PLANNING
SUBMISSION

REBECCA GREEN & ASSOCIATES
Planning Submission

Increase Quarry Operations to Level 2 Activity

Merry Creek Quarry

Break O’Day Council
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1. Executive Summary

1.1 Proposal Overview

This submission is prepared in support of a proposal for the intensification of the Merry Creek Quarry from a Level 1 Activity to a Level 2 Activity.

The relevant land owner/manager of the subject land is Break O’Day Council. Break O’Day Council operates Merry Creek Quarry, located on Merry Creek Road on Billy Taylor Ridge, northwest of Mathinna under Mining Lease 16M/2016. This application is made with the consent of the owners/managers.

The proposal has been prepared in accordance with the provisions of the Break O’Day Interim Planning Scheme 2013 and the objectives of the Land Use Planning and Approvals Act 1993.

The proposal is summarised as:

- Increase quarry operations from Level 1 to Level 2 Activity.

1.2 Proposal Compliance Assessment

<table>
<thead>
<tr>
<th>Element</th>
<th>Compliance requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td></td>
</tr>
<tr>
<td>Extractive Industries</td>
<td>• Discretionary (Level 2 Activity)</td>
</tr>
<tr>
<td>Development</td>
<td></td>
</tr>
<tr>
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<td>• P1.1, P2.1, P3, P4 &amp; P5</td>
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<td>• P3</td>
</tr>
<tr>
<td>E8.6.1 Habitat and vegetation management</td>
<td>• P2</td>
</tr>
</tbody>
</table>

2. Subject Land and Locality

2.1 Subject Land Description

Break O’Day Council operates Merry Creek Quarry, located on Merry Creek Road on Billy Taylor Ridge, northwest of Mathinna under Mining Lease 16M/2016.

The Mining Lease is located on State Forest (Permanent Timber Production zone land) under the authority of Forestry Tasmania (Property ID 3385970, CT 142604/1) that permits the Council to:

- Carry out mining operations in the lease area, for minerals of Category 3 – Construction Minerals,
- Only gain access to the lease area, to enter on, and pass over Crown land adjoining the lease area.

The existing quarry operates as a Level 1 Activity.
2.2 Locality Description

Figure 1: Locality Map

The subject site is located to the north-west of Mathinna.

3. Proposal

3.1 Development Proposal

To meet revised operational requirements for the purpose of supplying road gravel for re-sheeting Council’s unsealed road network in the Mathinna region for the next 15 to 20 years, Council requires the quarry to operate as a Level 2 Activity site as specified in Schedule 2 of the Environmental Management and Pollution Control Act 1994 (EMPCA) enabling the production of greater than 5,000m³ of product per annum or rock crushing premises processing over 1,000m³ per annum.

The intensified quarry operation includes two activities that are defined within Schedule 2 of the EMPCA:

- **Section 5. Extractive Industries, (a) Quarries:** the extraction of any rock or gravel and producing 5,000 cubic metres or more of rock or gravel per year.
  
  Council’s requirement is for the extraction of a maximum volume of 10,000 cubic metres per annum.

- **Section 6. Materials Handling, (a) Crushing, Grinding or Milling:** processing (by crushing, grinding, milling or separating into different sizes by sieving, air elutriation or in any other manner) of – (ii) rock, ores or minerals at a rate in excess of 1,000 cubic metres per year.
Council’s requirement is for the processing of a maximum volume of 10,000 cubic metres per annum.

Quarrying activities will continue to be the following:

- Surface site preparation by soils removal and stockpiling;
- Rock drilling and blasting by a licensed contractor;
- Rock removal by excavator;
- Rock crushing and screening using a mobile crushing plant;
- Stockpiling of processed material within the quarry area;
- Loading of stockpiled material onto trucks with a wheel loader;
- Transport of material by Class 9 trucks (truck and truck trailer combinations) ranging from 12 to 38 metric ton capacity.

Operating hours will continue to be in accordance with the requirements of the Quarry Code of Practice, 07:00 and 19:00 (7:00am to 7:00pm), Monday to Friday, and Saturday 08:00 to 17:00 (8:00am to 5:00pm).

Quarry operations will continue to involve periodic drilling and blasting to supply suitable rock for mechanical crushing and screening. Blasting will only be conducted between the hours of 10:00am to 5:00pm Monday to Friday.

4. Planning Assessment

4.1 Break O’Day Interim Planning Scheme 2013

The subject site is zoned Rural Resource within the Break O’Day Interim Planning Scheme 2013.
26 Rural Resource Zone

26.1 Zone Purpose

26.1.1.1 To provide for the sustainable use or development of resources for agriculture, aquaculture, forestry, mining and other primary industries, including opportunities for resource processing.

26.1.1.2 To provide for other use or development that does not constrain or conflict with resource development uses.

26.1.1.3 To provide for economic development that is compatible with primary industry, environmental and landscape values.

26.1.1.4 To provide for tourism-related use and development where the sustainable development of rural resources will not be compromised.

Proposal Response

The proposal meets the zone purpose statements. The proposal is to formalise an existing pit for the extraction and processing of rock and gravel which is consistent with this zone purpose. The development will not prevent or constrain other land uses on the same and adjacent properties. The property that supports the quarry is used for agricultural activities. The quarry will not substantially detract from the overall quantity and quality of agricultural land in the region that is otherwise available for primary production. The quarry pit will not be seen from Mathinna Plains Road and environmental matters (e.g. Water management) will be addressed through conditions imposed by the EPA (a level 2 activity).

26.2 Use Table

The proposed use best fits the use class of Extractive Industries (Level 2 Activity) of which is a Discretionary use within the Rural Resource Zone.

26.3 Use Standards

26.3.1 Discretionary Uses if not a single dwelling

Objective

a) To provide for an appropriate mix of uses that support the Local Area Objectives and the location of discretionary uses in the rural resources zone does not unnecessarily compromise the consolidation of commercial and industrial uses to identified nodes of settlement or purpose built precincts.

b) To protect the long term productive capacity of prime agricultural land by minimising conversion of the land to non-agricultural uses or uses not dependent on the soil as a growth medium, unless an overrising benefit to the region can be demonstrated.
c) To minimise the conversion of non-prime land to a non-primary industry use except where that land cannot be practically utilised for primary industry purposes.

d) Uses are located such that they do not unreasonably confine or restrain the operation of primary industry uses.

e) Uses are suitable within the context of the locality and do not create an unreasonable adverse impact on existing sensitive uses or local infrastructure.

f) The visual impacts of use are appropriately managed to integrate with the surrounding rural landscape.

<table>
<thead>
<tr>
<th>Acceptable Solution</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 If for permitted or no permit required uses.</td>
<td>P1.1 It must be demonstrated that the use is consistent with local area objectives for the provision of non-primary industry uses in the zone, if applicable; and P1.2 Business and professional services and general retail and hire must not exceed a combined gross floor area of 250m² over the site.</td>
<td>The development will continue to add to the overall activity of primary industries by providing a resource for road construction and repair (for transport purposes). The development has not and will not detract from tourism activities in the region. The development will provide social benefits to the region through economic activity (e.g. Staff purchasing materials, fuel, and food locally). The proposal is considered compliant with P1.1.</td>
</tr>
</tbody>
</table>

| A2 If for permitted or no permit required uses. | P2.1 Utilities, extractive industries and controlled environment agriculture located on prime agricultural land must demonstrate that the: i) Amount of land alienated/converted is minimised; and ii) Location is reasonably required for operational efficiency; and P2.2 Uses other than utilities, extractive industries or controlled environment agriculture located on prime agricultural, must demonstrate that the conversion of prime agricultural land to that use will result in a significant benefit to the region having regard to the economic, social and environmental costs and benefits. | The development is not located on prime agricultural land. The proposal is considered compliant with P2.1. |
| A3 If for permitted or no permit required uses. | P3 The conversion of non-prime agricultural to non-agricultural use must demonstrate that: |
| | a) The amount of land converted is minimised having regard to: |
| |   i) Existing use and development on the land; and |
| |   ii) Surrounding use and development; and |
| |   iii) Topographical constraints; or |
| | b) The site is practically incapable of supporting an agricultural use or being included with other land for agricultural or other primary industry use, due to factors such as: |
| |   i) Limitations created by any existing use and/or development surrounding the site; and |
| |   ii) Topographical features; and |
| |   iii) Poor capability of the land for primary industry; or |
| | c) The location of the use on the site is reasonably required for operation efficiency. |
| | The development will only utilise a maximum of 2 hectares as the active disturbed area over the life of quarry (0.8ha of which is already consumed). Topographically the area to be quarried is rocky and its use for agricultural potential is limited to rough grazing and addition of fertiliser and some irrigation water – it is not amenable to cropping or intensive agriculture where the soil is the growth medium. The proposal is considered compliant with P3a). |

| A4 If for permitted or no permit required uses. | P4 It must be demonstrated that: |
| | a) Emissions are not likely to cause an environmental nuisance; and |
| | b) Primary industry uses will not be unreasonably confined or restrained from conducting normal operations; and |
| | c) The capacity of the local road network can accommodate the traffic generated by the use. |
| | The development is not likely to cause environmental nuisance – it is a considerable distance to the nearest residence (>5kms). The development will not confine or restrain primary industry uses – there will be no conflict between the quarry use and adjoining agricultural land management practices. The local road network (principally Mathinna Plains Road) can absorb the traffic generated by the development. |
The proposal is considered compliant with P4.

<table>
<thead>
<tr>
<th>A5 The use must:</th>
<th>P5 It must be demonstrated that the visual appearance of the use is consistent with the local area having regard to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Be permitted or no permit required; or</td>
<td>a) The impacts on skylines and ridgelines; and</td>
</tr>
<tr>
<td>b) Be located in an existing building.</td>
<td>b) Visibility from public roads; and</td>
</tr>
<tr>
<td></td>
<td>c) The visual impacts of storage of materials or equipment; and</td>
</tr>
<tr>
<td></td>
<td>d) The visual impact of vegetation clearance or retention; and</td>
</tr>
<tr>
<td></td>
<td>e) The desired future character statements.</td>
</tr>
</tbody>
</table>

The development is not on a ridgeline or skyline. The development will not be directly visible from a public road.

To enable continued development of the quarry work area within the lease boundary, vegetation covering an area of 0.6 hectares to the northwest of the current working face will require removal enabling access to the rock resource. Removing the vegetation allows access to 40,000 cubic metres of rock resource.

The site will be rehabilitated at the end of its operational life. The configuration of the site and mode of operation does not allow for progressive rehabilitation of worked areas.

The proposal is considered compliant with P5.

26.3.2-26.3.3 – Not applicable.

26.4 Development Standards – not applicable.

26.4.2 Subdivision – Not applicable.

26.4.3 Tourist Operations – Not applicable.
4.2 Other Planning Considerations

**E1.0 Bushfire Prone Areas Code** – Not applicable, the proposal is exempt from the Code.

**E2.0 Potentially Contaminated Land Code** – Not applicable, the subject site is not known to be potentially contaminated land.

**E3.0 Landslip Code** – Not applicable, the subject site is not known to be potentially subject to a landslip hazard.

**E4.0 Road and Railway Code**

**E4.6.1 Use of Road or Rail Infrastructure**

### Objective

To ensure that the safety and efficiency of road and rail infrastructure is not reduced by the creation of new accesses and junctions or increased use of existing accesses and junctions.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Sensitive use on or within 50m of a category 1 or 2 road, in an area subject to a speed limit of more than 60km/h, a railway or future road or railway, must not result in an increase to the annual average daily traffic (AADT) movements to or from the site by more than 10%.</td>
<td>P1 Sensitive use on or within 50m of a category 1 or 2 road, in an area subject to a speed limit of more than 60km/h, a railway or future road or railway must demonstrate that the safe and efficient operation of the infrastructure will not be detrimentally affected.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>A2 For roads with a speed limit of 60km/h or less the use must not generate more than a total of 40 vehicle entry and exit movements per day.</td>
<td>P2 For roads with a speed limit of 60km/h or less, the level of use, number, location, layout and design of accesses and junctions must maintain an acceptable level of safety for all road users, including pedestrians and cyclists.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>A3 For roads with a speed limit of more than 60km/h the use must not increase the annual average daily traffic (AADT) movements at the existing access or junction by more than 10%.</td>
<td>P3 For limited access roads and roads with a speed limit of more than 60km/h:</td>
<td></td>
</tr>
<tr>
<td>a) Access to a category 1 road or limited access road must only be via an existing access or junction or the use or development must provide a significant social and economic</td>
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</tr>
<tr>
<td>The proposal relies upon performance criteria due to average daily traffic movements. A Traffic Impact Assessment accompanies this application (Appendix C to this submission). The access is not a category 1, 2 or 3 road. No new accesses are proposed. The existing road junctions provide an</td>
<td></td>
<td></td>
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</tbody>
</table>
benefit to the State or region; and

b) Any increase in use of an existing access or junction or development of a new access or junction to a limited access road or a category 1, 2 or 3 road must be for a use that is dependent on the site for its unique resources, characteristics or locational attributes and an alternate site or access to a category 4 or 5 road is not practicable; and

c) An access or junction which is increased in use or is a new access or junction must be designed and located to maintain an adequate level of safety and efficiency for all road users.

Adequate level of safety and efficiency for all road users, as outlined in the Traffic Impact Assessment.

The proposal is considered compliant with P3.

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### E4.7.1 Development on and Adjacent to Existing and Future Arterial Roads and Railways.

