Dianas Basin Gravel Pit

Environmental Effects Report

FINAL
Revised August 2011
Break O’Day Council

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Final August 2011
This Environmental Effects Report (EER) describes the proposed operations of a gravel pit by the Break O’Day Council and environmental management practices for the pit. The quarry has been in operation since the mid 1990’s.

Preparation of the EER has been undertaken in accordance with guidelines prepared by the Department of Primary Industries, Parks, Water and Environment, (DPIPWE) and the EPA. A Level 2 Land Use Permit will be required from Break O’Day Council for the gravel pit. The EER provides supporting information for the application.

The EER also fulfils the role of providing information on the proposed activities to other decision-making authorities and the public, who have the opportunity to make submissions on the proposal under Section 57 of the Land Use Planning and Approvals Act (LUPAA) (1993). Submissions may be lodged, as specified, under Section 57 of the LUPAA (1993) within 28 days of advertisements being placed in local newspapers.
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Appendix D  Roy Sainty Archaeology Report  
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INTRODUCTION AND PURPOSE

The Dianas Basin gravel pit has been operated by the Break O’Day Council as a Level 1 operation on ML 1589 P/M. The pit has been in operation since granting in 1995 and provides road gravel and general construction materials essential for Council road construction and maintenance without any significant adverse environmental effects.

Figure 1 shows the location of the lease. General access is via the Tasman Highway and Basin Creek Road.

Figure 1  Diana’s Basin  Mining Lease Regional Location

The Council wishes to increase production to provide additional gravel supplies and is applying for a Level 2 permit for the gravel pit at a production level of up to 20,000 m³/year, although operations will most likely be in the range of 2-10,000 m³/year. The gravels will be used for road construction and road maintenance in the area.

Road construction and maintenance materials are a low value product and transport costs are a large part of the eventual cost. Therefore, strategically located gravel puts are required to economically maintain gravel roads, where materials are lost as dust.

ML 1589 P/M is currently up for renewal and covers an area of 5 hectares. This is adequate for the future operations. The quarry and crushing activity is expected to supply gravel at a rate of up to 10,000 cubic metres of gravel per year. This classifies the proposal as a level 2 activity according to Schedule 2 of the Environmental Management and Pollution Control Act 1994. The application has been assessed by the Environment Protection Authority as a Level 2B activity as defined in the Environmental Management and Pollution Control Act 1994 (EMPC Act).
This document has been prepared to supply the Break O’Day Council, Mineral Resources Tasmania (MRT), the EPA and the Department of Primary Industry, Parks, Water and Environment, (DPIPWE), Forestry, residents in the area and the general community with the following information:

- a description of the proposal,
- the area's environment, and
- the possible environmental impacts and the proposed environmental management controls for the gravel pit.

The EES has been prepared using guidelines prepared by the EPA (Appendix A).

The gravel pit will be operated on a campaign basis as road maintenance needs require.

**PART A – PROPOONENT INFORMATION**

*Proponent* – Break O’Day Council

The Break O’Day Council is located on Tasmanian's East Coast; the region boasts many coastal towns including: St Helens, Scamander, Falmouth, Four Mile Creek, Beaumaris, Stieglitz, Seymour, Ansons Bay and Binalong Bay. With an area of 3,809 square kilometres, Break O’ Day is one of the largest local government areas in the state. The population stands at about 6,000. The Council chambers are located at St Helens.

Contact details are;

David Richardson, Works Manager Break O'Day Council

PO Box 21 ST HELENS   TAS 7216  Telephone 63761866

**PART B – PROJECT DESCRIPTION**

1 **General Description**

The gravel pit has been operated since 1995. The general location is shown in Figure 1. Figure 2 shows a more detailed location and Figure 3 an aerial photo image, with contours etc. The pit (and lease) adjoins an existing gravel pit operated by NE Excavations who recently (mid 2009) were granted a Level 2 permit for an increase in production to 20,000 m³ per year.

The existing pit occupies an area (ie disturbed) of some 1ha. Future operations will be similar to what has happened in the past, with rock recovered by excavator and/or dozer. Occasional blasting will be required to fracture the rock for removal and crushing. Photograph 1 shows the existing pit.

The material quarried is Mathinna Beds quartzwacke which has been exposed in operating faces (see photo 1). Past quarrying has exposed the existing working area at a level of approximately 95 m RL.
After blasting (if required) and excavation, the rock will then be crushed using contract crushing and screening equipment (see photograph 2) and stockpiled on site. The crushed product will be recovered by excavator or front loader and loaded onto truck and trailers.
(35 tonne approximately capacity) for transport to road maintenance sites in the vicinity. The access route will be via Coach Road, Eastern Creek Road and Skyline Drive to the Tasman Highway.

Photograph 2: Typical crushing and screening plant.

2 Pit Plans

It is the intent of the Break O’Day Council to continue to operate a conventional gravel pit on the mining lease. Annualised quarrying rates are anticipated to be between 2-10,000 cubic metres (m3) of crushed rock and gravel. The pit is expected to have a potential life of approximately 50 years. Quarrying will be accordance with the Quarry Code of Practice, which has been developed by the Department of Primary Industries Water and Environment (now Department of Primary Industries, Parks, Water and Environment – DPIPWE) and the quarry industry (Appendix B: Quarry Code of Practice, 1999).

To date the pit has been developed as a single bench, which was started on the hillside and progressing eastwards with vegetation salvage and topsoil salvage progressing in advance of the face (Figure 3, photograph 1).

Quarry planning for long term production, decommissioning and rehabilitation provides for further development to the west and north at the existing level. This will provide sufficient area for approximately 5 years production at full production (10,000 m3/year). Thereafter, quarrying will be at depth within this “footprint”. Benches will be constructed (at approximately 5m height and width) to allow for final rehabilitation. Figure 3 shows the pit plan.

The pit outline may vary, as materials may be located in the quarry which may not be suitable for construction materials and as such, the bench outlines as shown in the Figures may be different to those shown. However, the pit will be located within the perimeters indicated.
3 Quarrying description

Quarrying activities will involve the following:

- Site preparation (vegetation clearing, topsoil and overburden stockpiling);
- Rock drilling and blasting (where required);
- Rock removal using rubber tyred loaders or excavator;
- Rock crushing and screening on a campaign basis;
- Stockpiling of crushed rock and gravel; and
- Transport to road maintenance sites in the area.

The area of the lease is some 5 ha of which approximately 1.0 ha will ultimately be disturbed over the pit life. The pit plans have been aligned to avoid the riparian area adjoining the creek on the eastern side of the lease, which has been recommended for protection by the flora and fauna consultants (Figure 3).

Vegetation clearance and topsoil salvage is progressively required in the Stage 1 (0-5 yrs) development, covering an area of less than 0.1ha (the largest part has already been cleared).

Marketable timber will be recovered and the balance windrowed for firewood. There will be no burning of vegetation.

The area of land around the existing quarry is classified as ‘vulnerable land’ under the Forest Practices Regulations due to the presence of at least one threatened species.

Most of the existing topsoil has been stockpiled and any additional materials will be recovered and stockpiled. Overburden materials (unconsolidated materials unsuitable for road gravel) will also be recovered and stockpiled for later use in the quarry rehabilitation at the boundaries of the pit.

The pit boundary will be bordered by natural vegetation and care will be taken to ensure no overburden or other materials are outside the boundary. Exclusion fencing will be installed approximately where shown to protect flora and fauna values (see Figure 3). A “bund” of stockpiled topsoil/overburden and natural surface (approximately 1m high) will be left so that there is no uncontrolled drainage off the pit floor.

As the pit is developed, 3m to 5m wide benches will be left on the face at 5m vertical intervals. This will allow for progressive rehabilitation of the benches.

Drainage of the pit area will be directed to the undisturbed surrounding vegetation as shown in Figure 3 after passing though settling pond(s).

Drilling and blasting will be carried out by a qualified contractor, using Ammonium Nitrate Fuel Oil mixture (ANFO). The frequency of these events will depend on production rates but should not exceed 2 – 3 times a year.

The rock which is removed from the face will be crushed and screened, also by contractors. The processed gravel will then be stockpiled on the pit floor for later transport.

The pit will operate year round on a campaign basis and is dependent on road maintenance requirements.
Operating hours will be 0700 to 1900 hours, Mondays to Fridays and 0800 to 1600 hours on Saturdays which is in accordance with the Quarry Code of Practice. Occasional work may be required outside these hours, but all transport of gravel will be within these hours.

Access will remain the existing unnamed access road and Basin Creek Road which is currently used by the adjoining quarry and forestry activities. Gravel transport will be to the west via Coach Road, Eastern Creek Road and Skyline Drive.

4 Project Area Description

4.1 Location and access

The mining lease and gravel pit are located approximately 7km south of St Helens and 1.5km from the Tasman Highway (Figure 1) The pit is accessed from the highway via Basin Creek Road, a gravel road in good condition and well constructed (Figure 2). This is a Forestry Road maintained by the Forestry Commission. The cartage route will be via via Coach Road, Eastern Creek Road and Skyline Drive to the Tasman Highway.

The quarry is located on the northern side of a ridge at elevation of approximately 100m in an area of low rolling hills running generally eastwards from the elevated Scamander Tier area (Figure 4). Because of this location the quarry is not visible from any viewpoints. There are no permanent waters within the lease, with an ephemeral creek draining to a more significant creek to the eastern side. This drains eventually to Dianas Basin through private land.

![Figure 4](image)

*Figure 4  Diana’s Basin Mining Lease Topography and Drainage*

4.2 Climate

Climatic data is available from St Helens where records have been kept since 1890.

St Helens has a temperate climate with an annual rainfall of 775mm. Mean monthly temperatures vary from 23°C in February to 14°C in July. Minimums vary from 12°C to 2.5°C.
Rainfall is reasonably evenly spread throughout the year. Figure 5 shows the rainfall evaporation balance. This shows that evaporation exceeds rainfall from September to April. In these periods runoff is therefore unlikely except in extreme rainfall events and that dust generation is most common.

Wind directions for the period October to April (drier months) are mostly from the North West and also are the strongest. At 3pm, the NW still predominate, but with an increasing frequency in easterly direction (sea breezes). These are relevant to dust generation and nuisance.

**Figure 5: Rainfall evaporation balance**

### 4.3 Geology and Soils

Geologically the Scamander Tier area is predominantly Mathinna beds with some outcropping Devonian granite. The Mathinna series quartzwacke is the rock to be quarried.

The soil at the quarry site is a thin sandy surface horizon overlaying a shallow clayey subsoil. The soil is typical of the Mathinna bed "Malahide" classification. These soils typically have low site productivity because of low moisture and nutrient availability (P, N, Ca).

### 4.4 Land-use and Tenure

Because of the poor soils (for agriculture) and slopes, which restrict land uses, the land use in the area is typically forestry.

The lease is located on private land owned by the Council. Surrounding land tenure is private land to the north, east and south. To the west is State Forest (see Figure 6). The nearest house is to the east some 700m distance, the only house within a radius of 1km, the next some 1200m away.

Land use is native forest, with active forestry operations in the west and south (see Figure 7). There are also active quarries in the area with one operated by NE Excavations to the immediate south. The actual pit area has not been recently logged and the vegetation is in excellent condition.
Figure 6: Land Tenure

Figure 7: Google image showing land uses in area
4.5 Zoning

The area is zoned as Environmental Protection under the Break O’Day Council planning scheme (1996). The Break O’Day planning scheme has both general and specific objectives. Resource development is an allowable use in the zone.

Applications for development in the Environment Protection Zone may need to address some or all of the following schedules:

Use and development in this zone is to conform with relevant planning scheme standards set out in Table 11.1 and in codes listed in Clause 11.4.2 in the planning scheme. Table 11.1 and Clause 11.4.2 are set out below.

**TABLE 11.1 PLANNING SCHEME STANDARDS APPLICABLE TO USE OR DEVELOPMENT IN THE ENVIRONMENT PROTECTION ZONE**

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>AREA OF DEVELOPMENT</th>
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<tr>
<td>OBJECTIVE</td>
<td>To ensure that where use and development occurs there is minimal disturbance to the environment.</td>
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<tr>
<th>ACCEPTABLE SOLUTION</th>
<th>PERFORMANCE CRITERIA</th>
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<tr>
<td>11.1 Management of unused land</td>
<td>11.1 Management of unused land</td>
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- **a)** No more than
  - a) 35% of the total area of a lot less than 2000m² in areas, or
  - ii) 20% of the total area of a lot greater than 2000m² in area,
  - is to be utilised for buildings, roads, private roadways, parking areas, power line easements or storage areas, including all existing developments on the lot.

- **b)** Applications for use or development are to demonstrate how it is intended to manage the balance of a lot not required for development in terms of protecting existing native vegetation cover, protecting fauna habitats, managing environmental weeds, watercourse protection, fire management, protection of riparian vegetation and wetland protection.

- **a)** An area greater than that specified in the acceptable solution may be utilised for development where the development is for the purposes of a road or driveway provided that the applicant can demonstrate compliance with Part B.14 - Car Parking and Access Code, or where the development is shore based marine farming activities and it can be demonstrated there will be no adverse environmental impact.

- **b)** No performance criteria.

The area of the development will be restricted to 20% of the total area in accordance with Clause 11.1 (except road access).
4. ISSUE - RESOURCE DEVELOPMENT IN THE ENVIRONMENT PROTECTION ZONE

OBJECTIVE - To limit resource development to activities and areas where adverse impacts on the environment can be controlled and managed.

<table>
<thead>
<tr>
<th>ACCEPTABLE SOLUTION</th>
<th>PERFORMANCE CRITERIA</th>
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<tr>
<td>4.1 Resource Development</td>
<td>4.1 Resource Development</td>
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<tr>
<td>a) Only activities in the Resource Development use class allowed in the Environment Protection Zone are:</td>
<td>a) No Performance Criteria</td>
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<td>i) Timber harvesting within the boundaries of State Forests; and</td>
<td></td>
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<td>ii) Mining in areas identified under the Regional Forest Agreement; and</td>
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<td>iii) Agricultural Use on land currently used for agricultural purposes.</td>
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11.4.2 Scheme standards applicable to use or development in the Environment Protection Zone

D16. Heritage Code
D17. Signs Code
D18. Wetlands and Waterways Code
D20. Road Asset Code
D21. Residential Development Code
D22. Subdivision and Building in Bushfire Prone Areas Code

Use and development in this zone is to conform with relevant planning scheme standards and in codes listed in Clause 11.4.2 in the planning scheme. Other issues which were considered in the planning of the quarry are:

- Vegetation Protection
- Land Clearance
- Road Access and Set Backs
- Pollution and Waste Disposal
- Infrastructure Provision, and
- Attenuation Distances.

Applicable codes directly relating to the quarry are:

- Wetlands and Waterways Code (Part D. 18)
- Also of relevance are:
  - Attenuation Distances Code (Part D.15)
  - Siting of Developments Code (Part D.19)
  - Road Asset Code (Part D.20)

All of these were considered in planning.

The waterways code specifies a distance of 30m from the waterway. The quarry is located beyond that distance and the natural flow regimes, water quality and biological diversity of any waterway or wetland will not be adversely affected.
Attenuation distances are sufficient from the nearest habitable residences to ensure they are unlikely to be affected by noise, fumes, smoke, or odour emissions. There is only 1 residence within 1 km (700m approx. away)). This residence is shielded by topography and vegetation.

4.6 Flora and fauna

North Barker Ecosystem Services were engaged to conduct flora and fauna surveys of the proposed lease area and the access road. Their report is enclosed in Appendix C.

Native forest communities and other TASVEG land-use mapping units present are:

- DSO – Eucalyptus sieberi forest not on granite
- DOB – Eucalyptus obliqua dry forest
- FUM – Extra-urban miscellaneous

Figure 8 shows the vegetation communities. Excluding the existing quarry the study area is covered by native forest. The Tasveg mapping units present are Eucalyptus sieberi forest not on granite (DSO), E. oblique dry forest (DOB) and Extra-urban miscellaneous (FUM), which includes the existing quarry and the access track. The conservation and reservation status of native communities is provided in Table 1, they are described in detail below and their distribution across the study area is depicted in Figure 8. Photograph 4 shows the DOB community.

E. sieberi forest on granite (DSG) and E. obliqua dry forest (DOB) are not listed as threatened communities under the Nature Conservation Act 2002 and they are well represented in reserves.

Table 1: Conservation and reservation status of the native vegetation communities.

