Little Henty River Exploration Botanical Survey

Mineral and Metals Group Exploration

12th January 2010

Commercial-In-Confidence

Prepared by

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Summary

No vegetation community listed as threatened under the Tasmanian *Nature Conservation Act 2002* was present in the areas surveyed. No plant species listed under the Tasmanian or Commonwealth threatened species Acts were observed during the survey.

The proposed drill pad at Site 2 is within a community of *Eucalyptus globulus* Wet Forest. This community is considered to be of high conservation value in the West Bioregion because of the species limited occurrence on the west coast and because it is genetically distinct from the east coast form of the species.

The endangered Swift Parrot *Lathamus discolor* was observed feeding within the community. This species is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* The siting and location of the drill pad at Site 2 should be varied as much as possible in order to limit the number of mature *Eucalyptus globulus* which will need to be felled. A "Permit to Take" under the Acts may be required before any trees are felled at this site.

At other sites it is recommended that clearing of drill pads and the felling of trees on and adjacent to Sites 1, 3 and 4 be to the minimum specification in order to limit OH&S risks and the impact on surrounding vegetation.

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1.0 Introduction

MMG Ltd is undertaking an exploratory drilling program in the vicinity of the lower reaches of the Little Henty River in western Tasmania which will involve the clearing of four drill pad sites to enable helicopter access for transfer of drilling equipment and personnel. A botanical survey is required of each drill pad site as part of MRT license conditions to determine any likely impacts on threatened species or threatened vegetation communities.

Please note that the desktop and field surveys have utilized Datum GDA94 and the maps provided by MMG are in Datum AGD66. Both datum systems are referred to in this report.

1.1 Objectives

The objectives of the survey were to;

- Undertake a desktop survey to confirm the known biological records and the natural values present in the exploration target 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 the presence of any species of threatened fauna or of their potential habitat.
- Determine the possible impacts of the proposed exploration program on the natural values present and make recommendations on how those impacts may be minimized.

1.2 Location of Study Area

The exploration area is located about one kilometre upstream from the mouth of the Little Henty River, which is near Trial Harbour on the west coast of Tasmania (Figure 1). One proposed drill site is located to the north of the river and two are located along a ridge to the south of the river (Figure 2). The fourth site is located about 2 kilometres south-east of the river. The study area is located within the West Bioregion of Tasmania.

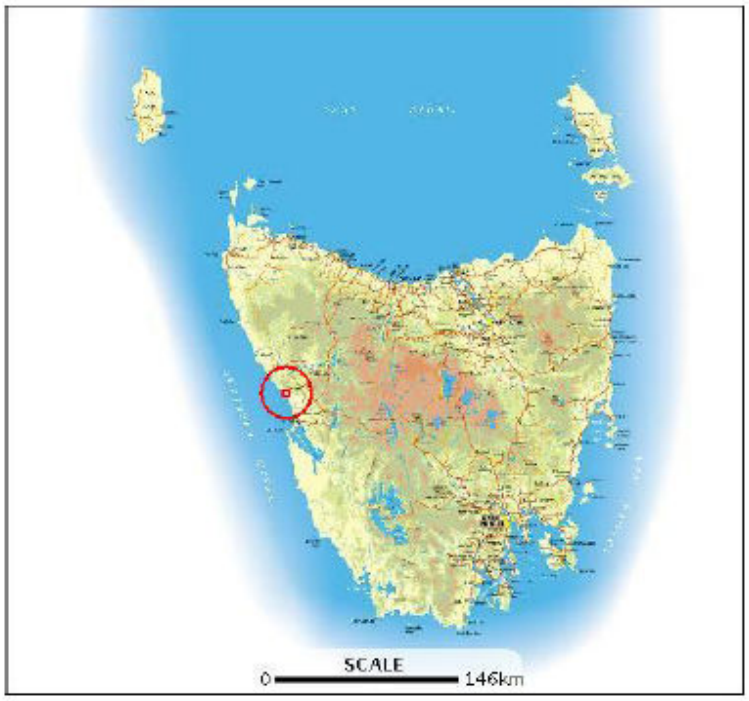

Figure 1 Location plan

Site 1…….. 350850E – 5355520N	350962E – 5355703N
Site 2 ……..351200E – 5355220N	351312E – 5355403N
Site 3 ……..351350E – 5355100N	351462E – 5355283N
Site 4 ……..353600E – 5354120N	353712E – 5354303N
****: AGD66	**** GDA94

1.3 Site Description

The survey area is located on the valley slopes and adjacent ridgeline about one kilometre upstream from the mouth of The Little Henty River. The area has been subject to some low impact mineral exploration in the past however the environment and associated vegetation is relatively undisturbed and in a near pristine condition. No past forestry activities were evident in the locality.