**Objective**

To ensure that development on or adjacent to class 1 or 2 roads (outside 60km/h), railways and future roads and railways is managed to:

- **a)** Ensure the safe and efficient operation of roads and railways; and
- **b)** Allow for future road and rail widening, realignment and upgrading; and
- **c)** Avoid undesirable interaction between roads and railways and other use or development.

<table>
<thead>
<tr>
<th>Acceptable Solution</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>P1</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

The following must be at least 50m from a railway, a future road or railway, and a category 1 or 2 road in an area subject to a speed limit of more than 60km/h:

- **a)** New road works, buildings, additions and extensions, earthworks and landscaping works; and

Development including buildings, road works, earthworks, landscaping works and level crossings on or within 50m of a category 1 or 2 road, in an area subject to a speed limit of more than 60km/h, a railway or future road or railway must be sited, designed and landscaped to:
b) Building envelopes on new lots; and
c) Outdoor sitting, entertainment and children’s play areas.

a) Maintain or improve the safety and efficiency of the road or railway or future road or railway, including line of sight from trains; and

b) Mitigate significant transport-related environmental impacts, including noise, air pollution and vibrations in accordance with a report from a suitably qualified person; and

c) Ensure that additions or extensions of buildings will not reduce the existing setback to the road, railway or future road or railway; and

d) Ensure that temporary buildings and works are removed at the applicant’s expense within three years or as otherwise agreed by the road or rail authority.

E4.7.2 Management of Road Accesses and Junctions

**Objective**

To ensure that the safety and efficiency of roads is not reduced by the creation of new accesses and junctions or increased use of existing accesses and junctions.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 For roads with a speed limit of 60km/h or less the development must include only one access providing both entry and exit, or two accesses providing separate entry and exit.</td>
<td>P1 For roads with a speed limit of 60km/h or less, the number, location, layout and design of accesses and junctions must maintain an acceptable level of safety for all road users, including pedestrians and cyclists.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>
| A2 For roads with a speed limit of more than 60km/h the development must not include a new access or junction. | P2 For limited access roads and roads with a speed limit of more than 60km/h:  
  a) Access to a category 1 road or limited access road must only be via an existing access or junction | Not applicable. |
or the development must provide a significant social and economic benefit to the State or region; and

b) Any increase in use of an existing access or junction or development of a new access or junction to a limited access road or a category 1, 2 or 3 road must be dependent on the site for its unique resources, characteristics or locational attributes and an alternate site or access to a category 4 or 5 road is not practicable; and

c) An access or junction which is increased in use or is a new access or junction must be designed and located to maintain an adequate level of safety and efficiency for all road users.

E4.7.3 Management of Rail Level Crossings – Not applicable.

E4.7.4 Sight Distance at Accesses, Junctions and Level Crossings

Objective
To ensure that use and development involving or adjacent to accesses, junctions and level crossings allows sufficient sight distance between vehicles and between vehicles and trains to enable safe movement of traffic.

Acceptable Solutions | Performance Criteria | Proposal Response
--- | --- | ---
A1 Sight distances at  
 a) An access or junction must comply with the Safe Intersection Sight Distance shown in Table E4.7.4; and  
 b) Rail level crossings must comply with AS1742.7 Manual of uniform traffic control devices – Railway crossings, Standards Association of Australia; or  
 c) If the access if a temporary access, the written consent of the relevant authority have been obtained. | P1 The design, layout and location of an access, junction or rail level crossing must provide adequate sight distances to ensure the safe movement of vehicles. | The proposal complies with the acceptable solution. The approach sight distances are assessed as complying with Table E4.7.4 provisions due to the approach road alignment both ways from the vehicle access.
E5.0 Flood Prone Areas Code – Not applicable.

E6.0 Car Parking and Sustainable Transport Code

Table E6.1: Parking Space Requirements

<table>
<thead>
<tr>
<th>Use</th>
<th>Parking Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle</td>
</tr>
<tr>
<td>Extractive Industry</td>
<td>1 space per 2 employees</td>
</tr>
</tbody>
</table>

Proposal Response

No additional parking is provided as part of the proposal.

E6.6 Use Standards

E6.6.1 Car Parking Numbers

Objective

To ensure that an appropriate level of car parking is provided to service use.

Acceptable Solutions    Performance Criteria    Proposal Response

A1 The number of car parking spaces must not be less than the requirements of:

a) Table E6.1; or
b) A parking precinct plan contained in Table E6.6: Precinct Parking Plans (except for dwellings in the General Residential Zone).

P1 The number of car parking spaces provided must have regard to:

a) The provisions of any relevant location specific car parking plan; and
b) The availability of public car parking spaces within reasonable walking distance; and
c) Any reduction in demand due to sharing of spaces by multiple uses either because of variations in peak demand or by efficiencies gained by consolidation; and
d) The availability and frequency of public transport within reasonable walking distance of the site; and

The proposal complies with the acceptable solution. Several car parking spaces are provided within the site currently.
e) Site constraints such as existing buildings, slope, drainage, vegetation and landscaping; and

f) The availability, accessibility and safety of on-road parking, having regard to the nature of the roads, traffic management and other uses in the vicinity; and

g) An empirical assessment of the car parking demand; and

h) The effect on streetscape, amenity and vehicle, pedestrian and cycle safety and convenience; and

i) The recommendations of a traffic impact assessment prepared for the proposal; and

j) Any heritage values of the site; and

k) For residential buildings and multiple dwellings, whether parking is adequate to meet the needs of the residents having regard to:

i) The size of the dwelling and the number of bedrooms; and

ii) The pattern of parking in the locality; and

iii) Any existing structure on the land.

6.7 Development Standards

E6.7.1 Construction of Car Parking Spaces and Access Strips
### Objective

**To ensure that car parking spaces and access strips are constructed to an appropriate standard.**

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 All car parking, access strips manoeuvring and circulation spaces must be: a) Formed to an adequate level and drained; and b) Except for a single dwelling, provided with an impervious all weather seal; and c) Except for a single dwelling, line marked or provided with other clear physical means to delineate car spaces.</td>
<td>P1 All car parking, access strips manoeuvring and circulation spaces must be readily identifiable and constructed to ensure that they are useable in all weather conditions.</td>
<td>No changes proposed to existing car parking arrangements.</td>
</tr>
</tbody>
</table>

### E6.7.2 Design and Layout of Car Parking

**Objective**

To ensure that car parking and manoeuvring space are designed and laid out to an appropriate standard.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1.1 Where providing for 4 or more spaces, parking areas (other than for parking located in garages and carports for a dwelling in the General Residential Zone) must be located behind the building line; and A1.2 Within the general residential zone, provision for turning must not be located within the front setback for residential buildings or multiple dwellings.</td>
<td>P1 The location of car parking and manoeuvring spaces must not be detrimental to the streetscape or the amenity of the surrounding areas, having regard to: a) The layout of the site and the location of existing buildings; and b) Views into the site from the road and adjoining public spaces; and c) The ability to access the site and the rear of buildings; and</td>
<td>No changes proposed to existing car parking arrangements.</td>
</tr>
</tbody>
</table>
A2.1 Car parking and manoeuvring space must:

- a) Have a gradient of 10% or less; and
- b) Where providing for more than 4 cars, provide for vehicles to enter and exit the site in a forward direction; and
- c) Have a width of vehicular access no less than prescribed in Table E6.2; and
- d) Have a combined width of access and manoeuvring space adjacent to parking spaces not less than as prescribed in Table E6.3 where any of the following apply:
  - i) There are three or more car parking spaces; and
  - ii) Where parking is more than 30m driving distance from the road; or
  - iii) Where the sole vehicle access is to a category 1, 2, 3 or 4 road; and

A2.2 The layout of car spaces and access ways must be designed in accordance with Australian Standards AS 2890.1-2004 Parking Facilities, Part 1: Off Road Car Parking.

P2 Car parking and manoeuvring space must:

- a) Be convenient, safe and efficient to use having regard to matters such as slope, dimensions, layout and the expected number and type of vehicles; and
- b) Provide adequate space to turn within the site unless reversing from the site would not adversely affect the safety and convenience of users and passing traffic.

No changes proposed to existing car parking arrangements.

E6.7.3 Parking for Persons with a Disability

**Objective**
To ensure adequate parking for persons with a disability.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 All spaces designated for use by persons with a disability must be located closest to the main entry point to the building.</td>
<td>P1 No performance criteria.</td>
<td>No changes proposed to existing car parking arrangements.</td>
</tr>
<tr>
<td>A2 One of every 20 parking spaces or part thereof must be constructed and designated for use by persons with disabilities in accordance with Australian Standards AS/NZ 2890.6 2009.</td>
<td>P2 No performance criteria.</td>
<td>No changes proposed to existing car parking arrangements.</td>
</tr>
</tbody>
</table>

E6.7.4 Loading and Unloading of Vehicles, Drop-off and Pickup

Objective

To ensure adequate access for people and goods delivery and collection and to prevent loss of amenity and adverse impacts on traffic flows.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 For retail, commercial, industrial, service industry or warehouse or storage uses; a) At least one loading bay must be provided in accordance with Table E6.4; and b) Loading and bus bays and access strips must be designed in accordance with Australian Standard AS/NZ 2890.3 2002 for the type of vehicles that will use the site.</td>
<td>P1 For retail, commercial, industrial, service industry or warehouse or storage uses, adequate space must be provided for loading and unloading the type of vehicles associated with delivering and collecting people and goods where these are expected on a regular basis.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

E6.8 Provisions for Sustainable Transport

E6.8.1- E6.8.4 – Not used in this Planning Scheme.

E6.8.5 Pedestrian Walkways

Objective
To ensure pedestrian safety is considered in development.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Pedestrian access must be provided for in accordance with Table E6.5.</td>
<td>P1 Safe pedestrian access must be provided within car park and between the entrances to buildings and the road.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

E7.0 Scenic Management Code – Not applicable.

E8.0 Biodiversity Code

E8.6 Development Standards

E8.6.1 Habitat and Vegetation Management

Objective

To ensure that:

a) Vegetation identified as having conservation value as habitat has priority for protection and is appropriately managed to protect those values; and

b) The representation and connectivity of vegetation communities is given appropriate protection when considering the impacts of use and development.

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>A1 Clearance or disturbance of priority habitat is in accordance with a certified Forest Practices Plan or:</td>
<td>P1 Clearance or disturbance of native vegetation within priority habitat may be allowed where a flora and fauna report prepared by a suitably qualified person demonstrates that development does not unduly compromise the representation of species or vegetation communities in the bioregion having regard to the:</td>
<td>Not applicable, no vegetation removal will occur within an area identified as priority habitat.</td>
</tr>
<tr>
<td>A2 Use or development does not clear or disturb native vegetation within the area of the site identified as priority habitat.</td>
<td>a) Quality and extent of the vegetation or habitat affected by the proposal, including the maintenance of species diversity and its value as a wildlife corridor; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Means of removal; and</td>
<td></td>
</tr>
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</table>

Not applicable, no vegetation removal will occur within an area identified as priority habitat.
c) Value of riparian vegetation in protecting habitat values; and

d) Impacts of siting of development (including effluent disposal) and vegetation clearance or excavations, in proximity to habitat or vegetation; and

e) Need for and adequacy of proposed vegetation or habitat management; and

f) Conservation outcomes and long-term security of any offset in accordance with the General Offset Principles for the RMPS, Department of Primary Industries, Parks, Water and Environment.

| A2 Clearance or disturbance of native vegetation is in accordance with a certified Forest Practices Plan. |
| P2 Clearance or disturbance of native vegetation must be consistent with the purpose of this Code and not unduly compromise the representation of species or vegetation communities in the bioregion having regard to the: |
| An ecological assessment has been completed by Environmental Consulting Options Tasmania (attached at Appendix D to this submission). The proposal complies with the performance criteria. The report has concluded with a number of key findings. No plant species or fauna species listed as threatened on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) and/or the Tasmanian Threatened Species Protection Act 1995 (TSPA) were detected from the mining lease area. To enable continued development of the quarry work area, vegetation |

  a) Quality and extent of the vegetation or habitat affected by the proposal, including the maintenance of species diversity and its value as a wildlife corridor; and

  b) Means of removal; and

  c) Value of riparian vegetation in protecting habitat values; and

  d) Impacts of siting of development (including effluent disposal) and vegetation clearance or excavations, in proximity to habitat or vegetation; and
e) Need for and adequacy of proposed vegetation or habitat management; and
f) Conservation outcomes and long-term security of any offset in accordance with the General Offset Principles for the RMPS, Department of Primary Industries, Parks, Water and Environment.

covering an area of 0.6 hectares will require removal.

The topsoil depth ranges between 0 and 200mm. Based on a depth of 150mm, approximately 900 cubic metres of topsoil requires removal to access the rock resource.

Hard rock extraction areas will be prepared by removing topsoil. Removing the vegetation allows access to 40,000 cubic meters of rock resource (extraction stages 1,4,5 & 6). As the quarry is developed, topsoil shall be stockpiled for future rehabilitation away from the operating area of the quarry and placed along the eastern boundary of the site in line with current practice.

Stockpiled topsoil shall not exceed 1.0m in depth, to preserve soil quality. Topsoil will not be mixed with extracted quarry material.

A 50m buffer of regeneration has been retained to maintain a vegetation screen on future developments.

Council will be seeking formal advice from DPIPWE’s Policy & Conservation Advice Branch in relation to the management of known wedge-tailed eagle nests and potential habitat of wedge-tailed eagles.
Council has prepared a Weed Management Plan for the quarry site.

