

Bushways

Environmental Services - Tasmania



Native Vegetation Management Plan
Seaview, Pyengana, Tasmania.

AUTHOR

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Northeast Bioregional Network, Gunns Ltd and Break O’Day Council

Cover photographs clockwise from top left: Plantation through the riparian zone of the South George River; Recent harvesting through tributaries of the North George River; Tall Riceflower, *Pimelea ligustrina*; Myrtle dominated rainforest remnant on the South George River; Blue Tongue Lizard; Plantation of *Eucalyptus nitens*.

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TABLE OF CONTENTS

| | |
|--|----|
| Author | 2 |
| Acknowledgements | 2 |
| TABLE OF CONTENTS | 3 |
| EXECUTIVE SUMMARY | 4 |
| 1 INTRODUCTION | 5 |
| 1.1 Background | 5 |
| 1.2 Site information | 5 |
| 1.3 Map of study site | 7 |
| 2 METHODOLOGY | 8 |
| 2.1 Background research | 8 |
| 2.2 Field survey | 8 |
| 2.3 Development of management recommendations | 9 |
| 2.4 Limitations | 10 |
| 3 NATURAL VALUES | 11 |
| 3.1 Native vegetation | 11 |
| 3.1.1 Acacia dealbata (silver wattle) forest | 12 |
| 3.1.2 Rainforest | 12 |
| 3.1.3 Freshwater aquatic sedgeland and rushland | 13 |
| 3.2 Non-native vegetation | 13 |
| 3.2.1 Plantation and agricultural land | 13 |
| 3.2.2 Weeds | 13 |
| 3.3 Rivers and waterbodies | 14 |
| 3.4 Habitat for threatened flora and fauna | 15 |
| 3.5 Seaview natural values and weeds map | 16 |
| 3.6 Seaview native vegetation map | 17 |
| 5 ISSUES FOR MANAGEMENT | 18 |
| 6 MANAGEMENT RECOMMENDATIONS | 21 |
| 6.1 Protect existing natural values | 21 |
| 6.2 Protect wide streamside reserves | 22 |
| 6.3 Plantation management | 23 |
| 6.4 Regeneration and revegetation | 23 |
| 6.5 Improve habitat for threatened species | 24 |
| 6.6 Control weeds | 24 |
| 6.7 Ensure permanent protection | 25 |
| 6.8 Seaview management map | 26 |
| 6.9 Seaview (Albertview) management map | 27 |
| 6.10 Seaview restoration map | 28 |
| 6.11 Seaview photo monitoring site map | 29 |
| 6.12 Monitoring of habitat condition | 30 |
| 6.12.1 Monitoring site photos | 31 |
| 6.12.2 Monitoring site table | 33 |
| 6.13 Strategic management priorities and priority areas | 34 |
| 6.14 Keys for management and restoration | 35 |
| 7 REFERENCES | 41 |
| 8 APPENDICES | 43 |
| Appendix 1. Plants recorded in native vegetation on site | 43 |
| Appendix 2. Threatened fauna possible on site | 46 |
| Appendix 3. Threatened flora on site | 47 |
| Appendix 4. Native plants for revegetation at Seaview | 48 |

EXECUTIVE SUMMARY

The **Seaview Native Vegetation Management Plan** was initiated by the North East Bioregional Network, Gunns Limited, the Break O Day Council and community stakeholders and outlines a cooperative approach to best practice plantation forestry.

The **natural values on Seaview** were assessed and recorded through field work. The main resources used to guide the field assessment included the GIS layers of the native forest distribution prior to 1996, TASVEG 2000 vegetation communities and Gunns Pty Ltd layer of the plantation extent. Native vegetation communities were ground truthed and the network of rivers and waterbodies were assessed for the extent and condition of their riparian vegetation.

The most widespread native vegetation communities are Silver wattle forest and Aquatic sedgeland and rushland, occupying many of the riparian areas and gullies, and Rainforest, found mostly on the edges of the property, especially in the north. Other smaller remnants include Tea tree scrub, Broad leafed scrub, Blackwood forests, Giant ash, Stringybark and Gumtopped stringybark. There is recorded and potential threatened flora and fauna habitat on Seaview and the opportunity for increasing this is considerable.

Plantation is all *Eucalyptus nitens* in its first rotation and occupies a considerable portion of Seaview, approximately 75%. The majority of the plantation has replaced agricultural land but a significant proportion, approximately 30%, occupies land converted from native forest.

Management issues identified are related to loss of native vegetation and fragmentation of habitat, discontinuous and inadequate streamside reserves, weed invasion, especially blackberry and foxglove, planting of *E. nitens* too close to streams and within remnant vegetation, recent harvesting through streams and springs, loss of threatened species habitat, a significant lack of eucalypts across the site, lack of tree hollows and ground habitat, large areas of plantation hostile to wildlife movement and lacking biodiversity, aerial spraying for application of chemicals and excessive clearing for roadside management.

Management recommendations were formulated around protection of existing values and optimising opportunities for restoration. A key was developed for use in the field by forest managers to identify management issues and solutions using images taken at representative sites. Detailed management recommendations are outlined in the document but are summarised below:

Strategic management priorities:

- Protect all existing native vegetation – this is the highest priority for management of this site.
- Protect and restore streamside reserves.
- Target restoration areas using the overlay of ‘native forest prior to 1996’ as a planning tool.
- Maximise restoration opportunity by following the first harvest in the rotation with restoration.
- Careful removal of *E. nitens* from streamside reserves and native remnants.
- Plant local native eucalypts.
- Restore riparian and wetland buffer zones in recently harvested areas.
- Leave logs and harvested debris in buffer zones for habitat enhancement.
- Revegetate the central section of the South George River.
- Contain and control weeds.
- Ensure permanent protection of native vegetation with covenants.

Priority areas are:

- Large tract of forest in the north of Seaview - restore plantation islands to consolidate native forest, and control weeds in this otherwise intact forest with streams mostly in excellent condition.
- South George River and tributaries above the St Columba Falls to the Ralph Falls turn off – extensive riparian area to protect, connect and enhance with weed control, restoration of plantation areas and revegetation at sites 10 and 14.
- Tea tree swamp at site 5 – careful removal of *E. nitens*, restoration of plantation areas, leave all embedded natural habitat logs in situ, control the few foxgloves, protect existing native vegetation and do not disturb the ground covers and embedded habitat logs.
- South George River sites 1, 2, 3 - careful removal of *E. nitens* and restore streamside reserves.
- Protect mature rainforest Dobsons Creek site 7, establish buffers and restore plantation areas.

1 INTRODUCTION

1.1 Background

The Seaview Native Vegetation Management Plan was initiated by the North East Bioregional Network, Gunns Limited, the Break O Day Council and community stakeholders and outlines a cooperative approach to best practice plantation forestry.

This plan will contribute to Gunns Ltd. meeting the following objectives:

1. Provide a cooperative community and industry developed best practice example of plantation and property management;
2. Provide agreement between participating stakeholders regarding forest management and provide functions for addressing future concerns if they arise;
3. Maintain a viable plantation estate on the property;
4. Maintain, and where required improve, the standard and integrity of the natural vegetation areas; and
5. Maintain water quality of the riparian systems that pass through the property.

It is intended in the longer term that this management plan will provide input into a broader catchment based management plan for the George River, encompassing all landowners/managers.

The Management Plan identifies and documents:

- Conservation values (threatened species, potential and threatened species habitat, threatened vegetation communities)
- Riparian restoration areas (to native vegetation)
- Plantation restoration areas (to native vegetation)
- Existing bush for protection
- Areas for organic plantation trials
- Recommendations and a key for restoration to native vegetation

1.2 Site information

Property name: Seaview (includes Albertview).

Total property area: 2100ha

Total plantation area: approx 1290 ha

Bioregion: Ben Lomond

Location: Pyengana, Tasmania

1:25,000 TASMAR Sheets: Ringarooma 5643 and Victoria 5642

Central grid reference Seaview: E 576247 N 5430633

Central grid reference Albertview: E 575956 N 5426601

Landform: moderate to steep hills and undulating plateau

Geology: Dolerite, Granitic elements in streams.

Altitude range (asl): approx. 190-830 m

Adjoining and nearby conservation values: Mt Victoria Forest Reserve, St Columbus Falls State Reserve including Bendover Hill, Blue Tier, a large area surrounding and adjacent to Seaview currently being proposed as North East Highlands National Park.

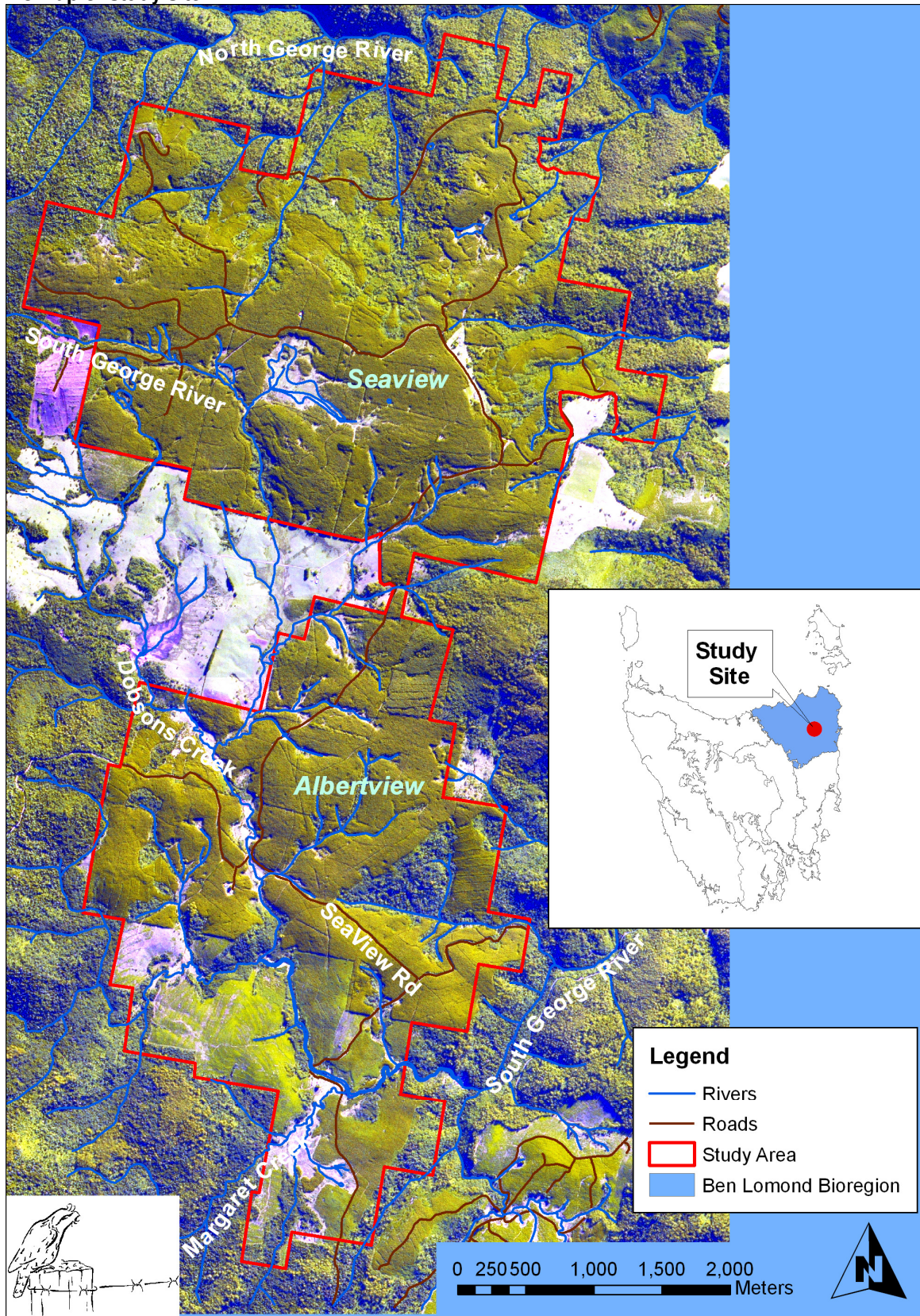
Seaview is located at West Pyengana in North East Tasmania, approximately 28 km to the west of St Helens. The property is located within the George River catchment in the Ben Lomond bioregion. The whole property is almost always referred to as Seaview in this document, for brevity, but occasionally the southern part is referred to as Albertview for ease of description.

The property is approximately 2100 hectares in size, with 1290 hectares of established *Eucalyptus nitens* plantation. The plantation areas were established on both pasture/agricultural areas and as a result of conversion of natural forests by the previous landowner. The property was acquired by Gunns Limited in 2007. Most of the existing plantations were established in 1996, which was prior to the latest code provisions for plantations (Forest Practices Code 2000).

The property also contains approximately 810 hectares of land which has not been developed for plantation. These areas are predominately natural vegetation and include approximately 185 hectares classified as stream side reserve, 444 hectares as non-commercial (for production forestry) natural forest, roads and powerline easements.

Gunns intend to maintain the property for plantation growing only on already cleared and previously established areas. Under Gunns Permanent Natural Forest Estate Policy existing areas of natural vegetation will be maintained as natural vegetation.

1.3 Map of study site



2 METHODOLOGY

2.1 Background research

A Natural Values Report was conducted through Natural Values Atlas (November 2010) for all threatened flora and fauna records within 5 kilometres of the site, as well as TASVEG communities and any geoconservation sites.

“Tasmania’s Threatened Fauna Handbook” (Bryant & Jackson 1999) was used to identify any other threatened fauna found within the area of the Ringarooma and Victoria mapsheets.

