

**BRACKNELL**  
**BOTANICAL & FAUNA HABITAT SURVEY**  
**For ABX4 PTY LTD**  
**5<sup>th</sup> November 2012**



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**1.0 Introduction: ABX4 Pty Ltd** a wholly owned subsidiary of Australian Bauxite Ltd is undertaking an exploratory program on the property “Mountain View” located off Liffey Road to the south-east of the Bracknell township.

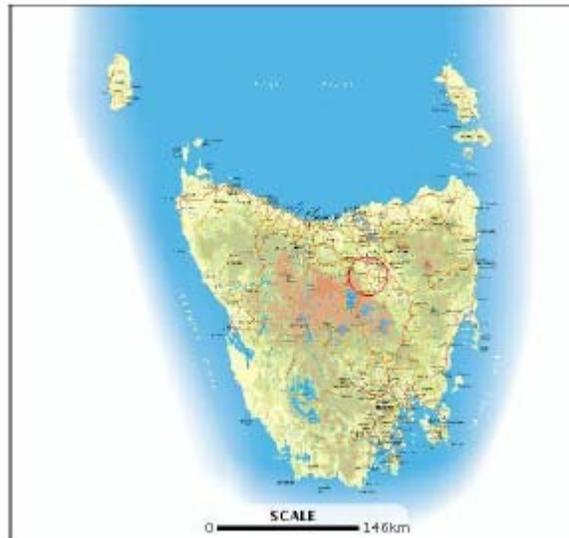
The exploration program will involve numerous shallow drill holes which will not require the clearing and/or leveling of drill pad sites and so is expected to have a minimal impact on the ground surface and adjacent vegetation.

A botanical and fauna habitat survey is required of the target area as part of the MRT licence conditions in order to determine any likely impacts on threatened species or threatened vegetation communities.

**1.1 Objectives:** The objectives of this survey were to;

- Undertake a desktop survey to confirm the known biological records and the natural values present in the exploration area and in the vicinity.
- Undertake a field survey of the exploration target areas to observe and record the natural values present including the vegetation types and plant communities, the flora and in particular any threatened species and potential habitat for species of threatened fauna.
- Determine the possible impacts of the proposed exploration program on the natural values present and make recommendations on how those impacts can be minimized.

**1.2 Location of Study Area:**



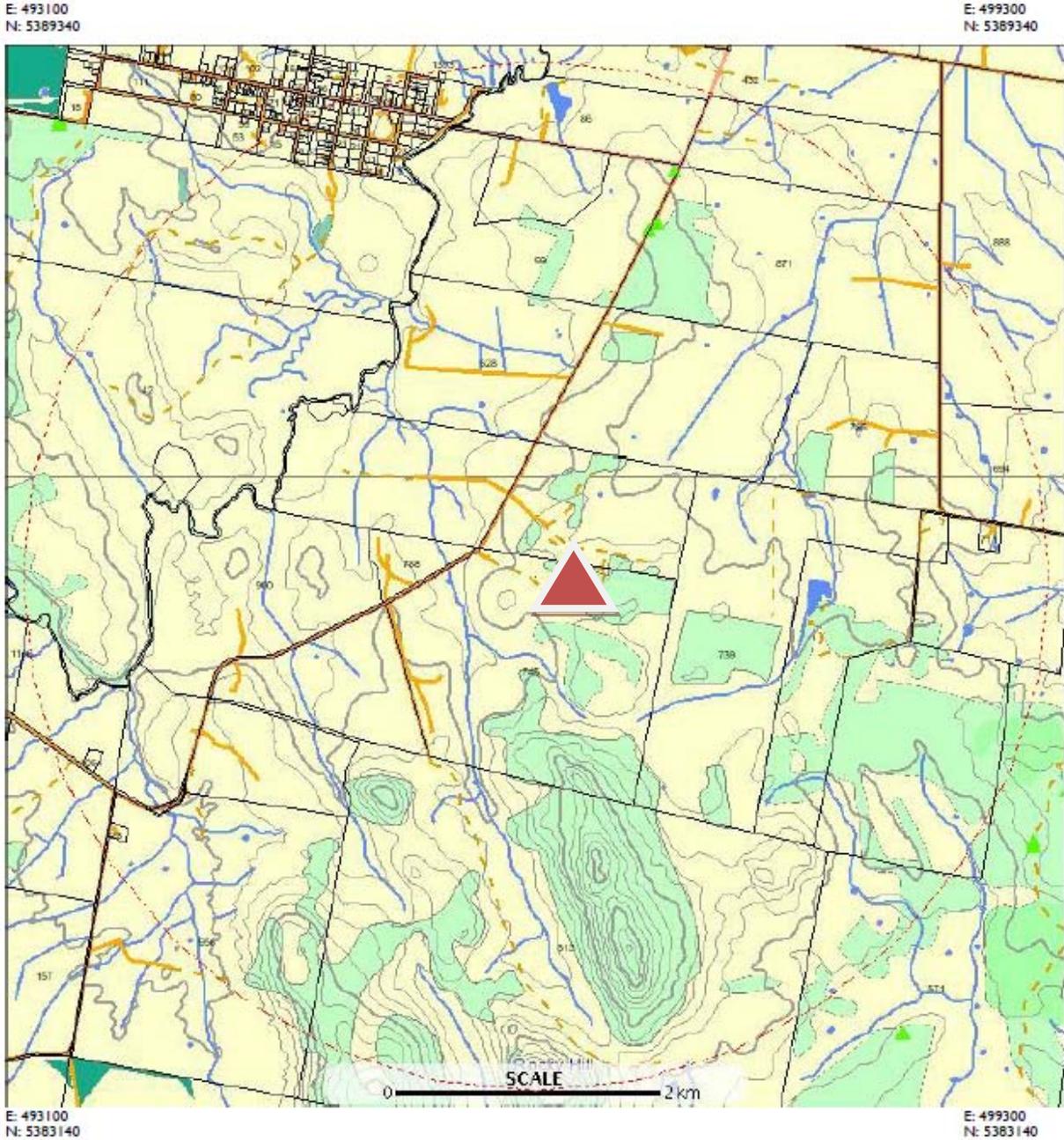
MAP REF: Tasmap 1:25,000, Sheet No. 4838, Liffey

