Environmental Management Plan for Seymour Conservation Area

January 2023

Figure 1 Coastal wetlands and scrub communities, Seymour Conservation Area

Prepared for Seymour Community Action Group Inc. (SCAGI)

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Acknowledgements

This project has been undertaken on the lands of the leetermairemener people. Long Point was referred to as wuggatena poeenta and Doctors Creek as wuggatena menennya. Bushways Environmental Services – Tasmania and The Seymour Community Action Group Inc acknowledge and pay respect to the palawa (Tasmanian Aboriginal) people as the Traditional Owners of lutruwita (Tasmania). We remember and honour their Elders, past and present and Tasmanian Aboriginal people as the continuing custodians of the rich cultural heritage of lutruwita.

Bushways thanks Quentin Smith, Daniel Steiner and members of Seymour Community Action Group and Todd Dudley, Northeast Bioregional Network for assistance and consultation during field work and the preparation of this report.

Mapping data in this draft has been taken from the TASMAP Series, NRE Natural Values Atlas, The List, TASVEG 4, Seymour Community Action Group records and field work conducted by Helen Morgan, Bushways.

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1 Executive Summary

Seymour Conservation Area on the east coast of Tasmania has recently been significantly enlarged with the addition of Crown land containing the wetland Seymour Swamp. This proclamation (Tasmanian Government Gazette 2022) was achieved due to the high conservation values of threatened vegetation communities and threatened species habitat and the commitment of the community to recognise and protect these values. Seymour Community Action Group Incorporated (SCAGI) is a group of volunteer residents of Seymour who have taken responsibility for restoring native habitat and weed control in the reserve for many years. In January 2023 SCAGI engaged Helen Morgan (Bushways Environmental Services Tasmania) to assess the current condition of the natural values and restoration of Seymour Conservation Area and work with the group to produce recommendations for the reserve's ongoing management for restoration under its new status. The objectives of the Environmental Management Plan for Seymour Conservation Area are to provide a current assessment of the 1) natural values of Seymour Conservation Area 2) progress and success of the restoration program 3) threats to the natural values and their management.

Seymour Conservation Area extends from Templestowe Lagoon and Beach south to Douglas River mouth and includes Templestowe Beach, Long Point headland, Seymour Beach and the wetland, Seymour Swamp. Seymour Conservation Area supports three threatened vegetation communities, Freshwater aquatic sedgeland and rushland, *Melaleuca ericifolia* swamp forest and Saline sedgeland/rushland, a Temperate Coastal Saltmarsh community. Other vegetation communities identified include Coastal heathland, Lowland grassy sedgeland, Sea bird rookery complex and Regenerating cleared land. Extensive habitat for threatened species occurs in the wetlands and surrounding vegetation, restoration areas, lagoon, beaches, rocky headlands and ocean. Threatened fauna previously recorded in Seymour Conservation Area include green and gold frog, Tasmanian devil, fairy tern, hooded plover, little tern, white bellied sea eagle and wedge-tailed eagle. Threatened flora species recorded in Seymour Conservation Area include southern swamp grass and small leaf glycine.

Restoration of native habitat is progressing well with healthy, good condition remnant vegetation, well established revegetation and effective weed control through impressive community effort. Opportunities for further restoration include continuing with current works and extending the rehabilitation effort west of the Templestowe Beach access track. A considerable number of potential threats and issues to manage were identified and discussed on site such as habitat loss, climate change, access, weeds, water quality, roaming pets, feral animals, inappropriate development, fire, disease, and acid sulfate soils.

SCAGI have always demonstrated willingness to engage and work with other stakeholders, partners and authorities for good practice and effective management of the reserve. The new status of the reserve now offers opportunity for greater collaboration and implementation between SCAGI, National Parks and the community for nature conservation. The following report and recommendations are intended to

support and facilitate ongoing communication and management between SCAGI, NPWS, the community and all stakeholders.

Summary of priority actions recommended to address management issues include:

1. Vegetation
    a. Protect and maintain existing remnant vegetation maintain edges as buffers
    b. Revegetation with local native species to close gaps and follow up after weed control
    c. Exclude fire from sensitive areas like wetlands and dunes, reduce frequency of planned burns to minimum 15 years
2. Access
    a. Install boom gate at the Champ St entrance of the track north to Templestowe Beach with key for authorised access only, permits necessary
    b. No vehicles on Seymour Beach except to access one designated boat launching area
    c. No camping in the reserve
    d. Install clear signage for regulations regarding access
3. Dogs and cats
    a. Improve dog control with clear signage and fine enforcement
    b. Engage with local community and other stakeholders to improve cat control
4. Biosecurity and soils
    a. Weed control – gorse, blackberries, thistles and other weeds
    b. Install and use weed and disease control hygiene station at Champ St entrance to reserve
    c. Track closure and rehabilitation, erosion and drainage control
    d. Seek advice from NRE if acid sulfate soil disturbance is suspected
5. Monitoring programs
    a. Monitoring programs, maintain records for adaptive management
        i. regeneration, revegetation, weeds
        ii. birds, frog calls, feral cat presence
        iii. water quality

2 Introduction

2.1 Background

Seymour Conservation Area on the east coast of Tasmania has recently been significantly enlarged with the addition of Crown land containing the wetland, Seymour Swamp. This proclamation (Tasmanian Government Gazette 2022) was achieved due to the high conservation values of threatened vegetation communities and threatened species habitat and the commitment of the community to recognise and protect these values. The wetland of Seymour Swamp is the heart of the reserve and lies in the low elevation country behind the dunes of Templestowe Lagoon and Beach.

Seymour Community Action Group formed in the mid-1980s and began to care for Seymour Swamp Crown Lands by undertaking sand blow stabilisation, threatened species habitat protection (shore birds and green and gold frog), tree planting and weed control. Some years later the group saved the wetlands from being drained and subdivided which marked the beginnings of their negotiations with stakeholders and authorities to manage the land for nature conservation. A fuel reduction burn at Seymour Swamp Crown Lands was carried out by National Parks and Wildlife Service in August 2016 giving the group an opportunity to embark on weed control of the gorse and a native revegetation program. The group became incorporated as Seymour Community Action Group Incorporated (SCAGI) in 2016 with a commitment to native restoration of the wetlands and its long term protection.

SCAGI has worked closely with Department of Primary Industries, Water and the Environment (DPIPWE), now Natural Resources and Environment Tasmania (NRE), National Parks and Wildlife Service (NPWS), Break O'Day Council (BOD), NRM North (NRMN), University of Tasmania (UTAS) and North East Bioregional Network (NEBN), to restore the wetland and to upgrade the formal conservation status for the Crown Land Reserve to Conservation Area. SCAGI also worked with other community based groups such as Landcare Tasmania, Bird Life Tasmania, Planning Matters Alliance Tasmania, Friends Of Freycinet Group, Earth Ocean Network Bicheno, Green Army, Tasmanian Fire Service (TFS) and local and state-wide businesses for grants, environmental planning and implementation of restoration works. Works included cat trapping, gorse mulching and spraying, slashing, manual weed control, boom spraying, drone aerial spraying, car park upgrade, access barriers, educational signage, traffic control, dog control, shore bird fencing, rubbish removal, revegetation and ongoing maintenance, seed collection, field days, workshops and working bees and road and track management.

SCAGI have diligently mapped and documented their restoration program since 2016 with volunteer time and skills including drone photography stitched together for landscape scale monitoring of the reserve. Planning documents have guided the group and kept other stakeholders informed and include Gorse Strategy (2017), Revegetation Plan (2018), Seymour Wetland Weed Management Plan (2019), Weed and Disease Management Plan for the Gorse Eradication Strategy for Seymour Wetlands Restoration (2020), Vol.2 Gorse Eradication Strategy for Seymour Wetlands Restoration (2022).

Fire has been both a management tool, used by NPWS, and a risk since the first fire in 2016 when a planned burn in 2017 escaped and developed into a peat fire and took many days and resources to control. Other challenges have been vandalism (damage to signs, barriers and beach tracks), illegal camping and fire lighting, the global pandemic, which limited meetings and on ground help and cancelled events, extended wet weather which made access difficult and delayed works, the proposed and approved water licence and Seymour Dam adjacent to Doctors Creek – a threat to the natural values of Templestowe Lagoon, beach and Seymour Conservation Area – and a grounded yacht with potential fuel and rubbish pollution. A full history of SCAGI activities with stories of tasks and achievements, people involved, chronology, photographs, plans and maps can be found on www.sgaci.org

In 2021 Seymour Community Action Group Incorporated were recognised for their commitment and achievements and won the Landcare Tasmania Community Group Award for their restoration work and the Seymour Wetland Restoration Project area was officially reclassified and proclaimed under the Nature Conservation Act 2002 as part of the Seymour Conservation Area in June 2022. This meant the reserve was increased in size from 61 ha to 115 ha, nearly double, and is now formally recognised as being of high conservation value and part of the National Reserve Estate. The aims and objectives of SCAGI for Seymour Wetlands are:

- To restore and sympathetically enhance the endemic values of the wetland site with respect to its integration with the adjoining Seymour Conservation Area.
- To provide appropriate safe access and opportunity for community stewardship and appreciation of coastal areas and values.
- To foster community engagement, pride and health through participation in environmental restoration works.
- To continue to work collaboratively with the Parks and Wildlife Service to preserve, protect and manage Tasmania's reserved lands, to enrich our community.

In January 2023 SCAGI engaged Helen Morgan (Bushways Environmental Services Tasmania) to assess the current condition of the natural values and restoration of Seymour Conservation Area and work with the group to produce recommendations for the reserve's ongoing management for restoration under its new status.

2.2 Objectives of this report

The objectives of the Environmental Management Plan for Seymour Conservation Area are to provide a current assessment of the:

1. natural values of Seymour Conservation Area,
2. progress and success of the restoration program,
3. threats to the natural values and their management

The group particularly want the report to guide the future management of the area by addressing the threats and impacts, manage the weed growth of the last few wet years and continue the positive trajectory of ecological condition that SCAGI has gained. The group's vision is to restore the area to be like Winifred Curtis Reserve in nativeness and quality of habitat.

3 Method

3.1 Background

Members of SCAGI met with Helen Morgan, Bushways Environmental Services Tasmania on site 6th and 7th January 2023 at the Seymour Conservation Area to provide a history and tour of the restoration works and develop an environmental management plan for the reserve.

Previous reports were referred to for history and progress of restoration of Seymour Conservation Area (https://scagi7215.wixsite.com/scagi) and a desktop assessment was made from the List (Land Information System Tasmania https://maps.thelist.tas.gov.au) and Natural Values Atlas (https://www.naturalvaluesatlas.tas.gov.au January 2023) for all threatened flora and fauna, vegetation communities and biosecurity risks recorded within 5 kilometres of the site.

3.2 Site description and study area

Seymour Conservation Area is situated on the east coast of Tasmania 1 km east of the small settlement of Seymour. Seymour Conservation Area includes the coast north, east and south of Seymour with a narrow coastal reserve on the southeast shore of Templestowe Lagoon, the southern end of Templestowe Beach, Seymour Beach as far south as the Douglas River, the rocky foreshore of Long Point headland including Sneaker Rocks and Black Dog Reef, with some extra extensions of the reserve between private land parcels, and a larger area of land surrounding the wetlands, Seymour Swamp. Doctors Creek flows into Templestowe Lagoon at the north-western extent of the reserve. The wetlands are located 607367E, 5378076N. Seymour Conservation Area has ~9kms of coastline and ~10.5 kms of boundary neighbouring over 20 private land parcels. More small titles exist in Seymour surrounded by the reserve but not immediately adjoining the boundary.

The reserve is 2 km east of Douglas Apsley National Park and connects north to the coastal reserve along Templestowe Beach and Lagoon and south to Denison Rivulet Conservation Area. Conservation covenants on private land join the north-western boundary of Seymour Conservation Area, strengthening the ecological connection to Doctors Creek and Templestowe Lagoon.

The study area was the low-lying coastal land surrounding and including the wetlands, the reserve around the rocky foreshore of Long Point, and the dunes connecting to the southern end of Templestowe beach and lagoon.

3.3 Field survey

The field survey was undertaken over two days 6th and 7th January 2023 by Helen Morgan supported by Todd Dudley, Quentin Smith, Daniel Steiner with local knowledge. Transects were walked (11 kms) and driven (4 kms). During the field survey sites were observed and noted for the type and condition of

native vegetation communities, flora species, fauna signs, stage of native regeneration, the presence and growth stage of gorse and other weeds.

Areas of special ecological value and high priority for either ongoing maintenance or management intervention were noted, as well as areas where native regeneration and restoration has been successful. Management issues and threats to natural values in addition to weeds were noted and discussed, such as erosion of tracks, illegal camping and fires, loss of seabird and shore bird habitat, vehicles on beaches. Restoration methods previously used on site were discussed and considered for ongoing management.

Site and locations of any notable features were photographed and recorded by handheld GPS. Locations in this report were taken in GDA94. All botanical names are in accordance with "A Census of the Vascular Plants of Tasmania, including Macquarie Island" (de Salas and Baker 2022).

3.4 Limitations

This survey and report has briefly visited the natural values of the area. Some plant species are not visible above ground at this time, making identification impossible. Some species vary in abundance from year to year. Many orchids emerge in different seasons or sporadically under conditions poorly understood. Bryophytes and lichens were not surveyed. A full fauna survey was not carried out. However, signs of fauna and any potential habitat for threatened fauna were noted.