Helen Morgan and Sam Morgan of Bushways initially met with steering committee members including Jim Wilson and Suzette Weeding from Gunns Limited, and Todd Dudley, Lesley Nicklason, Beris Hansberry and Alison Bleaney from the North East Bioregional Network to access plantation maps and discuss the aims and desired outcomes of the plan. A field tour was undertaken on the day visiting several sites on Seaview.

The steering committee provided background information on the history of the plantation, recent management history, and local context, as well as copies of maps (provided by Gunns Limited).

GIS mapping data layers of the Seaview and Albertview properties were provided by Gunns Limited.

Information on the conservation values of the land surrounding and adjacent to Seaview, including the North East Highlands National Park Proposal (Nicklason et al 2007) was provided by Lesley Nicklason.

A literature search was conducted regarding relevant research into biodiversity protection and restoration in plantations, especially any thresholds or practical prescriptions relevant to the site. The existing Forest Practices Code 2000 and relevant Technical Guidelines were major references for the project and should remain a guide (at least until updated).

2.2 Field survey

The field survey was undertaken by Helen Morgan, Sam Morgan and Anna Povey in three visits: 26th – 28th November, 9th - 10th December 2010 and 25th January 2011.

Major roads through the plantation were driven, to gain an overview of native vegetation remnants and their characteristics and condition. Minor roads and tracks were walked or ridden on horseback and mountain bike to access the more remote areas.

Areas of remnant native vegetation were closely assessed where access was possible. Areas assessed represent larger remnants, remnants in differing topography, streamside native vegetation remnants and areas where there was no mapped information available. Due to the steepness of gullies, dense vegetation and rough terrain, at times distant observation with binoculars was the most efficient option for visual assessment. The TASVEG data was ground truthed and mapped according to TASVEG version 2.0 classifications (Harris & Kitchener, 2005).

Stream sections of the South George River, Dobson’s Creek, some of their tributaries and some tributaries of the North George River were assessed for the presence and health of native riparian vegetation. Existing buffer zones and areas where further protection is required were identified. The GIS drainage layer was used to identify streams and amended where information was either not provided or inaccurate.

Areas converted from native forest to plantation and areas that were previously agricultural land were identified using topographical data from the 1:25000 TASMALP sheets Ringarooma 5643 and Victoria 5642. These areas were ground truthed by observing the presence and characteristics of native understorey species and/or pasture and weed species beneath the plantation as indicators of recent conversion and regenerative potential.

Coupes recently harvested were assessed for:

- the vegetation type and condition of native remnants nearby and connected to the plantation;
- the presence and condition of wetlands, springs and streamside reserves proximal to and impacted by forestry activity;
- the presence of native species and evidence of native regeneration;
- fauna signs and available native fauna habitat;
- presence of weed species.

Restoration areas assessed included:

- riparian and wetland areas that require revegetation after harvesting impacts;
- riparian and wetland areas that require revegetation for buffer widening and connectivity;
- areas unsuitable for plantation, (eg: too wet, steep, rocky) where native vegetation could be regenerated or restored to enhance connectivity and habitat;
- tracts of native vegetation, including riparian areas and wetlands, which contain small areas of plantation that could be restored to enhance conservation values;
- native forest areas converted to plantation that would enhance connectivity and conservation values if consolidated and restored to native;
- past agricultural land that requires revegetation to achieve native restoration;
- areas that currently lack representation of the native vegetation that should be present eg: lack of eucalypt-dominated communities in native remnants in the plantation zone;
- roadsides and powerline areas where weeds and disturbance have degraded native vegetation.

Observation points and locations of any notable features were recorded by handheld GPS. Locations given in this report were taken in WGS 84 (=GDA94)

All botanical names are in accordance with the recently updated “A Census of the Vascular Plants of Tasmania” (Buchanan, 2005).

Specimens of native flora, including threatened species, were taken for the purpose of identification in accordance with Permit No. TFL 09005 (Threatened Species Unit).

2.3 Development of management recommendations

Management recommendations were formulated firstly around **protection of existing values**, as the highest priorities for sustainability of the site:

- Protection of existing natural values (native vegetation, fauna, threatened species)
- Maintain water quality of riparian systems

Consideration was given to addressing long-term challenges of this protection, including:

- Weed invasion
- Ensuring ongoing natural regeneration
- Ensuring development of critical habitat elements (e.g. tree hollows, fallen logs)
- Impacts of silviculture in the surrounding plantation, especially exposure of remnants to edge effects such as windthrow, microclimate changes, weed invasion and disease (e.g. myrtle wilt)
- Impacts of silviculture (including harvesting and chemical use) on water quality

Environmental sustainability within **the broader landscape** was also considered, including:

- Connectivity for wildlife across the property, via riparian strips, corridors, “stepping stones” and across the plantation itself
- Avoiding impacts on neighbouring reserves (e.g. through weed invasion, edge effects, eucalypt hybridisation or excessive impediments to wildlife movements)
- Protection of water quality for downstream users (especially as the South George River forms the water supply for St Helens).
- Scenic amenity

Additional considerations:

The past history of cleared agricultural pasture, and the planting of the existing plantation in 1996 (prior to the requirements of the most recent Forest Practices Code 2000) are understood to have a bearing on what exists currently on site.

Some native forest was cleared for establishment of this plantation, and these areas will be ideal for restoration to native vegetation.

The context of this property within the largely natural surroundings of major reserves has also been considered.

Some tensions between biodiversity conservation and other plantation objectives are acknowledged (e.g. encouragement of wildlife which may browse plantation plantings, management of weeds while avoiding chemical contamination of waterways, etc).

The location of the property at the top of the Georges River catchment (water supply for the St Helens area) is of major importance, which raises the priority of managing streams, soaks and springs.

A key for use in the field by forest managers for identifying management issues and solutions was developed with images taken at representative sites.

2.4 Limitations

This plan aims to provide a balance between optimal protection and restoration of natural values on the site, and the practical difficulties of achieving this at such a large scale, and of maintaining a viable plantation estate. Local guidelines and recent research were consulted, although an exhaustive literature search was not possible in the timeframe of this project.

The field survey was not intended to be a scientific survey, but an assessment of natural values, vegetation management issues and regeneration potential which could guide this management plan.

Access to some of the remnants, particularly those at the outer edges of the property, was difficult. As many native vegetation patches as possible were visited. Some could only be assessed with binoculars or interpretation from observations of similar nearby patches. Threatened species were not specifically surveyed, but previous records and potential habitat were noted during the assessment of the site and threatened species found were recorded.

Methods to assist revegetation and weed control are suggested, but trials and adaptive management will determine the best methods for the site.

3 NATURAL VALUES

3.1 Native vegetation

Native vegetation communities (TASVEG codes in brackets) occurring on Seaview include:

- *Acacia dealbata* (silver wattle) forest (NAD)
- *Nothofagus – Atherosperma* (myrtle – sassafras) rainforest (RMT)
- *Acacia melanoxydon* (blackwood) forest on rises (NAR)
- *Eucalyptus delegatensis* (gum-topped stringybark) forest over rainforest (WDR)
- *Eucalyptus obliqua* (stringybark) forest over rainforest (WOR)
- *Eucalyptus obliqua* (stringybark) forest with broad leaf shrubs (WOB)
- *Eucalyptus regnans* (giant ash) forest (WRE)
- *Leptospermum* (teatree) with rainforest scrub (RLS)
- Rainforest fernland (RFE)
- Broad-leaf scrub (SBR)
- Regenerating cleared land (FRG)
- Freshwater aquatic sedgeland and rushland (ASF)
- Wetland, undifferentiated (AWU)

Wetlands (of which freshwater aquatic sedgeland and rushland is one type) are listed as a threatened native vegetation community (vulnerable; Schedule 3A, *Nature Conservation Act 2002*). No other threatened vegetation communities were found on the property.

Riparian scrub (SRI) was mapped by TASVEG and is also listed as vulnerable, however this survey did not find any on the property. All areas mapped as riparian scrub were ground truthed as regenerating cleared land, freshwater aquatic sedgeland and rushland or silver wattle forest on riparian sites.

Generally the native vegetation remnants on the property are found in gullies and other riparian areas, with little vegetation remaining on slopes or hilltops.

The best quality native vegetation tends to be found at the edges of the property, where the vegetation has not been previously cleared and where it adjoins the neighbouring reserves. At the north of the property are the largest areas of intact rainforest and giant ash forest.

There are smaller areas of relatively undisturbed forest also on the eastern side, and in patches throughout the southern part of the property (Albertview), which include rainforest, stringybark forest with broadleaf shrubs, blackwood forest on rises, blackwood swamp forest and gumtopped stringybark forest. Small areas of broadleaf scrub are mapped by TASVEG in the far northeast and far southwest of the property, but could not be ground-truthed during these surveys.

Although silver wattle forest is a successional community found on disturbed sites (Harris & Kitchener, 2005), this forest contributes considerable habitat value to the property. Some areas here are in very good condition for the community type, with mature trees and a relatively diverse understorey. There are large areas of silver wattle forest throughout the property.

Most of the riparian areas of the main channel of the South George River consist of regenerating cleared land (with sedges, rushes, sparse silver wattles and some other native species, as well as pasture species and weeds, especially foxglove) or silver wattle forest.

The riparian vegetation on the lowest reach of the South George River and the tributaries (from St Columba Falls to just below Ralphs Falls turn off) is in very good condition, and excellent in parts, with eucalypt and tea tree forest remnants with rainforest elements. Most of the better condition and larger tracts of riparian vegetation, some myrtle forest but mainly silver wattle forest and freshwater aquatic sedgeland and rushland, is found on the tributaries.

In the northern predominately plantation area, the riparian areas tend to support freshwater aquatic sedgeland and rushland, where sedges and rushes are denser than in the regenerating cleared land, In the central north swamp area moss, liverworts and herbs occur rather than pasture, with patches of teatree and occasional rainforest species.

The lack of eucalypts of any kind is notable throughout almost all of the property (apart from eucalypt forest remnants predominantly in the north), indicating extensive past logging or clearing which was not followed by regeneration. Isolated individuals of stringybark, white gum, gum-topped stringybark and giant ash are occasionally found (those found during this survey are marked on maps 3.5, 6.8, 6.9).

The major plant species found in native vegetation during these surveys are listed in Appendix 1. As there was considerable overlap of species in each vegetation type, which tended to be at various stages of natural regeneration from past disturbance, separate lists for each vegetation community were not made.

The vegetation of surrounding reserves provides some guidance as to what was probably originally on the property, including rainforest, stringybark forest over rainforest, stringybark forest with broadleaf shrubs, giant ash forest, gumtopped stringybark forest with broadleaf shrubs and smaller areas of other vegetation types.

The predominant native vegetation communities on the property are described further here; namely silver wattle forest, rainforest and freshwater aquatic sedgeland and rushland. (Many of the eucalypt communities, not described in detail, consist largely of rainforest with a eucalypt overstorey, although some include drier understorey species as well).

3.1.1 *Acacia dealbata* (silver wattle) forest

Most of the native forest remaining on the property is silver wattle forest. This is dominated by silver wattles, in many cases very mature and tall trees. Where this forest is healthy and retains elements of the original forest, or where succession to rainforest is occurring, there are occasional other trees in the canopy; generally blackwoods and sometimes myrtles. The understorey of this forest varies between patches, but typically includes rainforest and wet forest elements in varying amounts, such as young myrtles, cheesewood, sassafras, soft treefern, bracken, ruddy groundfern, batwing fern, fishbone waterfern, mother shieldfern, mountain pepper, native currant, and forest daisybush. A greater diversity of plants tends to be found where more intact forest occurs nearby (such as at the edges of the property). Blackberries and foxgloves are often present to some extent.

Where this forest is not so healthy, with fewer original forest species remaining and little regeneration occurring, the silver wattles are sparse and are not being replaced by late successional species, and the forest is declining as wattles die. These forest patches tend to have more weeds in the understorey.

In some places cleared land (e.g. along rivers) is more recently regenerating with silver wattles, with the density reaching the point that patches can be considered as silver wattle forest. These places tend to be patchy, with the groundstorey dominated by foxgloves and pasture grasses and weedy herbs.

3.1.2 Rainforest

The rainforest which is mature enough to classify was usually found to be myrtle-sassafras rainforest, with myrtles dominating, in some cases tall (over 25m). There are some blackwoods or sassafras in the canopy. Celerytop pine was only found at some sites, and did not tend to be at canopy level. The understorey of the mature forests was sparse and ferny, with soft treefern typical. The best examples of this community were found on Dobson's Creek and in the less disturbed forest in the north of Seaview.

In some places the rainforest is regenerating from disturbance, so is shorter than the mature forest and includes a greater density of understorey species. Mountain pepper, cheesewood, ruddy groundfern, sassafras, soft treefern, bracken, ruddy groundfern, batwing fern, mother shieldfern, fishbone waterfern, native currant, dollybush and forest daisybush are typical.

There are some small areas of other rainforest types, including rainforest fernland (in gullies with the understorey dominated by soft treefern) and teatree with rainforest scrub, both perhaps a result of past disturbance.

3.1.3 Freshwater aquatic sedgeland and rushland

These sedgelands tend to be dominated by tall sedge, with various rushes such as broom rush also present. In some places there is cutting grass and woolly teatree, and in better drained sites there are sometimes other shrubs such as cheesewood, myrtle and mountain pepper. Between the sedges the very poorly drained ground supports mosses and liverworts, and some herbs such as matted pratia, creeping raspwort and hairy pennywort.

This community commonly occurs on the tributaries of the South George River and part of the main stream.

3.2 Non-native vegetation

Non native vegetation on Seaview includes:

- Plantation for silviculture (FPL)
- Agricultural land (FAG)
- Weeds.

