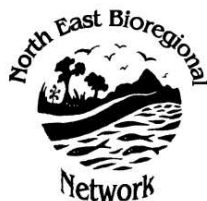




CONSTABLE CREEK – LOILA TIER RESERVE
A NEW PROTECTED AREA FOR NORTH EAST TASMANIA
North East Bioregional Network



July 2007





Contents

Executive Summary	3
Recommendations	3
Reserve Area	4
Description of the Constable Creek – Loila Tier area	4
Geology	4
Landscape and drainage	4
Vegetation	6
Natural Values	6
Flora of Conservation Significance	6
Fauna of Conservation Significance	8
Vegetation Communities of Conservation Significance	9
Biodiversity	12
Naturalness	13
Recreation and education	14
References	15
Maps	16
Land Tenure	16
Geology	16
Vegetation	17
Photo-mosaic and threatened species	18
National Estate and Recreation	20



Executive Summary

This document presents a proposal for a new reserve in north-east Tasmania. The proposed Constable Creek – Loila Tier Reserve covers an area of approximately 13,200 hectares of largely pristine native forest, heathland and watercourses.

Constable Creek is a permanent watercourse which flows into Georges Bay at St Helens on Tasmania's east coast. The 4000-hectare Constable Creek catchment is remarkable for its natural condition. The region is a wilderness area within walking distance of the St Helens town centre (the largest population centre on Tasmania's East Coast).

The Constable Creek catchment, adjoining Loila Tier and the middle reaches of the Scamander River, provides an important landscape link between the coast and the highlands. This area is an outstanding example of dry forest vegetation with a diverse range of plant and animal species.

A Constable Creek – Loila Tier Reserve will ensure protection for many rare and threatened species in addition to under-reserved vegetation types (such as black gum forest and oldgrowth ironbark forest).

Furthermore the natural integrity of the Constable Creek area, with its multiple forested hills, provides a scenic backdrop to the Georges Bay district, which is a major holiday destination. Recreational activities within the proposed reserve provide a variety of visitor experiences to complement the established attractions of St Helens and the coastal zone.

Constable Creek and associated waterways are notable for their integrity and naturalness. This reserve proposal not only protects this largely undisturbed landscape but also contributes to the health of Medeas Cove Conservation Area and Georges Bay.

Recommendations

1. The proposed Constable Creek – Loila Tier Reserve be proclaimed a State Reserve or similar status of reserve under the *Nature Conservation Act 2002*.
2. A management plan for the reserve developed in conjunction with relevant stakeholders following biological, geological, historical and cultural surveys of the area.
3. Biodiversity survey plots established in the reserve for long-term ecological monitoring of flora, fungi, invertebrates, aquatic fauna, etc.



Reserve Area

There is a clear deficiency of reserves in the St Helens hinterland. Existing reserves in the area are small and isolated and many have only informal reserve status. By filling a gap between the Avenue River Forest Reserve in the south and Mount Pearson State Reserve to the north this reserve will contribute significantly to a connected series of protected land along the east coast. Furthermore the Constable Creek Reserve proposal increases connectivity between the coastal environment of Georges Bay (with associated protected areas such as Medeas Cove, Humbug Point and St Helens Point) and the highland reserves of Mount Victoria and Blue Tier. This connectivity is important because it allows the continuity of native habitats along environmental gradients (e.g. in altitude and distance from the coast) and provides a corridor for animals and plants to move through the landscape over short and long time scales.

The proposed reserve is around 13,200 hectares of State Government administered land presently classified State Forest with small areas of Crown Land (currently being reviewed under the Crown Land Assessment and Classification Project). A single parcel of private land covering around 20 hectares is surrounded by the proposed reserve. The proposed reserve will consolidate existing informal reserves (from the Regional Forest Agreement and Community Forest Agreement processes) and sites recognised for National Estate values by the Commonwealth Government.

Description of the Constable Creek – Loila Tier area

Geology

Geologically the proposed reserve covers two major rock types. Most of the reserve area is Ordovician mudstone which typically produces poor soils. More fertile soils develop on the Devonian granite which occurs in the Launceston Creek and upper Constable Creek area in the northwest of the proposed reserved.

Landscape and drainage

Most of the proposed reserve is in two main catchments: Constable Creek and Scamander River. All of the watercourses in this area eventually reach the Tasman Sea on Tasmania's east coast. The Scamander River and Constable Creek are the only permanently flowing watercourses; the other major creeks typically flow for most of the year and become dry in summer. Several waterfalls occur where watercourses meet resistant granite bedrock.

