

**“QUORN HALL”, “CHESTERFIELD”, “SHARLANDS”**

**CAMPBELLTOWN SOUTH - EAST**

**BOTANICAL & FAUNA HABITAT SURVEY**

**For ABX4 PTY LTD**

**29<sup>th</sup> July 2013**



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**1.0 Introduction:**

ABX4 Pty Ltd, a wholly owned subsidiary of Australian Bauxite Ltd is undertaking an exploratory program over three properties “Quorn Hall”, “Chesterfield” and “Sharlands” located to the south-east of Campbelltown and within EL 7/2010 and EL 3/2012.

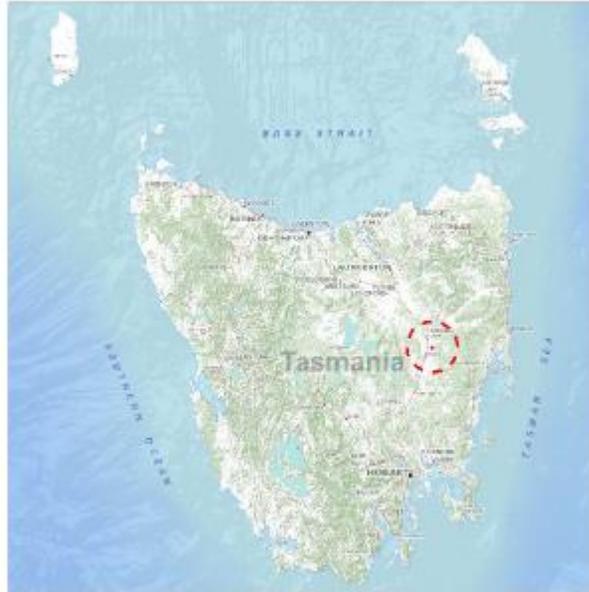
The exploration program targets 4 sites and will involve a shallow drill hole at each site which will not require the clearing and/or leveling of drill pad sites and so is expected to have a minimal impact on the ground surface and adjacent vegetation.

A botanical and fauna habitat survey is required as part of the MRT licence conditions to determine any likely impacts on threatened species, threatened vegetation communities or other natural values.

**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 target areas 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 minimised.

**1.2 Location of Study Area:**



MAP REF: Tasmap 1:25,000, Sheet No. 5435, Campbelltown

BIOREGION: Northern Midlands

GRID REF: 545100E – 5352200N

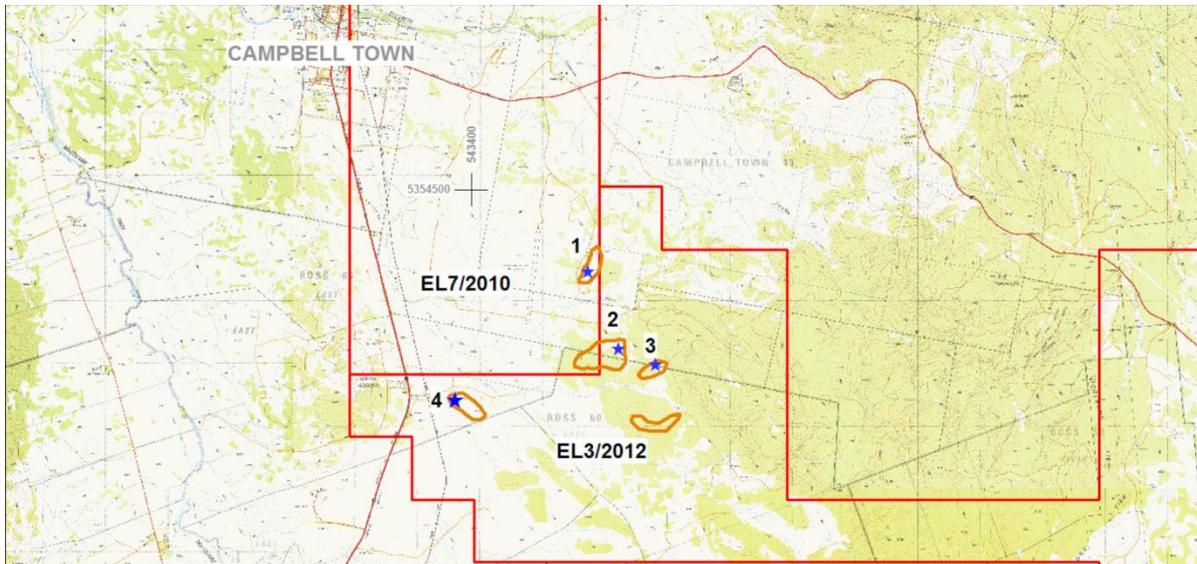
(All Grid References MGA Zone 55 GDA94)