BIOREGION: Northern Midlands

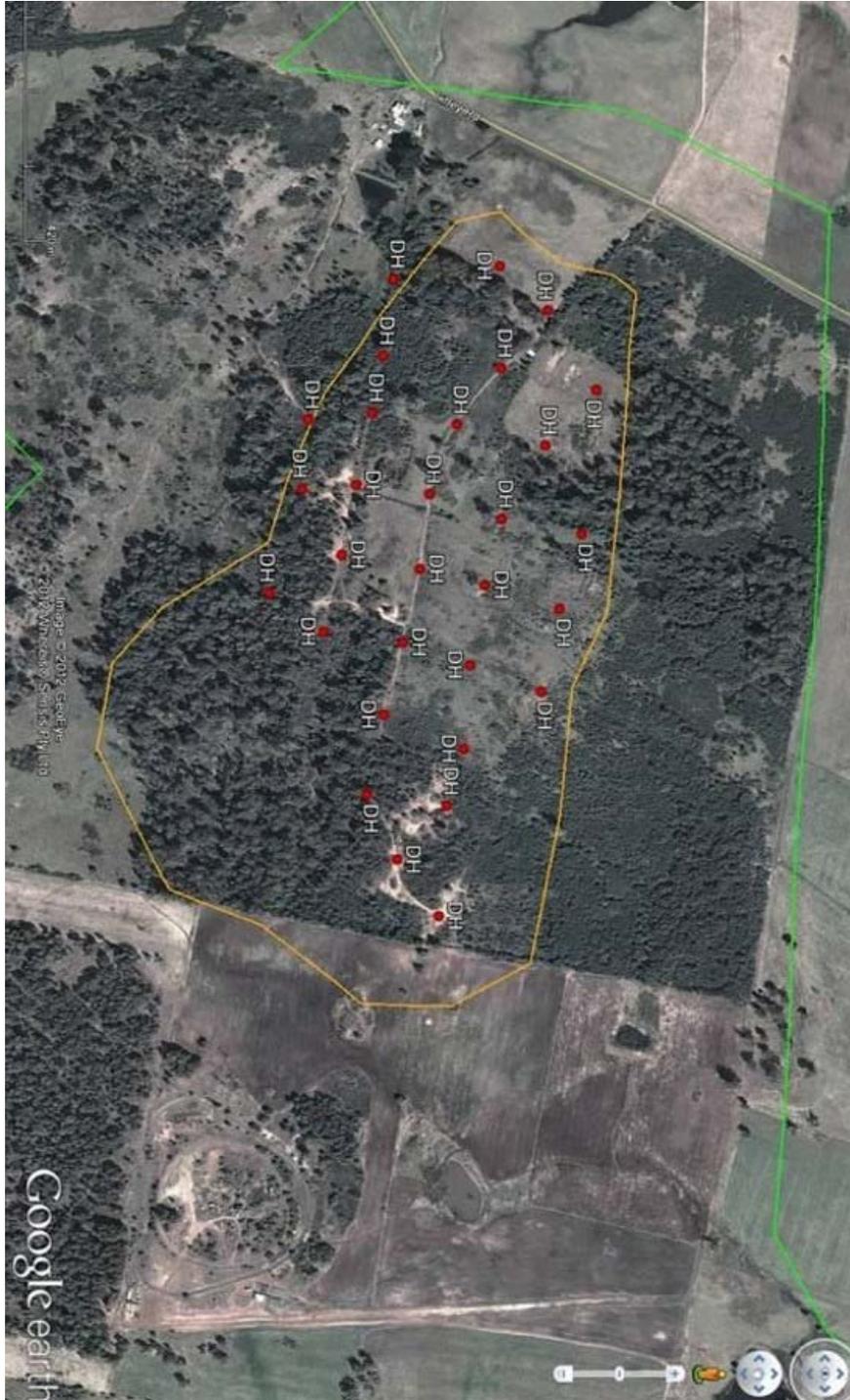
GRID REF: 496200E – 5386240N  
(All Grid References MGA Zone 55 GDA94)

