p>	<p>Complies with P1.</p> <p>The extraction of gravel and rock is more than 300m from any existing sensitive use (Figure 8).</p> <p>The nearest relevant zone described in (b) is Low Density Residential. That zone is to the south of the Development, and that zone is also exposed to the noise, even intermittent, to two operational airstrips, and Lady Barron Road.</p> <p>Crushing and/or screening of rock and gravel is limited to the hours of Monday to Friday, 0900 to 1700 hrs, and the nearest sensitive use (dwelling) is 355m to the south (Figure 8).</p> <p>The Level 1 activity may generate up to 20 truck movements per day, with 5 on average – this is a very low traffic generating activity, and a very small extractive industry activity overall.</p> <p>The distance from the crushing/screening location to the zone is sufficient to mitigate noise levels to acceptable levels given the proposed operating hours (day time hours only, during the week). Bunding will be installed near the crusher and screen. Modelling³ of operational noise shows that predicted noise levels are below the relevant Quarry Code of Practice criterion level for noise and as such unreasonable noise impact is unlikely to occur.</p>

³ Tarkarri Engineering Pty Ltd (2022). Vinegar Hill sand extraction pit and quarry environmental noise assessment. **Attachment 4**.

<p>vi. existing emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste; and</p> <p>vii. measures to eliminate, mitigate or manage emissions from the activity.</p>	<p>Standard best-practice measures to minimise the risk of dust from road use outlined in the QCP will be applied.</p> <p>The Development is unlikely to cause –</p> <ul style="list-style-type: none"> • any unreasonable loss of amenity or unreasonable impacts on health and safety of a sensitive use which is existing, or has a planning permit, and • any unreasonable impacts on land within the Low Density Residential Zone
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Operating hours for the Development which are designed to minimise the risk of environmental nuisance to sensitive uses and zones.

Activity	Days and Hours of Activity
Clearing, ripping, carting of material from Pit to Storage Yard	Monday to Friday, 0700 to 1900 hrs Saturday, 0800 to 1600 hrs No activity on Sunday and public holidays (those gazetted statewide)
Crushing and/or vibratory screening	Monday to Friday, 0900 to 1700 hrs
Loading and carting of product for delivery	Monday to Friday, 0800 to 1700 hrs Saturday, 0800 to 1600 hrs No activity on Sunday and public holidays (those gazetted statewide)

Management Measures to mitigate emissions

The activity will adopt a number of management measures to mitigate the potential for environmental nuisance. Vibration is not considered to be a management issue given the distance between any dwelling and the Storage pads where crushing and screening may occur. No blasting at the Quarry Pit is proposed.

Table 2. Management Measures to mitigate emissions that could cause environmental nuisance

Emission Type	No.	Description
Dust	1	The access haul road from the Storage Pad to the Quarry will be watered to minimise the risk of environmental nuisance. Trucks will utilise proven dust control measures such as tarpaulins and load dampening when travelling by public roads.

	2	<p>Standard industry practice for dust control will be applied –</p> <ul style="list-style-type: none"> Raw material to have a suitable water content level prior to crushing and/or to utilise the installed sprayers on the output chute to minimise dust emissions from an otherwise dry product. Water will be accessed from the sediment basin, groundwater bore to be installed adjacent to the Storage Pad or obtained via a dedicated water tanker. Establish grass/vegetative cover on bare soil areas to minimise wind erosion.
Sediment	3	A sediment pond will be established to receive all surface water flows from the Quarry disturbed area. The pond will be cleaned out every year to maintain capacity.
	4	Cut-off drains and drains around and internal to the Quarry will be maintained and additional drains constructed where required to direct catchment runoff around the Quarry.
	5	Access road drains, culverts, spoon-drains, and other water shedding devices will be checked quarterly and maintained as required to minimise sediment release into stormwater.
Noise	6	<p>Soil/rock bunds will be established within the first 3 months of the activity at the Storage pad to provide shielding adjacent to the following -</p> <ul style="list-style-type: none"> Crusher (associated with DA2022/0031) is to be located on the northern side of a 4 m earth bund to provide attenuation. Screen (for sand associated with DA2022/0029) is to be located on the northern side of a 3 m earth bund to provide attenuation.
	7	Access tracks and haul roads will be well maintained to prevent corrugation that contributes to truck noise.

C9.5.2 Sensitive use within an attenuation area

Objective:	That sensitive use located within an attenuation area does not interfere with or constrain the operation of an existing activity listed in Tables C9.1 or C9.2.	
	Performance Criterion	Comments in relation to Development
P1	<p>Sensitive use within an attenuation area, must not interfere with or constrain an existing activity listed in Tables C9.1 or C9.2, having regard to:</p> <p>(a) the nature of the activity with potential to cause emissions including:</p> <p>(i) operational characteristics of the activity;</p> <p>(ii) scale and intensity of the activity; and</p> <p>(iii) degree of hazard or pollution that may be emitted from the activity;</p>	<p>Provision not relevant.</p> <p>No sensitive use is proposed.</p>

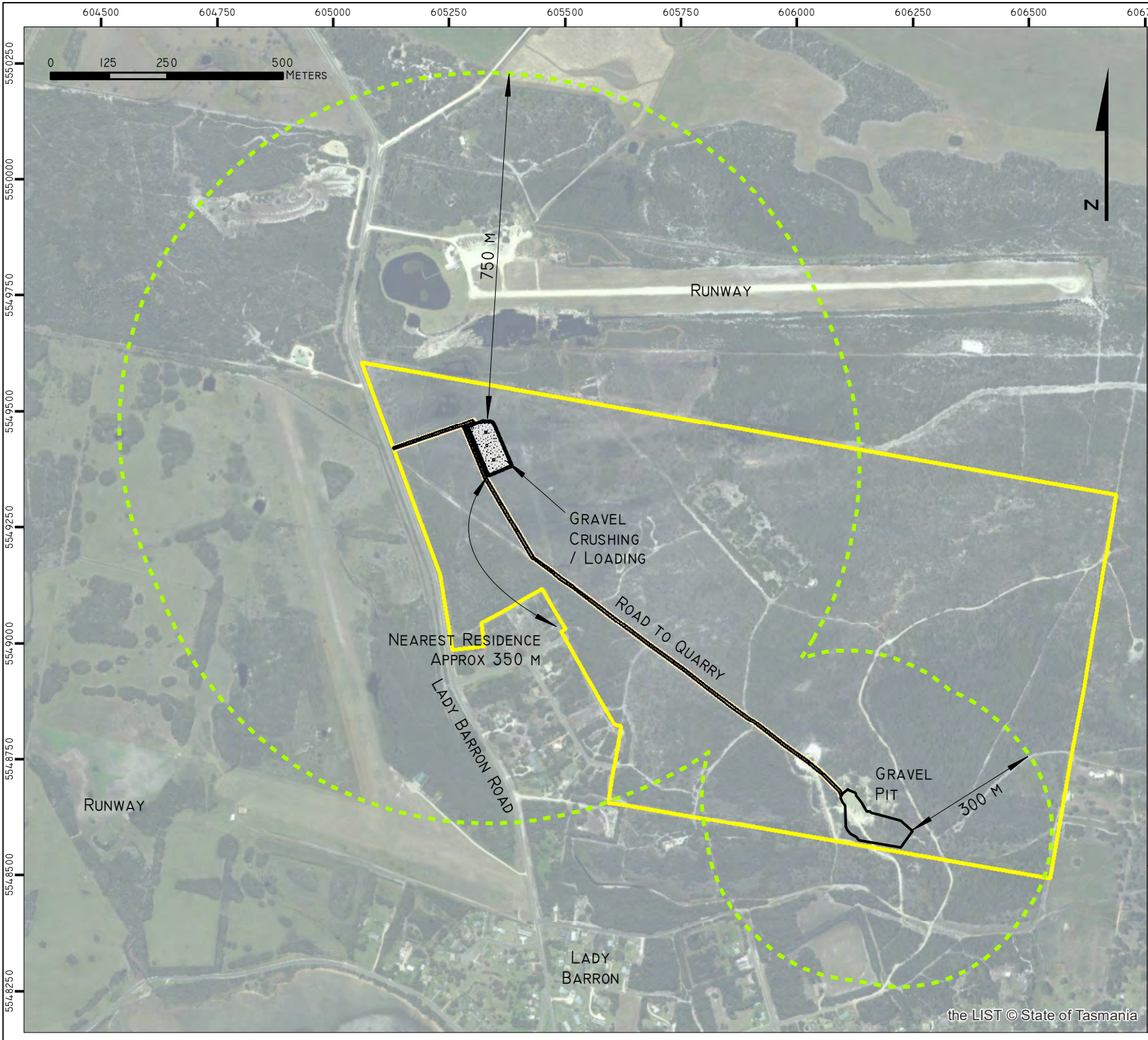
<ul style="list-style-type: none">(b) the nature of the sensitive use;(c) the extent of encroachment by the sensitive use into the attenuation area;(d) measures in the design, layout and construction of the development for the sensitive use to eliminate, mitigate or manage effects of emissions of the activity;(e) any advice from the Director, Environment Protection Authority; and(f) any advice from the Director of Mines.	
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C15.0 Landslip Hazard Code

The purpose of this provision is to:

- C15.1.1 To ensure that a tolerable risk can be achieved and maintained for the type, scale and intensity and intended life of use or development on land within a landslip hazard area.

Clause C15.4.1 will provide an exemption from this Code once the mining lease has been granted under the *Mineral Resources Development Act 1995*. As a consequence, and at this stage, no additional information has been provided.



14.2.1 - March 2023

FIFD PTY LTD

DA - QUARRY AND STORAGE YARD

FIGURE 8: RESIDENCES NEAR TO THE DEVELOPMENT AREA

TASMAP:
FISHER
5954

LGA:
FLINDERS

 MINING LEASE

BASE DATA BY TASMAP. © STATE OF TASMANIA
BASE IMAGE BY TASMAP. © STATE OF TASMANIA

 **an Diemen CONSULTING**
PO Box 1 New Town TAS 7008



DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: ~~56~~ ⁵⁵ MAY 2022

PART D – CONCLUSION

Vinegar Hill Quarry and its associated haul road and storage yard are proposed to be established on land at Lady Barron (accessed off Lady Barron Road) in the Flinders Island Municipality. The Proponent seeks approval, via a permit granted under the *Land Use Planning and Approvals Act 1993*, to establish and operate the Development.

The maximum extraction limit is to be 4,999 cubic metres per annum, with up to 1,000 cubic metres crushed and/or screened to produce a uniform aggregate for specific applications.

The potential environmental impacts from the activity, including noise, dust, and sediment discharge in uncontrolled stormwater discharge can be managed to avoid environmental nuisance and harm.

The Quarry Code of Practice (2017) will be applied by the Proponent in operating the Quarry and Storage Yard.

It is concluded that:

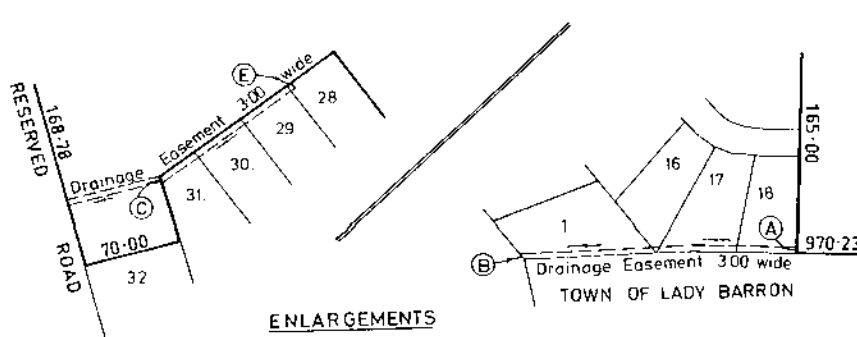
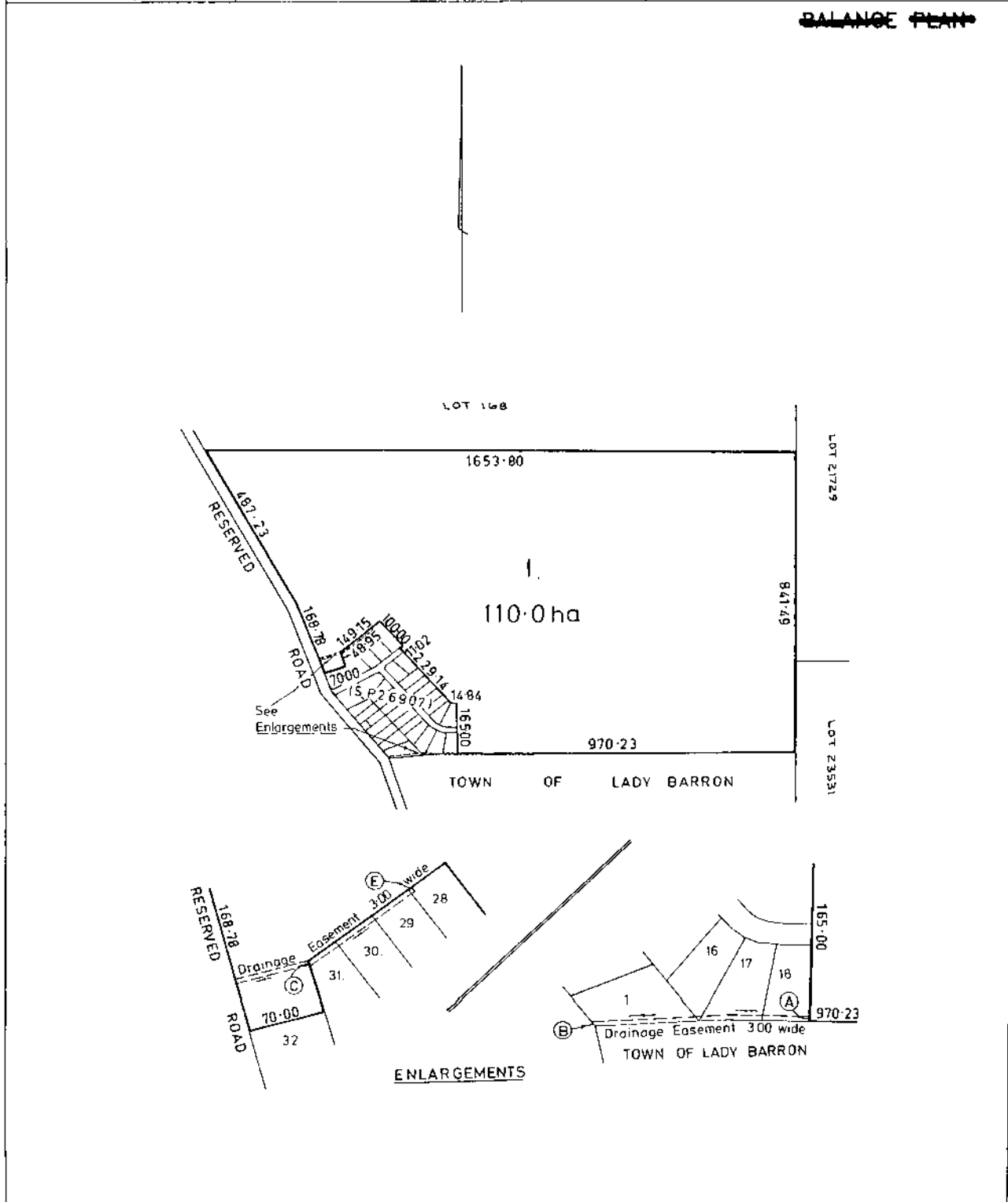
1. the RMPS and EMPCS objectives have been duly and properly pursued while sourcing and compiling information on the proposal,
2. the potential environmental impacts from the activity have been identified in accordance with the relevant provisions of the Scheme, the Tasmanian EPA *Extractive Industry Environmental Effects Report Guidelines*⁴, and the Environmental Impact Assessment Principles at s74 of the *Environmental Management and Pollution Control Act 1994*,
3. avoidance and mitigation measures to address the identified potential environmental impacts have been prepared in accordance with the Quarry Code of Practice and other industry best practice guidelines and procedures, and
4. the activity is capable of being managed in an environmentally acceptable manner such that it is unlikely that the objectives of the *Environmental Management and Pollution Control Act 1994* (the RMPS and EMPCS objectives) would be compromised.

⁴ Environment Protection Authority (2020) *Extractive Industry Environmental Effects Report*, Environment Protection Authority, Hobart, Tasmania.