**1.3 Site Description:**

The four target areas are located on the properties “Quorn Hall”, “Chesterfield” and “Sharlands” to the south-east of Campbelltown, to the east of the Midlands Highway and to the south of the Lake Leake Main Road.

The area consists of a broad flat plain surrounded by undulating hills typical of this area of the midlands and the four sites are located on the adjacent low hills. An old war time airfield extended the length of the flat plain.

The broad plain has been extensively cleared for agriculture and for the airfield in the past and is grazed by stock or cropped. Remnant open forest and woodland remains on some of the surrounding hills although grazing pressure varies depending on the property and its location. Forested and wooded vegetation is more extensive to the east of the study area.



**MAP 1: Location of the 4 target areas on the properties “Quorn Hall”, “Chesterfield” & “Sharlands” to the south-east of Campbelltown.**

**2.0 Desktop Survey of Natural Values:**

The DPIPWE 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. Occurrences of environmental weeds, geo-conservation sites and reserve status of land in the area were also sourced.

REFERENCE POINT for the locality: 545100E – 5352200N (Site 2)

**2.1 Desktop Survey Results:**

**VEGETATION COMMUNITIES:**

The following vegetation communities are mapped under the TASVEG mapping program as occurring within 1,500 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 Cainozoic Deposits	DAZ / bright green with “x”	Linear area extending through the eastern half of the study area.
<i>Eucalyptus amygdalina</i> Forest & Woodland on Dolerite	DAD / Bright green with horizontal lines	In the east of the study area and near Site 3.
<i>Eucalyptus viminalis</i> Grassy Forest & Woodland	DVG / Blue-green	The main remnant vegetation through the centre of the study area and around the agricultural land.
<i>Eucalyptus pauciflora</i> Forest & Woodland not on Dolerite	DPO / Dark green with “x”	Single small patch in the north north-west periphery of study area.
Lowland <i>Poa labillardierei</i> Grassland	GPL / bright yellow with diagonal lines	Scattered patches near the southern periphery of the study area.
Agricultural Land	FAG / cream	Widespread in the study area.

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



**FIGURE 1: Vegetation communities as per TasVeg mapping program within 1,500 metres of reference point: GRID REF: 545100E – 5352200N.**

-  **DAZ** ..... *Eucalyptus amygdalina* Inland Forest & Woodland on Cainozoic Deposits,
-  **DAD** ..... *Eucalyptus amygdalina* Forest & Woodland on Dolerite
-  **DVG** ..... *Eucalyptus viminalis* Grassy Forest & Woodland
-  **DPO** ..... *Eucalyptus pauciflora* not on Dolerite
-  **GPL** ..... Lowland *Poa labillardierei* Grassland

VEGETATION COMMUNITIES:

**DAZ** *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* may be present and can sometime form the dominant canopy species. Dry sclerophyll shrubs, often low or prostrate species, Bracken *Pteridium esculentum* or grasses and graminoids with 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 in the northern Midlands and its main area of distribution is in the northern Midlands with outlying localities include the Fingal Valley, 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 on the less fertile soils in the northern Midlands areas 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*.

**DAD** *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. The two Eucalypt communities DAZ and DAD often 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.

**DVG** *Eucalyptus viminalis* Grassy Forest & Woodland is found throughout the drier parts of the state but is particularly prevalent through the Midlands and the lower slopes of the Eastern Tiers although it has been subject to clearance for agriculture through the Midlands. The community typically has a grassy understorey which can be relatively species rich in grasses and herbs in some locations. Old-growth formations of this community which contain trees with hollows are considered to be of high conservation value as potential fauna habitat.

**GPL** Lowland *Poa labillardierei* Grassland. Many areas which were originally this community have been ploughed and converted to improved pasture dominated by exotic pasture grasses or for cropping.