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

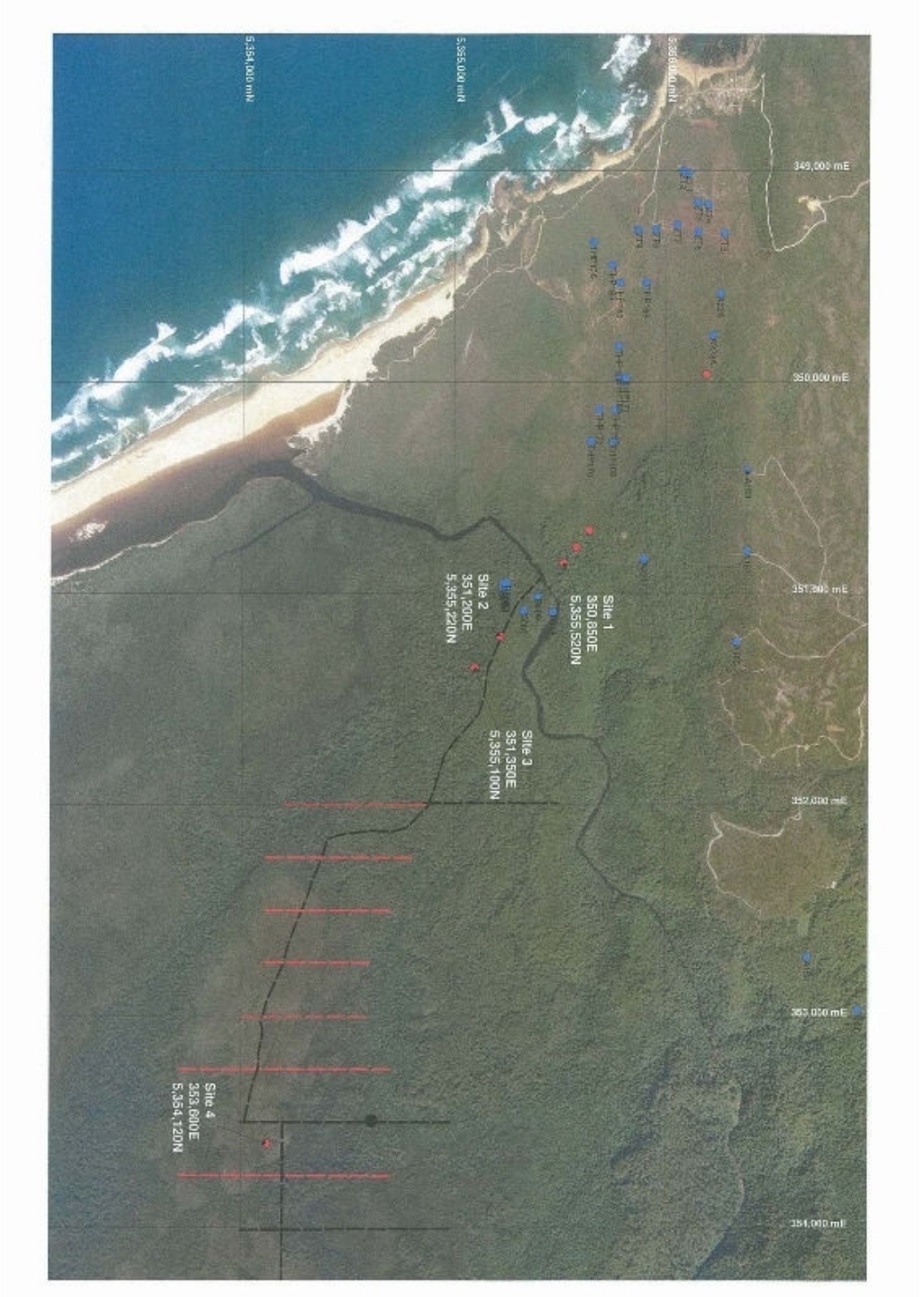

Figure 2 Aerial photomap of Little Henty River exploration area and proposed drill pad sites.

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.

REF POINT for Sites 1 -3: 351312E – 5355400N

REF POINT for Site 4: 353712E – 5354300N

*** NOTE DATUM GDA94

2.1 Desktop Survey Results

2.1.1 Vegetation communities

The following vegetation communities are mapped under the TasVeg vegetation mapping program as occurring within 1,000 metres of the study area reference points (Figures 3 and 4).

Table 1 Tasveg index to maps

Vegetation community	Tasveg code	Map colour	Extent in study area
Leptospermum Scrub	SLW		Area near Site 1 & below ridgeline of sites 2 & 3 + others within 1km.Adjacent to MBU within 1km Site 4
Melaleuca squamea Heathland	SMM		Localised area 1km north of Site 4
Western Wet Scrub	SWW		NW of the Little Henty River 0.5 – 1km of Sites 1-3. 1km NW & Sw of Site 4
Broadleaf Scrub	SBR		3 small areas 1km to NE of Sites 1-3
Buttongrass Moorland (undifferentiated)	MBU		Predominant community around Site 4 and a smaller area about one km west of Sites 1-3
Nothofagus – Atherosperma Rainforest (undifferentiated)	RMT / RMU		4 small areas 1km north & NW of Sites 1-3 & 4 areas within 1km of Site 4
Eucalyptus nitida Dry Forest & Woodland	DNI		South of Site 4
Eucalyptus nitida Wet Forest (undifferentiated)	WNU		Widespread & the predominant community Sites 1 – 3 & north & south of Site 4
Melaleuca ericifolia Swamp Forest	NME		Along the banks of the Little Henty River and Fenn Creek and adjacent low lying land