<table>
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<tr>
<th>Equivalent Mapped Tasveg Community</th>
<th>State-wide Conservation Priority and Reservation Status</th>
<th>Bioregional Conservation Priority and Reservation Status</th>
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<tr>
<td>Ironbark (Eucalyptus sieberi) forest</td>
<td>Not threatened and adequately reserved</td>
<td>Not threatened but inadequately reserved</td>
</tr>
<tr>
<td>Eucalyptus sieberi forest not on granite (DSO) ha present</td>
<td>Not threatened and adequately reserved</td>
<td></td>
</tr>
<tr>
<td>Stringybark (Eucalyptus obliqua) forest</td>
<td>Not threatened and adequately reserved</td>
<td>Not threatened</td>
</tr>
<tr>
<td>Eucalyptus obliqua dry forest (DOB) ha present</td>
<td>Not threatened and adequately reserved</td>
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A total of 59 vascular plant species were recorded during the survey including one threatened species and two introduced species. A full species list is given in the North Barker Report.

The threatened species, Hovea corrickiae, is listed as ‘rare’ under the Tasmanian Threatened Species Protection Act 1995. Two plants were observed in the study area. Both occur on the creek bank near the eastern boundary and close to where the two creeks
It is highly possible that other plants are present in this general vicinity. Their location is identified in **Figure 8**. They are located to the east of the lease in an area which will not be disturbed.

**Figure 8**: Vegetation communities, threatened flora, potential threatened fauna nesting habitat and significant weeds
Photograph 4: DOB community.

Photograph 5. Hovea corrickiae shrub (on site).

The study area provides a diverse range of fauna habitat elements including both wet and dry forest, creeks, large mature trees some of which will contain hollows, areas of dense
shrubs, ground cover and litter and some fallen logs. These elements provide foraging, shelter and/or nesting habitat for a range of native mammals, birds and invertebrates.

The survey by North Barker found that the lease area provides potential foraging, shelter and/or nesting habitat for two threatened mammal and one threatened invertebrate species that are variously listed under the TSPA and/or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA). They are the Tasmanian devil, spotted tailed quoll and giant velvet worm. The Swift Parrot was not mentioned.

The assessment concluded the following:

“6.1 **COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBCA)**
Nationally significant species, for which the study area provides potential foraging, shelter and nesting habitat, include two mammals. The Tasmanian devil is listed as ‘endangered’ under this Act and the spotted-tailed quoll as ‘vulnerable’. Provided that sufficient buffers are maintained between habitat identified in this report and the area of quarry expansion then no significant impact is anticipated on these species. As such the requirement for referral due to a significant impact on a matter of National Environmental Significance is not triggered with regard to these species.”

As such no referral is required.

One den site under the roots of a large fallen tree, possibly used by a mammal such as the Tasmanian devil, was observed during the survey. This is located on the northern lease boundary (see Figure 8).

Although the study area is generally free of introduced plants two significant weeds were observed during the survey. A small infestation of Spanish heath (*Erica lusitanica*) occurs adjacent to the access track. This is a ‘declared weed’ under the Tasmanian Weed Management Act 1999. The other significant weed, radiata pine (*s*), which is considered to be an environmental weed, was noted in two locations close to the existing quarried area. The distribution of these weeds is depicted in Figure 8.

### 4.7 Surface and Groundwaters

There is one ephemeral (flow intermittently) stream on the northern side of the lease. This drains to a more significant stream which drains via private land to other streams and eventually to Dianas Basin.

There has been no sediment movement from the existing pit downslope, although there has been some sedimentation from the adjoining quarry. There are no significant wetlands listed by DPIW (ie on their website) in the catchment.

The catchment of these streams are all forested and in good condition.

As the pit site is located on a hill (RL approx 100m), groundwater levels will be well below the working surface and will not be affected by ongoing quarry activity.

### 4.8 Heritage and Significant Areas

Rocky Sainty, Aboriginal Heritage Consultant was engaged to conduct surveys of the area. His report is included in Appendix D.
Prior to European occupation this area and its surrounds was used regularly by Aborigines. The people of this area consisted of small clans or family groups, who frequented specific sites within the surrounding country (including the waterways) for food harvesting, camping, trade and ceremonial purposes and a number of Aboriginal sites have been recorded throughout the area.

The Tasmanian Aboriginal Site Index (TASI) at Aboriginal Heritage Tasmania of the Department of Environment, Parks, Heritage and the Arts was inspected in order to determine if any Aboriginal sites had been recorded within the survey area or surrounding area. This research also assists in developing an understanding of the nature of any sites in the general area. The inspection of the TASI revealed that there are several previously recorded Aboriginal heritage sites within close proximity to the study area but none recorded within the proposed footprint of the quarry extension.

The field survey was undertaken by walking 1-2m transects over the proposed quarry extension. No indicators of Aboriginal heritage were identified during the field survey.

The Tasmanian Heritage Council, National Estate and Parks and Wildlife data bases were searched for any sites of European heritage in the area. None were identified.

The nearest conservation area is the St Helens Conservation Area around Diana’s Basin and the coastline.

### PART C – POTENTIAL ENVIRONMENTAL EFFECTS

**1 Area of disturbance**

A total of approximately 0.1 ha of the existing vegetation will be disturbed over a period of ten years. Approximately 1ha has already been disturbed by the existing pit and an additional 0.1ha approx will be disturbed in years 0—5.

**2 Flora and fauna**

In order to negate the impact on the threatened plants and threatened fauna habitat in the study area, North Barker have recommended that the quarry expansion avoid creek lines in and around the lease and avoids a potential Tasmanian devil den site identified during the survey.

This will be achieved by clearly delineating the extent of activity using exclusion fencing (approx 25m away) (Figure 3).

The weed and plant pathogen management plan will be developed in accordance with recognised protocols (*Washdown guidelines for weed and Disease Control – Edition 1*) to limit the risk of introducing or spreading them to currently uninfected sites.

The plan will include;

- All machinery will be thoroughly cleaned to ensure that it is weed seed free before being taken to the site. Cleaning will include digging out tracks, hosing under-chassis areas and sweeping out cabin floors.
- No topsoil will be taken on site either deliberately for rehabilitation or accidentally laden trucks for ferrying personnel.
• A monitoring and control program will include an annual inspection of the lease area for new infestations of weeds and the application of selective herbicide sprays to individual plants or where native vegetation is vulnerable ‘cut stump’ application.

The introduction of *Phytophthora cinnamomi* will be prevented by the above measures plus the following additional measures:

• Maintaining good drainage to prevent mud forming on the active area of the site.
• Ensuring that employees are aware of *Phytophthora cinnamomi* symptoms and can identify its presence on other sites they visit.
• Stockpiling topsoil and stripping so as to drain away from the working areas of the site.
• The annual inspection for weeds will include a visual assessment of signs of *Phytophthora cinnamomi* in susceptible species.

3 **Rivers, creeks, wetlands and estuaries**

There were no permanent standing waters in the general area and no permanent flowing streams. All the drainage lines are vegetated and in good condition.

No areas will be allowed to drain uncontrolled to the east of the site. There was no evidence of any transported sediment from the existing operations, but settling basin(s) are proposed as a safeguard.

All drainage from the pit working areas will be directed to settling pond(s) prior to discharge to undisturbed vegetation as shown in **Figures 3**. A design for settling ponds is shown in **Figure 9**. This design has an HDPE outfall pipe which acts as siphon after a rainfall event and provides a “buffer” during heavy rainfall events before the pond overflows.

4 **Significant areas and/or land features**

The lease is located approximately 2km from the St Helens Conservation Area.

The quarry activities will not be visible from the area and will not be affected by any drainage.

5 **Air emissions**

There will be no air emissions other than exhausts of the diesel powered equipment and some dust from crushing and screening. These will not be an issue as the area is remote from residences which are some 0.7km away and to windward of prevailing winds. The quarry is also well protected by forest.

6 **Liquid effluent**

There will be no discharge of liquids other than surface runoff. A portable toilet will be installed and all toilet wastes will be disposed of at the St Helens plant. All waste oils etc will be disposed of to a licensed facility.

7 **Solid wastes**

No solid wastes will be generated, other than the normal domestic wastes, plus some maintenance materials, which will be disposed to the Council garbage service on a daily
**Plan View**

- Spillway
- Sediment storage zone
- Earth embankment
- Inflow
- Length / Width ratio 3:1 min.
- 150mm HDPE

**Cross-Section**

- Original ground level
- Sediment settling zone
- Sediment storage zone
- Water depth 500mm min.
- Crest of spillway
- 750mm min.
- Cut-off trench 500mm min. depth backfilled with impermeable clay & compacted
basis. There will be no garbage disposal facilities on site and employees and contractors will be required to dispose of any wastes to the Council facilities elsewhere on a daily basis.

8 Noise emissions

There will be noise emissions from the crushing and screening plant, if utilized. In addition there will be noise and vibration from blasting, when required. This is anticipated at approximately 2 or 3 times per year.

As there is only one residence within 1km (approx 700m away and screened by topography and vegetation) no adverse effects are expected and prevailing standards for noise and vibration are expected to be met.

Blasting noise and vibration will be measured at this residence for the initial blasting to check for compliance. They will also be advised when blasting will take place.

9 Transport impacts

Light vehicle traffic will be via Basin Road.

However, the gravel transport route will be via Coach Road, Eastern Creek Road and Skyline Drive (see Figure 10). Skyline Drive is sealed adjoining residences and the entrance onto the highway as excellent visibility and in good condition (see google image). Photographs 6 and 7 show the intersection.

For the quarry, based on annual production level of 10,000m³ (half of NE Excavations permit), and assuming the production is spread evenly over the year (50 weeks), approximately 2 truck movements will be required per day. These trucks will typically be truck and trailers of approximately 20 m³. However, as the pit will be worked on a campaign basis, truck movements will be more frequent and up to 3 trucks may be carting. As such, total truck movements on some days may be up to 20 movements per day.

There is no information on traffic levels on Skyline Drive. However, this road does have occasional log truck traffic plus it services a small subdivision of some 30-40 houses. It could be expected that traffic levels may be 30-50 return trips per day. For the Tasman Highway, traffic data indicates an ADT volume of some 2000 vehicles per day, provision for traffic growth indicating a predicted 2027 value some 1.30 times the present value. Seasonal factors indicate a substantial peak use for January i.e. some 30% above the ADT. The location suggests a peak hour factor at 10% of the daily volume as reasonable for assessment purposes. Sight distances are adequate in both direction (80KPH zone).

10 Other off-site impacts

There is no potential to generate any other off-site impacts that may affect the amenity of residences or other sensitive uses as they are over 0.7 km distant.

The quarry will not be visible from any significant viewpoints. Drainage will be directed through settling basins prior to release and therefore any effects on receiving waters is unlikely.
Google Image Skyline Drive- Tasman Highway intersection

Photograph 6 Skyline Drive- Tasman Highway intersection view to north
11 **Dangerous goods and chemicals**
No dangerous goods or chemicals will be used on site (other than by a blasting contractor). All oils, lubricants and fuels will be removed from site with equipment.

12 **Cultural heritage**
There are no Aboriginal sites in the area and no other heritage sites were identified in a desktop search and none have been identified in site surveys.

13 **Sites of high public interest**
The lease area is not in the vicinity of any site of high public interest.

14 **Safety**
The quarry will be operated under the quarry code of practice and the Council’s health and safety policies. There are no high faces and the quarry design incorporates benching to maintain public safety. The locked gate will be maintained in the existing location.

15 **Rehabilitation**
It is not intended to progressively rehabilitate the pit until the quarry floor is advanced to the west, as the long term plan is for the pit to be developed at depth. The benches will then be progressively revegetated. In the long term the quarry will be rehabilitated. This is not likely to be feasible until towards year 10. In the meantime, all topsoils and overburden materials (clays etc) will be stockpiled adjoining the quarry.

The rehabilitation process is based on the establishment of a colonising self-sustaining plant cover that encourages a succession towards the original pre-development vegetation.
community. The species are selected on their colonising ability and the economics of establishment.

The program will be based on

- preparing a suitable growing medium through deep ripping and the return of any available stockpiled soil
- water harvesting through contour cultivation and parallel contour mound construction
- application of native seed
- nutrient application to the low nutrient soils
- monitoring and maintaining stability, nutrient levels, weed control and vegetation establishment.

**Surface Preparation**

Surface preparatory works should be implemented in April/May of any one year, immediately prior to revegetation.

**Benches and Pit Floor**

The benches and floor will be deep ripped where practical and covered with a minimum of 200-300 mm of sandy overburden. (Note deep ripping can be conducted after the overburden is in place). The deep ripping should be conducted along the contours at 500 mm centres minimum.

Once ripping has been implemented, the quarry benches and floor should be covered with any available subsoils and topsoils. It is appreciated that the existing topsoil is minimal and consists of a thin humus layer. The topsoil will be respread and then pulled up into parallel mounds 300-400 mm wide x 300-400 mm high running along the contours (see photograph).

The topsoil will be left in a loose friable condition suitable for plant establishment. The depressions between rows act to harvest water in drier environments. The mounds also make vehicle access more difficult.

**Revegetation Guidelines**

**Seed**

The benches and floor following site preparation will requiring seeding and, as they are relatively small, can be best treated by hand seed application. The seed will be collected locally and should be purchased from a reputable supplier (Wildseed). The seed will need to be ordered in November of any one year to allow time for collection and sowing in the following Autumn/Winter season.
Photograph 8: Completed surface preparation including parallel mounds at a quarry.

Seed Mix sown at 5 kg/ha

The percentages shown are indicative only as many native species only seed readily based on the season and the year and are not always annually available. Natural colonisation may also negate the need for some seed application.

Aotus ericoides 1%
Bossiaea cinerea 1%
Goodenia lanata 10%
Allocasuarina littoralis 5%
Acacia mearnsii 5%
Acacia dealbata 5%
Acacia genistifolia 1%
Acacia suaveolens 5%
Acacia terminalis 10%
Acacia verniciflua 5%
Acacia verticillata verticillata 5%
Eucalyptus amygdalina 10%
Eucalyptus sieberi 10%
Eucalyptus globulus 5%
Eucalyptus viminalis viminalis 5%
Leptospermum scoparium 10%
Lomandra longifolia 2%
Poa labillardierei 5%
Seed Application

The native seed will be mixed with sawdust at a 10 to 1 ratio of sawdust to seed and then spread evenly over the surface. 75% of the acacia seed will need to be heat treated prior to sowing. The remaining 25% will be mixed without heat treatment.

Fertilizer

The soils are underlying materials are nutrient poor and will require the application of a readily available commercially available low phosphate N:P:K fertilizer 8:4:10 at 300 kg/ha, repeated in 24 months at the same rate.

Fertilizer Application

The 8:4:10 fertilizer can be applied by hand and should be supplied as 25 kg bags.

Weed colonisation may occur. Only through monitoring of the site will remedial weed control measures be identified and implemented. Based on the weed type and potential affect on the colonising native species control may be implemented.

Timing

Site preparatory work is best completed in April/May of any one year. These works are immediately followed by the application of the native seed and the cover crop (note : if the year is particularly dry site preparation and seeding should be postponed to June).

Seedling planting and the planting of plugs should be undertaken in June/July of any one year in order to capitalise on available moisture.

Seed and seedlings will need to be ordered in the November prior to planting and seeding in the following Autumn/Winter.

Monitoring and Maintenance

A monitoring inspection will be conducted annually in November by experienced Council officers or consultants. The inspection will aim to identify any issues associated with weed colonisation, surface stability and vegetation establishment success. If any of these issues are identified remedial measures will be undertaken.

Exclusion

On decommissioning the pit must be either fenced, bunded or have large rocks placed at all access points in order to prevent rubbish disposal, vandalism and damage to the revegetation works.
PART D – MANAGEMENT COMMITMENTS

The pit will be operated in accordance with the Quarry Code of Practice, the EES, the land use Permit and Mining Lease conditions. Table 2 show summary of commitments.