Lowland grassland communities are of high conservation value where they are in good condition but are becoming increasingly rare due to conversion to improved pasture and increased cultivation of crops such as canola and poppies. Lowland grasslands including GPL are considered to be a threatened vegetation community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

#### THREATENED VEGETATION COMMUNITIES:

- One natural vegetation community mapped within the study area is listed as threatened under the Tasmanian *Nature Conservation Act 2002*. *Eucalyptus amygdalina* Inland Forest & Woodland on Cainozoic Deposits (DAZ) 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.
- Native grassland communities such as the Lowland *Poa labillardierei* Grassland (GPL) which is mapped as occurring in the study area is recognized as a threatened vegetation community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

#### VEGETATION COMMUNITIES OF CONSERVATION SIGNIFICANCE

- Although the community *Eucalyptus amygdalina* Forest and Woodland on Dolerite is relatively widespread it mainly occurs on freehold land and is considered to be under-reserved in the state and particularly so in its old-growth condition.
- *Eucalyptus pauciflora* Forest and Woodland not on Dolerite is more prevalent in the southern Midlands but occurs sporadically in the north of the state including the northern Midlands and typically occur on dry nutrient poor sites. The community is considered to be under reserved where ever it occurs in the state.

#### THREATENED FLORA:

Eight 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 species of threatened flora is recorded on the database from within 1,500 metres of the study area reference point.

- *Austrostipa nodosa* Knotty Speargrass, rare under the Tasmanian Act, 2 records, one within 2,000 metres, both undated.
- *Arthropodium strictum* Chocolate Lily, rare in Tasmania, one undated record.
- *Caladenia anthracina* Black-tip Spider Orchid, endangered in Tasmania and critically endangered under the Commonwealth Act. 4 records from 1995/96.
- *Colobanthus curtisiae* Grassland Cupflower, rare in Tasmania and vulnerable nationally. Two records, one dated 1995.
- *Hypoxis vaginata* Sheathing Yellow-star. Rare in Tasmania, one 2001 record within 2,000 metres.
- *Leucochrysum albicans* var *tricolor* Grassland Paperdaisy, endangered in Tasmania and nationally. Two undated records.
- *Pterostylis commutata* Midlands Greenhood (orchid). Endangered in Tasmania and critically endangered nationally. One record from 1993.
- *Scleranthus fascicularis* Spreading Knawell, vulnerable in Tasmania with one undated record.

A further six species of threatened flora are recorded on the database as occurring from between 3,000 and 5,000 metres of the study area reference point.

- *Austrostipa scabra* subsp *falcata* Sickle Speargrass provisionally rare in Tasmania.
- *Calocephalus lacteus* Milky Beautyheads, rare in Tasmania.
- *Dianella amoena* Grassland Flaxlily, rare in Tasmania, endangered nationally.
- *Pterostylis ziegerleri* Grassland Greenhood (orchid) vulnerable in Tasmania and nationally.
- *Vittadinia cuneata* Fuzzy New Holland Daisy, rare in Tasmania.
- *Vittadinia gracilis* Woolly New Holand Daisy, rare in Tasmania.

**THREATENED FAUNA:**

No species of threatened fauna listed under the above Acts is recorded on the database as occurring within 3,000 metres of the study area reference point.

Two species have been recorded from within 5,000 metres of the study area reference points.

- The Tasmanian Devil *Sarcophilus harrisii* is listed as being endangered under both State and Commonwealth Acts. There are 4 sight records on the database from within 5,000 metres, dated 1967, 1985, 2012 and 2013.
- 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 are three records on the database dated from 1967, 1985 and 1992.

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

- The Spotted-tailed Quoll, *Dasyurus maculatus* subsp *maculatus* is listed as a rare species under the Tasmanian Act and vulnerable under the Commonwealth Act. It inhabits a range of forest types and will hunt and forage on farmland and pasture, travelling up to 20km at night. The animal will shelter in dens located in rocks, logs or thick vegetation.
- 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 a small native fish considered to be endangered in Tasmania and nationally, and is found only within the catchments of the Esk Rivers. The species is endemic to Tasmania.
- Australian Grayling *Prototroctes mareana* is a fish which moves between fresh and salt water localities. The species is listed as being vulnerable both in Tasmania and nationally.
- The Green and Gold Frog *Litoria raniformis* is considered to be vulnerable in Tasmania and Nationally. It is found mainly in the north of the state.
- Ptunerra Brown Butterfly *Orioxenica ptunarra* is listed as being vulnerable in Tasmania.
- The Green-lined Ground Beetle *Catadromus lacordairei* is listed as being vulnerable in Tasmania.