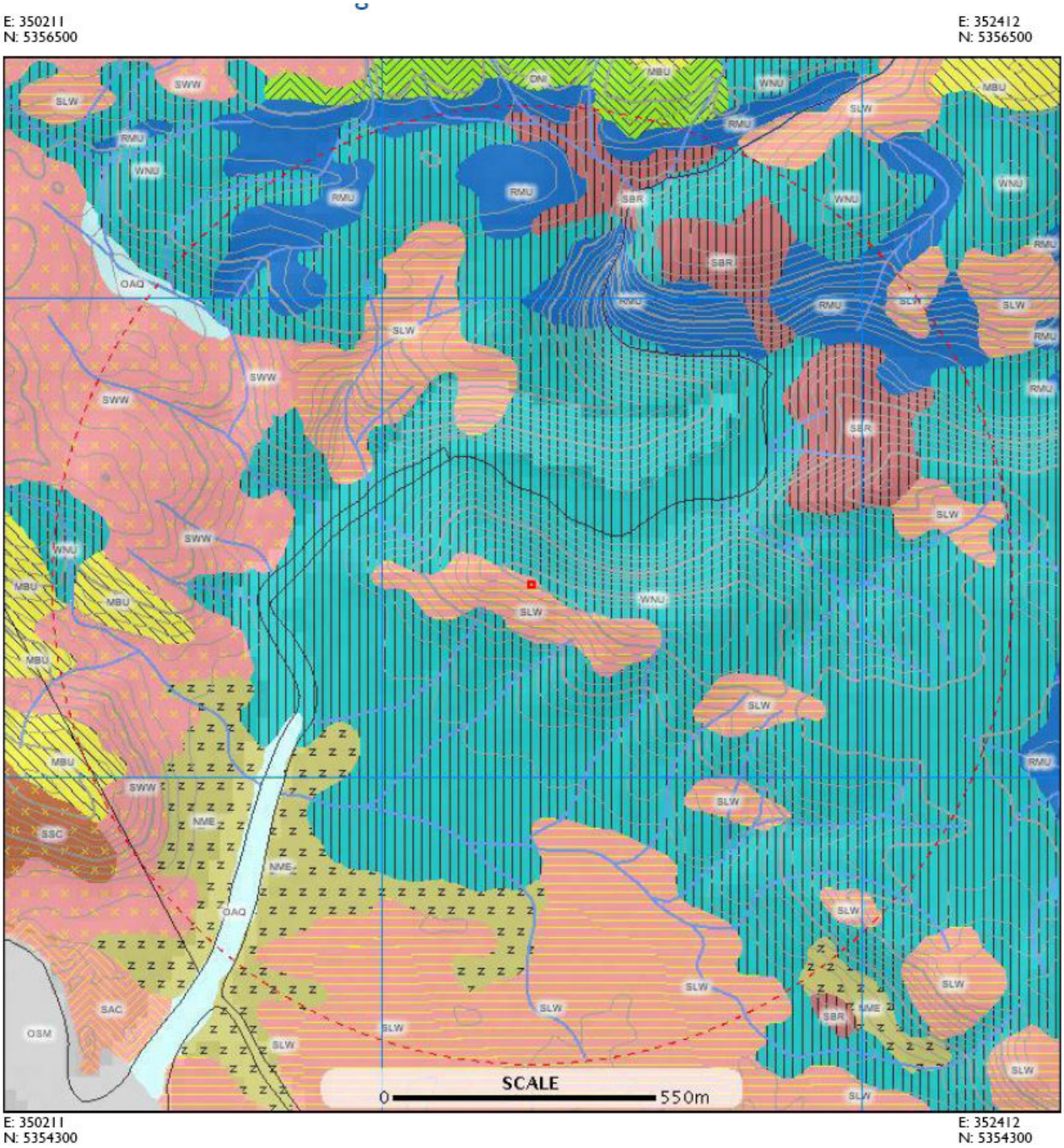

Figure 3 Vegetation communities as per TasVeg mapping program within 1,000 metre radius of Site 2.