3.5 Assessment of Conservation Significance

"Threatened" flora and fauna species are those listed at a state level on schedules 3, 4 or 5 of the Tasmanian *Threatened Species Protection Act 1995*, as well as those listed at a Commonwealth level on the *Environment Protection and Biodiversity Conservation Act 1999*. The term "threatened" or "listed" is used to cover all the categories on these schedules, including critically endangered, endangered, vulnerable and rare (and also presumed extinct or extinct in the wild). These terms are further explained in Appendix 1. Threatened native vegetation communities are those listed on schedule 3a of the Tasmanian *Nature Conservation Act 2002* (and clarified in the Threatened Native Vegetation Communities list, DPIPWE 2014), as well as those listed at a Commonwealth level on the *Environment Protection and Biodiversity Conservation Act 1999.*

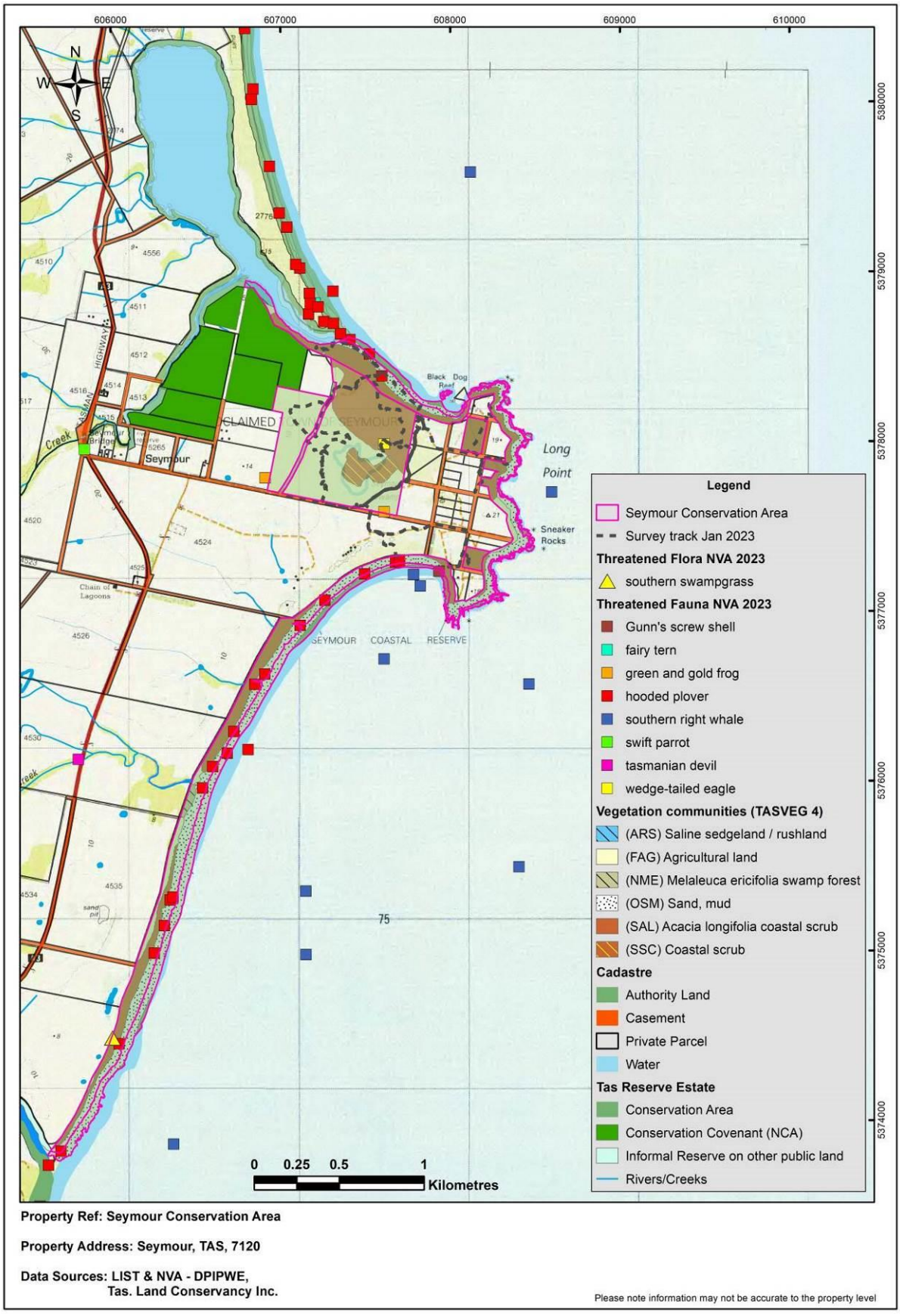


Figure 2 Seymour Conservation Area, survey track, threatened flora and fauna records (NVA 2023) and vegetation communities (TASVEG 4)

4 Natural values

4.1 Vegetation communities

Native vegetation in and around Seymour Swamp includes several vegetation communities in different stages of regeneration since the fire in 2016 and likely previous disturbances such as clearing, drainage, grazing, burning and vehicle access. The vegetation is a complex of wetland, sedge and heath, shrub and remnant woodland communities, and regenerating cleared land within the lowland area surrounded by dunes. At a broad scale TASVEG (4) has mapped Seymour Swamp with two different coastal scrub communities (Coastal scrub and *Acacia longifolia* coast scrub), and agricultural land. The survey revealed more complexity in the vegetation, which contains three threatened vegetation communities 1) Freshwater aquatic sedgeland and rushland, 2) *Melaleuca ericifolia* swamp forest and 3) Saline sedgeland/rushland, a Temperate Coastal Saltmarsh community. Other vegetation communities identified include Coastal heathland, Lowland grassy sedgeland, Sea bird rookery complex and the bush regenerating in the agricultural land was classed as Regenerating cleared land.

A species list gathered during the survey can be found in Appendix 2. Other species are likely to be present and another survey at a different seasonal time would find more species. Remapping the vegetation communities was not possible this survey but the vegetation descriptions below will help managers to recognise the different types of vegetation and guide restoration and management efforts. Some communities identified this survey are likely to be transitional as regeneration progresses. Native regeneration is evident and the area is undergoing change towards recovery, which has been assisted by targeted and effective revegetation and weed control efforts. Appendix 3 contains a table of species occurrence and suitability for use in restoration. TASVEG live maps are shown in Appendix 8.

4.1.1 Freshwater aquatic sedgeland and rushland (TASVEG Code ASF)

Freshwater aquatic sedgeland and rushland is a wetland community, listed as a threatened vegetation community under the Nature Conservation Act 2002 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999, and as such should be protected, not cleared or drained, and managed to retain its current good condition. Freshwater aquatic sedgeland and rushland lies in the heart of Seymour Swamp and is characterised by an extensive cover of native sedges and rushes that merge with surrounding grassy sedgeland, shrub and forest communities. This community is tolerant of a salinity range from freshwater to brackish. Dominant species include *Eleocharis sphacelata* (tall spike rush), dense over most of the wetland, and a large patch of *Phragmites australis* (southern reed). *Juncus pallidus* (pale rush) and *Juncus procerus* (tall rush) line the edges with *Juncus kraussii* (sea rush) evident closer to dunes where the ground water is likely to be more saline, and *Juncus planifolius* (broadleaf rush), *Leptocarpus tenax* (slender twinerush) and *Ficinia nodosa* (knobby clubsedge) occur where the wetland merges with grassy sedgeland and heath. *Triglochin procerus* (water ribbons) and *Azolla rubra* (pacific azolla) were submergent and floating on the edges near the swamp paperbark forest. The wetland provides excellent aquatic habitat and is in very good condition. Threatened fauna species *Litoria*

raniformis, green and gold frog, requires habitat with permanent water and basking sites, and has been recorded here.

Fig. 3 Freshwater aquatic sedgeland and rushland (looking south) with Lowland grassy sedgeland meeting it on the right. The brighter green in the distance is a patch of Phragmites australis (southern reed).

Fig. 4 Freshwater aquatic sedgeland and rushland, dominated by Eleocharis sphacelata (tall spike rush) with Juncus spp. around the edge and adjoining Melaleuca ericifolia swamp forest.

Fig.5 Looking north from the road to the Freshwater aquatic sedgeland and rushland across regenerating Coastal heathland and Melaleuca ericifolia swamp forest in the foreground.

Fig 6 Wetland dominated by Eleocharis sphacelata (tall spike rush) abruptly meets mature Melaleuca ericifolia swamp forest on the eastern edge.

4.1.2 Lacustrine herbland (TASVEG Code AHL)

Lacustrine herbland is a wetland community, listed as a threatened vegetation community under the Nature Conservation Act 2002 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999, and as such should be protected, not cleared or drained, and managed to retain its current good condition.

This community was not sighted during the survey but was mapped in TASVEG live as lying between the road and Seymour Beach associated with Melaleuca ericifolia swamp forest. This wetland community is usually marginal on edges of wetlands from freshwater to brackish and characterised by very low growing herbs e.g., *Pratia pedunculata, Villarsia reniformis* and *Neopaxia astralasica*, and sedges e.g., *Isolepis marginata, Centrolepis strigosa* and *Schoenus nitens*. Lacustrine herblands are often maintained by grazing wildlife as a marsupial lawn and can be species rich, depending on seasonal variation and salinity levels.

4.1.3 *Melaleuca ericifolia* swamp forest (TASVEG Code NME)

Melaleuca ericifolia swamp forest is listed as a threatened vegetation community under the Nature Conservation Act 2002 and as such should be protected, not cleared or drained, and managed to retain its current good condition.

Melaleuca ericifolia swamp forest exists around the edges of the wetland in Seymour Swamp as mature regrowth and young regenerating forest. *Melaleuca ericifolia* (swamp paperbark) is dominant with other tree and shrub species on edges such as *Acacia melanoxylon* (blackwood), *Hakea teretifolia* (dagger needle bush), *Acacia verticillata* (prickly moses) and *Leptospermum scoparium* (prickly tea tree). Rushes, grasses, *Microlaena stipoides* (weeping grass) and *Poa labillardierei* (silver tussockgrass) and low shrubs such as *Melaleuca gibbosa* (slender honeymyrtle) are also present in places where light and space allow.

Melaleuca ericifolia swamp forest is well suited to this wetland system and was probably widespread in this area prior to disturbance. Remnants of this community occur in patches throughout Seymour Swamp, some with gorse and blackberry to manage, and native regeneration is evident from existing mature patches with young trees emerging in parts of the sedgeland, heathland and regenerating cleared land in wet areas. *Melaleuca ericifolia* swamp forest is also found in remnants in other parts of the Seymour Conservation Area in isolated blocks and along roads, adjoining coastal scrub on Long Point (variable condition, some poor condition) and behind the dunes on Seymour beach (not sighted this survey).

Fig. 7 Melaleuca ericifolia swamp forest with Hakea teretifolia (dagger needle bush) and Leptospermum scoparium (prickly tea tree) on the edge.

Fig. 8 Melaleuca ericifolia swamp forest remnant on Long Point in an isolated part of the Seymour Conservation Area

Fig.9 Melaleuca ericifolia swamp forest as mature regrowth evidently regenerating out into grassy sedgeland

Fig.10 Melaleuca ericifolia swamp forest is salt and water tolerant and during wet seasons is valuable as a buffer to other vegetation communities less tolerant of salt water.

4.1.4 Coastal heathland (TASVEG Code SCH)

Coastal heathland is probably the most diverse and species rich vegetation community in the conservation area and occurs near the road, around the wetlands and between remnants of *Melaleuca ericifolia* swamp forest. It merges with other vegetation communities Lowland grassy sedgeland and Regenerating cleared land in a complex matrix which provides excellent open and low cover habitat for fauna as well as nesting, pollination and foraging opportunities. Occasional emergent and regenerating trees were *Eucalyptus ovata* (black gum), *E. amygdalina* (black peppermint) and *E. viminalis* (white gum) with *E. globulus* (blue gum), *Acacia melanoxylon* (blackwood) and *A. dealbata* (silver wattle). Dominant shrubs included *Banksia marginata* (silver banksia), *Hakea teretifolia* (dagger needlebush), *Daviesia ulicifolia* (yellow spiky bitterpea), *Leptospermum scoparium* (prickly tea tree) and *Monotoca elliptica* (tree broomheath). Other shrubs *Acacia genistifolia* (spreading wattle), *Pomaderris elliptica* (yellow dogwood), *Bursaria spinosa* (prickly box) and *Daviesia latifolia* (hop bitterpea) were present with lower shrubs *Hibbertia riparia* (erect guineaflower), *H.procumbens* (spreading guineaflower), *Pimelea humilis* (dwarf riceflower), *P. linifolia* (slender riceflower), *Epacris impressa* (common heath) and *E. lanuginosa* (swamp heath) scattered. Sedges and rushes were also common including *Ficinia nodosa* (knobby clubsedge), *Juncus planifolius* (broadleaf rush), *Lomandra longifolia* (sagg) with *Leptocarpus tenax* (slender twinerush) in damper spots. Herbs *Lobelia anceps* (angled lobelia) and *Dichondra repens* (kidneyweed) were occasional. This community had weed invasions (notably blackberry and gorse) which have been managed in the past and follow up control is now needed to maintain good condition.

Fig 11 Coastal heathland is probably the most diverse and species rich community in the conservation area.

Fig. 12 Hakea teretifolia flowering in coastal heathland – lowland grassy sedgeland edge

4.1.5 Lowland grassy sedgeland (TASVEG Code GSL)

Lowland grassy sedgeland was extensive between the wetlands and the regenerating cleared land, in a complex with Coastal heathland and around Coastal scrub and *Melaleuca ericifolia* swamp forest. Dominated by *Lomandra longifolia* (sagg), *Ficinia nodosa* (knobby clubsedge), *Juncus planifolius* (broadleaf rush and *Lepidosperma* spp. (sword sedges) were also common. Swathes of native grasses occurred in patches *Themeda triandra* (kangaroo grass), *Microleana stipoides* (weeping grass) and *Rytidosperma* spp. (wallaby grasses) with *Poa labillardierei* (silver tussockgrass) scattered throughout. Interstitial spaces allowed for low shrubs such as *Kennedia prostrata* (running postman), *Pimelea humilis* (dwarf pimelea) and *Hibbertia procumbens* (spreading guineaflower), and herbs *Acaena novae-zelandiae* (buzzy), *Lobelia pedunculata* (matted lobelia) and *Wahlenbergia* spp. (bluebells). *Pteridium esculentum* (bracken fern) was common, indicating the fire and disturbance history. This community provides excellent low cover and nesting sites for fauna such as birds, marsupials, reptiles and invertebrates like butterflies and other insects and facilitates foraging and migration between taller patches of trees and shrubs.

Fig. 13 Lowland grassy sedgeland dominated by Lomandra longifolia (sagg) with Pterideum esculentum (bracken) and grasses adjoins Acacia longifolia coastal scrub

Fig. 14 Lowland grassy sedgeland with Lomandra longifolia (sagg), Dichelachne crinita (longhair plume grass) and Juncus kraussii (sea rush). Coastal scrub in the background.

Fig.15 Lowland grassy sedgeland joining the wetland Freshwater aquatic sedgeland and rushland, and Coastal scrub.

4.1.6 Coastal grass and herbfield (TASVEG Code GHC)

Coastal grass and herbfield occurred on small sandplains behind the dunes of Templestowe Beach interspersed with Coastal grassy sedgeland, Coastal Scrub and *Acacia longifolia* coastal scrub. Grasses included *Poa poiformis* (coastal tussockgrass) *Austrofestuca littoralis* (coastal fescue), *Austrostipa stipoides* (coastal speargrass) and sedges *Juncus kraussii* (sea rush) *Ficinia nodosa* (knobby clubsedge) were common.