3.2.1 Plantation and agricultural land

Plantation is all *Eucalyptus nitens* in its first rotation and occupies a considerable portion of Seaview, approximately 75%. A lot of the plantation has replaced agricultural land but a significant proportion, approximately 30%, occupies land converted from native forest. Areas of converted native forest can be recognised by the healthy and diverse understorey that has regenerated and in many instances they are close to remaining healthy forest. Land previously agricultural with a longer history of land use involving vegetation clearing and grazing and now under plantation tends to be poorer in native understorey and weedier with grasses, blackberry and foxglove. The streams in these areas also show signs of longer term degradation with bank and channel erosion, weeds, poorer riparian vegetation and slower native regeneration.

Areas remaining of agricultural land are limited as most of this has begun to regenerate. However, small patches remain on the South George River near the homestead and in the north near the old shearing sheds. These areas are prone to being weedy and there is limited natural regeneration. These areas will require revegetation and active weed management for restoration.

3.2.2 Weeds

Environmental weeds represent a major threat to the conservation and restoration of natural values on Seaview. Many of the weeds on Seaview are serious environmental weeds and should be controlled. The potential for weeds (especially blackberry) to spread throughout the property and into neighbouring reserves and private land is considerable and should not be underestimated. Conditions for the spread of weeds are ideal with a reliable rainfall, relatively fertile soils, a history of disturbance, and extensive areas of available establishment sites in disturbed ground and edges.

The major environmental weeds encountered on Seaview were blackberry and foxglove. These were noted almost everywhere, in gullies, roadsides, wetlands, remnants and plantation. It was not possible to map the distribution of these weeds for this project but they were recorded in representative areas and these locations mapped as examples (see map in 3.5). Other environmental weeds were noted in specific places and mapped and these include willow, radiata pine, bulrush, glyceria, columbine and hemlock. It is likely that there are more of these weeds in places not seen during this survey and that there are additional weed species not recorded.

Blackberry is throughout the property and is a major threat. Some control of Blackberry may have occurred in the past as there are many small plants and seedlings. They are found everywhere along streams and waterbodies, edges of forest and riparian remnants, and beneath plantation. In places they are very dense.

There is enormous potential for blackberry to spread a lot further on this property. The plantation environment is extensive and very suitable for them with many edges, a light canopy and little competition in the understorey. Additionally, they are well established in many gullies and riparian areas, edges of remnants and regenerating agricultural land and the potential for expansion in these environments is immense.

Blackberry control will require a concerted strategic effort which should not be delayed as the infestation on Seaview appears to be on the cusp of considerable expansion. Without control there is significant risk to the conservation values on the property and surrounding land.

Foxglove is also found throughout the property along roadsides, under powerlines, freshly cleared roadsides and past agricultural land. Foxglove is invading areas of good native forest areas along roadsides. Any areas without foxgloves or with few are important to maintain as such.

Radiata pine occurs in occasional planted rows on the property, but wildings are evident and there is the occasional individual large mature pine. Pine trees in rows occur near the old stock yards in the north and north of the house west of the Ralph Falls Rd. A small plantation with wildings spreading was found near a waterfall on a tributary of Dobsons Creek. Pines are a very invasive environmental weed. Any pine poses a threat to the ongoing health of a natural area and will retard restoration efforts in the long term.

Willows are present on several streams and waterbodies in channels and on banks and should be removed. Their invasiveness and ability to degrade waterways is well documented. The few willows on Seaview would be easy to eradicate with low cost at this stage.

Glyceria and Bulrush occur in still water on some wetlands and slow flowing sections of some streams, especially in agricultural land. Glyceria is extremely difficult to eradicate and containment is likely to be the best option. Bulrush can be removed more successfully and control of this weed is possible. Any wetland without Glyceria or Bulrush should be noted and maintained as such.

Columbine is a garden escape and the infestation here should be controlled while it is still a small area.

Hemlock was noted in only a few areas but is very poisonous and should be controlled as soon as possible.

3.3 Rivers and waterbodies

Approximately 75% of Seaview provides catchment for the South George River and the remainder is catchment for the North George River. These rivers meet at Pyengana, below Seaview, and flow into Georges Bay at St Helens. St Columba Falls, a spectacular waterfall and tourist attraction, is situated on the South George River just east of the Seaview boundary.

Dobson's Creek and other tributaries flow into the South George River on the west and southwest of Seaview from the slopes of Mt Victoria and Mt Albert. Many additional springs and tributaries to this river rise on Seaview and a substantial number of these come from land predominantly under plantation.

Tributaries of the North George River flow north from Seaview and most of these originate in native forest although some springs and wetlands occur within areas of plantation.

There is a diverse array of rivers and waterbodies on the property with springs and wetlands, natural pools and soaks, braided streams, major channels, deep gorges and waterfalls. Boulders and cobbles are common in the stream beds, especially associated with reaches of higher water energy while braided alluvial channels are a feature of low energy tributaries.

Generally, the rivers and waterbodies are in fairly good condition but there are instances of serious degradation in parts (erosion, weeds, cleared vegetation) and these areas disconnect the good condition areas. A complete assessment of the condition of Seaview's rivers and waterbodies was not possible during this study. A more thorough biophysical assessment would be beneficial to guide restoration efforts with priorities and recommendations.

3.4 Habitat for threatened flora and fauna

Seaview provides known and potential habitat for several threatened flora and fauna species and this could be increased with further habitat and remnant protection and restoration. Several species have been recorded on the property and there are many more records nearby (Natural Values Atlas 11/2010).

There are two known nesting sites of Wedge tailed eagle in the adjacent forest on Bendover Hill, east of Seaview. The plantation would not provide suitable nesting habitat, but planning of operations must consider the proximity of eagle nests. Restoration of areas near to known nests would help provide a greater undisturbed area around them.

There are records of Vanderschoor's stag beetle and Simson's stag beetle on the property proximal to the boundary nearest to the eagle's nests. This land lies between two tributaries of the South George River and has been converted from native forest to plantation but could be restored to native habitat.

Giant velvet worm is recorded from nearby gullies. At present the plantation itself would not form suitable habitat of wet forest with rotting logs, but with restoration this velvet worm could colonise damp gullies (eucalypt logs do remain in some gullies). Forest snails are recorded in the nearby Weld catchment and there is some potential habitat on site that would improve as restoration progresses.

Caddis fly (St Columba Falls) is recorded immediately downstream of the property. It is possible that this species occurs on Seaview in areas of excellent stream condition with good oxygenation.

Many bandicoot diggings were found which may be those of the Eastern Barred Bandicoot, and there is excellent potential habitat available for this animal on Seaview.

Additional threatened fauna species which may occur here in suitable habitat, although this is probably limited, include Masked Owl, Spotted-tailed Quoll, and Grey Goshawk. These animals may all hunt and forage on Seaview. See Appendix 2 for more details of threatened fauna status, records and habitat.

The Australian grayling, recorded in the George River, is unlikely to occur upstream of the waterfall (Dave Jarvis pers. com 23/03/11) or in the upper reaches of the North George. Its known preferred habitat is likely to be downstream (Bryant and Jackson 1999; Backhouse et al 2008a) and therefore water quality protection in the upper catchment is important for this species.

Swan galaxias are unlikely to occur here as they cannot survive any trout predation and this catchment is completely unconnected with the only catchment they are known in (Threatened Species Unit 1998).

Asperula subsimplex, water woodruff, was identified on site in an unnamed tributary of the South George River. (E576505 N5425873). The habitat area was a moist creek gully, on the edge of regenerating forest and open freshwater herbfield.

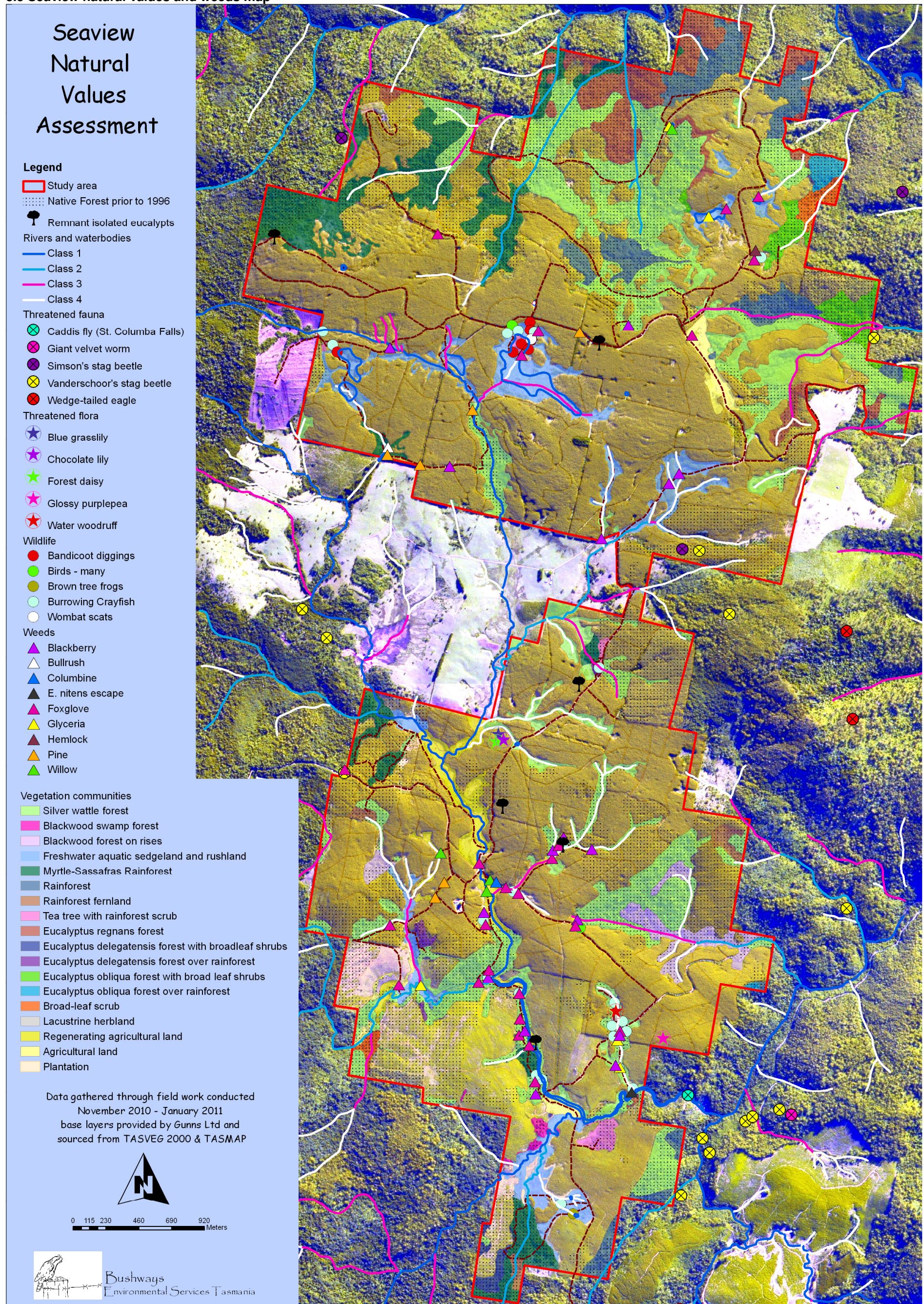
Several other threatened flora species were recorded on the site but were not found, (see Appendix 3 for further details) probably as the habitat area had been converted from native forest to plantation. Clearly threatened flora is unlikely within an existing plantation, but may occur in regenerating areas.



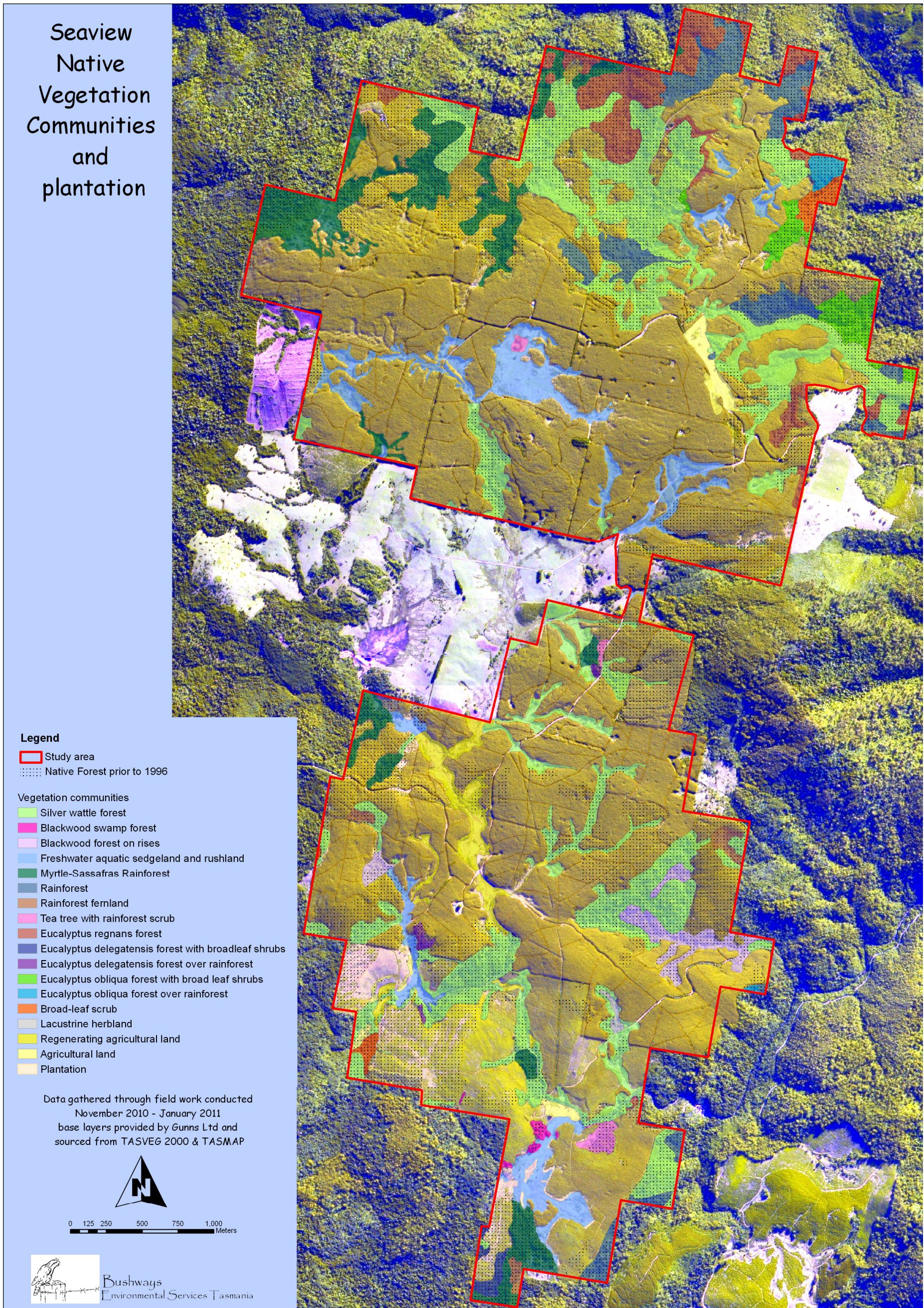
Seaview provides habitat for many other non threatened animals, including invertebrates, reptiles, marsupials, bats and many birds. Fauna habitat could be considerably enhanced with restoration works

Figure 8 Stumps provide excellent bat habitat. These very small, nocturnal mammals inhabit tiny crevices in stumps, old fence posts and trees.