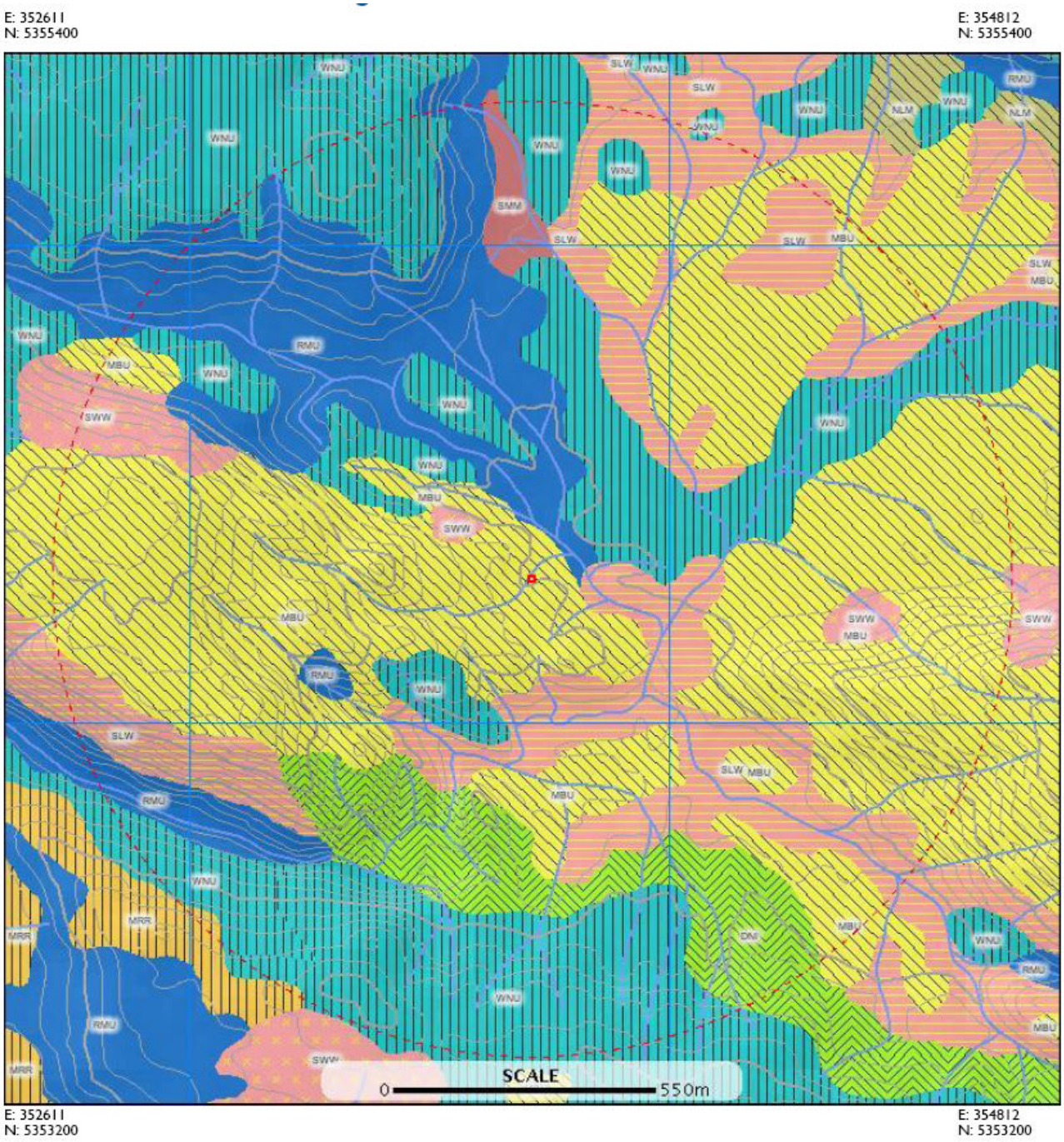

Figure 4 Vegetation communities as per TasVeg mapping program within 1,000 metre radius of Site 4.

2.1.2 Threatened vegetation communities

- The community Melaleuca ericifolia Swamp Forest (NME) which is mapped as occurring in the low lying areas along the Little Henty River and Fenn Creek is listed as a threatened native vegetation communitiy under the Nature Conservation Act 2002.

2.1.3 Vegetation communities of conservation significance

- *Eucalyptus nitida* Dry Forest & Woodland and *Eucalyptus nitida* Wet Forest in their old-growth condition are considered to be under-reserved in some regions of the state.
- *Nothofagus – Atherosperman* Rainforest is considered to be under-reserved in some regions of the state and particularly so in its old-growth condition.

2.1.4 Threatened flora

The following species of threatened flora listed under the Tasmanian *Threatened Species Conservation Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are recorded on the "Natural Values Atlas" database as occurring within 5,000 metres of the study area. None were recorded within 500 metres of Sites 1-3 or Site 4 and only the Horned Orchid *Orthoceras strictum* was recorded within 2,000 metres of either site.

- *Amphibromus neesii* Southern Swampgrass is listed as rare under the Tasmanian Act. There is one record from 1981 for the species. It grows in damp ground by marshes, lagoons and river flats on the west coast and in other localities across the state.
- *Baumea gunnii* Slender Twigsedge is listed as rare under the Tasmanian Act. There is one very early record of the species from 1894. This species has been recorded across Tasmania in marshes, wet moors, creek and river banks from near sea levek up to 750 metres.
- *Deyeuxia minor* Small Bentgrass is listed as rare under the Tasmanian Act. There is one 1981 record for the species. It occurs open Eucalypt forest and around the margins of wet Eucalypt forest. Trial Harbour township is considered to be a key location for the species.

- *Lachnagrostis scabra* subsp *scabra* Rough Blowngrass is listed as rare under the Tasmanian Act with two records, only one of which is dated and is a very early collection from 1894.
- *Orthoceras strictum* the Horned Orchid is listed as being rare under the Tasmanian Act. There are 7 records from the study area from between 1968 and 1977. The species is found in localised coastal and near coastal areas of the north, east and west of the state in areas of buttongrass moorland, scrubby heathland and some other vegetation types on poorly to moderately drained peaty, sandy and clay soils. The species is usually more evident after fires which are often frequent in the species preferred habitats.
- *Ranunculus acaulis* the Dune Buttercup is listed as rare under the Tasmanian Act. There is one 1981 record for the species. It grows in seepage areas on the seaward side of sand dunes. It occurs on the Tasmanian west coast as well as in New Zealand and Chile.
- *Veronica novae-hollandiae* the Coast Speedwell is listed as being vulnerable under the Tasmanian Act. It is endemic to the west and south-west coasts of Tasmania and is found on sandy littoral banks and herbfields. There is one early record for the species from 1945.

2.1.5 Threatened fauna

The following species of threatened fauna are listed under the above threatened species Acts and are recorded on the database as occurring within 5,000 metres of the study area. No species are recorded within 500 metres.

- The Wedge-tailed Eagle, *Aquila audax* ssp *fleayii.* The Tasmanian subspecies is listed as endangered under both the Tasmanian and Commonwealth Acts. The species requires large trees within tracts of old-growth forest for successful nesting. There are 8 records of the species from between 1978 and the most recent in June 2009.
- The White-bellied Sea-eagle, *Haliaeetus leucogaster* is considered to be vulnerable in Tasmania and is listed under the State Act. It can be found around the Tasmanian coast as well as along rivers and inland waterways

and lakes. There are 18 records of the species from this area between 1978 and 2002.

- The Azure Kingfisher, *Ceyx azurea* is endangered in Tasmania and is restricted to riparian habitat along western and north-western rivers. There is one 1996 recording from the junction of Fenn Creek and the Little Henty River.
- The Orange-bellied Parrot, *Neophema chysogaster* is an endangered species both in Tasmania and Nationally. There are 4 records of the species from 1981 and 2002.
- The Spotted-tailed Quoll, *Dasyurus maculatus* subsp *maculatus* is rare in Tasmania and vulnerable nationally. There are 2 records of the species from 1977 and one from 1990.
- The Tasmanian Devil, *Sarcophilus harrisii* is now considered to be endangered and is listed under both State and Commonwealth Acts. There are two 2002 records for this species.