Figure 16 Coastal grass and herbfield on sandplains behind the dunes of Templestowe Beach

4.1.7 *Acacia longifolia* coastal scrub (TASVEG Code SAL)

Acacia longifolia coastal scrub occurs along the dunes of each beach Templestowe and Seymour, and around the edge of Long Point and in patches of Seymour Swamp. Dominated by *Acacia longifolia* subsp. *sophorae* (coast wattle) it provides substantial cover and structure to stabilise dunes and absorb wind and salt spray. Other tall shrubs existing with coast wattle include *Banksia marginata* (silver banksia) and *Leucopogon parviflorus* (coast beardheath) and lower shrubs on edges and in gaps are *Rhagodia candolleana* (coast saltbush) *Tetragonia implexicoma* (bower spinach) and *Carpobrotus rossii* (pigface) While dense thickets and continuous expanses of coast wattle characterise this community there are opportunities for other plants to establish on edges and in damaged areas where the coast wattle has been weakened and the species richness in these places can be quite high if light and water is available. Salt tolerant rushes *Juncus kraussii* (sea rush), grasses *Distichlis distichophylla* (Australian Saltgrass), *Spinifex sericeus* (beach spinifex) and *Poa poiformis* (coast tussockgrass), sedges *Dianella revoluta* (spreading flaxlily) *Lepidosperma concavum* (sand swordsedge) and *Lepidosperma gladiatum* (coast swordsedge), herbs *Lobelia anceps* (angled lobelia) and *Wahlenbergia* spp.(bluebells) and low shrubs

Pimelea glauca (smooth riceflower) are found in these areas. Marram grass was introduced for dune stabilisation and is still common.

Fig. 17 Acacia longifolia coastal scrub occurs along the dunes of Templestowe lagoon and beach, Leucopogon parviflorus (coast beardheath) in the foreground.

Fig.18 Wind pruned Acacia longifolia coastal scrub on dunes at Templestowe Lagoon mouth

Fig. 19 Acacia longifolia coastal scrub on dunes behind Seymour beach, Spinifex sericeus (beach spinifex) in the foreground.

Fig. 20 Pimelea glauca (smooth riceflower), Dianella revoluta (spreading flaxlily) and Lepidosperma gladiatum (coast swordsedge) on high foredune above Templestowe Lagoon, edge of Acacia longifolia coastal scrub

Fig. 21 Carpobrotus rossii (pigface) and Lomandra longifolia (sagg) on high foredune above Templestowe Lagoon, edge of Acacia longifolia coastal scrub

4.1.8 Coastal scrub (TASVEG Code SSC)

Coastal scrub community in Seymour Swamp is more limited than has been mapped (TASVEG 4). Much of the area mapped as SSC is *Melaleuca ericifolia* swamp forest or *Acacia longifolia* coastal scrub, both communities are readily recognised on the ground by their dominant species. Coastal scrub was considered present where dominant species were not evident and there was a mix of codominant shrub species including any of *Banksia marginata* (silver banksia), *Leucopogon parviflora* (coast beardheath), *Leptospermum scoparium* (prickly tea tree), *Bursaria spinosa* (prickly box), *Daviesia ulicifolia* (yellow spiky bitterpea), *Acacia longifolia* (coast wattle), *Acacia verticillata* (prickly moses), *Melaleuca ericifolia* (swamp paperbark), *Monotoca elliptica* (tree broomheath) with occasional tree species *Allocasuarina littoralis* (bulloak). Emergent eucalypts are rare in Coastal scrub communities but in Seymour Swamp they are present, although these may have been planted. Coastal scrub tends to be dense with little understorey which was the case here, the edges being well defined with grassland and wetland.

Fig. 22 Wetland meets Coastal scrub behind the Templestowe beach dunes, Banksia marginata, Leucopogon parviflorus and Acacia longifolia are codominant. Emergent eucalypts are present in this community, see on left.

Fig. 23 Allocasuarina littoralis and Melaleuca ericifolia with blackberry, on an edge of Coastal scrub and Lowland grassy sedgeland.

Fig 24 Coastal scrub on rocky headland Long Point.

4.1.9 Saline sedgeland/rushland (TASVEG Code ARS)

Temperate Coastal Saltmarsh is a Threatened Ecological Community nationally under the EPBC Act and listed as Vulnerable.

Saltmarsh is significant and unique habitat for flora and fauna connecting marine, coastal and terrestrial habitat and containing flora and fauna adapted to functioning in the tidal, salty environment. Temperate Coastal Saltmarsh occurs in generally small areas and has limited opportunity for landward migration especially under land use and climate change impacts. Temperate Coastal Saltmarsh communities are saline and may be dominated by sedges and rushes or succulent shrubs and herbs and elements of all saltmarsh communities can be present. Saltmarsh is important habitat for shore birds, sea birds crustaceans, molluscs and other saline dwelling invertebrates.

Saline sedgeland/rushland lies on the southern side of Templestowe Lagoon at the Doctors Creek mouth. Within Seymour Conservation Area the saltmarsh forms a narrow strip meeting Coastal scrub and *Acacia longifolia* coastal scrub along the shores of Templestowe Lagoon and widens towards Doctors Creek and the adjoining conservation covenant on private land where the saltmarsh is more extensive.

Saline sedgeland/rushland is generally dominated by salt tolerant sedges and rushes such as *Juncus kraussii* (sea rush), well noted during this survey, with *Gahnia filum* (chaffy sawsegde), *Poa poiformis* (coastal tussockgrass), *Austrostipa stipoides* (coast speargrass) and *Distichlis distichophylla* (Australian saltgrass), and occasional succulent herbs including *Lobelia anceps* (angled lobelia).

Fig. 25 Saline sedgeland/rushland, narrow strip along edge of Templestowe Lagoon.

Fig. 26 Saline sedgeland/rushland, looking west to Doctors Creek.

Fig. 27 Saline sedgeland/rushland, looking east, Templestowe Lagoon.

4.1.10 Seabird rookery complex (TASVEG Code SRC)

The little penguin and mutton bird rookery on the northern end of Long Point near Black Dog Reef is almost completely covered by *Rhagodia candolleana* (coast saltbush) and *Tetragonia implexicoma* (bower spinach). *Acacia longifolia* (coast wattle) is becoming established in the rookery. There has been a noted decline in mutton bird populations, according to local residents, which has increased vegetation cover. The population decline may be due to climate change impacts affecting successful foraging and migrating regimes of the mutton birds and cat predation. Several dead mutton bird remains (3) were found during the survey. A second large mutton bird rookery situated on the southern end of Long Point was not visited.

Fig 28 Mutton bird rookery on the northern end of Long Point near Black Dog Reef is almost completely covered by Rhagodia candolleana (coast saltbush) and Tetragonia implexicoma (bower spinach).

Fig. 29 Whip snake basking in the bower spinach – it left quickly.

Fig.30 Remains of dead mutton bird were found during the survey.

4.1.11 Regenerating cleared land (TASVEG Code FRG)

A significant portion of the agricultural land (TASVEG 4) to the west of the wetlands can be reclassified as Regenerating cleared land. Introduced weedy grasses including *Agrostis capillaris* (browntop bent), *Anthoxanthem odoratum* (sweet vernal grass) and *Holcus lanatus* (fog grass) are common throughout

and dominant in places. However, young eucalypt seedlings were emerging including *Eucalyptus ovata* (black gum) and *E. viminalis* (white gum), with *Melaleuca ericifolia* (swamp paperbark) establishing in drains and low-lying wet places and regeneration of native grasses, rushes and sedges was evident throughout. Occasional large patches of mature *Melaleuca ericifolia* swamp forest and intermittent small remnant patches of woodland trees, including eucalypts, wattles and bulloak provide islands of taller cover for fauna and are sources of native regeneration from seed and suckers. Woody weeds, mainly gorse and blackberry, were present, as mature clumps and scattered individuals with young plants establishing around native shrubs and sedges.

Fig. 31 Regenerating cleared land looking west from wetlands with Melaleuca ericifolia swamp forest remnant in the background

Fig. 32 Drains and wet soaks in Regenerating cleared land provide habitat for native rushes and regenerating Melaleuca ericifolia, opportunity to revegetate, target weed control and increase connecting native habitat

Fig. 33 Patches of native sedges, rushes and shrubs occur in Regenerating cleared land and provide opportunity to revegetate and target weed control outwards into the introduced grasses, increasing the native patch size and eventually connecting with other native patches

4.2 Threatened species habitat

Extensive habitat for threatened species occurs in the wetlands and surrounding vegetation, restoration areas, lagoon, beaches, rocky headlands and ocean. These diverse habitat areas are well connected and the linkages between the terrestrial, aquatic, littoral and marine are important for ecosystem health and threatened species refuge.

Threatened fauna previously recorded in Seymour Conservation Area include green and gold frog and Tasmanian devil, fairy tern, hooded plover, little tern, white bellied sea eagle and wedge-tailed eagle. These species are dependent on intact wetlands and bushland, open areas for foraging and coastal dunes and foreshore. The area immediately adjacent to Templestowe Lagoon is an important nesting site for fairy terns and the critically endangered little tern. This habitat is of national significance for nesting shorebirds and terns and needs permanent protection (year-round).

Marine habitats immediately offshore provide for threatened fauna including gunns screw shell, blue warehou and southern right whale, previously recorded within 500 m.

Fig. 34a (left) Green and gold frog habitat, permanent water of the wetlands and Fig. 34b (right) shorebird habitat under threat from storm surges and dune erosion, and vehicles on the beach.

Additional threatened fauna previously recorded within 5 km and potentially occurring on site utilising available foraging and/or nesting habitat include Australian grayling, swift parrot, white-throated needletail and white bellied sea eagle. Other threatened fauna species that may occur within 5 km, based on range boundaries, include chaostola skipper, eastern quoll, grey goshawk, masked owl (Tasmanian), new holland mouse, spotted-tail quoll, swan galaxias and tussock skink. Potential offshore and marine threatened species include black browed albatross, shy albatross, humpback whale, leatherback and loggerhead turtles, New Zealand fur seal, Ziebells handfish.

Threatened flora species recorded in Seymour Conservation Area include southern swamp grass and small leaf glycine. Additional threatened flora species have been recorded within 5kms and some of these may appear on site following disturbance and fire, including orchids which may emerge following disturbance, earlier than some other species.

As restoration progresses, opportunities for threatened flora and fauna to inhabit the site will increase with more native species diversity, structure and cover. Managing vegetation to maintain habitat niches and diversity may become necessary over time.

Threatened fauna and flora recorded on and within 5km of the site are listed in Appendices 4 and 5.

4.3 Habitat for non-threatened native species

Seymour Conservation Area provides a range of diverse habitat for non-threatened flora and fauna. The connection of habitat the reserve offers is significant for migrating and roaming fauna, merging vegetation communities and continuity of essential resources such as cover for movement across the landscape, nesting sites and rearing young, foraging and hunting opportunities, refuge from predators (native and feral) and shelter from weather. Broader ecosystem benefits from habitat conservation include maintenance of soil moisture and water quality regimes, nutrient cycles and erosion control, pollination

and seed dispersal. Signs (scats, calls, fur, diggings, bones, paths, tunnels) of native fauna were found indicating presence of Tasmanian devil, wombat, wallabies, brushtail possums, many birds, invertebrates and reptiles.

Over 90 flora species were recorded during the survey, 10 were introduced, including declared weeds but the remainder are native including 3 endemics (found only in Tasmania). More species would be recorded with more time to search the wetlands and dunes and conducting surveys during other seasons. This range of species is evidence of the diversity of habitat and opportunities for species recruitment and survival in Seymour Conservation Area.

Flora species of Conservation Significance (NVA January 2023) include those on the Native Watch list which identifies plants that may be recognised as threatened in the future. *Cardamine gunnii* (tuberous bittercress) has been identified as data deficient and poorly known but may occur in Seymour Swamp. One to look out for! Its description - herb often found in rocky places, rosette leaves, lobed, sparse on stem, many taproots.

Figure 35 Cardamine gunnii (tuberous bittercress)
(https://www.utas.edu.au/docs/plant_science/field_botany/species/dicots/brassisp/cardgunn.html)

Other Flora species of Conservation Significance (within 5 kms NVA January 2023) listed under Native Watch include: *Agrostis propinqua* shortanther bent, *Bedfordia linearis* subsp.*oblongifolia* var.*oblongifolia* blunt blanketleaf, *Blechnum patersonii* subsp.*patersonii* strap waterfern, *Hibbertia appressa* southern guineaflower, *Hypolepis glandulifera* downy groundfern, *Juncus antarcticus* cushion rush, *Odixia angusta* roundhead everlastingbush, *Oxalis radicosa* stoutroot woodsorrel, *Sarcochilus australis* Gunns treeorchid, *Sigesbeckia orientalis* Indian weed. Habitat protection and conservation will reduce the likelihood of the current non-threatened species becoming rare and threatened.

4.4 Landforms, lagoons and dunes

Seymour Conservation Area includes the southern shore and dunes of Templestowe Lagoon between Doctors Creek and the mouth of the lagoon into the ocean. This part of the reserve forms a narrow strip which adjoins private land, including several titles protected by conservation covenants. Templestowe Lagoon is a large estuarine water body supplied by several inland creeks as well as bilateral flow to and from the sea when the lagoon mouth is open, as it was at the time of the survey. The lagoon mouth closes with sediment accumulation and low water level during times of drought. A closed mouth is generally experienced for longer periods than an open mouth in response to high rainfall and input events. Templestowe Lagoon is classified as an open/closed estuary (UTAS 2011) the group of estuaries in Tasmania most susceptible to degradation through limited ability to dilute or flush nutrients (EPA 2021). However, the mouth is notably unmodified by bridges or other infrastructure or development (North Barker 2009) which allows it to function relatively naturally. Templestowe Lagoon was classified as being of moderate conservation significance (Edgar et al 1999), meaning that while the estuary and associated catchment area was affected by human habitation and land clearance, the lagoon was not badly degraded. Templestowe Lagoon is classified with an Integrated Conservation Value (ICV) of high with a medium value for naturalness and very high Conservation Management Priority (CFEV List Map 2023).