### 1.3 Site Description:

The area of the property to be surveyed consists of land previously cleared and used for stock grazing, old gravel pits and regenerating vegetation where areas have been previously stripped of ironstone gravel, and there are also areas of remnant forest vegetation, most of which has been subject to firewood harvesting over a long period of time



**MAP 1: Survey area located on the property “Mountain View” near Bracknell.**



**MAP 2: Google Earth Image of the property and survey area showing proposed drill sites.**

**2.0 Desktop Survey of Natural Values:**

The DPIW database “The Natural Values Atlas” was accessed for the known biological records of the locality and environs. Records of threatened species of flora and fauna known to occur within a 5,000 metre radius of the location were also accessed. Data sourced included the vegetation types and plant communities, the occurrence of any threatened vegetation communities, the recorded locations of any threatened species of plants and threatened fauna known or expected to occur in the vicinity.

REFERENCE POINT for the locality: 496200E – 5386240N

**2.1 Desktop Survey Results:**

**VEGETATION COMMUNITIES:**

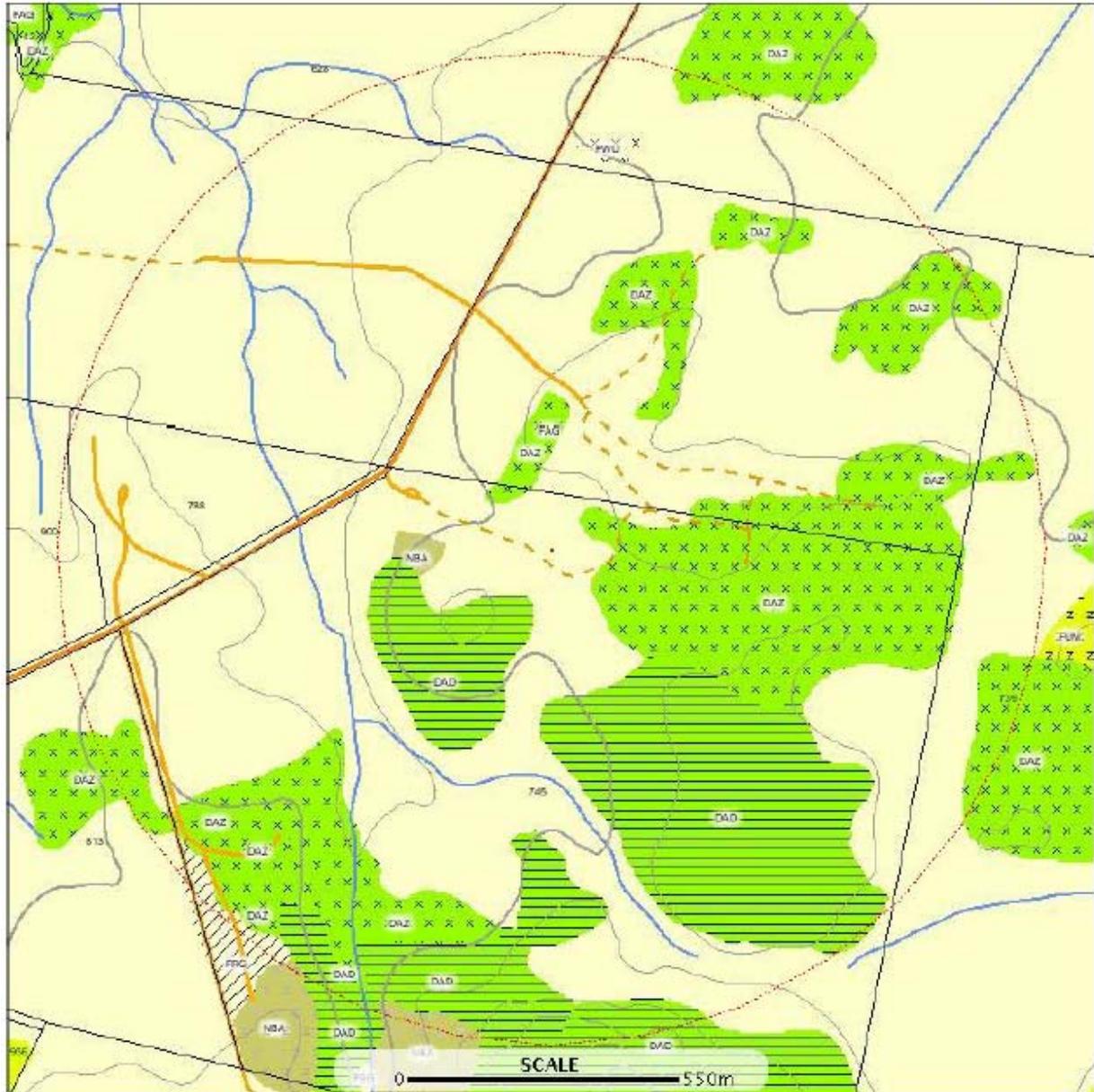
The following vegetation communities are mapped under the TasVeg mapping program as occurring within 1,000 metres of the study area reference point.