3.5 Seaview natural values and weeds map



3.6 Seaview native vegetation map



5 ISSUES FOR MANAGEMENT

Issues for nature conservation on Seaview were assessed during the field survey and in discussions with the steering group. Issues relate to impacts to the natural values from clearing of native vegetation, plantation establishment and degradation of streams and riparian areas. The issues are summarised below and recommendations for solutions can be found in the next section.

- **Insufficient streamside reserves** (SSRs) occur on many streams, especially the main channels and riparian areas of the South George River and several of its tributaries. Some of the tributaries had good width of riparian buffer remaining, probably due to being unsuitable for plantation as they were either too steep, rocky or too wet for plantation. However, many of these are unconnected to other good riparian areas.
- **Plantation has been established through streamside reserves** and sometimes planted in the stream channel (pre 2000 code). Many small areas and strips of plantation have been established within streamside reserves and native remnants. Some of these plantings appear to have been experimental or random. Access to these plots has the potential to damage otherwise intact remnants and waterways and they represent an unnecessary compromise to the integrity of remnants.
- **Connectivity of the main “corridor”, the South George River**, and also aquatic habitat quality, is compromised by the extent of regenerating cleared land (rather than intact native riparian vegetation) and agricultural land on Seaview and in the neighbouring property. A lack of trees and shrubs limits stream shade (important for aquatic habitat and water quality), while a lack of riparian understorey plants may have contributed to localised erosion and reduced filtering of inputs such as nutrients and chemicals into the river..
- Substantial **recent harvesting across streams, soaks and springs** has occurred in the central north of Seaview. These wetland areas have been seriously degraded and require restoration as a priority.



Figure 9 Plantation to the edge of the South George River. Recently harvested area where springs at the break of slope were cleared for a truck loading site.

- **Broad scale chemical use** (herbicides and pesticides, including aerial application) has been a management strategy of plantation establishment and maintenance. Spray drift to waterways and native habitat is an issue for water quality and biodiversity.
- **Water quality protection** and maintenance is important in these upper catchments for the water supply to St Helens, as well as aquatic habitat on site and downstream. Poor water quality also affects scenic amenity.
- Potential impacts from Seaview's land management on **surrounding reserves** (fragmentation, reduced water quality, weeds) and to fauna movement across the landscape.
- **Threatened species habitat** requires protection, including habitat for threatened plants and animals recorded on site or within 5kms:
 - aquatic fauna species, (St Columba Falls caddisfly and freshwater snails);
 - wet forest invertebrate fauna species, (giant velvet worm, Simson's stag beetle, Vanderschoor's stag beetle);
 - terrestrial vertebrate fauna, (wedge-tailed eagle, quolls, grey goshawk, eastern barred bandicoot);

- flora species, (blue grasslily, chocolate lily, forest daisy, glossy purplepea, water woodruff).
- **Wetlands** require protection (the only threatened vegetation community on site).
- Many **remnants have been affected by past management**, and lack natural plant diversity and structure (e.g. silver wattle forest, regenerating agricultural land) and will require revegetation for recovery.
- There is a notable **lack of eucalypts** in most of the native vegetation on the property.
- Some (limited) **excellent native vegetation requires protection** from weeds and further fragmentation (mostly at the edges of the property, especially north, far south and patches in east and west of Albertview).
- **Most remnants occur along streams** and there is limited slope and ridge (better drained) vegetation types and no connectivity across catchments (over hills).
- **Large areas of pre-plantation native vegetation were converted** including stag beetle locations. Albertview has undergone a greater level of native forest conversion than the northern portion of Seaview.
- **Very large areas of plantation** currently exist, that are hostile to wildlife movements and habitat, and will leave large bare areas when harvested and extensive edge effects.
- **Impacts on remnants** from harvesting and subsequent exposure and edge effects during plantation regrowth period.
- Some good **natural regeneration** is occurring along some streamsides but some areas are slow to respond and will require revegetation to recover.
- There is a significant **lack of tree hollows and large ground logs** for habitat and there will be a large time lag for their natural development (80-200 years for tree hollows to develop).
- **Weeds** are well established, and will require determined control:
 - Foxglove occurs across most of site, especially in open areas, along tracks and roadsides, under powerlines and invading some wetlands.
 - Blackberry is present across most of site both in forested and open areas. Under plantation blackberry is very dense in some locations. There are many seedlings present which are likely to greatly increase in vigour and density.
 - Occasional willows on stream channels which could easily be removed before they become worse.
 - Pines are present planted in rows, as individuals and as wildlings. Many are large and mature and should be removed and wilding control followed up.
 - Glyceria is present in some wetlands, especially those in agricultural land or regenerating cleared land and plantation. This species is very difficult to eradicate and containment is likely to be the only option for control.
 - There is a possibility of *E.nitens* spreading into remnants and reserves. Some apparently self sown individuals were found.
 - Weeds can spread from here into surrounding reserves and neighbouring properties.



Figure 10 Extreme Foxglove invasion of land between remnant and plantation.

- There is a chance, albeit low, of ***E.nitens* hybridisation** with nearby native eucalypts (*E.viminalis* has medium susceptibility, but there are few on site; other common eucalypts nearby are not susceptible. *E.ovata* is susceptible but there were none found during the survey).
- **Wildlife browsing** and plantation establishment:
 - Control techniques depend largely on shooting and timing of planting; there is no use of 1080.
 - Tension with habitat restoration likely leading to more browsers
- Clearing of **roadsides and power line easements** – inviting weed invasion and spread, erosion and increased sediment loads to streams and down slope vegetation. Roadside clearing especially seemed excessive with more destruction of native vegetation than appeared necessary. Methods for avoiding erosion could be improved.
- **Scenic amenity issues** with proximity to St Columbus Falls, and tourist driveways through the property.



Figure 11 Turn off to Ralph Falls over South George River. Roadside erosion, the result of the bank being too steeply cut away. During heavy rain events wash of sediment into the river is inevitable. Bank could be battered more gradually and planted with low growing native grasses to stabilise it and reduce sediment loss and still allow sunlight to reach the road.

6 MANAGEMENT RECOMMENDATIONS

Many of the issues for nature conservation and water quality on Seaview can be jointly addressed through wide streamside reserves, protection of existing native remnants, weed control, minimising use of chemicals near waterways, habitat restoration and plantation management techniques.

Better management of the plantation for biodiversity conservation at Seaview is important both for local conservation and also in the context of large areas of Tasmania now being managed as plantation. Lindenmayer et al (2003) argue that "widespread adoption of plantation forestry that leads to homogenous stands of extensive monocultures will risk re-creating the array of negative environmental outcomes that have been associated with agriculture in many parts of Australia". They also show that plantations can provide habitat for a range of species and that plantation management can promote biodiversity if conducted with that aim. This management plan for Seaview is intended by Gunns Ltd, North East Bioregional Network, the Break O Day Council and community stakeholders to outline just such best practice plantation forestry.

References from scientific literature and from industry guidelines and conferences were consulted in the formulation of the management recommendations below. These stress the importance of both large and small native remnants within plantations (Fischer & Lindenmayer, 2002; Lindenmayer & Hobbs, 2007; Archibald *et al*, 2010), riparian areas as particularly valuable for wildlife and dispersal (Lindenmayer (2002), the importance of native understoreys (Archibald *et al*, 2010), the lack of hollows and other structural elements in plantations (Lindenmayer & Hobbs, 2007), that plantations can improve landscape permeability compared with agricultural land but that smaller coupes and a mosaic of stand age classes would improve this further (Lindenmayer & Hobbs, 2007), and that leaving thinnings and logging waste to rot on the plantation forest floor can provide invertebrate habitat (Bonham et al, 2002, cited by Lindenmayer et al 2003).

The most recent Forest Practices Code and Forest Practices Authority guidelines should guide management on site. The recommendations outlined below should be used to improve protection of natural values and water quality, above that provided for in the Code.

6.1 Protect existing natural values

- Retain all remaining native vegetation on property. This includes forest and non-forest remnants such as sedgelands. Map 3.6 shows all known areas of native vegetation.
- Protect threatened species and habitat with buffers around known locations, and habitat (e.g. wet forest, logs) protected along streamside reserves and in remnants. Survey locations of previous records in spring, and if threatened species are present, carefully remove any plantation and regenerate sites, which may be included in stream side reserves.
- Protect all existing eucalypts (known locations shown on Maps 3.5, 6.8, 6.9) and implement buffers around them to encourage natural regeneration.
- Protect rainforest from harvesting damage and myrtle wilt. At least a 40 metre wide buffer is recommended for relict rainforest (Forest Practices Authority 2009).
- Retain any native vegetation along roadsides if possible (e.g. clumps, and any native understorey) to improve native connectivity, to improve scenic value and to avoid weed colonisation of bare areas.

6.2 Protect wide streamside reserves

- Follow the most recent Forest Practices Code recommendations for protection of streamside reserves (SSRs), as if for native forest (rather than for plantations), and with an additional 10m width over recommended minimums. This may be implemented as each coupe is harvested and replanted.

| Watercourse type | Minimum horizontal width from bank to outer edge of SSR |
|--|---|
| Class 1 - rivers | 50 - 100 m |
| Class 2 - streams (catchment >100ha) | 40 m |
| Class 3 - streams, running water most of year (catchment 50-100ha) | 30 m |
| Class 4 - watercourses, carrying water part or all of year. Also here springs, seeps, swamps, pools. | 20 - 30 m |

Increased protection provided by such wider SSRs is justified on the following bases:

- **Water supply** (Forest Practices Code sections D2.1 and D2.2 recommends wider SSRs and specific prescriptions regarding use of chemicals)
- **Threatened fauna**, including aquatic and wet forest species (Forest Practices Code section D2.1 recommends wider streamside reserves; Bryant & Jackson 1999 recommend for velvet worms, p300, for caddisflies, p345, and for stag beetles, p358, wide streamside buffers of no less than 10 to 60m each side)
- **Rainforest myrtle remnants** (myrtle wilt, etc) (Forest Practices Code section D2.1)
- **Likelihood of windthrow and edge effects** when plantation is harvested (Forest Practices Code section D2.1)
- **Some references** recommend at least 30m SSR on class 4 to at least 60m-100m on class 1 waterways, in order to provide for water quality, habitat for terrestrial animals and habitat for stream fauna (Munks, 1996; Bryant & Jackson, 1999; Lynch & Catterall, 1999).

At this site, most vegetation is along streams and is wet forest. Wet forest, surrounded by plantation which will be harvested at 12-15 yr intervals (rather than remnants in native forest being harvested after many decades), requires increased protection to enable it to retain a suitable microclimate, to be self-sustaining and to avoid impacts from harvesting. The threatened stag beetles and velvet worms here require moist, long-standing forest with deep litter and decaying logs, again best provided by substantial SSRs.

- Protect wetlands, class 4 streams, pools, springs/seeps and swamps with 30m SSR. Carefully remove existing plantation from these areas. No machinery within 5 m of stream or 10m of seep/swamp. Avoid damage to native plants. Regenerate/revegetate to native.
- Improve SSRs above St Columbus Falls, which supports threatened caddisfly, as well as stag beetles and velvet worms.
- Avoid chemical use near waterways, and only use water-registered herbicides nearby if necessary. Avoid aerial spray with any chance of drift. Use non-chemical browsing control.

6.3 Plantation management

- At harvest, leave some logs and some harvesting debris in SSRs and remnants as habitat (e.g. for velvet worms, stag beetles, quolls etc in time).
- Carefully remove plantation strips and small patches (<2ha approx.) within SSRs and larger remnants: regenerate or revegetate to native vegetation
- Careful harvesting of *E. nitens* within or too close to native vegetation. Methods to be used include: no machinery, manual chainsawing where necessary, felling trees without damage to existing native vegetation, not churning up the soil profile, leaving logs as habitat.
- Use dispersed harvesting, smaller coupes and some longer rotations to increase habitat complexity of plantation and reduce visual and natural impacts of harvesting.
- Where possible, carefully remove plantation trees from areas with good native understorey (i.e. recently converted native forest) and restore to native forest.
- Conduct a trial of organic plantation management. The trial site will need to be at a suitable distance from conventional plantation and well buffered to avoid spray drift.