Catchment area for Templestowe Lagoon is ~25 km^2 and includes Doctors Creek and Cliff Creek, with tributaries from more than half the catchment and smaller creeks to the north, Stonyford Creek and Harry's Creek. Integrated Conservation Values of the lower catchment streams have been classified as low and upper catchment steams were high ICVs (CFEV List Map 2023). The upper catchment in Douglas Apsley National Park, still intact, is likely to be in excellent condition. Landscape connectivity between Templestowe Lagoon, Seymour Conservation Area and the upper catchment is weak due to vegetation clearing and current land use.

The complex coastal dune system in Seymour Conservation Area has Geoconservation values as the only active Holocene bypass dunefield system with older stabilised beach ridges within mainland Tasmania (SCAGI 2022).

The wetland at the heart of Seymour Conservation Area, Seymour Swamp, lies in the low elevation country behind the dunes of Templestowe Lagoon and Beach and within the dune system of the Long Point granite headland. Seymour Swamp was created in the 1800s by excavation for clay. It is not connected to tidal movement and with limited connection to regional groundwater it may be considered a perched lake (North Barker 2009). Due to the small catchment area (~1 km^2) the wetland relies on direct rainfall and minimal runoff for water input and is subject to evaporation with limited ground water input. The well vegetated dunes limit aeolian sand inputs and the sediments are highly organic. The wetland is not weedy and is in good natural condition. As a waterbody, ICV of Seymour Swamp is high, with low for naturalness and very high Conservation Management Priority (CFEV List Map 2023).

4.5 Aboriginal cultural heritage

Aboriginal cultural heritage sites as yet undiscovered are possible in the reserve. Aboriginal heritage is protected under the Aboriginal Heritage Act 1975. If restoration work uncovers any indication of Aboriginal heritage sites, such as middens, tools or other signs, the work should cease immediately and contact NPWS and Aboriginal Heritage Tasmania (AHT) https://www.aboriginalheritage.tas.gov.au/ . Refer to the Unanticipated Discovery Plan for steps to take under these circumstances: https://www.aboriginalheritage.tas.gov.au/Documents/UDP.pdf

5 Restoration progress

5.1 Revegetation

Seymour Community Action Group have been revegetating in conjunction with weed control works and are successfully restoring large areas to native shrubs and trees. Early plantings included eucalypts – white gums and blue gums on edges of existing scrub, which have done well and are now mature trees. Recent focus has been on the land to the west of the wetland in the Regenerating cleared land, Lowland grassy sedgeland and Coastal heathland. Areas of previous weed (mainly gorse) control works, bare ground, bracken patches and swathes of introduced grasses have offered good opportunity for planting native habitat. Planted black gum, white gum, silver banksia and bulloak are doing well and some are now several metres tall. Other native shrubs and sedges are regenerating in the same areas including tea tree, guineaflower, dagger needle bush and yellow spiky bitterpea with knobby clubsedge, sagg and swordsedge. Natural regeneration and revegetation together are promising to restore potentially excellent habitat and at the same time will reduce opportunity for weed invasion. On going monitoring and maintenance of revegetation is recognised by the Seymour Community Action Group as necessary to sustain the improvement of habitat and adapt management according to progress.

Fig. 36 Eucalyptus viminalis (white gum) planted years ago and now a beautiful shade and habitat tree on the edge of the swamp paperbark forest

Fig. 37 Members of the Seymour Community Action Group checking the revegetation area near wetland, which will connect existing native shrub patches and restore burnt areas dominated by bracken to a more diverse coastal woodland and shrub community.

Fig38 (left Bulloak in corflute tree guard, browsed on top but still growing well and Fig.39 (right) banksia flourishing in wire mesh tree guard with knobby club sedge and rushes also doing well

Fig. 40 Planted banksia doing well in a patch, yellow tailed black cockatoos will enjoy these in a few more years.

Fig. 41 removing tree guard as banksia is outgrowing its space, Fig.45 bulloak also well grown

5.2 Weeds and weed control

Seymour Conservation Area has been well managed by the Seymour Community Action Group to control weed infestations for many years. The sustained effort by the group to plan and manage the conservation area has been well documented. The Gorse Eradication Strategy for Seymour Wetlands Restoration (Vol. 2) for the 5-year period December 2022 through to December 2027 is the most recent report completed and endorsed by NPWS.

Gorse is the main threatening weed and gorse invasion of Seymour Conservation Area was extensive prior to 2016. Since then it has been the focus of a concerted weed control effort and successful restoration by SCAGI. Activities and methods for gorse control have included munching/mulching, burning, bulldozing, spraying with herbicide and cutting and pasting from 2016–2022. Gorse now occurs mostly as scattered individuals and clumps but has the potential to increase again if uncontrolled. Recent persistent wet weather limited access for management while promoting growth. Gorse seedlings and juvenile plants were evident in most communities. Mature plants were present on edges of remnants. The wetlands and swamp paperbark forests were the least impacted by gorse while it was most evident in the agricultural land/regenerating cleared land west of the wetland. Gorse is known to occur on private land behind Seymour Beach dunes adjacent to the reserve.

Blackberry was scattered, mostly as small plants but also as larger scrambling bushes on edges of remnants and in grasslands. Blackberry is increasing and SCAGI members are aware of this and are working on its control. Tree lupins are scattered on dunes and edges of scrub and have been targeted for consistent control by hand pulling and cut and paint. African boxthorn has been removed from the wetland area. A patch of Californian thistles has been a focus for control. The Gorse Strategy (2021) notes that Spanish heath, Montpellior or canary broom and pampass grass have been recorded onsite and have been targeted for control.

Other weeds include marram grass, well established on the dunes, sea spurge on Templestowe Beach, blue periwinkle on the headland, and mature radiata pine forest adjoins the wetland. Grassy weeds such as sweet vernal grass and Yorkshire fog grass are extensive in the regenerating cleared land and scattered through the sedgeland, coastal heathland and coastal scrub. Native shrubs and rushes appear to find opportunities to regenerate through these introduced grasses but native grasses and herbs seem less successful.

Additional weeds boneseed and crack willow have been previously recorded within 5 km and are potential on site. Their likely appearance should be constantly monitored. Weeds known and potential in Seymour Conservation Area are listed in Appendix 6.

Fig. 42 Gorse in regenerating cleared land, fog grass and sweet vernal grass in the foreground

Fig.43 Individual gorse plant successfully found and killed while still young in Lowland grassy sedgeland

Fig.44 Patch of gorse controlled on edge of Regenerating cleared land and Lowland grassy sedgeland

Fig 45 Mature gorse on edge of Melaleuca ericifolia swamp forest remnant (distant) and smaller gorse plants (foreground) scattered through regenerating cleared land and in amongst native sedgy patches.

Fig. 46 Blackberry and fog grass adjoin parking area at Seymour beach

Fig 47 (left) Blue periwinkle forms dense mats and can be highly invasive and Fig. 48 (right) shrubby daisy bush and marram grass on dunes

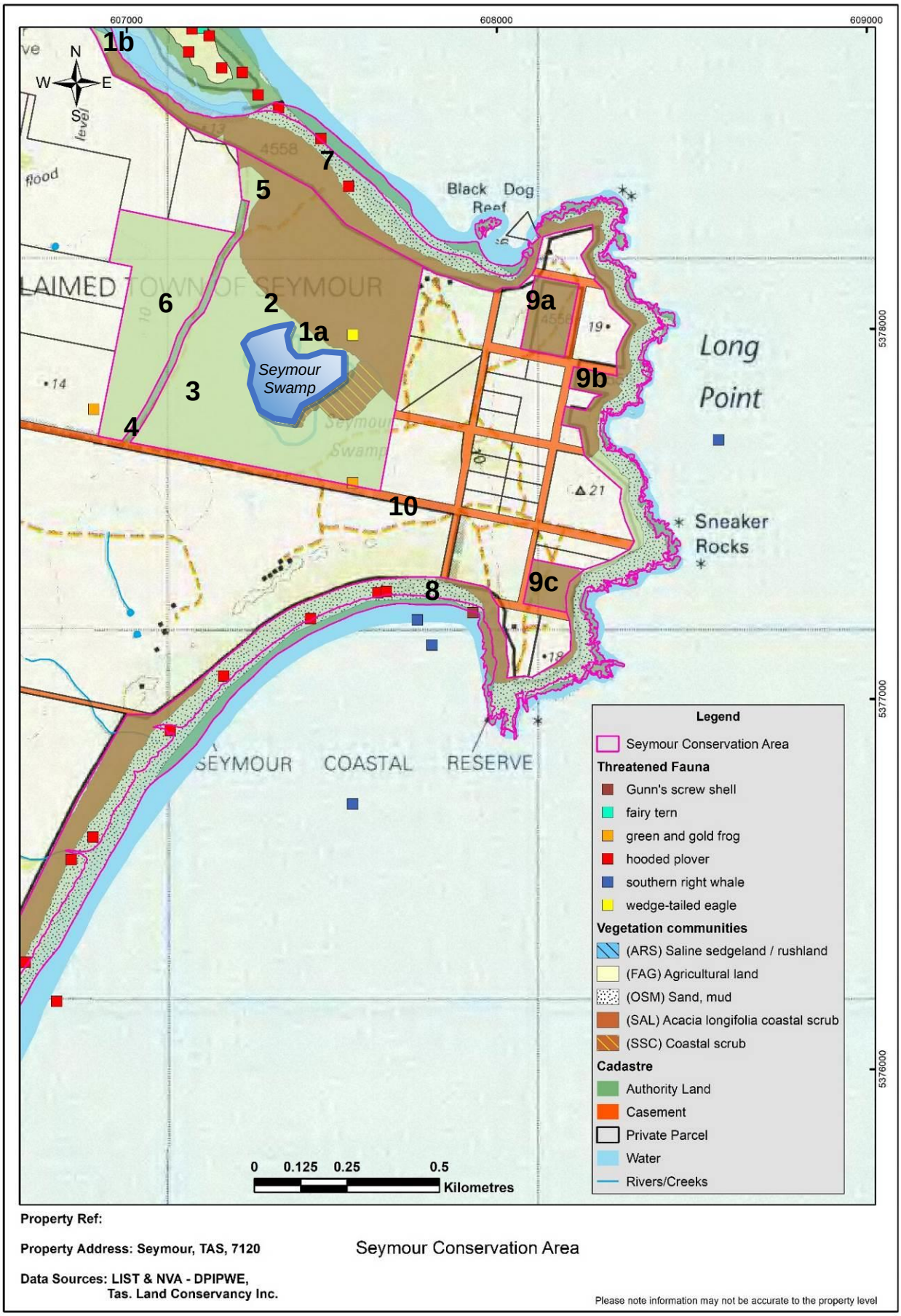


Figure 49 Management map for Seymour Conservation Area

6 Threats and recommendations for management

This chapter outlines the threats, impacts and management issues and presents recommendations for management that have been identified and discussed with SCAGI. Threats and impacts include habitat loss, climate change, weed invasion, beach access, water quality, domestic pet, feral animals, inappropriate development, fire, soil pathogens and disease, and acid Sulfate soils. Threats and management issues for Seymour Conservation Area are often integrated e.g. unmanaged beach access causing erosion, habitat loss for threatened and non-threatened species, and likely to be degrading water quality while potentially increasing risk of fire, introduction of pathogens, roaming pets and disturbance to wildlife. Management of some impacts may be best addressed together for efficiency and effectiveness.

The location of Seymour Conservation Area means that it is subject to several land use pressures through:
1) a long boundary and edges with multiple private land parcels in the semi-urban township of Seymour which bring a range of potential impacts to the reserve,
2) the pressures of increased visitation and tourism development on the east coast of Tasmania, and
3) agricultural development increasing in the catchment and surrounding region, the east coast hinterland.

Priorities for management summary and management table are included in Chapter 7.

6.1 Habitat Loss

The persistent threat of habitat loss could be recognised as an over-arching management issue for Seymour Conservation Area. Habitat conservation is a priority aim for conservation areas and loss of habitat undermines this goal. A range of diverse habitats occur in Seymour Conservation Area from marine, littoral, rocky and sandy shores to freshwater and saline wetlands, dunes, forest, shrub, heathland and grassland and their connection and integrity supports life cycles for threatened and non-threatened species (see Sections 4.2. and 4.3). All of Seymour Conservation Area should be recognised as threatened species habitat and maintaining good condition of vegetation communities is vital for maintaining habitat. Good condition includes structural integrity, diversity, species richness, regenerative capacity and connection.

The main body of the reserve around Seymour Swamp adjoins modified land of residences and gardens, grazing land, roads on the east, south and western edge while the smaller patches on the Long Point headland are more disjunct, connected only by the narrow coastal reserve. The reserve is narrow along Seymour Beach and Templestowe Lagoon. Therefore, edge effects are a considerable threat to the integrity of the reserve. Disturbances such as fire, clearing, weed invasion, roaming pets, outside the reserve will place pressure on the habitats in the reserve.

Habitat loss has occurred in Seymour through historical clearing, wetland drainage and land disturbance for mining, residential development, agriculture, pine planting and more recently through further residential development, weed invasion, garden encroachment, road formation, fire, erosion, vehicles on vulnerable land, foot tracks through dunes, and climate change effects of increased erosion removing habitat due to storm surge and sea level rise.

Habitat loss can be triggered off site such as planning decisions, upstream or upper catchment developments, tourism and, as experienced recently, a global pandemic which changed human movement and lifestyle. These impacts may originate beyond SCAGI control or influence but manifest on site and potentially threaten and increase habitat loss. Changes in environmental conditions can be insidious and processes become established before they are evident such as water quality degrading aquatic habitat or 'sleeper' weeds booming when conditions are suitable. Issues like these exist sometimes unobserved but can become a greater management problem. Freshwater and saline aquatic habitats in Templestowe Lagoon and Seymour Swamp are vulnerable to degradation and drying out from altered water flow regimes either in or out of the wetlands, potential contaminated run off into wetlands, and loss of vegetation (e.g., through fire, clearing, erosion) altering nutrient and sediment filters and shade/ temperature regimes.

Fig 50 Dense bracken fern such as this results from disturbance such as clearing, burning and/or grazing causing habitat loss, without trees, shrubs, herbs or habitat diversity here. The bracken is doing its job of maintaining cover and one Lomandra longifolia is evident (centre foreground) with a dead Banksia marginata on right. It will be a long time before other species and structure become established in this patch and the contiguous shrub habitat for birds, invertebrates and small mammals is restored unless management is applied, but at least the bracken is providing cover.
(9a on map).