The quarry site will be rehabilitated at the end of its operational life (15 to 20 years). The configuration of the site and mode of quarrying operations does not allow for the progressive rehabilitation of worked areas.

Council will prepare a Decommissioning and Rehabilitation Plan for submission to the EPA for consideration within 30 days of a decision made by the proponent to permanently cease activity at the site.

With appropriate conditions, the proposal will comply with the recommendations of the report and the performance criteria.

**E9.0 Water Quality Code** – Not applicable. The development is not located within 200 metres of a watercourse or wetland.

**E10.0 Recreation and Open Space Code** – Not applicable, the proposal is not for a subdivision.

**E11.0 Environmental Impacts and Attenuation Code**

**E11.6 Use Standards**

**E11.6.1 Attenuation Distances**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
<th>Proposal Response</th>
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<tbody>
<tr>
<td>To ensure that potentially incompatible use or development is separated by a distance sufficient to ameliorate any adverse effects.</td>
<td>A1 No acceptable solution.</td>
<td>P1 Sensitive use or subdivision for sensitive use within an attenuation area to</td>
<td>A1 Not applicable.</td>
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</table>
an existing activity listed in Tables E11.1 and E11.2 must demonstrate by means of a site specific study that there will not be an environmental nuisance or environmental harm, having regard to the:

a) Degree of encroachment; and

b) Nature of the emitting operation being protected by the attenuation area; and

c) Degree of hazard or pollution that may emanate from the emitting operation; and

d) The measures within the proposal to mitigate impacts of the emitting activity to the sensitive use.

A2 Uses listed in Tables E11.1 and E11.2 must be setback from any existing sensitive use, or a boundary to the General Residential, Low Density Residential, Rural Living, Environmental Living, Village, Local Business, General Business, Community Purpose, Recreation, Open Space, Particular Purpose Zone – Ansons Bay Small Lot Residential zones, the minimum attenuation distance listed in Tables E11.1 and E11.2 for that activity.

A2 The proposal is at least 5km to the closest sensitive use, and is surrounded by the Rural Resource zone.

A2 Use with the potential to create environmental harm and environmental nuisance must demonstrate by means of a site specific study that there will not be an environmental nuisance or environmental harm having regard to:

a) The degree of encroachment; and

b) The nature of the emitting operation being protected by the attenuation area; and

c) The degree of hazard or pollution that may emanate from the emitting operation; and

d) Use of the land irrigated by effluent must comply with
E12.0 Airports Impact Management Code – Not applicable.

E13.0 Local Historic Heritage Code – Not applicable.

E14.0 Coastal Code – Not applicable.

E15.0 Signs Code – Not applicable. Any signage to be erected as part of the development will either be identification or directional signage.

E16.0 On-Site Wastewater Management Code – Not applicable.

4.3 State Policies

4.3.1 State Coastal Policy 1996

The State Coastal Policy was created under the State Policies and Projects Act 1993. This Policy applies to the Coastal Zone, which is defined as the area within State waters and all areas within one kilometre of the coast.

Proposal Response

The subject site is located greater than one kilometre from the coast, meaning that the provisions of the State Coastal Policy 1996 do not apply.

4.3.2 State Policy on Water Quality Management 1997

This Policy applies to all surface waters, including coastal waters, and ground waters, other than:

i. Privately owned waters that are not accessible to the public and are not connected to, or flow directly into, waters that are accessible to the public; or

ii. Waters in any tank, pipe or cistern.

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

The objectives of this Policy are to:
1. Focus water quality management on the achievement of water quality objectives which will maintain or enhance water quality and further the objectives of Tasmania’s Resource Management and Planning System;

2. Ensure that diffuse source and point source pollution does not prejudice the achievement of water quality objectives and that pollutants discharged to waterways are reduced as far as is reasonable and practical by the use of best practice environmental management;

3. Ensure that efficient and effective water quality monitoring programs are carried out and that the responsibility for monitoring is shared by those who use and benefit from the resource, including polluters, who should bear an appropriate share of the costs arising from their activities, water resource managers and the community;

4. Facilitate and promote integrated catchment management through the achievement of objectives (1) to (3) above; and

5. Apply the precautionary principle to Part 4 of this Policy.

Proposal Response

Quarry drainage is managed by directing all storm water through four sediment traps connected in series by 300mm diameter culvert pipes and table drains at the southern end of the quarry. Drainage water exits the fourth sediment trap on the eastern side of Merry Creek Road and is dispersed through natural vegetation.

The proposal is consistent with the policy.

4.3.3 State Policy on Protection of Agricultural Land 2009

The subject mining lease is within a significantly disturbed area and therefore considered to have limited agricultural value.

4.4 Land Use Planning and Approvals Act 1993

The Land Use Planning and Approvals Act 1993 provides objectives for all development considered under this Act. The proposal has been considered against the objectives of this Act. The proposal has been prepared to be consistent with the provisions of the Break O’Day Interim Planning Scheme 2013. The proposal is therefore considered to be consistent with the objectives of the Act.

4.5 National Environment Protection Measures

A series of National Environment Protection Measures (NEPMs) have been established by the National Environment Protection Council. These measures are:
• Ambient air quality;
• National pollutant inventory;
• Movement of controlled waste;
• Use packaging materials;
• Assessment of site contamination; and
• Diesel vehicle emissions.

Proposition Response

It is considered that the NEPMs are not relevant to the proposed development.

5. Conclusion

The proposal is for the intensification of the Merry Creek Quarry from a Level 1 Activity to a Level 2 Activity, located on Merry Creek Road on Billy Taylor Ridge, northwest of Mathinna under Mining Lease 16M/2016.

The proposal complies with the development standards prescribed by the Scheme, and can be approved under the Break O’Day Interim Planning Scheme 2013.

The proposal is consistent with the relevant State and local policies, Planning Scheme objectives and considerations and objectives of the Land Use Planning and Approvals Act 1993. It is therefore recommended that the proposal be considered for planning approval.

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<td>Rebecca Green</td>
<td>1</td>
<td>26 September 2017</td>
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Appendix A: Land Owners Consent

(under separate cover)
Appendix B: Environmental Effects Report

(under separate cover)
Appendix C: Traffic Impact Assessment
Break O’Day Council

3M/2016 Merry Creek Road
Billy Taylor Quarry
Traffic Impact Assessment

June 2017
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1. Introduction

1.1 Background
To meet the operational requirement of producing road resheeting gravel for use within approximately a 25km radius, Break O'Day Council intends to increase the production and crushing limit of the Billy Taylor Quarry at Mathinna Plains Road from 5,000 m$^3$ to 10,000 m$^3$ per annum (peak year estimate).

Midson Traffic were engaged by Council to prepare a traffic impact assessment for the proposed quarry expansion.

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

This TIA has been prepared in accordance with the Department of State Growth (DSG) publication, *A Framework for Undertaking Traffic Impact Assessments*, September 2007. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management, Part 12: Traffic Impacts of Developments*, 2009.

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

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

This TIA also addresses relevant clauses contained in E4, *Road and Railway Assets Code* of the Break O'Day Interim Planning Scheme, 2013.

1.3 Statement of Qualification and Experience
This TIA has been prepared by an experienced and qualified traffic engineer in accordance with the requirements of Council’s Planning Scheme and The Department of State Growth’s, *A Framework for Undertaking Traffic Impact Assessments*, September 2007, as well as Council’s requirements.
The TIA was prepared by Keith Midson. Keith’s experience and qualifications are briefly outlined as follows:

- 21 years professional experience in traffic engineering and transport planning.
- Master of Transport, Monash University, 2006
- Master of Traffic, Monash University, 2004
- Bachelor of Civil Engineering, University of Tasmania, 1995
- Engineers Australia: Fellow (FIEAust); Chartered Professional Engineer (CPEng); Engineering Executive (EngExec); National Engineers Register (NER)

Keith is a Director of the traffic engineering, transport planning and road safety company, Midson Traffic Pty Ltd. He is also a Teaching Fellow at Monash University, where he teaches and coordinates the subject ‘Road Safety Engineering’ as part of Monash’s postgraduate program in traffic and transport. Keith is also an Honorary Research Associate with the University of Tasmania, where he lectures the subject ‘Transportation Engineering’ in the undergraduate civil engineering program as well as supervising several honours projects each year.

1.4 Project Scope

The project scope of this TIA is outlined as follows:

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

1.5 Subject Site

The subject site (the Quarry) is located on Billy Taylor Road, which connects to Mathinna Plains Road, northeast of Mathinna. The subject site and surrounding road network is shown in Figure 1.
1.6 Reference Resources

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

- Break O’Day Interim Planning Scheme, 2013 (Planning Scheme)
2. **Existing Conditions**

2.1 **Existing Quarry Operations**
As a current Level 1 activity site, Council is permitted to produce up to 5,000 cubic metres of uncrushed gravel and up to 1,000 cubic metres of crushed gravel per annum.

2.2 **Transport Network**
For the purpose of this report, the primary transport network consists of Billy Taylor Road, Merry Creek Road, Mathinna Plains Road, Eton Road, Upper Esk Road, and Mathinna Road.

Billy Taylor Road is a Forestry Road that provides access to the quarry from Mathinna Plains Road. Council's most recent traffic data for Mathinna Plains Road indicated that it carries approximately 60 vehicles per day (February 2015).

All roads in the region are unsealed with varying road widths and very low traffic volumes. The road network services a largely agricultural and forestry area within the region. The unsealed road speed limit of 80-km/h applies to all roads in the region. Various site photographs of the network are provided in Figure 2, Figure 3, Figure 4 and Figure 5.

**Figure 2  Billy Taylor Road from Mathinna Plains Road**
Figure 3  Mathina Plains Road at Billy Taylor Road

Figure 4  Mathina Plains Road at Eton Road
2.3 Road Safety Performance

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

Crash data was obtained from the Department of State Growth for a 5+ year period between 1st January 2012 and 31 May 2017 for all Roads in the Mathinna Plains area.

The findings of the crash data is summarised as follows:

- A total of 16 crashes were reported during this timeframe.
- Of these crashes, 8 involved injury (4 minor and 4 serious injury), 3 involved first aid at the scene, and 5 involved property damage only.
- The majority of crashes, 69%, occurred during normal daylight hours (7:00am to 7:00pm). One crash occurred at midnight.
- There were no clear crash trends. 15 crashes involved a single vehicle and 1 involved a collision between two vehicles: 4 crashes involved ‘other-curve’, 4 involved a vehicle striking an animal, 3 involved ‘other-straight’, 3 involved ‘other-maneuvering’, 1 involved ‘out of control on carriageway’, and 1 involved a head-on collision. The crash types are summarised in Figure 6.
- Crashes by day of week: A disproportionate number of crashes were reported on weekends, accounting for 56% of all crashes. Fridays had a higher rate of crashes compared to other weekdays. This is shown in Figure 7.
- Geographically the crashes were reasonably disbursed, with no locations with unusually high number of crashes. The crash locations are shown in Figure 8.
- Vehicle types: No crashes involved heavy vehicles, 7 crashes involved motorcyclists, 9 crashes involved light vehicles (cars).

The crash history does not indicate that there are any pre-existing road safety deficiencies in the road network that may be exacerbated by the traffic generated by the quarry’s expansion. The crash rate is considered ‘typical’ of a rural unsealed network. The relatively high rate of motorcyclist crashes and weekend crashes may indicate that the area is used for recreational purposes.

**Figure 6  Crash Types**

![Crash Types Chart]

- 180 - Other curve
- 167 - Animal (not ridden)
- 179 - Other straight
- 149 - Other maneuvering
- 184 - Out of control on carriageway
- 120 - Wrong side/other head on (not overtaking)
Figure 7  Crashes by Day of Week

<table>
<thead>
<tr>
<th>Day</th>
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<tr>
<td>MON</td>
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</tr>
<tr>
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<td>1</td>
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<tr>
<td>WED</td>
<td>1</td>
</tr>
<tr>
<td>THU</td>
<td>1</td>
</tr>
<tr>
<td>FRI</td>
<td>3</td>
</tr>
<tr>
<td>SAT</td>
<td>4</td>
</tr>
<tr>
<td>SUN</td>
<td>5</td>
</tr>
</tbody>
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Figure 8  Crash Locations
3. Proposed Development

3.1 Development Proposal

The proposed development involves the expansion of the existing Billy Taylor Gravel quarry to an EPA Level 2 activity. To meet the operational requirement of producing road re-sheeting gravel for use within a 25 kilometre radius, Council is applying to increase the production and crushing limit to 10,000 m$^3$ per annum (peak year estimate).

The gravel produced by the quarry will be used to resheet roads in the Upper Esk, Roses Tier, Evercreech, Tyne Valley, Matthinna and Matthinna Plains areas.

The forecast peak daily transport requirement would be no greater than 1,000 m$^3$ of crushed gravel leaving the site. This equates to approximately 50 trucks inward and 50 trucks outward (total of 100 two-way truck movements per day). Note that this would be a maximum daily quantity and only during periods that road re-sheeting is occurring. At other times of the year the truck volumes would be much lower.

From the quarry, material is transported a short distance along Billy Taylor Road (Forestry Road) then onto Mathhina Plains Road (Council Road) and the subsequent connecting Council road network within the region serviced by the Quarry.
4. Traffic Impacts

4.1 Traffic Generation

It is proposed to increase the level of production of the Quarry from its current output of to 5,000 m³ of uncrushed gravel and up to 1,000 m³ of crushed gravel per year to 10,000 m³ maximum per year. This is an increase of 4,000 m³ or 67% per annum.