6.4 Regeneration and revegetation

- There is good potential for existing native vegetation to be linked using the overlay of 'native forest prior to 1996' (see Maps 3.5, 3.6, 6.9, 6.10) as a planning tool for consolidating areas of native forest. These areas should be considered as a priority for restoration when planning streamside reserves, wildlife corridors and restoring plantation islands and strips within and near native vegetation. Some of these areas have been identified on the maps (see 6.9, 6.10) but there are likely to be more areas when planning is undertaken at a closer scale.
- This first rotation of plantation harvest presents an excellent opportunity to restore targeted areas of previously native forest while the resilience for regeneration is still high. This resilience is likely to be considerably reduced if a second rotation is embarked upon and there is another 15 years of delay in the restoration process. Current restoration of native forest at Skyline Tier, Scamander, is demonstration of this resilience being evident in first rotation regeneration sites compared to second or more rotations (Todd Dudley pers. com. 23/3/11).
- Allow natural regeneration of SSRs, wildlife corridors, and other areas targeted for restoration, where likely to be successful, for one harvest cycle. Natural regeneration is likely to be successful where native vegetation existed before 1996 (see Maps 3.5, 3.6, 6.9, 6.10), near healthy remnants, where a variety of native plants already exists, and where the vegetation is sedgeland or forest already. During this cycle, weeds should be controlled as a priority. Assess and revegetate if necessary at next cycle.
- Revegetate SSRs and wildlife corridors where natural regeneration is unlikely to succeed (e.g. in areas of previous agricultural land).
- The central section of the South George River should be revegetated (Sites 10 and 14). Small wetlands, pools and springs which have been surrounded by plantation should be revegetated as they are critical centres for biodiversity within the plantation. Suitable local native plants for revegetation are listed in Appendix 4.
- Sparse plantings or patch plantings of key missing species (e.g. eucalypts, myrtles, others as appropriate) to restore diversity in impoverished remnants (e.g. silver wattle forest, regenerating agricultural land) and SSRs.
- Plant local eucalypts (*E. delegatensis*, *E. obliqua*, *E. regnans*, *E. viminalis*) wherever appropriate (e.g. into gaps in silver wattle remnants).
- Plant robust buffers (e.g. dogwoods, blackwoods) at edges of remnants (e.g. mature rainforest) vulnerable to harvesting impacts, edge effects and wind throw.

-
- Improve structural diversity and provide critical habitat elements in remnants and SSRs (e.g. leave some logs, thinnings and windrows as habitat; protect all eucalypts into the long-term future and plant more, allow them to mature and ultimately form hollows; consider providing nest boxes)
 - Consider restoration of areas of pre-plantation native vegetation, especially as wildlife corridors and to provide slope and ridge habitats.
 - Establish wildlife corridors (at least 100m to 150m wide; Forest Practices Authority 2010) – e.g. from Bendover Hill to Rattler Range/Mt Victoria.
 - Leave some sedgelands open and allow natural regeneration only. Plant woolly teatree around edges of less healthy regenerating sedgelands.
 - Use local native plants for revegetation (see Appendix 4 for species).
 - To improve success of revegetation, implement thorough site preparation (e.g. control pasture or weeds, consider mounding or cultivation), plant with care (roots well down, water in if possible, use biodegradable plant guards or other browsing control methods), use appropriate species for each micro-site, and monitor and maintain plantings during establishment.
 - Follow up weed control in revegetation sites for several years is a priority.

6.5 Improve habitat for threatened species

- Allow substantial areas of forest to regenerate (and revegetate where necessary), which will improve habitat for velvet worms, stag beetles, spotted tailed quolls and devils, and possibly for threatened flora.
- Plant blackwoods along streams to eventually provide nesting habitat for grey goshawks.
- Establish native riparian vegetation in wide streamside reserves on all waterways (and especially above St Columba Falls) to improve water quality for St Columba Falls caddisfly, as well as wet forest habitat for other threatened fauna.
- At harvest, leave some logs and some harvesting debris in SSRs and remnants as potential habitat (e.g. for velvet worms, stag beetles, quolls etc in time).
- Plant local native eucalypts where possible and allow maturing over the very long term.
- If threatened species are still present where previous locations were converted to plantation, carefully remove any plantation and regenerate sites.

6.6 Control weeds

- Washdown machinery between weedy and non-weedy areas. Avoid transfer of soil.
- Control sparse/isolated weeds ASAP – willows, pines, columbines.
- Contain glyceria and bulrush - monitor (and control) any new infestations.
- Ensure foxglove etc do not establish in new areas. Control where sparse. Shade out with plantings where appropriate. Hand pulling may be the safest option in wetlands.
- Control blackberry throughout SSRs and remnants, using targeted methods (e.g. metsulfuron-methyl) taking care near waterways and native vegetation. Trials of alternative methods of blackberry control may be worthwhile but it is very important not to delay blackberry control as a much greater level of invasion appears imminent.
- Regularly monitor edges of property (and into adjacent reserves) for weeds, including *E. nitens* (and hybrid) seedlings, blackberries, foxgloves and any other weeds, and control immediately.
- Control weeds along roadsides and powerline easements, and along regenerating streamside reserves.
- Follow up control annually or biannually is essential for success.

6.7 Ensure permanent protection

- Put perpetual covenants on remnants and SSRs.
- Pursue benefits such as rate rebates, land tax rebates and carbon credits.
- For updated information from the Australian Government: *GIFTS THAT KEEP GIVING: A landholders guide to land protection and conservation options* See the Department of the Environment and Heritage website www.deh.gov.au

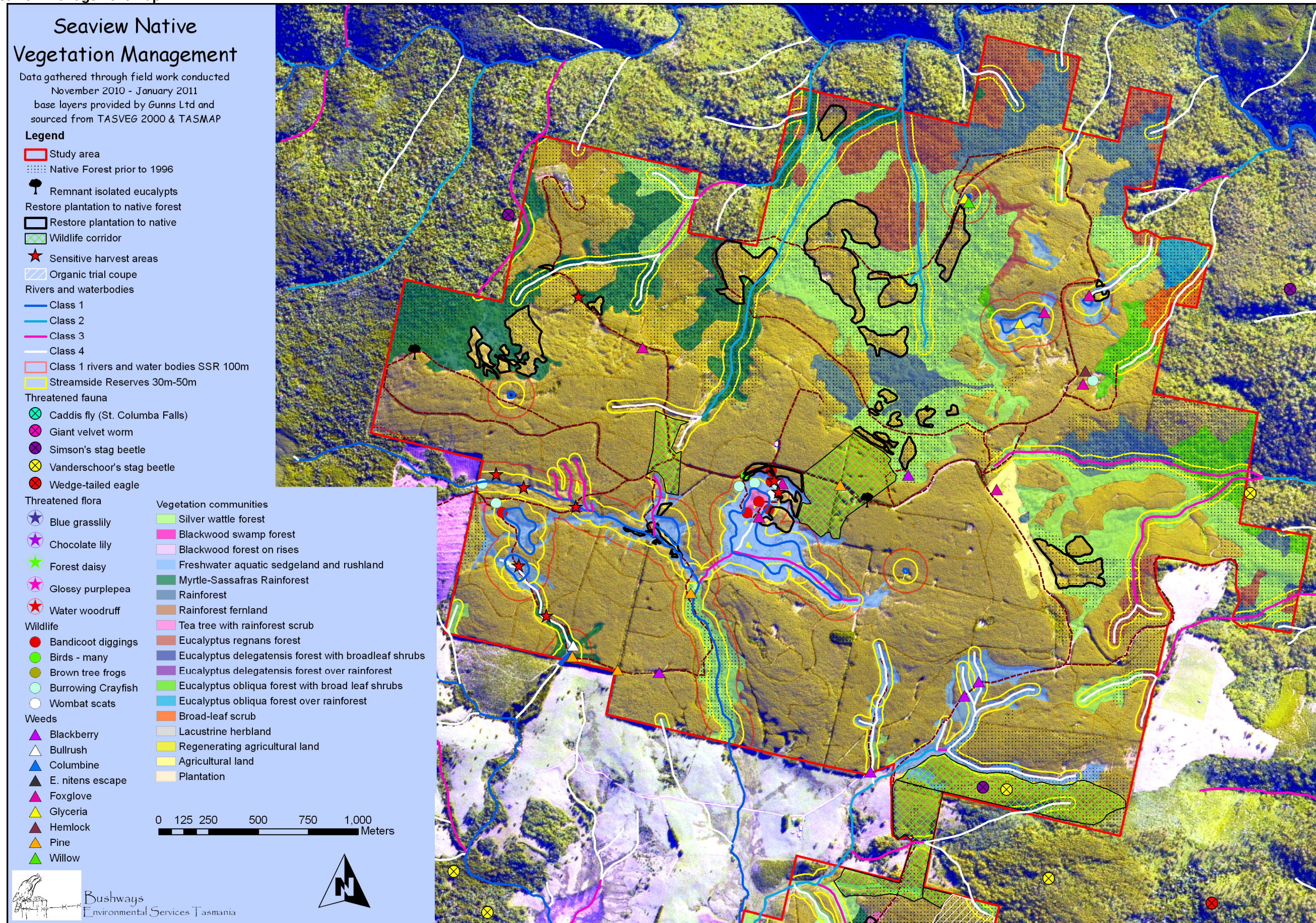


Figure 12 Butterfly, Maclays swallowtail on Tall Riceflower.

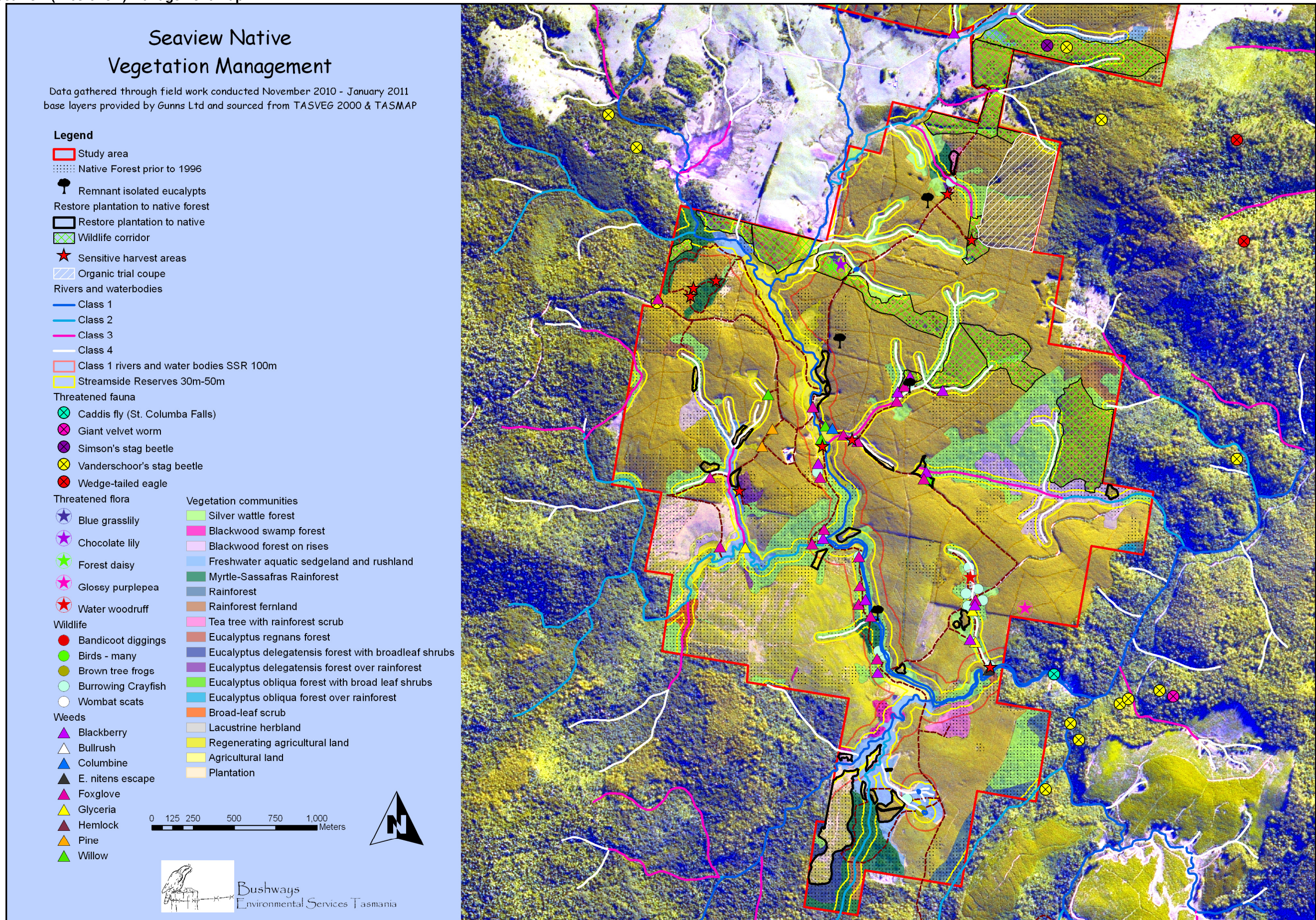


Figure 13 Tiger snake retreating from basking position when disturbed.