PART E – PUBLIC CONSULTATION

John Miedecke and Partners and its consultants during site studies and project planning have consulted with state and local government authorities, including MRT, DPIPWE, EPA, Forestry and Break O’Day Council.
<table>
<thead>
<tr>
<th>EER Sect</th>
<th>Potential Impacts</th>
<th>Management measure commitments</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General</td>
<td>Operate the pit in accordance with the Forest Practices Code, the Quarry Code of Practice, the EER, the land use Permit and Mining Lease conditions.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>2</td>
<td>General</td>
<td>Consult with Forestry regarding timber salvage, road access and maintenance</td>
<td>Ongoing</td>
</tr>
<tr>
<td>3</td>
<td>Noise</td>
<td>Monitor blasting near closest residence to demonstrate compliance with regulations (ground vibration and airblast)</td>
<td>At least initially</td>
</tr>
<tr>
<td>4</td>
<td>Flora and fauna</td>
<td>Maintain exclusion zone (fencing) to the east and north to protect existing vegetation and possible Devil Den site (Fig 3) Revegetate pit progressively after benches developed and on closure.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>5</td>
<td>Weeds and diseases</td>
<td>Ensure all machinery is washed in accordance with the wash down guidelines (see Appendix E). Implement the weed and Phytophthora management plan.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>First year</td>
</tr>
<tr>
<td>6</td>
<td>Transport</td>
<td>Use transport shown in Figure 10 for gravel transport. Maintain access roads in good condition. Liaise with Forestry re road use and maintenance Install signage when operating. Liaise with existing road users and DIER re highway junction.</td>
<td>As needed. Ongoing.</td>
</tr>
<tr>
<td>7</td>
<td>Visual</td>
<td>Maintain visual screen around quarry.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>8</td>
<td>Water management</td>
<td>Direct all runoff from active pit area through the settling pond prior to release. Bund pit area.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>9</td>
<td>Dust management</td>
<td>Operate water sprays on crushing equipment when required. Maintain access roads and apply dust suppression measures (water sprays) as required.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td><strong>Wastes</strong></td>
<td>Dispose of all liquid and solid wastes council waste disposal facilities.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>---</td>
<td>------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>11</td>
<td><strong>Rehabilitation</strong></td>
<td>Salvage topsoils and subsoils and stockpile for rehabilitation. Rehabilitate benches progressively and at quarry closure.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>12</td>
<td><strong>Management</strong></td>
<td>Cooperate with Environment Division, MRT and Forestry officers in site inspections and recommendations/directions. Seek professional advice when required.</td>
<td>Continuous</td>
</tr>
</tbody>
</table>
Break O’Day Council

Dianas Basin Gravel Pit

ENVIRONMENTAL EFFECTS REPORT

APPENDIX A

EER Guidelines
Environmental Effects Report Guidelines for
Break O’Day Council-
Dianas Basin Gravel Pit

Instructions

Purpose of Environmental Effects Report guidelines
These guidelines are to assist in the preparation of an Environmental Effects Report (EER).

An EER is intended to provide information about the environmental effects of smaller proposals that require assessment by the Board of the Environment Protection Authority (the EPA Board) under the Environmental Management and Pollution Control Act 1994.

It should be noted that these guidelines are appropriate for smaller proposals only. For larger proposals (and smaller proposals that are likely to generate public interest or complex environmental issues) the EPA Board will provide detailed guidelines for preparation of a Development Proposal and Environmental Management Plan (DPEMP).

Preparation of EER
The EER should be prepared using these guidelines. It should contain five parts as follows:

Part A – information on the proponent
Part B – information on the project and project area
Part C – information on potential environmental effects
Part D – description of management commitments
Part E – information about any public consultation undertaken

Any other relevant information may be attached to the EER to support the application.

The EER and attachments must either be submitted electronically, or be typed, A4 sized and of sufficient quality for scanning into electronic format.

Submission
The EER may be mailed, faxed or emailed to:

Director, Environment Protection Authority
GPO Box 1550
Commonwealth legislation
In addition to State Government requirements, the Commonwealth Government may also have a role in the environmental assessment and approval of the project. Commonwealth approval is required for an action which is likely to have a significant impact on a matter of national environmental significance or on Commonwealth land.

Information on the Commonwealth environmental legislation can be obtained on the internet at www.environment.gov.au/epbc/ or by calling 1800 803 772.

Contacts
For more information contact:

Environment Protection Authority and the Environment Division
Telephone: (03) 6233 6518
Email: EnvironmentEnquiries@environment.tas.gov.au
Web: www.epa.tas.gov.au
For information about the preparation of an EER, and the assessment and approvals process for level 2 and activities and 'called in' activities and for general advice about air, water and noise pollution and land contamination.

Threatened Species Unit
Telephone: 03 6233 8759
For information about threatened species and communities

Heritage Tasmania
Telephone: 03 6233 2037
Web: www.heritage.tas.gov.au
For historic cultural heritage information

Aboriginal Heritage Tasmania
Telephone: 03 6233 6613
For Aboriginal heritage information

Parks and Wildlife Service
Telephone: 1300 135 513
Web: www.parks.tas.gov.au and www.thelist.tas.gov.au
For parks and reserves information
Content of EER

Part A – Proponent information

- Name of proponent
- Address of proponent
- Contact telephone
- ACN (where relevant)

Part B – Project description

1. Description of project
   - General description of the project, including method of operation and the main items of equipment
   - Timeframe in which the project is proposed to occur.
   - Operating hours.
   - Specify production rates and describe any seasonal variations.

2. Project area
   - General description of the project site, including topography, vegetation, wetlands, watercourses, buildings.
   - Current and historical (where known) use of the site.
   - Land tenure of the site (is the proponent the owner?).
   - Description of surrounding land use, including location of nearest residences and other sensitive uses (such as schools, hospitals, etc).
   - Description of soils and underlying rock types.

3. Map and site plan
   - General location map (eg. 1:25,000 scale)
   - Site plan showing boundary of project site, position of existing and proposed buildings/structures, native vegetation, watercourses (rivers, creeks, lakes). The location of significant earthworks and/or vegetation to be cleared should be shown on a map

Part C – Potential environmental effects

1. Flora and fauna
   - Will native vegetation or potential habitat for native fauna be cleared or disturbed as part of the proposal? If yes, complete this section, if no, go to the next section.
   - Provide details of the nature of vegetation or habitat to be cleared and the area of vegetation to be cleared (in hectares).
   - Are there any known occurrences of rare or threatened fauna species or flora species or communities on or near the site? If yes, or if the site has potential habitat for any such species, a detailed survey is likely to be required and the results should be presented in the EER.
Information about observations of rare species can be obtained on the internet by registering to use the natural values atlas (www.naturalvaluesatlas.dpiw.tas.gov.au).

2. Rivers, creeks, wetlands and estuaries
   - Will stormwater from the site drain to a river, creek, wetland or estuary? If yes, provide details about potential impacts and how they will be managed, such as sediment settling ponds.
   - Will the proposal result in the filling or excavating of a river, creek, wetland or estuary? If yes, provide details.
   - Will the proposal result in the impoundment of a river, creek, wetland or estuary? If yes, provide details.
   - Will the proposal occur within 200 metres of a river, creek, wetland or estuary? If yes, provide details.
   - Will the proposal result in the clearing of vegetation within 200 metres of a river, creek, wetland or estuary? If yes, provide details.

3. Significant areas
   - Is the proposal located within or adjacent to an existing reserved area (eg National Park, State Reserve, Regional Reserve, Nature Reserve, Forest Reserve or Conservation Area)? If yes, provide details.

4. Coastal zone
   - Will any part of the proposal lie within 300 metres of the coast? If yes, provide details.

5. Marine areas
   - Is the proposal likely to impact on sensitive marine areas, conservation areas, or areas used extensively for recreation or commercial fishing activities? If yes, provide details about potential impacts.

6. Air emissions
   - Will the proposal result in emission of pollutants to air (includes dust, odours and emissions from chimneys)? If yes, provide details about potential impacts and how they will be managed.

7. Liquid effluent
   - Will the proposal result in discharge of liquids (including to sewer)? If yes, provide details of the nature of the discharge (estimated volume and characteristics) and the nature of the receiving environment (eg downstream waterways). Provide details of any proposed effluent treatment and water monitoring activities. Where available, water quality data describing the downstream environment should be presented.

NOTE: unpolluted stormwater should be addressed under Section 2, this Section relates to liquid wastes produced while carrying out the activity.

8. Solid wastes
   - Will the proposal produce or result in solid wastes? If yes, provide details of the nature of the waste types and proposed methods for
reuse/recycling/disposal of such wastes. Can generation of the wastes be avoided in the first place?

9. Noise emissions
   • Will the proposal result in noise emissions beyond the site boundary? If yes, provide details about potential impacts and their management.

10. Transport impacts
   • Will the proposal result in or require substantial transport of goods or materials to or from the site, which may affect the amenity of the surrounding area? If yes, provide details such as vehicle types, no. of vehicle movements and route(s).

11. Other off-site impacts
   • Does the proposal have the potential to generate any other off-site impacts that may affect the amenity of residences or other sensitive uses (such as schools and hospitals)? If yes, provide details. The location of all nearby residences or other sensitive uses should be clearly shown on a map.

12. Dangerous goods and chemicals
   • Will the proposal involve the use and/or storage of dangerous goods or other fuels/oils/chemicals that have the potential to cause environmental harm if released? If yes, provide details of the nature and quantity of goods, their storage location/methods and measures to prevent their release. Response measures in the event of accidental spillage should also be described.

13. Site Contamination
   • Has the site on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination? If yes, provide details. Include details of any assessments for soil or groundwater contamination on the site.

14. Cultural heritage
   • Is the proposal on or near a place listed on the Tasmanian Aboriginal Site Index, Tasmanian Heritage Register or Tasmanian Historic Places Inventory (maintained by the Aboriginal Heritage Tasmania and the Tasmanian Heritage Office respectively)? If yes, provide details.
   • Please note, Aboriginal heritage sites, regardless of site type, condition, size or land tenure are protected in Tasmania under the Aboriginal Relics Act 1975.
   • An assessment of Aboriginal heritage by an appropriately qualified person is commonly required prior to approval. Different types of Aboriginal heritage assessment may be required depending upon the nature of the site. Before engaging a consultant, Aboriginal Heritage Tasmania should contacted for advice.
   • The standards and guidelines packages that apply to Aboriginal Heritage Officers and Consulting Archaeologists are available at http://www.aboriginalheritage.tas.gov.au/.
15. Sites of high public interest
- Is the proposal located within or adjacent to a site of high public interest (such as a recreation area or natural scenic feature)? If yes, provide details.

16. Rehabilitation
- Where the activity involves disturbance of native vegetation or has a finite life (particularly mining and quarrying activities), future rehabilitation measures should be described.

Part D – Management commitments

- Specific, unambiguous written commitments for avoiding, minimising and managing the potential environmental impacts of the proposal (as identified in Part C) should be documented in Part D.

Part E – Public consultation

- Has public consultation taken place (such as with other government agencies, community groups or neighbours)? Is it intended that consultation will take place? If yes, provide details.

[Last updated: June 2009]
APPENDIX B

Quarry Code of Practice

see Environment website
Break O’Day Council

Dianas Basin Gravel Pit

ENVIRONMENTAL EFFECTS REPORT

APPENDIX C

North Barker Flora and Fauna Report
Dianas Basin Quarry, near St Helens

Vegetation Survey and Fauna Habitat Assessment

1 October 2009
For John Miedecke & Partners PL
MIE009
**SUMMARY**

A vegetation survey and fauna habitat assessment was undertaken of the area around a quarry west of Dianas Basin, near St Helens, prior to a proposed expansion of the existing quarry.

Native forest communities and other Tasveg land-use mapping units present are:

- **DSO** – *Eucalyptus sieberi* forest not on granite
- **DOB** – *Eucalyptus obliqua* dry forest
- **FUM** – Extra-urban miscellaneous

Neither DSO nor DOB are listed as threatened communities under the *Nature Conservation Act 2002* although the former is not adequately reserved within the Flinders bioregion.

Flora: One threatened plant species, *Hovea corrickiae*, listed as ‘rare’ under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) was recorded during the survey.

Fauna: The study area provides potential foraging, shelter and/or nesting habitat for two threatened mammal and one threatened invertebrate species that are variously listed under the TSPA and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). They are the Tasmanian devil, spotted-tailed quoll and giant velvet worm.

Weeds and pathogens: One ‘declared weed’, *Erica lusitanica*, under the Tasmanian *Weed Management Act 1999* was recorded. There was no evidence that the area is currently infected by *Phytophthora cinnamomi*.

**RECOMMENDATIONS**

1. In order to negate any possibility of impacting the threatened species and their habitat it is recommended that the quarry expansion avoid creek lines in and around the lease and avoids a potential Tasmanian devil den site identified during the survey.

2. The extent of the quarry expansion should be clearly delineated and procedures established to ensure no sediment is washed down the adjacent slopes.

3. The area of land around the existing quarry is classified as ‘vulnerable land’ under the Forest Practices Regulations due to the presence of at least one threatened species. Therefore, a Forest Practices Plan (FPP) will be required if any amount of forest is to be cleared.

4. A weed and *P. cinnamomi* management plan should be developed in accordance with recognised protocols to limit the risk of introducing or spreading them to currently uninfected sites. This could be incorporated into an FPP.
ACKNOWLEDGMENTS

Fieldwork: Nicky Meeson, NBES.
Report preparation: Philip Barker, Nicky Meeson and Chris Obst, NBES.
Client consultation: John Miedecke & Partners PL.
Mapping: Chris Obst, NBES.
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1. INTRODUCTION

1.1 BACKGROUND

Expansion of the existing Dianas Basin gravel quarry is proposed. North Barker Ecosystem Services have been engaged by John Miedecke & Partners PL to undertake a vegetation survey and fauna habitat assessment of the native vegetation around the quarry.

This assessment focuses on the extent of vegetation, flora and fauna habitat values of high conservation significance. It includes a review of the potential of the area to support threatened species known to occur in the vicinity. It also considers whether the proposed quarry expansion would invoke any threatened species legislation or require a Forest Practices Plan.

In addition to native plant species, non-native species have been recorded and an assessment has been made of the presence of *Phytophthora cinnamomi*. Measures to minimise their potential impacts are considered.

1.2 THE STUDY AREA

The quarry is located off Basin Creek Road, approximately 2 km to the west of Dianas Basin, south of St Helens in north eastern Tasmania. It is situated in the Break O'Day municipality and in the Tasmanian Flinders bioregion¹ (Figure 1). It occurs in the moist subhumid warm climatic zone where the annual average rainfall is approximately 600 mm to 800 mm. The altitude of the study area ranges from approximately 40 m to 100 m above sea level.

The quarry lease covers an area of 5 hectares. A portion of the lease has already been worked along the middle southern side where it adjoins another quarry, which is under a different leaseholder. Access to the lease is via a track through the adjoining lease.

The lease occurs mainly on a gentle to moderate north east facing slope. A creek line runs in an easterly direction immediately to the north of the lease boundary but flows through the lease, in a south easterly direction, in the eastern quarter of the lease. It flows into a larger creek adjacent to the eastern lease boundary.

Apart from the existing quarried area (Plate 1) the study area is covered by native forest which is in excellent condition. Minor weed invasions are generally confined to the edge of the quarry. The proposed quarry expansion will involve clearing of at least some of the forest².

¹ IBRA5 – Peters & Thackway 1998
² John Miedecke, pers. comm., 3/9/2009
Figure 1: Location of the study area.

Plate 1: The existing Dianas Basin quarry looking east.
2. BOTANICAL SURVEY AND FAUNA HABITAT ASSESSMENT

2.1 BACKGROUND RESEARCH

The following sources were used for biological records from the region:

- Natural Values Atlas\(^3\) - all threatened plant and animal records within 5 km of the study area plus potential suitability for other threatened fauna.

2.2 BOTANICAL SURVEY

The survey was undertaken on 3 September 2009. All vascular plants species were recorded. Botanical nomenclature follows the current census of Tasmanian plants \(^4\).

An assessment was also made of the presence of the root rot pathogen *Phytophthora cinnamomi*.

2.3 FAUNA HABITAT ASSESSMENT

The study area was assessed for fauna habitat with respect to threatened fauna species known from the area, or considered to potentially occur there. This assessment was based on the overall structure of the vegetation including identification of factors such as the presence of old growth trees with hollows and logs. Evidence of native animal presence, such as scats and burrows, were also noted.

2.4 ASSESSMENT OF CONSERVATION SIGNIFICANCE

Methods of assessing conservation status of vegetation communities and flora or fauna species are detailed in Appendix 1.

Vegetation types have been classified according to Tasveg\(^5\). The conservation status of a vegetation type relates to its current extent compared with the modelled extent prior to European settlement. This has allowed an estimate of the extent of loss to land clearing to be calculated. A 2007 amendment to the *Nature Conservation Act 2002* included the listing of threatened native vegetation communities in accordance with their conservation status\(^6\).

Conservation status at the regional level has not been undertaken for all Tasveg version 1 mapping units. However, a bioregional and state analysis was completed in 2007 of forest communities for the Forest Conservation Fund\(^7\).

The State and Federal Governments are committed through the Regional Forest Agreements to achieving a Comprehensive Adequate and Representative (CAR) Reserve System (following JANIS criteria for reservation targets outlined in Appendix 1). Analysis of the reservation status of vegetation types in Tasmania (as per current Tasveg mapping) has also only been completed for forest communities as

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\(^{3}\) Natural Values Report #37064, 2/9/2009, Threatened Species Section, DPIW.

\(^{4}\) Buchanan 2007.

\(^{5}\) Harris & Kitchener 2005

\(^{6}\) DPIW 2006

\(^{7}\) FCF 2007
part of the Forest Conservation Fund. No recent analysis exists for non forest vegetation.

The conservation significance of species is determined at a state and federal level by legislation (Tasmanian Threatened Species Protection Act 1995 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999), the implications of which are considered in the light of relevant legislation (Appendix 2).

2.5 LIMITATIONS

While the survey was undertaken in summer, no botanical survey can guarantee that all vascular plants will be recorded due to the limitations of the sampling technique, seasonal and annual variation in abundance and the possible absence of fertile material for identification. Additional species are likely to occur that may be recorded by repeated visits over several years and at different seasons.