VEGETATION COMMUNITY	TasVeg Code / Map colour	EXTENT IN STUDY AREA
<i>Eucalyptus amygdalina</i> Inland Forest & Woodland on Dolerite	DAD / bright green with horizontal lines	Mainly in the southern half of the focus area.
<i>Eucalyptus amygdalina</i> Forest & Woodland on Cainozoic Deposits	DAZ / Bright green with “x”	Mostly in the northern half of the focus area.
<i>Bursaria – Acacia</i> Woodland & Scrub	NBA / Olive green.	A single localised patch on the property near Liffey Road.
Agricultural Land	FAG / cream	Most of the balance of the property.
Weed infestation	FWU / cream with “x”	Localised patch outside the northern boundary of the property.

**TABLE 1: Vegetation Communities and extent within the study area as per TasVeg mapping program.**

E: 495100  
N: 5387340

E: 497300  
N: 5387340



**FIGURE 1: Vegetation Communities as per TasVeg mapping program within 1,000 metres of Survey Area Reference Point. GRID REF: 496200E – 5386240N**

- CODE:** DAD ..... *Eucalyptus amygdalina* Forest & Woodland on Dolerite  
 DAZ ..... *Eucalyptus amygdalina* Inland Forest & Woodland on Cainozoic Deposits  
 NBA ..... *Bursaria - Acacia* Woodland & Scrub  
 FAG ..... Agricultural Land

#### VEGETATION COMMUNITIES:

*Eucalyptus amygdalina* Inland Forest and Woodland on Cainozoic Deposits is a community usually dominated by the Black Peppermint *Eucalyptus amygdalina* although other species such as *Eucalyptus viminalis*, *E. pauciflora* or occasionally *E. ovata* are present and can sometime form the dominant canopy species. Dry sclerophyll shrubs, often low or prostrate species, Bracken *Pteridium esculentum* or grassland with graminoids and forb species can dominate the ground stratum depending on the soil type, fertility and depth and the drainage conditions, as well as the additional historical factors of firing and land use. There can be a high diversity of species in the ground layer vegetation although many of the remnants are now degraded.

This community is strongly associated with lateritic sediments and its main area of distribution is in the northern Midlands. Some outlying localities include the West Tamar, Bridgenorth and Westbury, between Cranbrook and Swansea on the east coast and in the Cressy – Blackwood Creek area.

The community was much more extensive in the northern Midlands at the time of white settlement however much of it has been cleared for agriculture. Large areas of the northern midlands on the less fertile soils were cleared in the 1960's following the introduction and widespread use of superphosphate.