6.8 Seaview management map

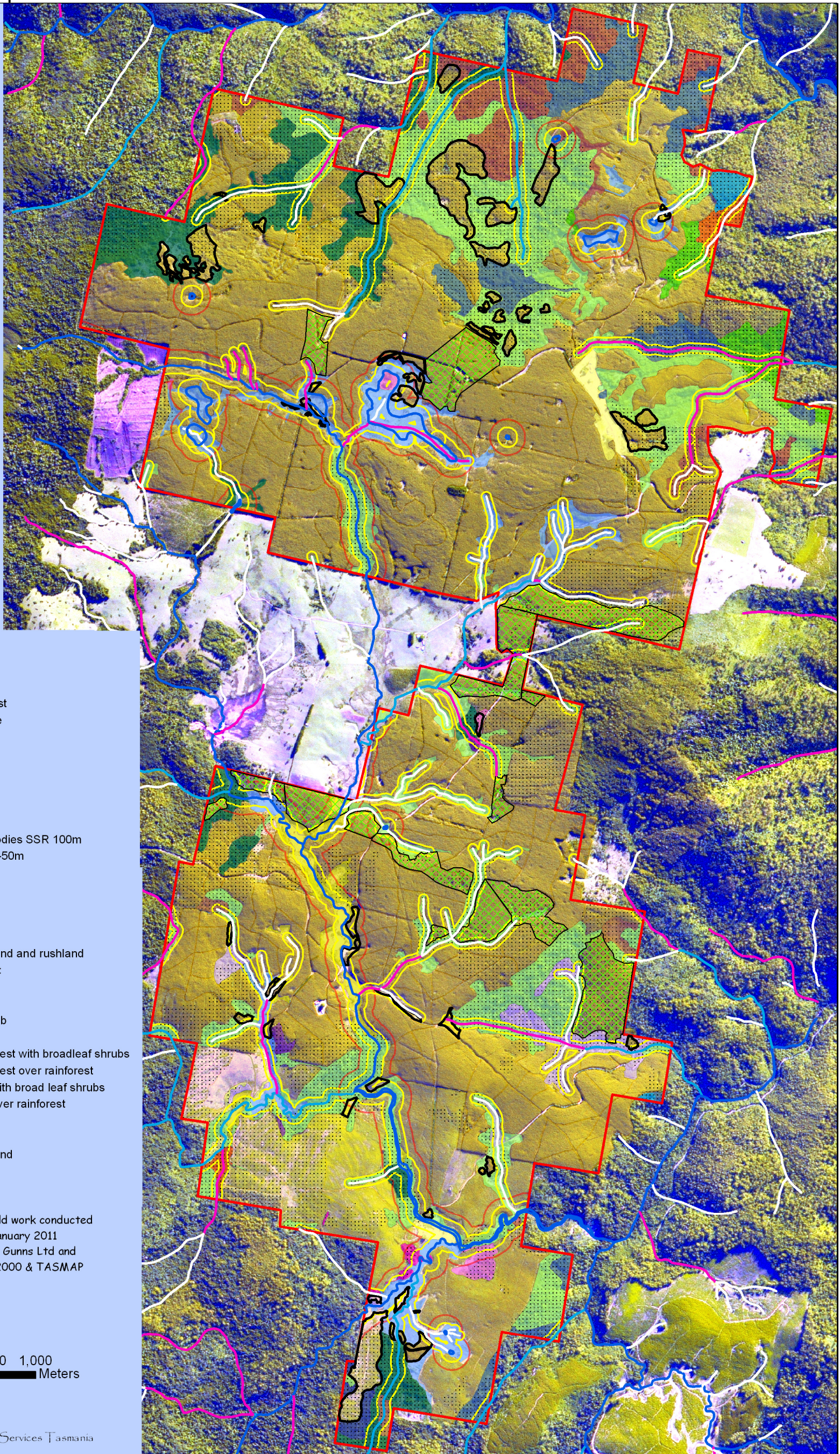


6.9 Seaview (Albertview) management map



6.10 Seaview restoration map

Seaview
 Native
 Vegetation
 Communities,
 Streamside
 Reserves
 and
 Restoration
 Areas



Legend

- Study area
- Native Forest prior to 1996
- Restore plantation to native forest
- Restore plantation to native
- Wildlife corridor
- Rivers and waterbodies
- Class 1
- Class 2
- Class 3
- Class 4
- Class 1 rivers and water bodies SSR 100m
- Streamside Reserves 30m-50m

- Vegetation communities
- Silver wattle forest
- Blackwood swamp forest
- Blackwood forest on rises
- Freshwater aquatic sedgeland and rushland
- Myrtle-Sassafras Rainforest
- Rainforest
- Rainforest fernland
- Tea tree with rainforest scrub
- Eucalyptus regnans forest
- Eucalyptus delegatensis forest with broadleaf shrubs
- Eucalyptus delegatensis forest over rainforest
- Eucalyptus obliqua forest with broad leaf shrubs
- Eucalyptus obliqua forest over rainforest
- Broad-leaf scrub
- Lacustrine herbland
- Regenerating agricultural land
- Agricultural land
- Plantation

Data gathered through field work conducted
 November 2010 - January 2011
 base layers provided by Gunns Ltd and
 sourced from TASVEG 2000 & TASMAP

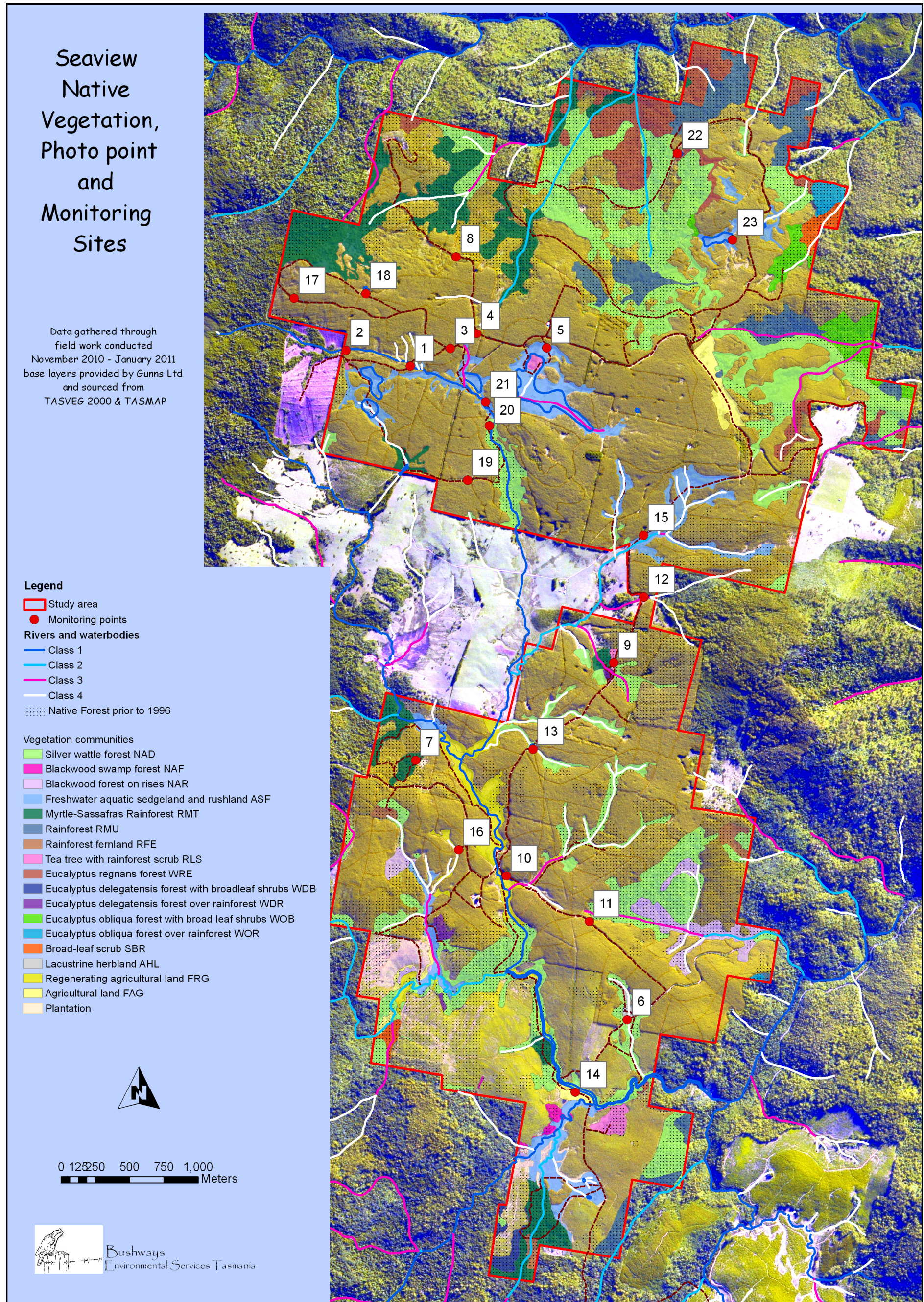


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Bushways
 Environmental Services Tasmania

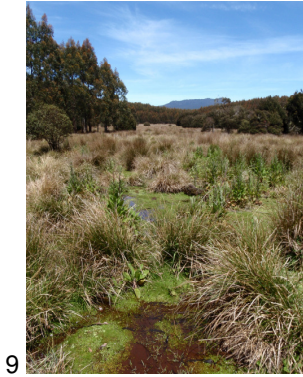
6.11 Seaview photo monitoring site map



6.12 Monitoring of habitat condition

- Conduct ongoing habitat assessments of remnants on Seaview, using the *Tasveg Vegetation Condition Manual* (Michaels, 2006).
- Use monitoring photos and waypoints tabled below to record changes in vegetation.
- Develop monitoring program as required and establish permanent photo points if necessary.
- Regular sampling of aquatic macroinvertebrates on the South George River would be valuable for monitoring river health and water quality. Set up sampling points at strategic positions along the river where access is easy and data will be relevant. This is a good way to involve the community and land managers and has the added benefit of education.
 - A monitoring site at each bridge on the main stream channel in Albertview would be both useful and easy to access. The bridge upstream of Site 14 is downstream of a fairly good condition native riparian zone while the bridge upstream of Site 10 (at the Ralph Falls turn off) is downstream of poorer condition regenerating riparian zone. Monitoring points on tributaries would be useful but will be more difficult to access.
 - Monitoring the northern portion of the South George River would be worthwhile on the main channel at the boundary with neighbouring property Forest Lodge. Tributaries could be accessed from the road.
 - Monitoring of the North George tributaries will be more difficult due to access issues as well as multiple small tributaries and sub catchments. These tributaries should (mostly) be in fairly good condition and may be considered less of a priority to monitor.

6.12.1 Monitoring site photos





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6.12.2 Monitoring site table

| Monitoring site number | Easting | Northern | Monitoring Photo number | Photo direction from waypoint | Site description | Priority |
|------------------------|---------|----------|-------------------------|-------------------------------|--|----------|
| 1 | 574925 | 5430518 | 1, 2, 3, | upstream and down | South George River restore maximum riparian buffer | High |
| 2 | 574455 | 5430633 | 4 | downstream | South George River sensitive harvest, restore maximum buffer | High |
| 3 | 575218 | 5430647 | 5 | west | South George River springs restore with maximum buffer | High |
| 4 | 575409 | 5430757 | 6,7 | east and northeast | Recent harvest restore riparian buffers | High |
| 5 | 575921 | 5430650 | 8,9,10,11 | southwest, south and west | Tea tree wetland protect, restore plantation islands, weed control | High |
| 6 | 576508 | 5425741 | 12,13 | north and south | Fat Creek good condition protect, restore plantation weed control | High |
| 7 | 574965 | 5427637 | 14,15 | northwest | Excellent rainforest Dobson's Creek protect, restore remnant buffer | High |
| 8 | 575260 | 5431316 | 16, 17 | north | North George catchment protect rainforest | High |
| 9 | 576409 | 5428349 | 18,19 | northwest and south | Roadside clearing restore buffer and protect eucalypt forest remnant | High |
| 10 | 575626 | 5426792 | 20 | west | South George River remove willows, restore buffer | |
| 11 | 576231 | 5426459 | 21 | south east | Roadside clearing restore plantation island, revegetate slope | |
| 12 | 576629 | 5428830 | 22 | upstream | (ASF) Good condition riparian area upstream protect | |
| 13 | 575820 | 5427717 | 23 | downstream | Waterbody widen buffer and restore | |
| 14 | 576129 | 5425213 | 24 | upstream | South George River (FAG) restore riparian buffer | |
| 15 | 576626 | 5429284 | 25 | downstream | Good regeneration under threat from clearing and weed invasion | |
| 16 | 575279 | 5426984 | 26 | west | Tributary to South George River remove willows, restore buffer | |
| 17 | 574077 | 5431015 | 27 | downhill | Converted forest proximal to South George River target for restoration | |
| 18 | 574600 | 5431049 | 28 | northwest | Waterbody widen buffer, restore, keep weed free no glyceria! | |
| 19 | 575343 | 5429684 | 29 | ? | Dense blackberry understorey to plantation, weed control | |
| 20 | 575503 | 5430083 | 30, 31 | upstream and down | Pines on waterfall and river, remove all, restore | |
| 21 | 575475 | 5430255 | 32 | upstream | Plantation islands, restore them and riparian buffer | |
| 22 | 576874 | 5432073 | 33 | south east | Waterbody remove willow, contain the glyceria and protect | |
| 23 | 577277 | 5431438 | 34 | west | Waterbody, contain the glyceria and restore buffer | |