Transport will be undertaken using predominantly 10-yard trucks to cart the quarried material, with an occasional dog trailer. The use of dog trailers will be limited due to the tight geometry within some parts of the road network.

The forecast peak daily transport requirement would be no greater than 1,000 m³ of crushed gravel leaving the site. This equates to approximately 50 trucks inward and 50 trucks outward (total of 100 two-way truck movements per day). Note that this would be a maximum daily quantity and only during periods that road re-sheeting is occurring. At other times of the year the truck volumes would be much lower.

4.2 Trip Distribution

The material is intended for use in the Mathinna / Upper Esk area and back to Evercreech Road (off Mathinna Road).

4.3 Planning Scheme Requirements

Acceptable Solution A3 of Clause E4.6.1 of the Planning Scheme states “For roads with a speed limit of more than 60km/h the use must not increase the annual average daily traffic (AADT) movements at the existing access or junction by more than 10%”. In this case the quarry expansion will result in up to 100 truck movements per day during peak periods. The Acceptable Solution is therefore not met.

The Performance Criteria P3 states:

For limited access roads and roads with a speed limit of more than 60km/h:

a) access to a category 1 road or limited access road must only be via an existing access or junction or the use or development must provide a significant social and economic benefit to the State or region; and

b) any increase in use of an existing access or junction or development of a new access or junction to a limited access road or a category 1, 2 or 3 road must be for a use that is dependent on the site for its unique resources, characteristics or locational attributes and an alternate site or access to a category 4 or 5 road is not practicable; and

c) an access or junction which is increased in use or is a new access or junction must be designed and located to maintain an adequate level of safety and efficiency for all road users.
The following is relevant with respect to the proposed development:

a. N/A. The access is not a Category 1 road.

b. N/A. The access is not a Category 1, 2 or 3 road. It is noted that the quarry does provide a unique resource that is important for the region.

c. No new accesses are proposed. The existing road junctions provide an adequate level of safety and efficiency for all road users, as outlined in the following sections of this TIA.

Based on the above assessment, the increased traffic generated by the increased production of the quarry meets the requirements of Performance Criteria P3 of Clause E4.6.1 of the Planning Scheme.

4.4 Sight Distance

Acceptable Solution A1 of Clause E4.7.4 of the Planning Scheme states that "Sight distances at an access or junction must comply with the Safe Intersection Sight Distance shown in Table E4.7.4".

For a vehicle speed of 80-km/h, the required Safe Intersection Sight Distance (SISD) is 175 metres (assuming the 85th percentile vehicle speed on Mathinna Plains Road equates to the speed limit of 80-km/h).

The available sight distance along Mathinna Plains Road from Billy Taylor Road is 220 metres to the west and 325 metres to the east (as shown in Figure 3). The sight distance therefore meets the SISD requirements of the Acceptable Solution A1 of Clause E4.7.4 of the Planning Scheme.

4.5 Traffic Efficiency

In terms of capacity, the road network impacts relate to the peak hour traffic generation of the quarry on the surrounding road network. The peak hour traffic generation will not alter significantly due to the constraints of daily production levels. The daily network impacts will therefore not alter to current daily peak production periods. Increased production on a yearly basis will simply result in more frequent daily peak periods.

From a network operational efficiency perspective, the surrounding road network has the capacity to absorb the traffic generated by the proposed quarry operations.

4.6 Road Safety Impacts

No significant detrimental road safety impacts are foreseen for the proposed quarry expansion based on the following:

- There is sufficient capacity in the surrounding network to safely absorb the annual increase in heavy vehicle traffic in the surrounding road network. The maximum daily output of the quarry is not proposed to significantly alter, therefore the peak hourly capacity of any of the junctions in the surrounding network will not be detrimentally impacted.
- There is sufficient sight distance available at the key road intersections in the surrounding transport network for the prevailing vehicle speeds in accordance with the Planning Scheme requirements.

- There is no crash history to suggest that there are any existing road safety deficiencies in the vicinity of the subject site.

- The proposed development is not a new development but an expansion of existing long-term activity and as such, heavy vehicle movements into and out of the site will not be seen as an unusual event by other motorists.
5. Conclusions

This TIA investigated the road and traffic impacts of the proposed expansion of operations at the Billy Taylor Gravel Pit quarry. Access to the site is via a number of Council and Forestry roads connecting the site in the Mathinna Plains region.

The key findings of the TIA are summarised as follows:

- 5,000 m$^3$ of uncrushed gravel and up to 1,000 m$^3$ of crushed gravel per year to 10,000 m$^3$ maximum per annum. The quarry services a local area within approximately 25 kilometre radius from the quarry. The majority of truck movements connect to Mathinna Plains Road and its subsequent side roads.

- When operating at maximum capacity, the quarry will generate up to 100 vehicles per day (50 inward and 50 outward movements). The proposed development will not significantly increase from the existing peak daily generation, but will enable the quarry to produce more on a yearly basis. For this reason, the various junctions within the surrounding road network will continue to operate in a safe and efficient manner. The peak hourly generation of the quarry is likely to be in the order of 10 trips per hour, which is well within the surrounding road network's ability to absorb without any perceivable loss of level of service.

- Adequate sight distance is provided at the site access, as well as other major road junctions in the surrounding transport network in accordance with the Planning Scheme requirements for the prevailing vehicle speeds.

Based on the findings of this report and subject to the recommendations above, the proposed development is supported on traffic grounds.
Midson Traffic Pty Ltd  ABN: 26 133 583 025
18 Earl Street
Sandy Bay  TAS  7005

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Document Status

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<td>Keith Midson</td>
<td>Zara Kacic-Midson</td>
<td>28 June 2017</td>
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Appendix D: Ecological Assessment
ECOLOGICAL ASSESSMENT OF MERRY CREEK ROAD QUARRY (CHANGE OF USE FROM FOREST PRACTICES PLAN TO MINING LEASE), BILLY TAYLOR RIDGE, TASMANIA

Environmental Consulting Options Tasmania (ECOtas) for Break O’Day Council

20 June 2017
CITATION

This report can be cited as: ECOtas (2017). Ecological Assessment of Merry Creek Quarry, (Change of Use from Forest Practices Plan to Mining Lease), Billy Taylor Ridge, Tasmania. Report by Environmental Consulting Options Tasmania (ECOtas) for Break O’Day Council, 20 June 2017.

AUTHORSHIP

Field assessment: Mark Wapstra
Report production: Mark Wapstra
Habitat and vegetation mapping: Mark Wapstra
Base data for mapping: TheList, Break O’Day Council
Digital and aerial photography: Mark Wapstra, GoogleEarth, TheList

ACKNOWLEDGEMENTS

David Jolly, Wayne Polden & Kristina Freshney (Break O’Day Council) provided background information.

COVER ILLUSTRATIONS

View north into existing quarry.

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

General

Break O’Day Council engaged Environmental Consulting Options Tasmania (ECOtas) to undertake an assessment of the ecological values associated with the existing Merry Creek Road Quarry, Billy Taylor Ridge, Tasmania, primarily to ensure that the requirements of the identified ecological values are appropriately considered during further project planning under local, State and Commonwealth government approval protocols.

The mining lease area was assessed by Mark Wapstra on 16 June 2017.

Summary of key findings

Threatened flora

- No plant species listed as threatened on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) and/or the Tasmanian Threatened Species Protection Act 1995 (TSPA) were detected, or are known from database information, from the mining lease area.
- In the absence of identified populations of threatened flora, no special management is recommended in relation to the future quarry operations.

Threatened fauna

- No fauna species listed as threatened on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) and/or the Tasmanian Threatened Species Protection Act 1995 (TSPA) were detected, or are known from database information, from the mining lease area.
- The mining lease area may support occasional use by marsupial carnivores (Tasmanian devil, spotted-tailed quoll, eastern quoll) but no significant impact is anticipated from quarrying activities on these species.
- There is a known wedge-tailed eagle nest (RND #1191) located within c. 500 m of the boundary of the mining lease area. Quarry operations may be constrained by this nest site (this will need to be confirmed by consultation with DPIPWE).
- There are two additional known wedge-tailed eagle nests (RND #2005 & RND #2006) located northeast of Mathinna Plains Road, one of which is only c. 165 m from the road. Carting of product may be constrained by this nest site (this will need to be confirmed by consultation with DPIPWE).
- Further aerial searching of potential nesting habitat of wedge-tailed eagles within c. 500 m (and up to c. 1,000 m line-of-sight) may be warranted (this will need to be confirmed by consultation with DPIPWE).

Vegetation types

- The mining lease area supports the following TASVEG mapping units:
  - *Eucalyptus delegatensis* dry forest and woodland (DDE);
  - *Eucalyptus delegatensis* forest with broad-leaf shrubs (WDB); and
  - extra-urban miscellaneous (FUM).
None of these mapping units equate to threatened ecological communities listed on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, or are listed as threatened on Schedule 3A of the Tasmanian *Nature Conservation Act 2002*.

No special prescriptions are recommended in relation to management of native vegetation types.

**Weeds**

One species classified as a “declared weeds” within the meaning of the Tasmanian *Weed Management Act 1999* was detected from the mining lease area, as follows:

- *Senecio jacobaea* (ragwort): single non-fertile rosette (grubbed out and removed from site).

Recommendations are made to maximise the chance of maintaining the mining lease area as weed-free.

**Plant disease**

There is no evidence that the mining lease area supports is infected with *Phytophthora cinnamomi* (elevation above 700 m a.s.l. and generally closed wet forest).

There is no evidence that the mining lease area or surroundings supports myrtle wilt (absence of *Nothofagus cunninghamii*).

No special prescriptions are recommended in relation to management of plant disease.

**Animal disease (chytrid)**

The mining lease area is not known to support frog chytrid disease and does not support habitats conducive to the disease persisting (no waterbodies).

No special management is recommended in relation to chytrid disease.

**Informal reserve**

A small part of the mining lease coincides with an Informal Reserve on State forest, which is also identified as part of the Priority Habitat overlay under the *Break O’Day Interim Planning Scheme 2013*.

It is recommended that quarry operations do not extend into the informal reserve (this may mean that the extent of the reserve needs to be demarcated prior to quarry operations).

**Recommendations**

The recommendations provided below are a summary of those provided in relation to each of the ecological features described in the main report. The main text of the report provides the relevant context for the recommendations. It is assumed that the phrasing below will be modified in planning documents for the project.

**Vegetation types**

There are no specific constraints on the operation of the quarry based on the vegetation types identified.

**Threatened flora**

There are no identified sites of threatened flora that require special management.
Threatened fauna
It is recommended that formal advice be sought from DPIPWE’s Policy & Conservation Advice Branch (PCAB, DPIPWE) in relation to the management of known wedge-tailed eagle nests and potential habitat of wedge-tailed eagles.

Weed management
It is recommended that specific weed management actions be incorporated into any quarry operations plans.

Informal reserve
It is recommended that the extent of the informal reserve/Priority Habitat overlay be demarcated prior to operations commencing such that no works occur within the reserve.

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

A permit under the Tasmanian Threatened Species Protection Act 1995 will not be required to take threatened flora or fauna.

It is assumed a development application will be required to be prepared under the provisions of the Break O’Day Interim Planning Scheme 2013.
PURPOSE, SCOPE, LIMITATIONS AND QUALIFICATIONS OF THE SURVEY

**Purpose**

Break O’Day Council engaged Environmental Consulting Options Tasmania (ECOtas) to undertake an assessment of the ecological values associated with the existing Merry Creek Road Quarry, Billy Taylor Ridge, Tasmania, primarily to ensure that the requirements of the identified ecological values are appropriately considered during further project planning under local, State and Commonwealth government approval protocols.

**Scope**

This report relates to:

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

This report follows the government-produced *Guidelines for Natural Values Surveys - Terrestrial Development Proposals* (DPIPWE 2015) in anticipation that the report (or extracts of it) will be used as part of various approval processes that will be required for works at the site. Specifically, the present report addresses the key items required under the Environment Protection Authority’s Environmental Effects Report in relation to biodiversity values.

The report format will also be applicable to other assessment protocols as required by the Commonwealth Department of the Environment & Energy (for any referral/approval that may be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*), and under the local planning scheme (*Break O’Day Interim Planning Scheme 2013*).

**Limitations**

The ecological assessment was undertaken on 16 June 2017. Many plant species have ephemeral or seasonal growth or flowering habits, or patchy distributions (at varying scales), and it is possible that some species were not recorded for this reason. However, every effort was made to sample the range of habitats present in the survey area to maximise the opportunity of recording most species present (particularly those of conservation significance). Late spring and into summer is usually regarded as the most suitable period to undertake most botanical assessments. While some species have more restricted flowering periods, a discussion of the potential for the site to support these is presented. The timing of the survey is not considered critical in any manner for the present site.
The survey was also limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, a consideration is made of threatened species (vascular and non-vascular) likely to be present (based on habitat information and database records) and reasons presented for their apparent absence.

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

Qualifications

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

Permit

Any plant material was collected under DPIPWE permit TFL 17029 (in the name of Mark Wapstra). Relevant data will be entered into DPIPWE’s Natural Values Atlas database by the author. Some plant material may be lodged at the Tasmanian Herbarium by the author.

No vertebrate or invertebrate material was collected.

DESCRIPTION OF MINING LEASE AREA & PROPOSAL

The Merry Creek Quarry is located on Merry Creek Road (the quarry has formed the effective end of this road for many years) on Billy Taylor Ridge, northwest of Mathinna, accessed from Mathinna Plains Road (Figures 1-4). The quarry has been operating under a Forest Practices Plan KSW0003-01 under the provisions of the Tasmanian Forest Practices Act 1985 and associated regulations.