8 FCF 2007
3. THE BIOLOGICAL VALUES

3.1 The Vegetation

Excluding the existing quarry the study area is covered by native forest. The Tasveg mapping units present are *Eucalyptus sieberi* forest not on granite (DSO), *E. obliqua* dry forest (DOB) and Extra-urban miscellaneous (FUM), which includes the existing quarry and the access track. The conservation and reservation status of native communities is provided in Table 1, they are described in detail below and their distribution across the study area is depicted in Figure 2.

Table 1: Conservation and reservation status of the native vegetation communities.

<table>
<thead>
<tr>
<th>Equivalent Mapped Tasveg Community</th>
<th>State-wide Conservation Priority and Reservation Status</th>
<th>Bioregional Conservation Priority and Reservation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Eucalyptus sieberi</em> forest not</td>
<td>Not threatened and adequately reserved</td>
<td>Not threatened but inadequately reserved</td>
</tr>
<tr>
<td>on granite (DSO) ha present</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Eucalyptus obliqua</em> dry forest</td>
<td>Not threatened and adequately reserved</td>
<td>Not threatened and adequately reserved</td>
</tr>
<tr>
<td>(DOB) ha present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Eucalyptus sieberi** forest not on granite (DSO)

This is the dominant community in the study area occupying the slopes around the existing quarry. Most of the forest is in the mature growth phase but there are two patches of dense re-growth forest in the south west corner and adjacent to the access track in the south east of the lease (Plate 2).

In the mature forest ironbark (*E. sieberi*) is the dominant tree. Black peppermint (*E. amygdalina*) occurs very occasionally and white gum (*E. viminalis*) and stringybark (*E. obliqua*) occur on the periphery near the transition to the DOB community.

The understorey on the gentle slope in the western part of the lease is dominated by bracken (*Pteridium esculentum*) and sand swordedsedge (*Lepidosperma concavum*). Scattered shrubs include sunshine wattle (*Acacia terminalis*), spreading wattle (*A. genistifolia*), common tea-tree (*Leptospermum scoparium*), twiggy waxflower (*Philotheca virgata*) and pink beardheath (*Leucopogon ericoides*). Native herbs include curling everlasting (*Coronidium scorpioides*), woolly crossherb (*Xanthosia pilosa*), trailing native-primrose (*Goodenia lanata*), common raspwort (*Gonocarpus tetragynus*) and ivyleaf violet (*Viola hederacea*). A dense patch of southern grasstree (*Xanthorrhoea australis*) is also present here (Plates 3 and 4).

9 Harris & Kitchener 2005  
10 FCF 2007. Note there is no recent analysis of reservation status of non forest communities  
11 FCF 2007
On the steeper slope that descends towards the creek, in the northern part of the lease, the understorey is dominated by dense patches of black sheoak (*Allocasuarina littoralis*) and the ground layer by bracken. There is also a dense litter layer and some fallen branches and logs. The creekline itself is dominated by a dense layer of rainbow fern (*Calochlaena dubia*) (Plates 5 and 6).

State-wide 46 415 ha of DSO is mapped, of which 13 010 ha is reserved. Within the Flinders bioregion 10 810 ha is mapped, of which 1 590 ha is reserved. It is not listed as threatened under the *Nature Conservation Act 2002*.

**Eucalyptus obliqua** dry forest (DOB)

This community occurs along the creek line and represents a transition zone from the dry DSO community at its western end to a wet forest community where the creek flows into the larger creek adjacent to the eastern lease boundary. The forest along the larger creek is characterised as *E. obliqua* forest with broad-leaf shrubs (WOB) and it occurs as a very narrow strip in a steep sided gully. Some of this community probably occurs partly within the study area but due to the relative inaccuracy of a hand-held GPS. and the scale of mapping used in this study it has not been mapped as such.

The DOB community is in the mature growth phase. Stringybark is the dominant tree and white gum is a sub-dominant. As in the DSO community, the creek line is dominated by a dense layer of rainbow fern.

Understorey trees and shrubs include black sheoak, prickly box (*Bursaria spinosa*), varnish wattle (*Acacia verniciflua*), prickly moses (*A. verticillata*), heartleaf bushpea (*Pultenaea daphnoides*) and forest daisybush (*Olearia lirata*). As it grades into WOB other understorey species include blackwood (*A. melanoxylon*), common dogwood (*Pomaderris apetala*), stinkwood (*Zieria arborescens*) and Tasmanian blanketleaf (*Bedfordia salicina*) (Plates 7, 8 and 9).

State-wide 179 130 ha of DOB is mapped, of which 56 640 ha is reserved. Within the Flinders bioregion 6 225 ha is mapped, of which 2 675 ha is reserved. It is not listed as threatened under the *Nature Conservation Act 2002*. 
Figure 2: Vegetation communities, threatened flora, potential threatened fauna nesting habitat and significant weeds.
Plate 2: DSO regrowth forest

Plate 3: DSO mature forest in western part of lease.

Plate 4: DSO mature forest in western part of lease showing patch of southern grasstrees.

Plate 5: DSO mature forest on northern slope with understorey of black sheoak, bracken and large log.

Plate 6: DSO mature forest along creek.
Plate 7: DOB community.

Plate 8: DOB community.

Plate 9: WOB community in gully just beyond eastern lease boundary.
3.2 Flora of Conservation Significance

A total of 59 vascular plant species were recorded during the survey including one threatened species and two introduced species. A full species list is given in Appendix 3.

The threatened species, *Hovea corrickiae*, is listed as ‘rare’ under the Tasmanian *Threatened Species Protection Act 1995*. Further details are provided following Table 2 below.

All species of conservation significance previously recorded within 5 km of the study area are listed in Table 2 together with a description of their preferred habitat and an assessment of their likely occurrence in the study area.

Table 2: A risk assessment of the likely occurrence of flora species of conservation significance previously recorded in the vicinity (5km radius) of the study area and within similar habitat.

<table>
<thead>
<tr>
<th>Species</th>
<th>Status(^{12})</th>
<th>Potential to occur</th>
<th>Observations and Preferred Habitat(^{13})</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hierochloe rariflora</em></td>
<td>Rare /</td>
<td>HIGH</td>
<td>Twenty-one previous records are mostly from the 2000s. An uncommon perennial grass found in eucalypt forest and riparian/gorge habitat. Suitable habitat is present along the larger creek on or close to the eastern lease boundary.</td>
</tr>
<tr>
<td>cane holygrass</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Acacia ulicifolia</em></td>
<td>Rare /</td>
<td>MODERATE</td>
<td>Six previous records include three from the 2000s. Occurs in sandy coastal heaths and open forests and woodlands. Potential habitat is present but unlikely to have been overlooked unless it occurs in very low numbers.</td>
</tr>
<tr>
<td>juniper wattle</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Austrostipa blackii</em></td>
<td>Rare /</td>
<td>LOW</td>
<td>Three previous records include two from the 2000s. Occurs in open woodlands up to an altitude of 100 m. Very few grasses were recorded during the study. Habitat in the study area is probably unsuitable.</td>
</tr>
<tr>
<td>crested speargrass</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Brachyloma depressum</em></td>
<td>Rare /</td>
<td>LOW</td>
<td>Two previous records are from 1992. Occurs in shrubby heathland amongst granite boulder/sheets or on granite soils. No suitable habitat is present.</td>
</tr>
<tr>
<td>spreading heath</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Caladenia caudata</em></td>
<td>Vulnerable /</td>
<td>LOW</td>
<td>One previous record is from 1974. Widespread but localised in distribution. It occurs in heathy and grassy open eucalypt woodlands often with she-oaks and in heathland on sandy and loamy soil. It is most often found on sunny north-facing slopes. Habitat in the study area is probably unsuitable due to the dense ground layer of bracken and litter.</td>
</tr>
<tr>
<td>tailed spider-orchid</td>
<td>VULNERABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Conospermum hookeri</em></td>
<td>Vulnerable /</td>
<td>LOW</td>
<td>Eight previous records include several recent ones. Occurs in open coastal heathland and heathy woodland on granite or sandy acid, low nutrient soils. Marginally suitable habitat is</td>
</tr>
<tr>
<td>tasmanian smokebush</td>
<td>VULNERABLE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{12}\) TSPA - Tasmanian *Threatened Species Protection Act 1995*; EPBCA - Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

\(^{13}\) Natural Values Atlas; Lazarus *et al.* 2003
<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Potential to occur</th>
<th>Observations and Preferred Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cyrtostylis robusta</strong>&lt;br&gt;large gnat-orchid</td>
<td>Rare / -</td>
<td>VERY LOW</td>
<td>One previous record is historical. Currently known from coastal scrub and she-oak woodland on well-drained sandy or brown loams, often near dolerite outcrops. No suitable habitat is present in the study area.</td>
</tr>
<tr>
<td><strong>Desmodium gunnii</strong>&lt;br&gt;southern ticktrefoil</td>
<td>Vulnerable / -</td>
<td>MODERATE</td>
<td>One previous record is from 2007. Occurs in very small isolated populations in dry sclerophyll forest and woodland and forms dense mats in moist soil. Some suitable habitat is present along the larger creek on or close to the eastern lease boundary.</td>
</tr>
<tr>
<td><strong>Hibbertia calycina</strong>&lt;br&gt;lesser guineaflower</td>
<td>Vulnerable / -</td>
<td>LOW to MODERATE</td>
<td>Three previous records are from 1999 and 2000. It has an extremely limited distribution, found only near Scamander and St Helens. It favours isolated north and west facing slopes, with soils that are extremely shallow, free draining and relatively stony with little moisture-holding capacity and low nutrient status. It occurs on ridgelines and upper slope areas in <em>Eucalyptus sieberi</em> forest. Very marginal habitat is present north of the existing quarried area. Unlikely to have been overlooked unless it occurs in very low numbers.</td>
</tr>
<tr>
<td><strong>Hibbertia virgata</strong>&lt;br&gt;twiggy guineaflower</td>
<td>Rare / -</td>
<td>LOW to MODERATE</td>
<td>Five previous records are from 1999 to 2008. Occurs in sand heaths and open woodlands. Very marginal habitat is present to the north and west of the existing quarried area. May have been overlooked particularly if it occurs in very low numbers.</td>
</tr>
<tr>
<td><strong>Hovea corrickiae</strong>&lt;br&gt;glossy purplepea</td>
<td>Rare / -</td>
<td>PRESENT</td>
<td>Six previous records are from 1996 to 2006. Occurs in rocky areas along riparian zones with wet sclerophyll understorey shrubs and in open forest. Two plants were observed within the study area close to the eastern boundary. See below for more details</td>
</tr>
<tr>
<td><strong>Lachnagrostis billardierei tenuiseta</strong>&lt;br&gt;small-awn blowgrass</td>
<td>Rare / -</td>
<td>NONE</td>
<td>One previous record is from 2000. Occurs in coastal scrub on sand dunes. No suitable habitat is present.</td>
</tr>
<tr>
<td><strong>Lepidium pseudotasmanicum</strong>&lt;br&gt;shade peppercress</td>
<td>Rare / -</td>
<td>NONE</td>
<td>One previous record is from 1990. Found on bare ground in grassland and grassy woodland. No suitable habitat is present.</td>
</tr>
<tr>
<td><strong>Plantago debilis</strong>&lt;br&gt;shade plantain</td>
<td>Rare / -</td>
<td>MODERATE</td>
<td>Fifteen previous records are mostly from the 2000s. Occurs in boulder crevices in both wet and dry forest and woodland. Some suitable habitat is present along the larger creek on or close to the eastern lease boundary.</td>
</tr>
<tr>
<td><strong>Pterostylis grandiflora</strong>&lt;br&gt;superb greenhood</td>
<td>Rare / -</td>
<td>LOW</td>
<td>Three previous records with the most recent from 1945. Uncommon and localised especially in coastal areas. It occurs in heathy and shrubby open eucalypt forest and in grassy she-oak woodland on moderately to well drained sandy and loamy soils. Whilst very marginal habitat is present the population in this area of the State is possibly extinct.</td>
</tr>
<tr>
<td><strong>Scleranthus brockiei</strong>&lt;br&gt;brock knawel</td>
<td>Rare / -</td>
<td>VERY LOW</td>
<td>One previous record is from 1990. Occurs in grassland/woodland, predominantly in subalpine to alpine areas. No suitable habitat</td>
</tr>
</tbody>
</table>
Species | Status\(^2\) | Potential to occur | Observations and Preferred Habitat\(^3\)
---|---|---|---
Sporobolus virginicus salt couch | Rare / - | NONE | Two previous records are historical. It occurs in salt marshes and on sand hills. No suitable habitat is present.
Utricularia australis yellow bladderwort | Rare / - | NONE | One previous record is from 2008. Grows in marshy habitats in still or slow flowing water up to several meters deep. No suitable habitat is present.
Villarsia exaltata erect marshflower | Rare / - | LOW | Two previous records are from 2005. It grows in stationary or slow flowing water to a depth of 50 cm. Very marginal habitat is present along the larger creek on or close to the eastern lease boundary.

**Hovea corrickiae - glossy purplepea (TSPA: rare)**

*H. corrickiae* grows as a small shrub or slender tree to 5 m tall. The leaves are up to 4 cm long, glossy green above and densely hairy below. The flowers are white streaked with purple.

Two plants were observed in the study area. One is a mature, slender shrub approximately 2.5 m tall and in full flower at the time of the survey. The other is a juvenile less than 0.5 m tall. Both occur on the creek bank near the eastern boundary and close to where the two creeks meet. It is highly possibly that other plants are present in this general vicinity (Plates 10 and 11).

Plate 10: *Hovea corrickiae* shrub (on site).

Plate 11: *Hovea corrickiae* flowers (on site).
3.3 Fauna Habitat

The study area provides a diverse range of fauna habitat elements including both wet and dry forest, creeks, large mature trees some of which will contain hollows, areas of dense shrubs, ground cover and litter and some fallen logs. These elements provide foraging, shelter and/or nesting habitat for a range of native mammals, birds and invertebrates.

One den site under the roots of a large fallen tree, possibly used by a mammal such as the Tasmanian devil, was observed during the survey. This is located on the northern lease boundary (see Figure 2 and Plates 5 and 12).

3.4 Fauna of Conservation Significance

Table 3 lists threatened fauna species that have been recorded within the vicinity of the study area or may be expected to occur in suitable habitat. A brief discussion is given to indicate the reasons why habitat is suitable or unsuitable.