PART E – ATTACHMENTS

OWNER		<p style="text-align: center;">PLAN OF TITLE</p> <p>LOCATION</p> <p style="text-align: center;">FLINDERS-COOMA</p> <p>FIRST SURVEY PLAN No. 21-20 L.D.</p> <p>COMPILED BY L.T.O</p> <p>SCALE 1: 10000 LENGTHS IN METRES</p>		Registered Number	
FOLIO REFERENCE C.T. 4278/39				P.199735	
GRANTEE				APPROVED 11 APR 1997	
				 Recorder of Titles	
MAPSHEET MUNICIPAL CODE No. 110 (6054-125)	LAST UPI No DOKB2	LAST PLAN No. 21-20 L O	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN		

~~BALANCE PLAN~~



A 113

SEARCH OF TORRENS TITLE

VOLUME 199735	FOLIO 1
EDITION 5	DATE OF ISSUE 20-May-2014

SEARCH DATE : 13-Feb-2022

SEARCH TIME : 01.46 PM

DESCRIPTION OF LAND

Parish of COOMA, Land District of FLINDERS
 Lot 1 on Plan 199735
 Derivation : Part of Lot 22903 Gtd. to J. Wood
 Prior CT 4278/39

SCHEDULE 1

M303372 TRANSFER to FIFD PTY LTD Registered 17-May-2011 at
 12.02 PM

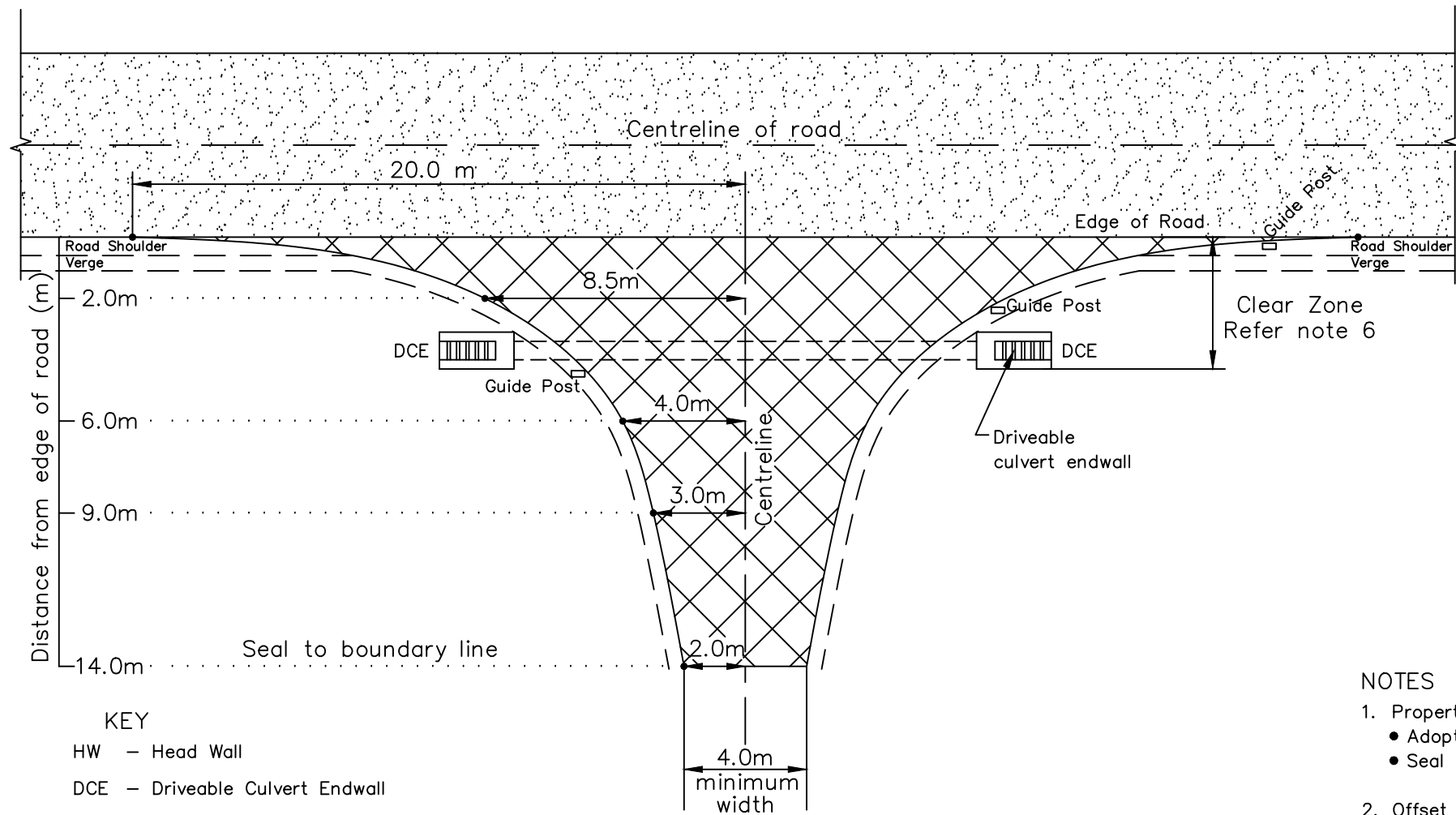
SCHEDULE 2

Reservations and conditions in the Crown Grant if any
 BENEFITING EASEMENT: Right of Drainage over the drainage
 easement marked A.B. and E.C. on Plan No. 199735
 BURDENING EASEMENT: Right of Drainage [appurtenant to Lots 28
 to 31 on Sealed Plan No. 26907) over the Drainage
 Easement passing through the said land within
 described
 D128355 MORTGAGE to Westpac Banking Corporation Registered
 20-May-2014 at 12.01 PM

UNREGISTERED DEALINGS AND NOTATIONS

182640 PLAN Lodged by PAGE SEAGER on 21-Jan-2022 BP: 182640
 E266330 APPLICATION: TASMANIAN WATER & SEWERAGE CORPORATION
 PTY LTD under the Land Acquisition Act 1993 of
 Lodged by PAGE SEAGER on 21-Jan-2022 BP: 182640
 E292592 DISCHARGE OF MORTGAGE D128355 Lodged by DOBSON
 MITCHELL on 09-Feb-2022 BP: E292592

ATTACHMENT 1 LAND TITLE



KEY
 HW - Head Wall
 DCE - Driveable Culvert Endwall

DRIVEWAY TYPE 'A' Caters for:	LENGTH
Long Rigid Trucks	12.5m
Long Mini B-Doubles	19.0m
Truck + Trailer Combinations	19.0m

STANDARD OBJECTIVES

1. Maximise road safety.
2. Reduce the extent of debris being tracked onto the roadway.
3. Provide vehicle standing area clear of the road edge.
4. Contain stormwater runoff within the road table drains.

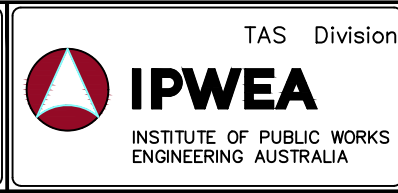
NOTES

1. Property Access Seal Types:
 - Adopt the seal type on the adjacent road (Asphalt / Hot Sprayed bituminous surfacing).
 - Seal is not required for property access off unsealed roads.
2. Offset property entrance gate to provide adequate vehicle standing area clear of road edge, as required.
3. Install guideposts at :
 - culvert end walls.
 - the start of the access ('nearside' lane approach only).
4. Pipe Culvert.
 - Pipe size, type, class, cover and grade shall be determined by consideration of the drainage catchment, rainfall I.F.D. data and road grade for an A.R.I. of 5 years (min).
 - Minimum pipe size - 300 dia.
 - Minimum grade - 1 in 100 (1%).
5. References.
 - DIER drawing No.3402-2/P35-2.
6. Refer to Department of State Growth Hazard Management Guide - Figures 6 and 7 for clear zone determination. Headwalls inside clear zone are to be driveable

SCALES: AS SHOWN
 (All scales are correct at A3)
 XRef File: TSD-R05-v2.dwg

REFERENCES

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STANDARD DRAWING
TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A'

GPO Box 1521, Hobart Tasmania 7001 | 326 Macquarie Street, Hobart Tasmania 7000
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ISSUE DATE: 28-04-2020 DWG No. TSD-R05-v2

ATTACHMENT 2 TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A' (DRAWING: TSD-R05-V2)

ATTACHMENT 3 SCENIC AND ECOLOGICAL ASSESSMENTS – CT199735/1, VINEGAR HILL

SCENIC AND ECOLOGICAL ASSESSMENTS – CT199735/1

VINEGAR HILL, FLINDERS ISLAND



Van Diemen Consulting Pty Ltd

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New Town, Tasmania

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This document has been prepared in accordance with the scope of services agreed upon between Van Diemen Consulting (VDC) and the Client.

To the best of VDC's knowledge, the report presented herein represents the Client's intentions at the time of completing the document. However, the passage of time, manifestation of latent conditions or impacts of future events may result in changes to matters that are otherwise described in this document. In preparing this document VDC has relied upon data, surveys, analysis, designs, plans and other information provided by the client, and other individuals and organisations referenced herein. Except as otherwise stated in this document, VDC has not verified the accuracy or completeness of such data, surveys, analysis, designs, plans and other information.

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Document Status

Revision	Author	Review	Date
1	R Barnes C McCoull	R Barnes and C McCoull, VDC	14-3-2022
1	R Barnes C McCoull	R Barnes and C McCoull, VDC	19-5-2022

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DEFINITIONS

(the) Land	CT199735/1 located at Lady Barron, Flinders island
(the) Scheme	Tasmanian Planning Scheme - Flinders
Threatened fauna	Species of fauna listed on the – <ul style="list-style-type: none"> • Tasmanian <i>Threatened Species Protection Act 1995</i>, or the • Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>.
Threatened flora	Species of flora listed on the – <ul style="list-style-type: none"> • Tasmanian <i>Threatened Species Protection Act 1995</i>, or the • Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
Threatened native vegetation communities	Native vegetation communities listed under Schedule 3A of the Tasmanian <i>Nature Conservation Act 2002</i> . Ecological communities listed under s 181 of the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>

ACRONYMS

BVD	Biodiversity Values Database
DNRE	Department of Natural Resources and Environment Tasmania
DPIPWE (now DNRE)	Department of Primary Industries, Parks, Water and Environment
NVA	Natural Values Atlas

PART A – BACKGROUND

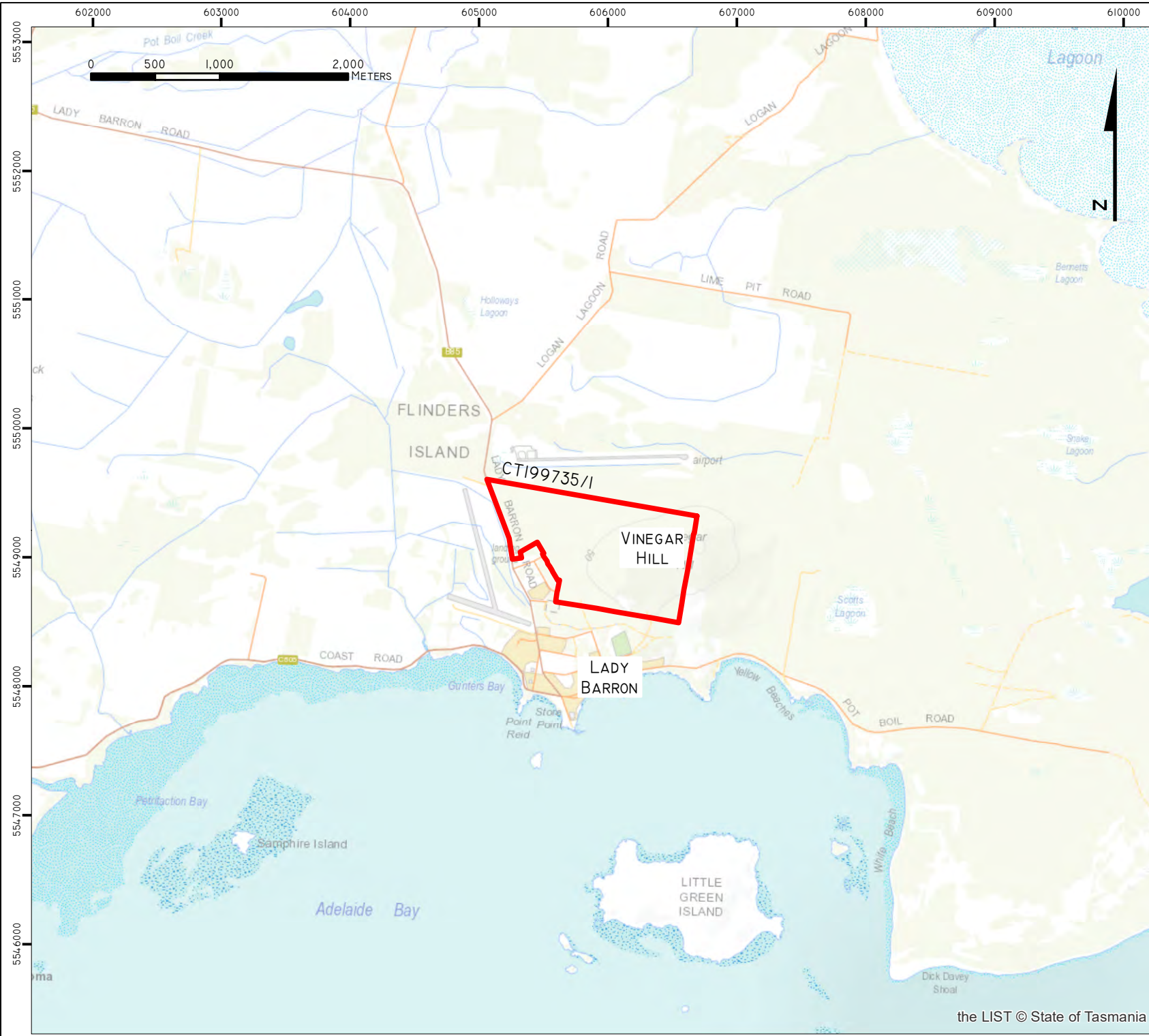
A.1 OBJECTIVE OF REPORT

A development application for use and/or development may on occasion need to assess the requirements of Scheme Codes and zone provisions. The need to assess specific matters is often determined by the zone within which the use and development are proposed, and Code overlays (where mapped) or other specific Code provisions which are not shown on Scheme maps.

The basis of this Report is to provide information to base an assessment of a use and development where that assessment requires consideration of natural values (7.0 Natural Assets Code) and scenic protection values (8.0 Scenic Protection Code).

A.2 SURVEY AREA

The Survey Area is the land located at Vinegar Hill, being CT199735/1 (the 'Land', **Figures A-1 and A-2**).



14.2.1 - March 2023
 SCENIC AND ECOLOGICAL
 ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
 CT199735/1

FIGURE A1: LOCATION OF
 CT199735/1

TASMAP:
 FISHER
 5954

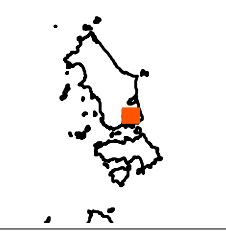
LGA:
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 CT 199735/1

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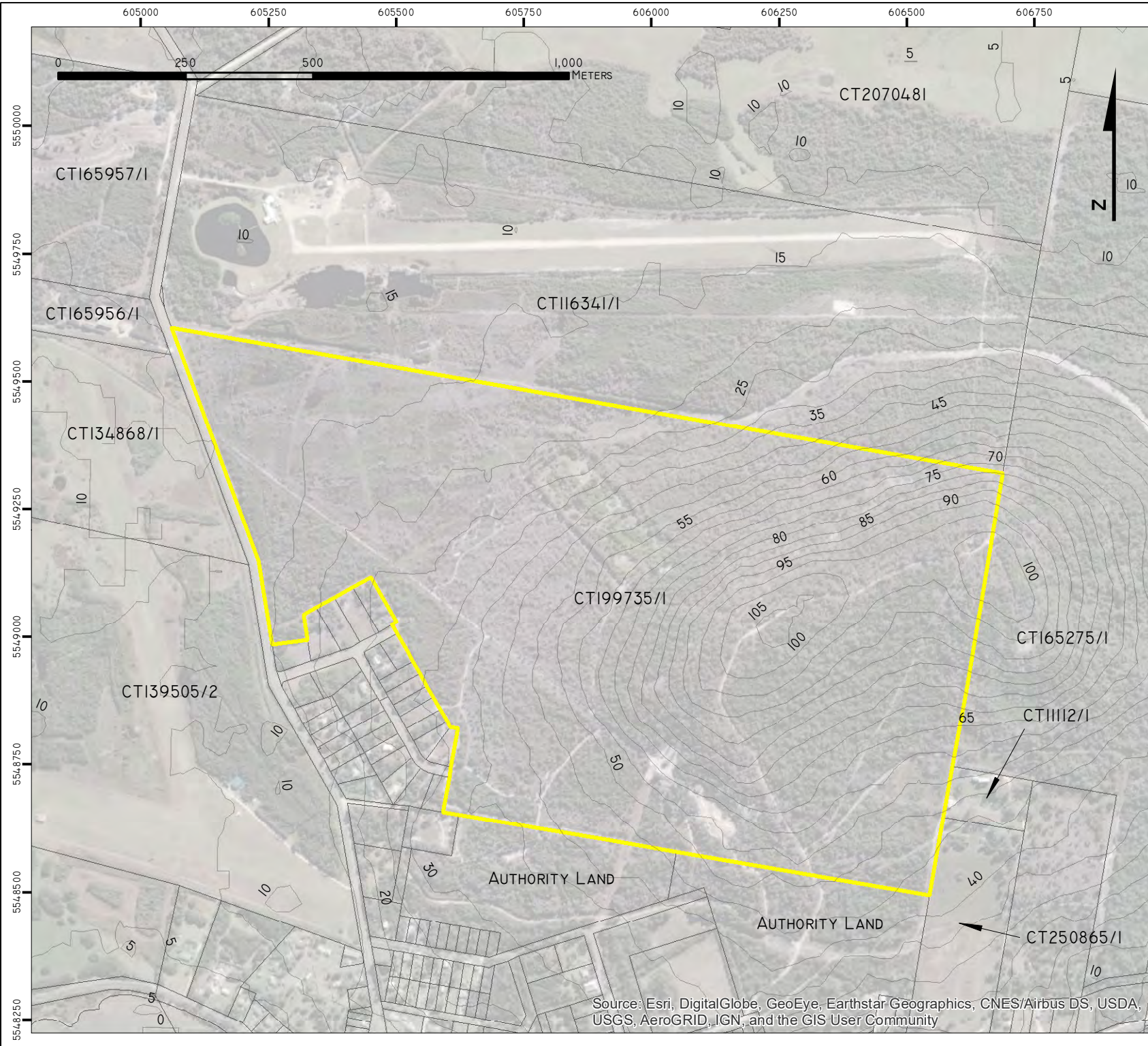
an Diemen CONSULTING
 PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
 GRID: MGA ZONE 55
 SCALE: @A4 - NA