The quarry is located on State forest (Permanent Timber Production Zone Land) and was previously operated by Forestry Tasmania, referred to in KSW0003-03 as the “Billy Taylor Pit QSA001”. Control of the operation of the quarry was handed to Break O’Day Council and as such the facility now operates under Mining Lease 3M/2016, effective February 2017.

The current quarry site comprises active quarrying features (quarry floor, batters, benches, slopes, stockpiles, etc.) and is accessed by a well-formed gravel road (no upgrades required, existing locked gate near start of road outside lease area, existing OH&S signage, etc.). The quarry is surrounded by native vegetation in various conditions from highly modified (immediate fringes of quarry) to undisturbed.

The elevation of the mining lease area is around 700-770 m a.s.l.

Geology of the mining lease area is mapped as Ordovician-Devonian-age (Paleozoic) “micaceous quartzwacke turbidite sequences (Mathinna Group).” (geocode: ODq), which was confirmed by site assessment.
Figure 1. General location of mining lease area [source: TheList]
Figure 2. Detailed location of mining lease area [source: TheList]
Figure 3. Location of mining lease area showing land tenure [source: TheList]
Figure 4. Detailed location of mining lease area showing aerial imagery [source: TheList]
Land tenure and other categorisations of the mining lease area are as follows:

- Mining Lease 3M/2016;
- State forest (Permanent Timber Production Zone Land, with a tiny part of the northwest corner of the mining lease area zoned as Informal Reserve - FT Managed Land);
- Break O’Day municipality, zoned as Rural Resource under the *Break O’Day Interim Planning Scheme 2013*, and partly subject to the Priority Habitat overlay (Figure 5);
- Ben Lomond Bioregion; and
- Northern Natural Resource Management (NRM) region.

**Figure 5.** Extent of Priority Habitat overlay under the *Break O’Day Interim Planning Scheme 2013*

**METHODS**

**Nomenclature**

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

Vegetation classification follows TASVEG 3.0, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania’s Vegetation* (Kitchener & Harris 2013).

**Preliminary investigation**

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

- Tasmanian Department of Primary Industries, Parks, Water & Environment’s *Natural Values Atlas* records for threatened flora and fauna (GIS coverage maintained by the author current as at date of report);
- Tasmanian Department of Primary Industries, Parks, Water & Environment’s *Natural Values Atlas* report *ECOtas_BreakODay_MerryCreekRoadQuarry* for a point (566720mE 5416030mN) defining the approximate centroid of the mining lease area, buffered by 5 km, dated 15 June 2017 (DPIPWE 2017) – Appendix E;
- Forest Practices Authority’s *Biodiversity Values Database* report, specifically the species’ information for grid reference centroid 566720mE 5416030mN (i.e. the centroid of the *Natural Values Atlas* search area), buffered by 2 km, hyperlinked species’ profiles and predicted range boundary maps, dated 15 June 2017 (FPA 2017) – Appendix F;
- Commonwealth Department of the Environment & Energy’s *Protected Matters Search Tool Report* for coordinates -41.40432 147.79806 defining the approximate centroid of the mining lease area, buffered by 5 km, dated 15 June 2017 (CofA 2017) – Appendix G;
- Tasmanian Department of Primary Industries, Parks, Water & Environment’s *Natural Values Atlas Raptor Nest Database* reports *ECOtas_BreakODay_MerryCreekRoadQuarry-RND-1191 & RND-2006*, dated 19 June 2017 (DPIPWE 2017) – Appendix H;
- the TASVEG 3.0 vegetation coverage (as available through a GIS coverage);
- GoogleEarth and TheList aerial orthoimagery; and
- other sources listed in tables and text as indicated.

The following document was also reviewed for relevant information:

- Forest Practices Plan FPP KSW0003-01.

**Field assessment**

A detailed site assessment was undertaken by Mark Wapstra on 16 June 2017. The survey extended from the gate on Merry Creek Road to the existing quarry area. Meandering transects were used to criss-cross the mining lease area, targeting any obvious variation in vegetation structure and composition. The existing disturbed sites (road, minor tracks, quarry floor and working faces, stockpiles, etc.) were also assessed.

Vegetation was classified by waypointing vegetation transitions for later comparison to aerial imagery. The structure and composition of the vegetation types was described using nominal 30 m radius plots at a representative site within the vegetation types, and compiling “running” species lists between plots and vegetation types.

Where significant ecological features were detected, these were recorded using hand-held GPS (Garmin Oregon 600).
FINDINGS

Vegetation types

Comments on TASVEG mapping

This section, which comments on the existing TASVEG 3.0 mapping for the mining lease area, is included to highlight the differences between existing mapping and the more recent mapping from the present study to ensure that any parties assessing land use proposals (via this report) do not rely on existing mapping. Note that TASVEG mapping, which was mainly a desktop mapping exercise based on aerial photography, is often substantially different to ground-truthed vegetation mapping, especially at a local scale. An examination of existing vegetation mapping is usually a useful pre-assessment exercise to gain an understanding of the range of habitat types likely to be present and the level of previous botanical surveys.

TASVEG 3.0 maps the mining lease area (Figure 6) as:

- *Eucalyptus delegatensis* dry forest and woodland (TASVEG code: DDE): majority of mining lease area, including the existing quarry facility, and also the vegetation on either side of (and including) Merry Creek Road out to Mathinna Plains Road;
- *Eucalyptus delegatensis* forest over rainforest (TASVEG code: WDR): eastern part of mining lease area, east of Merry Creek Road, associated with slope above Merry Creek;
- *Eucalyptus sieberi* forest and woodland not on granite (TASVEG code: DSO): relatively small part of western portion of mining lease; and
- *Eucalyptus amygdalina* forest on mudstone (TASVEG code: DAM): miniscule portion of western corner of mining lease area (but extending further to northwest outside the lease area).

The Forest Practices Plan for the site classified the vegetation as the RFA vegetation community dry *Eucalyptus delegatensis* forest (RFA code: D), which equates to the TASVEG mapping unit community *Eucalyptus delegatensis* dry forest and woodland (TASVEG code: DDE).

Vegetation types recorded as part of the present study

Vegetation types have been classified according to TASVEG 3.0, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania’s Vegetation* (Kitchener & Harris 2013). Table 1 provides information on the vegetation types identified with notes on condition. Appendix A provides a detailed description of the native vegetation mapping unit identified from the mining lease area. Figure 6 shows the revised vegetation mapping.

The re-classification of the vegetation of the mining lease areas is significantly different to that shown on TASVEG 3.0 vegetation mapping, with only one of the original vegetation types (DDE) being (marginally) present.

Of the vegetation types recorded from the mining lease area, none equate to threatened ecological communities listed on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, or threatened vegetation types on Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. 
The native vegetation types present within the mining lease area are widespread and well-reserved and further clearance and disturbance within the mining lease area will have no significant impact on the conservation status of the communities at a regional or Statewide level.

Table 1. Vegetation mapping units present in mining lease area

[conservation status: NCA – as per Schedule 3A of the Tasmanian Nature Conservation Act 2002, using units described by Kitchener & Harris (2013), relating to TASVEG mapping units only (DPIPWE 2017); table headings are as per modules in Kitchener & Harris (2013); EPBCA – as per the listing of ecological communities on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999, relating to communities as described under that Act, but with equivalencies to TASVEG units]

<table>
<thead>
<tr>
<th>TASVEG mapping unit (Kitchener &amp; Harris 2013)</th>
<th>Conservation status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet eucalypt forest and woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eucalyptus delegatensis forest with broad-leaf shrubs (WDB)</td>
<td>Not threatened Not threatened</td>
<td>While TASVEG 3.0 currently maps four different mapping units across the mining lease area (but fails to recognise the existing quarry facility), and the Forest Practices Plan identified just one vegetation type – specifically Eucalyptus delegatensis dry forest and woodland (TASVEG code: DDE) – the present assessment has vastly simplified the vegetation mapping to just two mapping units being present outside the quarry working areas. Surrounding areas have been mainly mapped as wet sclerophyll forest dominated by Eucalyptus delegatensis, although Eucalyptus dalrympleana is also a significant component of the canopy. The stature varies from tall forest that is relatively undisturbed (e.g. east of Merry Creek Road) to low regrowth forest created by extraction activities (e.g. western fringes of quarry). WDB grades into DDE and it may have been simpler to map all the native vegetation as WDB. However, the vegetation indicated in the Forest Practices Plan supports the notion that the ridgeline area did support more typical dry sclerophyll forest.</td>
</tr>
<tr>
<td>Dry eucalypt forest and woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eucalyptus delegatensis dry forest and woodland (DDE)</td>
<td>Not threatened Not threatened</td>
<td>DDE occurs on the more insolated parts of the mining lease area i.e. the “ridgeline” areas north and south of the working areas. DDE has strong affinities to WDB, and is perhaps only classifiable as a separate mapping unit because of recent land use history. Refer also to comments under WDB.</td>
</tr>
<tr>
<td>Agricultural, urban and exotic vegetation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra-urban miscellaneous (FUM)</td>
<td>Not threatened Not threatened</td>
<td>FUM has been used to map the existing quarry facility and associated fringes of heavily disturbed vegetation. FUM has been extended to include Merry Creek Road.</td>
</tr>
</tbody>
</table>
Figure 6. Mining lease area and surrounds showing existing TASVEG 3.0 vegetation mapping (see text for codes)
Figure 7. Mining lease area showing revised vegetation mapping (see text for codes)
Plant species

General information

A total of 61 vascular plant species were recorded from the mining lease area (Appendix B), comprising 42 dicotyledons (including 8 endemic and 5 exotic species), 12 monocotyledons (including 1 endemic and 2 exotic species) and 7 pteridophytes (both native).

Additional surveys at different times of the year may detect additional short-lived herbs and grasses, although follow-up surveys are not considered warranted because it is highly unlikely that any species with a high priority for conservation management will be detected.

Threatened flora species recorded from the mining lease area

No plant species listed as threatened on the Tasmanian Threatened Species Protection Act 1995 and/or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 were detected from within or close to the mining lease area.

Threatened flora species potentially present (database analysis)

Table C1 (Appendix C) provides a listing of threatened flora from within 5,000 m of the mining lease area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded. Some species not listed on databases but considered by the author to have potential to occur in the mining lease area are also discussed. Database information (DPIPWE 2017; FPA 2017) indicates no known records of threatened flora from within 5,000 m of the mining lease area – the information in Table C1 is based only on CofA (2017).

Fauna species

Threatened fauna species recorded from the mining lease area

No fauna species listed as threatened on the Tasmanian Threatened Species Protection Act 1995 and/or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 were detected from within or close to the mining lease area.

Potential habitat is present for several species, as follows:

- *Sarcophilus harrisii* (Tasmanian devil);
- *Dasyurus maculatus* subsp. maculatus (spotted-tailed quoll); and
- *Dasyurus viverrinus* (eastern quoll).

No evidence (e.g. scats, dens, etc.) was detected. The working quarry area presents no potential denning habitat (hard rock and hardened gravel surfaces). Surrounding areas may support the species but will not be materially impacted, noting however that the vegetation immediately
surrounding the working areas are highly modified, quite open and lack a complex understorey (e.g. coarse woody debris absent, large areas of bare ground, no obvious burrowing habitat, etc.). Continued use of the quarry is not anticipated to have a significant impact on these species, including from use of the access road (i.e. roadkill risk), because this is a low speed/low traffic volume road due to the presence of a locked gate c. halfway between the quarry and the junction with Mathinna Plains Road.

There are three previously reported nests of *Aquila audax* subsp. *fleayi* (wedge-tailed eagle) within 2,000 m of the mining lease area (Figure 8), which may constrain some quarrying and carting activities.

A nest is located on the slopes of Merry Creek southwest of the mining lease area. This nest (RND #1191) is almost exactly 500 m from the closest boundary of the mining lease (the Forest Practices Plan included a map that showed the "500 m eagle reserve" within the lease area). The key management question is whether the nest is in practical line-of-sight of the quarrying activities. An examination of the topographic map indicates that this nest is low down on the slope, and even if high in a tree, it would not extend to anywhere close to the level of the quarry. In addition, the quarry is probably just "around the corner" from the line-of-sight of the nest. In my opinion, it can be argued that the nest site is greater than 500 m from the quarrying activity, and not within 1,000 m line-of-sight, such that the nominal breeding season buffer distances are not exceeded.

There are two other nests that may impact on the carting operations of the quarry. These nests (RND #2006 RND #2005) are located west of Mathinna Plains Road. RND #2005 is just outside the nominal 500 m zone relative to Mathinna Plains Road but is tucked away on a slope hidden from view so would not be deleteriously affected by carting on Mathinna Plains Road. RND #2006 is closer to Mathinna Plains Road (c. 165 m downslope to the northeast of the road) and the 500 m zone affects c. 980 m of Mathinna Plains Road northwest of the junction with Merry Creek Road. Mathinna Plains Road is a major forest production road and well-used through road for light traffic between the Fingal Valley and the northeast. It would be unlikely that intermittent carting of gravel past the nest closest to Mathinna Plains Road would present as a significant increase to the current levels of non-directed disturbance to the nest.

The junction of Merry Creek Road and Mathinna Plains Road is not within 500 m of any of the nest sites, nor within 1,000 m line-of-sight of any of the nest sites. Any carting that occurred in a southerly direction (i.e. towards Mathinna) would not impact on any of the known nest sites.