Table 3: Fauna species of conservation significance previously recorded, or which may potentially occur, within 5 km of the study area.

| Species                  | Status TSPA/EPBCA | Potential to occur | Observations and preferred habitat
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Wedge-tailed eagle</td>
<td>Endangered /</td>
<td>Nesting:</td>
<td>Requires large sheltered trees</td>
</tr>
<tr>
<td>Aquila audax fleayi</td>
<td>ENDANGERED</td>
<td>VERY LOW</td>
<td>for nesting. During the breeding</td>
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<td></td>
<td></td>
<td></td>
<td>season it is highly sensitive to</td>
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<td></td>
<td></td>
<td></td>
<td>disturbance within 500 m or</td>
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<td>within 1 km in line of sight.</td>
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<td></td>
<td>The creeks provide potential</td>
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<td></td>
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<td>habitat but given that the</td>
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<td>existing quarries have been in</td>
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<td></td>
<td></td>
<td>operation for some time these</td>
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<td></td>
<td></td>
<td></td>
<td>creeks are unlikely to</td>
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<td></td>
<td></td>
<td></td>
<td>provide suitable habitat for</td>
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<td></td>
<td></td>
<td></td>
<td>successful breeding. Three</td>
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<td></td>
<td></td>
<td></td>
<td>known nests in the vicinity are</td>
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<td></td>
<td></td>
<td></td>
<td>beyond the range of likely</td>
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<td></td>
<td></td>
<td></td>
<td>disturbance although one nest is</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>just over 1 km from the quarry.</td>
</tr>
<tr>
<td>White-bellied sea eagle</td>
<td>Vulnerable /</td>
<td>Nesting:</td>
<td>Similar habitat requirements to</td>
</tr>
<tr>
<td>Haliaeetus leucogaster</td>
<td>-</td>
<td>VERY LOW</td>
<td>the wedge-tailed eagle and is</td>
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<td></td>
<td></td>
<td></td>
<td>sensitive to disturbance within</td>
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<td></td>
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<td></td>
<td>250 m. Three known nests in the</td>
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<td></td>
<td></td>
<td></td>
<td>vicinity are beyond the range</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of likely disturbance.</td>
</tr>
<tr>
<td>Swift parrot</td>
<td>Endangered /</td>
<td>Nesting:</td>
<td>Several previous records are</td>
</tr>
<tr>
<td>Lathamus discolor</td>
<td>ENDANGERED</td>
<td>MODERATE</td>
<td>from 1979 to 1997. Although there</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>are no known nests within 5 km</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>of the study area some nests do</td>
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<td></td>
<td></td>
<td>occur in the St Helens area. It</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>breeds near the east coast of</td>
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<td></td>
<td></td>
<td>Tasmania within the range of the</td>
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<tr>
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<td></td>
<td></td>
<td>Tasmania blue gum. Forest types</td>
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<td></td>
<td></td>
<td></td>
<td>in which it nests include E.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>obliqua dry forest. Requires tree</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>hollows for nesting and feeds on</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>nectar of blue gum and black</td>
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<td></td>
<td></td>
<td></td>
<td>gum flowers. While no blue or</td>
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<td></td>
<td></td>
<td></td>
<td>black gums were observed during</td>
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<td></td>
<td></td>
<td></td>
<td>the survey potential nest hollows</td>
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<td></td>
<td></td>
<td></td>
<td>may be present in some of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>mature stringybark trees.</td>
</tr>
<tr>
<td>Grey goshawk</td>
<td>Endangered /</td>
<td>Nesting:</td>
<td>Three previous records in the</td>
</tr>
<tr>
<td>Accipiter novaehollandiae</td>
<td>-</td>
<td>LOW</td>
<td>vicinity are from 1996 and 1998.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inhabits large tracts of wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>forest and breeding pairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>commonly occur in blackwood</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>swamps and rivers. They require</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>old trees for nesting. Wet forest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>occurs in the vicinity but only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>along the deep gullies. The area</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is not core habitat for this</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>species although juveniles or</td>
</tr>
</tbody>
</table>

14 Natural Values Atlas; Bryant & Jackson 1999
<table>
<thead>
<tr>
<th>Species</th>
<th>Status TSPA/EPBCA</th>
<th>Potential to occur</th>
<th>Observations and preferred habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Masked owl Tyto novaehollandiae castanops</strong></td>
<td>Endangered</td>
<td>Nesting: LOW to MODERATE</td>
<td>Three previous records in the vicinity are from 1978 and 1980. Preferred habitat is coastal and sub-coastal dry forest and woodland of the north, north east, east and south east. Requires a mosaic of forest and open areas for foraging and large old-growth hollow-bearing trees for nesting. The study area is within the core habitat range for this species but the mature trees may not provide large enough hollows for this owl.</td>
</tr>
<tr>
<td><strong>Forty-spotted pardalots Pardalotus quadragintus</strong></td>
<td>Endangered / ENDANGERED</td>
<td>Nesting: NONE</td>
<td>This Tasmanian endemic bird is restricted largely to headlands, peninsulas and nearby islands in the eastern part of the State. It occurs only dry grassy forest and woodland containing mature white gum, which is usually found on well-drained dolerite slopes. It possibly visits the area outside the breeding season but there are no known nest colonies in this part of the State and no suitable nesting habitat is present.</td>
</tr>
<tr>
<td><strong>Shy albatross Diomedea cauta cauta</strong></td>
<td>Pending Vulnerable / pending VULNERABLE</td>
<td>NONE</td>
<td>An oceanic bird that breeds on offshore islands and rock stacks.</td>
</tr>
<tr>
<td><strong>Fairy prion (southern subspecies) Pachyptila turtur subantarctica</strong></td>
<td>Endangered / VULNERABLE</td>
<td>NONE</td>
<td>An oceanic bird that breeds on offshore islands mainly in Bass Strait.</td>
</tr>
<tr>
<td><strong>Great crested grebe Poliocephalus cristatus subsp. australis</strong></td>
<td>Vulnerable / -</td>
<td>NONE</td>
<td>An uncommon species that inhabit rivers, lakes and estuaries and nest in heaped floating vegetation anchored in reed beds or drooping branches. No suitable habitat is present.</td>
</tr>
<tr>
<td><strong>Little tern Sterna albifrons sinensis</strong></td>
<td>Endangered / -</td>
<td>NONE</td>
<td>Preferred breeding habitat includes sand or shingle beaches, dunes and estuaries.</td>
</tr>
<tr>
<td><strong>Fairy tern Sterna nereis nereis</strong></td>
<td>Vulnerable / -</td>
<td>NONE</td>
<td>Same as for the little tern</td>
</tr>
</tbody>
</table>

### MAMMALS

<table>
<thead>
<tr>
<th>Species</th>
<th>Status TSPA/EPBCA</th>
<th>Potential to occur</th>
<th>Observations and preferred habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spotted-tailed quoll Dasyurus maculatus maculatus</strong></td>
<td>Rare / VULNERABLE</td>
<td>MODERATE to HIGH</td>
<td>Three previous records in the vicinity are from 1992 to 1995. Occurs throughout Tasmania but at low densities. Primarily inhabits forests being most abundant in high rainfall areas containing rainforest, wet forests and blackwood swamp forest but also occurs in eucalypt forest and woodland and coastal heath. Forages and hunts on farmland and pasture, mainly at night, travelling up to 20 km or more. Requires logs, rocks or thick vegetation for daytime shelter. Suitable habitat is present.</td>
</tr>
<tr>
<td><strong>New holland mouse Pseudomys novaehollandiae</strong></td>
<td>Endangered / -</td>
<td>LOW</td>
<td>Previous survey effort has been low and habitat may be broader than described. Core habitat is coastal dry heath on a sandy substrate with a dense and floristically diverse understorey. While there are areas of dense vegetation they are not particularly floristically diverse.</td>
</tr>
<tr>
<td><strong>Eastern-barred bandicoot Perameles gunnii gunnii</strong></td>
<td>- / VULNERABLE</td>
<td>LOW</td>
<td>Favours a mosaic of open grassy areas for foraging with thick vegetation cover for shelter and nesting. Habitat within the study area is very marginal for this species although it may utilise the</td>
</tr>
<tr>
<td>Species</td>
<td>Status</td>
<td>Potential to occur</td>
<td>Observations and preferred habitat</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------</td>
<td>--------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>Tasmanian devil</strong></td>
<td>Endangered /</td>
<td>MODERATE to HIGH</td>
<td>One previous record in the vicinity is from 1995. Devils are nocturnal hunters and scavengers. They inhabit forest, woodland and agricultural areas, sheltering during the day in caves, old burrows and thick scrub. Although devil facial tumour disease is the main threat to this species the protection of maternal dens to ensure successful breeding is important to assist recovery. One potential den site was identified in the study area under the roots of a fallen tree. Other den sites may be present in the area.</td>
</tr>
<tr>
<td><em>Sarcophilus harrisii</em></td>
<td>ENDANGERED</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Green and gold frog</strong></td>
<td>Vulnerable /</td>
<td>NONE</td>
<td>Requires permanent fresh water for breeding, preferably shallow water with diverse emergent vegetation. No suitable habitat is present.</td>
</tr>
<tr>
<td><em>Litoria raniformis</em></td>
<td>VULNERABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Giant velvet worm</strong></td>
<td>Rare / -</td>
<td>VERY HIGH</td>
<td>Eight previous records in the vicinity, from 1983 to 1988, include one in the large creek along the eastern lease boundary. Preferred habitat is narrow wet gullies, on creek and river flats and drainage lines on steep hillsides. Lives deep within large decaying eucalypt logs or occasionally under moss-covered or shaded stones, in deep litter or on log surfaces among friable composting material. Habitat patches can be as small as 10 m. The transition zone from DOB to WOB within the study area provides suitable habitat.</td>
</tr>
<tr>
<td><em>Tasmanipatus barrettii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Australian grayling</strong></td>
<td>Vulnerable /</td>
<td>NONE</td>
<td>Inhabits permanent rivers and streams. They spawn in moderately flowing fresh water and lays eggs on gravelly stream beds. No suitable habitat is present.</td>
</tr>
<tr>
<td><em>Prototroctes maraena</em></td>
<td>VULNERABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eastern dwarf galaxias</strong></td>
<td>Vulnerable /</td>
<td>NONE</td>
<td>Inhabits slow-flowing fresh water such as swamps, drains and stream backwaters amongst dense aquatic or emergent vegetation. No suitable habitat is present and the study area is not within the known range of this species.</td>
</tr>
<tr>
<td><em>Galaxiella pusilla</em></td>
<td>VULNERABLE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.5 Introduced Plants

Although the study area is generally free of introduced plants two significant weeds were observed during the survey. A small infestation of Spanish heath (*Erica lusitanica*) occurs adjacent to the access track. This is a ‘declared weed’ under the Tasmanian *Weed Management Act 1999*. The other significant weed, radiata pine (*Pinus radiata*), which is considered to be an environmental weed, was noted in two locations close to the existing quarried area (Plates 13 and 14). The distribution of these weeds is depicted in Figure 2.
Commonly known as dieback or root rot fungus, *Phytophthora cinnamomi* (PC) is a soil borne fungal pathogen that invades the roots of plants and starves them of nutrients and water. It is generally spread by the transportation of soil on vehicles, construction machinery and walking boots. The establishment and spread of PC is favoured in areas that receive above 600 mm of rainfall per annum and are below 800 m altitude.

There is no obvious evidence that PC is presently affecting the study area as no dead or dying susceptible plants were observed. Furthermore, the study area supports seven species that are susceptible to PC, or are reliable indicator species, although most of them are patchily distributed and none occur in any great abundance. They are *Hibbertia empetrifolia*, *Leucopogon ericoides*, *Amperea xiphoclada*, *Aotus ericoides*, *Pultenaea daphnoides*, *Stylidium graminifolium* and *Xanthorrhoea australis*.

The study area falls within the climate envelope favoured by PC and also within the area of its known distribution. The DSO and DOB communities are of variable or moderate susceptibility to PC but identification of PC in the field is often problematic15.

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15 Schahinger et al. 2003; Rudman 2005
4. ASSESSMENT OF IMPACT

The impact of the proposed quarry expansion on the native vegetation, flora and fauna values of the study area is dependent upon the extent of works and the nature of environmental controls.

Although infrastructure, including access roads, already exist, the footprint of quarrying activity goes beyond the actual area being worked.

There will inevitably be some direct impact on the vegetation, flora and fauna habitat associated with the quarry expansion, and potentially, the indirect impact of the introduction or spread of *Phytophthora cinnamomi* on sensitive species.

4.1 Significant Vegetation

There are no threatened forest communities and, hence, none are at risk from the proposed quarry expansion.

4.2 Significant Flora

One threatened plant species, *Hovea corrickiae*, listed as ‘rare’ under the Tasmanian Threatened Species Protection Act 1995 (TSPA), was recorded in the study area. The population of this species in the vicinity may be more widespread than the two plants observed during the survey. However, other individuals are likely to be confined to the riparian zones close to the eastern lease boundary.

Other threatened plants with a moderate to high potential to occur in the study area are also species that are most likely to be found in the riparian zone. They are *Desmodium gunnii*, *Hierochloe rariflora* and *Plantago debilis*. The first of these is listed as ‘vulnerable’ and the other two as ‘rare’ under the TSPA.

Provided that a sufficient buffer is maintained along the riparian zone then these plants should not be impacted by the proposed quarry expansion.

4.3 Fauna Habitat

The most significant fauna habitat elements in relation to threatened species that may be impacted by the proposed quarry expansion are the riparian zone and large fallen logs on the forest floor.

The giant velvet worm, listed as ‘rare’ under the TSPA, has previously been observed in the gully/creek just beyond the eastern lease boundary. Any disturbance to habitat in the general vicinity of this boundary, where the DOB community grades into WOB, would likely impact on the giant velvet worm.

The lease provides potential habitat for two threatened mammals: the Tasmanian devil, listed as ‘endangered’ under both the TSPA and Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBCA), and the spotted-tailed quoll, listed as ‘rare’ under the TSPA and ‘vulnerable’ under the EPBCA. One potential den site is located on the northern lease boundary and it is highly likely that other potential den sites are present in other fallen logs in this general area which is close to the creek line parallel to the northern lease boundary.

4.4 Weeds and Plant Pathogens

The introduction of machinery and vehicles in general presents an increased risk of introducing weeds. It also risks introducing and/or spreading the root rot pathogen...
Phytophthora cinnamomi (PC). The study area supports several plants known to be susceptible to PC.

5. MINIMISING IMPACT

5.1 THREATENED FLORA AND FAUNA

The areas identified as the most significant in terms of flora and fauna habitat are the northern boundary and the eastern part of the lease, specifically, along and close to the creeks, which are down slope from the existing quarry workings.

Maintaining a substantial buffer (30 m) between these areas and the area of disturbance created by the quarry by clearly delineating the extent of activity and ensuring no sediment is washed down the slopes should be effective in minimising or negating any direct impact on these habitats.

5.2 WEEDS AND Phytophthora cinnamomi

Protocols for appropriate hygiene have been developed\textsuperscript{16}. At the core of these guidelines are measures to reduce the introduction and spread of Phytophthora cinnamomi (PC) and weeds through such things as:

- Wash-down of machinery before entering the site.
- Periodic reconnaissance surveys for weeds and PC in development areas.

The Contract for the quarry expansion should include a requirement to conform to these guidelines for any earth moving machinery (excluding trucks) that is to enter the site. Site managers should have an awareness of best practise for weed and PC management as well as basic training in identification.

\textsuperscript{16} DPIWE, FT & ACT 2004
6. LEGISLATIVE IMPLICATIONS

6.1 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBAC)

Nationally significant species, for which the study area provides potential foraging, shelter and nesting habitat, include two mammals. The Tasmanian devil is listed as ‘endangered’ under this Act and the spotted-tailed quoll as ‘vulnerable’.

Provided that sufficient buffers are maintained between habitat identified in this report and the area of quarry expansion then no significant impact is anticipated on these species. As such the requirement for referral due to a significant impact on a matter of National Environmental Significance is not triggered with regard to these species.

6.2 TASMANIAN THREATENED SPECIES PROTECTION ACT 1995 (TSPA)

One threatened plant, Hovea corrickiae, occurring in the lease is listed as ‘rare’ under this Act.

Fauna species listed under this Act, for which the lease provides potential foraging, shelter and nesting habitat, include two mammals and one invertebrate. The Tasmanian devil is listed as ‘endangered’ and the spotted-tailed quoll and giant velvet worm are listed as ‘rare’.

If direct destruction of these species or their habitat is anticipated by the proposed quarry expansion then a permit application should be made to the Development and Conservation Assessment Branch (DCAB), Department of Primary Industries, Parks, Water and Environment.

However, in the event that a Forest Practices Plan is required (see below) this would act as the equivalent of a permit.

Appendix 2 outlines the implications of threatened species in regard to the TSPA.

6.3 TASMANIAN WEEE MANAGEMENT ACT 1999 (WMA)

‘Declared weeds’ are subject to the provisions of the WMA. Under the Act, Management Plans classify Break O’Day as a Zone B municipality for the ‘declared weed’, Erica lusitanica, occurring in the lease.

Weeds in Zone B require containment within municipal boundaries, prevention of the weed spreading to land free of the weed and prevention of the weed impacting negatively upon any community or flora or fauna species listed under the EPBAC and/or the TSPA. Properties containing these weeds are potentially subject to the directives of the Regional Weed Management Officer.

6.4 TASMANIAN FOREST PRACTICES REGULATIONS 2005

The Forest Practices Regulations17 require a Forest Practices Plan (FPP) where the clearing of forest is in excess of 1 hectare or 100 tonnes of timber or involves ‘vulnerable land’ where the thresholds become less (see Appendix 4.)

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Under the terms of the Forest Practices Regulations, any native vegetation which has the potential to develop to a height exceeding 5 m is considered ‘forest’.

Any clearing activities on ‘vulnerable land’ will require an FPP, irrespective of the volume of timber or area of vegetation involved (unless the clearing or harvesting is necessary to protect public safety or to maintain existing infrastructure and it involves less than 1 ha or 5 tonnes of timber).

The area of land around the existing quarry, which is potentially subject to vegetation clearance in the course of the proposed quarry expansion, is classified as ‘vulnerable land’ as it contains at least one threatened species (see Appendix 4). Hence, an FPP will be required for clearance of any forest.

7. CONCLUSION AND RECOMMENDATIONS

In order to negate any possibility of impacting the threatened plant, *Hovea corrickiae*, and potential threatened fauna habitat in and around the lease it is recommended that the extent of the quarry expansion is limited to areas away from creek lines and away from the den identified during this survey (grid reference: 605097E, 5418945N +/-8m GDA). This can be achieved by establishing and clearing delineating a 30 m buffer between these habitats and the quarry expansion area and establishing procedures to ensure no sediment is washed down slope.

The area of land around the existing quarry is classified as ‘vulnerable land’ under the Forest Practices Regulations due to the presence of at least one threatened species. Therefore, a Forest Practices Plan will be required if any amount of forest is to be cleared.