CLIENT:
 FIFD PTY LTD

DATE: 10 MAY 2022






14.2.1 - March 2023
 SCENIC AND ECOLOGICAL
 ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
 CT199735/1

FIGURE A2: LAND TITLES
 AND TOPOGRAPHY

TASMAP:
 FISHER
 5954

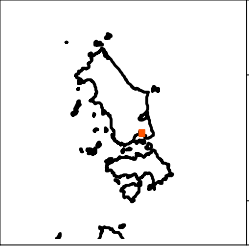
LGA:
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-  5M CONTOURS
-  CT 199735/1
-  OTHER LAND TITLES (THE LIST)

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DATUM: GDA94
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 SCALE: @A4 - NA

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DATE: 7th MAY 2022

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

PART B – NATURAL ASSETS CODE

The Land is partly covered by the Priority Vegetation overlay which triggers the Natural Asset Code where applicable in Clause 7.2.1 of the Scheme.

The objective of this report section is to document the findings of ecological assessments of CT 199735/1 (the ‘Survey Area’).

B.1 SURVEY METHODS

B.1.1 Qualifications of personnel

The Natural and Cultural Heritage Division (2015¹) note that -

‘The proponent or their representative must ensure that the personnel undertaking surveys and preparing reports have appropriate skills, qualifications and experience in identification and documentation of all natural values of interest, including a knowledge of Tasmanian species, their habitat and other ecological requirements, and vegetation communities.’

In this case, the surveyors of the natural values each hold a PhD in a relevant field of science – zoology and botany – and over 50 years of combined field expertise in natural values assessment, identification, mapping, reporting and ecological impact assessment/mitigation.

The surveys were conducted in February 2022.

B.1.2 Vegetation Classification and Mapping

Classification

Vegetation communities were identified and attributed to Tasmanian Vegetation Mapping Units (Kitchener and Harris 2013, 2nd Edition and with revisions in April 2019). All vegetation types in the Survey Area were assessed and the variation within each explored. Flora species present within representative plots were recorded and additional species were added to the list as they were encountered in a meandering survey. Scientific names for flora species follow de Salas and Baker (2020).

Mapping

A handheld GIS/GPS unit was used to navigate within the Survey Area which had been loaded with shapefiles of the Survey Area boundaries. An iPhone was also used to navigate and assist with the interpretation of vegetation types using Google Earth overlain with shapefiles of the Survey Area and threatened species

¹ Natural and Cultural Heritage Division (2015). Guidelines for Natural Values Surveys - Terrestrial Development Proposals. Department of Primary Industries, Parks, Water and Environment. Version 1.1 – 13th August 2019 (minor updates to links in document).

locations (NVA data). Aerial photography both in the field and in the office was used to further interpret vegetation boundaries.

B.1.3 General Flora and Fauna Species Survey

Queries of the following database sources were used to generate reports to identify previous recorded locations of species (flora and fauna) and range boundaries for significant or threatened fauna species.

- Biodiversity Values Database (BVD, **Attachment 1**) managed by the Forest Practices Authority, and
- Natural Values Atlas (NVA, **Attachment 2**) managed by the Department of Natural Resources and Environment Tasmania, and

The conservation status of flora and fauna species follow the:

- Tasmanian *Threatened Species Protection Act 1995*,
- Tasmanian *Nature Conservation Act 2002*, and
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The survey directly assessed the range of habitat types present in the Survey Area, especially wet soaks, and rocky outcrops as these tend to support rare or interesting flora species or vegetation communities.

B.1.4 Targeted Flora and Fauna Species Surveys

Flora species of particular focus were those listed in the Biodiversity Values Database report as having known records, or potential habitat, within and near the Survey Area. The flora surveys were limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, consideration was made of species (vascular and non-vascular) likely to be present based on available habitat information and database records. Potential habitat for threatened fauna was assessed by reference to the vegetation communities present and the associated characteristics of the habitat values each provided to fauna species - assessments were made by comparing the characteristics of known fauna habitat with the habitat present in the Survey Area.

Eagle species

The Survey Area is within the breeding range of both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone makes nesting by the white-bellied eagle more likely.

Conservation Listed (threatened) Mammal Species

Only one mammal species of conservation significance is identified in the BVD and NVA reports – New Holland mouse (*Pseudomys novaehollandiae*). Trapping was not conducted as it would have required the approval of the Tasmanian Animal Ethics Committee and was not considered warranted. A 'habitat suitability' assessment rather than trapping is justified in this case as there is anecdotal evidence and existing State Government data (BVD and Natural Values Atlas) that this species may be present in suitable habitat.

B.1.5 Fauna Habitat Assessment Criteria

Fauna species with potential or known habitat in the Survey Area were considered in the context of habitat ranges/descriptions provided below (FPA 2020) –

Habitat Descriptor	Definition
Core Range	Encompasses the area, within the known range, known to support the highest densities of the species and/or thought to be of highest importance for the maintenance of breeding populations of the species.
Potential Range	Encompasses the area, within the known range, known to support the highest densities of the species and/or thought to be of highest importance for the maintenance of breeding populations of the species.
Known Range	is the area within which the species is most likely to occur, being the area of land within a minimum convex polygon of all known localities of the species. This term is synonymous with 'extent of occurrence' as referred to in the <i>Guidelines for Eligibility for Listing under the Threatened Species Protection Act 1995</i> (DPIW 2009).
Potential habitat	is all habitat types within the potential range of a species that are likely to support that species in the short and/or long term. It may not include habitats known to be occupied intermittently (e.g. occasional foraging habitat only). Potential habitat is determined from published and unpublished scientific literature and/or expert opinion, and is agreed by the Threatened Species Section (DPIPWE) in consultation with species' specialists.
Significant habitat	is habitat within the known or core range of a species that (1) is known to be of high priority for the maintenance of breeding populations throughout the species' range and/or (2) conversion of which to non-native vegetation is considered to result in a long-term negative impact on breeding populations of the species. It may include areas that do not currently support breeding populations of the species but that need to be maintained to ensure the long-term future of the species. Significant habitat is determined from published and unpublished scientific literature and/or expert opinion, and is agreed by the Threatened Species Section (DPIPWE) in consultation

B.1.6 Existing Impacts to VegetationFire – planned and unplanned

Of relevance is the occurrence of planned burns in the Survey Area, with the most recent occurring in the 2017-18 burning season. The map below is extracted from the NVA report (**Attachment 2**, pg 26-27) which shows the extent of the 2017-18 planned burn. The forest on Vinegar Hill is adjacent to the Lady Barron township so its management for fire hazard reduction is seemingly important to the protection of the township.

Fire occurrence, including the lack of fire and its frequency, can significantly influence the condition, species diversity, structural complexity, and aesthetics of it when viewed through human eyes. On Flinders Island for example, the absence of fire for a long period of time (many decades) in damp areas of eucalypt forest can result in the succession of eucalypt forest to Oyster pine bay forest. Conversely, Oyster bay pine can be eradicated from areas where fire occurrence is frequent.

The vegetation observed at Vinegar Hill has been significantly affected by the occurrence of fire, with Oyster bay pine being present but mainly as seedlings with most (>90%) parent trees killed by the fire – a fire before the seedlings can reach an age to produce seed could see the species dramatically reduced at the location or eradicated entirely as has occurred on many other parts of the island.



Tracks and infrastructure

The Land contains a number of infrastructure assets including water tanks (active and disused), water lines for Taswater to distribute water, roads, and tracks, fencelines, an existing granite quarry, and telecommunications infrastructure (tower, phone line and associated power lines). Pictures below provide an indication of the type and form of the infrastructure present.

Taswater holding tank on the Land above Lady Barron township



Road access and underground water pipeline from Taswater treatment plant (at Lady Barron Road in the distance) to new holding tank



Disused Lady Barron township water holding tank near quarry



Telecommunications tower, shed and fenced area (with fire buffer) on north-eastern side of the Land.



Track and associated phone line



Existing track/road



Existing track/road



Existing fencelines and posts around previously cleared areas



Powerline and power pole clearing lines and access track



Gravel pit near Barr Street



B.1.7 Limitations

Flora

Due to varying flowering times and seasonality of occurrence not all flora species that occur in the Survey Area may have been recorded during the on-ground surveys.

Short lived annuals, orchids and lilies that may be present at the site may have been missed because they were not able to be identified (they were not flowering) or they were not evident at this time of year (they were annual plants that had died back or not emerged at the time of survey). Specifically, two conservation significant orchid species known to be in the area (*Pterostylis sanguinea* and *Pterostylis tunstallii*) flower in mid to late winter so their presence could not be confirmed by this survey however it is possible to assess and spatially identify suitable habitat based on spatially accurate records and habitat descriptions of known populations.

Overall, it is unlikely that species of conservation significance were not appropriately considered in the survey/assessment and recommendations made from the results of those surveys.

Fauna

The fauna assessment (except for direct searches of nests and dens etc as outlined above) was limited to a habitat assessment for fauna species, including the ground truthing of potential habitats for significant fauna species that were identified in database searches. See section B.1.4 TARGETED FLORA AND FAUNA SPECIES SURVEYS for information about target species.

Micro Flora and Fauna

The flora and fauna surveys excluded micro-flora and micro-invertebrates such as algae, zooplankton, and cave-dwelling fauna.

B.2 RESULTS

B.2.1 Vegetation Communities

A list of vegetation communities located in the Survey Area is provided in Table 1, and spatially presented in **Figure B-1**. There are 2 native forest communities present within the Survey Area, one non-forest community and 2 non-native land use mapping units.

One native vegetation community listed on Schedule 3A (Threatened native vegetation communities) of the *Nature Conservation Act 2002* occur on the Land.

No ecological communities listed under section 181 of the *Environment Protection and Biodiversity Conservation Act 1999* occur on the Land.

Table 1. Vegetation (TASVEG codes) categories recorded in the Survey Area

TASVEG CODE	TASVEG COMMUNITY	Threatened native vegetation community [#]	Extent in Survey Area (hectares)
DNF	<i>Eucalyptus nitida</i> Furneaux forest	No	77.61
DVF	<i>Eucalyptus viminalis</i> Furneaux forest and woodland	Yes	17.31
SHW	Wet heathland	No	9.53
FUM	Extra-urban miscellaneous	No	1.16
FRG	Regenerating cleared land	No	3.93

Threatened native vegetation communities are those listed in Schedule 3A of the *Nature Conservation Act 2002*

Descriptions of each vegetation community and some representative images for forest communities are provided below.

Eucalyptus nitida Furneaux forest (DNF)

The dominant species is *Eucalyptus nitida* (Furneaux peppermint), with *Allocasuarina verticillata* and *Callitris rhomboidea* sporadically present. The understorey is heathy to shrubby. There are considerable areas of bare ground between eucalypts and the taller shrubs commonly include *Banksia marginata*, *Leptospermum glaucescens*, *L. scoparium*, *L. lanigerum* and *Acacia sophorae*. *Xanthorrhoea australis* is sparse but on occasion it can be locally abundant, especially occurring as regrowth plants which lack a trunk (root rot fungus is present, and widespread in some areas as evident by a ‘wave’ of infection).

The ground layer species diversity is greatest in recently burnt areas – some areas were burnt in 2018 as part of a fuel reduction burn – but the ground coverage of plants remains as low as those areas where were unburnt. Long undisturbed understorey areas (those areas not burnt in 2018) are closed *Leptospermum* scrub

with patchy bracken-fern. The forest type grades into wet heathland in the Survey Area (in the north-western corner of the Land) with occasional emergent *Eucalyptus nitida*.

The following images depict the various forms of this forest type present in the Survey Area.

A regrowth unburnt section of *E. nitida* Furneaux forest with a midstorey of sheoak and tea-tree.

The canopy gap in the foreground supports bracken-fern and a few dry forest herbs.



E. nitida Furneaux forest with a sparse shrubby midstorey with canopy gaps where *X. australis* can grow.



E. nitida Furneaux forest with a bracken-fern dominated understorey.

Dead regrowth eucalypts are abundant (fire killed) and sub-canopy trees are present as regrowth shrubs to small trees.



A closed canopy section of *E. nitida* Furneaux forest with the ground layer covered by leaf litter only.



A localised patch of *Xanthorrhoea australis* with PC present.



Eucalyptus viminalis Furneaux forest and woodland (DVF)

This forest type is usually dominated by *Eucalyptus viminalis* with damp forest species present, however there is on occasion a facies dominated by *Eucalyptus globulus* (Tasmanian blue gum) which seems to be prevalent on granite (or Mathinna bed) derived gravels, boulders, and rock slopes on hilltop or near hilltop locations (e.g., Broughams Sugarloaf).

The facies present on the upper north-facing slopes and ridgeline of Vinegar Hill is dominated by *Eucalyptus globulus* growing on granite derived soils (including coarse to fine gravels, sheet-rock and granite derived loams, clays, and talus) with *E. nitida* as a sub-dominant tree on the lower slopes where the soils transition to acidic sands. *Eucalyptus viminalis* is absent possibly due to the very dry nature of the site and lack of watercourses or damp gullies on deep loams and clays.

Eucalyptus globulus gives way to *E. nitida* when the deep acidic sands of the lower slopes are reached, with several other species also disappearing or becoming very sparse at that point (e.g., *Kunzea ambigua*). The transition from DVF to DNF is quite abrupt, with a distinctive change in soil profile observed.

Eucalyptus globulus attains a height of up to 20 m. Fire frequency has been high evident by the abundant fire scars on larger trees and there is a sapling cohort present, presumably stimulated by the 2018 planned fuel reduction burn.

The following images depict the various forms of this forest type present in the Survey Area.

Eucalyptus globulus forest on both sides of a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.



Eucalyptus globulus forest on both sides of a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present, with most impact to the vegetation being on the northern side of the road (left side of image).



Eucalyptus globulus forest adjacent to a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.



Eucalyptus globulus forest adjacent on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.



Eucalyptus globulus forest adjacent on the ridgeline of Vinegar Hill.

Note the *Callitris rhomboidea* (arrows) that largely escaped impact from the fire



Fire affected *E. globulus* forest on north-facing slope of Vinegar Hill



Open area of regrowth *E. globulus* with sapling *Allocasuarina verticillata*.