The following species of threatened fauna which are listed under the State and/or Commonwealth Acts have potential to occur within the study area based on habitat mapping within the known geographical range of each.

- The Masked Owl, *Tyoto novaehollandiae* ssp *castinops.* The Tasmanian subspecies is listed as endangered under the Tasmanian Act. This species requires large tree hollows for nesting and old-growth forest for its survival.
- The White (Grey) Goshawk, *Accipiter novaehollandiae* is endangered in Tasmania and requires mature wet forest as habitat.
- The Australian Grayling, *Prototroctes mareana* is a fish which is listed as being vulnerable under both Acts and is found in the lower reaches of coastal rivers.

3.0 Field Survey

3.1 Methodology

The field survey was undertaken on foot and focused on the four proposed drill site locations;

Site 1: Located to the immediate north of the Little Henty River at Grid Ref. 350962E – 5355703N was surveyed on day one and was accessed via a 4WD track from Trial Harbour Road.

Site 2: Located on the ridgeline south of the Little Henty River at Grid Ref. 351312E – 5355400N

Site 3: Located on the ridgeline south of the Little Henty River at Grid Ref. 3514462E – 5355283N

Site 4: Located approx. 2km south-east of the Little Henty River at Grid Ref. 353712E – 5354300N.

Note Datum. MGA Zone 55 GDA94

Sites 2, 3 and 4 were accessed from the river and along a previously cut and flagged route.

An area of approximately 100 metres diameter was surveyed around each drill site location. All drill sites are to be accessed by helicopter for equipment and most personnel so there will be no development or construction of a vehicular track or road for access as part of this exploration program.

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

The field survey was conducted on Monday the 7th and Tuesday the 8th of December 2009.

Although this survey was conducted in early summer when many species of plants are flowering no botanical survey can guarantee that all flora will be observed and recorded in a single survey in any one year due to seasonal and annual variation in abundance and the possible absence of flowers and fertile material needed for identification. Ephemeral species which may have been present includes species of orchids, lilies, grasses and other graminoids. However all significant species known to occur in the study area and environs have been considered in this report.

3.2 Field Survey Results

3.2.1 Vegetation communities

SITE 1. is located on a ridge above and about 150 metres to the north of the Little Henty River in an area of *Eucalyptus nitida* Wet Forest with trees up to about 30 metres in height. The understorey vegetation was variable and contained broad-leafed species typical of wet forest as well as rainforest species. The vegetation along the gully and creek line below the ridge (and along most of the creeks and gullies in the vicinity) was a corridor of *Nothofagus / Atherosperma* Rainforest (RMT). The understorey on the proposed drill site was dominated by a ground layer of Sword Sedge *Lepidosperma elatius* and an occasional tree of Musk *Olearia argophylla,* Dogwood *Pomaderris apetala* and small trees of Blackwood *Acacia melanoxylon* and Leatherwood *Eucryphia lucida.* The canopy trees of *Eucalyptus nitida* on and around the site were relatively mature however they would not be considered old-growth. Two dead standing trees were also observed adjacent to the drill pad site. Up to 12 Eucalypts will need to be felled to clear the drill pad site and to enable safe and clear access to the site by helicopter.

SITE 2. is located about 300 metres south of the river and at the northern end of a ridgeline which runs approximately parallel with the coastline. This proposed drill pad is located within an area of *Eucalyptus globulus* Wet Forest (Wet Blue Gum Forest) which is a rare vegetation community on the west coast of Tasmania and of very high conservation value as it is genetically distinct from populations of Blue Gum in eastern Tasmania . *Eucalyptus globulus* Wet Forest has not as yet been mapped and documented under the TasVeg mapping program so under the current vegetation map sourced for this report the community has been included within *Eucalyptus nitida* Wet Forest in this location although no trees of *E. nitida* were observed within the Blue Gum forest during the field survey. The forest community was observed to be composed of trees which were of a relatively even age up to about 20 metres in height and with no old-growth, emergent or dead standing trees evident. The predominant species in the understorey was the Dogwood *Pomaderris apetala* although the Swamp Paperbark *Melaleuca ericifolia* was also prevalent. The ground layer comprised Bracken *Pteridium esculentum,* the Sword Sedge *Lepidosperma elatius* and in places a heavy mulch layer of bark and leaf litter. In order to clear the drill pad site some 10 to 15 trees of *Eucalyptus*

globulus would need to be felled in order to provide a safe and clear access for the helicopter.

The *Eucalyptus globulus* Wet Forest community in this area extended from the banks of the Little Henty River and south-eastwards along the ridgeline and adjacent slopes. The southern most extent of the community along the ridge was mapped at GRID REF: 351465E – 5355335N (Datum GDA94).

SITE 3. is located on the same ridgeline and about 150 metres south-east of Site 2. and the vegetation community at this point was back into *Eucalyptus nitida* Wet Forest although with its location along the top of the ridge its characteristics tended towards a dry forest with a relatively open tree canopy and an open understorey comprising species typically of wet forests however such as Musk *Olearia argophylla,* Dogwood *Pomaderris apetala,* Stinkwood *Ziera arborescens* and Goldey Wood *Monotoca glauca.* The ground layer was dominated by Bracken *Pteridium esculentum* and some Tasman Flax-lily *Dianella tasmanica.* No old-growth trees of *Eucalyptus nitida* were observed within and adjacent to the proposed drill pad, however a number of semi-mature trees will need to be cleared to accommodate the drill site.