The community is of high conservation value and is listed as a threatened native vegetation community under the Tasmanian *Nature Conservation Act 2002*.

*Eucalyptus amygdalina* Forest and Woodland on Dolerite is more widespread than the former community and is often located on rocky sites in low rainfall areas. The community typically is dominated by uneven aged Black Peppermint less than 25metres in height and with a variable understorey ranging from grassy to shrubby. In this location the two Eucalypt communities occur side by side and each has a similar structure with the dominant trees and a similar composition of species in the ground stratum. It is principally the underlying geology which separates them.

#### THREATENED VEGETATION COMMUNITIES:

One of the two forest communities mapped within the study area is listed as threatened under the Tasmanian *Nature Conservation Act 2002*.

- *Eucalyptus amygdalina* Inland Forest & Woodland on Cainozoic Deposits is listed as a vulnerable community under the Act as it has been subject to extensive clearing and fragmentation throughout the northern midlands and in particular since the 1960's. This community occurs within the exploration target area.

#### VEGETATION COMMUNITIES OF CONSERVATION SIGNIFICANCE:

- *Eucalyptus amygdalina* Forest and Woodland on Dolerite is relatively widespread in the drier areas of eastern Tasmania and the midlands.

#### THREATENED FLORA:

Two species of threatened flora listed under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are recorded on the "Natural Values Atlas" database as occurring within 3,000 metres of the study area reference point. No threatened species are mapped as occurring within 1,000 metres of the reference point.

- *Brunonia australis* the Blue Pincushion is listed under the Tasmanian Act as being rare. There are two records from November 2000 from within 3,000 metres of the reference point. There are a further 10 records from within 5,000 metres. The Blue Pincushion is a small herb which is usually found growing in the lighter soils within grassy woodlands.
- *Arthropodium strictum* the Chocolate Lily is also listed as being rare in Tasmania with two records from 1994 on the database and a further single record from within 5,000 metres. The Chocolate Lily is usually found in native grasslands and grassy woodlands.

The following additional species of threatened flora has been recorded from between 3,000 and 5,000 metres from the study area reference point.

- *Hypoxis vaginata* the Sheathing Yellowstar is listed as being rare under the Tasmanian Act. There are five records on the database. It is usually found growing in damp soaks within native grasslands.

#### THREATENED FAUNA:

Three species of threatened fauna listed under the above Acts are recorded on the database as occurring within 3,000 metres of the study area including a known Wedge-tailed Eagle nest tree site. No species have been recorded from within 1,000 metres of the study area reference point.

- The Tasmanian subspecies of the Wedge-tailed Eagle *Aquila audax* subsp. *fleayi* is listed as being endangered under both State and Commonwealth Acts. The bird requires large trees within tracts of old-growth forests for successful nesting. There is a known nest tree located in a patch of retained forest about 2km to the north of this reference point. The nest was in use in 2000 however there is no information on the database to indicate the nest tree has been used since that time.
- The Green and Gold Frog *Litoria raniformis* is listed as being vulnerable under both State and Commonwealth Acts. There are three records on the database from 2004, 2005 and 2006.
- The Green-lined Beetle *Catadromus lacordierei* is listed as being vulnerable under the Tasmanian Act. There are two 1983 records on the database.
- The Eastern-barred Bandicoot *Parameles gunnii* is relatively widespread in Tasmania but is rare on the mainland and is listed as being vulnerable under the Commonwealth Act. There is a single record on the database dated from about 1985 to the south-west of the reference point.

The following two species of threatened fauna have been recorded on the database as occurring from between 3,000 and 5,000 metres from the study area reference point.

- The Tasmanian Devil *Sarcophilus harrisii* is now listed as being endangered under both State and Commonwealth Acts due to the spread and impact of the DFT disease on the species. There are 2 sight records on the database from within 3,000 metres, one from 2005 and the other from 2006.
- The White (Grey) Goshawk *Accipiter novaehollandiae* is endangered in Tasmania. The species requires mature wet forest with Blackwoods as habitat, and old-growth trees for nesting. There is a known nest tree site located about 5,000 metres to the west south-west of this reference point. The nest was first recorded in the season 2009/2010 when it was in use.

The following five species of threatened fauna could occur in the locality based on habitat mapping and on the known geographical range of each.