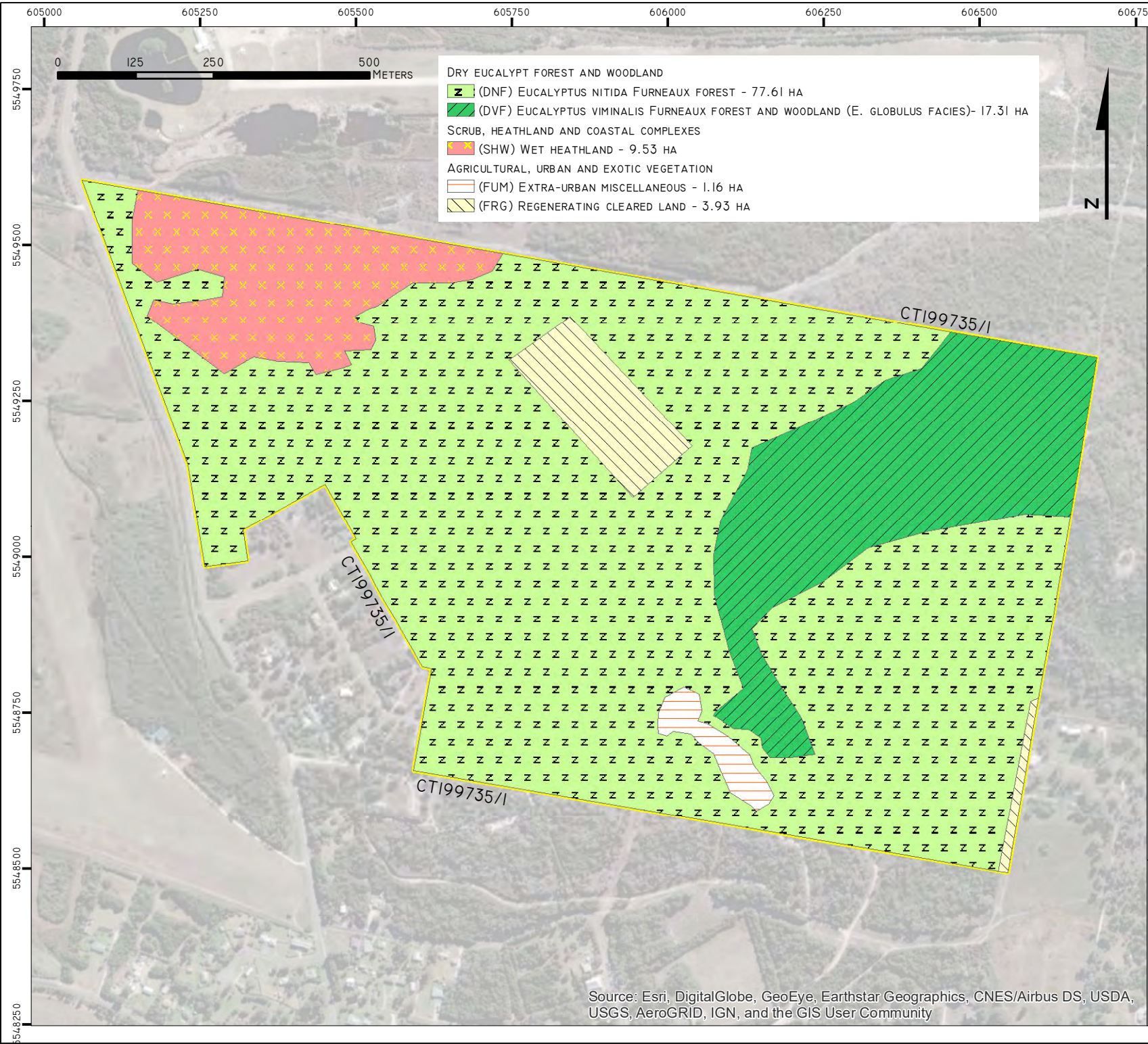
Note the large dead *Callitris rhomboidea* (arrow)



Severely fire-damaged *E. globulus* forest.

Note the large dead *Callitris rhomboidea* (arrows)





14.2.1 - March 2023
 SCENIC AND ECOLOGICAL
 ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
 CT199735/1

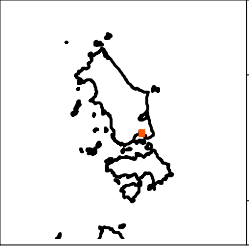
FIGURE BI: TASVEG COMMUNITIES
 WITHIN CT199735/1

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LGA:
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BASE DATA BY TASMAP. © STATE OF TASMANIA
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DATUM: GDA94
 GRID: MGA ZONE 55
 SCALE: @A4 - NA

CLIENT:
 FIFD PTY LTD

DATE: 88 MAY 2022

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Wet heathland (SHW)

This community is generally of low height (generally <1m excluding the eucalypt copses and wet areas dominated by the shrub species) and is growing on sands with occasional peat (of shallow to deep formation).

Eucalyptus nitida is present as scattered regrowth fire-affected trees. Fires have clearly been frequent as evident by the abundant and various age fire scars on the eucalypts. Like any wet heathland environment, its species diversity and structure changes with fire frequency and soil conditions, with peaty areas of poor drainage being dominated by sedges, rushes, and water loving shrub species. Fire can also eradicate species that require longer periods between fires to grow and set seed – the notable absence of *Hakea* and species suggests a high fire frequency, perhaps combined with the occurrence of PC in the heathland.

Common shrub species include *Melaleuca squarrosa*, *M. gibbosa*, *Leptospermum glaucescens*, *L. scoparium*, *Acacia verticillata*, *A. mucronata*, *A. sophorae*, *Banksia marginata* and . The heaths present include *Epacris obtusifolia*, *E. lanuginosa*, *E. impressa*, *Sprengelia incarnata*, *Acrotriche serrulata* (on drier sandier areas), *Boronia pilosa* and *Hibbertia procumbens*. Herbs are also present.

Species of Restionaceae and Cyperaceae form a large proportion of the plant coverage in the ground layer, and include *Lepidosperma filiforme*, *L. concavum*, *Baloskion australe*, *Gahnia grandis*, *Leptocarpus tenax*, and *Empodisma minus*. The ferns, *Lindsaea linearis* and *Gleichenia microcarpa*, and the clubmoss, *Selaginella uliginosa*, are present.

The following images depict the various forms of this vegetation type present in the Survey Area.

Low wet heathland on a sandy and shallow peat soil.

Eucalyptus nitida regrowth is emergent and form localised copses in a few locations



Low wet heathland on a sandy and shallow peat soil.

PC (root rot fungus) is present throughout the heathland, with *X. australis* especially affected (see blue arrows)



Low wet heathland on a sandy and shallow peat soil.

PC (root rot fungus) is present throughout the heathland, with heaths and legumes affected – arrows indicated yellowing or dead plants



Extra-urban miscellaneous (FUM)

This category includes the existing granite gravel quarry. The following images depict the category.



Existing granite quarry north of Lady Barron, accessed via Barr Street



Regenerating cleared land (FRG)

This category includes the old vineyard and associated dam that was installed several years ago. Wattles now dominate the area, being *A. sophorae* and *A. mucronata* with occasional *Allocasuarina verticillata*. Eucalypts are absent.

The following images depict the various forms of this forest type present in the Survey Area.

Acacia sophorae in the previously cleared area. Many plants are dead with little regrowth.



Acacia sophorae in the previously cleared area with sub-dominant *Leptospermum glaucescens* and *L. scoparium*.



Disused dam at the top of the cleared area.



B.2.2 Threatened Flora Species

Previous Observations

There are several threatened flora species recorded near (within 500m) the Survey Area based on data contained within the Biodiversity Values Database (**Attachment 1**) and Natural Values Atlas (**Attachment 2**). **Table 2** provides a list of the species.

Table 2. Threatened flora species previously observed within 5km of the Survey Area

Species name	Common name	TSPA / EPBC
<i>Acacia uncifolia</i>	coast wirilda	r / -
<i>Asperula minima</i>	mossy woodruff	r / -
<i>Caladenia australis</i>	southern spider orchid	e / -
<i>Caladenia pusilla</i>	tiny fingers	r / -
<i>Gyrostemon thesioides</i>	Broom wheelfruit	r / -
<i>Hydrocotyle comocarpa</i>	fringe-fruit pennywort	r / -
<i>Leucopogon affinis</i>	lanceleaf beardheath	r / -
<i>Parietaria debilis</i>	Shade pellitory	r / -

<i>Pterostylis sanguinea</i>	banded greenhood	r / -
<i>Pterostylis tunstallii</i>	Tunstalls greenhood	e / -
<i>Scaevola albida</i>	pale fanflower	v / -
<i>Spyridium parvifolium</i> var. <i>parvifolium</i>	coast dustymiller	r / -

* Derived from records in the BVD Report (Attachment 1) and Natural Values Atlas (Attachment 2).

Threatened flora species observed

One species was observed during the survey of the Survey Area:

Gyrostemon thesioides – broom wheelfruit

Threatened Species Protection Act 1995 – Rare

Environment Protection and Biodiversity Conservation Act 1999 – Not listed

In Tasmania the species has been recorded from the central east and also the Furneaux Group of islands. Habitat includes low forest or scrub dominated by *Allocasuarina verticillata* (drooping sheoak), and also woodland dominated by ‘half-barked’ *Eucalyptus amygdalina* (black peppermint), the underlying geology being mostly Jurassic dolerite on mainland Tasmania and Devonian granite elsewhere. Associated species may include *Kunzea ambigua* (white kunzea) and, for occurrences on dolerite, *Scaevola aemula* (fairy fanflower).

Attachment 5 contains the DNRE notesheet for these species.

On the Land, the species was observed in DVF community where it was locally abundant on granite sheet rock, and granite derived gravels and sands with a moderate clay content. The species occurred with *Kunzea ambigua* and *Allocasuarina verticillata* regrowth in fire affected areas – the fire may have stimulated the germination of seed and subsequent growth of the species. Some plants were dead, possibly from drought or their lifespan had been reached, while others were young and vigorous covered in developing seed pods. It is likely that as the forest becomes closed (in the absence of fire) the species reduces in number and may become restricted to areas around rock plates where light exposure remains high and some soil disturbance continues for seed germination to occur (e.g., rock fall, tree fall, soil expansion and contraction from wetting and drying, animals digging in and around cryptogamic mats on the granite bedrock).

It has been recorded on the Land previously, as per the NVA records shown in **Figure B-2**.

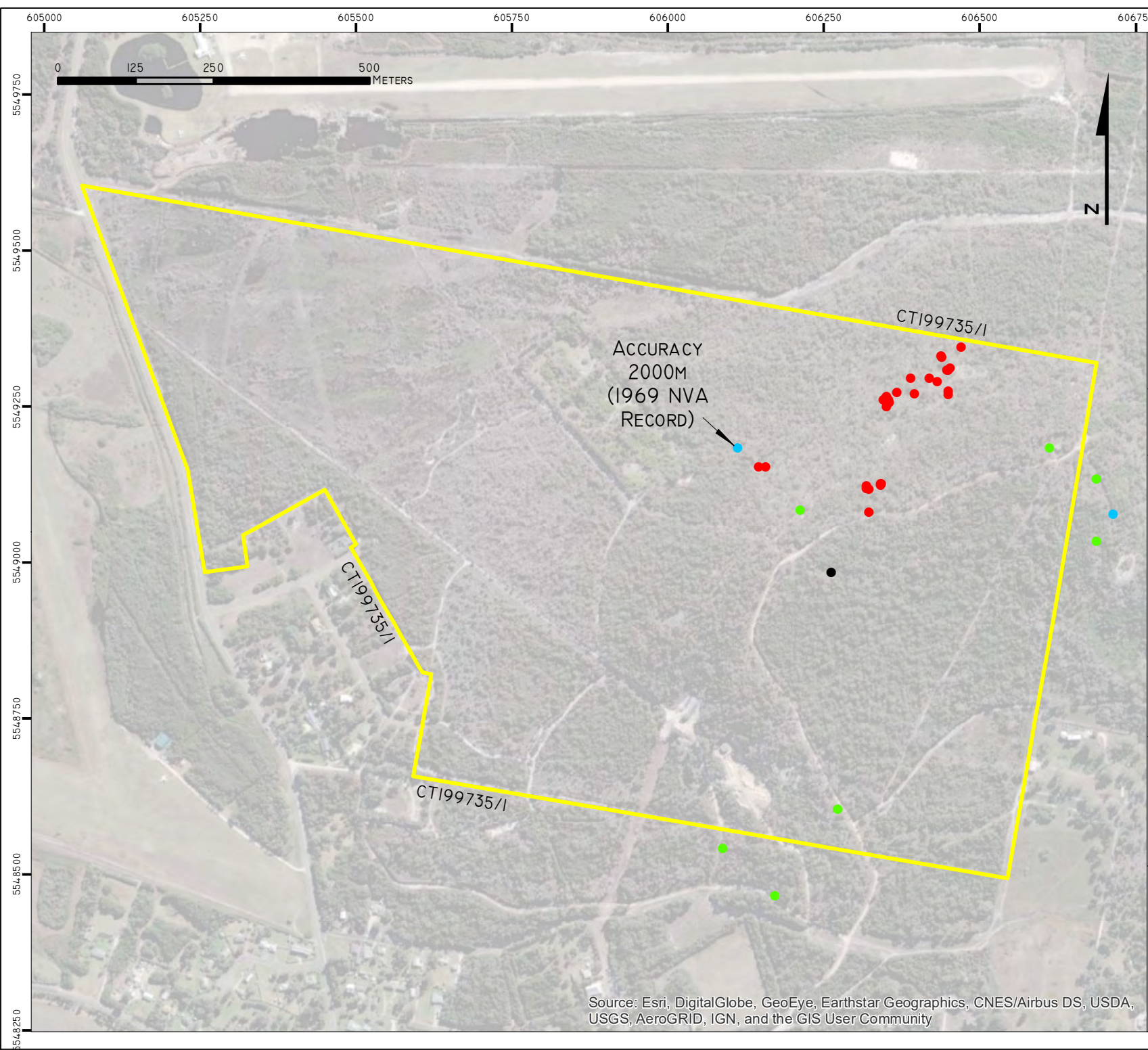
The species did not extend its range to the deep acidic sands of the lower slopes of Vinegar Hill where the DVF community was replaced with *Eucalyptus nitida* Furneaux forest (DNF).

Broom wheelfruit
growing on skeletal
granite bedrock with
Kunzea ambigua



broom wheelfruit (fresh
seed pods present)
growing on granite
derived gravelly soils
with a well-developed
leaf litter layer





14.2.1 - March 2023
 SCENIC AND ECOLOGICAL
 ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
 CT199735/1

FIGURE B2: THREATENED FLORA
 WITHIN CT199735/1
 (NVA AND OBSERVED)

TASMAR:
 FISHER
 5954

LGA:
 FLINDERS

- ASPERULA MINIMA (R/-)
 - GYROSTEMON THESIOIDES (R/-)
 - PTEROSTYLIS SANGUINEA (R/-)
 - PTEROSTYLIS TUNSTALLII (E/-)
- BASE DATA BY TASMAR. © STATE OF TASMANIA
 BASE IMAGE BY TASMAR. © STATE OF TASMANIA

Van Diemen CONSULTING
 PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
 GRID: MGA ZONE 55
 SCALE: @A4 - NA

CLIENT:
 FIFD PTY LTD

DATE: 96 MAY 2022

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

No species listed on the *Environment Protection and Biodiversity Conservation Act 1999* were observed during the surveys of the Survey Area.

Threatened flora species potentially present (database and habitat analysis)

Species in Table 3.1 (Attachment 3) include those that are listed in the BVD (**Attachment 1**) and NVA (**Attachment 2**) that may have or are likely to have habitat present in the area based on predictive modelling.

Two orchid species are known from the area – *Pterostylis sanguinea* and *P. tunstallii* (see **Attachment 5** for notesheets for these species).

Most *Pterostylis tunstallii* records are on the ridgeline of Vinegar Hill, which may be a biased sampling regime because people may have simply, walked the road that traverses the area. Nevertheless, the species .

The 1969 recorded location for *P. tunstallii* has an accuracy of 2,000m and the location does not support the habitat otherwise occupied by the other locations which are much more accurate. The record could be relatively accurate compared to its stated accuracy given it is not far from habitat (DVF community) to which the orchid species has been recorded. Like many old records, their reliability is unknown and should not be relied upon, without some verification, as part of an assessment process.

Pterostylis sanguinea recorded locations are on the south-facing slopes of Vinegar Hill (most off the Land) and on the ridgeline in associated with or nearby to *Pterostylis tunstallii*. *Pterostylis sanguinea* is an orchid of well-drained gravelly to sandy soils often in association with deep organic litter – soil and habitat conditions within the DVF community.

It is unlikely that either species extends their range to the acidic deep sands of the lower slopes of Vinegar Hill (including those of the south-east facing gully) which are leached and lack a deep litter layer.

B.2.3 Root-rot fungus (*Phytophthora cinnamomi*)

Root-rot fungus (*Phytophthora cinnamomi*, PC) is a soil borne water-mould that causes death in a wide range of native plant species often leading to floristic and structural changes in susceptible plant communities.

PC evolved in tropical areas, and it requires warm moist soils for at least some time of the year to produce sporangia and release zoospores (Rudman 2005). Only those areas of the State that are below an altitude of about 700m above sea level have soils sufficiently warm for this to occur (Podger *et al* 1990). Vegetation types below 700m elevation may not be wholly or partly susceptible if closed canopies keep soil temperatures cool during the summer months, such as tall wet eucalypt forests over rainforest species, or rainforest communities.