6.13 Strategic management priorities and priority areas

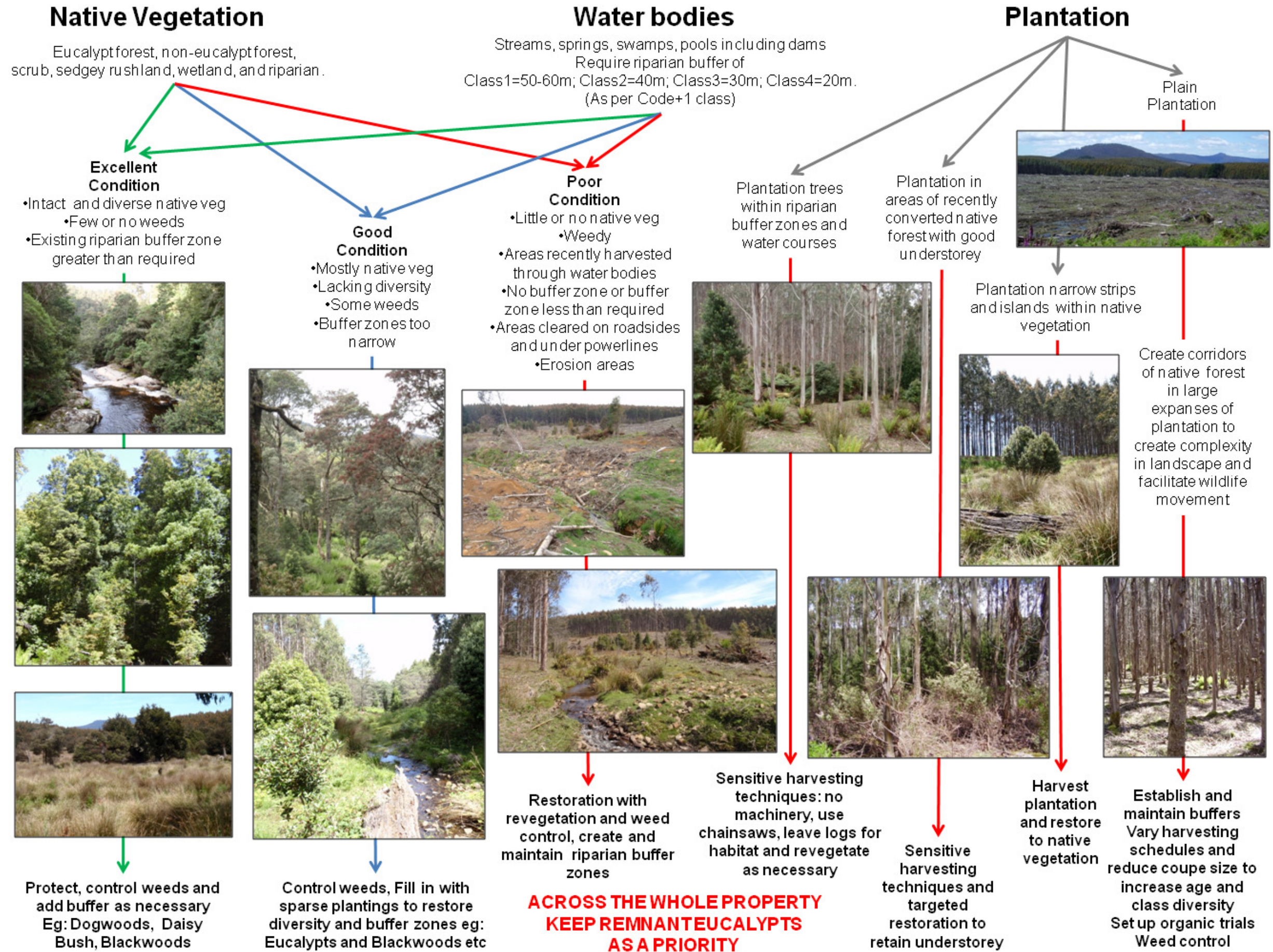
Strategic management priorities:

1. Protect all existing native vegetation– this is the highest priority for management of this site.
2. Protect and regenerate streamside reserves.
3. Restore native vegetation using the overlay of 'native forest prior to 1996'.
4. Optimise restoration energy by following the first harvest in the rotation with restoration.
5. Careful removal of *E.nitens* from streamside reserves and native remnants.
6. Plant local native eucalypts.
7. Restore riparian and wetland buffer zones in recently harvested areas.
8. Leave logs and harvested debris in buffer zones for habitat enhancement.
9. Revegetate the central section of the South George River.
10. Contain and control weeds.
11. Ensure permanent protection of native vegetation with covenants.

Priority areas:

1. Large tract of forest in the north of Seaview - restore plantation islands to consolidate native forest, and control weeds in this otherwise intact forest with streams mostly in excellent condition..
2. South George River and tributaries above the St Columba Falls to the Ralph Falls turn off – extensive native riparian reserves to protect, connect and enhance with weed control, restoration of plantation areas and revegetation at sites 10 and 14.
3. Tea tree swamp at site 5 – careful removal of *E. nitens*, restoration of plantation areas, leave all embedded natural habitat logs in situ, control the few foxgloves, protect existing native vegetation and do not disturb the soil, ground covers and embedded habitat logs.
4. South George River monitoring sites 1, 2, 3 - restore streamside reserves. Careful removal of *E. nitens* from SSR.
5. Protect mature rainforest Dobsons Creek site 7, establish buffers and restore plantation areas.

6.14 Keys for management and restoration



Seaview Native Vegetation Management Plan - RESTORATION GUIDE

A. Native Vegetation and Waterbodies — Excellent Condition



- Intact and diverse native vegetation
- Few or no weeds
- Existing riparian buffer zone, wide enough

Figures: (Left) Many of the healthy remnants on Seaview are rainforests along rivers, and a very few are wet eucalypt forests (right).
(Below) Not all native vegetation is forest. Some excellent sedgeland and teatree remnants exist, especially in boggy areas.



Figure: Willows are few and should be removed.
(Blackberries are common on Seaview and must be controlled. Foxgloves should be contained and not allowed to invade new areas. Pines are few and should be removed.)

- **Protect** and avoid disturbance
- Do not convert or harvest
- Use as reference for revegetation elsewhere

- **Leave healthy sedgelands open**



- **Plant robust buffer** 10-40m wide on sides which will be exposed after harvest, especially around any significant rainforest areas, to protect them from wind throw, myrtle wilt, and edge effects.
- E.g. Plant dogwoods, blackwoods.

Figure: Rainforest (on left) will be exposed when plantation (right) is harvested

- **Control any weeds**



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Seaview Native Vegetation Management Plan - RESTORATION GUIDE

B. Native Vegetation and Waterbodies — Good Condition



- Mostly native vegetation
- Lacking diversity
- Some weeds
- Riparian buffer zones (SSRs) too narrow

Figure: (Left) Much of the forest on Seaview is silver wattle forest, remaining after past cutting/clearing. Although some is in good condition, it lacks key species such as eucalypts.



Figure: (Above) Some native riparian vegetation, but this needs a SSR to protect it in future. Some planting may be necessary if natural regeneration is not sufficient.

- **Sparse plantings** within remnant to restore diversity, especially eucalypts, etc.
- Leave some harvest debris (logs etc) as habitat

- **Plant riparian buffer** to edge of full streamside reserve if natural regeneration insufficient.
- Include robust plantings (e.g. dogwood, blackwood) at edge to buffer from future harvest impacts.

- **Establish streamside reserves (SSRs)** around streams, springs, pools, soaks and swamps. As per FPC for native vegetation plus one class (10m).

- **Careful removal of existing plantation** from SSR.
- **Do not harvest in future within SSR**

- **Control weeds**
- Avoid herbicide use near water (see FPC section E2)

| Watercourse type | Minimum horizontal width from bank to outer edge of SSR |
|--|---|
| Class 1 - rivers | 50 m |
| Class 2 - streams (catchment >100ha) | 40 m |
| Class 3 - streams, running water most of year (catchment 50-100ha) | 30 m |
| Class 4 - watercourses, carrying water part or all of year. Also here springs, soaks, swamps, pools. | 20 - 30 m |

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Seaview Native Vegetation Management Plan - RESTORATION GUIDE

C. Native Vegetation and Waterbodies — Poor Condition



- Little or no native vegetation
- Lacking diversity
- Weedy
- No riparian buffer zone (SSRs) or too narrow
- Recently harvested through waterbody
- Erosion sites

Figure: (Left) Plantation too close to creek, and almost no native plants. Blackberries likely to become worse if not controlled. Removal of plantation from SSR and restoration plantings required.



Figure: (Above) Harvesting of plantation has damaged creek and native vegetation. SSR necessary, and will need planting.

- **Restoration planting** to edge of full SSR as natural regeneration unlikely.
- Plant wide range of local native species, with riparian specialists at water's edge.
- Leave some sedgy areas open.
- Leave some harvest debris (logs etc) for habitat.

- **Control weeds**
- Avoid herbicide use near water (see FPC section E2)

- **Careful removal of existing plantation** from SSR.
- **Do not harvest in future within SSR**

- **Establish streamside reserves (SSRs)** around streams, springs, pools, soaks and swamps. As per FPC for native vegetation plus one class (10m).
- **Do not establish future plantation within SSR**



Figure: Pools are potential habitat for green and golden frogs, aquatic plants and animals. These also require SSR protection.

| Watercourse type | SSR from each bank |
|--|--------------------|
| Class 1 - rivers | 50 m |
| Class 2 - streams (catchment >100ha) | 40 m |
| Class 3 - streams, running water most of year (catchment 50-100ha) | 30 m |
| Class 4 - watercourses, carrying water part or all of year. Also here springs, soaks, swamps, pools. | 20 - 30 m |

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Seaview Native Vegetation Management Plan - RESTORATION GUIDE

P. Plantation

P1: Plantation trees within SSR



- **Careful removal of existing plantation** from streamside reserves (SSRs), avoiding damage to native plants.
- **No machinery** within 5 m of watercourse (see FPC C4.2)
- **No further plantation establishment within SSR**
- **Allow natural regeneration**
- **Restoration plantings** where necessary

P2: Recently converted forest with good native understorey



- **Restore** to native vegetation if possible (especially for SSRs and wildlife corridors) and protect.
- **Careful removal of plantation trees**, avoiding damage to native plants.
- **Allow natural regeneration**
- **Manage for native forest logging?**

All sites:

- **Control weeds**
- **Avoid herbicide** use near water (see FPC section E2)
- **Washdown machinery** before moving from weedy to non-weedy site.

Seaview Native Vegetation Management Plan - RESTORATION GUIDE

P. Plantation

P3: Narrow strips and islands (<1.5ha) of plantation within native vegetation



- **Careful removal of existing plantation**, avoiding damage to native plants.
- **Allow natural regeneration**
- **Restoration plantings** where necessary

P4: Bulk of plantation, to be operated commercially



- **Dispersed harvesting** to create mosaic of stand age classes in smaller coupes.
- **Create corridors** of native forest across large expanses of plantation. Manage for **native forest logging?**

All sites:

- **Control weeds**
- **Avoid herbicide** use near water (see FPC section E2)
- **Washdown machinery** before moving from weedy to non-weedy site.

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8 APPENDICES

Appendix 1. Plants recorded in native vegetation on site

Plants noted during site visits between 27th November and 25th January. These plants were found in areas of native or regenerating vegetation. Major vascular plant species were recorded. More could be expected to be found with a thorough survey, especially within large, healthy, native remnants.

Key:

i = introduced and naturalised in Tasmania; eT = endemic in Tasmania

Threatened species in yellow-

Tasmanian status (*Threatened Species Protection Act 1995*):

en = Endangered; x = Presumed Extinct; v = Vulnerable; r = Rare

Commonwealth status (*Environment Protection and Biodiversity Conservation Act 1999*):

EX = extinct; CR = Critically Endangered; EN = Endangered; VU = Vulnerable

| Family | Scientific name | Common name | Status |
|--|---------------------------------|-------------------------|--------|
| Dicotyledonae (broad leaved plants) | | | |
| APIACEAE | <i>Conium maculatum</i> | hemlock | i |
| | <i>Hydrocotyle hirta</i> | hairy pennywort | |
| ASTERACEAE | <i>Bedfordia salicina</i> | tasmanian blanketleaf | eT |
| | <i>Cassinia aculeate</i> | dollybush | |
| | <i>Cassinia trinerva</i> | veined dollybush | |
| | <i>Cirsium vulgare</i> | spear thistle | i |
| | <i>Euchiton sp.</i> | cottonleaf | |
| | <i>Euchiton involucratus</i> | star cottonleaf | |
| | <i>Olearia argophylla</i> | musk daisybush | |
| | <i>Olearia lirata</i> | forest daisybush | |
| | <i>Olearia phlogopappa</i> | common dusty daisybush | |
| | <i>Cirsium vulgare</i> | spear thistle | i |
| | <i>Ozothamnus ferrugineus</i> | tree everlastingbush | |
| | <i>Ozothamnus thyrsoides</i> | arching everlastingbush | |
| | <i>Senecio linearifolius</i> | common fireweed | |
| | | groundsel | |
| | <i>Senecio minimus</i> | shrubby fireweed | |
| CAMPANULACEAE | <i>Pratia pedunculata</i> | matted pratia | |
| CAROPHYLLACEAE | <i>Cerastium sp.</i> | mouse ear | |
| ELAEOCARPACEAE | <i>Aristotelia peduncularis</i> | heartberry | eT |
| EPACRIDACEAE | <i>Leptecophylla juniperina</i> | common pinkberry | eT |
| | <i>Monotoca glauca</i> | goldey wood | |
| FABACEAE | <i>Lotus sp.</i> | birdsfoot trefoil | i |
| | <i>Oxylobium ellipticum</i> | golden shaggybea | |
| | <i>Nothofagus cunninghamii</i> | myrtle beech | |
| | <i>Pultenaea juniperina</i> | prickly beauty | |
| GERANIACEAE | <i>Geranium potentilloides</i> | mountain cranesbill | |
| HALORAGACEAE | <i>Gonocarpus micranthus</i> | creeping raspwort | |
| MIMOSACEAE | <i>Acacia dealbata</i> | silver wattle | |
| | <i>Acacia melanoxylon</i> | blackwood | |
| MONIMIACEAE | <i>Atherosperma moschatum</i> | sassafras | |