A weed and *P. cinnamomi* management plan should be developed in accordance with recognised protocols to limit the risk of introducing or spreading them to currently uninfected sites.
REFERENCES


APPENDIX 1A: DEFINITIONS OF CONSERVATION VALUES OF
PLANT AND ANIMAL SPECIES

SPECIES OF NATIONAL SIGNIFICANCE

Listed in Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act has six categories of threat status for species:

1. **Extinct** - If at a particular there is no reasonable doubt that the last member of the species has died

2. **Extinct in the wild** - If it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or if it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form

3. **Critically endangered** - If at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria

4. **Endangered** - If it is not critically endangered; and it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria

5. **Vulnerable** - If at a particular time it is not critically endangered or endangered; and it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

6. **Conservation dependent** - If, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years

SPECIES OF STATE SIGNIFICANCE

Listed in Tasmanian Threatened Species Protection Act 1995 (TSP Act)

Threatened flora and fauna species in Tasmania are listed in Schedules 3 (extinct or endangered), 4 (vulnerable) or 5 (rare). These three categories are defined in Section 15 of the Act.

1. **Extinct** - If no occurrence of the taxon in the wild can be confirmed during the past 50 years

2. **Endangered** - If it is in danger of extinction because long-term survival is unlikely while the factors causing it to be endangered continue operating.

3. **Vulnerable** - If it is likely to become an endangered taxon while the factors causing it to be vulnerable continue operating.

4. **Rare** - If it has a small population in Tasmania that is not endangered or vulnerable but is at risk.”

Species that have been nominated and approved by the Scientific Advisory Committee for listing in the Act

SPECIES OF REGIONAL OR GENERAL SIGNIFICANCE

The following definitions are from three publications: Flora Advisory Committee 1994, Vertebrate Advisory Committee 1994, Invertebrate Advisory Committee 1994

Flora only - Species listed as rare but not necessarily ‘at risk’ (r3)

Fauna only – Species requiring monitoring (m)

Both – Species of unknown risk status (k) in Tasmania, or thought to be uncommon within region, or a species having a declining range or populations within the area.

Species considered being outside its normal range or of an unusual form as determined and justified in the body of the report.

Species identified in regional studies as being of conservation significance that are not listed in current legislation

Species that have been recognised but have not been formally described in a published journal that are thought to significant as determined and justified in the body of the report.

Plant species that are not known to be reserved. To be so it must be known to exist in at least one secure Reserve. Secure reserves include reserves and parks requiring the approval of both Houses of Parliament for their revocation. They include: National Parks, Aboriginal Sites, Historic Sites, Nature Reserves, State Reserves, Game Reserves, Forest Reserves, Wellington Park, and insecure reserves in the World Heritage Area which is protected by international agreement under the World Heritage Convention.
### Appendix 1B: Definitions of Conservation Values of Plant Communities

#### Plant Community Reservation Status

<table>
<thead>
<tr>
<th>Representativeness</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Reserved</td>
<td>A viable area of a community is found within two or more reserves, or two or more viable areas are well separated within one reserve, or if all its known occurrences are within viable, secure reserves.</td>
</tr>
<tr>
<td>Poorly Reserved</td>
<td>A community is found in one or more reserves, but it does not satisfy one of the conditions required to be considered well reserved.</td>
</tr>
<tr>
<td>Unreserved</td>
<td>A community which is not known from any reserve</td>
</tr>
</tbody>
</table>

For this assessment, reserves include those areas considered to have the highest security of tenure.

#### Conservation Status of Forest Communities

The conservation status of communities was assessed based on the following criteria (PLUC 1996):

**Rare Communities**
- R1 - total area generally less than 10,000 ha
- R2 - total area generally less than 1,000 ha
- R3 - patch sizes generally less than 100 ha

**Vulnerable Communities**
- V1 - approaching greater than 70% depletion
- V2 - where threatening processes have caused either loss or significant decline in species that play a major role within the ecosystem or have caused a significant alteration to the ecosystem process

**Endangered Communities**
- E1 - distribution has contracted to less than 10% of pre-1750 range
- E2 - less than 10% of pre-1750 area remains
- E3 - 90% of area is in small patches and is subject to threatening processes

#### Regional Conservation Status of Forest Communities

The RFA Private Land Program and CARSAG have determined the conservation priority of forest communities using the Interim Bioregions (Version 5) of Tasmania. Communities have been placed into three categories of significance applying the Conservation status defined above for each community at a bioregional level and also considering ‘old growth’ values. This is useful for a range of users such as local government for natural resource management strategies, catchment planning, Bushcare, Tasveg 2000, community groups and land owners.

- **Category 1 (HIGH)** – Endangered communities, Vulnerable and Rare communities (old growth only)
- **Category 2 (MODERATE)** – Vulnerable and Rare communities; and other forest communities (old growth only)
- **Category 3 (LOW)** – Other forest communities.

In addition select communities have been ascribed higher priorities at a case by case basis where CARSAG have determined that the particular circumstances of a community require it to be of greater significance than the above method applies (CARSAG 2000)

#### Conservation Status of Non-Forest Communities

The conservation status of non-forest communities is currently being considered as part of the Tasmanian Vegetation Management Strategy (VMS) 1998 and will be determined on completion of the Tasveg 2000 Statewide vegetation mapping project. Interim Regional conservation priorities have been determined for the VMS (Tasmanian Vegetation Management Strategy 2000)
APPENDIX 2: LEGISLATIVE IMPLICATIONS OF THREATENED SPECIES

TASMANIAN STATE LEGISLATION AFFECTING THREATENED SPECIES

_Threatened Species Protection Act 1995_

Threatened flora and fauna species in Tasmania are listed in Schedules 3 (endangered) and 4 (vulnerable) of the Threatened Species Protection Act, 1995. Rare species that are considered to be ‘at risk’ are listed in Schedule 5 of the Act. These three categories are defined in Section 15 of the Act.

1. “An extant taxon of native flora or fauna may be listed as **endangered** if it is in danger of extinction because long-term survival is unlikely while the factors causing it to be endangered continue operating.

2. A taxon of native flora or fauna may be listed as **vulnerable** if it is likely to become an endangered taxon while the factors causing it to be vulnerable continue operating.

3. A taxon of native flora or fauna may be listed as **rare** if it has a small population in Tasmania that is not endangered or vulnerable but is at risk.”

The Act provides mechanisms for protecting these species from threatening processes the implementation of ‘recovery plans’, ‘threat abatement plans’, ‘land management plans’, public authority agreements’, and ‘interim protection orders’.

Section 51 (a) of the TSPA states that: “A person must not knowingly, without a permit - take, trade in, keep or process any listed flora or fauna”. The Act defines ‘take’ as including: “kill, injure, catch, damage, destroy and collect. A land manager is therefore required to obtain a permit from the Development and Conservation Assessment Branch (DCAB) of Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE) to carry out management that may adversely affect any of the species listed in the Act.”
Commonwealth of Australia Legislation Affecting Threatened Species

*Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act establishes a process for assessing actions that are likely to have impacts of *national environmental significance*. Such impacts include World Heritage Areas, RAMSAR Wetland sites of international importance, migratory species protected under international agreements, nuclear actions, the Commonwealth marine environment and *nationally threatened species and communities*.

Threatened species are defined in several categories:

1. **Extinct**
   - If at a particular time there is no reasonable doubt that the last member of the species has died

2. **Extinct in the wild**
   - If it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
   - If it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form

3. **Critically endangered**
   - If at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria

4. **Endangered**
   - If it is not critically endangered; and it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria

5. **Vulnerable**
   - If at a particular time it is not critically endangered or endangered; and it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

6. **Conservation dependent**
   - If, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years

An action that is likely to affect species that are listed in any of the above categories may require ministerial approval unless the Commonwealth Environment Minister has granted an exemption. The Act establishes a referral process to Environment Australia to determine whether an action requires a formal approval and thus would be required to proceed through the assessment and approval process.

A referral must provide sufficient information to allow the Minister to make a decision. The Minister is then required to make a decision within 20 business days of the referral. The Minister may decide an approval is not necessary if the action is taken in a specified manner. The action may not require approval but may require a permit if undertaken on Commonwealth land. If an approval is required then an environmental assessment must be carried out. In such instances the environmental assessment approach will be determined by the Minister and may vary from preliminary documentation to a full public inquiry depending on the scale and complexity of the impact.
## APPENDIX 3: VASCULAR PLANT SPECIES LIST

**Status codes:**
- **ORIGIN**
  - i - introduced
  - d - declared weed WM Act
  - en - endemic to Tasmania
- **NATIONAL SCHEDULE**
  - EPBC Act 1999
- **STATE SCHEDULE**
  - TSP Act 1995
  - CR - critically endangered
  - e - endangered
  - EN - endangered
  - v - vulnerable
  - VU - vulnerable
  - r - rare

**Sites:**
1. DSO - E605137, N5418884
2. DOB - E605345, N5418840

### Sites

<table>
<thead>
<tr>
<th>Site</th>
<th>Name</th>
<th>Common name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>DICOTYLEDONAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>APIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Xanthosia pilosa</td>
<td>woolly crossherb</td>
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</tr>
<tr>
<td>2</td>
<td><strong>ASTERACEAE</strong></td>
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<td></td>
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<td>1</td>
<td>Bedfordia salicina</td>
<td>tasmanian blanketleaf</td>
<td>en</td>
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<tr>
<td>2</td>
<td><strong>CASUARINACEAE</strong></td>
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<td>Allocasuarina littoralis</td>
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<td>1</td>
<td><strong>DILLENIACEAE</strong></td>
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<td>1</td>
<td>Hibbertia empetrifolia subsp. empetrifolia</td>
<td>scrambling guineaflower</td>
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</tr>
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<td>1</td>
<td><strong>EUPHORBIACEAE</strong></td>
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<td><strong>EUPHORBIACEAE</strong></td>
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<td>1</td>
<td>Amperea xiphoclada var. xiphoclada</td>
<td>broom spurge</td>
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</tr>
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<td>Aotus ericoide</td>
<td>golden pea</td>
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<td>Bossiaea cinerea</td>
<td>showy bossia</td>
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<td>Dillwynia cinerascens</td>
<td>grey parrotpea</td>
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<td>common raspwort</td>
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<td>Acacia melanoxylon</td>
<td>blackwood</td>
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<td>Acacia suaveolens</td>
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<td>Acacia verniciflua</td>
<td>varnish wattle</td>
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<td><strong>MYRTACEAE</strong></td>
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<td>en</td>
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<td>Eucalyptus obliqua</td>
<td>stringybark</td>
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<td><strong>Euryomyrtus</strong></td>
<td>ramosissima</td>
<td>heath-myrtle</td>
<td></td>
</tr>
<tr>
<td><strong>Leptospermum</strong></td>
<td>lanigerum</td>
<td>woolly teatree</td>
<td></td>
</tr>
<tr>
<td><strong>Leptospermum</strong></td>
<td>scoparium</td>
<td>common tea-tree</td>
<td></td>
</tr>
<tr>
<td><strong>OXALIDACEAE</strong></td>
<td>Oxalis perennans</td>
<td>grassland wood sorrel</td>
<td></td>
</tr>
<tr>
<td><strong>PITTOSPORACEAE</strong></td>
<td>Bursaria spinosa subsp. spinosa</td>
<td>prickly box</td>
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<tr>
<td><strong>PROTEACEAE</strong></td>
<td>Lomatia tinctoria</td>
<td>guitar plant</td>
<td></td>
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<tr>
<td></td>
<td>Persoonia juniperina</td>
<td>prickly geebung</td>
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<tr>
<td><strong>RHAMNACEAE</strong></td>
<td>Pomaderris apetala</td>
<td>common dogwood</td>
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<tr>
<td></td>
<td>Pomaderris elliptica</td>
<td>yellow dogwood</td>
<td></td>
</tr>
<tr>
<td><strong>RUBIACEAE</strong></td>
<td>Coprosma quadrifida</td>
<td>native currant</td>
<td></td>
</tr>
<tr>
<td><strong>RUTACEAE</strong></td>
<td>Philothea virgata</td>
<td>twiggy waxflower</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zelia arborescens</td>
<td>stinkwood</td>
<td></td>
</tr>
<tr>
<td><strong>STYLIDIACEAE</strong></td>
<td>Stylidium graminifolium</td>
<td>narrow leaf trigger plant</td>
<td></td>
</tr>
<tr>
<td><strong>THYMELACEAE</strong></td>
<td>Pimelea humilis</td>
<td>dwarf rice flower</td>
<td></td>
</tr>
<tr>
<td><strong>VIOLACEAE</strong></td>
<td>Viola hederacea</td>
<td>ivy leaf violet</td>
<td></td>
</tr>
<tr>
<td><strong>GYMNOSPERMAE</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>PINACEAE</strong></td>
<td>Pinus radiata</td>
<td>radiata pine</td>
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<tr>
<td><strong>MONOCOTYLEDONAE</strong></td>
<td></td>
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<tr>
<td><strong>Cyperaceae</strong></td>
<td>Gahnia grandis</td>
<td>cutting grass</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lepidosperma concavum</td>
<td>sand swordsedge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lepidosperma laterale</td>
<td>variable swordsedge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lepidosperma longitudinale</td>
<td>spreading swordsedge</td>
<td></td>
</tr>
<tr>
<td><strong>Liliaceae</strong></td>
<td>Dianella revoluta</td>
<td>spreading flax lily</td>
<td></td>
</tr>
<tr>
<td><strong>Orchidaceae</strong></td>
<td>Acianthus sp.</td>
<td>mosquito orchid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chiloglottis sp.</td>
<td>bird orchid</td>
<td></td>
</tr>
<tr>
<td><strong>Restionaceae</strong></td>
<td>Hypolaena fastigiata</td>
<td>tassel roperush</td>
<td></td>
</tr>
<tr>
<td><strong>Xanthorrhoeaceae</strong></td>
<td>Lomandra longifolia</td>
<td>sagg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Xanthorrhoea australis</td>
<td>southern grasstree</td>
<td></td>
</tr>
<tr>
<td><strong>PTERIDOPHYTA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dennstaedtiaceae</strong></td>
<td>Pteridium esculentum</td>
<td>bracken</td>
<td></td>
</tr>
<tr>
<td><strong>Dicksoniacae</strong></td>
<td>Calochlaena dubia</td>
<td>rainbow fern</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 4 - LAND CLEARING REGULATIONS


When do you need a Forest Practices plan FPP?

Forest Practices include:
- Harvesting and regenerating native forest
- Harvesting and/or establishing plantations
- Clearing forests for other purposes
- Constructing roads and quarries for the above purposes
- Harvesting tree ferns

Most forest practices require a Forest Practices Plan (FPP). This is so for all tenures - State forest and private forest, including Private Timber Reserves. New Statewide controls on the clearing of trees and woody vegetation were introduced in January 2002. Landowners and developers are strongly advised to seek professional advice from a Forest Practices Officer (FPO) or the Forest Practices Authority (FPA) before undertaking any forest practices, including tree clearing. Unauthorised forest practices can result in substantial penalties.

Forest Practices Regulations

You need a Forest Practices Plan if...

1. The land is vulnerable land, and you are the landowner or have their consent and wish to carry out any timber harvesting or tree clearing. If you are clearing trees to protect public safety or to maintain existing infrastructure you may not need a FPP.

2. The land is not defined as vulnerable land and if you are the landowner or have their consent and wish to:
   - harvest or clear more than 100 tonnes of timber (including firewood)
   - harvest or clear more than one hectare of trees (including tree ferns)
   - harvest more than 6 tree ferns from their land in any calendar year.

You do not need a Forest Practices Plan if...

1. The land is not defined as vulnerable land and you are the landowner or have their consent and wish to harvest timber or clear trees if this is less than 100 tonnes or less than one hectare (whichever is the lesser) on any property per calendar year. This does not apply to tree ferns.

2. The land is vulnerable land and you are the landowner or have their consent and wish to harvest timber or clear trees to protect public safety or to maintain existing infrastructure if this is less than five tonnes or less than one hectare (whichever is the lesser) on any property per calendar year.

3. You wish to harvest timber or clear trees on any land for the following purposes:
   - easements for power lines;
   - gas pipelines;
   - public roads.

4. You wish to establish less than ten hectares of trees on any property that has not contained trees in the immediately preceding five year period and this does not involve the construction of a road or the operation of a quarry.

5. You wish to harvest tree ferns – if no more than six tree ferns on any property per calendar year.

6. You wish to clear trees in accordance with-
vegetation management agreements or conservation covenants recognised by the Forest Practices Authority (more information on conservation)

FPPs for Subdivisions

If you wish to clear a few trees for a subdivision, you may need a FPP. Clearing trees for subdivisions is not treated any differently from other forest practices and the regulations outlined above apply.

Clearing defined

Clearing includes the removal or destruction (by cutting, pushing down, burning or any other means) of native trees, and any seedlings, shrubs or woody plants that have the potential to grow to a height of five metres or more. The controls include forest species planted for wood production but do not include other introduced species such as those planted for agricultural or amenity purposes (e.g. willows).

Property defined

A single property is any land recorded as one valuation on the valuation roll under section 23(1) of the Land Valuation Act 1971. The valuation roll can be found on the web at www.thelist.gov.au.