SITE 4. is located approximately 2km south-east of the previous two sites on undulating hills covered by buttongrass moorland. The buttongrass community in this location has been included in the undifferentiated mapping unit for buttongrass under the TasVeg mapping ie MBU, however it fits within the definition of Western Buttongrass Moorland (MBW) as Buttongrass *Gymnoschoenus sphaerocephalus* makes up less than 30% of the cover and with shrubby species up to 2 metres high providing the balance of the cover with species such as Swamp Honeymyrtle *Melaleuca squamea,* the Swampheath *Sprengelia incarnata* and the Treatrees *Leptospermum nitidum* and *L. scoparium* being prominent. Species diversity is relatively high with the shrubby and heathy component of the community. It is a largely treeless community although the site is near the periphery of the buttongrass community with a community of *Leptospermum* Scrub (SLW) with some small trees of *Eucalyptus nitida* about 100 metres to the east. There are no trees close to or on the proposed drill site.

Buttongrass Moorland is a widespread community in western Tasmania and is well reserved with over 100,000 ha within the public reserve system.

The clearing for the drill pad will have minimal impact on the vegetation in this location.

3.2.2 Threatened vegetation communities

No vegetation community listed under the *Tasmanian Nature Conservation Act 2002* was observed within the survey area in the vicinity of Sites 1, 2, 3 or 4. *Melaleuca ericifolia* Swamp Forest occurred along the banks of the Little Henty River and on low lying and poorly drained areas adjacent to the river and along its tributary Fenn Creek. The community extended from the river mouth upstream for at least one km which was the starting point for day 2 of this survey. This community is listed as threatened under the above Act however it occurred outside of the actual survey area and it will not be affected by the proposed exploration program.

3.2.3 Vegetation communities of conservation significance

Eucalyptus globulus Wet Forest is of very high conservation value as the community has an extremely limited and disjunct occurrence in the Western Bioregion and is known from only five scattered locations around the west coast and are of particular biogeographic interest. These are sound grounds for the western facie of *Eucalyptus globulus* Wet Forest to be added to the threatened communities schedule of the above Act however it is not at this point in time listed.

The community was observed on and around Site 2 and extended along the ridge. The interface between this community and the *E. nitida* was at GRID REF: 351465E – 5355335N (GDA94). It is essential that any impacts on this community from clearing and activities associated with the exploration program is minimized.

3.2.4 Threatened flora

No plant species listed under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was observed or recorded during the field survey.

3.2.5 Flora of conservation significance

The occurrence of *Eucalyptus globulus* in this location on the west coast is of high conservation significance as it is well outside the usual range for the species. The

species in this location is of great biogeographical interest and importance and is genetically distinct from the *E. globulus* which occurs in eastern Tasmania. A number of trees were in full flower at the time of the survey and the ground under many of the trees was littered with unopened flower buds attached to small twigs. The author suspects that Green Rosellas are responsible for nipping off the twigs and buds but has been unable to confirm.

The species was observed along the higher banks of the Little Henty River and on both sides of the river and also extended up and along the ridge to the south-east which was followed for this survey. *Melaleuca ericifolia* Swamp Forest occupied the lower lying and poorly drained niches along the river and towards the river mouth.

The species was present on Site 2. and up to 15 trees will need to be felled in order to clear the drill pad site.

3.2.6 Threatened fauna

The Swift Parrot *Lathamus discolor* is listed as an endangered species under both State and Commonwealth Acts and was present within the *Eucalyptus globulus* Wet Forest community and feeding on the nectar from the flowers of the Blue Gums at the time of the survey. Swift Parrots are dependent on Blue Gums in the east of the state but have not been recorded in this location previously.

The removal of up to 15 trees of *Eucalyptus globulus* on and adjacent to Drill Site 2 will potentially have some impact on the Swift Parrot by a loss of some food trees.

No old-growth or senescent trees possessing hollows suitable for the nests of Swift Parrots was observed during the survey or on or near any of the proposed drill sites.

No other listed threatened species, or evidence of their presence, which are known or have potential to occur in the locality was observed during the survey.

3.2.7 Threatened fauna habitat

The field survey confirmed the presence of the Swift Parrot *Lathamus discolor* within the *Eucalyptus globulus* Wet Forest community and the birds were feeding on the blossoms as numerous trees were in full flower.

No old-growth or senescent trees with hollows were observed in this community so it is unlikely that the birds are nesting within the Blue Gum Forest. Old-growth trees were observed in nearby forest types which were not *E. globulus* (within 1-2 km) but were well outside of the survey area and so it is possible that the Swift Parrots do nest in the district.

The birds were not present in other forest types in the area at the time of the survey.

No potential habitat for other species of threatened fauna was observed in the vicinity of Sites 1, 3 or 4.

Potential habitat was observed for the Azure Kingfisher and the White-bellied Sea-eagle along the Little Henty River itself however the river is outside the survey area and the proposed exploration program will have no impact on the river or its riparian vegetation.

3.2.8 Environmental weeds

No environmental weeds were observed at Sites 1, 2, 3 or 4, however a previously approved and cleared helipad in the vicinity of Site 1. had a number of Spear Thistles *Cirsium vulgare* growing on it, and it is important that these weeds are treated before they flower and set seed to ensure they are not inadvertently spread to the new drill pad sites.

Although outside of the survey area the New Zealand Flax *Phormium tenax* was observed and is becoming established as an environmental weed along the banks of the Little Henty River and has the potential over time to out compete the natural riparian vegetation along the river.

3.2.9 Phytophthora

No symptomatic field evidence of the presence of the root pathogen *Phytophthora cinnamomi* was observed during the field survey. Indicator species such as the Swamp Heath *Sprengelia incarnata* which is particularly sensitive to the disease was quite prevalent in the buttongrass community near Site 4, and all plants were observed to be healthy in this location.