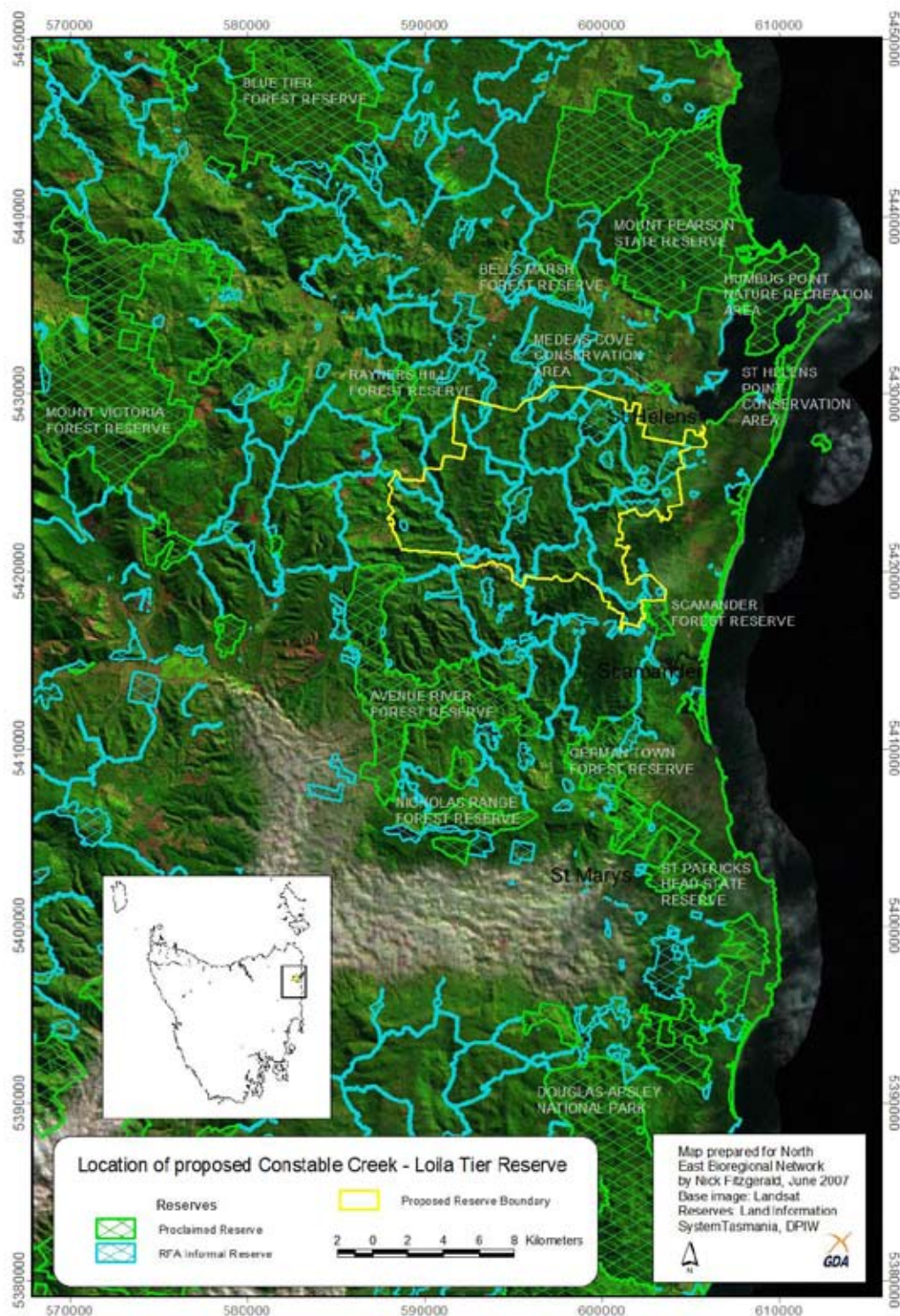
In the mudstone areas the landscape is characterised by deep creek gullies, steep slopes and narrow ridges. The landscape in the eastern part of the area is defined by prominent ridges such as Scamander Tier and Loila Tier trending roughly north-south. The highest points are Copper Show Ridge (390 m), Loila Pinnacle (375 m) and Flagstaff Hill (328 m). Boggy Creek is a small catchment draining from Flagstaff Hill directly into Georges Bay. The eastern slopes of Scamander Tier drain via small creeks into the coastal lagoon of Dianas Basin. The eastern slopes of Loila Tier feed Arm Creek which joins the Scamander River estuary around 10 km from the river mouth.

The Constable Creek catchment occupies the centre and northwest of the proposed reserve. The western half of the Constable Creek catchment and the adjoining Launceston Creek comprise generally low hills and broad flats, while the eastern half is steep rugged terrain including Mount Echo and the western slopes of Scamander Tier. Constable Creek then passes through around 2 km of wetland and saltmarsh



before reaching Medeas Cove at St Helens. Slopes tend to be less steep in the granite landscape in the northwest of the proposed reserve and in this area there are alluvial flats in the broader valleys.

The western part of the Constable Creek reserve is in the Scamander River catchment and includes a variety of landforms from alluvial flats (eg Helens Marsh) and granite knolls (eg Granite Knob) to highly





dissected slopes at Bridge Creek. Elevation reaches 398 metres on an unnamed ridge at the southwest corner of the proposed reserve.

Vegetation

The dominant vegetation in this region is dry sclerophyll forest with an open canopy and sparse understorey. Extensive areas are dominated by Ironbark (*Eucalyptus sieberi*), particularly on the driest sites. Dry sclerophyll forest dominated by either black peppermint (*E. amygdalina*) or stringybark (*E. obliqua*) occurs in sizable patches. Damp gullies and shaded lower slopes support small stands of wet sclerophyll forest dominated by stringybark (*E. obliqua*). Damp sclerophyll forest with a mix of eucalypt species occurs in small sheltered patches on the higher ridges, apparently where low cloud frequently provides extra moisture as fog and drizzle.

There are only small areas of non-forest vegetation. Wet heathland comprising dense sedges and shrubs with few or no trees occurs on flat areas with poor drainage. The margins of these heathlands supports small patches of black gum (*E. ovata*) forest and woodland. Damp forest dominated by white gum (*E. viminalis*) or a combination of eucalypt species with a shrubby and sedgely understorey occurs in small patches on alluvial flats beside the Scamander River.

Vegetation in this area is determined largely by moisture availability and as such distinct changes in vegetation composition and structure are evident with changes in the landscape over short distances such as between north-facing and south-facing slopes.

A small area of pine plantation occurs in the south-east corner of the proposed reserve—this site would be easily regenerated to native forest, providing an important landscape link with the Scamander Forest Reserve.

Natural Values

The Constable Creek – Loila Tier region is a rich and well preserved natural environment. The area contains extensive areas of mature forest, a variety of vegetation types, several threatened species and significant biodiversity.

Flora of Conservation Significance

Table 1. Threatened flora known from Proposed Reserve or likely to be present

Name	Common Name	Tasmanian status*	National status**	Distribution in Proposed Reserve
<i>Acacia mucronata</i> ssp. <i>dependens</i>	blunt caterpillar wattle	Rare		Not recorded but suitable habitat in riparian areas.
<i>Acacia sicutiformis</i>	dagger wattle	Rare		Not recorded but known within 1 km of northeast boundary and suitable habitat present.
<i>Acacia ulicifolia</i>	juniper wattle	Rare		Not recorded but known within 4 km of eastern boundary and suitable habitat present.



<i>Arachnorchis caudata</i>	tailed spider orchid	Rare	Vulnerable	No recent known records in the vicinity. Suitable habitat present.
<i>Baumea gunnii</i>	slender twigsedge	Rare		Recorded from Constable and Launceston creeks. Likely to occur elsewhere in riparian and marsh situations.
<i>Blechnum cartilagineum</i>	gristle fern	Vulnerable		No reliable records. Garrett (1996) notes that a small population was known beside Constable Creek in the early 1980s however he states that the present [1996] status of this population is unknown.
<i>Bossiaea obcordata</i>	spiny bossiaea	Rare		Not recorded but known within 3 km of southern boundary and suitable habitat present.
<i>Brachyloma depressum</i>	spreading heath	Rare		Not recorded but known within 1 km of northeast boundary, however probably no suitable habitat.
<i>Conospermum hookeri</i>	variable smokebush	Vulnerable		Not recorded but known within 0.5 km of northern boundary and some suitable habitat present on granite.
<i>Desmodium gunnii</i>	slender tick trefoil	Vulnerable		Not recorded but known within 2 km of eastern boundary and some suitable habitat present in damper situations.
<i>Euphrasia collina</i> ssp. <i>deflexifolia</i>	eastern eyebright	Rare		Recorded from Constable Creek south of Mount Echo. Some potential habitat elsewhere in the area.
<i>Hibbertia calycina</i>	lesser guinea flower	Vulnerable		Reserve proposal covers prime habitat for this species with several known populations in the northeast and southeast of the area.
<i>Hibbertia virgata</i>	twiggy guinea flower	Rare		Recorded from Boggy Creek in the northeast of the proposed reserve.
<i>Hierochloa rariflora</i>	cane holygrass	Rare		Recorded from several locations in the area and likely to be widespread.
<i>Hovea corrickiae</i>	glossy purple-pea	Rare		Several known populations at Constable Creek, Loila Tier and the western end of the proposed reserve.
<i>Phebalium daviesii</i>	davies waxflower		Critically	No known natural populations. Some plants were planted at Beahrs Creek (TSU 2001), although the status of this population is not known.