Vulnerable land defined

Vulnerable land includes any land that:

- is within a streamside reserve or machinery exclusion zone as defined in the Forest Practices Code (FPC). The FPC prescribes the following buffer widths:
  - Class 1 stream (major river or lake) – 40m either side of stream channel
  - Class 2 stream (catchment > 100 hectares) – 30m either side of stream channel
  - Class 3 stream (catchment 50 - 100 hectares) – 20m either side of stream channel
  - Class 4 stream (minor or intermittent stream) – 10m either side of stream channel
- has steep slopes, in excess of the limits prescribed in Table 7 (p54) of the FPC (this ranges from 11° to 19° depending on rock type)
- has high to very high soil erodibility (see p.52 and Appendix 6 of the FPC)
- contains threatened species
- contains vulnerable karst (limestone or dolomite) soils (see p.101 of the FPC)
- contains areas of forest reserved from harvesting under a current or expired forest practices plan
- contains forest (and other vegetation) communities listed as threatened under the Nature Conservation Act 2002.
**Forest communities defined as vulnerable land**

The table below lists threatened forest communities which are included in the FPA definition of vulnerable land and so are protected from conversion. Clearing is not permitted in these forest types unless special approval is given by the FPA for exceptional circumstances or for exempt land uses (public roads, power easement and gas pipelines).

<table>
<thead>
<tr>
<th>Forest type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrubby E. ovata – E. viminalis forest</td>
</tr>
<tr>
<td>E. viminalis wet forest</td>
</tr>
<tr>
<td>Furneaux E. viminalis forest</td>
</tr>
<tr>
<td>King Island E. globulus / E. brookeriana / E. viminalis forest</td>
</tr>
<tr>
<td>E. morrisbyi forest</td>
</tr>
<tr>
<td>Melaleuca ericiifolia coastal swamp forest</td>
</tr>
<tr>
<td>Banksia serrata woodland</td>
</tr>
<tr>
<td>Notelaea ligustrina and/or Pomaderris apetala closed forest</td>
</tr>
<tr>
<td>E. risdonii forest</td>
</tr>
<tr>
<td>Callitris rhomboidea forest</td>
</tr>
<tr>
<td>E. viminalis - E. globulus coastal shrubby forest</td>
</tr>
<tr>
<td>King Billy pine – deciduous beech forest</td>
</tr>
<tr>
<td>Pencil pine forest</td>
</tr>
<tr>
<td>Pencil pine – deciduous beech forest</td>
</tr>
<tr>
<td>Inland E. amygdalina forest</td>
</tr>
<tr>
<td>E. amygdalina forest on sandstone</td>
</tr>
<tr>
<td>E. brookeriana wet forest</td>
</tr>
<tr>
<td>Inland E. tenuiramis forest</td>
</tr>
<tr>
<td>Grassy E. globulus forest</td>
</tr>
</tbody>
</table>
Break O’Day Council

Dianas Basin Gravel Pit

ENVIRONMENTAL EFFECTS REPORT

APPENDIX D

R Sainty Aboriginal Sites report
Aboriginal Cultural Heritage Survey
Diana’s Basin Quarry.

Prepared By: Rocky Sainty, Aboriginal Heritage Consultant
Address: 1 Hilcot Place, Glenorchy 7010

Email: rockysainty@aapt.net.au
Phone: (03) 62741834

Date: 30th August 2009

Prepared For: John Miedecke, Consultant, for the Break ODay Council
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[Cover image: Existing Diana’s Basin Quarry]
Summary

This report presents the findings of an Aboriginal Cultural Heritage Assessment in relation to the proposed expansion of the Diana’s Basin Quarry (see Appendix A).

The purpose of this assessment was to locate any indicators of Aboriginal heritage values within the footprint of the proposed works and establish the potential for Aboriginal heritage sites to be impacted by the proposed development, through a search of the Tasmanian Aboriginal Site Index (TASI), background research and a systematic field survey.

This assessment was commissioned by John Miedecke, Consultant for the Break ODay Council.

The field assessment was carried during July 2009 by Aboriginal Heritage Consultant, Rocky Sainty. No Aboriginal heritage values were identified within the Study Area during the field assessment.

Study Area and Environment

The Study Area is an existing quarry which produced road gravel. It has an existing Level 1 permit and is on a mining lease, and is an area of approximately 5 ha in size. The production is to be expanded with production of up to 10,000 m3 of rock produced per year. The quarry will be developed at the current location and will be benched with the quarry advancing to the North. Topsoil and subsoils will be stripped ahead of the face. (see Appendix A).

Surface visibility was low (in accordance with the visibility guide in the Aboriginal Heritage Guidelines & Standards Package below) due to coverage (in sections) of native coastal vegetation (see Appendix D – Photographic Plates).
Research

Prior to European occupation this area and its surrounds was used regularly by Aborigines. A number of Aboriginal placenames have been recorded for country all across Tasmania. The people of this area consisted of small clans or family groups, who frequented specific sites (including offshore islands waterways) within the surrounding country for food harvesting, camping, trade and ceremonial purposes. [Plomley: NJB: Weep in Silence; Tasmanian Aboriginal Placenames; Friendly Mission; Tasmanian Aboriginal Tribes and Cicatrices as Tribal Indicators among the Tasmanian Aborigines]

The Tasmanian Aboriginal Site Index (TASI) at Aboriginal Heritage Tasmania of the Department of Primary Industries, Parks, Water and the Environment was inspected in order to determine if any Aboriginal sites had been recorded within the Study Area or surrounding area. This research also assists in developing an understanding of the nature of any sites in the general area and allows a review of any previous studies in the area of field survey. The inspection of the TASI revealed that there are no previously recorded sites within the proposed Study Area [email of 21/7/09 from Aboriginal Heritage Tasmania].

Field Survey Methods

Project Plans of the proposed extension to quarry works footprint (Appendix B) were provided by John Miedecke.

The writer walked sections of the Study Area 1-5 metres apart due to steepness of the terrain and the thick native vegetation. (see GPS map)

Results and Discussion

No Aboriginal heritage was identified during the field survey.

The Tasmanian Aboriginal community have a continued physical and spiritual connection with Country. A number of Aboriginal sites have been recorded throughout the area, and unfortunately as many may have been impacted on by European farming and other land use practices and more recent development.

The Aboriginal community does not place a level of significance to Aboriginal sites - all sites are significant.
Consultation

As there were no Aboriginal heritage values identified within the Study Area during this Cultural Heritage Assessment, and proposed works relating to this Project will not impact on Aboriginal Heritage, Aboriginal community consultation will be limited to supplying a copy of this Report to the Tasmanian Aboriginal Land and Sea Council (TALSC) and Aboriginal Heritage Tasmania (AHT).

Legislative Framework – Aboriginal Relics Act 1975

As contained under Section 14 (1) of the Aboriginal Relics Act 1975; “Except as otherwise provided in this Act, no person shall, otherwise than in accordance with the terms of a permit granted by the Minister on the recommendation of the Director –
(a) destroy, damage, deface, conceal, or otherwise interfere with a relic;
(b) make a copy or replica of a carving or engraving that is a relic by rubbing, tracing, casting, or other means that involve direct contact with the carving or engraving;
(c) remove a relic from the place where it is found or abandoned;
(d) sell or offer or expose for sale, exchange, or otherwise dispose of a relic or any other object that so nearly resembles a relic as to be likely to deceive or be capable of being mistaken for a relic;
(e) take a relic, or cause or permit a relic to be taken, out of this State; or
(f) cause an excavation to be made or any other work to be carried out on Crown Land for the purpose of searching for a relic.”

Recommendations

No Aboriginal sites were located within the Study Area for the proposed quarry extension works during the field survey and therefore, no Permits under the Aboriginal Relics Act 1975 are required.

All Aboriginal heritage is protected under the Aboriginal Relics Act 1975. It is therefore recommended that if at any time during development works Aboriginal heritage is suspected, works must cease immediately and Aboriginal Heritage Tasmania be contacted for advice.

The above recommendations represent the opinion of the writer only. To ensure compliance with the Aboriginal Relics Act 1975, Aboriginal Heritage Tasmania must be contacted prior to any works proceeding.
Appendix A
Map of Survey Area
Provisional quarry extension at Diana’s Basin
(provided by John Miedecke)
Appendix B
Project Plans
Map of Survey Area

Proposed quarry extension at Diana’s Basin
(Provided by John Miedecke)

Appendix C
GPS Tracking Map
Appendix D

Project Brief

Aboriginal Heritage Investigation Consultancy Brief for Aboriginal Heritage Officers

1. Background
Project Proponent: Break ODay Council
Contact Person: Graeme Cameron
Address: Council Chambers, St Helens
Phone: 63761866
Email: graham.cameron@bodc.tas.gov.au

Project Proposal Dianas Basin Gravel Pit Expansion 1589P/M

Describe project aims.
Ongoing rock and gravel extraction for road construction. **Survey is required to identify any sites in the mining lease so quarry planning can avoid.**

2. Study Area
Location: Dianas Basin
Region: St Helens
Map Sheet: St Helens
Grid Reference: E 605171, N 5418861

Study area shown on attached 1:25000 or best scale map to be supplied by project proponent
(Attached location plans and detailed lease plans.
Note: for small projects such as house blocks this may not be necessary. In these instances a PID number may be more appropriate.

3. Objectives and Tasks
(a) Conform to the documents *Practice Notes for Aboriginal Heritage Officers* and *Aboriginal Heritage Investigation Report Proforma* developed by Aboriginal Heritage Tasmania, Department of Environment, Parks, Heritage and the Arts.
(b) Review the Tasmanian Aboriginal Site Index (TASI) for sites within and adjacent to the study area.
The cultural heritage characteristics of the general area must be taken into account in your assessment of the proposed project.
(c) Conduct background research and review previous unpublished reports and other documents related to the study area.
Aboriginal Heritage Tasmania, Department of Environment, Parks, Heritage and the Arts
(d) Locate, document and assess the Aboriginal heritage values of the study area through a systematic survey.
(e) Describe each site identified including its location, contents and condition.
(f) Assess the cultural landscape of the study area within context to its surrounds and consider the cultural resource potential of the wider area.
(g) Provide site information (completed TASI site recording forms and/or site update forms) to Aboriginal Heritage Tasmania for registration on the TASI database.
(h) Assess any potential impacts of the proposed project/development on Aboriginal heritage sites identified within the study area.
(i) Assess the potential for the presence of further Aboriginal heritage material and recommend any further research/investigation required.
(j) Provide specific recommendations for mitigating impact to the Aboriginal sites identified.
(k) Inform the project proponent as to their obligations under the relevant legislation.
(l) Consult with Aboriginal Heritage Tasmania regarding the project/development proposal and survey methodologies, develop mitigation recommendations and ensure compliance with the Aboriginal Relics Act 1975.
(m) Consult with Aboriginal organisations and/or people with an interest in the study area in order to obtain their views regarding the cultural heritage of the area.
(n) Complete and submit, to the project proponent and AHT, an accurate survey report.

4. Final Report
The Final Report must conform to the Aboriginal Heritage Investigation Report Proforma and meet the standards and requirements of the current Practice Notes for Aboriginal Heritage Officers prepared by Aboriginal Heritage Tasmania, Department of Environment, Parks, Heritage and the Arts.

Note: all figures, tables and references to sites recorded during the investigation must show TASI site register numbers allocated by Aboriginal Heritage Tasmania, not field designations.

5. Restrictions and Requirements
(a) The consultant must not damage or interfere with any Aboriginal heritage site. No excavations are to be carried out during an investigation/project.
(b) Excavations, auguring or other forms of sub-surface sampling will be permitted only if appropriate consultations with Aboriginal Heritage Tasmania have been undertaken and any required permits obtained. Such activities must only be carried out in conjunction with an appropriately experienced and qualified archaeologist.
(c) The project proponent may produce further copies of the Final Report under the authorship of the consultant; however TASI location information must be kept confidential.
(d) All costs associated with the project will be met by the project proponent. The consultant must not incur costs without the prior approval of the project proponent.

6. Timing and Reporting
(a) A Draft Final Report must be submitted to the project proponent by the [insert date].
(b) The Final Report and all additional documentation must be submitted to the project proponent by the [insert date].
(c) A copy of the Final Report should be submitted to Aboriginal Heritage Tasmania.

Project Proponent Aboriginal Heritage Officer
Name: Break O Day Council
Signed: JG Miedecke (consultant)
Date: 17 July 2009

Aboriginal Heritage Investigation, Consultancy Brief for Aboriginal Heritage Officers, April 2009
Guidelines and Standards Package for Aboriginal Heritage Officers
Aboriginal Heritage Tasmania, Department of Environment, Parks, Heritage and the Arts
Appendix E

Photographic Plates

Photographic Plate 1: Diana’s Basin proposed Quarry extension. Indication of ground surface visibility – taken by Rocky Sainty
Break O’Day Council

Dianas Basin Gravel Pit

ENVIRONMENTAL EFFECTS REPORT

APPENDIX E

Washdown Guidelines
Break O’Day Council

Halfway Hill  Gravel Pit

ENVIRONMENTAL EFFECTS REPORT

APPENDIX E

Washdown Guidelines
Tasmanian

Washdown Guidelines
for Weed and Disease Control

Machinery, Vehicles & Equipment
Edition 1

DEPARTMENT of PRIMARY INDUSTRIES, WATER and ENVIRONMENT

Forestry Tasmania

Agricultural Contractors of Tasmania
ACKNOWLEDGEMENTS
The Queensland Weed Seed Project kindly allowed their washdown procedures to be used as a basis for these guidelines. This document was prepared by Tim Rudman (Department of Primary, Industries Water and Environment), David Tucker (Forestry Tasmanian) and Doug French (Agricultural Contractors Association of Tasmania) with the input from councils, industry and State government. Cover photograph David Tucker.

REVIEW OF THE GUIDELINES
The Washdown Guidelines will be reviewed in April 2005. Comments on the guidelines may be forwarded to:

David Tucker                   Doug French                Tim Rudman
Forestry Tasmania,             Agricultural Contractors  Nature Conservation Branch
79 Melville St                 334 Hazelwoods Lane    GPO box 44
Hobart Tas. 7000               Whitemoore Tas. 7303    Hobart Tas. 7001

DISCLAIMER
The Tasmanian Department of Primary Industries, Water and Environment, Forestry Tasmania and the Agricultural Contractors Association of Tasmania have produced this publication in good faith, as a guide only. It should not be seen as a substitute for;
(i) the user seeking his/her own professional advice; and
(ii) any advice or instruction provided in the constructors’ manuals for any machinery, vehicles or equipment.

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Accordingly, all use of information, advice or data contained in this publication is at the user's risk.
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INTRODUCTION

We all have a responsibility not to spread weeds and disease when visiting or working on private or Crown land. In some cases this may be a legal requirement specified under provisions of the *Plant Quarantine Act 1997*, *Animal Health Act 1995* or as detailed in a Weed Management Plan. In other cases industries may have standard operating procedures or codes of practice governing washdown requirements for weed and disease control.

Weed seed, some insects and plant pathogens may travel almost sight unseen in mud or lodged in nooks and crannies on machinery, vehicles and other equipment. It is easy to overlook the risk of carrying weeds and diseases; the consequences however, are not so subtle. Failure to washdown can result in crop losses or permanent environmental damage, often incurring substantial cost to the land owner or manager. For example, crop-destroying diseases such as onion white rot and club root may be spread in soil adhering to farm machinery, while in the bush, the introduction of *Phytophthora* root rot may reduce the biodiversity of heathlands and potentially lead to the extinction of some plants.

These guidelines establish a standard for washdown and provide a guide to prescribing its application where codes of practice or other environmental management plans are not in place.

Always consult the land owner or manager for any specific washdown requirements and approval to proceed with any washdown procedures outlined in these guidelines.
WHEN TO WASHDOWN

Many industries have, or are developing, standard operating procedures for vehicle and machinery washdown. Consult your industry code of practice or environmental management system for determining the washdown requirements that apply.

Major developments are also subject to environmental management plans that will specify washdown requirements applying to the project.

For other situations, as a general guide washdown is advisable after:

- operating in an area affected by a weed or disease that is under containment
- transporting weeds or soil known to be infected with weed seed or a plant pathogen

or before:

- moving machinery out of a local area of operation
- moving machinery between properties
- moving vehicles or machinery to an island
- using machinery along roadsides or along river banks
- using machinery to transport soil and quarry materials
- using controlled-access vehicle tracks
- visiting remote areas where access is only by boat, helicopter or light plane
EQUIPMENT

Personal and small tool wash equipment

Portable wash baths are recommended for use when travelling in vehicles and helicopters for washing footwear and small tools. Washbaths can be made from a fish box (or other suitably sized plastic box) fitted with an open weave plastic doormat, a scrubbing brush, a pair of safety gloves, glasses, detergent or fungicide, and a container of clean water. For backpacking, a 2 litre bottle, scrubbing brush, safety gloves and glasses can be used for small tools and boot washing.