Fig. 51 Clearing of threatened vegetation community for roadside management on Long Point, leaving bare ground vulnerable to soil loss and large thistles that will spread (5b on map).

This survey assessed current likely and active threats to habitat loss and the natural values of Seymour Conservation Area to include:

- beach and dune erosion from storm surge damaging vegetation, leaving sheer faces on dunes and removing shore bird habitat (see 6.2),
- numerous eroding roads and tracks to Templestowe and Seymour beaches damaging vegetation, impeding drainage and disrupting water regimes, flow to the wetlands (see 6.3),
- vehicles on beaches damaging and eroding vegetation and foredunes, shore bird and littoral zone habitat (see 6.3),
- illegal camping potentially damaging vegetation, leaving rubbish, removing ground debris and increasing risk of fire (see 6.3),
- vegetation clearing and spread of weeds along roadsides (see 6.4),
- weed invasion of declared weeds gorse, blackberry and thistle and other weeds noted including introduced grasses, shrubby daisy bush, lupins, blue periwinkle, pines and marram grass (see 6.4),
- the new dam development on agricultural land immediately upstream of Templestowe Lagoon will impact the natural hydrological regime, regulating and reducing natural water flow to the lagoon with potential run off containing sediment, agricultural chemicals and nutrients to the lagoon, likely impacting aquatic, riparian and terrestrial habitat for fauna and flora (see 6.5),
- roaming domestic pets and feral animals invade habitat with smells, faeces and predation (see also 6.6 and 6.7),
- inappropriate development includes developments that have been approved without considering the issues that may arise from developments near or adjacent to a conservation reserve such as large constructions e.g. buildings, fences or walls, that may obstruct flight paths or terrestrial

fauna routes, commercial enterprises such as accommodation and/or tours that may impact habitat without adequate mitigation, agricultural or horticultural developments that may contaminate run off, increase traffic and visitation (see 6.8),

- fire either accidental or wild can potentially harm coastal ecosystems, cause habitat loss and set back restoration work, coupled with climate change fire frequency and intensity may overwhelm recovery (see 6.9),
- soil borne pathogens and disease especially *Phytophthora cinnamomi* (root rot) are a likely threat in coastal ecosystems and can kill heath species and damage susceptible communities and harm wildlife (see 6.10).

6.1.1 Recommendations for reducing habitat loss

- Protect existing native vegetation.
- Engage with authorities such as NRE, NPWS, Break O'Day Council and Tasmanian Fire Service to ensure planning decisions for developments and land management do not compromise the integrity of habitat within and adjoining the reserve.
- Ensure that threatened vegetation communities such as wetlands, saltmarsh and swamp paperbark are properly protected from disturbance with education, signage and incorporation into management planning.
- Liaise with Break O'Day Council regarding roadside management such as vegetation trimming is not excessive especially where threatened vegetation and edges of the reserve are involved, that machinery is washed down before entering Seymour and follow up weed control is carried out.
- Communicate and liaise with the local community regarding the purpose and significance of the reserve and how land management may affect its condition.
- Raise the profile locally of threatened fauna species in the reserve and their requirement for habitat and connectivity across the landscape.
- Continue to build networks within the local community to support conservation-friendly behaviour.
- Promote and utilise proactive programs such as Land For Wildlife, Birds Australia, Understorey Network and NPWS Summer Ranger activities to involve local landholders and visitors in conservation as well as inviting local participation in SCAGI events and working bees.
- Prioritise areas of habitat loss for restoration efforts where the gains can be made and ongoing maintenance is possible. Aim to link areas of existing good habitat and where further impacts will be unlikely.
- Improve clear and attractive signage to engage and promote responsible use of beaches (better control of vehicles and pets) and protect habitat especially for threatened species and threatened vegetation communities.
- Minimise tracks but prioritise foot tracks over vehicles tracks to keep and maintain for access.

6.1.2 Recommendations for habitat restoration

- Protect areas of good condition native vegetation and maintain weed free with no new tracks.

- Promote and manage natural regeneration as priority, identify areas where regeneration is occurring well, control weeds and protect young native plants from browsing if necessary.
- Recognise areas of native grasses (silver tussock, kangaroo, wallaby and plume grasses) and allow them to flourish. Aim to only use herbicide on introduced grasses before revegetating into these areas.
- Continue revegetation with local native species in areas where the greatest gains can be made, i.e., strengthening edges around remnants, closing gaps between remnants and repairing eroded areas on tracks and dunes.
- Continue to plant into areas of bracken fern and bare ground – a good strategy for increasing species richness with the shelter of bracken.
- Where bracken is dense slashing first and using herbicide on regrowth bracken may help to prepare some space for revegetation.
- In the open regenerating cleared land revegetate out from islands of native grasses and sedges and along drainage lines and soaks where rushes and paperbark are regenerating.
- Plant areas of structural diversity for a range of habitats: a) patches of low shrubs, sedges and grasses, b) patches of taller shrubs and c) woodlands of trees over grasses and sedges with scattered shrubs.
- Plant according to soil water availability – wattles, heaths white gum, black peppermint, into drier places and tea tree, paperbark, black gum, carex and gahnia into damper places.
- Monitor progress of revegetation and regeneration using permanent transects and photo points to record changes over time i.e., community development, species survival and natural regeneration progress.
- Survey seasonal changes in wetland vegetation to better understand cycles and potential response to climate change
- Monitor bird presence-absence during spring and summer.

6.2 Climate Change

Climate change is a major threat to ecosystems everywhere and Seymour Conservation Area is vulnerable to the effects of climate change involving potential sea level rise, a warmer drier climate, temperature range increase, higher risk of fire, and changes to water, sediment and nutrient regimes and habitat. The actual effects of this are unknown and difficult to predict. The ways in which ecological communities will recover from past impacts is uncertain due to the unknown and unpredictable effects of climate change on life cycles. For example, recruitment and regeneration of eucalypts and other flora species from soil seed banks and other seed sources are subject to climatic conditions favourable for germination and survival. Migration of birds and marine species and breeding patterns of terrestrial fauna are likely to be affected by reduced or altered forage availability, loss of resting and nesting habitat, and disease, all symptoms of the global effects of climate change. Local evidence includes signs that less mutton birds are using the rookeries on Long Point which are growing over densely with coastal saltbush as burrows are left empty. Environmental conditions shaping this system in the future are likely to be hotter and drier with more extremes and largely unprecedented

conditions, necessitating an adaptive management strategy for restoration and habitat protection.

Fig. 52 Loss of shore bird nesting habitat due to increased wave action, sea level rise and storm surge, dunes are actively eroding and vegetation loss is evident with no foredune nesting habitat and the beach is flat and open to wind.

Seymour Beach and Templestowe Beach exhibit sheer frontal dunes carved vertical by strong seas, high tidal action and storm surges. Beach dune erosion has removed the low vegetation cover, and low sloping foredunes with soft sand and undulations favoured by shorebirds for nesting habitat. Higher tides and storm surge pushes water further inland following existing furrows such as eroding dunes, gaps in vegetation roots and tracks. Both beaches and Templestowe Lagoon are classified as soft sandy shorelines backed by a soft sediment plain and vulnerable to erosion and shoreline recession (ListMap January 2023). This means that their dune habitat will be vulnerable to sediment and vegetation loss, with associated loss of nesting and hunting sites, habitat niches for a range of species, loss of current sites for threatened saltmarsh community, and further loss of threatened shore bird habitat. Alternative opportunities for these species and communities to migrate inland with sea level rise are limited by human land use and suitable topography for low elevation and shoreline habitats. Long Point is a rocky shoreline, partially with exposed cliffs vulnerable to slumping and rock fall and otherwise a sloping rocky shoreline with some resilience against flooding or erosion (ListMap 28/5/23). Long Point rockiness may provide some protection and refuge to adjacent inland habitats.

6.2.1 Recommendations for reducing climate change effects

- Maintain vegetation cover and soil stability.
- Minimise opportunities for erosion due to sea level rise and storm surge by rationalising existing tracks in the dune vegetation and not forming new tracks.
- Restrict vehicles from Templestowe Beach, restore eroded track with dune vegetation.
- Strengthen vegetation on back dunes by planting gaps, cover ground and connect existing habitat,
- Promote canopy, shade and dense cover surrounding wetlands with an aim of maintaining soil moisture and retaining water in the landscape rather than draining.
- Identify natural regeneration – weed control and protect individual trees and shrubs from grazing and browsing damage, monitor and manage disease, replant gaps with resilient species.
- Liaise with landholders around Templestowe Lagoon and Beach and Seymour Beach to provide protection for habitat opportunities into the future, e.g. through livestock exclusion fencing and restoration of habitat areas, widening buffers to lagoon and dunes, allowing space in lowland for saltmarsh migration.

Fig. 53 Sooty oyster catchers, Templestowe Beach

6.3 Access

Public access to Seymour Beach and Templestowe Beach exists through Seymour Conservation Area from the main road, Champ St, where there are car parks near the start of foot and vehicle tracks. Vehicles are allowed on Seymour Beach and can drive south onto Seymour Beach through dunes. All vehicles are allowed access north to Templestowe Beach through the restoration area, past the wetland and through dunes, with boat launching from the beach only to the right of the track. Recreational vehicles for 4WDing, launching boats for fishing and family outings commonly access the beaches and heavy vehicles such as tractors are taken onto beaches to launch boats.

The tracks through the dunes are degraded and eroding leaving deep pools of water, collapsing edges and damaged vegetation and doughnut tracks were evident on Seymour beach. This type of impact is seriously damaging to habitat and wildlife and is in direct conflict with the intent of the conservation area.

Water flow to the wetland Seymour Swamp has been impaired by erosion and track use, therefore contributing to reduced water availability and quality in the wetland and consequent potential habitat loss for threatened species, green and gold frog recorded here and other wetland flora and fauna and vegetation communities.

Roads and tracks are a risk for weed invasion and transport of diseases and encourage unauthorized entry with associated illegal wood collecting and rubbish and green waste dumping activities. Closing unnecessary roads is recommended to reduce risk of unauthorized entry and spreading impacts from ensuing activities.

There is no camping allowed in Seymour Conservation Area but occasionally campers have been found and asked to leave and a caravan and boat trailer has been dumped behind Templestowe Beach. Small boulder barriers have been placed behind Templestowe Beach to deter casual campers and recreational vehicles but these have been moved at times.

6.3.1 Recommendations for managing access

- The track from Champ St to Templestowe Beach needs a boom gate at the Champ St entrance for control, with key access for authorised and better signage informing people of regulations regarding beach access.
- Drainage from road to Templestowe Beach needs improvement with erosion repair and culverts to redirect water to the wetland, but only if uncontaminated.
- Monitor water quality and soils from erosion on the end of the track for acid sulfate drainage, seek advice from NRE for assistance with monitoring, and management to close track if necessary.
- The vehicle track to Seymour Beach should be closed to vehicles other than for boat launching

- Boat launching should have one designated area e.g., east end of Seymour Beach with one maintained track and clear signage.
- Seymour Beach access requires more regulation, clear signage and presence from NPWS to stop 4WDs from damaging habitat.
- Remove dumped caravan and boat trailer.
- Ensure that Seymour Conservation Area does not get listed on freely available internet camping sites such as Wiki camps
- Import larger rocks to place as barriers to potential illegal campsites and block vehicle access
- Allow only seasonal on foot access to Seymour Conservation Area, when dry.

Fig. 54 Eroded track between wetland and dunes behind Templestowe beach – close this track, rehabilitate and ensure drainage does not continue to exacerbate the erosion problem

Fig. 55 Restricted road access to Templestowe Beach, being used as public access by a range of vehicles, eroding, drainage impaired and habitat compromised with water quality and sedimentation

Fig. 56 Recreational vehicle marks on Seymour Beach from high tide mark to the foredunes

Fig.57 Damaged and eroded track to Seymour Beach

Fig. 58Deeply eroded track to Seymour Beach

Fig. 59 rocks (too small) used as a barrier to illegal camping, behind Templestowe Beach dunes, rushes and sedges maintaining cover, although illegal campers have ignored the caution and moved rocks.

6.4 Weeds

Seymour Conservation Area has a history of weed invasion following land clearing, fire and other disturbances. The responsibility and commitment for weed control as a primary and successful activity by SCAGI has been a major force in gaining the reserve its new status as a conservation area. Weed control on site has been implemented in conjunction with revegetation which means that habitat restoration is well underway. The survey for this report assessed the current status of the main weeds occurring in Seymour Conservation Area – gorse, blackberry, thistles, tree lupin, radiata pine, introduced grasses are present in the main restoration area surrounding the wetlands (see 5.2) while blue periwinkle, sea spurge and marram grass are found on the dunes and coastal edge.

6.4.1 Recommendations for gorse control

Gorse on this site is likely to be a management issue for the long term due to the seed stock in the soil and the resilience of deep roots but the weed control evidence on site demonstrates the benefit of persistent attention and treatment to achieve success. The recent wet years combined with covid restrictions hampered volunteer effort and the gorse has evidently grown again in this time.

- Funding for a regular weed control contract team would be a huge support for SCAGI and help to maintain gorse control in a more formal way now that such a good result has been gained.

Gorse has been well controlled and is much reduced problem now compared to the original infestation but has started to regrow over the recent wet years when control has been difficult. The methods used to date have been effective.

- Continuing control treatment with a mixed application of slashing and burning, foliar spraying, cutting and painting where suitable and hand pulling small plants followed by revegetation are recommended.
- Any gorse in management areas 1 and 2 should be treated as a high priority as these areas are the best condition native vegetation and habitat.
- Gorse in and around the revegetation area (management area 3) is mostly present as individuals or small clumps. These should be treated as a priority since the investment in this area has been significant and restoration is well advanced.

Mature gorse plants remain on edges of remnants (far western side of management area 4) and should be controlled without damaging the native vegetation.

- Careful foliar spraying with herbicide or cutting and painting if that method was more suitable, depending on access to the stem, flowering times and disposal methods.
- Killing in situ is often easier and more effective to leave the weed to die standing, where it continues to provide shelter, perching sites and soil protection while it decays.
- Follow up treatment is essential with this method in case it reshoots.
- Disposal is not a problem when killing in situ.

Gorse regenerating in the open grassy areas (management area 4) could be either:

- foliar sprayed as soon as possible before it gets too big, (see figure below) or
- slashed and then foliar sprayed when regrowth is very low.

- Slashing should be timed for when grass seeds are not fertile as most of the grasses in this area are introduced and weedy.
- Patches of natives in this area should be identified and protected from weed treatments. Restoration efforts could enhance these patches with revegetation following gorse control especially along drainage lines and in wet soaks where native paperbark, rushes and sedges are regenerating.