<i>Plantago debilis</i>	shade plantain	Rare		Known from 3 widely separated records and likely to be extensive given the widespread suitable habitat.
<i>Pomaderris phyllicifolia</i> ssp. <i>phyllicifolia</i>	narrowleaf dogwood	Rare		Not recorded but known within 3 km of southern boundary and some suitable habitat present in riparian situations.
<i>Prostanthera rotundifolia</i>	roundleaf mintbush	Vulnerable		Not recorded but known in close proximity (less than 1 km) to proposed area and potential habitat present.
<i>Pterostylis grandiflora</i>	superb greenhood	Rare		No reliable records. Likely to be suitable habitat.
<i>Teucrium corymbosum</i>	forest germander	Rare		Not recorded but known within 2 km of southern boundary and some suitable habitat present.
<i>Scleranthus brockiei</i>	brock knawel	Rare		Not recorded but known in close proximity (less than 0.5 km) to northeast boundary and some potential habitat present.

* as per Tasmanian *Threatened Species Protection Act 1995*

** as per Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The proposed reserve would protect prime habitat and significant populations of the following threatened flora species: lesser guineaflower (*Hibbertia calycina*), glossy purplepea (*Hovea corrickiae*) and cane holygrass (*Hierochloa rariflora*).

Austral grasstree (*Xanthorrhoea australis*) is not a listed threatened species, however it is considered a priority species under the Tasmania-Commonwealth Regional Forest Agreement. Ironbark (*Eucalyptus sieberi*) forests in the proposed reserve contain good populations of austral grasstrees. *Phytophthora* root-rot is a major threat to this species and consequently the prevention of *Phytophthora* infection is important to ensure the future viability of austral grasstrees.

Fauna of Conservation Significance

Table 2. Threatened fauna recorded from Proposed Reserve and surrounding area

Name	Common Name	Tasmanian status	National status	Distribution in Proposed Reserve
<i>Accipiter</i>	grey goshawk	Endangered		No records but within Estimated Geographic Range. Suitable habitat particularly in the wetter western part.
<i>Aquila audax fleayi</i>	wedge-tailed eagle	Endangered	Endangered	At least 6 known nest sites. Widespread foraging habitat.
<i>Dasyurus maculatus maculatus</i>	spotted-tail quoll	Rare	Vulnerable	Likely to be widespread in denser forests.



<i>Haliaeetus leucogaster</i>	white-bellied sea eagle	Vulnerable		Within Estimated Geographic Range. Two known nesting sites in the northeast of the proposed reserve at Boggy Creek.
<i>Hoplogonus simsoni</i>	simson's stag beetle	Vulnerable		No records but within Estimated Geographic Range. Suitable habitat restricted to damp mature forest sites.
<i>Hoplogonus vanderschoori</i>		Vulnerable		No records but within Estimated Geographic Range. Suitable habitat restricted to damp mature forest sites.
<i>Lathamus discolor</i>	swift parrot	Endangered	Endangered	No records but within Estimated Geographic Range. Suitable nesting and foraging habitat occurs at Scamander Tier.
<i>Perameles gunnii gunnii</i>	eastern barred bandicoot		Provisionally vulnerable	Likely to occur in areas of grassy or sedgey habitat.
<i>Tasmanipatus barretti</i>	giant velvet worm	Rare		Widespread in gullies and damp shaded slopes.
<i>Thylacinus cynocephalus</i>	thylacine	Extinct	Extinct	Extinct.
<i>Tyto</i>	masked owl	Endangered		Recorded from northeastern boundary near Boggy Creek. Likely to be widespread in the area.

The proposed reserve would protect prime habitat and significant populations of the following threatened fauna species: wedge-tailed eagle (*Aquila audax fleayi*) and giant velvet worm (*Tasmanipatus barretti*).

The area also provides habitat for species considered to be of conservation significance which do not meet the criteria for listing as threatened species. Typically these are species which depend upon mature forests, especially those which require specific types of tree hollows for nesting. Habitat modelling for the yellow-tailed black cockatoo (*Calyptorhynchus funereus*) shows the Constable Creek – Loila Tier accounts for a significant proportion of habitat for this species in north-east Tasmania. Although presently not rare, the population of this species is predicted to decline by more than 40 % in northeast Tasmania in response to reductions in feeding and breeding habitat associated with loss of mature forest (Fox et al. 2004).

Vegetation Communities of Conservation Significance

» **Paperbark (*Melaleuca ericifolia*) swamp forest**

Swamp forest has a dense canopy of paperbark (*M. ericifolia*) around 10 metres tall over a sparse understorey of sedges and ferns. It occurs in narrow bands on the margins of estuaries and lagoons in coastal northern Tasmania. A small patch of swamp forest occurs on



E. ovata forest and buttongrass at Helens Marsh



Crown Land along Boggy Creek near Georges Bay. Swamp forest is vulnerable to damage by fire, land clearing, weed invasion, sea level rise and changes in catchment hydrology.

This vegetation community is considered rare and endangered and under-reserved in Tasmania.

» **Black gum (*Eucalyptus ovata*) forest**

Forest dominated by black gum (*E. ovata*) generally has a relatively short (under 20 metres) and open canopy with an understorey varying from dense shrubby to open sedgey. Black gum forest prefers flat areas, particularly river flats, which has led to extensive clearing of this forest type. Very small patches of black gum forest occur on the margins of heathy marshes in the upper reaches of Launceston and Constable creeks. More extensive black gum forest occurs in the Scamander River catchment where this forest type forms a mosaic with open sedgeland and heathland on broad creek flats. Black gum forest on private land at Steels Marsh is protected by conservation covenant, however the forest extends onto adjoining State Forest. An excellent example of this forest type is found at Helens Marsh where it occurs in a mosaic with buttongrass moorland and wet heath.