- The Tasmanian subspecies of the Masked Owl *Tyto novaehollandiae* subsp *castinops* is listed as being endangered in Tasmania and considered to be vulnerable under the Commonwealth Act.
- The Spotted-tailed Quoll, *Dasyurus maculatus* subsp *maculatus* is listed as a rare species under the Tasmanian Act and vulnerable under the Commonwealth Act.
- The Tussock Skink *Pseudemoia pagenstecheri* is a grassland species which is considered to be vulnerable in Tasmania. It inhabits some types of native grasslands.
- The Swan Galaxia *Galaxias fontanus* is considered to be endangered in Tasmania and nationally. The species is endemic to Tasmania. It occurs within the catchments of the Esk Rivers.
- The Australian Grayling *Prototroctes mareana* is a fish which moves between fresh and salt water habitats. The species is listed as being vulnerable both in Tasmania and Nationally.

### **3.0 Field Survey:**

The field survey was undertaken on Thursday the 4<sup>th</sup> October 2012.

Methodology: The survey followed existing vehicular tracks throughout the survey area and across sections of property where drilling is proposed as detailed on Map No.2.

Vascular plant species were recorded, vegetation communities were observed and cross-referenced with the TasVeg map sourced from the Natural Values Atlas database.

Limitations: This survey was conducted in spring when many species are in flower, particularly the ground layer flora. However no botanical survey can guarantee that all flora will be observed and recorded in a single survey in one year due to seasonal and annual variation in abundance and the possible absence of flowers and fertile material for identification. Ephemeral species which may have been present includes species of orchids, lilies, herbs, grasses and other graminoids. However all significant species known to occur in the study areas and their environs have been considered in this report.

### **3.1 Field Survey Results:**

The main area of remnant forest was located in the south-east portion of the target area. Although all areas of the property have been subject to tree harvesting there are still a number of large remnant Eucalypts remaining. A number of old gravel pits were present within and around the areas of remnant vegetation and the northern and central portion of the target area consisted of regenerating vegetation of stunted Silver Wattles and a grassy ground layer following previous gravel stripping.

#### **VEGETATION COMMUNITIES:**

The main vegetation community observed within the target area was *Eucalyptus amygdalina* Inland Forest and Woodland on Cainozoic Deposits although it has been affected by previous land uses such as gravel stripping and selective logging. The understorey consisted of woody

shrubs typical of a dry sclerophyll forest and the ground stratum varied between dwarf shrubs and bracken to patches of native grasses. Although the area has been selectively logged for firewood there are a number of large mature remnant Eucalypts which have been retained. The area within the central and northern portions of the study area were most likely this vegetation type originally however following the removal of the gravel layer the vegetation which has regenerated consists of a low stunted forest of Silver Wattle with a grassy ground stratum with a low diversity of species.

#### THREATENED VEGETATION COMMUNITIES:

One vegetation community listed under the Tasmanian *Nature Conservation Act 2002* was observed during the field survey.

- *Eucalyptus amygdalina* Inland Forest and Woodland on Cainozoic Deposits.

#### VEGETATION COMMUNITIES OF CONSERVATION SIGNIFICANCE:

No vegetation community of conservation significance was observed within the areas surveyed.

#### THREATENED FLORA:

One plant species listed under the Tasmanian *Threatened Species Conservation Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was observed and recorded during the field survey.

- *Brunonia australis* the Blue Pincushion was observed in three separate locations during the survey, however the species was not common and the recorded locations can be easily avoided during the drilling program.  
Location 1: GRID REF: 496554E – 5386212N (4m +/-) About 15 plants within a 5 metre radius.  
Location 2: GRID REF: 496888E – 5386348N (3m +/-) About 6 plants within an old gravel pit area.  
Location 3: GRID REF; 496973E – 538653N (3m +/-) A single clump within an old gravel pit.



**PHOTO No. 1:** *Brunonia australis* Blue Pincushion observed during the survey.



**PHOTO No.2:** *Brunonia australis*. Heads of Blue flowers on long stems in early summer.  
(Philip Milner File Photo)

The other two species of threatened flora known to occur within 5,000 metres of this location were not observed during the field survey.

#### THREATENED FAUNA:

No species of fauna listed under the above Acts was observed during the field survey however evidence of the presence of Tasmanian Devils was observed.

- Tasmanian Devil scats were observed at the following locations, which confirms the species presence on the property and in the area.

Location 1: GRID REF: 496734E – 5386243N (4m +/-) A single scat.

Location 2: GRID REF: 496623E – 5386374N (3m +/-) Numerous scats were observed around a small waterhole.