The Forest Practices Plan only specifies management actions in relation to wedge-tailed eagle nests (although it did not specify which nest was being referred to, it is assumed RND #1191 was intended), specifying the that "an eagle nest exists to the south west of the quarry" and "the future developments of the quarry are not to encroach within 500 m of the nest (ref. Tim Leaman’s report of 1/7/2009)“, the latter referring to formal advice provided by the Forest Practices Authority. The Forest Practices Plan also included standard management recommendations delivered through the Threatened Fauna Adviser decision-support system, which technically specified that “to avoid nest desertion, no forestry activities (including roading, harvesting, burning and other activities such as carting, loading, boundary marking, planting, 1080 baiting, etc.) should be carried out within 500 m of the nest or within 1 km if in line of sight of the nest. (August to January inclusive)” and this nest is subject to an annual activity check”.

The Raptor Nest Database report indicates that RND #1191 has been checked in 2005, 2006, 2007, 2008 & 2016, with variable activity status (e.g. 21 Nov. 2005 “4-5 week old chick”; 15 Sep. 2006 “lined”; 17 Sep. 2007 “bird flew to nest”; 9 Jan. 2008 “fledgling”). The use of the nest in the time since the quarry has been under the auspices of the Forest Practices Plan is not known.

The management of the quarry in relation to the potential disturbance to wedge-tailed eagle nests in the vicinity of the operation will need to be confirmed by consultation with the Policy & Conservation Advice Branch (PCAB, DPIPWE). I am aware that long-term monitoring of nests close to quarry sites (including sites that incorporate blasting in their routine operations) has been...
undertaken in at some sites and this information may be useful to develop an operation plan that minimises the impact on the species.

I am not aware of the last time that a formal search was conducted for nests within the vicinity of the mining lease. Modelling provided through the Forest Practices Authority’s website indicates substantial areas of high to moderate nest potentiality within 500-1,000 m of the mining lease area (generally associated with the slopes of the Merry Creek drainage system east and west of the mining lease – refer to Figure 9). PCAB (DPIPWE) may recommend more up-to-date surveys for nests close to the quarry site. Such surveys would need to be undertaken by helicopter due to the steepness of terrain, stature of the forest and density of the understorey.

**Threatened fauna species potentially present (database analysis)**

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

**Other ecological values**

**Weed species**

One plant species classified as a “declared weeds” within the meaning of the Tasmanian Weed Management Act 1999 was detected from the mining lease area. A single non-fertile rosette of *Senecio jacobaea* (ragwort) was found at the entrance to the main quarry floor (Figure 10, Plates 1 & 2) – the single rosette was grubbed out and removed from site. *Senecio jacobaea* is a potentially invasive species but is rarely encountered in the broader forests estate, except as scattered plants, as was the case here, probably representing an aerially-dispersed seed germinating opportunistically. Apart from that species, the mining lease area only supported minor occurrences of exotic plant species. A small patch of *Digitalis purpurea* (foxglove) rosettes was present on the track/quarry edge – this patch was also grubbed out and removed.

Management actions should aim to minimise the risk of introducing weeds the mining lease area. The key to this will be strict hygiene protocols for machinery, vehicles and personnel entering the work area from a potentially weed-affected site (noting the main forestry roads leading to Merry Creek Road, and Merry Creek Road itself, appear to be essentially weed-free such that vehicles travelling on these routes can be considered clean, unless they have come from a potentially contaminated site). Several planning manuals provide guidance on appropriate management actions, which can be referred to develop site-specific prescriptions for the operation of the quarry. These manuals include:

Figure 8. Known wedge-tailed eagle nest locations (with nominal 500 m management buffer indicated) relative to the mining lease area.
Figure 9. Mining lease area showing modelled potential wedge-tailed eagle nest habitat (the higher the model number, the greater the likelihood of a nest)
Figure 10. Distribution of weeds (*Senecio jacobaea*) within the mining lease area.
It is recommended that regular monitoring is undertaken by suitably qualified personnel (e.g. Break O’Day field officers) in the spring months during quarry operation. If weeds (including ubiquitous species such as thistles) are detected, they should be relatively simple to treat without herbicides (i.e. grub out). Maintaining the weed-free status will be important for delivering product to project sites that may require the weed-free status of the source material to be certified.

Rootrot pathogen, *Phytophthora cinnamomi*

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

The mining lease area is above 700 m elevation and essentially within an area of native vegetation broadly classifiable as wet sclerophyll forest (or at the least in parts, as densely shrubby “dry” sclerophyll forest). No evidence of the pathogen was observed. It is noted that the Forest Practices Plan stated that “this quarry was declared PC free in 1999 but not included in the survey due to the perceived low susceptibility in this year’s check by FT personnel”.

Unless evidence indicates otherwise, I believe it is reasonable to continue to consider this quarry as source of PC-free gravel.

**Myrtle wilt**

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

*Nothofagus cunninghamii* is absent from the mining lease area. No special management is required.

**Myrtle rust**

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

No evidence of myrtle rust was noted. It is recommended that only indigenous native plants be used in any amenity or rehabilitation plantings.

**Chytrid fungus and other freshwater pathogens**

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

The mining lease area does not support any waterbodies (dams, streams, drainage depressions, etc.) such that no special management is recommended in relation to chytrid.

**Additional "Matters of National Environmental Significance"**

The EPBCA Protected Matters Area report (CofA 2017) indicates that the Threatened Ecological Community Alpine Sphagnum Bogs and Associated Fens, listed as Endangered, is likely to occur within the area. Database information and field assessment indicates that no such vegetation is present within, or close to, the mining lease area.

**Informal Reserve on State forest**

There is an Informal Reserve present to the west of the mining lease, and a small part of the reserve impinges into the mining lease itself. The purpose of the reserve is not identified on databases but as a minimum it includes what would be a reserve around RND #1191 (although the reserve is an order of magnitude greater than the standard minimum 10 ha reserve established around a wedge-tailed eagle nest), and linked wildlife habitat strips (nominally 100 m wide, established under the provisions of the *Forest Practices Code*), but does not appear to be related to any particular natural value such as threatened vegetation (although at the time of
establishment, *Eucalyptus amygdalina* forest on mudstone, which does occur in the reserve in a small area, was uncertainly classified and of unknown conservation status).

It is noted that the Informal Reserve coincides directly with the Priority Habitat overlay under the *Break O’Day Interim Planning Scheme 2013*. The Forest Practices Plan clearly identified the Informal Reserve and the boundary of the Forest Practices Plan was drawn to exclude the reserve area. I found no evidence on the ground that this area had been formally demarcated but if it had been, the tapes would now be old.

**DISCUSSION**

**Summary of key findings**

**Threatened flora**
- No plant species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the mining lease area.
- In the absence of identified populations of threatened flora, no special management is recommended in relation to the future quarry operations.

**Threatened fauna**
- No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the mining lease area.
- The mining lease area may support occasional use by marsupial carnivores (Tasmanian devil, spotted-tailed quoll, eastern quoll) but no significant impact is anticipated from quarrying activities on these species.
- There is a known wedge-tailed eagle nest (RND #1191) located within c. 500 m of the boundary of the mining lease area. Quarry operations may be constrained by this nest site (this will need to be confirmed by consultation with DPIPWE).
- There are two additional known wedge-tailed eagle nests (RND #2005 & RND #2006) located northeast of Mathinna Plains Road, one of which is only c. 165 m from the road. Carting of product may be constrained by this nest site (this will need to be confirmed by consultation with DPIPWE).
- Further aerial searching of potential nesting habitat of wedge-tailed eagles within c. 500 m (and up to c. 1,000 m line-of-sight) may be warranted (this will need to be confirmed by consultation with DPIPWE).

**Vegetation types**
- The mining lease area supports the following TASVEG mapping units:
  - *Eucalyptus delegatensis* dry forest and woodland (DDE);
  - *Eucalyptus delegatensis* forest with broad-leaf shrubs (WDB); and
  - extra-urban miscellaneous (FUM).
- None of these mapping units equate to threatened ecological communities listed on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act*...
1999, or are listed as threatened on Schedule 3A of the Tasmanian Nature Conservation Act 2002.

- No special prescriptions are recommended in relation to management of native vegetation types.

**Weeds**

- One species classified as a “declared weeds” within the meaning of the Tasmanian Weed Management Act 1999 was detected from the mining lease area, as follows:
  - *Senecio jacobaea* (ragwort): single non-fertile rosette (grubbed out and removed from site).
- Recommendations are made to maximise the chance of maintaining the mining lease area as weed-free.

**Plant disease**

- There is no evidence that the mining lease area supports is infected with *Phytophthora cinnamomi* (elevation above 700 m a.s.l. and generally closed wet forest).
- There is no evidence that the mining lease area or surrounds supports myrtle wilt (absence of *Nothofagus cunninghamii*).
- No special prescriptions are recommended in relation to management of plant disease.

**Animal disease (chytrid)**

- The mining lease area is not known to support frog chytrid disease and does not support habitats conducive to the disease persisting (no waterbodies).
- No special management is recommended in relation to chytrid disease.

**Informal reserve**

- A small part of the mining lease coincides with an Informal Reserve on State forest, which is also identified as part of the Priority Habitat overlay under the Break O’Day Interim Planning Scheme 2013.
- It is recommended that quarry operations do not extend into the informal reserve (this may mean that the extent of the reserve needs to be demarcated prior to quarry operations).

**Legislative and policy implications**

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

**Tasmanian Threatened Species Protection Act 1995**

Threatened flora and fauna on this Act are managed under Section 51, where a permit is required to knowingly “take” (which includes kill, injure, catch, damage, destroy and collect), keep, trade in or process any specimen of a listed species. Where threatened flora or fauna are likely to be taken, it is usual to apply for a permit under Section 51 of the Act on the required proforma to the Policy & Conservation Advice Branch (PCAB, DPIPWE)
In this case, no flora species listed on the Act were detected, or are known from database information, from within or close to the mining lease area, such that there are no requirements under the Act.

Potential habitat of threatened fauna is more complex to manage under Section 51 of the Act because unless works would result in the “taking” of a specimen, a permit under the Act is not technically possible. However, it is usual for development proposals involving the disturbance of potential habitat of threatened species listed on the Act to be referred to DPIPWE for advice. In the absence of being able to issue a permit under Section 51 of the Act, DPIPWE’s Policy & Conservation Advice Branch (PCAB, DPIPWE) may make recommendations to a development proponent regarding managing habitat of threatened species and/or may endorse or comment on proposed offset/mitigation strategies. In this case, consultation with DPIPWE is recommended in relation to the management of known wedge-tailed eagle nests and potential habitat of wedge-tailed eagles.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The mining lease area does not support any communities listed as threatened under the Act.

The mining lease area does not support known sites or potential habitat of flora species listed on the Act.

The mining lease area may support populations of the Tasmanian devil, spotted-tailed quoll and eastern quoll.

The Commonwealth Department of the Environment & Energy provides a Significant Impact Guidelines policy statement (CofA 2013) to determine if referral to the department is required. In my opinion, with respect to the above species, any proposed disturbance within the mining lease area will not constitute a “significant impact” because while there will be a loss/modification of potential habitat, the loss is not such that it is likely to lead to a long-term decrease in the size of an important population of a species, reduce the area of occupancy of an important population, fragment an existing important population into two or more populations, adversely affect habitat critical to the survival of a species, disrupt the breeding cycle of an important population, modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, result in invasive species that are harmful to a threatened species becoming established in the threatened species’ habitat, introduce disease that may cause the species to decline, or interfere substantially with the recovery of the species.

There are known wedge-tailed eagle nests within 1,000 m of the mining lease area. Provided that State-based mitigation is applied (i.e. DPIPWE-endorsed management actions), the operation of the quarry should not require referral under the Act.

Tasmanian Nature Conservation Act 2002

Schedule 3A of the Act lists vegetation types classified as threatened within Tasmania. The mining lease area does not support any such vegetation types.

Tasmanian Forest Practices Act 1985 and associated regulations

The Act provides this definition of the concept of “clearing”:

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

The Act provides this definition of the concept of “trees”:

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

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

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

4. Circumstances in which forest practices plan, &c., not required

(i) the harvesting of timber or the clearing of trees on any land, or the clearance and conversion of a threatened native vegetation community on any land, in the course of mineral exploration activities, or mining activities, that are authorised under –

  (i) a permit granted under the **Land Use Planning and Approvals Act 1993**; or
  
  (ii) an exploration licence within the meaning of the **Mineral Resources Development Act 1995**; or
  
  (iii) a retention licence within the meaning of the **Mineral Resources Development Act 1995**; or
  
  (iv) a mining lease within the meaning of the **Mineral Resources Development Act 1995**.

It is understood that the quarry will be operated under a mining lease pursuant to the **Mineral Resources Development Act 1995**, such that a Forest Practices Plan will not be required. It is further understood that Forestry Tasmania will be seeking to terminate the current Forest Practices Plan through correspondence with the Forest Practices Authority.

**Tasmanian Wildlife (General) Regulations 2010**

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

**Tasmanian Weed Management Act 1999**

One plant species classified as a “declared weeds” within the meaning of the Tasmanian **Weed Management Act 1999** was detected from the mining area. A single non-fertile rosette of *Senecio jacobaea* (ragwort) was detected but grubbed out and removed from the site.