It is estimated that less than 5 % of the original extent of black gum forest remains in the Flinders bioregion and with a similar degree of loss (around 92%) statewide this community is considered endangered in Tasmania.

» **Black gum (*Eucalyptus ovata*) heathy woodland**

Heathland with sparse emergent black gum (*E. ovata*) up to 8 metres. Occurs in association with black gum forest and various types of heathland, either as an intermediate successional stage between heathland and forest, or as an environmental transition between these vegetation types (where tree growth is physiologically limited due to waterlogging). A diverse heathy understorey features dense shrubs 1 to 2 metres tall over dense low shrubs, sedges and rushes. This vegetation community has recently been recognised as distinct from black gum forest and as yet has not been mapped or analysed for conservation status, however it is likely to justify a similar status to black gum forest (possibly rare and endangered).



Oldgrowth *E. sieberi* forest with grasstree understorey

» **Oldgrowth Ironbark (*Eucalyptus sieberi*) forest**

Forest dominated by Ironbark is the major vegetation type in the proposed reserve and corresponds to two TASVEG communities. The Ironbark communities are differentiated by geology since the plant species composition of the understorey varies notably in response to soil type. Ironbark forest on granite (TASVEG = DSG) occurs in the north and west of the proposed reserve, while the mudstone soils in the south-eastern area corresponds to Ironbark forest on other substrates (DSO). Both forest communities are relatively common in the Flinders bioregion, however oldgrowth ironbark forest is naturally rare and as such is a high priority for conservation.



» **Oldgrowth Black peppermint (*Eucalyptus amygdalina*) forest**

Black gum forest is extensive across lowland northeastern Tasmania, particularly the ‘coastal’ black peppermint community (DAC) which occurs on sandy and granitic soils. Although this community is very common, it is frequently highly disturbed and rarely occurs as oldgrowth.

Table 3. Vegetation communities of conservation significance in proposed reserve

Vegetation community	TASVEG code	Old-growth	Statewide status*	Bioregional status	Extent in proposed reserve (hectares)
<i>Eucalyptus ovata</i> forest	DOV	no	Endangered	Endangered	15
<i>Eucalyptus viminalis</i> sedge forest	DOV	no	Endangered	Endangered	6
<i>Eucalyptus ovata</i> heathy woodland	DOW	no	?	?	12
<i>Eucalyptus sieberi</i> forest on granite	DSG	yes	Rare and depleted	Rare and depleted oldgrowth	50**
<i>Eucalyptus sieberi</i> forest on granite	DSO	yes	Rare and depleted	Rare and depleted oldgrowth	50**
<i>Eucalyptus amygdalina</i> coastal forest	DAC	yes		Non-threatened	100**
<i>Eucalyptus obliqua</i> wet forest	WOB	yes		Rare and depleted oldgrowth	50**
<i>Melaleuca ericifolia</i> swamp forest	NME	yes	Vulnerable	Rare and depleted oldgrowth	1
Riparian vegetation	SRI	n/a	Vulnerable	-	2
Saline wetland	AUS	n/a	Vulnerable	-	1

* as per DPIWE *Threatened Native Vegetation Communities Version 6*

** estimated extent of oldgrowth based on RFA 1:250,000 scale mapping

» **Oldgrowth Stringybark (*Eucalyptus obliqua*) wet forest**

Along with black peppermint and ironbark, stringybark is one of the most widespread forest dominants in the Scamander – St Helens region. Wet stringybark forest occurs in damp and fire protected gullies. Some instances of this forest type are oldgrowth, but oldgrowth development is probably limited by the fire regimes in the region.



Stringybark trees form better trunk and branch hollows than the other common eucalypt species in this region, so oldgrowth stringybark forest provides high quality habitat for a number of hollow-nesting animals including several species of conservation significance (e.g. yellow-tailed black cockatoo, masked owl, swift parrot).

» **Riparian scrub**

A narrow band of dense shrubs occupies riverbanks in some situations, particularly flood prone areas, such as parts of the middle reaches of Constable Creek.

» **Saline wetland**

A very small area of saline wetland occurs in the north-east corner of the proposed reserve at the mouth of Boggy Creek. Native sedges and rushes dominate this community which is bordered by paperbark swamp forest. Extensive saline wetland and saltmarsh is found at Medeas Cove, including at the estuary of Constable Creek. These estuarine communities are influenced by inputs from Launceston, Constable and Nephelie creeks and as such the protection of these catchments in the proposed reserve will help maintain these ecosystems.

Biodiversity

Few fauna and flora surveys have been conducted in the Constable Creek – Loila Tier area. Because it is an extensive area of relatively undisturbed vegetation it would be expected to provide a representative example of sub-coastal vegetation, flora and fauna from the northern east coast. Vegetation types and species associated with both major geological types in this region, Permian mudstone and Devonian granite, are well represented in the reserve area. Fungi, bryophytes and invertebrates are particularly poorly surveyed elements of the biodiversity in this area.



The National Estate assessments of Mount Echo and Loila Tier note that these areas are important as centres for fauna endemism, primitive and relictual fauna, contemporary refugia and for fauna species richness having a high diversity of invertebrate species within a restricted area. They have special importance within the Tasmanian forest region in terms of both space (biogeographical relicts) and time (phylogenetic relicts).

Mount Echo and Loila Tier contain “communities that are strongly associated with climatic and topographic factors that confer a degree of protection from endangering processes such as fire and disease. These refugia have two important roles: they provide locations for the conservation of species and communities and they provide sources for population expansion if limiting conditions prevail.” (Australian Heritage Database)

Additionally, Loila Tier and Skyline Tier are recognised as important biogeographically for a high concentration of flora species at the limits of their distributional range, being the northern limit of many east coast species (for example, *Eucalyptus pulchella*, *E. tenuiramis*).



Naturalness

The Constable Creek catchment covers an area of approximately 4000 hectares of which around 300 hectares has been logged and 50 hectares has been affected by mining. More than 90% of the catchment is in a natural state. Within the catchment the Mount Echo area provides an excellent example of natural condition, as such the Australian Heritage Commission determined that 76.5% of this 356-hectare site has the highest level of biophysical naturalness, with the remainder meeting the second highest rating.



View north-east from Carters Track Lookout towards Georges Bay and St Helens

The steep terrain throughout much of the proposed reserve area has contributed to a lack of roads and development. The vegetation in the area is generally in good to excellent condition with only isolated instances of major disturbance such as clearfell logging or alluvial mining. In comparison, much of the dry forest in the wider region has been lost or degraded by logging, mining, frequent fires and land clearing. The Constable Creek – Loila Tier area contains perhaps the most extensive good condition mature ironbark forest in Tasmania.