Fig. 60 gorse in weedy grasses, open area can be treated on a wide scale e.g. slashing then foliar spray regrowth, these areas of weedy grasses contain small patches of native habitat to look out for and protect while controlling gorse.

6.4.2 Recommendations for blackberry control

Blackberry is the most serious weed other than gorse and should take priority within the weed control program whenever possible. Many individuals found are young and small at this stage but without control may be unchecked until they are large. Climbing blackberry is straggly, often occurring through native shrubs where it can be difficult to manage. Blackberry is almost behaving as a sleeper weed on this site, with very small plants scattered around in native vegetation and weedy grasses. Blackberry is a relentless weed and will continue to grow unless controlled. It can be quite a useful habitat plant providing cover, as gorse can be too but in this conservation area, and as many plants are small, it is worth controlling now before it becomes a big problem. Several species of blackberry have been identified but they can be treated in the same way.

- Prioritise treatment of blackberry in the next few years.
- Finding the small blackberry plants in long grasses and sedges may be difficult so it could be worth developing a tagging method (suggest either coloured tape or white topped stakes) to mark plants for treatment while walking transects.

- To control small or straggling blackberries in native plants – use gloves and hand pull making sure you get all the roots (wet season job) or carefully foliar paint with broad leaf herbicide that wont harm graminoids or cut and paint stem low to ground.
- Blackberry in graminoids is easy to treat so prioritise these first then take more care with blackberries in shrubs.
- Broad leaf native shrubs will be susceptible to whatever broad leaf herbicide you use on blackberries so take care to aim carefully and beware – dogwood leaves can look a bit like blackberries sometimes!
- Larger clumps of blackberries can be foliar sprayed with broad leaf herbicide and left to die in situ, monitor and follow up treatment is necessary, they can return after a long time, 7-10 years.

Fig. 61 Small blackberry plant nestled in a sagg, removal of these are tricky, use gloves and hand pull making sure you get all the roots (wet season job) or carefully foliar paint with broad leaf herbicide that wont harm graminoids.

6.4.3 Recommendations to manage thistles

Thistles may be the 3rd weed priority to manage as they appear in almost all communities from saltmarsh to coastal scrub on dunes and regenerating cleared land. They develop many seeds that are windblown every year and will germinate in any opportunity they can find, especially bare ground and moist areas. Their rosettes can occupy quite a space and their roots are deep so they can be a competitive plant in regenerating areas.

- Digging or hand pulling can be done when the soil is not too hard or dry and where thistles are not too dense.
- Targeted seasonal foliar spray of rosettes will minimise herbicide use and spray drift.

- Whole plants can be foliar sprayed if necessary.
- Follow up will be essential due to the seed store and windblown potential.

6.4.4 Recommendations for control of other weeds

Blue periwinkle occurs in a dense patch on the reserve edge near Black Dog Reef.

- Blue periwinkle – monitor its spread, hand pulling is unlikely to deal with this weed as it spreads vegetatively, repeated treatment with herbicide regularly will contain its spread or eradicate eventually. Annual treatment and follow up will be necessary until it has gone. Replanting with resilient natives, silver tussock grass and saggs, could be attempted once the dense cover of periwinkle has been reduced.

Tree lupins are scattered on dunes, in heathland and grassland

- Tree lupins are being well controlled by hand pulling and occasional use of herbicide during walks. Monitor regularly for new emergent and continue control as this species is very invasive in coastal environments.

Sea spurge occurs on Templestowe Beach and can be hand pulled successfully with gloves and bags, best done with a few people together.

Marram grass is well established on dunes on both beaches and is a difficult weed to remove or control successfully. In places it is merging reasonably well with native vegetation.

- Control of marram may be most suitable in certain sites where erosion and collapse is a problem and marram can even facilitate erosion. In these areas e.g. roadsides or closed tracks on dunes, stabilising the sandy substrate and replanting with natives may be successful.

The mature plantation of radiata pine adjoining the reserve represents a long term weed threat as they are a very long-lived tree and dominant and can outcompete native forest over time if conditions are favourable. Yellow tailed black cockatoo forage on their cones and seeds can be spread for miles, and wildlings readily establish.

- Monitor and hand pull radiata pine wildlings wherever they emerge in the conservation area. To kill larger plants cut through trunk below lowest branch. Control prior to cone development, ideally.

Shrubby daisy bush is well established on dunes behind Templestowe Beach at the southern end. In places where it is mingling with coast wattle it may be prudent to monitor it before attempting control which will be time consuming.

- It can be treated by cut and paint method, but careful bagging and disposing of fertile material is essential.
- It is a vigorous plant and a control strategy should be to tackle contained patches at a time with revegetation to take up the space.

Other than shrubby daisy bush which is present on a lot of the east coast, garden escapes onto the coastal reserve were not a big problem as most gardens had a high native component. Nevertheless, raising awareness in the community of garden plants potentially becoming environmental weeds would help to prevent a future problem.

- Hold a native plant and weed identification and weed control field day in the local community to promote knowledge and understanding of the weed threat and individuals' capacity to manage them.

Serious weeds Spanish heath, African boxthorn, Montpellior or canary broom have all been treated and controlled on site. Continued monitoring for regrowth or new outbreaks is recommended with immediate follow up treatment. Boneseed and crack willow recorded nearby are potential on site and their likely appearance should be constantly monitored. They can be hand pulled immediately if found in small numbers and as juveniles. Otherwise, foliar spray or cut and paint stems may be necessary. Once recorded and treated, annual monitoring and follow up is necessary for control.

Fig. 62 Shrubby daisy bush on dunes

Fig. 63 Blue periwinkle on the edge of the reserve near Black Dog Reef. As this is a public pathway weed control and restoration here could be educational and a demonstration site with signage.

For all weed management good hygiene practices are critical, for more information see:
https://nre.tas.gov.au/invasive-species/weeds/weed-hygiene

6.5 Water quality

Water quality deficiencies have the potential to degrade habitat in and around estuarine Templestowe Lagoon and freshwater Seymour Swamp, ephemeral surface water and possibly ground water.

Edgar et al. (1999) identified ecological threats to Tasmanian estuaries and those relevant to Templestowe Lagoon include increased siltation from land clearance and urban and rural runoff, increased nutrient loads from agricultural fertilisers, modification of water flow through dams and weirs, long-term climate change and potentially introduced marine pests. These threats have the potential to degrade water quality and aquatic habitat in the lagoon. The ability of the lagoon to flush itself and maintain healthy water quality is dependent on good rainfall and water volume to keep the mouth open. Sand deposition along the coast, influenced by tides, storms, ocean currents and subject to the effects of climate change, also plays a role in the opening and closing of the mouth. Times of drought will reduce water volume and quality, potentially concentrating agricultural runoff.

Other than the small riparian section of Seymour Conservation Area land adjacent to Templestowe Lagoon and a narrow strip of crown land, the lagoon is surrounded by private land used for agriculture which has mostly been cleared and degraded.

Water quality in Templestowe Lagoon is potentially subject to nutrification and pollution from land use in the lower catchment with run off from agriculture and little riparian vegetation to filter and buffer nutrients and sediment. A large new dam for a vineyard and winery has been recently approved and installed on a tributary to Templestowe Lagoon potentially compounding these issues.

Water in Seymour Swamp is subject to proximal environmental conditions due to its small catchment and minimal connection to ground water. Factors that potentially reduce water quality in the wetland are runoff from erosion and modified drainage, potentially containing pollutants, from roads and tracks, fire and loss of vegetation cover. Water quality was found to be good at the time of the coastal lagoon assessment (North Barker 2009) and likely to be maintained by the nature of the small, well vegetated catchment.

6.5.1 Recommendations for managing water quality

- Seymour Swamp wetlands – maintain consistent vegetation cover and reduce erosion and runoff from roads to help maintain good water quality.
- Templestowe Lagoon – engage with neighbouring landholders to protect lagoon edges and inflowing water ways with livestock exclusion fencing, widening and restoring riparian vegetation and reduce agricultural runoff.
- Approach government, research organisations and regional bodies to conduct regular scientific monitoring of water quality.
- Monitor water quality in Doctors Creek, Templestowe Lagoon and Seymour Swamp to gather data and inform management.

- Involve adjacent landholders in water quality monitoring, promote use of filtration systems and sediment traps on dam outflows to improve and maintain water quality to creek, lagoon and wetlands.
- Monitoring – investigate funding or support for equipment and contractors to monitor water quality – include macroinvertebrate sampling as ecological indicators as well as physico-chemical, nutrient and biological parameters tabled below.

Table 1 Indicators of aquatic ecosystem estuarine health (EPA 2021)

Estuarine	Physico-chemical: Dissolved Oxygen, Salinity, pH, Turbidity and, Water Temperature. Nutrients: Ammonia/TAN (NH3 and NH4+), Nitrate, Nitrate, Nitrate and Nitrite, Total Nitrogen, Dissolved Reactive Phosphorus, Total Phosphorus, Silicate, and Dissolved Organic Carbon. Biological: Chlorophyll a.

6.6 Roaming Pets

Pets that are not contained are a threat to wildlife. Roaming cats and dogs threaten and kill wildlife through hunting and predation, spreading diseases (i.e. *Sarcosystis* and *Toxoplasmosis),* promoting fear and disturbing feeding and nesting sites. Sea birds and shorebirds are highly vulnerable to disturbance from cats and dogs. There is evidence of predation impacting mutton bird and penguin populations with mauled, dead birds found during the survey and a decline noted in the use of rookeries (pers. com. Daniel Steiner and Quentin Smith), as evidenced by increased growth of vegetation over burrows.

Dogs are allowed on lead on the southern sandy end of Templestowe Beach, where boat launching is allowed but are prohibited from Templestowe Beach north of the Champ St track exit to the beach and all around the Long Point foreshore to Seymour Beach. On Seymour Beach there is a short section where dogs are allowed off lead to exercise, around the track exits onto the beach. According to the Break O'Day Council Dog Management Policy, off lead areas are "where dogs are allowed off lead under escort by their owner or competent person and must remain under effective control. Dog controllers are to remain mindful of other people and wildlife in the area." Dog access zones can be found on the Break O'Day Council website:
https://www.google.com/maps/d/viewer?mid=1rT3JHwpkdC0EYr10NOA-terg5zRuZKj2&ll=-41.745621474272994%2C148.29826750410098&z=15

A variety of signage regarding the dog area rules have been erected on sand dunes, roads and tracks. It is likely there are further opportunities for clear signage alerting responsible dog control at strategic points of entrance to Seymour Conservation Area.

As a formal nature conservation reserve, Seymour Conservation Area is a prohibited area for cats. Managers of Crown Land and formal nature conservation reserves (Prohibited Areas for cats) may trap, seize or humanely destroy a cat found on those areas (https://www.bodc.tas.gov.au/property/cats/).

Domestic cat owners of Seymour have a responsibility to ensure their cats are contained and not roaming. The Cat Management Act (2009) requires that all cats are microchipped and desexed at 4 months or older aiming to reduce roaming and breeding with feral cats, and harming wildlife.

6.6.1 Recommendations for control of dogs and cats

- Improve clear signage for dog on and off lead zones on beaches and access through Seymour Conservation Area.
- Work with NPWS to apply warnings and fines where dogs are found off lead in prohibited or on lead areas.
- Engage with the community to contain cats on their property and for responsible dog control.
- Raise awareness of responsible pet ownership that prevents cats from roaming – https://www.tassiecat.com/resources
  https://nre.tas.gov.au/invasive-species/responsible-cat-ownership
  Tasmanian Cat Management Plan 2017 - 2022

6.7 Feral animals

Feral animals displace native animals in many ways including through predation, competition for resources, destruction of habitat and carrying disease. Cats, rabbits, rats and fallow deer are the most likely feral mammals to be present in the reserve. Feral invertebrates including bumblebees and European wasps are highly likely. A list and information of Tasmania's feral animals is available on the NRE website with advice on how the community can help to manage them:
https://nre.tas.gov.au/Documents/Feral-Deck_Feral-Animals-of-Tasmania.pdf

Cats are recognised as responsible for many extinctions in Australia and are a major threat to shorebirds, all birds, small mammals and restoration efforts. Feral cat management is complex and involves the whole community as cats are closely connected with humans as pets and companion animals and cat welfare is a high priority. Feral cat management and control programs exist in parts of Tasmania where local communities and government have taken measures to raise awareness of cat ownership responsibilities, and desexing and trapping programs are active in some areas. West Tamar Landcare and Bruny Island are two communities willing to share their stories and experiences of cat control programs. Raising awareness, knowledge and engagement within the community is a high priority for improved feral cat control (Johnson and Algar 2022).

Fallow deer population is rising and spreading in distribution in Tasmania and their known extent includes Seymour Conservation Area, which is in the eradication management zone (Tasmanian Wild Fallow Deer Management Plan 2022–27). They are the only deer species in Tasmania and their presence can be recognised through animal sightings, dung pellets, tracks and broken and trampled vegetation. As

browsers they can severely damage native vegetation and are a threat to restoration progress and the good condition of the reserve.

6.7.1 Recommendations for control of feral animals

- Download and use the FeralScan app to record locations and sightings of feral animals on the national database and upload locations to the Natural Values Atlas.
- Landcare Tasmania has a Cat Management Working group that Landcare groups such as SCAGI can join.
- Record and report any sightings of fallow deer to NPWS and upload locations to the Natural Values Atlas.
- Develop a plan for managing feral animals in Seymour Conservation Area starting with community engagement as a priority.
- Engage all stakeholders to develop control strategies, e.g., cat control, based on monitoring.
- Engage the community in a camera monitoring program, especially landholders on surrounding private land.
- Establish a monitoring program using remote sensor cameras to identify and locate feral animals in the reserve.

6.8 Inappropriate development

As a beautiful coastal location with a quiet community, Seymour has experienced increased visitation rates and increased numbers of landowners, both permanent and absentee over the last ~20 years (pers.com. Quentin Smith). This raises potential issues such as threat of new subdivisions, developments and infrastructure for tourism with associated vegetation clearing, habitat loss and potential degradation of the waterways and land surrounding Seymour Conservation Area.

The linear shape of the coastal strip and the wetland characteristics of the lower land in Seymour Conservation Area render it vulnerable to impacts from outside the reserve. A recent successful private land claim under Adverse Possession gained foreshore land bounded by Seymour Conservation Area and the coastal reserve the which would have been highly suitable to include in the conservation area. Coastal development brings increased people, vehicles, pets and pollution (e.g. human waste, rubbish, lights and noise) to potentially impact natural values unless foresight and planning is engaged in sympathy with ecological needs.