Management actions should aim to minimise the risk of introducing weeds the mining lease area. The key to this will be strict hygiene protocols for machinery, vehicles and personnel entering the work area from a potentially weed-affected site (noting the main forestry roads leading to Merry...
Creek Road, and Merry Creek Road itself, appear to be essentially weed-free such that vehicles travelling on these routes can be considered clean, unless they have come from a potentially contaminated site. It is recommended that regular monitoring is undertaken by suitably qualified personnel (e.g. Break O’Day field officers) in the spring months during quarry operation. If weeds (including ubiquitous species such as thistles) are detected, they should be relatively simple to treat without herbicides (i.e. grub out). Maintaining the weed-free status will be important for delivering product to project sites that may require the weed-free status of the source material to be certified.

Tasmanian Land Use Planning and Approvals Act 1993

The applicable planning scheme for the mining lease area is the Break O’Day Interim Planning Scheme 2013. As the quarry will be operated and administered by Break O’Day Council, no further analysis of the provisions of the Scheme is provided herein because it is assumed this can be undertaken internally by the client.

However, I note that the mining lease area is zoned as Rural Resource and that extractive uses are discretionary for level 2 activities, and that the Acceptable Solution is likely to be met. I also note that the mining lease is partially covered by the Priority Habitat overlay, but that it has been recommended that the quarry not expand to include any of this area, meaning that the Biodiversity Code will have limited (or no) direct application.

Recommendations

The recommendations provided below are a summary of those provided in relation to each of the ecological features described in the main report. The main text of the report provides the relevant context for the recommendations. It is assumed that the phrasing below will be modified in planning documents for the project.

Vegetation types

There are no specific constraints on the operation of the quarry based on the vegetation types identified.

Threatened flora

There are no identified sites of threatened flora that require special management.

Threatened fauna

It is recommended that formal advice be sought from DPIPWE’s Policy & Conservation Advice Branch (PCAB, DPIPWE) in relation to the management of known wedge-tailed eagle nests and potential habitat of wedge-tailed eagles.

Weed management

It is recommended that specific weed management actions be incorporated into any quarry operations plans.
Informal reserve

It is recommended that the extent of the informal reserve/Priority Habitat overlay be demarcated prior to operations commencing such that no works occur within the reserve.

Legislation and policy

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

A permit under the Tasmanian Threatened Species Protection Act 1995 will not be required to take threatened flora or fauna.

It is assumed a development application will be required to be prepared under the provisions of the Break O'Day Interim Planning Scheme 2013.

REFERENCES


CofA (Commonwealth of Australia) (2017). Department of the Environment & Energy’s Protected Matters Search Tool Report for coordinates -41.40432 147.79806 defining the approximate centroid of the mining lease area, buffered by 5 km, dated 15 June 2017 – Appendix G.


DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2017). Natural Values Atlas report ECOtas_BreakODay_MerryCreekRoadQuarry for a point (566720mE 5416030mN) defining the approximate centroid of the mining lease area, buffered by 5 km, dated 15 June 2017 – Appendix E.
DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2017). *Natural Values Atlas Raptor Nest Database* reports *ECOtas_BreakODay_MerryCreekRoadQuarry-RND-1191 & RND-2006*, dated 19 June 2017 – Appendix H.


FPA (Forest Practices Authority) (2017). *Biodiversity Values Database* report, specifically the species’ information for grid reference centroid 566720mE 5416030mN (i.e. the centroid of the *Natural Values Atlas* search area), buffered by 2 km, hyperlinked species’ profiles and predicted range boundary maps, dated 15 June 2017 – Appendix F.


APPENDIX A. Vegetation community structure and composition

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

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Height (m)</th>
<th>Cover (%)</th>
<th>Species (underline = dominant, parentheses = sparse or occasional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>35 m</td>
<td>40%</td>
<td><strong>Eucalyptus delegatensis</strong>, <strong>Eucalyptus dalrympleana</strong></td>
</tr>
<tr>
<td>Tall shrubs</td>
<td>6-18 m</td>
<td>variable</td>
<td>eucalypt regrowth, <strong>Bedfordia salicina</strong>, <strong>Acacia dealbata</strong>, <strong>Pomaderris apetala</strong>, <strong>Olearia argophylla</strong></td>
</tr>
<tr>
<td>Low shrubs</td>
<td>&lt;3 m</td>
<td>5-30%</td>
<td><strong>Cyathodes glauca</strong>, <strong>Tasmannia lanceolata</strong>, <strong>Coprosma quadriifida</strong>, <strong>Acacia leprosa</strong>, <strong>Acacia melanoxyon</strong>, <strong>Acacia dealbata</strong>, <strong>Olearia lirata</strong></td>
</tr>
<tr>
<td>Trunked ferns</td>
<td>1-2 m</td>
<td>&lt;5%</td>
<td><strong>Dicksonia antarctica</strong></td>
</tr>
<tr>
<td>Ground ferns</td>
<td>30%</td>
<td></td>
<td><strong>Hypolepis rugosula</strong>, <strong>Blechnum nudum</strong>, <strong>Blechnum wattle</strong>, <strong>Blechnum pinnamarina</strong>, <strong>Polystichum proliferum</strong>, <strong>Pteridium esculentum</strong></td>
</tr>
<tr>
<td>Grass</td>
<td>+</td>
<td></td>
<td><strong>Australopyrum velutinum</strong></td>
</tr>
<tr>
<td>Graminoids</td>
<td>+</td>
<td></td>
<td><strong>Gahnia grandis</strong></td>
</tr>
<tr>
<td>Herbs</td>
<td>+</td>
<td></td>
<td><strong>Hydrocotyle hirta</strong>, <strong>Euchiton japonicus</strong>, <strong>Acaena novae-zelandiae</strong>, <strong>Stellaria flaccida</strong>, <strong>Geranium potentioides</strong></td>
</tr>
</tbody>
</table>

While TASVEG 3.0 currently maps four different mapping units across the mining lease area (but fails to recognise the existing quarry facility), and the Forest Practices Plan identified just one vegetation type – specifically **Eucalyptus delegatensis** dry forest and woodland (TASVEG code: DDE) – the present assessment has vastly simplified the vegetation mapping to just two mapping units being present outside the quarry working areas.

Surrounding areas have been mainly mapped as wet sclerophyll forest dominated by **Eucalyptus delegatensis**, although **Eucalyptus dalrympleana** is also a significant component of the canopy. The stature varies from tall forest that is relatively undisturbed (e.g. east of Merry Creek Road) to low regrowth forest created by extraction activities (e.g. western fringes of quarry).

WDB grades into DDE and it may have been simpler to map all the native vegetation as WDB. However, the vegetation indicated in the Forest Practices Plan supports the notion that the ridgeline area did support more typical dry sclerophyll forest.

LHS. WDB on western side of mining lease

RHS. WDB on eastern side of Merry Creek Road
**Eucalyptus delegatensis** dry forest and woodland (TASVEG code: DDE)

DDE occurs on the more insolated parts of the mining lease area i.e. the “ridgeline” areas north and south of the working areas. DDE has strong affinities to WDB, and is perhaps only classifiable as a separate mapping unit because of recent land use history.

Refer also to comments under WDB.

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LHS. Regrowth facies of DDE grading into WDB on slope south of quarry

RHS. More mature (but still disturbed) facies of DDE north of quarry

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Height (m)</th>
<th>Cover (%)</th>
<th>Species (underline = dominant, parentheses = sparse or occasional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>25 m</td>
<td>25%</td>
<td><em>Eucalyptus delegatensis</em>, <em>Eucalyptus dalrympleana</em>, <em>(Eucalyptus amygdalina)</em></td>
</tr>
<tr>
<td>Tall shrubs</td>
<td>3-6 m</td>
<td>5%</td>
<td>Persoonia gunnii, eucalypt regrowth, <em>Oxylobium ellipticum</em>, <em>Monotoca glauca</em></td>
</tr>
<tr>
<td>Low shrubs</td>
<td>&lt;3 m</td>
<td>5-30%</td>
<td><em>Cvathodes glauca</em>, Olearia phlogopappa, Leptecophylla juniperina subsp. parvifolia, Pultenaea juniperina</td>
</tr>
<tr>
<td>Ground ferns</td>
<td></td>
<td>30%</td>
<td>Pteridium esculentum, Blechnum nudum</td>
</tr>
<tr>
<td>Grass</td>
<td></td>
<td>+</td>
<td>Australopyrum velutinum, Deyeuxia spp., Aira spp., Poa gunnii</td>
</tr>
<tr>
<td>Graminoids</td>
<td></td>
<td>+</td>
<td>Gahnia grandis</td>
</tr>
<tr>
<td>Herbs</td>
<td></td>
<td>+</td>
<td>Hydrocotyle hirta, Euchiton japonicus, Acaena novae-zelandiae, Geranium potentilloides, Senecio linearifolius, Luzula flaccida</td>
</tr>
</tbody>
</table>
APPENDIX B. Vascular plant species recorded from mining lease area

Botanical nomenclature follows A Census of the Vascular Plants of Tasmania (de Salas & Baker 2016), with family placement updated to reflect the nomenclatural changes recognised in the Flora of Tasmania Online (Duretto 2009+) and APG (2016); common nomenclature follows The Little Book of Common Names of Tasmanian Plants (Wapstra et al. 2005+, updated online at www.dpipwe.tas.gov.au).

i = introduced/naturalised; e = endemic to Tasmania
DW = declared weed within meaning of Tasmanian Weed Management Act 1999

Table B1. Summary of vascular species recorded from the mining lease area

<table>
<thead>
<tr>
<th>ORDER</th>
<th>DICOTYLEDONAE</th>
<th>MONOCOTYLEDONAE</th>
<th>GYMNOSPERMAE</th>
<th>PTERIDOPHYTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>29</td>
<td>9</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>e</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>i</td>
<td>5</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sum</td>
<td>42</td>
<td>12</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DICOTYLEDONAE**

**APIACEAE**
- Hydrocotyle hirta

**ASTERACEAE**
- e Bedfordia salicina
  - Cassinia aculeata subsp. aculeata
  - Euchiton japonicus
- i Hypochaeris radicata
  - Lagenophora stipitata
- i Leontodon saxatilis
  - Leptinella filicina
  - Olearia argophylla
  - Olearia lirata
- e Olearia phlogopappa subsp. gunniana
  - Olearia ramulosa
- i Senecio jacobaea
  - Senecio linearifolius var. denticulatus
  - Senecio minimus

**CARYOPHYLLACEAE**
- Stellaria flaccida

**ERICACEAE**
- e Cyathodes glauca
  - Leptocorys juniperina subsp. parvifolia
- e Monotoca glauca

**FABACEAE**
- Acacia dealbata subsp. dealbata
  - Acacia leprosa var. graveolens
  - Acacia melanoxylon
  - Acacia verticillata subsp. verticillata
  - Oxylobium ellipticum
  - Pultenaea juniperina

**GERANIACEAE**
- Geranium potentilloides var. potentilloides

**HYPERICACEAE**
- Hypericum gramineum

**MYRTACEAE**
- e Eucalyptus amygdalina
  - Eucalyptus dalrympleana subsp. dalrympleana
ECOtas...providing options in environmental consulting

- Eucalyptus delegatensis subsp. tasmaniensis - gumtopped stringybark
- Epilobium billardiereanum subsp. billardiereanum - robust willowherb
- Plantago varia - variable plantain
- Lysimachia arvensis - scarlet pimpernel
- Lomatia tinctoria - guitarplant
- Persoonia muelleri subsp. muelleri - highland geebung
- Ranunculus muelleri - gully buttercup
- Pomaderris apetala subsp. apetala - common dogwood
- Acaena novae-zelandiae - common buzzy
- Coprosma quadrifida - native currant
- Digitalis purpurea - foxglove
- Pimelea drupacea - cherry riceflower
- Tasmannia lanceolata - mountain pepper
- Gahnia sieberiana - redfruit sawsedge
- Juncus bassianus - forest rush
- Juncus procerus - tall rush
- Luzula flaccida - pale woodrush
- Pterostylis williamsonii - brownlip greenhood
- Aira caryophyllea subsp. caryophyllea - silvery hairgrass
- Aira praecox - early hairgrass
- Australopyrum pectinatum - prickly wheatgrass
- Austrostipa stuposa - corkscrew speargrass
- Deyeuxia monticola - mountain bentgrass
- Deyeuxia quadriseta - reed bentgrass
- Poa gunnii - gunns snowgrass
- Blechnum nudum - fishbone waterfern
- Blechnum penninarina subsp. alpina - alpine waterfern
- Blechnum wattsii - hard waterfern
- Hypolepis rugosula - ruddy groundfern
- Pteridium esculentum subsp. esculentum - bracken
- Dicksonia antarctica - soft treefern
- Polystichum proliferum - mother shieldfern
APPENDIX C. Analysis of database records of threatened flora

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

Table C1. Threatened flora records from within 5,000 m of boundary of mining lease area