Furthermore the proposed reserve area is notable for a lack of introduced species, particularly environmental weeds which are a threat to biodiversity.

An environment with such good natural condition provides an important benchmark for scientifically determining baseline biodiversity and water quality against which other areas can be assessed. This is important in a broader landscape subject to increasing human-caused disturbance and fragmentation in addition to the potential impacts of climate change.



Unnamed waterfall on lower reaches of Constable Creek



Recreation and education

The Constable Creek area contains several accessible attractions for visitors and local residents to enjoy. Waterfalls and swimming holes, bushwalking, forest drives and scenic lookouts provide a variety of visitor experiences. Natural attractions include Ironbark Falls, the Dreaming Pools and coastal views from Skyline Tier.

There is considerable educational value in the area. Being close to St Helens, Constable Creek provides a valuable opportunity for students to study an entire pristine water catchment from hills to wetland and sea.

A tourist guide to the Break O'Day Municipality lists Flagstaff Hill and Scamander Tier as scenic attractions, noting that the Tier provides “a magnificent view of the Tasman Sea”. Flagstaff Hill provides a panoramic view of St Helens, Georges Bay and surrounding coastline. Loila Tier Road features several good lookouts with views inland to Ben Lomond and south to the prominent peaks around St Marys. Several roads with scenic forests access Loila Tier, providing a variety of options for tourist drives.

At the western end of the proposed reserve, Beahrs Creek is an attractive forested gully with road access, with the option of a short walk to a pleasant picnic spot at Granite Falls. The more adventurous can make the short scramble through open forest to the summit of Granite Knob for excellent views.

The Scamander Forest Reserve at the southeast edge of the proposed reserve provides visitor infrastructure including picnic and camping facilities and is a popular place for fishing and canoeing.



Bushwalker on Granite Knob



References

Australian Heritage Database, Loila Tier and Mount Echo. Department of Environment and Water Resources. <http://www.environment.gov.au/heritage/ahdb/index.html>

Bryant, S. L. & Jackson, J. (1999). *Tasmania's Threatened Fauna Handbook*. Threatened Species Unit, Nature Conservation Branch, DPIWE.

CARSAG (2004). 'Assessing reservation priorities for private forested land in Tasmania', A report of the Comprehensive, Adequate and Representative Scientific Advisory Group (CARSAG) of the Private Forest Reserves Program, September 2004. Department of Primary Industries, Water and Environment, Hobart.

DPIW (2006) *Crown Land Assessment and Classification Consultation Report and Recommended Allocations for the Municipality of Break O'Day*

DPIW, Natural Values Atlas. www.naturalvaluesatlas.dpiw.tas.gov.au

Fox et al. (2004) *Linking landscape ecology and management to population viability analysis*. University of Melbourne, prepared for Forestry Tasmania.

Garrett, M. (1996) *The ferns of Tasmania: their ecology and distribution*. Tasmanian Forest Research Council, Hobart.

Harris, S. and Kitchener, A. (2005). *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*. Department of Primary Industries, Water and Environment, Printing Authority of Tasmania. Hobart.

Jones, D., Wapstra, H., Tonelli, P. & Harris, S. (2000) *The Orchids of Tasmania*. Melbourne University Press, Victoria.

Kirkpatrick, J.B. (1996) 'The Northeast in its Context'. In: Mesibov, R. (Ed.) *Biogeography of northeast Tasmania*. Queen Victoria Museum and Art Gallery, Launceston.

Lazarus, E., Lawrence, N. & Potts W. (2003). *Threatened Flora of Tasmania CD-Rom*. Threatened Species Unit, DPIWE, Hobart.

Lynch, A.J.J. and Appleby M.W.A. (1996) *Phebalium daviesii Recovery Plan 1996-2004*. Department of Primary Industries, Water and Environment, Hobart.

Threatened Species Unit 2001. *Listing Statement Davies' wax flower Phebalium daviesii*. Department of Primary Industries, Water and Environment, Tasmania.