PC can be spread through the movement of infected soil or plant material by people or animals and can even be transported by water percolating through soil or via surface water, such as in creeks and other drainage lines. Transport of PC to new areas is usually through soil/dirt adhering to vehicles and machinery. Transport into non-roaded areas of high human usage is mainly via bushwalking items such as tents or footwear but can also occur by bird activity.

The water mould is not always evident in the landscape as it attacks root systems of susceptible species, usually causing death in new growth or the yellowing of leaves followed by loss of vigour and, in most cases, death. The water mould can inhabit the root systems of resistant species without any visible signs of infection within the host plant.

The Survey Area is not within a PC Management Area².

Samples to directly survey for PC were not collected as they were not needed to identify the presence of this water mould. Instead, areas within and around the Survey Area were inspected in detail for signs of infection by PC which included areas of water accumulation such as spoon drains, culverts, and other drainage features.

Evidence of PC was observed across the Land, with symptoms (and death) most commonly observed in *X. australis* plants and heaths such as species of *Epacris* and *Leucopogon*, *Sprengelia incarnata* and *Banksia marginata*. It was evident in some areas that PC has been present for some time, with the understorey being dominated by species that are host or non-susceptible to the water mould (e.g., most sedges, rushes, tea-tree, paperbarks etc).

Most plants with symptoms were observed adjacent to or near roads, tracks, drains, and other areas of activity such as the telecommunications tower, water pipeline. The long linear infrastructure associated with powerlines, and the water pipeline (see also [Tracks and infrastructure](#)) are ideal conduits for the movement of water and animals which would carry the zoospores of the water mould.

Images below show the typical impact of the water mould on *X. australis* plants.

Xanthorrhoea australis plants infected with PC growing adjacent to a track.

Note the near death of some plants and early symptoms in adjacent plants.



² See Schahinger, R., Rudman T., and Wardlaw, T. J. (2003). Conservation of Tasmanian Plant Species & Communities threatened by *Phytophthora cinnamomi*. Strategic Regional Plan for Tasmania. Technical Report 03/03, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Hobart

Xanthorrhoea australis plants infected with PC growing adjacent to a track



Xanthorrhoea australis plant infected with PC growing in forest away from a track – indicates the movement of PC by means other than track use (e.g., water or animal movement).



B.2.4 Threatened Fauna Habitat Assessment – Mammalia

In conjunction with the BVD (**Attachment 1**) and NVA (**Attachment 2**) reports, the following species were considered in detail for the assessment.

New Holland Mouse (*Pseudomys novaehollandiae*)

The New Holland Mouse (*Pseudomys novaehollandiae*) is a small, nocturnal native rodent found in a small number of disjunct populations on the north and north-east coast of Tasmania including Flinders Island. The species also occurs in Queensland, New South Wales and Victoria. The New Holland Mouse is similar in appearance to the introduced and relatively common House Mouse (*Mus musculus*), but can be distinguished by its relatively large eyes and lack of a ‘mousey’ odour. In Tasmania, it has been found in open heathlands,

heathy woodlands, and vegetated sand dunes. The species appears to have undergone a major decline since European settlement. Historical and ongoing threats to the species include loss of habitat and predation from introduced predators. Causes of habitat loss include inappropriate fire regimes (either burning too little or too often), root rot fungus (*Phytophthora cinnamomi*), and coastal development.

Habitat for the New Holland Mouse includes the following elements: coastal open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes, particularly where the following indicator species also occur: Common Aotus (*Aotus ericoides*), Tassel Rope Rush (*Hypolaena fastigiata*), Sand Sword sedge (*Lepidosperma concavum*) and grasstree (*Xanthorrhoea* species).

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	The core range of the New Holland mouse is a 3 km (radius) buffer centred on the known sites.
Potential Range	The potential range of the New Holland mouse includes the core range and specialist-defined extensions of the core range that may support the species but are as yet largely unsurveyed (extends to within c. 15 km inland) from between Boltons Beach (east coast) around to East Devonport (north coast), including the Furneaux islands.
Known Range	N/A
Potential habitat	Potential habitat for the New Holland mouse is heathlands (mainly dry heathlands but also where dry heathlands form a mosaic with other heathland, moorland and scrub complexes), heathy woodlands (i.e. eucalypt canopy cover 5-20%), <i>Allocasuarina</i> -dominated forests on sandy substrates (not dolerite or basalt), and vegetated sand dunes. Key indicator plant species include (but are not restricted to) <i>Aotus ericoides</i> , <i>Lepidosperma concavum</i> , <i>Hypolaena fastigiata</i> and <i>Xanthorrhoea</i> spp.
Significant Habitat	Significant habitat for the New Holland mouse is all potential habitat within the core range of the species.

Survey Results

There is no core habitat present because there are no known sites within 3km. Some suitable or potential habitat is present in the form of *Allocasuarina*-dominated forests on sandy substrates (with *Allocasuarina* as the midstorey to eucalypt forest, being DVF) and wet heathland. The heathland is dominated by sedge and rush species with prolific evidence of current and past infection by PC, which has significantly reduced the diversity of the heath and therefore the food items available (and their density) to the New Holland Mouse.

Assessment of habitat and likely presence in Survey Area

There are no known records of New Holland Mouse within 10kms of the Land, and some suitable habitat is present, but its quality is low due to the widespread (past and present) abundance of PC.

Conclusion

Core habitat is absent (no known sites within 3km) so significant habitat is therefore absent.

B.2.5 Threatened Fauna Habitat Assessment – Aves

In conjunction with the BVD (**Attachment 1**) and NVA (**Attachment 2**) reports, the following species were considered in detail for the assessment.

Wedge-tailed eagle (*Aquila audax fleayi*)

This eagle subspecies is found only in Tasmania and occurs throughout the State including large offshore islands. It hunts over a wide range of habitats, but nests only in old-growth trees in native forests. Bird densities are highest in areas with mosaics of forest, farmland, grassland, wetlands, and rivers. Eagles feed mainly on rabbits, hares, wallabies, possums, birds such as native hens and ravens and carrion.

Nests are usually in tall eucalypt trees in large tracts (more than 10 ha) of old-growth eucalypt or mixed forest. Nest trees are amongst the largest in a locality. They are in sheltered positions on leeward slopes, between the lower and mid slopes and with the top of the tree usually lower than the ground level of the top of the ridge. Nests are not constructed close to sources of disturbance such as quarries or houses. Nests are traditional, with some having been used for at least 50 years. More than one nest may occur within a territory but only one is used in any one year. Breeding failure often promotes a change of nest in the next year. The breeding season occurs between August and January inclusive with eagles being particularly sensitive to disturbance early in this period.

The Recovery Plan (2006-2010) states for this species:

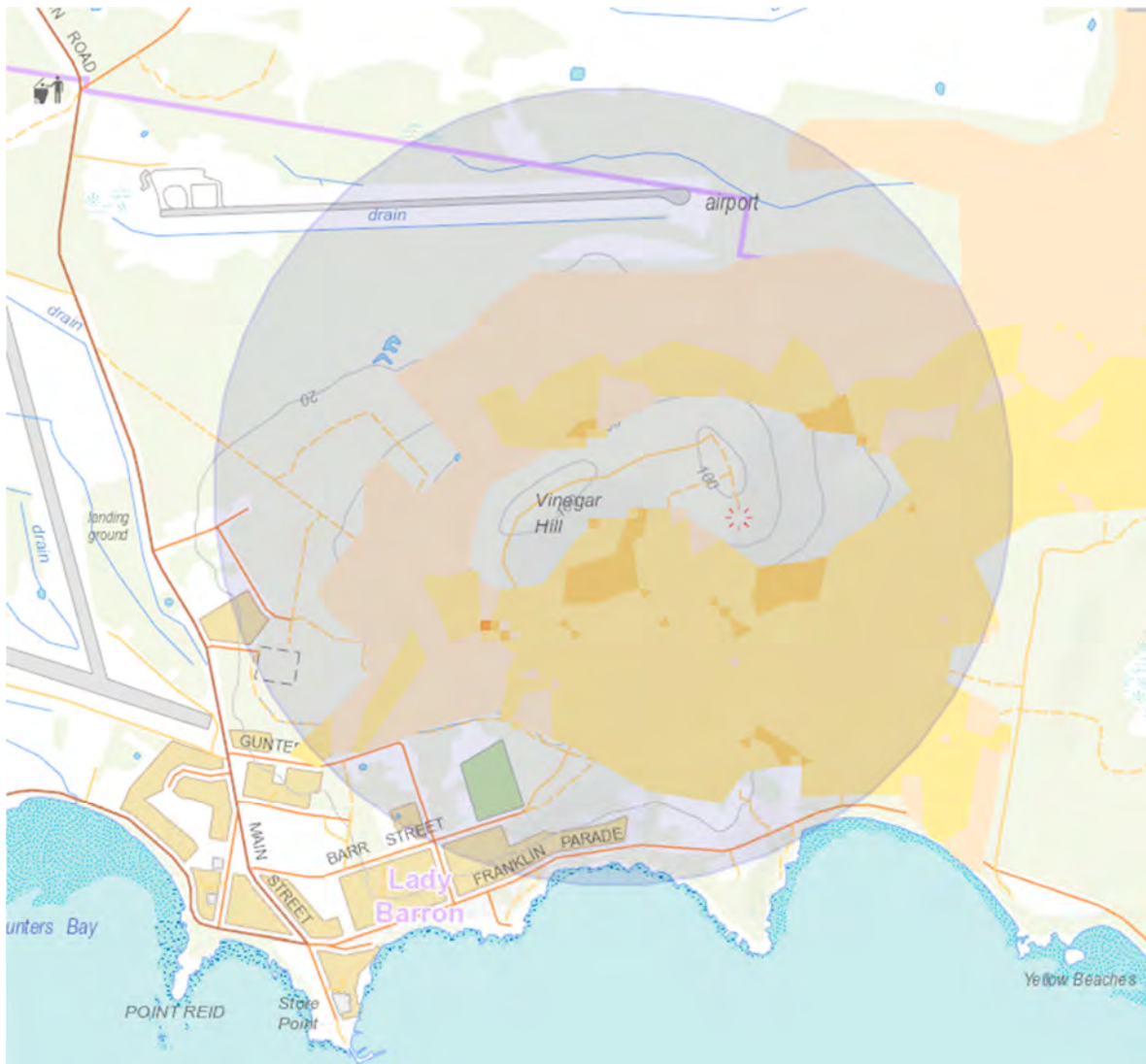
‘Habitat critical to the survival of the Tasmanian Wedge-tailed Eagle is defined by nesting habitat (see Mooney & Holdsworth 1991, Brown & Mooney 1997), as forests of predominantly old growth trees greater than 10ha in area and occurring on sites sheltered from prevailing strong winds. Trees selected for nesting are greater than 27 m in height, with few exceptions. Most nest sites have an eastern, south-eastern or southern aspect and the height of the nest is usually positioned below that of the ridge to the windward side.’

The Range and Habitat descriptors for the species (FPA 2020) are -

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

Survey Results

An eagle nest search was conducted of modelled habitat (see image below which shows a 1,000m radius circle and modelled habitat – yellow and orange) around Vinegar Hill. No nests were found.



Assessment of habitat and likely presence in Survey Area

There are very few raptor nests in the region attributed to wedge-tailed eagle, none of which occur within 1,000 m line-of-sight or 500 m of the Land. The Land is within the range of breeding for both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone (including the Tamar River) however makes nesting by white-bellied eagle more likely.

Conclusion

No wedge-tailed eagle nests occur on or near the Land. Significant habitat is therefore absent.

Grey goshawk (*Accipiter novaehollandiae*)

This raptor species inhabits mature blackwood swamp forest, wet forest, and mixed forest, primarily at lower altitudes (Forest Practices Authority 2008). In general, forest with a closed canopy and low stem density is favoured by the birds for nesting. Consequently, breeding densities are greatest in blackwood swamps and riparian blackwood forest in the north-west. Other areas where breeding occurs are in the north-east, the south-east (including wet parts of Bruny Island), the Mount Field area, the northern side of the Western Tiers, south of Macquarie Harbour and in coastal forest between Macquarie Harbour and the Pieman River.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	A specialist defined area (N.Mooney, unpublished data) based on the availability of potential and significant habitat and known breeding records.
Potential Range	The whole of mainland Tasmania.
Known Range	N/A
Potential habitat	Native forest with mature elements below 600 m altitude, particularly along watercourses. FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.
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.). FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.

Survey Results

There is no potential nesting or foraging habitat for grey goshawk on the Land. The Land has no watercourses that support dense blackwood and tea-tree, nor does it have any areas of closed canopy in association with ponds, dams, or any other artificial waterbody.

Assessment of habitat and likely presence in Survey Area

There is no potential nesting or foraging habitat for grey goshawk on the Land.

Conclusion

There is no potential nesting or foraging habitat or significant habitat for grey goshawk on the Land.

Swift parrot (*Lathamus discolor*)

The swift parrot is a small, largely nectar-feeding fast flying parrot which spends its winter in south-eastern mainland Australian before migrating to Tasmania in late winter/early spring to breed. During the breeding season, nectar from Tasmanian blue gum (*Eucalyptus globulus*) and black gum (*Eucalyptus ovata*) flowers is the primary food source for the species. These eucalypts are patchily distributed, and their flowering patterns are erratic and unpredictable, often leading to only a small proportion of swift parrot habitat being available for breeding in any one year. *Eucalyptus ovata* flowers before the main food tree *Eucalyptus globulus* and consequently *E. ovata* is considered an important earlier feeding resource for breeding swift parrots.

Swift Parrots nest in tree hollows in mature eucalypts within foraging range of a flower source. Birds can nest at low densities or sometimes in groups of >50 nests in <100 ha depending on the availability of flowers and tree hollows.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	The area within the SE potential breeding range that is within 10km of the coast or is designated as a SPIBA (as defined in FPA 2010).
Potential Range	Potential breeding range of the swift parrot comprises the NW potential breeding range and the SE potential breeding range . The NW potential breeding range includes the NW breeding areas (known nesting locations e.g. Gog Range, Badger Range, Kelsey Tier).
Known Range	N/A
Potential habitat	Potential breeding habitat for the swift parrot comprises potential foraging habitat and potential nesting habitat, and is based on definitions of foraging and nesting trees (see Table 1 in Technical Note 3). Potential foraging habitat comprises <i>E. globulus</i> or <i>E. ovata</i> trees that are old enough to flower (for management purposes, this applies to native forest only). The occurrence of foraging habitat can be remotely assessed, although only to a limited extent, by using mapping layers such as GlobMap (DPIPWE 2010). Due to the scale and inadequacies in current foraging-habitat mapping, potential foraging habitat density within operational areas may need to be largely identified by ground-based surveys as per Table 2 in the swift parrot habitat assessment Technical Note). For management purposes potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees. The FPA mature habitat availability map (see FPA's Fauna Technical Note 2) predicts the availability of hollow-bearing trees using the relevant definitions of habitat provided in Table 3 of the swift parrot habitat assessment Technical Note. The mature habitat availability map is designed to be used to make landscape-scale assessments and may not be reliable for stand-level assessments required during the development of a forest practices plan. At the stand-level the availability and distribution of hollow-bearing trees across a coupe or operation area is best determined from a ground-based assessment (see Table 3 in the Fauna Technical Note 3 Swift parrot breeding habitat).
Significant Habitat	All potential breeding habitat within the SE potential breeding range and the NW breeding areas.

Survey Results

The Land supports a significant area (elevated slopes and ridgeline on granite derived soils) of the primary swift parrot foraging resource species *Eucalyptus globulus*. There are trees with some minor hollow development in the Land (the DVF community) but the species is not known to breed on Flinders Island.

Assessment of habitat and likely presence in Survey Area

The *E. globulus* forest is likely to be used by swift parrots moving between mainland Tasmania (for breeding) and Australia (over-wintering).

Conclusion

The *E. globulus* forest (when trees are in flower) is likely to be used by swift parrots as they migrate between mainland Tasmania (for breeding) and Australia (over-wintering). Hollows suitable for breeding are very few in number and this location is not an area known to be used for breeding (i.e., significant habitat is absent).

White-bellied sea eagle (*Haliaeetus leucogaster*)

The white-bellied sea eagle is widely distributed from India to Australia. Key sites in Tasmania include the Tamar River estuary, Tasman Peninsula and the Bass Strait Islands. They nest and forage mainly near the coast but will also live near large rivers and lakes inland, often moving on a seasonal basis.

The nest of the white-bellied sea eagle is similar in construction to the wedge-tailed eagle and when resources are limited, competition for nest sites between the two species can occur. As with the wedge-tailed eagle, the white-bellied sea eagle nests are traditional. More than one nest may occur within a territory, but only one is used in any one year. The breeding season occurs between August and January inclusive with eagles being particularly sensitive to disturbance early in this period.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	N/A
Potential Range	The whole of Tasmania including islands.
Known Range	N/A
Potential habitat	Potential habitat for the white-bellied sea-eagle species 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. The species nests and forages mainly near the coast but will also live near rivers, lakes and farm dams. Nest trees are amongst the largest in a locality. Nests are not usually constructed close to sources of disturbance and nests close to disturbance are less productive. More than one nest may occur within a territory but only one is used for breeding in any one year. Breeding failure often promotes a change of nest in the next year. [see Part I of the BVD, and FPA's Fauna Technical Note 1 for more information]
Significant Habitat	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).