#### THREATENED FAUNA HABITAT:

No Tasmanian Devil dens or potential den sites were observed during the survey however the presence of a number of large old growth trees elsewhere on the property is indicative that suitable basal hollows may be present. The presence of scats confirms that Tasmanian Devils utilize the area for hunting and foraging.

Some of the larger standing Eucalypts including dead trees were observed to possess significant branch and upper trunk hollows which would provide habitat for fauna including some threatened species, such as the Masked Owl. However no large standing trees will be impacted by the proposed exploration program.

It is most likely that the property is within the hunting and foraging range of the Wedge-tailed Eagles which utilize the known the nest tree 2,000 metres to the north. It is considered that the exploration program as proposed will have no direct or indirect impact on these birds.

Some potential habitat for Eastern-barred Bandicoots was present in the survey area where there was a natural grassy understorey.

No potential habitat for the remaining species of threatened fauna which are known or expected to occur in the locality as discussed in the desktop section of this report was observed within the study area or in locations subject to the proposed drilling program.

#### ENVIRONMENTAL WEEDS:

One significant environmental weed was observed during the field survey.

- Gorse *Ulex europeus*. The weed was occasional but not extensive on the property. The drilling program should either avoid patches of the weed or undertake those drill locations last in the program.

#### PHYTOPHTHORA:

There was no symptomatic field evidence observed of the root pathogen *Phytophthora cinnamomi* during this field survey.

#### 4.0 Recommendations:

##### VEGETATION COMMUNITIES:

- No mature trees will need to be felled to accommodate any of the drill sites. Site drill locations to ensure there will be minimal impact on the understorey and ground stratum vegetation.
- Ensure the adequate containment within each drill pad site of all silt, dust, sediment and other contaminants resulting from the drilling program to minimise impacts on adjacent soils and ground stratum vegetation.

##### THREATENED VEGETATION COMMUNITIES:

- One vegetation community listed under the Tasmanian *Nature Conservation Act 2002* was present in the target area but has been subject to past disturbance. The proposed drilling program will have minimal impact on the community and no specific action is required in addition to that under vegetation communities.

##### THREATENED FLORA:

- One species of threatened flora was observed during the field survey, *Brunonia australis*. The proposed drilling program should avoid the three recorded locations of this species which are detailed in this report.
- The field and drilling crew should familiarise themselves with this plant to ensure it is not impacted by the drilling program if it is present in other locations on the property.

##### THREATENED FAUNA:

- No species of threatened fauna was observed or recorded during the field survey although evidence of the presence of the Tasmanian Devil was observed. No specific action is required.

##### THREATENED FAUNA HABITAT:

- As the proposed drilling program is to be undertaken mainly along existing vehicular tracks, old gravel pits and cleared boundary lines there will be no direct impact on the habitat of threatened species of fauna known to occur in the wider area. No specific action is required.
- There are one known nest tree of the Wedge-tailed Eagle located approximately 2,000 metres to the north of the site reference point. The proposed exploration program will have no direct or indirect impact on this nest site and no specific action should be necessary.

##### ENVIRONMENTAL WEEDS:

- The significant environmental weed Gorse was present in some locations on the property. Patches of the weed should be avoided if possible or undertaken last in the drilling program.
- As a precautionary measure and in order to prevent the introduction of other weeds into weed free areas all equipment and machinery should be subject to a wash-down procedure to remove any soil or mud which could contain weed seeds before being transported into and out of the exploration area.

PHYTOPHTHORA:

- Accepted protocols in regard to hygiene and wash-down procedures for all machinery and equipment, including the drill rig itself should be followed, to ensure that the pathogen is not inadvertently introduced into disease free locations by way of extraneous soil, mud and gravel adhered to tyres, work-boots and equipment.

Philip Milner

Vegetation Consultant

**Appendix 1:  
Vegetation Communities and Species Recorded**

**1. *Eucalyptus amygdalina* Inland Forest & Woodland on Cainozoic Deposits  
(TasVeg Code DAZ)**

The remnant vegetation and forest on the property consisted of this vegetation type although *Eucalyptus amygdalina* Forest and Woodland occurs on the property but to the south of the target area. A number of old gravel pits were present and the area has been subject to gravel stripping in the past. The forest has also been selectively logged for firewood over many years. There are however a number of large mature Eucalypts which have been retained mainly in the south-east portion of the study area. The condition of the understorey and ground stratum vegetation varied considerably from areas displaying minimal past disturbance to areas of old gravel pits where there was more bare ground.