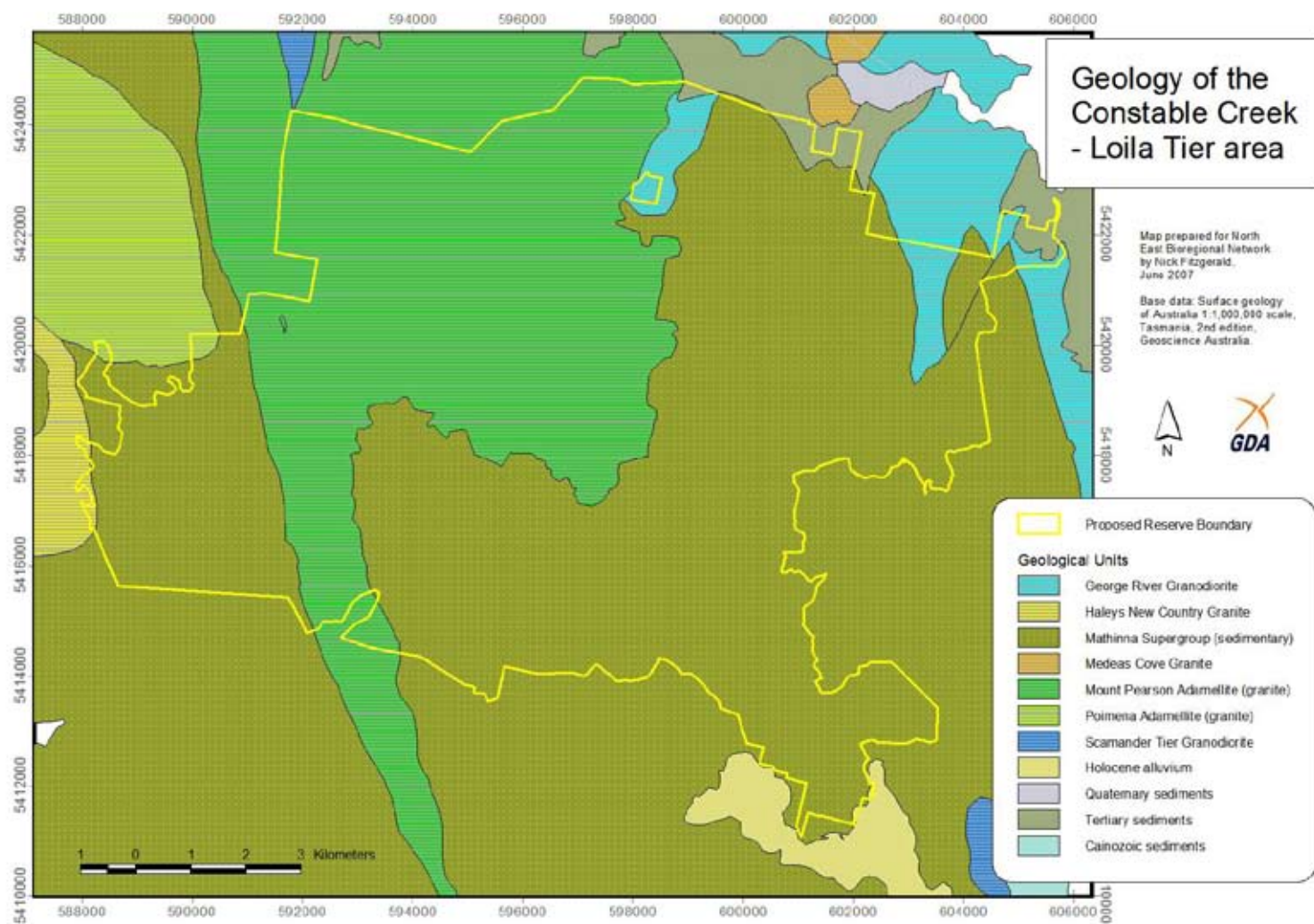
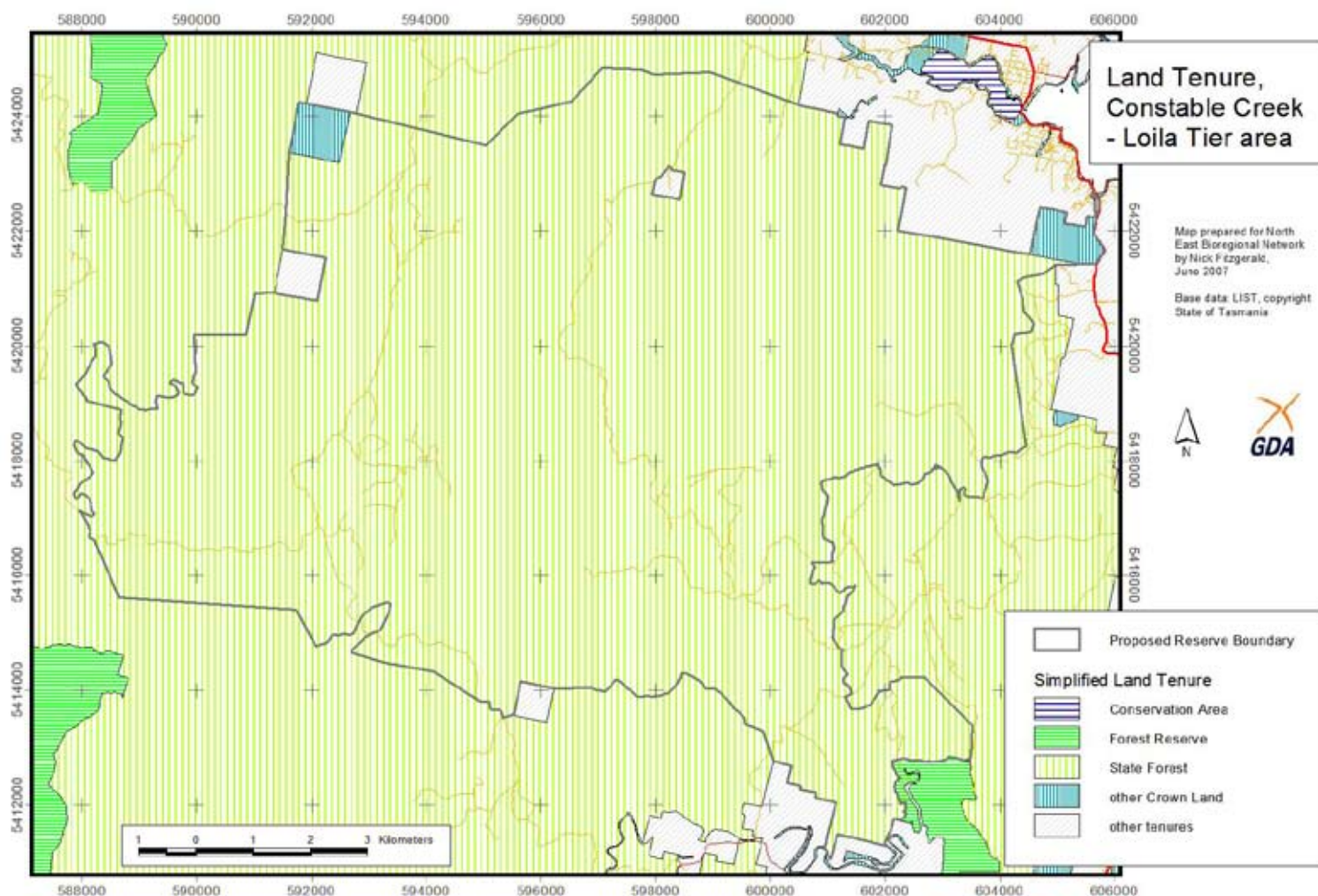
Schahinger, R., Rudman, T. & Wardlaw, T.J. (2003) *Conservation of Tasmanian plant species and communities threatened by Phytophthora cinnamomi. Strategic regional plan for Tasmania*. Technical Report 03/03, Nature Conservation Branch, DPIWE, Hobart.

Photos by Nick Fitzgerald, Todd Dudley and John Holley.

Text by Nick Fitzgerald and Todd Dudley.

Layout and design by Suzi Pipes.