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

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Status TSPA EpBCA</th>
<th>Tasmanian habitat description (and distribution)</th>
<th>Comments on mining lease area and database records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbarea australis</td>
<td>riverbed wintercress</td>
<td>e EN</td>
<td><em>Barbarea australis</em> is a riparian species found near river margins, creek beds and along flood channels adjacent to the river. It tends to favour the slower reaches, and has not been found on steeper sections of rivers. It predominantly occurs in flood deposits of silt and gravel deposited as point bars and at the margins of base flows, or more occasionally or between large cobbles on sites frequently disturbed by fluvial processes. Some of the sites are a considerable distance from the river, in flood channels scoured by previous flood action, exposing river pebbles. Most populations are in the Central Highlands, but other populations occur in the northeast and upland areas in the central north.</td>
<td>Potential habitat absent.</td>
</tr>
<tr>
<td>Colobanthus curtisiae</td>
<td>grassland cupflower</td>
<td>r VU</td>
<td><em>Colobanthus curtisiae</em> occurs in lowland grasslands and grassy woodlands but is also prevalent on rocky outcrops and margins of forest on dolerite on the Central Highlands (including disturbed sites such as log landings and snig tracks).</td>
<td>Potential habitat absent.</td>
</tr>
<tr>
<td>Epacris exserta</td>
<td>south esk heath</td>
<td>e EN</td>
<td><em>Epacris exserta</em> occurs along the lower reaches of the South Esk, North Esk and Supply rivers. It is a strictly riparian species that grows in areas subject to periodic inundation, mainly on alluvium amongst dolerite boulders within dense riparian scrub, and occasionally in open rocky sites. It has been recorded from 10-310 m a.s.l.</td>
<td>Potential habitat absent.</td>
</tr>
<tr>
<td>Glycine latrobeana</td>
<td>clover glycine</td>
<td>v VU</td>
<td><em>Glycine latrobeana</em> occurs in a range of habitats, geologies and vegetation types. Soils are usually fertile but can be sandy when adjacent to or overlaying fertile soils. The species mainly occurs on flats and undulating terrain over a wide geographical range, including near-coastal environments, the Midlands, and the Central Plateau. It mainly occurs in grassy/heathy forests and woodlands and native grasslands.</td>
<td>Potential habitat absent.</td>
</tr>
</tbody>
</table>
APPENDIX D. Analysis of database records of threatened fauna

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

**Table D1.** Threatened fauna records from 5,000 m of boundary of mining lease area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian Threatened Species Protection Act 1995 (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA). Information below is sourced from the DPIPWE’s Natural Values Atlas (DPIPWE 2017), Bryant & Jackson (1999) and FPA (2017); marine, wholly pelagic and littoral species such as marine mammals, fish and offshore seabirds are excluded. Species marked with # are listed in CoFA (2017).

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Status TSPA EPBCA</th>
<th>Tasmanian habitat description (and distribution)</th>
<th>Comments on mining lease area and database records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accipiter novaehollandiae</td>
<td>grey goshawk</td>
<td>e -</td>
<td>Potential habitat of Accipiter novaehollandiae is native forest with mature elements below 600 m altitude, particularly along watercourses. Significant habitat may be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body (i.e. stream, river, lake, swamp, etc.).</td>
<td>Potential habitat absent (mining lease area is above 600 m elevation and no areas of mature forest will be materially impacted).</td>
</tr>
<tr>
<td>Alcedo azurea subsp. diemenensis</td>
<td>Tasmanian azure kingfisher</td>
<td>e EN # only</td>
<td>Potential foraging habitat of Alcedo azurea subsp. diemenensis is primarily freshwater (occasionally estuarine) waterbodies such as large rivers and streams with well-developed overhanging vegetation suitable for perching and water deep enough for dive-feeding. Potential breeding habitat is usually steep banks of large rivers (a breeding site is a hole (burrow) drilled in the bank).</td>
<td>Not listed in FPA (2017) or DPIPWE (2017). No database records within 5 km. Wapstra et al. (2010) documented the distribution and habitat of the species in Tasmania. Potential habitat absent from mining lease area (no rivers). Note that CoFa (2017) lists the species as Ceyx azureus subsp. diemenensis.</td>
</tr>
<tr>
<td>Antipodia chaostola tax. leucophaea</td>
<td>chaostola skipper</td>
<td>e EN</td>
<td>Potential habitat of Antipodia chaostola tax. leucophaea is dry forest and woodland supporting Gahnia radula (usually on sandstone and other sedimentary rock types) or Gahnia microstachya (usually on granite-based substrates).</td>
<td>Potential habitat absent (neither Gahnia species present).</td>
</tr>
<tr>
<td>Aquila audax subsp. fleayi</td>
<td>Tasmanian wedge-tailed eagle</td>
<td>e EN #</td>
<td>Potential habitat of Aquila audax subsp. fleayi 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</td>
<td>Refer to FINDINGS Fauna species Threatened fauna species recorded from the mining lease area for more details.</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>Status</td>
<td>Tasmanian habitat description (and distribution)</td>
<td>Comments on mining lease area and database records</td>
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</tr>
<tr>
<td><em>Dasyurus maculatus</em></td>
<td>spotted-tailed quoll</td>
<td>VU</td>
<td>Potential habitat of <em>Dasyurus maculatus</em> subsp. <em>maculatus</em> is coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex and steep rocky areas are present, and includes remnant patches in cleared agricultural land.</td>
<td>Refer to FINDINGS Fauna species Threatened fauna species recorded from the mining lease area for more details.</td>
</tr>
<tr>
<td><em>Dasyurus viverrinus</em></td>
<td>eastern quoll</td>
<td>EN</td>
<td>Potential habitat of <em>Dasyurus viverrinus</em> is a variety of habitats including rainforest, heathland, alpine areas and scrub. However, it seems to prefer dry forest and native grassland mosaics which are bounded by agricultural land.</td>
<td>Refer to FINDINGS Fauna species Threatened fauna species recorded from the mining lease area for more details.</td>
</tr>
<tr>
<td><em>Galaxias fontanus</em></td>
<td>Swan galaxias</td>
<td>EN</td>
<td>Potential habitat of <em>Galaxias fontanus</em> is slow to moderately fast-flowing streams containing permanent water (even when not flowing), which have good instream cover from overhanging banks and/or logs, and shade from overhanging vegetation. A population can only be maintained where barriers have prevented establishment of trout and redfin perch. The nature of these barriers is variable and can include permanent natural structures such as waterfalls and chutes and also low flow-dependent features such as marshes, ephemeral water-losing and remnant channels, braided channel floodplain features.</td>
<td>Potential habitat absent (site is outside any catchments with natural or translocated sites).</td>
</tr>
<tr>
<td><em>Haliaeetus leucogaster</em></td>
<td>white-bellied sea-eagle</td>
<td>V</td>
<td>Potential habitat of <em>Haliaeetus leucogaster</em> 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).</td>
<td>Potential habitat absent (the mining lease area is far inland and well away from any major inland waterbody).</td>
</tr>
<tr>
<td>Scientific name Common name</td>
<td>Scientific name</td>
<td>Status</td>
<td>Tasmanian habitat description (and distribution)</td>
<td>Comments on mining lease area and database records</td>
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<tr>
<td></td>
<td>Lathamus discolor swift parrot</td>
<td><strong>e</strong></td>
<td>Potential habitat of <em>Lathamus discolor</em> comprises potential foraging habitat and potential nesting habitat. Potential foraging habitat comprises <em>Eucalyptus globulus</em> (blue gum) or <em>Eucalyptus ovata</em> (black gum) trees that are old enough to flower. For management purposes, potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees.</td>
<td>Potential habitat absent (<em>E. globulus</em> and <em>E. ovata</em> are not present; no hollow-bearing trees within mining lease area will be removed – site highly atypical of all known nesting sites).</td>
</tr>
<tr>
<td></td>
<td>Litoria raniformis green and golden frog</td>
<td><strong>v</strong></td>
<td>Potential habitat of <em>Litoria raniformis</em> is permanent and temporary waterbodies, usually with vegetation in or around them, including features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features.</td>
<td>Potential habitat absent (no free-standing or flowing freshwater features).</td>
</tr>
<tr>
<td></td>
<td>Perameles gunnii subsp. gunnii eastern barred bandicoot</td>
<td><strong>v</strong></td>
<td>Potential habitat of <em>Perameles gunnii</em> subsp. <em>gunnii</em> is open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland.</td>
<td>Potential habitat absent.</td>
</tr>
<tr>
<td></td>
<td>Prototroctes maraena Australian grayling</td>
<td><strong>v</strong></td>
<td>Potential habitat of <em>Prototroctes maraena</em> is all streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. Prosser River dam, weirs) that prevent fish migration, are not potential habitat.</td>
<td>Potential habitat absent (no creeks present).</td>
</tr>
<tr>
<td></td>
<td>Pseudemoia pagenstecheri tussock skink</td>
<td><strong>v</strong></td>
<td>Potential habitat of <em>Pseudemoia pagenstecheri</em> is grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present.</td>
<td>Potential habitat absent (only forest present).</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>Status</td>
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</tr>
<tr>
<td><em>Pseudemoia rawlinsoni</em></td>
<td>glossy grass skink</td>
<td>EPBCA</td>
<td>Potential habitat of <em>Pseudemoia rawlinsoni</em> is wetlands and swampy sites, including grassy wetlands, teatree swamps and grassy sedgelands, and margins of such habitat.</td>
<td>Potential habitat absent (only forest present).</td>
</tr>
<tr>
<td><em>Sarcophilus harrisii</em></td>
<td>Tasmanian devil</td>
<td>TSPA EN #</td>
<td>Potential habitat of <em>Sarcophilus harrisii</em> is all terrestrial native habitats, forestry plantations and pasture. Devils require shelter (e.g. dense vegetation, hollow logs, burrows or caves) and hunting habitat (open understorey mixed with patches of dense vegetation) within their home range (427 km²). Significant habitat of <em>Sarcophilus harrisii</em> is a patch of potential denning habitat where three or more entrances (large enough for a devil to pass through) may be found within 100 m of one another, and where no other potential denning habitat with three or more entrances may be found within a 1 km radius, being the approximate area of the smallest recorded devil home range. Potential denning habitat of <em>Sarcophilus harrisii</em> is areas of burrowable, well-drained soil, log piles or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of inundation and with at least one entrance through which a devil could pass.</td>
<td>Refer to FINDINGS Fauna species Threatened fauna species recorded from the mining lease area for more details.</td>
</tr>
<tr>
<td><em>Tyto novaehollandiae</em> subsp. <em>castanops</em></td>
<td>Tasmanian masked owl</td>
<td>VU #</td>
<td>Potential habitat of <em>Tyto novaehollandiae</em> subsp. <em>castanops</em> is all areas with trees with large hollows (≥15 cm entrance diameter). In terms of using mapping layers, potential habitat is considered to be all areas with at least 20% mature eucalypt crown cover (PI type mature density class 'a', 'b', or 'c'). Remnants and paddock trees (in any dry or wet forest type) in agricultural areas may constitute potential habitat. Significant habitat for the masked owl is any areas within the core range of native dry forest with trees over 100 cm dbh with large hollows (≥15 cm entrance diameter).</td>
<td>Potential habitat absent. There are no large trees bearing large hollows within the mining lease area that will be removed.</td>
</tr>
</tbody>
</table>
APPENDIX E. DPIPWE’s Natural Values Atlas report for mining lease area

Appended as pdf file.

APPENDIX F. Forest Practices Authority’s Biodiversity Values Atlas report for mining lease area

Appended as pdf file.

APPENDIX G. CofA’s Protected Matters report for mining lease area

Appended as pdf file.

APPENDIX H. DPIPWE’s Raptor Nest Database reports for wedge-tailed eagle nests

Appended as pdf file.

ATTACHMENTS

- .shp file of revised vegetation mapping
- .shp file of weed location.
Appendix E: Technical Memo- Noise and Vibration
5 July 2017

Break O’Day Council
32-34 Georges Bay Esplanade
St Helens, TAS 7216

5036_AC_R_R1
AJM

Attn: Mr David Jolly

Dear Sir,

RE: Level 2 activity at 3M/2016 Merry Creek Road (commonly known as Billy Taylor Quarry) NOI section in relation noise and vibration emissions.

Please find below our NOI section in relation to potential noise and vibration impact from level 2 activity at the Billy Taylor Quarry.

1. NOISE AND VIBRATION

It is expected that noise and vibration may be generated by blasting, extracting, crushing, screening, and hauling activity within the Billy Taylor Quarry.

Operating hours would be in accordance with the requirements of the Quarry Code of Practice, 0700 and 1900 (7:00am to 7:00pm), Monday to Friday, and Saturday 0800 to 1700 (8:00am to 5:00pm).

The Billy Taylor Quarry is located within regrowth forest on the crest of a north-south trending ridgeline. The pit is > 5 km distance from the nearest noise sensitive residential locations which are in and around the township of Upper Esk, to the south-west of the quarry. At this distance, it is expected that noise and vibration emissions from activity within the Quarry would have minimal impact. It is expected that noise emissions wouldn’t exceed approx. 30 dBA (assuming hemispheric spreading and minor topographic shielding) and this is highly likely to be below ambient noise levels and well within the acceptable standard in the Quarry Code of Practice (must not exceed 10 dBA above the normal ambient noise levels during daytime operations).

Ground vibration and air blast overpressure would be expected to not exceed 1 mm/s and 100 dBL respectively (assuming a charge mass per delay of no greater than 100 kg), well within the acceptable standard in the Quarry Code of Practice (5 mm/s and 115 dBL).

Impact on fauna from noise and vibration generated in the quarry is not expected to be significant with the exception of potential impact on wedge-tailed eagle nesting sites. Annual checks are in place for this quarry under FPA requirements and where nests are discovered management strategies to minimise potential impact from noise and vibration would be developed.
I hope this information meets your immediate requirements.

Please contact me directly if you have any questions concerning this work.

Yours faithfully,
Tarkarri Engineering Pty Ltd

Dr. Alex McLeod
Principal Consultant

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m. +61(0)439 357 297
email: alex.mcleod@tarkarri.com