There are no records of raptors, or known nest trees of Wedge-tailed Eagles *Aquila audax* subsp. *fleayi* within 5,000 metres on the NVA database.

**ENVIROMENTAL WEEDS:**

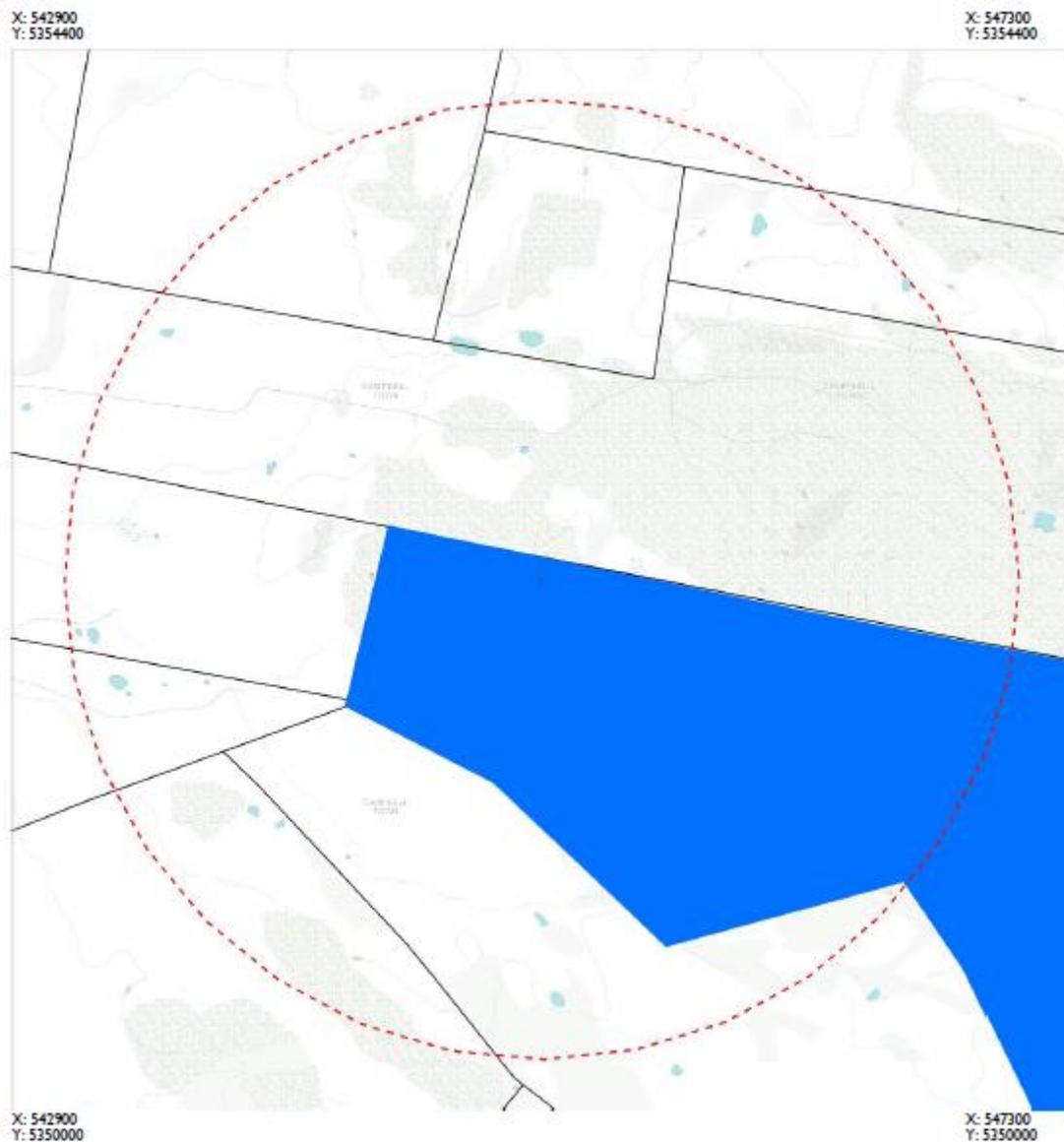
The following weeds are recorded on the NVA within 2,000 metres:

*Carduus nutans*, the Nodding Thistle.