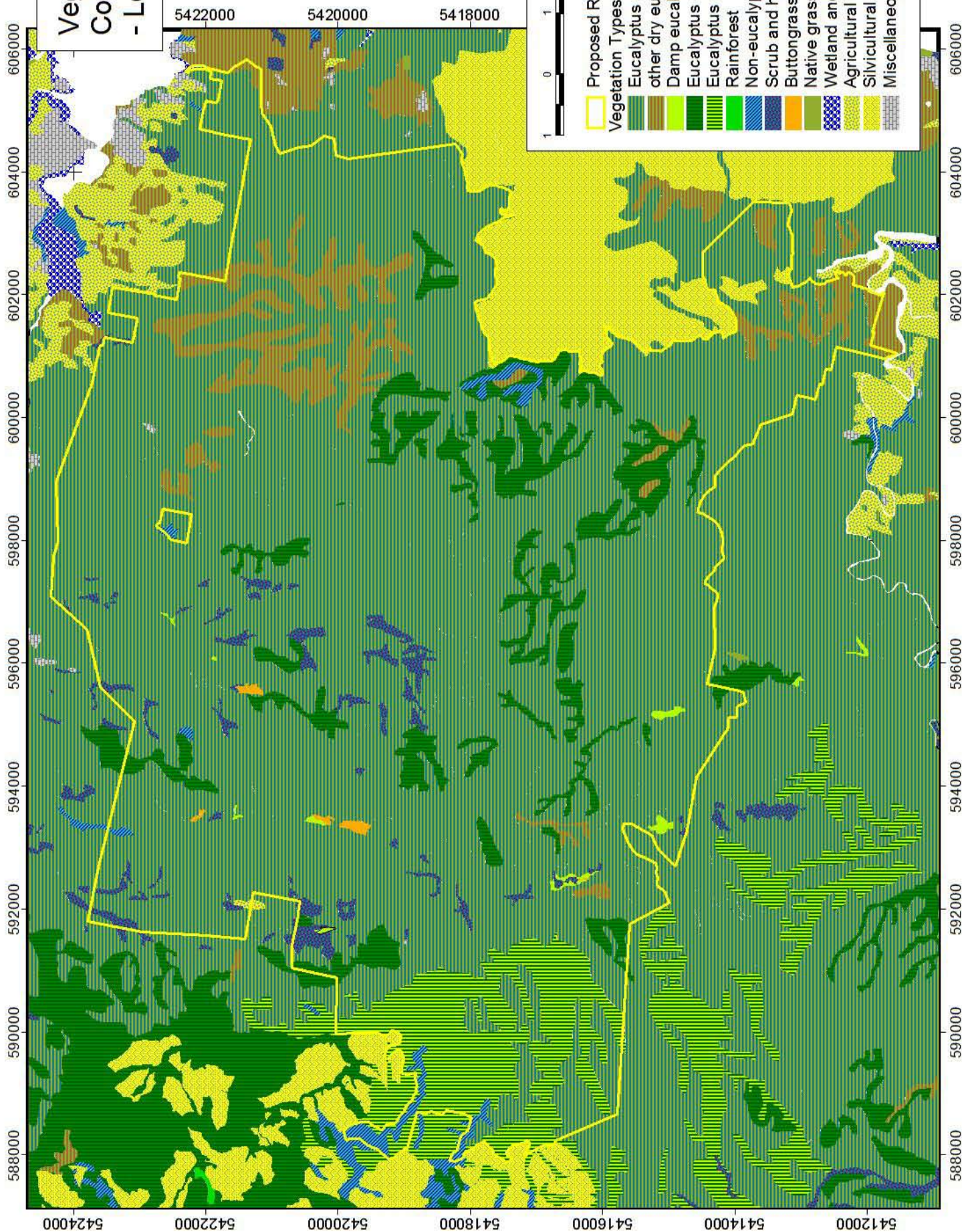
Funded by **DARA Foundation WildCountry Small Grants Programme.**



Vegetation of Constable Creek - Loila Tier area

Map prepared for North
East Bioregional Network
by Nick Fitzgerald,
June 2007

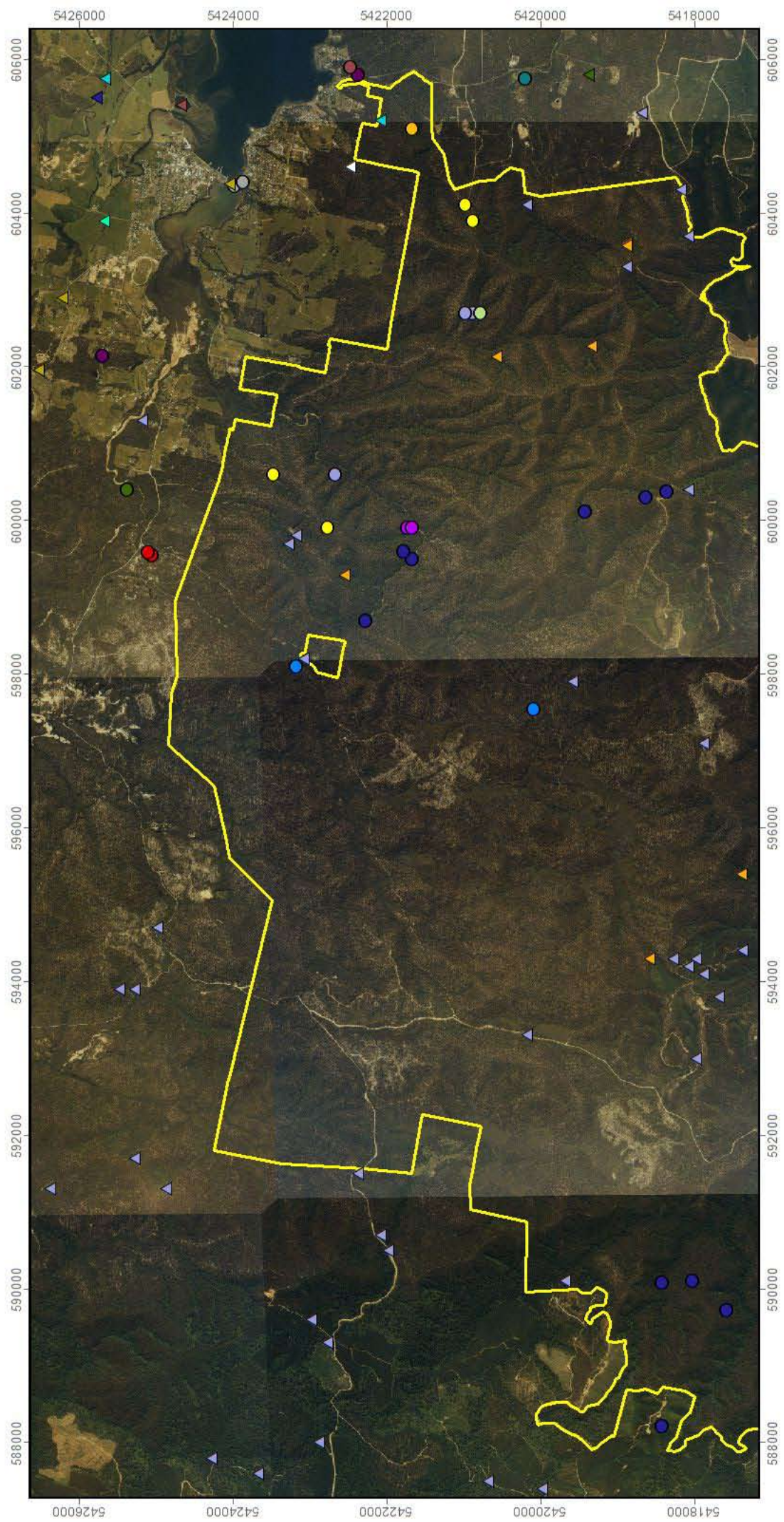
Base data: TASVEG, DPIW
Vegetation types derived
from TASVEG 1.2 statewide
vegetation map with some
patches updated based on
field survey