4.0 Survey Conclusions

No vegetation community listed as threatened under the Tasmanian *Nature Conservation Act 2002* was observed in the survey area. *Melaleuca ericifolia* Swamp Forest was present along the river banks and adjacent low lying areas from the mouth of the Little Henty River and to the starting point of the survey about one km upstream, however the community was not present within the actual survey area and will not be affected by the proposed exploration program.

The *Eucalyptus globulus* Wet Forest community is considered to be of very high conservation value in the West Bioregion and was present the on the higher ground above the Melaleuca community and on the adjacent slopes of the river valley and the ridgeline which extended to the south-east. The proposed drill pad at Site 2 is located within this community and actions will be required to minimize any impacts on this community.

No species of flora which is listed as threatened under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and biodiversity Conservation Act 1999* was observed during the field survey.

Eucalyptus globulus in this situation is considered to be a non-threatened species of high conservation value. The west coast form of this species is of limited occurrence and is genetically distinct from the more common east coast forms of the tree.

The Swift Parrot *Lathamus discolour* is listed as an endangered species under both State and Commonwealth Acts. The bird was present within the *Eucalyptus globulus* Wet Forest community at the time of the survey and feeding on the flowering trees. A “Permit to Take”may be required for this species in regard to the felling of *Eucalyptus globulus* trees on and adjacent to the Site 2 drill pad.

No other species of threatened fauna or evidence of their presence was observed during the field survey. The exploration program proposed at Sites 1, 3 and 4 will not impact on potential habitat for any species of threatened fauna which has the potential to occur in the locality.

No environmental weeds were observed at any of the four proposed drill pad sites. Spear thistles were observed at a previously approved and clears helipad site in

the vicinity of Site 1 and numerous plants of New Zealand Flax was observed along the banks of the Little Henty River.

No evidence of the presence of Phytophthora was observed during the field survey.

5.0 Recommendations

5.1 Vegetation communities

Limit clearing of drill pads and the felling of trees on and adjacent to Sites 1, 3 and 4 to the minimum specification in order to minimize the impact on surrounding vegetation. Varying the boundaries of drill pad sites where possible to limit the number of trees which will be required to be felled and fall smaller more immature trees in preference to any larger more mature trees.

5.2 Threatened vegetation communities

No vegetation community listed as threatened under the Tasmanian *Nature Conservation Act 2002* was present in the areas surveyed and no specific action is required.

5.3 Vegetation communities of conservation significance

The proposed drill pad at Site 2 is within a community of *Eucalyptus globulus* Wet Forest which is of high conservation value in the West Bioregion and is confirmed feeding habitat for the endangered Swift Parrot *Lathamus discolor.* Refer to the recommendations under threatened fauna and threatened fauna habitat for required actions.

5.4 Threatened flora

No plant species listed under the Tasmanian or Commonwealth threatened species Acts were observed during the survey and no specific action is required.

5.5 Flora of conservation significance

Eucalyptus globulus which was growing at and in the vicinity of Site 2 is considered to be of very high conservation value because of the species limited occurrence on

the west coast and because it is genetically distinct from the east coast form of the species. The siting and location of the drill pad should be varied as much as possible in order to limit the number of mature *Eucalyptus globulus* which will need to be felled.

5.6 Threatened fauna

The Swift Parrot *Lathamus discolor* was present and feeding within the *Eucalyptus globulus* Wet Forest Community at the time of the survey. This species is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* Site 2 is located within this community and a "Permit to Take" under the Acts may be required before any trees are felled at this site.

5.7 Threatened fauna habitat

Eucalyptus globulus Wet Forest at Site 2 is confirmed feeding habitat for the Swift Parrot *Lathamus discolor.* The location of this drill pad site should be varied as much as possible to limit the felling of mature trees of *Eucalyptus globulus.* A helicopter approach from the west would be preferable from an environmental perspective as fewer trees would need to be felled but may be less acceptable from an OH&S perspective. The clearing of the drill pad site will be conditional on the requirements of the "Permit to Take" should that be required under the above threatened species Acts.

5.8 Environmental weeds

Thistles observed growing on the existing helipad site not far from Site 1 should be controlled prior to them setting seed and before the exploration program is commenced.

In order to prevent the spread of weeds into weed-free locations all equipment and machinery should be subject to a wash-down procedure to remove any soil, mud or gravel which could contain soil borne weed seeds prior to entering the exploration target area.

5.9 Phytophthora

Accepted protocols in regard to wash-down procedures for all machinery and equipment to be utilized in the drilling program should be followed prior to entering the exploration target area to ensure that the pathogen is not inadvertently introduced into disease free locations by way of extraneous soil, mud and gravel adhered to tyres, tools, equipment and work boots.

Appendix 1 Vegetation Communities and Species

1. **Eucalyptus nitida** ***Wet Forest (TasVeg Code WNU)***

This community is widespread in the west and north-west of Tasmania and is well reserved with about 30,000 ha reserved on state owned land. In its old growth condition however it is considered to be under-reserved in some bioregions and is being targeted for further reservation under the RFA.

It is usually a tall forest with trees over 30 metres tall and in this location has an understorey composed of wet sclerophyll and rainforest species.

This community was observed in the vicinity of Site 1 where the understorey was comprised of wet sclerophyll and rainforest species and a ground layer of *Lepidosperma elatius* and around Site 3 which tended to be a drier community and a ground layer dominated by Bracken *Pteridium esculentum*.