Survey Results

An eagle nest search was conducted of modelled habitat (see image below which shows a 1,000m radius circle and modelled habitat – yellow and orange) around Vinegar Hill. No nests were found. The nearest nest of white-bellied sea eagle is on the north-eastern side of Great Dog Island.



Assessment of habitat and likely presence in Survey Area

There are several raptor nests in the region attributed to white-bellied sea eagle, none of which occur within 1,000 m line-of-sight or 500 m of the Land. The Land is within the range of breeding for both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone (including the Tamar River) however makes nesting by white-bellied eagle more likely.

Conclusion

No white-bellied sea eagle nests occur on or near the Land. Significant habitat is therefore absent.

B.2.6 Threatened Fauna Habitat Assessment – Amphibians

In conjunction with the BVD report (**Attachment 1**) the following species were considered in detail for the assessment, mainly because there is either evidence for them occurring in the area, or that suitable/potential habitat (even marginal/small areas) is present in the Survey Area.

Green and Gold Frog or Growling grass frog (*Litoria raniformis*)

Green and golden frogs are active during both day and night throughout the warmer months and can sometimes be seen basking out of the water amongst vegetation or on rocks and logs, the only Tasmanian frog to exhibit this behaviour. They have keen eyesight in daylight and as they are approached, they will jump

into the water with a distinctive ‘plop’. This is often the only way to know that they are there. At night, however, they can be approached with relative ease.

The breeding season in Tasmania spans September to January when males can be heard calling. The mating call of this species is a very distinctive and complex series of grunts and growls. Calling activity can be erratic, often being restricted to warm calm days and evenings. Choruses (many males calling) can reach peaks mid-morning and early evening. In breeding condition, the male frog exhibits a mottled black throat and develops black nuptial pads (hard calluses) on the back of each thumb with which he grasps the female when mating.

Green and golden frogs’ occurrence is dependent upon permanent freshwater lagoons for breeding. Ideal breeding habitat is the shallow part of lagoons (to approx. 1.5m) where there is generally a complex vegetation structure. Breeding sites often contain vegetation communities dominated by emergent plants such as water ribbons (*Triglochin*) and spike-rush (*Eleocharis*), and submerged plants such as (*Myriophyllum*), marsh-flower (*Villarsia*) and pondweed (*Potamogeton*). However, other plant communities can form equally suitable habitat.

The range of the green and golden frog is restricted to lowland areas, mainly in coastal zones except for the Deloraine-Longford-Launceston region, and historically it was common in the Midlands region. This frog was once common on King Island and Flinders Island but is now rare on these islands.

The DEWHA Species Profile and Threats Database for this species states:

‘Habitat

This species is found mostly amongst emergent vegetation (Robinson 1993), including *Typha* sp. (bullrush), *Phragmites* sp. (reeds) and *Eleocharis* sp. (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams (NSW DEC 2005a). The Growling Grass Frog can be found floating in warmer waters in temperatures between 18–25°C.

Additionally, this species occurs in:

- clays or well-watered sandy soils;
- open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps;
- montane eucalypt forest, dry sclerophyll forest in coastal Victoria;
- steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants; and
- formerly, areas of high altitudes (Ehmann & White 1997; NSW DEC 2005a)

Submerged vegetation is important habitat for breeding success as it provides egg-laying sites, calling stages for males, and food and shelter for tadpoles. Grassland provides habitat for foraging, dispersal and shelter, and may also provide overwintering sites for Growling Grass Frogs (Clemann & Gillespie 2004; Hamer & Organ 2006). Hamer and Organ (2006) found that large and relatively permanent waterbodies, with a high proportion of emergent vegetation cover, were more likely to be occupied by the Growling Grass Frog.

The Growling Grass Frog can also inhabit agricultural and higher rainfall pastoral lands so long as permanent and non-permanent water sites are available with dense emergent or fringing vegetation (Ehmann & White 1997; S. Wassens pers. comm. cited in NSW DEC 2005a).

The wetland systems that the Growling Grass Frog occupies in NSW consists of a mosaic of permanent and ephemeral waterbodies which flood in the spring of most years. Within these habitats, the greater the water depth and aquatic vegetation cover, the higher the probability that the Growling Grass Frog will be present. In the Lowbidgee Irrigation Area, NSW, Growling Grass Frogs occur in a series of small water bodies. The species is thought to retreat to these small water bodies during the dry season (between January and August). When the area is flooded during the wet season, these small water bodies flood to form a large wetland, which is used by the species for breeding, tadpole habitat and tadpole morphosis (NSW DEC 2005a; Wassens 2005; Wassens et al. 2008).

In the Coleambally Irrigation Area, NSW, the Growling Grass Frog occurs in irrigation channels and crops (NSW DEC 2005a). The species also occurs in lignum shrublands, black box and river red gum woodlands (S. Wassens undated, pers. comm. cited in NSW DEC 2005a) and alongside rivers in the southern parts of NSW (NSW DEC 2005a).

Basking Habitat

Growling Grass Frogs are active during both day and night throughout the warmer months and can be seen basking out of water amongst vegetation or on rocks and logs. In Tasmania, it is the only frog to exhibit this behaviour (Threatened Species Unit 2001). Growling Grass Frogs are known to bask in filtered sunlight, that is, under partly cloudy conditions or in deep vegetation (Ehmann & White 1997). The Growling Grass Frog is frequently found basking on grassy banks near water (Courtice & Grigg 1975). Its behaviour during winter is not well known, although it is speculated that it hibernates in warm, moist areas such as the mud at the bottom of ponds, under logs, rocks and debris or beneath thick vegetation (Ayers *et al.* 1996; G. Pyke undated, pers. comm. cited in NSW DEC 2005a, S. Wassens undated, pers. comm. cited in NSW DEC 2005a). Radio-tracking of some individuals has suggested that the species winter under dense vegetation (S. Wassens undated, pers. comm. cited in NSW DEC 2005a).

Breeding Habitat

The Growling Grass Frog is dependent upon permanent freshwater lagoons for breeding. The ideal breeding habitat is the shallow part of lagoons (up to approximately 1.5 m) where there is generally a complex vegetation structure. Breeding sites in Tasmania often contain vegetation communities dominated by emergent plants such as water ribbons (*Triglochin*) and spikerush (*Eleocharis*) and submerged plants such as water milfoil (*Myriophyllum*), marsh-flower (Villarsia), and pondweed (*Potamogeton*). However, other plant communities can form equally suitable habitat (Threatened Species Unit 2001).

The variety of habitats this species utilises for refuge includes soil cracks, fallen timber, debris and dense vegetation on low, frequently inundated floodplains (Cogger 2000; S. Wassens undated, pers. comm. cited in NSW DEC 2005a).

Movement Patterns

The Growling Grass Frog is a highly mobile species, capable of moving up to one kilometre in 24 hours (K. Jervis undated, pers. comm. cited in Robertson et al. 2002; S. Wassens undated, per. comm. cited in NSW DEC 2005a). Recent research suggests that, in areas other than the semi-arid/riverine part of the species' range, there are interactions between neighbouring populations (Clemann and Gillespie 2004).

When the Growling Grass Frog is restricted to small, permanent waterbodies, dispersal is low indicating high levels of site fidelity with individuals tending to move shorter distances. When occupying ephemeral waterbodies, the Growling Grass Frog has significantly higher levels of dispersal, indicating lower site fidelity, with individuals moving large distances (Wassens 2005).’

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	An arbitrary 2 km (radius) buffer centred on the known sites (with an accuracy of 2km or less). This range is also referred to as “important areas”, which can include point locations for low precision records and polygons for known habitat patches such as named lagoons.
Potential Range	Is based on models of the current and historic distribution of the species.
Known Range	N/A
Potential habitat	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.
Significant Habitat	Is still or very slow flowing water bodies, with at least some vegetation, and a lack of obvious pollutants (oils, chemicals, etc). See FPA Fauna Technical Note 18 for further guidance on assessing significant habitat for the green and gold frog.

Survey Results

There is no wetland, swampy or dam habitat for this species in or adjacent to the Land.

Assessment of habitat and likely presence in Survey Area

There is no wetland, swampy or dam habitat for this species in or adjacent to the Land so the species is likely to not be present, even for over-wintering.

Conclusion

Significant habitat is absent from the Land.

B.2.7 Threatened Fauna Habitat Assessment – Reptiles

Tussock skink (*Pseudemoia pagenstecheri*)

In Tasmania, the Tussock Skink, a ground-dwelling lizard, occurs in grassland and grassy woodland habitats at a range of elevations. Records of the species in Tasmania are in small, disconnected patches of habitat in the Midlands, inland near Cradle Mountain and the eastern Bass Strait islands.

Habitat includes the following elements: treeless tussock grassland and grassy open woodland at virtually any elevation where suitable habitat is present; typical habitat in the warmer lowland part of the range is native grassland dominated by *Poa labillardierei* (tussock grass) and species of *Rytidosperma* (wallaby grasses), *Themeda triandra* (kangaroo grass) and *Microlaena stipoides* (weeping grass).

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	Is a 500 m (radius) buffer centred on the known sites.
Potential Range	Includes the core range and specialist defined extensions of the core range that may support the species based on habitat characteristics but are as yet largely unsurveyed (includes the majority of mapped native lowland and highland grasslands throughout the Midlands, Fingal Valley and northwest grasslands).
Known Range	N/A
Potential habitat	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.
Significant Habitat	N/A

Survey Results

Marginally suitable habitat present in the form of a very small (<1 hectare) *Poa* grass (*Poa poiformis* and *P. labillardierei*) dominated understorey on the ridgeline of Vinegar Hill (most of the forest has a bracken-fern dominated understorey or there is no understorey).



Assessment of habitat and likely presence in Survey Area

There are no known locations within 500m of a known location, so core habitat is absent, but the Land is within the potential range. There is marginally suitable habitat present in the form of a very small (<1 hectare) *Poa* grass dominated understorey on the ridgeline of Vinegar Hill (most of the forest has a bracken-fern dominated understorey or there is no understorey).

Conclusion

The potential habitat of the species in the Land is limited to the very ridgeline of Vinegar Hill where there is localised *Poa* dominated areas.

B.3 SUMMARY

The natural values of significance on the Land are summarised in **Table 3**.

Table 3. Summary of significant natural values in the Survey Area

Value	Description
Threatened vegetation communities	<i>Eucalyptus viminalis</i> Furneaux forest and woodland
Threatened flora species	<i>Pterostylis sanguinea</i> – habitat and known locations <i>Pterostylis tunstallii</i> – habitat and known locations <i>Gyrostemon thesioides</i> – habitat and known locations <i>Asperula minima</i> – habitat and known locations
Threatened fauna species and their habitat	<i>Pseudemoia pagenstecheri</i> – potential habitat <i>Lathamus discolor</i> – foraging habitat

PART C – SCENIC PROTECTION AREA CODE

C.1 BACKGROUND

A portion of the Land is covered by a Scenic Protection overlay.

To aid any assessment, if one is required based on the intersection of a development and the overlay, a visual assessment was conducted of key vantage points where sections of Vinegar Hill can be seen, and what viewfields have existing structures that impact on that viewfield.

The visual assessment included an evaluation of the existing visual character of the Vinegar Hill landform and the surrounding landscape. The methodology for the visual assessment involved several stages, as discussed below.

STAGE 1 – CHARACTERISATION OF VINEGAR HILL

Vinegar Hill as a landform was briefly characterised to identify what the landform is, and what it supports in terms of infrastructure, land uses, adjacent land uses etc.

STAGE 2 - FIELD INVESTIGATIONS

Fieldwork involved the following:

- A drive around the Lady Barron township, along Lady Barron Road, Coast Road (Cooma and Ranga) and surrounding areas to determine potentially visual sensitive locations, and to ascertain the extent of views including prominent features and existing development and use.
- Photographs (from a digital SLR camera) were taken from selected locations shown in **Figure C-1** and are provided in **Attachment 6**.

STAGE 3 - ASSESSMENT

An assessment of the viewfields and information collected during the field work, in addition to the observations made during the ecological assessment of the hill landform and the vegetation and existing infrastructure is supports, were considered in developing an overlay.

C.2 CHARACTERISATION OF VINEGAR HILL

Vinegar Hill is a landform that attracts great affection by locals and visitors to the island due to its views from the summit and lookout. However, the landform is in private ownership and there is no public access to the summit of the informal lookout on land adjacent to the Land the subject of this Report.

The landform is a well weathered granite bedrock like other prominent hills and mountains in the area but on a much lesser scale – the hill is only 105 m ASL. An aeolian sand sheet exists on the northern side of the landform, which extends upslope to where it often sharply meets exposed granite bedrock. The sandsheet seems the thickest on the north-western side of the hill landform where a vineyard once existed and progressively lowers downslope as the hill is traversed eastwards. The source of the sands, given the spatial

occurrence of them, suggests the flats between Lady Barron and Lackrana when sea level was lower and conditions much drier – likely Pleistocene age, which is supported by geological mapping of the area.

Colluvial deposits formed by granite sediments (sands, gravels, rock, and clay) cover a very small section of the sands, which appear to have accumulated post sand sheet formation. The small band of ‘sediment mixing’ indicates a recent formation of the sands and/or slow weathering of the granite landform above. Recent fire (2017-18) on the slope has destabilised some of the vegetation (fire-killed, weakened trees) and this has led to localised movement downslope of granitic sediments as the trees fall over or from rain events washing sediment downslope due to the absence of soil-binding roots.

Exposed granite bedrock is intermittent on the northern slopes at around elevation 80-95 m ASL however these areas are poorly visible from a distance due to the vegetative cover (i.e., trees). The southern side of the landform supports sandsheets in the gullies and the vegetation is generally taller.

Images below provide a general overview of the landform including the type of views, existing infrastructure, and barriers to observations points –

Vinegar Hill when viewed from Coast Road. Development including houses extends upslope from Lady Barron Road.



Vinegar Hill in the distance when viewed from Martins Hill on Lady Barron Road.

There is no formal lookout or vehicle pullover area here and road conditions are not conducive to vehicles stopping.



Large sections of Lady Barron Road provide no viewfield to Vinegar Hill due to the localised occurrence of visual barriers such as existing vegetation, shelterbelts, and buildings.



Vinegar Hill on the approach to the Lackrana turnoff. The elevated parts and ridgeline of the hill landform are prominent.



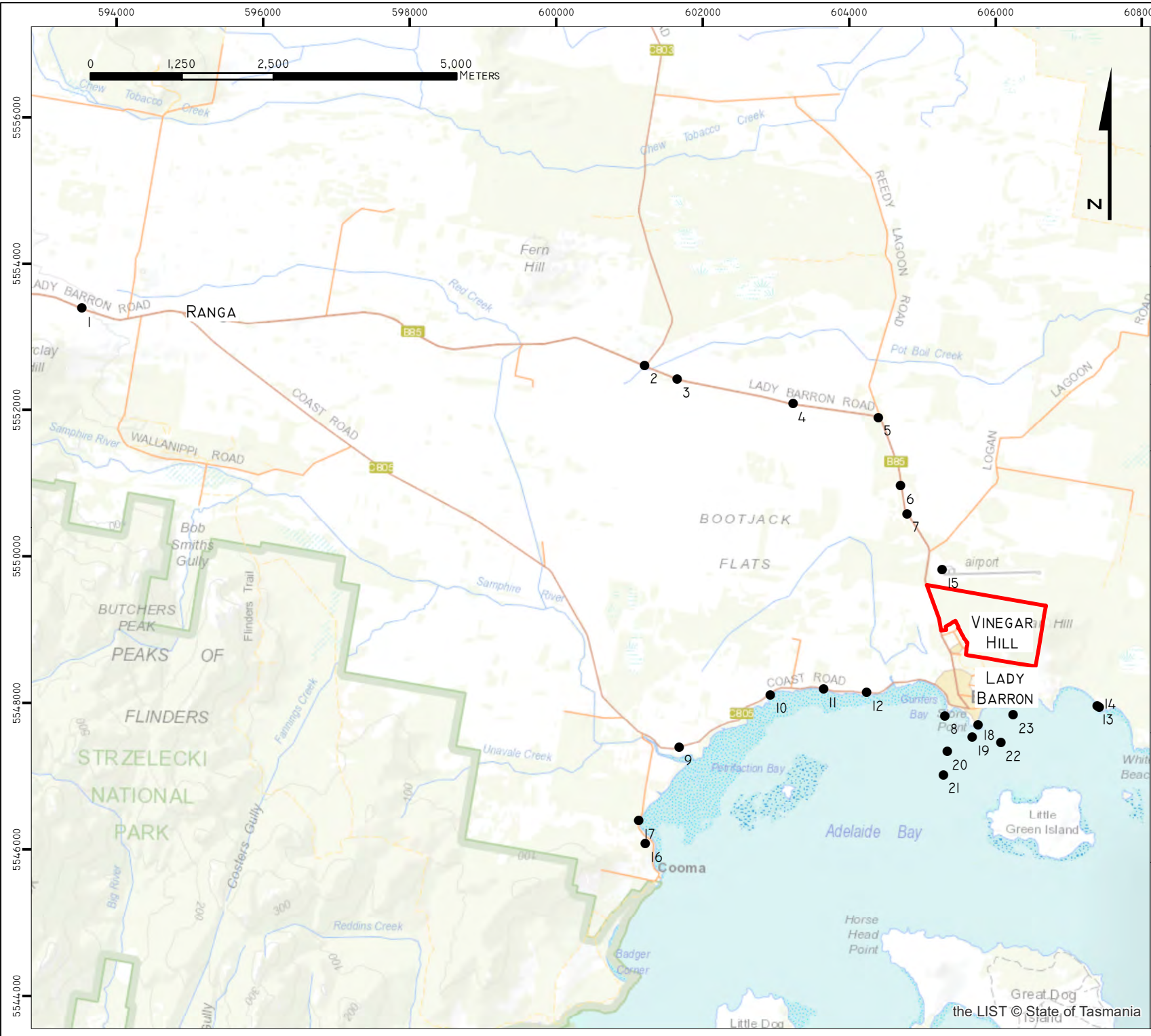
Vinegar Hill in the background with pasture and remnant native vegetation on the flats. The lower slopes and flats to the north-west of Vinegar Hill are not visible.