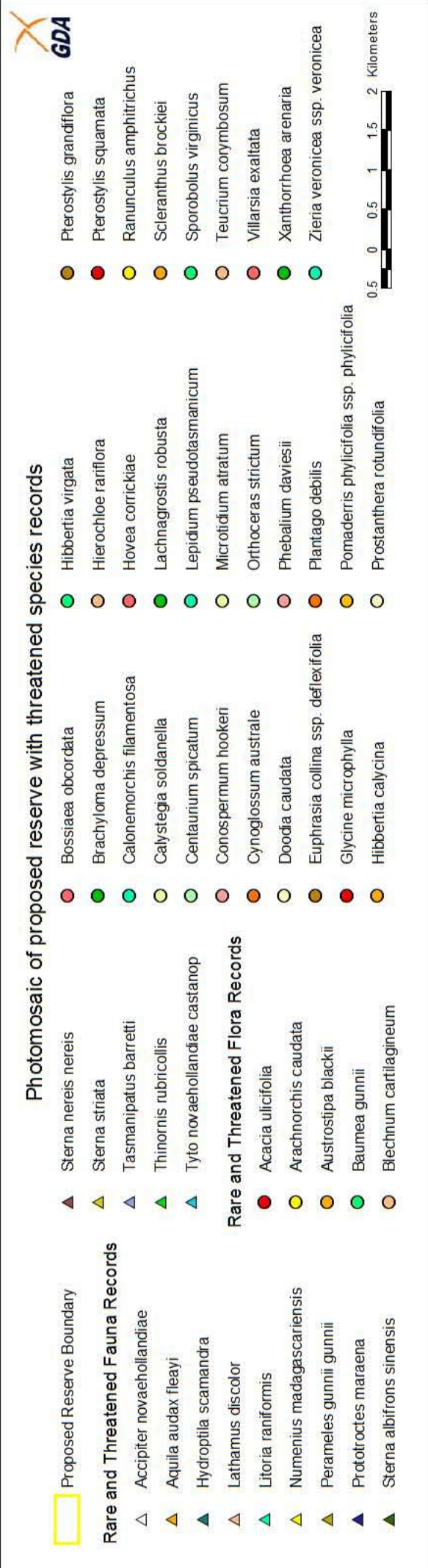
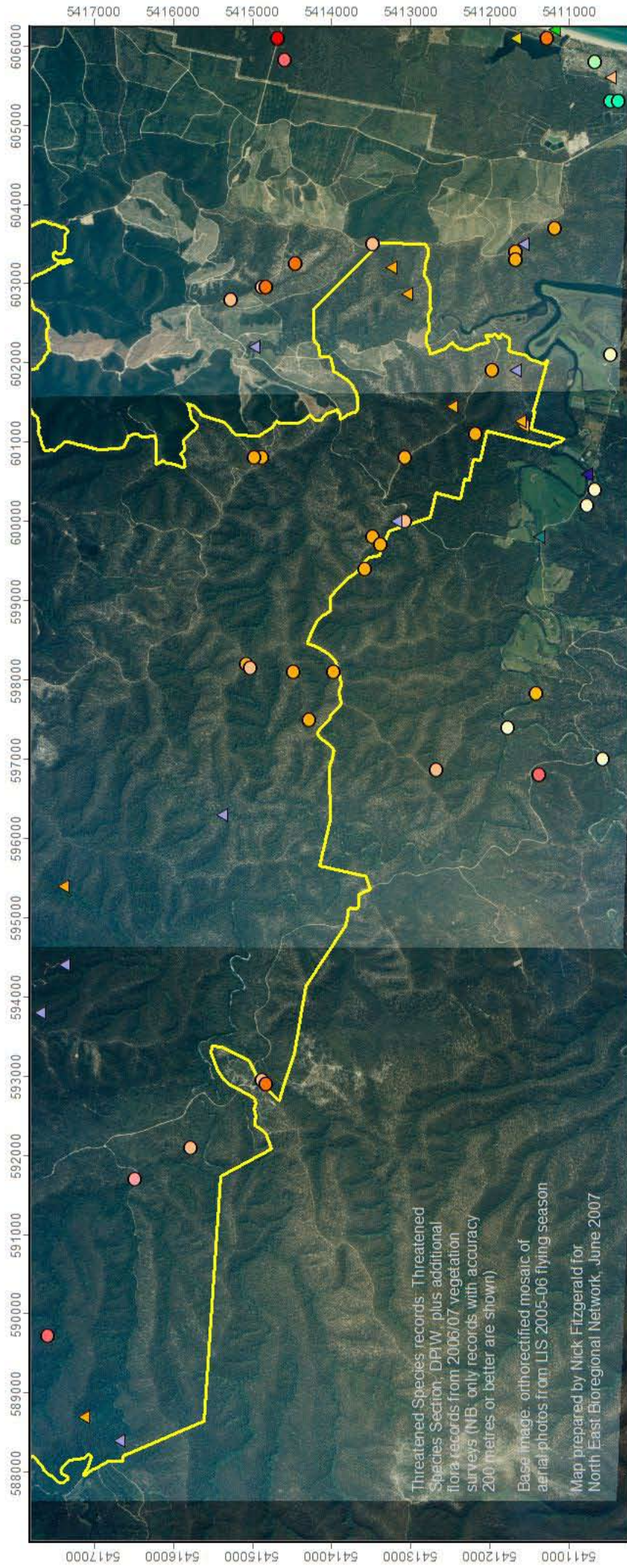


Proposed Reserve Boundary

Vegetation Types

- Proposed Reserve Boundary
- Eucalyptus sieberi dry forest
- other dry eucalypt forest types
- Damp eucalypt forest on flats
- Eucalyptus obliqua wet forest
- Eucalyptus regnans wet forest
- Rainforest
- Non-eucalypt forest
- Scrub and heathland
- Buttongrass moorland
- Native grassland
- Wetland and saltmarsh
- Agricultural
- Silvicultural plantation
- Miscellaneous urban and rural land





Tourist Attractions and National Estate Values, Constable Creek - Loila Tier

Map prepared for North East Bioregional Network by Nick Fitzgerald, June 2007

National Estate data: Dept of Environment and Heritage

Base image: TASMAP 1:25 000 mapsheets, copyright State of Tasmania



Visitor Attractions

National Estate

Proposed Reserve Boundary