DOMINANT TREES	COMMON NAME	EXTENT IN SURVEY AREA
Eucalyptus nitida	Western Peppermint	common
UNDERSTOREY TREES		
Acacia melanoxylon	Blackwood	occasional Site 1
SMALL TREES / LARGE SHRUBS		
Acacia mucronata	Caterpillar Wattle	occasional Site 3
Acacia verticillata	Prickly Moses	occasional Site 3
Anopterus glandulosa	Tasmanian Laurel	uncommon Site 1
Eucryphia lucida	Leatherwood	uncommon Site 1
Olearia argophylla	Musk	occasional
Pittosporum bicolor	Cheesewood	uncommon
Pomaderris apetala	Dogwood	very common
MEDIUM SHRUBS		
Monotoca glauca	Goldey Wood	common Site 3
Ziera arborescens	Stinkwood	occasional
SMALL SHRUBS		

Pimelea drupaceae	Cherry Riceflower	occasional
CLIMBERS		
Billardiera longiflora	Climbing Blueberry	occasional
HERBS		
Hydrocotyle hirta	Hairy Pennywort	occasional
ORCHIDS		
Acianthus caudatus	Mayflower Orchid	uncommon
Gastrodia sesamoides	Potato Orchid	one only
GRASSES & GRAMINOIDS		
Dianella tasmanica	Tasman Flax-lily	occasional Site 3
Gahnia grandis	Cutting Grass	occasional
Lepidosperma elatius	Tall Swordsedge	abundant Site 1

Eucalyptus nitida Wet Forest (WNU)

FERNS & ALLIED PLANTS		
Blechnum wattsii	Hard Waterfern	common
Dicksonia antarctica	Soft Treefern	occasional Site 1
Histiopteris incisa	Batswing Fern	occasional Site 1
Hypolepis rugulosus	Ruddy Groundfern	occasional Site 1
Polystichum proliferum	Mother Shieldfern	common
Pteridium esculentum	Bracken	abundant Site 3

2. *Eucalyptus globulus* Wet Forest (TasVeg Code WGL)

This community occurs predominantly in south-eastern Tasmania and typically occurs in well-drained gullies and lower south-facing slopes. It also extends up the east coast in sheltered and fire protected gullies. The extent of this community across the state is yet to be mapped under the TasVeg mapping program but is

considered to be uncommon in its main area of distribution. The few localized and disjunct occurrences on the west coast are considered to be rare and of very high conservation value, and at the species level the tree is genetically distinct from the eastern form.

The occurrence of the community along the valley of the Little Henty River appears to be quite localized on the lower slopes and adjacent ridgeline about 1km upstream from the river mouth. The community appears to be a pure stand or almost so, of *Eucalyptus globulus* with no other species of Eucalypt present, and a relatively low level of species diversity in the understorey.

Site 2 was located within this community.

DOMINANT TREES	COMMON NAME	EXTENT IN SURVEY AREA
Eucalyptus globulus	Tasmanian Blue Gum	common
UNDERSTOREY TREES / TALL SHRUBS		
Pomaderris apetala	Dogwood	common
Melaleuca ericifolia	Coast Paperbark	common
GRASSES & GRAMINOIDS		
Gahnia grandis	Cutting Grass	occasional
Lepidosperma elatius	Tall Swordsedge	occasional
FERNS & ALLIED PLANTS		
Polystichum proliferum	Mother Shieldfern	common
Pteridium esculentum	Bracken	common

3. Western Buttongrass Moorland (TasVeg Code MBW)

Western Buttongrass Moorland is a widespread community in west and south-western Tasmania and is well reserved with over 100,000 ha in public reserved land. The community usually occurs on acidic soils with a siliceous substrate where the topography is gently undulating to steeply sloping . Poor fertility and a relatively high fire frequency inhibit the vegetation from achieving the structure of scrub or

forest and few if any trees are present. The community in this location has a variable cover of shrubs usually less than 2 metres tall overtopping the tussocks of buttongrass which generally occupies less than 30% of the cover.

This community occurred on and in the vicinity of Site 4.

EMERGENT TREES	COMMON NAME	EXTENT IN SURVEY AREA
Eucalyptus nitida	Western Peppermint	very occasional
SHRUBS		
Agastachys odorata	White Waratah	occasional
Allocasuarina monilifera	Necklace Sheoak	occasional
Banksia marginata	Silver Banksia	occasional
Bauera rubioides	Wiry Bauera	common
Boronia pilosa	Hairy Boronia	occasional
Comesperma retusum	Mountain Milkwort	occasional
Dillwynia glaberrima	Smooth Parrotpea	common
Epacris lanuginosa	Swamp Heath	very common
Epacris impressa	Common Heath	occasional
Leptospermum nitidum	Shiny Teatree	very common
Leptospermum scoparium	Manuka	common
Melaleuca squamea	Swamp Honeymyrtle	common
Pimelea linifolia	Slender Riceflower	uncommon
Sprengelia incarnata	Pink Swamp Heath	very common
GRASSES & GRAMINOIDS		
Gymnoschoenus sphaerocephalus	Buttongrass	abundant
Patersonia fragilis	Short Purpleflag	common
Xyris marginata	Alpine Yelloweye	common
FERNS & ALLIED PLANTS		
Gleichenia dicarpa	Pouched Coralfern	occasional

Appendix 2 Photogrpahs

PHOTO 1. Estuary of Little Henty River, *Melaleuca ericifolia* Swamp Forest along shoreline, ridgeline in background is location of survey and Sites 2 & 3 and the *Eucalyptus globulus* Wet Forest community.

PHOTO 2. *Eucalyptus globulus* Wet Forest community along the lower slopes about 1km upstream of the Little Henty River

PHOTO 3. *Eucalyptus globulus* Wet Forest community in the vicinity of Site 2.

PHOTO 4. *Eucalyptus nitida* Wet Forest community in the vicinity of Site 1.

PHOTO 5. *Eucalyptus nitida* Wet Forest in the vicinity of Site 3.

PHOTO 6. Site 4 located in Western Buttongrass Moorland community.