The fungicide Phytophthora Clean™ should be added to washbaths to control the spread of Phytophthora cinnamomi if:

- sterilising tools used for P. cinnamomi sampling
- entering or washing down within a Phytophthora cinnamomi management zone
- entering a population of threatened species that is susceptible to P. cinnamomi

Portable vehicle wash equipment

Where field wash down is a regular practice facilities should be obtained and carried for the purpose. Large commercial wash units are available, though in many instances small self-assembled systems will be adequate. In industries that use bushfire slip-on units, these are ideal, allowing more flexible choice of washdown sites. Small fire pumps or portable high pressure wash units are suitable. A shovel, crow bar and stiff brush are also required. Farm workshops should also have suitable wash down equipment. Where a blowdown only is required, compressors or portable blower vacs may be used along with a small brush.
Vehicle wash bays

Purpose built wash bays should be used when ever possible. These washdown facilities include effective effluent management systems to protect the environment. Commercial washdown facilities are available for vehicles and small trucks at most large towns.

Figure 1 Smithton truckwash in action (Photo: Sue Jennings)
WASHDOWN STANDARDS

General standard

For general cleaning procedures the following standard applies:

• remove only those cover plates etc that can be quickly and easily removed and replaced

• no clods of dirt or loose soil should be present after washdown. Smeared soil stains and soil firmly lodged in difficult to access areas are acceptable

• radiator, grills and the interior of vehicles should be free of accumulations of seed and other plant material

Note that some machinery, such as harvesting equipment, cannot be washed with water because of potential damage to sensitive electronic equipment. Always consult and comply with the manufacturers recommended cleaning method.

Cleaning and inspection should be undertaken in accordance with the general washdown procedure (page 8) and machinery checklists (page 9).

Custom standards

Customised washdown standards may be applied under environmental management plans or job specifications where the control of a serious weed or pathogen is required. For instance, particular disinfectants may need to be applied and greater attention to soil accumulations behind protective plates and covers may be specified. Similarly landholders and managers may wish to apply specific washdown requirements.
PROCEDURES

Small tools & portable washbaths

These are used in the management of Phytophthora root-rot in native vegetation or can be established as temporary washdown points to contain the spread of soil by foot traffic in other diseased areas.

1. Site the washbath just outside the infected area or at the departure point for the vehicle or aircraft.
2. Remove all loose mud and dirt from the object to be cleaned.
3. Use the recommended safety equipment if washing with a fungicide (safety gloves and glasses).
4. Part fill the washbath with clean water, a depth of about 4 cms is adequate for boot washing. Mix a solution of detergent or fungicide as required (see page 3).
5. Clean boots, gaiters and equipment with the scrubbing brush.
6. Effluent containing registered products such as fungicides must be disposed of in accordance with label recommendations.
7. A final rinse or wipe with fungicide or methylated spirits can be used for sterilisation of scientific equipment.

Selecting a field washdown site.

Field washdown of may be required to contain weeds or plant pathogens to a particular area or where machinery is moved directly between field sites. Always consult the landholder. In selecting a washdown site, consideration should be given to:

- siting the washdown at the edge, or nearby, any areas where weeds or pathogens need to be contained, choose sites where the land slopes back into an infested area or an adjacent area not susceptible to the problem
• ensuring run-off will not enter any watercourse or waterbody, a buffer of at least 30m is desirable

• avoiding sensitive vegetation or wildlife habitat eg remnant native vegetation and threatened species sites

• selecting mud-free sites (e.g. well grassed, gravel, bark or timber corded) which are gently sloped to drain effluent away from the washdown area

• allow adequate space to move tracked vehicles

• potential hazards, e.g. powerlines

Note that low loaders are not a suitable platform for washing machinery. Where there will be large quantities of effluent or there is a risk of extensive run-off, the washdown area should be bunded and a sump constructed to safely dispose of the effluent. Take particular care where the effluent is likely to be contaminated with oils.

Mark or record washdown sites with the landowner or manager for subsequent monitoring and weed control.

Figure 2 Washing down (Photograph: D. Tucker)
General washdown procedure

Note: Do NOT apply water to harvesters or other equipment that may be damaged by water.

1. Locate washdown site and prepare the surface or construct bunding as required.
2. Safely park the vehicle free of any hazards (e.g. electrical), ensure the engine is off and the vehicle is immobilised.
3. Look over the vehicle, inside and out, for where dirt, plant material including seeds are lodged. Pay attention to the underside, radiators, spare tyres, foot wells and bumper bars.
4. Remove any guards, covers or plates if required being careful of any parts that may cause injury.
5. Knock off large clods of mud, use a crow bar if required and sweep out the cabin.
6. Use a vacuum or compressed air where available for removing dried plant material like weed seeds and chaff in radiators and other small spaces where this material lodges. Brush off dry material if no other facilities are available.
7. Clean down with a high pressure hose and stiff brush/crowbar. Use only freshwater if washing down in the field.
8. Start with the underside of the vehicle, wheel arches, wheels (including spare). Next do the sides, radiator, tray, bumper bars etc and finally upper body. Some vehicles may need to be moved during washdown eg tracked machinery.
9. Clean any associated implements, eg buckets.
10. Check there is no loose soil or plant material that could be readily dislodged or removed.
11. In wash bays, steam treat or rinse off vehicle with clean water.
12. Wash effluent away from vehicle, do not drive through wash effluent.
Machinery checklists

Trucks and vehicles

For small vehicles in the field where washdown facilities can not be provided the minimum requirement is:

all loose and large clods of dirt should be physically knocked off the vehicle at the desired washdown point before driving back to a suitable wash facility.

Systematically inspect and clean, including:

<table>
<thead>
<tr>
<th>Part</th>
<th>Areas</th>
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<tbody>
<tr>
<td>Cabin</td>
<td>floor, mats and under seats</td>
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<tr>
<td>Engine</td>
<td>radiators</td>
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<tr>
<td></td>
<td>engine bay and grill</td>
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<tr>
<td>Body</td>
<td>hollow channels</td>
</tr>
<tr>
<td></td>
<td>inside bumper bars</td>
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<td></td>
<td>crevices and ledges</td>
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<tr>
<td></td>
<td>underside</td>
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<tr>
<td>Wheels</td>
<td>inside and outside</td>
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<td></td>
<td>between dual wheels if fitted</td>
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<tr>
<td></td>
<td>spare wheel</td>
</tr>
<tr>
<td>Tray</td>
<td>hollow channels</td>
</tr>
<tr>
<td></td>
<td>chassis</td>
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</tbody>
</table>
Wheeled machinery (skidders, tractors, loaders etc)

Systematically inspect and clean, including:

<table>
<thead>
<tr>
<th>Cabin</th>
<th>floor and under seats</th>
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</thead>
<tbody>
<tr>
<td>Engine</td>
<td>grill, radiator, oil cooler etc</td>
</tr>
<tr>
<td></td>
<td>around sound deadening panels</td>
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<tr>
<td></td>
<td>engine compartment grill</td>
</tr>
<tr>
<td>Body</td>
<td>chassis</td>
</tr>
<tr>
<td></td>
<td>axle housing, hollow sections</td>
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<tr>
<td></td>
<td>guards</td>
</tr>
<tr>
<td></td>
<td>cab steps</td>
</tr>
<tr>
<td></td>
<td>around fuel tank</td>
</tr>
<tr>
<td></td>
<td>hollow sections in drawbars and retractable/extendable type three point linkages</td>
</tr>
<tr>
<td></td>
<td>general holes, ledges, gaps and crevices in body including damaged boots, cover plates where trash may lodge</td>
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<tr>
<td>Wheels</td>
<td>inside and outside wheels and rims</td>
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<tr>
<td></td>
<td>spaces between dual wheels</td>
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<tr>
<td></td>
<td>chains if fitted</td>
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<tr>
<td>Attached equipment</td>
<td>buckets/ blades including teeth and adaptor plates</td>
</tr>
<tr>
<td>Hydraulic arms</td>
<td>crevices where trash can lodge</td>
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</table>
**Bulldozers**

Systematically inspect and clean, including:

<table>
<thead>
<tr>
<th>Section</th>
<th>Checkpoints</th>
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</thead>
<tbody>
<tr>
<td>Cabin</td>
<td>floor and under seats&lt;br&gt;below transmission coverplates</td>
</tr>
<tr>
<td>Engine</td>
<td>radiator, oil cooler etc&lt;br&gt;airfilters (for seeds)&lt;br&gt;around engine bay</td>
</tr>
<tr>
<td>Tracks</td>
<td>lift inspection/coverplates to gain inside access&lt;br&gt;idler wheels&lt;br&gt;track frame</td>
</tr>
<tr>
<td>Body Plates</td>
<td>knock lose material out from belly plates and rear plates as far as is feasible without dismantling</td>
</tr>
<tr>
<td>Body</td>
<td>fuel cells&lt;br&gt;battery box</td>
</tr>
<tr>
<td>Blade</td>
<td>check all hollow sections&lt;br&gt;pivot points and adaptors at rear of blade where soil can compact</td>
</tr>
<tr>
<td>Tines</td>
<td>crevices where trash can lodge</td>
</tr>
<tr>
<td>Ripper</td>
<td>ripper frame support which is usually hollow&lt;br&gt;compacted soil underneath ripper points</td>
</tr>
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</table>
**Excavators**

Systematically inspect and clean, including:

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
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<tbody>
<tr>
<td>Cabin</td>
<td>floor and under seats</td>
</tr>
<tr>
<td>Engine</td>
<td>grill, radiator, oil cooler etc</td>
</tr>
<tr>
<td></td>
<td>around engine bay</td>
</tr>
<tr>
<td>Tracks</td>
<td>idler wheels</td>
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<tr>
<td></td>
<td>track frame</td>
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<td></td>
<td>tracks</td>
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<tr>
<td></td>
<td>removable track adjustor guards and lubrication points</td>
</tr>
<tr>
<td>Body Plates</td>
<td>glacier plate near radiator</td>
</tr>
<tr>
<td>Body</td>
<td>ledges and channels</td>
</tr>
<tr>
<td>Blade</td>
<td>check all hollow sections</td>
</tr>
<tr>
<td></td>
<td>between teeth of adaptors</td>
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<tr>
<td></td>
<td>wear plates</td>
</tr>
<tr>
<td>Booms</td>
<td>crevices</td>
</tr>
<tr>
<td>Turret pivot</td>
<td>under and around mechanism</td>
</tr>
</tbody>
</table>
**Ground engaging equipment**

Ploughs tillage equipment, discs, drills, seeders, posthole diggers, planting and harvesting equipment.

**Always consult the landowner or manager on requirements and suitable clean down site.**

Remove the bulk of the soil by knocking off and scrapping as far as practical. Depending on the type of contamination, wet or dry, use water or an air compressor.

Systematically inspect and clean, including:

<table>
<thead>
<tr>
<th>Frame</th>
<th>hollow channels</th>
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<tbody>
<tr>
<td></td>
<td>chassis crevices and ledges</td>
</tr>
<tr>
<td></td>
<td>bearing housings</td>
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<tr>
<td>Wheels/tyres</td>
<td>inside and outside</td>
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<tr>
<td></td>
<td>lifting mechanism</td>
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<td></td>
<td>axles</td>
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<tr>
<td>Mechanism</td>
<td>holding bins</td>
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<tr>
<td></td>
<td>discs, tines, cutters and shears</td>
</tr>
<tr>
<td></td>
<td>behind safety guards</td>
</tr>
<tr>
<td></td>
<td>conveyors</td>
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</tbody>
</table>
**Fodder and grain production equipment.**
(Rakes, headers, windrowers, conditioners, tedders, bailers etc)

Always consult the landowner or manager on requirements and suitable clean down site. Clean down may be required to control variety contamination in addition to weed and disease control. For certified crops clean down prior to leaving each crop and discharge headers 50m into next crop in accordance with the certification guidelines (see Agricultural Contractors of Tasmania Handbook) or the instructions of a Seed Certification Inspector.

Use only compressed air or a large vacuum cleaner. Cleaning with high pressure water could seriously damage harvesting equipment.

1. Blow down the outside of the machine first.
2. Remove or open easily accessed shields and covers and systematically inspect then clean.
3. For harvesters, increase the wind and run the machine at high speed.
4. Complete with a final blow down of the outside after closing covers.

Pay particular attention to:

<table>
<thead>
<tr>
<th>Body and frame</th>
<th>Hollow channels, ledges and crevices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabin</td>
<td>in and under the cabin</td>
</tr>
<tr>
<td>Engine</td>
<td>radiator and grill</td>
</tr>
<tr>
<td></td>
<td>around engine bay</td>
</tr>
<tr>
<td>Stone trap</td>
<td>if fitted</td>
</tr>
<tr>
<td>Mechanisms</td>
<td>elevators, slides, augers, drum and concaves</td>
</tr>
<tr>
<td></td>
<td>gearboxes, pulleys</td>
</tr>
<tr>
<td>Headers</td>
<td>straw spreader or choppers</td>
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<td></td>
<td>grain bin, trays</td>
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<td></td>
<td>fan housing, sieves and screens</td>
</tr>
<tr>
<td>Bailers</td>
<td>pickup and around bale chamber and knotters area</td>
</tr>
</tbody>
</table>

Note: For certified crops, headers must be comprehensively cleaned which will take ½ to 1 day.
Slashers and mowers.

Slashers are major contributors to roadside weed spread through carriage of seed. Cleaning may be required after passing through significant weed infestations or prior to slashing weed free areas.

When used in dry conditions they are best cleaned by blowing down. An on-board or portable compressor can be used and a stiff broom or shovel may be helpful.

1. Disengage power take off or other cutter power system.
2. Inspect and clean, paying particular attention to:

<table>
<thead>
<tr>
<th>Linkages</th>
<th>all places seeds may lodge</th>
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<tbody>
<tr>
<td>Body</td>
<td>underside including any sills</td>
</tr>
<tr>
<td></td>
<td>safety chain</td>
</tr>
<tr>
<td></td>
<td>cutters</td>
</tr>
<tr>
<td></td>
<td>topside including any sills</td>
</tr>
<tr>
<td>Wheels</td>
<td>inside and outside</td>
</tr>
<tr>
<td>Tractor</td>
<td>inspect and blow down or sweep out as per washdown checklist</td>
</tr>
</tbody>
</table>
**Water disinfection for *Phytophthora* root rot management**

Where water is transported into *Phytophthora* management zones or other areas of native vegetation sensitive to *Phytophthora* root-rot the water should be disinfected to prevent the introduction of *Phytophthora* root-rot. This situation will normally only occur during fire fighting operations where water is drawn from a different catchment.

Disinfection of water is most easily undertaken using granulated pool chlorine products. Handle in accordance with the manufacturer’s safety instructions and mix at a rate of:

6ml (0.05% NaOCl) per 10L water

The mixed solution should be allowed to stand a few minutes for disinfection to be completed. Fire fighting need not be delayed as there will be adequate time for disinfection on route to the fire. As chlorine is corrosive, equipment should be adequately rinsed with fresh water following use.

Note: Fire fighting foams or detergents will neutralise chlorine treatments. This will not be a problem provided that tanks do not become contaminated with foam or detergent is not added to the tanks to make “wet water”. Sterilisation will occur in the tank prior to foam induction.
APPENDIX 1: CLEANING AGENTS AND DISINFECTANTS

Truck cleaning agents

These may be used to improve soil removal and to degrease. They are best limited to use in washdown stations where effluent disposal systems are in place to limit grease and detergent contamination. A number of products are on the market, including products specifically designed for fungal control.

Specific cleaning agents for Phytophthora root rot.

Phytophthora clean™
Phytophthora clean™ is registered for the sterilisation of equipment and machinery in Tasmania for the control of Phytophthora cinnamomi. It is used at a rate of 200ml per 10L of water for washing surfaces cleaned of mud, and at a rate of 1000ml per 10L water in washbaths. Solution should remain in contact with surfaces for at least 30 seconds before rinsing. It is available in 20L or 200L drums and is manufactured by SDI Group, Dandenong South (Ph: 03 9768 3368, web: www.sdiinternational.com.au). Use only in accordance with the label directions and when prescribed in the job specifications for the control of Phytophthora root rot.

Sodium Hypochlorite
Sodium hypochlorite is recommended for sterilising water in firefighting units. However it needs to be used carefully. Once mixed the compound is not stable and quickly degrades, particularly in water with a high organic content. It also corrodes metal. 2 mg/l chlorine is required to kill zoospores in water with a 1 minute exposure time.

Pure alcohol and methylated spirits
These may be used for surface sterilisation of equipment once dirt has been washed off. Its application is limited to small implements and items used in disease survey work such as sampling for Phytophthora root-rot.
APPENDIX 2: WASHDOWN LEDGER

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<th>Date</th>
<th>Operator</th>
<th>Machine</th>
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WASHDOWN LEDGER

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## WASHDOWN LEDGER

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