Vinegar Hill on the approach to Lady Barron township highlighting the upper slopes and ridgeline as prominent viewfield features.

Note the telecommunications tower on the ridgeline at left of the hill landform.





14.2.1 - March 2023
 SCENIC AND ECOLOGICAL
 ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
 CT199735/1

FIGURE C1: LOCATION OF
 LANDSCAPE ASSESSMENT
 VIEWPOINTS TO VINEGAR HILL

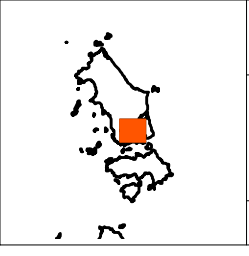
TASMAP:
 FISHER
 5954

LGA:
 FLINDERS

- VIEWING LOCATIONS
- ▭ CT 199735/1

BASE DATA BY TASMAP. © STATE OF TASMANIA
 BASE IMAGE BY TASMAP. © STATE OF TASMANIA

an Diemen CONSULTING
 PO Box 1 NEW TOWN TAS 7008



DATUM: GDA94
 GRID: MGA ZONE 55
 SCALE: @A4 - NA

CLIENT:
 FIFD PTY LTD

DATE: 16 MAY 2022

C.3 SUMMARY

The scenic values on the Land that should be considered in developing a Scenic Protection Area overlay for the Land are summarised in **Table 4**.

The scenic values, particularly what can and cannot actually be seen from key vantage locations, should be used to guide the assessment of development relative to the Code. For example, the flats at the north-western corner section of the survey area cannot be seen at any significant vantage point other than from the adjacent Lady Barron Road which is blocked by the vegetation itself – the hill formation is obscured by the vegetation along the frontage

Table 4. Summary of scenic values identified for Vinegar Hill

Value	Description
Ridgeline	<p>Prominent and relatively intact vegetated ridgeline (forms a skyline from numerous viewing locations), especially when viewed from a distance.</p> <p>Low occurrence of sharp edges in the viewfield of the ridgeline due to the retention of vegetation (even though it is fire impacted) and careful placement of the existing road.</p>
Elevated slope (southern slope)	<p>Low to no visibility of the hill formation from Lady Barron township itself, with views increasing as distance is achieved from the township, especially eastwards to Yellow and White Beaches (Pot Boil Road which is a no through road system to the east) and along Coast Road.</p> <p>The upper slopes when viewed from Coast Road provide an aesthetic backdrop to the housing in the town and adjacent 'bush' setting (ie., the houses and building blocks at Cemetery Road and Vinegar Hill Road).</p> <p>The ridgeline is prominent from Adelaide Bay especially once passed southwards of Fisher Island.</p>
Elevated slope (northern slope)	<p>The upper slopes when viewed from Lady Barron Road (once Martins Hill is reached heading towards Lady Barron) provide an aesthetic viewfield albeit intermittent and fleeting due to the existence of barriers, road conditions (100 km/hr speed limit road) and lack of pullover areas for vehicles to stop and people to 'admire the view'. That is, there are no formalised viewing locations or scenic lookouts on Lady Barron Road that can enable or encourage people to stop and take in the Vinegar Hill landform.</p> <p>The elevated slopes and associated vegetated ridgeline are especially prominent from near the Lackrana turnoff from Lady Barron Road through to the waste transfer station, near the Logan Lagoon turnoff from Lady Barron Road.</p>

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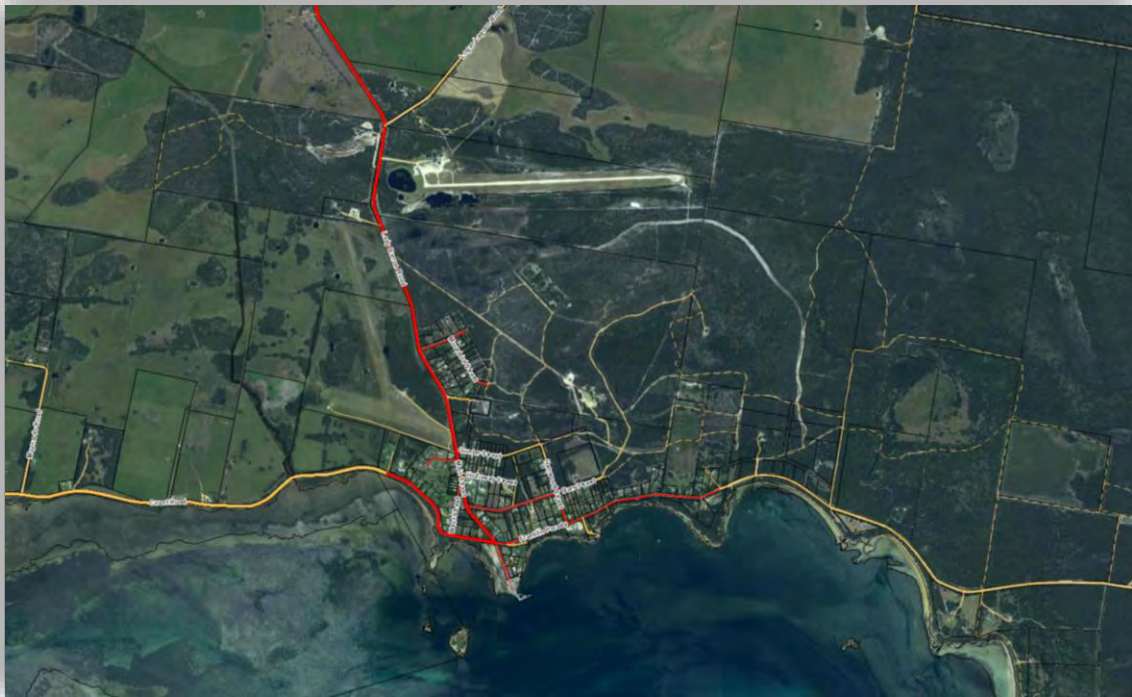
ATTACHMENTS

ATTACHMENT 1: BIODIVERSITY VALUES DATABASE (BVD) REPORT

ATTACHMENT 4 VINEGAR HILL SAND EXTRACTION PIT AND QUARRY. ENVIRONMENTAL NOISE ASSESSMENT

Van Diemen Consulting

Vinegar Hill sand extraction pit and quarry environmental noise assessment



Report No. 5697_AC_R

TARKARRI ENGINEERING PTY LTD

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August 2022

**Tarkarri
Engineering**



Air Quality • Acoustics • Environment • Vibration



DOCUMENT CONTROL

VINEGAR HILL SAND EXTRACTION PIT AND QUARRY ENVIRONMENTAL NOISE ASSESSMENT

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Author	Alex McLeod Director / Principal Consultant	Date: 26 August 2022
Revision History		
Revision No.	Date Issued	Reason/Comments
0		
Distribution		
Copy No. _____	Revision No.	Location
1	0	Project/Client File
2	0	Client
3	0	Tarkarri Engineering Library
Keywords	dB_A – Decibels A-weighted. A-weighting – Weighting of the audible frequencies reflective of the response of the human ear to noise. L_{Aeq,T} – Equivalent continuous A-weighted sound pressure level over a given time (T).	



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References

- [1] Environment Protection Authority (2017) Quarry Code of Practice 3rd Edition, EPA Tasmania, Hobart, Tasmania.
- [2] SoundPLAN Acoustic modelling software - Braunstein & Berndt GmbH.
- [3] CONCAWE The oil companies’ international study group for conservation of clean air and water – Europe (est. 1963) report 4/81.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

Executive summary

Tarkarri Engineering conducted an environmental noise assessment of operations at the Vinegar Hill sand extraction pit and quarry located at Lady Barron Rd, Lady Barron.

Modelling of operational noise shows that predicted noise levels are below the relevant Quarry Code of Practice criterion level for noise and as such unreasonable noise impact is unlikely to occur.



1 Introduction

Tarkarri Engineering was commissioned by Van Diemen Consulting (VDC) to conduct and environmental noise assessment of operations at the Vinegar Hill sand extraction pit and quarry located at Lady Barron Rd, Lady Barron. This follows Requests for Further Information (RFIs) from the Flinders Council. Relevant sections of the RFIs are provided below for reference.

DA 2022 / 00029

- Due to the proximity of the neighbouring sensitive uses please provide an attenuation report prepared by a suitably qualified person to assess the impact of the proposed industry on the existing sensitive uses

DA 2022 / 00031

- Please provide a response to C9.5.1, prepared by a suitably qualified person, which demonstrates what specific measures will be put in place to ensure that no unreasonable loss of amenity occurs to the existing surrounding sensitive uses. The response should consider the cumulative effect of the proposed use including traffic, noise, dust and vibration.

This assessment address environmental noise only.

2 Site description

The Vinegar Hill sand pit and quarry is located on Lady Barron Rd to the north of the township of Lady Barron. Nosie sensitive residential properties bound the land to the south and south-west.

Figure 2-1 presents an aerial view of the sand pit and quarry land and surrounds while Figure 2-2 presents mine plan.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.



Figure 2-1: Aerial view of existing Vinegar Hill sand pit and quarry and surrounds.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

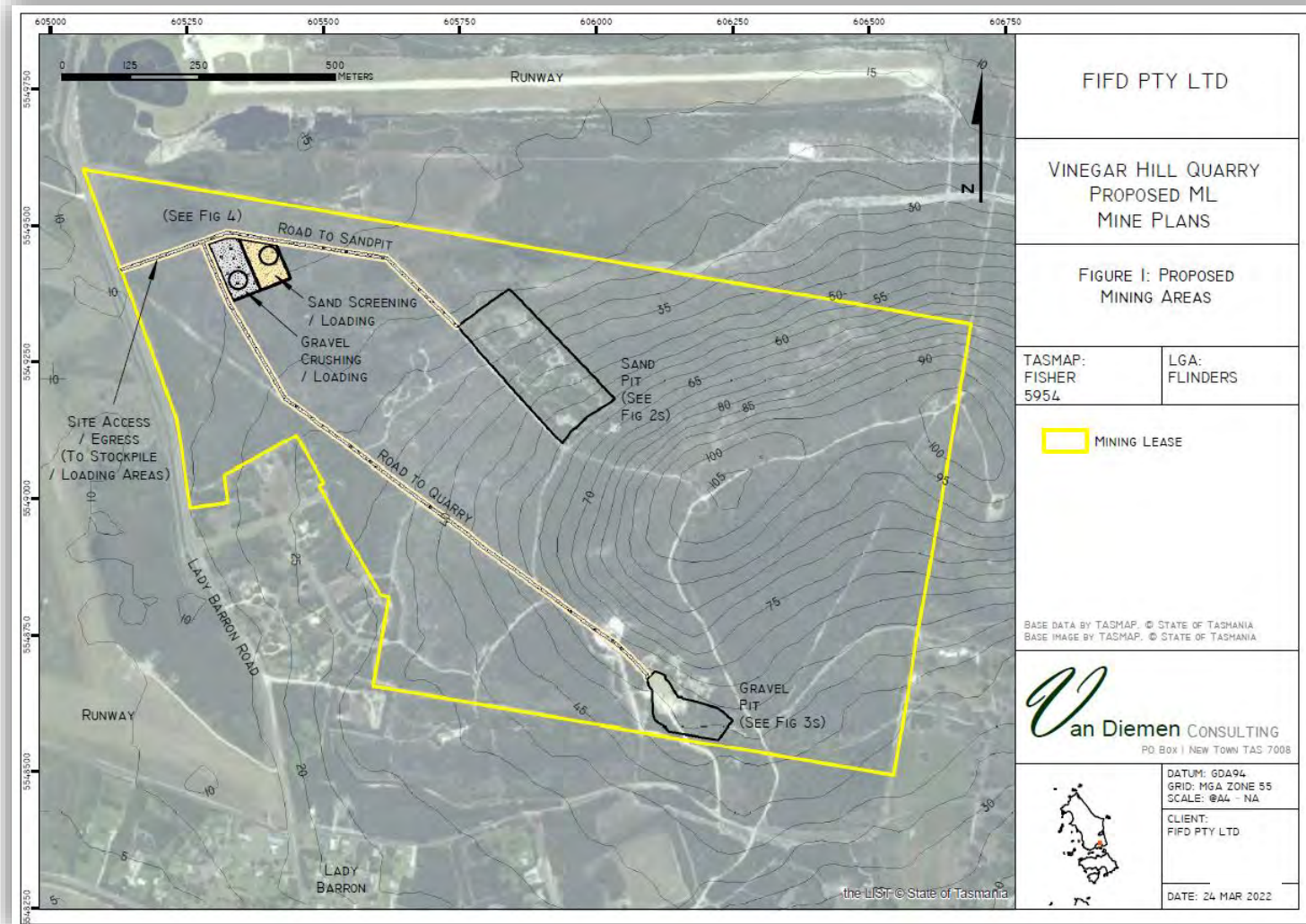


Figure 2-2: Mine Plan (provided by VDC).



3 Assessment criterion

Criteria for the assessment of environmental noise emissions from quarry operations are given in the Quarry Code of Practice (QCP)^[1] as follows:-

7.2.2.2 Level of noise

Noise from quarrying and associated activities, including equipment maintenance, when measured at any neighbouring sensitive use must not exceed the greater of:

- the A-weighted 10 minute L₉₀, excluding noise from the quarry, plus 5 dB(A), or
- the following levels:
 - 45 dB(A) from 0700 to 1900 hours (daytime)
 - 40 dB(A) from 1900 to 2200 hours (evening), and
 - 35 dB(A) from 2200 to 0700 hours the following day (night time)

when measured as a 10 minute L_{eq}.

Regulatory authorities may require compliance with alternative noise limits derived from a site-specific noise assessment.

All operations would occur in the day period and given this and the above the following noise emission criterion is nominated for this assessment:

- Day: 45 dBA (L_{Aeq,10min})

4 Environmental noise model

SoundPLAN^[2] software was used for carrying out detailed noise modelling of the two extractive industries. This program allows the use of the CONCAWE^[3] calculation method for modelling atmospheric attenuation/amplification of noise. Parameters influencing sound propagation and attenuation include:

- Source type (point, line, plane).
- Relative source and receiver height.
- Topography and barriers.
- Industrial buildings as sources and/or barriers.
- Ground and air absorption.
- Distance attenuation.
- Atmospheric conditions (Pasquill stability, temperature, humidity and vector wind speed).
- Reflecting surfaces.
- Source directivity.

As all propagation and attenuation parameters are frequency dependent, all input source data has been based on 1/3-octave band sound power spectra.

Geo-referenced topographic data was based 5 m and 10 m interval contour data obtained from LISTdata.

Layout data and equipment locations were provided by VDC.

All source and geodata is referenced to the Map Grid of Australia (MGA).



4.1 Model input data

Input sound power (SWL) spectra were developed from Tarkarri Engineering library data. Table 5-1 and 5-2 present overall SWLs, equipment details and 1/1-octave band SWL spectra. Four model scenarios were considered as follows and the SWL data in the tables in laid out in accordance with these scenarios:

- **Sand Pit extraction:** excavator and FEL operating in pit, truck carting material to the materials handling pad (MHP).
- **Sand Pit MHP:** FEL and screen operating at the MHP, trucks transporting material off-site.
NB: screen located on the northern side of a 3 m earth bund to provide attenuation.
- **Gravel Pit extraction:** excavator and FEL operating in pit, truck carting material to the materials handling pad (MHP).
- **Gravel Pit MHP:** FEL and crusher operating at the MHP, trucks transporting material off-site.
NB: crusher located on the northern side of a 4 m earth bund to provide attenuation.