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Appendix 1 (continued). Plants recorded in native vegetation on site

| Family | Scientific name | Common name | Status |
|---|------------------------------------|------------------------|---------------|
| MYRTACEAE | <i>Eucalyptus delegatensis</i> | gumtopped stringybark | eT |
| | <i>Eucalyptus nitens</i> | shining gum | i |
| | <i>Eucalyptus obliqua</i> | stringybark | |
| | <i>Eucalyptus regnans</i> | giant ash | |
| | <i>Eucalyptus viminalis</i> | white gum | |
| | <i>Leptospermum lanigerum</i> | woolly teatree | |
| OLEACEAE | <i>Notelaea ligustrina</i> | native olive | |
| OXALIDACEAE | <i>Oxalis perennans</i> | grassland woodsorrel | |
| PITTOSPORACEAE | <i>Pittosporum bicolor</i> | cheesewood | |
| POLYGONACEAE | <i>Acetosella vulgaris</i> | sheep sorrel | i |
| | <i>Muehlenbeckia gunnii</i> | forest lignum | |
| RANUNCULACEAE | <i>Aquilegia vulgaris</i> | columbine | i |
| | <i>Clematis aristata</i> | mountain clematis | |
| | <i>Ranunculus sp.</i> | buttercup | |
| | <i>Ranunculus repens</i> | creeping buttercup | i |
| ROSACEAE | <i>Acaena novae-zelandiae</i> | common buzzy | |
| | <i>Rubus fruticosus</i> | blackberry | i |
| RUBIACEAE | <i>Asperula conferta</i> | common woodruff | |
| | <i>Asperula subsimplex</i> | water woodruff | r |
| | <i>Coprosma quadrifida</i> | native currant | |
| | <i>Coprosma nitida</i> | mountain currant | |
| SALICACEAE | <i>Salix fragilis</i> | crack willow | i |
| SCROPHULARIACEAE | <i>Digitalis purpurea</i> | foxglove | i |
| | <i>Veronica gracilis</i> | slender speedwell | |
| STYLIDACEAE | <i>Stylidium dilatatum</i> | broadleaf triggerplant | |
| THYMELAEACEAE | <i>Pimelea drupacea</i> | cherry riceflower | |
| | <i>Pimelea ligustrina</i> | tall riceflower | |
| URTICACEAE | <i>Urtica urens</i> | stinging nettle | i |
| VIOLACEAE | <i>Viola hederacea</i> | ivy leaf violet | |
| WINTERACEAE | <i>Tasmannia lanceolata</i> | mountain pepper | |
| Gymnospermae (conifers) | | | |
| PODOCARPACEAE | <i>Phyllocladus aspleniifolius</i> | celerytop pine | eT |
| | <i>Pinus radiata</i> | pine | i |
| Monocotyledonae (narrow leaved plants) | | | |
| CYPERACEAE | <i>Carex appressa</i> | tall sedge | |
| | <i>Gahnia grandis</i> | cutting grass | |
| | <i>Isolepis subtilissima</i> | dwarf clubsedge | |
| JUNCACEAE | <i>Juncus astreptus</i> | rigid rush | eT |
| | <i>Juncus pallidus</i> | pale rush | |
| | <i>Juncus procerus</i> | tall rush | |
| | <i>Juncus sarophorus</i> | broom rush | |
| | <i>Luzula meridionalis</i> | southern woodrush | |
| LILIACEAE | <i>Drymophila cyanocarpa</i> | turquoise berry | |
| ORCHIDACEAE | <i>Chiloglottis cornuta</i> | green bird-orchid | |
| | <i>Thelymitra pauciflora</i> | slender sun-orchid | |

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Appendix 1 (continued). Plants recorded in native vegetation on site

| Family | Scientific name | Common name | Status |
|------------------|------------------------------|--------------------|---------------|
| POACEAE | <i>Agrostis capillaris</i> | browntop bent | i |
| | <i>Anthoxanthum odoratum</i> | sweet vernalgrass | i |
| | <i>Ehrharta stipoides</i> | weeping grass | |
| | <i>Glyceria maxima</i> | reed sweetgrass | i |
| POTAMOGETONACEAE | <i>Potamogeton ochreatus</i> | blunt pondweed | |

Appendix 2. Threatened fauna possible on site

Species which have been recorded within 5 km of the site, or which may occur in suitable habitat on the Ringarooma and Victoria mapsheets (Natural Values Atlas 11/2010; Bryant & Jackson 1999).

Comments are based on information obtained from Tasmania's Threatened fauna Handbook, Bryant & Jackson, 1999.

| Scientific name | Common name | Tas. status TSPA 1995 | Cwth status EPBC 1999 | Comments |
|---|--------------------------------|-----------------------|-----------------------|--|
| <i>Accipiter novaehollandiae</i> | grey goshawk | e | | Nesting habitat usually occurs along watercourses in wet forest with old-growth or regrowth older than 50 years particularly in areas containing <i>Acacia melanoxylon</i> . A limited amount of this vegetation occurs here making this species likely. |
| <i>Aquila audax fleayi</i> | wedge-tailed eagle | e | EN | Nests recorded nearby. Possible habitat in old-growth forest however potential nesting sites are limited to the north of the site. Unlikely to nest within plantation area, as activity would disturb any nesting areas. |
| <i>Beddomeia tasmanica</i> | freshwater snails | r | | Likely and Potential habitat on site, prefers good condition riparian areas with wide buffer, rotting debris and diverse native vegetation. |
| <i>Dasyurus maculatus maculatus</i> | spotted-tailed quoll | r | VU | Previously recorded in the area. Potential habitat in dense vegetation with fallen logs onsite. Eastern quoll (of high conservation significance and extinct on the mainland) also possible here. Both species highly likely on site. |
| <i>Hoplogonus simsoni</i> | Simpson's stag beetle | v | VU | Previously recorded in the area. Potential habitat in tall, relatively undisturbed wet eucalypt forest, mixed forest, rain forest and area of change between wet and dry eucalypt forest onsite. Likely on site. |
| <i>Hoplogonus vandershoori</i> | Vandershoor's stag beetle | v | VU | Previously recorded in the area. Potential habitat in tall, relatively undisturbed wet eucalypt forest, mixed forest, rain forest and area of change between wet and dry eucalypt forest onsite. Likely on site. |
| <i>Hydrobiosella sagitta</i> | caddis fly (St. Columba falls) | r | | Previously recorded in the area. Potential habitat in freshwater environments including springs and streams onsite. This species only found near Pyengana. Likely on site. |
| <i>Lathamus discolor</i> | swift parrot | e | EN | Previously recorded in the area. <i>Eucalyptus globulus</i> and <i>Eucalyptus ovata</i> forest required for foraging not present therefore this species not likely on site. |
| <i>Oreixenica ptunarra subsp. Angelia</i> | ptunarra brown butterfly | v | | Previously recorded in the area. Preferred habitat in open tussock grassland which is limited on site. Species unlikely on site. |
| <i>Perameles gunnii</i> | eastern barred bandicoot | | VU | Habitat mapping suggests that the site may be suitable habitat for this species. Potential habitat in open grassy areas with dense scrubby vegetation areas. Species will adapt to many different and modified habitats. Multiple diggings were observed on site making species highly likely. |
| <i>Prototroctes maraena</i> | Australian grayling | v | VU | Not likely here as waterfall a barrier and does not inhabit upper reaches |
| <i>Tasmanipatus barrette</i> | giant velvet worm | r | | Previously recorded in the area. Potential habitat in wet forest with rotting logs on site. Species is likely on site. |
| <i>Thylacinus cynocephalus</i> | thylacine | x | EX | Previously recorded in the area. As species is listed as extinct it is highly unlikely on site. |
| <i>Tyto novaehollandiae castanops</i> | masked owl (Tasmanian) | e | | Habitat mapping suggests that the area may be suitable for this species, however there are no suitable large nesting hollows over most of the site. Species may hunt on site and may nest in eucalypt forest in the north or in nearby reserves. |

Appendix 3. Threatened flora on site.

Species which have been recorded within 5 km of the site (Natural Values Atlas 11/2010; Bryant & Jackson 1999. Comments are based on information obtained from the Threatened species Unit of DPIPWE.

Key:

Tasmanian status (*Threatened Species Protection Act 1995*):

en = Endangered; x = Presumed Extinct; v = Vulnerable; r = Rare

Commonwealth status (*Environment Protection and Biodiversity Conservation Act 1999*):

EX = extinct; CR = Critically Endangered; EN = Endangered; VU = Vulnerable.

| Scientific name | Common name | Tas. status TSPA 1995 | Cwth status EPBC 1999 | Comments |
|--|-------------------|--------------------------|--------------------------|--|
| <i>Arthropodium strictum</i> | chocolate lily | r | | Species inhabits open forest, dry hillsides and grasslands predominantly of the eastern side of the Tasmania. Records on site, however habitat converted to plantation. |
| <i>Brachyscome sieberi</i> <i>var. gunnii</i> | forest daisy | r | | This species is endemic to Tasmania. It is predominantly located on the eastern side of the state in wet sclerophyll forest however has been found in areas of the south-west. Records on site, however habitat converted to plantation |
| <i>Caesia calliantha</i> | blue grasslily | r | | This species found predominantly throughout the midlands in grasslands and grassy woodlands. Also known to inhabit roadsides. Records on site, however habitat converted to plantation |
| <i>Corunastylis nuda</i> | tiny midge-orchid | r | | Not found on site |
| <i>Hovea corrickiae</i> | glossy hovea | r | | This species is found on rocky sites along riparian zones with wet sclerophyll understorey shrubs in open forest. Only small, scattered populations occur in the north-east of Tasmania. Records on site, however habitat converted to plantation |
| <i>Scleranthus brockiei</i> | mountain knawel | r | | Not found on site |

Appendix 4. Native plants for revegetation at Seaview

| Scientific name | Common name | Special comments |
|---|-------------------------|--|
| MAJOR REVEGETATION SPECIES – should form greater part of most plantings | | |
| <i>Acacia melanoxylon</i> | blackwood | Plant as buffer for rainforests etc. |
| <i>Atherosperma moschatum</i> | sassafras | |
| <i>Eucalyptus delegatensis</i> | gumtopped stringybark | |
| <i>Eucalyptus obliqua</i> | stringybark | |
| <i>Eucalyptus regnans</i> | giant ash | |
| <i>Eucalyptus viminalis</i> | white gum | |
| <i>Nothofagus cunninghamii</i> | myrtle beech | |
| <i>Pomaderris apetala</i> | common dogwood | Plant as buffer for rainforests etc. |
| <i>Tasmannia lanceolata</i> | mountain pepper | |
| <i>Pittosporum bicolor</i> | cheesewood | |
| ADDITIONAL SPECIES FOR DIVERSITY AT MANY SITES | | |
| <i>Acacia dealbata</i> | silver wattle | Not necessary to plant at most sites, already common. Useful quick species where no existing regeneration. |
| <i>Bedfordia salicina</i> | Tasmanian blanketleaf | |
| <i>Olearia argophylla</i> | musk daisybush | |
| <i>Olearia lirata</i> | forest daisybush | |
| <i>Ozothamnus ferrugineus</i> | tree everlastingbush | |
| <i>Monotoca glauca</i> | goldey wood | |
| <i>Notelaea ligustrina</i> | native olive | |
| <i>Phyllocladus aspleniifolius</i> | celerytop pine | |
| UNDERSTOREY PLANTS– could be planted on roadsides where low plants are needed, and also to add diversity to other sites | | |
| <i>Carex appressa</i> | tall sedge | |
| <i>Clematis aristata</i> | mountain clematis | Climber. Plant along fences. |
| <i>Coprosma quadrifida</i> | native currant | |
| <i>Blechnum nudum</i> | fishbone waterfern | |
| <i>Dianella tasmanica</i> | forest flaxlily | |
| <i>Lomandra longifolia</i> | sagg | |
| <i>Ozothamnus thyrsoides</i> | arching everlastingbush | |
| <i>Poa labillardierei</i> | tussockgrass | Seed could be spread on bare ground on all roadsides. |
| <i>Ozothamnus thyrsoides</i> | arching everlastingbush | |
| <i>Polystichum proliferum</i> | mother shieldfern | |
| <i>Pultenaea juniperina</i> | prickly beauty | |
| FOR DRIER SITES – slopes and ridgetops, better drained eucalypt forests | | |
| <i>Banksia marginata</i> | banksia | |
| <i>Cassinia aculeata</i> | dollybush | |
| <i>Eucalyptus delegatensis</i> | gumtopped stringybark | |
| <i>Eucalyptus obliqua</i> | stringybark | |
| <i>Eucalyptus regnans</i> | giant ash | |
| <i>Eucalyptus viminalis</i> | white gum | |
| <i>Monotoca glauca</i> | goldey wood | |
| <i>Olearia lirata</i> | forest daisybush | |
| <i>Oxylobium ellipticum</i> | golden shaggybea | |
| <i>Ozothamnus thyrsoides</i> | arching everlastingbush | |
| <i>Pultenaea juniperina</i> | prickly beauty | |
| FOR WETTER AREAS – species for regenerating sedgeland, other boggy areas, around wetlands and springs, and on river banks. | | |
| <i>Leptospermum lanigerum</i> | woolly teatree | |
| <i>Carex appressa</i> | tall sedge | |
| <i>Gahnia grandis</i> | cutting grass | |
| <i>Juncus</i> spp. | Rushes | |