*Ulex europaeus*, Gorse.

**RESERVED LAND:**

That part of the “Chesterfield” property within the study area is subject to a management agreement for conservation purposes.



**FIGURE 2: Property subject to a Management Agreement with Site 2 at the centre point.**

### 3.0 Field Survey:

The field survey was undertaken on Tuesday the 24<sup>th</sup> May 2013.

Methodology: The four target areas as detailed on Map No.1 were surveyed on foot.

Vascular plant species were recorded, evidence of the presence of threatened fauna and of any potential habitat was observed, vegetation communities were also observed and cross-referenced with the TasVeg map sourced from the Natural Values Atlas database.

Limitations: This survey was conducted in early winter when many species are dormant and not flowering, particularly ground layer flora within grasslands. 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:

SITE 1: GRID REF: 544900E – 5353700N.

The proposed drill site is located on a low broad hill covered by mixed pasture which has been heavily grazed by sheep. Native grasses are likely to be present as part of the grass sward however they were not observable at this time of the year and with the degree of grazing. However the drilling operation will result in limited disturbance and will have a minimal impact on the ground layer vegetation. There is a single record of the rare native Knotty Spear Grass *Austrostipa nodosa* on the “Natural Values Atlas” about 600 metres to the north-east of the site.

There is also a small patch of remnant vegetation about 100 metres to the south-east of the site. The patch is predominantly *Eucalyptus viminalis*, White Gum which is in decline, probably due to exposure and impacts from sheep, such as soil enrichment and compaction. This remnant patch falls within the definition of the community *Eucalyptus viminalis* Grassy Forest (DVG) which is a widespread community throughout the midlands however it has been extensively cleared for agriculture in the past. The patch had no woody understorey except for some gorse but some of the ground layer vegetation persisted with mainly Tussock Grass *Poa labillardierei* but also occasional plants of *Chrysocephalum apiculatum*, *Lissanthe strigosa*, *Acaena echinata*, *Einadia nutans*, *Austrodanthonia sp.* and *Juncus sp.* No evidence of the presence of any species of threatened fauna such as Tasmanian Devils or Eastern-barred Bandicoots was observed in the vicinity of Site 1 or in the adjacent remnant vegetation.

The proposed drill site will not impact on this area of remnant vegetation or any threatened fauna habitat.

SITE 2: GRID REF: 545100E – 5352200N.

The proposed drill site is located on and near the boundary of the Von Bibra property and within a patch of locally significant remnant vegetation on a hill which is actually an old sand dune. This sand dune forms part of the listed geoconservation site known as the Macquarie River Valley Sand-sheets. The vegetation was relatively intact and in a near natural condition although the canopy was very open and there was considerable windfall branches and logs on the ground. The open forest in this location is dominated by the Cabbage Gum *Eucalyptus pauciflora* which

had a heathy understorey rather than grassy. This community is described as *Eucalyptus pauciflora* Forest and Woodland not on Dolerite (DPO) which has its stronghold in the southern midlands, usually on sandy nutrient poor sites. The community can be further defined as *Eucalyptus pauciflora* Dry Forest and Woodland on Sediments with a Diverse Heathy Understorey (DAI) on the basis of the understorey and ground stratum vegetation.

The composition of the ground stratum was diverse in heathy species including *Lissanthe strigosa*, *Hibbertia riparia*, *Hibbertia prostrata*, *Hibbertia procumbens*, *Leucopogon virgatus*, *Astroloma humifusa*, *Pultenaea pedunculata* and *Pimelea humifusa* as well as other species commonly found on sandy soils such as *Dianella revoluta*, *Lomandra longifolia*, *Pteridium esculentum* and *Scleranthus biflorus*. There is also potential for ephemeral species to be present such as orchids and lilies, however they were not observable at this time of the year. The location appeared to be lightly grazed, if at all, by sheep or other stock.