6.8.1 Recommendations to manage inappropriate development

- Long Point / Seymour retained as low density residential and farming and low impact tourism, in order to limit impacts to remnant vegetation (BOD Council Coastal Plan 2015) and threatened species habitat and the integrity of Seymour Conservation Area.
- Liaise with Break O'Day Council planners to prioritise consideration of potential impacts to the natural values in Seymour Conservation Area from any development approvals

- Even 'low impact' tourism needs planning as it could have negative impacts on habitat and threatened species in the reserve through flow on effects such as new walking tracks and increased companion animals.

6.9 Fire

Fire is a threat to natural values, infrastructure and restoration as well as being a natural part of the system through evolution and a useful management tool in some circumstances. However, fire is a potential threat and high risk for habitat loss for threatened species and threatened vegetation communities means. Wildfire, escaped planned burns and too frequent ecological or fuel reduction burns are all likely to occur on site. Seymour Conservation Area has recorded 11 fires since 1995 (NVA January 2023), one the planned burn of 2016, two were undetermined and the others were classed as accidental. Dry windy conditions often prevalent in summer and flammable coastal vegetation with peaty soils make this a high fire risk area. The shape of the conservation area means that a lot of edge is vulnerable to fire from different directions and sources.

Fire was used to promote grazing land historically and has been successfully used to manage gorse. As part of the restoration program fire could be used to sustain vegetation communities such as coastal heath and manage successional changes in vegetation. However, too frequent burns could deplete the system of ground cover, soil organic matter and moisture, valuable nutrients, species richness, cover habitat especially for fauna, and promote vulnerability to more fire, thus increasing frequency to an untenable level. Fire has a negative impact on saltmarsh, wetlands and swamp paperbark communities and the dune and headland vegetation is vulnerable to wind, drought, erosion and critical habitat loss if burnt.

6.9.1 Recommendations to manage fire risk

- Keep fire out of the saltmarsh, wetlands and swamp paperbark communities, to maintain their good condition. Their good condition is not compatible with fire, which would harm aquatic and coastal habitat and fauna, including shorebirds and threatened green and gold frog, known to be on site.
- For restoration purposes fire could be used in patches in the regenerating cleared land on introduced grass areas and on contained patches of gorse, with strategic management and controls, where revegetation has not been initiated and excluding the scattered patches of native vegetation. More advanced restoration areas such as those with revegetation, regenerating paperbark and other native shrubs and trees, sedges and rushes would be set back and investment lost if burnt. Follow up weed control after use of fire is essential.
- Planned burns for fuel reduction should consider the requirements of the vegetation communities involved, the current cycle of 8–15 years (Smith et al 2022) may be too frequent to support species richness and diversity. However, some burning on longer frequencies, not less than 15 years, may be suitable to maintain open heathland habitat.

- Maintain and enforce conditions of no recreational or campfires fires in the reserve and no fires permitted without NPWS authority.

6.10 Diseases

Phytophthora cinnamomi, or rootrot disease, ("Pc") is a serious threat to native vegetation, especially coastal heathland and dry forests. It is a fungus-like pathogen which can be transported in soil particles and carried on vehicles and footwear. It affects susceptible plants, many of which are coastal heath species, such as grasstrees, banksias and many flowering shrubs and trees, and results in death. There were no records of Pc in or within 1000 m of Seymour Conservation Area on the NVA (January 2023). However, it is a known threat to coastal vegetation communities and individual species such as silver banksia and grasstrees are highly susceptible. Signs of Pc include yellowing of part or all the plant, increasing necrosis and then death. Specific soil tests from samples sent to the Newtown Laboratory in Hobart will identify the presence of this threat. Pc is highly mobile in water and along tracks and the many roads and tracks in and around Seymour Conservation Area suggests high potential for Pc introduction.

Freshwater wetlands, such as those in Seymour Conservation Area, may potentially be affected by a global amphibian disease, *Batrachochytrium dendrobatidis* **chytrid fungus,** which harms frogs by infection of their skin in many wetlands throughout Tasmania. Threatened green and gold frog recorded here is vulnerable to this disease.

Zoonotic diseases (those transferable from animals to humans) such as *Sarcosystis* and *Toxoplasmosis* are spread by cats and dogs and are difficult to identify but can be catastrophic for livestock and humans causing abortion, illness and death and economic loss. Management of these diseases can be helped through responsible pet ownership, feral cat control options addressed in 6.6. and 6.7.

6.10.1 Recommendations to manage diseases and soil borne pathogens

- A hygiene station location has been nominated by SCAGI for location at the junction of Champ St and the track to Templestowe Beach for wash down with water sourced from a potable council approved source to reduce risk of disease and infection spread. This proposal should be supported and managed by NPWS and implemented as a priority.
- A likely hot spot for Pc introduction is the whole track from Champ St to Templestowe Beach, subject to wet and muddy conditions and used by many unauthorised vehicles. The construction of a locked boom gate and a hygiene station should help to avoid this problem.
- Practice good hygiene with cleaning and wash down of vehicles, tools, boots and equipment before entering and working anywhere on site. https://nre.tas.gov.au/Documents/15130802_52keepingitcleanspreadswe.pdf
- Close any unnecessary vehicle tracks and minimise footpaths through the reserve to minimise risk of introduced pathogens.

- Seasonal closure of public visitation during wet times would reduce risk of importing Pc to the reserve
- Any gravel or other road maintenance materials should be sourced from an accredited Pc free quarry and all on site hygiene carefully managed.
- Monitor for symptoms of Pc infection – yellowing and dying plants, can be in a swathe near water
- Undertake Pc surveys and soil samples if symptoms are detected and proceed with quarantine measures.
- Conduct repeat frog call surveys or visual tadpole surveys to provide presence/absence data to monitor frog populations.
- Chytrid fungus surveys require specialists, liaise with NPWS and NRE regarding frog monitoring and management.
- Use “frog friendly” herbicides such as Roundup Biactive ®, and Weedmaster Duo ® but limit amounts as much as possible near wetlands and drains.
- Suspected cases of *Toxoplasmosis* (i.e. dead bodies of wildlife or sheep) can be taken to Mt Pleasant Pathology Laboratory (Prospect, Launceston) for examination and diagnosis. Practice safe hygiene when handling any carcass or body parts e.g. placentas, use gloves, bag the sample with two layers and travel in an esky = 3 layers of protection. Wash your hands after handling samples.
- Raise community awareness of disease behaviour and threats to fauna and flora, humans and livestock with signage and promotion.

6.11 Acid sulfate soils

Potential acid sulfate soils are naturally occurring soils that contain iron sulfides which remain stable when buried under anoxic waterlogged environments. When these soil layers are exposed to air by drying out, drainage or soil disturbance, they can oxidise to form sulfuric acid. If released, this acid can lead to massive fish kills and loss of habitat, and can be extremely damaging to the environment, to farm productivity, to infrastructure and to human health. Such damage may be long-lasting and expensive or impossible to reverse.

High probability occurrence of acid sulfate soils is mapped in Seymour Conservation Area on the south side of Templestowe Lagoon immediately below Doctors Creek confluence, where the saltmarsh community lies and in a ~6ha patch between Seymour Swamp and the dunes behind the southern end of Templestowe Beach (List Map January 2023). The road access to the beach passes through this patch and is currently very eroded, presenting a potential threat. Another high probability area is mapped on the northern and east edges of Templestowe Lagoon proximal to Seymour Conservation Area. The remaining parts of Seymour Conservation Area has been mapped with a ‘low’ or ‘extremely low’ probability of occurrence of acid sulfate soils (NVA January 2023). Other than the access track to Templestowe Beach the vulnerable areas are well vegetated and unlikely to be disturbed.

In the lagoon itself, risks of soil acidification would increase if the lagoon dries out when the mouth is closed. When the mouth is open, tidal seawater maintains waterlogged soils and natural buffering.

6.11.1 Recommendations to manage acid sulfate soils

- For any probable acid sulfate soils – keep them wet, keep them anaerobic, and do not disturb them.
- Maintain vegetation cover, structure and integrity associated with wetlands and the lagoon and the high-risk acid sulfate area.
- Seek advice from Rob Morton, Prospect Offices, Launceston, NRE if acid sulfate soil disturbance is suspected.
- Close the road if necessary at the end through the dunes to Templestowe Beach and allow vegetation to return to the site, actively revegetate.
- Avoid draining the area while it revegetates.

7 Priorities for Management

Management issues and potential solutions are extensive. Management areas are prioritised below as the most important to manage the threats and issues discussed earlier.

7.1 Priorities for management areas:

7.1.1 High Priority

- Areas of special ecological value where conservation gains can be highest – threatened vegetation communities, threatened species habitat, riparian and wetland areas, good condition native vegetation – weed control, no new tracks or fire – Management area 1a (freshwater wetlands and paperbark swamp forest) and 1b (saltmarsh community)
- Good condition native regeneration evident where timely weed control gives best value – protect emerging juveniles from browsing, weed control, revegetate in gaps – Management areas 1, 2, 3
- Areas where weed regrowth poses a threat to good condition native regeneration – weed control of young gorse, low clumps of gorse, blackberry, revegetate in gaps – Management areas 1, 2, 3
- Boom gate and authorised access only from Champ St to Templestowe Beach – Management areas 4 and 5
- Install hygiene station at Champ St entrance to reserve – between Management area 4
- Rehabilitate damaged track to restore vegetation, reduce erosion and redirect drainage – end near Templestowe Beach Management area 5

7.1.2 Medium Priority

- Strategic sites connecting high value sites, can be managed with slashing, strategic fire, weed control and managed regeneration – Management area 6 – slashing and burning will have to be followed up in a timely manner, weed control and revegetation to supplement existing native regeneration
- Maintain integrity of remnant edges to protect whole patches – Management areas 2, 9 a,b,c – weed control on edges, liaise with neighbours to discourage new tracks and keep pets on their own properties
- Control weeds and reduce erosion through track management and closure, increase dog control, – Management area 8

7.2 Summary of priority actions

6. Vegetation
    a. Protect and maintain existing remnant vegetation maintain edges as buffers
    b. Revegetation with local native species to close gaps and follow up after weed control
    c. Exclude fire from sensitive areas like wetlands and dunes, increase frequency of planned burns to minimum 15 years
7. Access
    a. Install boom gate at the Champ St entrance of the track north to Templestowe Beach with key for authorised access only, permits necessary
    b. No vehicles on Seymour Beach except to access one designated boat launching area
    c. No camping in the reserve
    d. Install clear signage for regulations regarding access
8. Dogs and cats
    a. Improve dog control with clear signage and fine enforcement
    b. Engage with local community and other stakeholders to improve cat control
9. Biosecurity and soils
    a. Weed control – gorse, blackberries, thistles and other weeds
    b. Install and use weed and disease control hygiene station at Champ St entrance to reserve
    c. Track closure and rehabilitation, erosion and drainage control
    d. Seek advice from NRE if acid sulfate soil disturbance is suspected
10. Monitoring programs
    a. Monitoring programs, maintain records for adaptive management:
        i. regeneration, revegetation, weeds
        ii. birds, frog calls, feral cat presence
        iii. water quality

Table 2 management areas and priority actions

Management area	Natural values	Threats	Priority Actions
1a	Threatened vegetation communities, Swamp paperbark forest and freshwater wetlands, threatened species green and gold frog, threatened species habitat, very good condition, few weeds, intact structure and diversity	Weed invasion, climate change, fire, drought, harm to wildlife and threatened species, weed and disease introduction and spread, fire	**Protect, maintain** with weed control, gorse and blackberry as priority No new tracks or fire Protect and manage natural regeneration - protect young native plants from browsing if necessary Maintain intact and monitor for new weed appearance Seasonal access only in dry seasons Initiate water quality monitoring program in wetland Monitor frog presence and health, seek advice if Chytrid fungus suspected Monitor vegetation health throughout and regeneration on edges Monitor bird presence-absence during spring and summer
1b	Threatened vegetation community, saline saltmarsh, threatened species habitat, shorebirds and migratory birds, very good condition, few weeds, intact structure and diversity	Potential declining water quality, potential changes to hydrological cycle, climate change, sea level rise, weed invasion, fire	Initiate water quality monitoring program below new dam outfall, Doctors Creek and Templestowe Lagoon. Weed control of thistles Do not burn or form tracks Monitor for new weed invasions Monitor bird presence-absence during spring and summer
2	Threatened species habitat, excellent regeneration and connection to threatened vegetation, good condition habitat, moderate weed presence	Erosion, habitat loss, harm to wildlife and threatened species, weed and disease introduction and spread, fire	Maintain integrity of remnant edges to protect whole patches Weed control of gorse, blackberry as priority and other weeds, Revegetate in gaps with local native species Monitor progress of revegetation and regeneration using transects, species records and photo points Monitor bird presence-absence during spring and summer
3	Threatened species habitat, excellent regeneration and revegetation, connection to threatened vegetation, good condition habitat, moderate weed presence	Habitat loss, harm to wildlife and threatened species, weed and disease introduction and spread, fire, loss of revegetation investment and progress	Weed control of young gorse, low clumps of gorse, blackberry and other weeds, revegetate in gaps Recognise areas of native grasses (silver tussock, kangaroo, wallaby and plume grasses) revegetate around and maintain them Monitor progress of revegetation and regeneration using transects, species records and photo points Monitor bird presence-absence during spring and summer
4	High conservation values to manage and protect from this strategic biosecurity point	Erosion, habitat loss, harm to wildlife and threatened species, weed and disease introduction and spread, fire	Install boom gate with key for authorised access only Install and use hygiene station at Champ St entrance to reserve Install clear signage for regulations to access and pet control
5	High conservation values to protect	Habitat loss and acid sulfate soil disturbance from track erosion, weed and disease introduction and spread, fire	Rehabilitate damaged track to restore vegetation, reduce erosion and redirect drainage Seek advice from NRE if acid sulfate soil disturbance is suspected Monitor erosion and vegetation recovery