These four scenarios would occur as separate operations (i.e. not concurrently) and are therefore not modelled together.

Overall sound power levels (dBA)		
Source	SWL	Comment
Sand Pit extraction		
Excavator	101	Scaled SWL for operating half of 10-minute period
Front End Loader (FEL)	98	Scaled SWL for operating half of 10-minute period
Truck (pit to MHP)	88	Scaled for low speed and time of operation over traverse length (20 km/h speed)
Sand Pit MHP (screen and load)		
FEL	101	
Transport trucks	90	X3 trucks in 10-minute period and scaled for low speed and time of operation over traverse length (20 km/h speed)
Screen	107	
Gravel Pit extraction		
Excavator	101	Scaled SWL for operating half of 10-minute period
FEL	98	Scaled SWL for operating half of 10-minute period
Truck (pit to MHP)	92	Scaled for low speed and time of operation over traverse length (20 km/h speed)
Gravel Pit MHP (crush and load)		
FEL	101	
Transport trucks	89	X3 trucks in 10-minute period and scaled for low speed and time of operation over traverse length (20 km/h speed)
Crusher	116	

Table 4-1: Overall sound power levels and data source information.



1/1-octave band sound power level spectra (dBA)										
Source	Frequency (Hz)									Total
	31.5	63	125	250	500	1k	2k	4k	8k	
Sand Pit extraction										
Excavator	67	75	88	89	96	95	95	89	81	101
Front End Loader (FEL)	52	67	86	94	87	90	90	86	79	98
Truck (pit to MHP)	52	63	73	73	79	81	85	79	70	88
Sand Pit MHP (screen and load)										
FEL	55	70	89	97	90	93	93	89	82	101
Transport trucks	53	65	74	75	81	83	86	81	72	90
Screen	52	73	82	91	98	101	102	101	95	107
Gravel Pit extraction										
Excavator	69	77	90	91	98	97	97	91	83	101
FEL	52	67	86	94	87	90	90	86	79	98
Truck (pit to MHP)	55	67	76	77	83	85	88	83	74	92
Gravel Pit MHP (crush and load)										
FEL	55	70	89	97	90	93	93	89	82	101
Transport trucks	52	64	73	74	80	82	85	80	71	89
Crusher	64	84	99	106	113	110	107	103	94	116

Table 4-2: 1/1-octave band sound power level spectra.

7 environmental noise model receiver locations were selected for the prediction of sound pressure levels from the four model scenarios. These were selected to represent the closest residential premises in any direction. Table 4-3 present location information for each receiver.

Model receiver positions		
Position number	Location	Coordinates (MGA, Zone 55 G)
R1	7 Vinegar Hill Dr	605486 5549037
R2	13 Moonbird St	605595 5548784
R3	3 Gunter St	605539 5548440
R4	18 Gunter St	605659 5548348
R5	21 Barr St	605924 5548208
R6	53 Franklin Pde	606484 5548284
R7	57a Franklin Pde	606621 5548718

Table 4-3: Model receiver positions.

4.2 Atmospheric conditions

Using the CONCAWE^[3] algorithm, SoundPLAN^[2] models atmospheric attenuation via Pasquill stability indices. These indices are influenced primarily by vector wind speed and solar radiation levels. Combinations of these conditions are used to determine appropriate frequency dependent attenuation parameters. In this study two main propagation conditions have been analysed as follows:



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

- **Worst-case propagation (wcw):** This condition considers all receiver points to be downwind of the plant with a Pasquill stability class F and a vector wind speed of 2 m/s, noise contours will then represent the highest predicted sound pressure levels at any location around the plant. These conditions commonly occur on cold clear nights when atmospheric inversions develop.
- **Neutral propagation (neu):** Situations where the atmospheric conditions are neutral generally occur with a Pasquill stability class D and no wind. These conditions can typically occur in the hour before sunset and the hour after sunrise. Neutral conditions can also occur during calm, cloudy conditions.

4.3 Model views

Figures 4-1 and 4-2 present a model plan views with the location of the sources listed in Tables 5-1 and 5-2 and receiver locations marked. Figure 5-2 presents a wire-frame model view from the south.

NB: The sources from all four model scenarios are presented in the figures.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

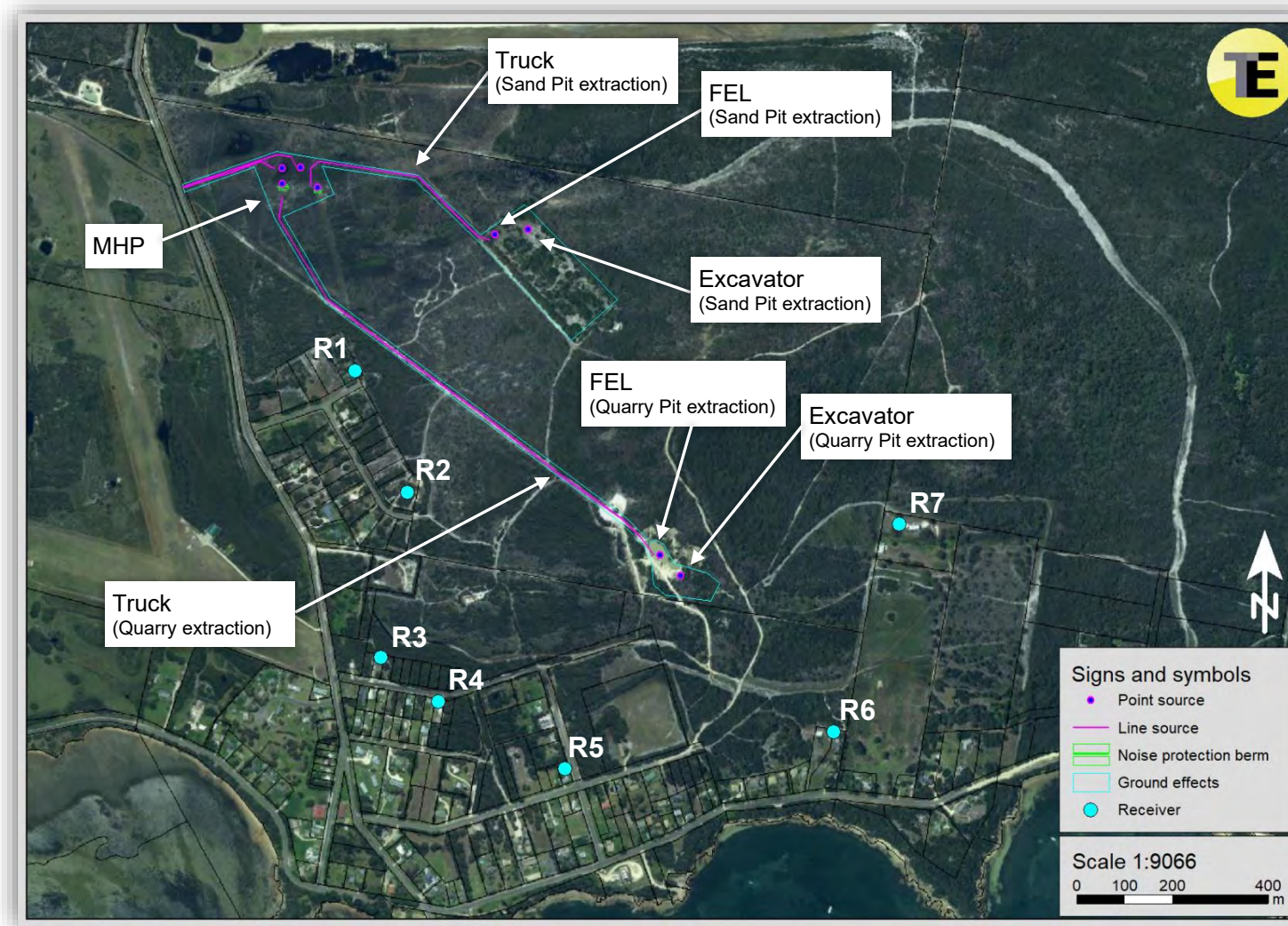


Figure 4-1: Model plan view.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

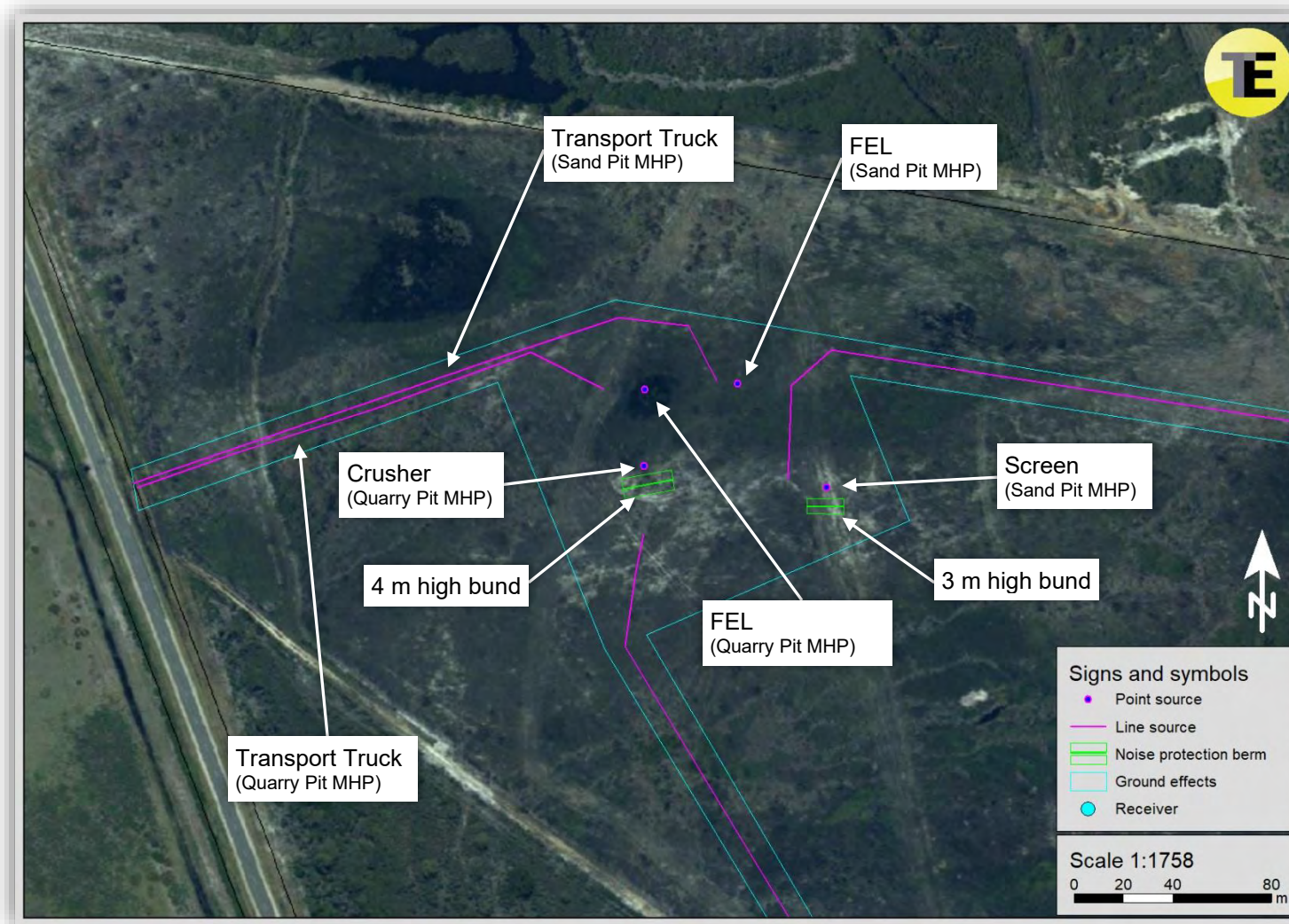


Figure 4-2: Model plan view, MHP.



VDC – Vinegar Hill sand extraction pit and quarry environmental noise assessment.

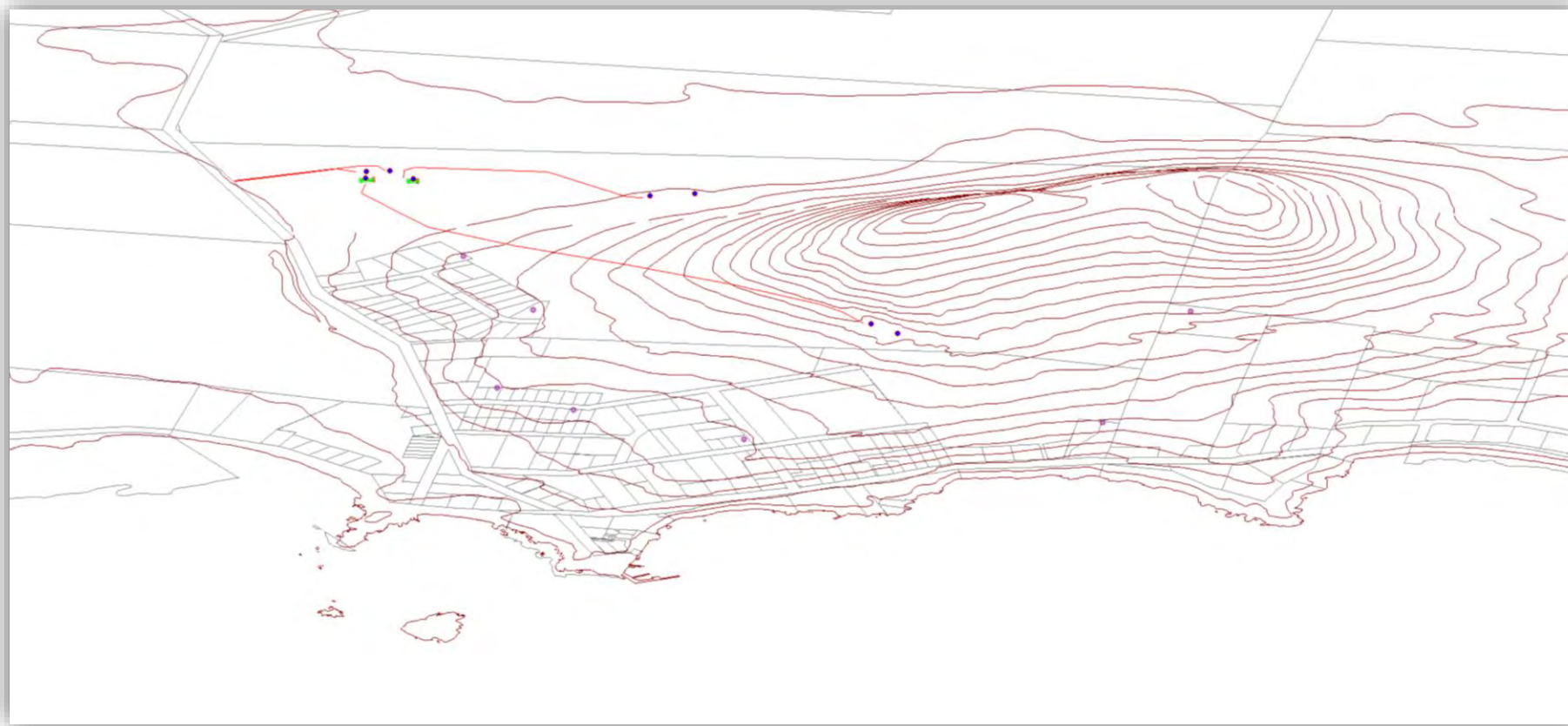


Figure 4-3: Model wire-frame view from the south.



5 Modelling results and discussion

Table 5-1 presents predicted sound pressure levels at receiver locations for the 4 modelling scenarios. Predicted levels for neutral and worst-case weather conditions are provided.

Predicted received sound pressure levels (dBA)								
Receiver	Sand Pit extraction		Sand Pit MHP		Gravel Pit extraction		Gravel Pit MHP	
	neu	wcw	neu	wcw	neu	wcw	neu	wcw
R1	33	37	33	37	37	38	37	41
R2	28	33	26	31	31	36	30	35
R3	18	23	20	26	28	33	23	29
R4	11	16	19	24	30	35	22	28
R5	5	10	16	22	32	37	20	26
R6	-	5	2	7	32	37	6	12
R7	2	7	2	7	23	28	6	11

Table 5-1: Predicted received sound pressure levels.

From the above:

- The noise levels predicted are below the criterion level of 45 dBA. This demonstrates that unreasonable noise impact from sand pit and quarry operations is unlikely to occur.