Wombat burrows were observed in the location as well as scats of Tasmanian Devil. Devils often utilize Wombat burrows as den sites. Discussed further under threatened fauna below.

This particular vegetation community appears to be quite localised and limited to the crest of the sand dune. The ground stratum grades into a cover of bracken as one moves downslope. The community could be present elsewhere within the Macquarie River Valley Sandsheets where it is relatively undisturbed however this localised occurrence needs to be considered as being of conservation significance although it is not listed as a threatened native vegetation community under the *Tasmanian Nature Conservation Act 2002*.

This site is important from both the remnant vegetation and localised community perspective as well as potential habitat for the Tasmanian Devil, with a risk of impact and collapse of the wombat burrows. It would be most desirable to relocate the drill site onto the cleared farmland nearby.

**SITE 3: GRID REF: 546100E- 5352200N.**

Site 3 is located about one kilometre to the east of Site 2, and is located on a low hill within an area of grassy forest with White Gum *Eucalyptus viminalis* as the dominant tree and which included an occasional large old-growth individual in the wider area. The community present fits within the definition of *Eucalyptus viminalis* Grassy Forest and Woodland (DVG). The area in the vicinity of the proposed drill site has been subject to the clearing and removal of trees over the years and is regularly grazed, but has not been ploughed or cultivated. The ground stratum was grassy and composed principally of indigenous grasses, forbs and herbs, including *Poa labillardierei*, *Poa rodwayi*, *Themeda triandra*, *Lomandra longifolia*, *Pimelea humilis*, *Acaena echinata*, *Chrysocephalum apiculatum*, *Cynoglossum suavolens* *Geranium sp.*, *Dichondra repens*, *Bossiaea prostrata*, *Scleranthus biflorus*, *Brachyscome aculeata*, *Astroloma humifusa* and *Lissanthe strigosa*. Small patches of gorse were also present in the location. A couple of large hollow logs were observed which may provide potential den sites for Tasmanian Devils although no evidence of their use or other presence, such as scats was observed. Wombat scats were observed however. No basal hollows were observed in the larger trees which may have provided potential den sites although one or two trees in the vicinity and in the wider area were observed with upper trunk or branch hollows which would be potential fauna habitat, including for some threatened species.

The drill site will have minimal impact on the vegetation in the location however the site works should keep clear of any large hollow logs in the vicinity and clear of any larger trees, and avoid patches of gorse.

SITE 4: GRID REF: 542800E – 5351500N.

This site is located in an old gravel quarry on the “Sharland” property and about 800 metres to the east of the Midlands Highway.

The site has been extensively disturbed in the past and is now heavily infested with gorse although remnant native grassland vegetation does persist around the periphery of the site and away from the gorse. The only native trees present were some copses of stunted *Acacia dealbata* and some exotic *Pinus radiata* which were probably planted in the past to revegetate the site.

Ground stratum flora included *Poa labillardierei*, *Austrodanthonia sp.*, *Dichelachne sp.*, *Scleranthus biflorus*, *Astroloma humifusa* and *Lissanthe strigosa*.

There are two species of threatened flora recorded on the NVA from within 2,000 metres of the site and both from the verge of the Midlands Highway. *Calocephalus lacteus* is listed as being rare in Tasmania, and *Dianella amoena* is rare in Tasmania and endangered nationally. Neither species was observed in the vicinity of the quarry however.

Two species of threatened fauna are recorded on the NVA within 2,000 metres. There is one 2012 record of the Tasmanian Devil and three records of the Eastern-barred Bandicoot the most recent from 1992. No evidence of the presence of either species was observed in the vicinity of Site 4.

**THREATENED VEGETATION COMMUNITIES:** No vegetation community listed as threatened under the Tasmanian *Nature Conservation Act 2002* was present in the areas surveyed.

**THREATENED FLORA:** No species of flora listed under the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* were observed during the survey.

None of threatened species of flora recorded on the Natural Values Atlas database from within 3,000 metres of each of the four sites was observed during the field survey.

**THREATENED FAUNA:** No species of threatened fauna was observed during the survey.

Evidence of the presence of Tasmanian Devils (scats) was observed at survey site 2.

The Tasmanian Devil and the Eastern-barred Bandicoot have both been recorded on the NVA database in the past from within 2,000 metres of Site 4.