DOMINANT TREES	COMMON NAME	FREQUENCY
<i>Eucalyptus amygdalina</i>	Black Peppermint	common
SECONDARY TREES		
<i>Eucalyptus viminalis</i>	White Gum	occasional
UNDERSTOREY TREES AND TALL SHRUBS		
<i>Acacia dealbata</i>	Silver wattle	common
<i>Banksia marginata</i>	Silver Banksia	occasional
<i>Bursaria spinosa</i>	Prickly Box	occasional
<i>Exocarpus cupressiformis</i>	Native Cherry	occasional
MEDIUM SHRUBS		
<i>Davesia latifolia</i>	Hop Bitterpea	occasional
<i>Leptecophylla juniperina</i>	Pinkberry	occasional
SMALL SHRUBS		
<i>Acrotriche serrulata</i>	Ants Delight	occasional
<i>Astroloma humifusa</i>	Cranberry Heath	occasional
<i>Bossiaea prostrata</i>	Creeping Bossia	occasional
<i>Epacris impressa</i>	Common Heath	occasional
<i>Hibbertia riparia</i>	Erect Guineaflower	occasional
<i>Leucopogon virgata</i>	Twiggy Beardheath	occasional
<i>Lomatia tinctoria</i>	Guitarplant	occasional
<i>Pimelea humilis</i>	Dwarf Riceflower	uncommon
<i>Tetratheca pilosa</i>	Lilac Bells	uncommon
CLIMBING PLANTS		
<i>Comesperma volubile</i>	Blue Love Creeper	occasional

HERBS & HERB-LIKE PLANTS

<i>Acaena novaezelandiae</i>	Buzzy	occasional
<i>Acaena echinata</i>	Sheeps Burr	occasional
<b><i>Brunonia australis</i></b>	<b>Blue Pincushion</b>	<b>localised</b>
<i>Drosera peltata</i>	Pale Sundew	occasional
<i>Euchiton sp.</i>	A Cudweed	occasional
<i>Goodenia lanata</i>	Trailing Native-primrose	uncommon
<i>Hypericum gramineum</i>	Small StJohns Wort	uncommon
<i>Lagenophora stipitata</i>	Bluebottle Daisy	occasional
<i>Oxalis perennans</i>	Grassland Woodsorrel	common
<i>Poranthera microphylla</i>	Small Poranthera	occasional
<i>Viola hederaceae</i>	Ivy-leaved Violet	occasional

ORCHIDS

<i>Cyrtostylis reniformis</i>	Small Gnat Orchid	localised
<i>Caladenia sp.</i>	Finger Orchid	localised
<i>Chiloglottis sp.</i>	Bird Orchid	localised
<i>Microtis parviflora</i>	Slender Onion Orchid	localised

GRASSES & GRAMINOIDS

<i>Austrodanthonia sp.</i>	Wallaby Grass	occasional
<i>Dichelachne crinita</i>	Loose Plumegrass	occasional
<i>Lomandra longifolia</i>	Mat-rush	common
<i>Themeda triandra</i>	Kangaroo Grass	occasional
<i>Wurmbea dioica</i>	Early Nancy	occasional

FERNS & ALLIED PLANTS

<i>Pteridium esculentum</i>	Bracken	common
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ENVIRONMENTAL WEEDS

<i>Centaureum erythraea</i>	Centauray	occasional
<i>Romulea rosea</i>	Lilac Oniongrass	occasional
<i>Ulex europeus</i>	Gorse	occasional

REFERENCES

1. DPIPWE Website ..... [www.naturalvaluesatlas.dpiw.tas.gov.au](http://www.naturalvaluesatlas.dpiw.tas.gov.au)
2. DPIPWE Website ..... [www.dpipwe.tas.gov.au/threatenedflora\(and fauna\)](http://www.dpipwe.tas.gov.au/threatenedflora(and_fauna))
3. Harris S, & Kitchener A, (2005), *From Forest to Fjaeldmark*, DPIW Tasmania
4. Wapstra H, A & M, Gilfedder L, *The Little Book of Common Names for Tasmanian Plants*



**PHOTO 3: Regenerating forest and remnant trees on the property.**



**PHOTO 4: *Eucalyptus amygdalina* Forest on Cainozoic deposits on the property.**



**PHOTO 5:** *Eucalyptus amygdalina* Forest on Cainozoic deposits with remnant trees and old gravel pit.



**PHOTO 6:** Previous gravel pit area located on the property.



**PHOTO 7: Grassy understorey present in some locations on the property.**



**PHOTO 8: Regenerating area of grassland and *Acacia dealbata* post gravel stripping.**