There are no known nest trees of Wedge-tailed Eagles or other raptors within 5,000 metres of the location as referenced on the NVA.

**THREATENED FAUNA HABITAT:**

No specific threatened fauna habitat was observed during the field survey however the presence of wombat burrows and scats of Tasmanian Devils in the vicinity of Site 2 would support the location as being likely and favourable habitat for Devils, including potential den sites in the wombat burrows.

There were a few old-growth trees present in the vicinity of survey site No.3 which possessed hollows and these would provide potential fauna habitat including some threatened species. No mature tree however will be directly impacted by the proposed drilling program so there will be no threat to any such potential habitat.

Large hollow logs were also present in the vicinity of Site 3 although there was no evidence of recent use by Devils or Quolls.

No potential threatened fauna habitat was present in the vicinity of sites 1 and 4.

#### ENVIRONMENTAL WEEDS:

Gorse was observed in the vicinity of Site No.1 and Site No.3, and there was a severe infestation around the quarry at survey site No.4, as well as Radiata Pine. Spear Thistles were observed in a number of locations and Horehound was present at Site 1.

#### PHYTOPHTHORA:

No evidence of the presence of this pathogen was observed at each of the four survey sites.

#### 4.0 Conclusions:

There were no listed threatened vegetation communities observed and no threatened flora or fauna observed during the field survey, although evidence of the presence of Tasmanian Devils was observed at Site 2.

The vegetation community at Site 2 is considered to be significant at least at the local level.

Site 2 included evidence of the presence of Tasmanian Devils (scats) and Wombat burrows which would serve as potential den habitat for the Devils.

Gorse was present in the vicinity of Sites 1 and 3, and there was a heavy infestation at Site 4.

#### 5.0 Recommendations:

- Site 1. No specific recommendation although field operations should avoid the small nearby patch of *Eucalyptus viminalis* Grassy Forest.
- Site 2. This site should ideally be relocated onto nearby cleared farmland in order to avoid impacting on the locally significant vegetation community, and to avoid the risk of collapsing wombat burrows which are potential den habitat for Tasmanian Devils.
- Site 3. Position drill site to avoid any large hollow log and patches of gorse.
- Site 4. This drill site should be undertaken last in the program in order to avoid the risk of the translocation of soil contaminated with gorse seed to relatively weed free locations.
- Ensure the adequate containment within each drill site of all silt, dust, sediment and other contaminants resulting from the drilling program to avoid impacting on adjacent soils and ground stratum vegetation.
- As a precautionary measure and in order to prevent the introduction of 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 between each property.

- 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 *Phytophthora* 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 viminalis* Grassy Forest and Woodland (TasVeg Code DVG)**

This community was present in Survey 3 and as a small remnant near to Survey area 1.

The understorey consisted of Silver Wattle saplings and the groundlayer consisted of grasses and a seasonal presentation of ephemeral herbs, only some of which are evident at this time of year. This community is widespread in drier areas such as the Midlands but has been extensively cleared for agriculture in this area.

DOMINANT TREES	COMMON NAME	FREQUENCY
<i>Eucalyptus viminalis</i>	White-gum	common
SECONDARY TREES		
<i>Eucalyptus amygdalina</i>	Black Peppermint	common
UNDERSTOREY TREES AND TALL SHRUBS		
<i>Acacia dealbata</i>	Silver wattle	occasional
SMALL SHRUBS		
<i>Astroloma humifusa</i>	Cranberry Heath	occasional
<i>Bossiaea prostrata</i>	Creeping Bossia	occasional
<i>Hibbertia riparia</i>	Erect Guineaflower	occasional
<i>Lissanthe strigosa</i>	Peach Heath	occasional
<i>Pimelea humilis</i>	Dwarf Riceflower	occasional
HERBS & HERB-LIKE PLANTS		
<i>Acaena echinata</i>	Sheeps Burr	uncommon
<i>Asperula conferta</i>	Prickly Woodruff	Site 1 only
<i>Brachycome aculeata</i>	Hill Daisy	Site 3 only
<i>Chrysocephalum apiculatum</i>	Common Everlasting	occasional
<i>Dichondra repens</i>	Kidneyweed	occasional
<i>Einadia nutans</i>	Climbing Saltbush	Site 1 only
<i>Geranium potentilloides</i>	Mountain Geranium	occasional
<i>Oxalis perennans</i>	Grassland Woodsorrel	common
<i>Scleranthus biflorus</i>	Twinflower Knawell	occasional
GRASSES & GRAMINOIDS		
<i>Austrodanthonia sp.</i>	A Wallaby Grass	occasional
<i>Poa labillardierei</i>	Silver Tussockgrass	common
<i>Juncus sp.</i>	A Rush	occasional
<i>Poa rodwayi</i>	Velvet Tussock Grass	occasional
<i>Lomandra longifolia</i>	Mat-rush	very common
<i>Themeda triandra</i>	Kangaroo Grass	occasional

Appendix 1 (cont)

*Eucalyptus viminalis* Grassy Forest & Woodland (cont)

FERNS & ALLIED PLANTS	COMMON NAME	FREQUENCY
<i>Pteridium esculentum</i>	Bracken	occasional

ENVIRONMENTAL WEEDS

<i>Cirsium vulgare</i>	Spear Thistle	occasional
<i>Marrubium vulgare</i>	Horehound	Area 1 only
<i>Ulex europaeus</i>	Orse	common

**2. *Eucalyptus pauciflora* Forest & Woodland not on Dolerite (TasVeg Code DPO)**

The only occurrence of this community in the areas surveyed was in Target Area No.2. where it was present on and along the crest of the old dune. The understorey consisted of silver Wattle saplings and Black Sheoak and the groundlayer was predominantly heathy with a high diversity of low shrubby vegetation. Grasses were not prominent in contrast to the White Gum community nearby. Bracken became the predominant groundcover on the lower slopes of the dune/hill.

DOMINANT TREES	COMMON NAME	FREQUENCY
<i>Eucalyptus pauciflora</i>	Cabbage Gum	common

CO-DOMINANT TREES

<i>Eucalyptus viminalis</i>	White Gum	common
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UNDERSTOREY TREES & LARGE SHRUBS

<i>Acacia dealbata</i>	Silver Wattle	occasional
<i>Allocasuarina littoralis</i>	Black Sheoak	occasional

SMALL SHRUBS

<i>Astroloma humifusa</i>	Cranberry Heath	occasional
<i>Bossiaea prostrata</i>	Creeping Bossia	occasional
<i>Hibbertia procumbens</i>	Spreading Guineaflower	occasional
<i>Hibbertia prostrata</i>	Prostrate Guineaflower	occasional
<i>Hibbertia riparia</i>	Erect Guineaflower	common
<i>Leucopogon virgatus</i>	Twiggy Beardheath	occasional
<i>Lissanthe strigosa</i>	Peach Heath	common
<i>Pimelea humilis</i>	Dwarf Riceflower	occasional
<i>Pultenaea pedunculata</i>	Matted Bushpea	occasional

HERBS & HERB-LIKE PLANTS

<i>Acaena echinata</i>	Sheeps Burr	uncommon
<i>Chrysocephalum apiculatum</i>	Common Everlasting	common
<i>Oxalis perennans</i>	Grassland Woodsorrel	common
<i>Scleranthus biflorus</i>	Twinflower Knawell	common

Appendix 1 (cont)

*Eucalyptus pauciflora* Forest & Woodland not on Dolerite (cont)

GRASSES & GRAMINOIDS

<i>Austrodanthonia sp.</i>	A Wallaby grass	occasional
<i>Dianella revoluta</i>	Grassland Flax lily	common
<i>Juncus sp.</i>	A Rush	occasional
<i>Poa labillardierei</i>	Silver Tussockgrass	common
<i>Lomandra longifolia</i>	Mat-rush	common

FERNS & ALLIED PLANTS

<i>Pteridium esculentum</i>	Bracken	common
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**PHOTO No.1: Remnant patch of *Eucalyptus viminalis* Grassy Forest & Woodland (DVG) near Survey area No.1**



**PHOTO No. 2: Survey Area 2. *Eucalyptus pauciflora* Forest & Woodland not on Dolerite (DPO)**



**PHOTO No. 3: Survey Area No.3 . *Eucalyptus viminalis* Grassy Forest & Woodland (DVG)**



**PHOTO No. 4: Survey Area No. 4. Old quarry and Gorse infestation.**