6	Threatened species habitat, strategic sites, buffering and connecting high value sites, natural regeneration occurring, succession to threatened community swamp paperbark forest likely in parts, open hunting habitat for raptors	Weed invasion especially gorse and blackberry, weed and disease introduction and spread, fire, loss of restoration investment and progress	Revegetate out from patches of native grasses and sedges and along drainage lines and soaks where rushes and paperbark are regenerating Continue to plant into areas of bracken fern and bare ground, eroded areas Recognise areas of native grasses (silver tussock, kangaroo, wallaby and plume grasses) revegetate around and maintain them Plant areas of structural diversity for a range of habitats Monitor progress of revegetation and regeneration using transects, species records and photo points Monitor bird presence-absence during spring and summer
7	Dune habitat for shorebirds, threatened species habitat, shorebirds and migratory birds, unmodified mouth of Templestowe Lagoon, dune vegetation intact, some weeds	Dune erosion, habitat loss, harm to wildlife and threatened species, weed and disease introduction and spread, fire	Templestowe Beach control unauthorised access through boom gate No vehicles on beach Weed control on dunes if time and energy permit Keep campers out to reduce risk of fire and rubbish Southern end is dog off lead area so access on foot from southern end of beach
8	Dune habitat for shorebirds, dune vegetation intact, some weeds,	Dune erosion, habitat loss, harm to wildlife and threatened species, weed and disease introduction and spread, fire	Control weeds and reduce erosion through track management and closure, Improve dog control with clear signage and fine enforcement Allow boat launching but manage track to avoid erosion and habitat loss Restrict vehicles other than boat launching, only foot access Monitor weed (likely gorse) invasion from behind the dunes Seymour to Douglas River mouth
9	Patches of threatened vegetation communities connected to coastal reserve, mutton bird rookeries,	Edge effects, poor roadside management, roaming pets, storm damage, new tracks, rubbish dumping, weed and disease introduction and spread, fire	Maintain integrity of remnant edges to protect whole patches Weed control where accessible, form no new tracks, no burning Maintain edges as buffers for the reserve Encourage responsible pet ownership to avoid roaming pets Fire restriction Engage local residents to take pride in reserve and support wildlife habitat Engage with BOD council to improve roadside management for reserve protection
10	Good native vegetation around edges of reserve and along roads	Weeds established in parking areas and roadsides, weed and disease introduction and spread, fire	Install new clear signage informing dog control and beach access Weed control around car parks and roadsides Maintain edges as buffers for the reserve

8. References

Blood, K. (2001), Environmental Weeds, a Field Guide for SE Australia. CH Jerram Science Publishers, Mt Waverley, Victoria.

Break O'Day Council TCG Planning and Environmental Services and Design (2015) Coastal Plan Break O'Day Council Municipal Management Plan

de Salas, MF, Baker, ML (2022) A Census of the Vascular Plants of Tasmania, including Macquarie Island. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery, Hobart) https://flora.tmag.tas.gov.au/resources/census/

Department of Primary Industries, Parks, Water and Environment, Tasmanian Acid Sulfate Soil Management Guidelines, coordinated by Declan McDonald, Sustainable Land Use Section, Land Conservation Branch, DPIPWE.

DPIWE (2005), Threatened Native Vegetation Communities List (Version 6.0). Department of Primary Industries, Water and Environment, November 2005, available on website www.dpiw.tas.gov.au.

Department of Primary Industries, Parks, Water and Environment (2015). Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania. (Eds.) Karen Stewart and Michael Askey-Doran. Department of Primary Industries, Parks, Water and Environment, Hobart, Tasmania

Environment Protection Authority (2021) Default Guideline Values (DGVs) for Aquatic Ecosystems of Tasmanian Estuarine Waters, Environment Protection Authority, Hobart, Tasmania Natural and Cultural Heritage Division (2015)

Guidelines for Natural Values Surveys - Terrestrial Development Proposals. Department of Primary Industries, Parks, Water and Environment

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.

Johnston, M. and Algar, D (2020). Glovebox Guide for Managing Feral Cats. PestSmart Toolkit publication. The Centre for Invasive Species Solutions, Canberra, ACThttps://pestsmart.org.au/wp-content/uploads/sites/3/2021/02/CISS-Glovebox-Guide-Cat-web.pdf

Natural Values Atlas (www.naturalvaluesatlas.tas.gov.au), January 2023

North, A., and Barker, P. (2009) Break O'Day Coastal Lagoon Assessment for NRM North and break O'Day Council

Muyt, A. (2001), Bush Invaders of South-East Australia. R.G. and F.J. Richardson, Meredith, Victoria.

Philips, A., Voyles, J., Wilson, D., Driessen, M. (2010), Tasmanian Chytrid Management Plan, Biodiversity Conservation Branch, DPIPWE Tasmania

Reid, J.B., Hill, R.S., Brown, M.J., Hovenden, M. J. (2005) Vegetation of Tasmania Australian Biological Resource Study Flora of Australia supplementary series no. 8. Hobart, Tasmania.

Ross, J., Crawford, C., and Gibson, J. (2011) A decision tree for monitoring and management of Tasmanian estuaries, Fact Sheet for managers and policy makers #16 Landscape Logic, Department of Sustainability, Environment, Water, Population and Communities.

Smith, Q., Simth, K., Dudley, T., Everts, F., Steiner, D. (2022 – Update 8) Gorse Eradication Strategy for Seymour Wetlands Restoration, Seymour Community Action Group Inc 11 May 2017 to 9 Aug 2022 Guidelines for the long-term control of Gorse - Ulex europaeus on Crown Land at Seymour PID 6406669 on the East Coast of Tasmania.

Tasmanian Government Gazette (Wednesday 29 June 2022) No. 22 207 Published by Authority ISSN 0039-9795 **www.gazette.tas.gov.au**

Tasmanian Fallow Deer Management Plan 2022–27
https://nre.tas.gov.au/Documents/Tasmanian%20Wild%20Fallow%20Deer%20Management%20Plan%202022-27.pdf

Threatened Species Unit (2003), Listing Statements, Threatened Flora of Tasmania CD, Department of Primary Industries and Water, Hobart.

9 Appendices

9.1 Appendix 1. Legislation relating to species of conservation significance

The Threatened Species list for Tasmania consists of plants and animals listed under the *Environmental Protection and Biodiversity Conservation Act 1999* at the Commonwealth level and/or listed under the *Tasmanian Threatened Species Protection Act 1995* at the State level.

Tasmanian Threatened Species Protection Act 1995
There are specified criteria and mechanisms for listing and de-listing of taxa under the Tasmanian *Threatened Species Protection Act 1995*. The Minister is responsible for this, but is advised by a Scientific Advisory Committee (S.A.C.). Criteria are described in Guidelines for the Listing of Species under the Tasmanian *Threatened Species Protection Act 1995*[5] . It is an offence to knowingly "take" (including kill or injure) threatened flora or fauna without a permit. Permits may be applied for from the Threatened Species Unit, Department of Primary Industries, Water and Environment.

At the State level, threatened species may be placed in one of four categories that indicate their level of extinction risk. The four categories or risk codes are listed in order of decreasing seriousness:

Extinct (x): Those species presumed extinct.
Endangered (e): Those species in danger of extinction because long-term survival is unlikely while the factors causing them to be endangered continue operating.
Vulnerable (v): Those species likely to become endangered while the factors causing them to become vulnerable continue operating.
Rare (r): Those species with a small population in Tasmania that are at risk.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999
At the Commonwealth level threatened species listed in the *Environment Protection and Biodiversity Conservation Act 1999* may be placed in one of five categories that indicate their level of extinction risk. It is an offence to undertake an action that will have a significant impact on listed threatened species or communities without approval or exemption from the federal Environment Minister. A process is defined for applying for approval.

The five categories or risk codes are listed in order of decreasing seriousness:

Extinct (EX): Where a species has not definitely been located in the wild for the past 50 years.
Extinct In The Wild (EW): A species cannot be found living in the wild despite exhaustive surveys, but is still known to exist in captivity. At present we do not have any in this category in Tasmania.
Critically Endangered (CR): In this case a species is in extreme danger of becoming extinct in the immediate future.
Endangered (EN): A species at very high risk of becoming extinct in the near future.
Vulnerable (VU): A species is facing a high risk of extinction in the medium term future.

Tasmanian Regional Forest Agreement 1997
Priority Species Requiring Consideration are listed in Attachment 2 of the *Tasmanian Regional Forest Agreement 1997*. The list includes threatened species, species protected through other mechanisms (such as the Forest Practices Code) and others requiring further research to determine requirement for protection. For instance, the list includes hollow dependent species.

Tasmanian *Wildlife Regulations 1999* (*Nature Conservation Act 2002)*
Protected wildlife (currently fauna species only) is listed on Schedules 1, 2, 3 and 4. Note that these schedules also list threatened species from other states, and are updated less frequently than the schedules in the *Threatened Species Protection Act 1995*. It is illegal to "take" (including kill or injure) protected wildlife or their products (nests, burrows, etc), unless authorized by a permit or licence. Permits may be applied for from the Nature Conservation Branch, Department of Primary Industries, Water and Environment.

Tasmanian *Forest Practices Act 1985* and *Regulations*
Available at www.fpa.tas.gov.au is a Forest Practices Authority information sheet that describes the legislation affecting land clearing under this Act.

9.2 Appendix 2. Vascular plants identified during this survey

Key:
e = endemic in Tasmania; d = declared weed; i = introduced and naturalised in Tasmania.

Family	Species	Common name	Status
	EUDICOTS		
AIZOACEAE	*Carpobrotus rossii*	native pigface	
	Tetragonia implexicoma	bower spinach	
AMARANTHACEAE	*Rhagodia candolleana*	coast saltbush	
APOCYNACEAE	*Vinca major*	blue periwinkle	i
ASTERACEAE	*Cirsium vulgare*	scotch thistle	d
	Hypochaeris radicata	rough catsear	i
	Ozothamnus costatifructus	east coast everlastingbush	e
	Osteospermum fruiticosum	shrubby daisy bush	i
	Senecio linearifolius	fireweed groundsel	
CAMPANULACEAE	*Lobelia anceps*	angled lobelia	
	Lobelia pedunculata	matted lobelia	
	Wahlenbergia spp.	bluebells	
CASUARINACEAE	*Allocasuarina littoralis*	black sheoak	
CONVOLVULACEAE	*Dichondra repens*	kidneyweed	
DILLENIACEAE	*Hibbertia procumbens*	spreading guineaflower	
	Hibbertia riparia	erect guinea-flowe	
DROSERACEAE	*Drosera peltata*	sundew	
ERICACEAE	*Epacris impressa*	common heath	
	Epacris lanuginosa	swamp heath	
	Leucopogon parviflorus	coast beardheath	
	Monotoca elliptica	tree broomheath	
FABACEAE	*Acacia dealbata*	silver wattle	
	Acacia genistifolia	spreading wattle	
	Acacia longifolia subsp *sophorae*	coast wattle	
	Acacia melanoxylon	blackwood	
	Acacia verticillata	prickly moses	
	Almaleea subumbellata	wiry bushpea	
	Daviesia latifolia	hop bitterpea	
	Daviesia ulicifolia	yellow spikey biitterpea	
	Dillwynia glaberrima	smooth parrotpea	
	Lupinus arboreus	tree lupin	i
	Kennedia prostrata	running postman	
	Phyllota diffusa	heath bushpea	
	Pultenaea juniperina	prickly beauty	
	Ulex europaeus	gorse	d
MYRTACEAE	*Eucalyptus amygdalina*	black peppermint	e
	Eucalyptus globulus subsp. *globulus*	Tasmanian blue gum	
	Eucalyptus ovata	black gum	
	Eucalyptus viminalis	white gum	

	Euryomyrtus ramosissima	rosy heath myrtle	
	Leptospermum lanigerum	woolly tea tree	
	Leptospermum scoparium	prickly tea tree	
	Melaleuca ericifolia	swamp paperbark	
	Melaleuca gibbosa	slender honeymyrtle	
OXALIDACEAE	*Oxalis perennans*	grassland woodsorrel	
PITTOSPORACEAE	*Bursaria spinosa*	prickly box	
PROTEACEAE	*Banksia marginata*	silver banksia	
	Hakea teretifolia	dagger needlebush	
RHAMNACEAE	*Pomaderris elliptica*	yellow dogwood	e
ROSACEAE	*Acaena novae-zelandiae*	common buzzy	
	Rubus fruticosus	blackberry	d
SOLANACEAE	*Solanum laciniatum*	kangaroo apple	
STYLIDIACEAE	*Stylidium graminifolium*	narrowleaf triggerplant	
THYMELAEACEAE	*Pimelea glauca*	smooth riceflower	
	Pimelea humilis	dwarf riceflower	
	Pimelea linifolia	slender riceflower	
	MONOCOTS		
ASPARAGACEAE	*Lomandra longifolia*	sagg	
CYPERACEAE	*Carex appressa*	tall sedge	
	Gahnia filum	chaffy sawsedge	
	Eleocharis sphacelata	tall spikesedge	
	Ficinia nodosa	knobby clubsedge	
	Lepidosperma concavum	sand swordsedge	
	Lepidosperma gladiatum	coast swordsedge	
	Lepidosperma sp.	sword sedges	
	Schoenus apogon	common bogsedge	
HEMEROCALLIDACEAE	*Dianella revoluta*	spreading flaxlily	
HYPOXIDACEAE	*Hypoxis glabella*	yellow star	
IRIDACEAE	*Diplarrena moraea*	white flag-iris	
	Patersonia occidentalis	long purpleflag	
JUNCACEAE	*Juncus kraussii*	sea rush	
	Juncus pallidus	pale rush	
	Juncus planifolius	broadleaf rush	
	Juncus procerus	tall rush	
JUNCAGINACEAE	*Triglochin procerus*	water ribbons	
ORCHIDACEAE	*Spiranthes australis*	pink spiral-orchid	
POACEAE	*Ammophila arenaria*	marram grass	i
	Anthoxanthum odoratum	sweet vernalgrass	i
	Austrofestuca littoralis	coast fescue	
	Austrostipa spp.	speargrass	
	Austrostipa stipoides	coastal speargrass	
	Dichelachne crinita	longhair plumegrass	
	Distichlis distichophylla	australian saltgrass	
	Holcus lanatus	yorkshire fog	i
	Microlaena stipoides	weeping grass	

	Phragmites australis	southern reed
	Poa labillardierei	silver tussockgrass
	Poa poiformis	coast tussockgrass
	Rytidosperma caespitosum	common wallaby grass
	Rytidosperma spp.	wallaby grasses
	Spinifex sericeus	beach spinifex
	Themeda triandra	kangaroo grass
RESTIONACEAE	*Empodisma minus*	spreading roperush
	Leptocarpus tenax	slender twinerush
XANTHORRHOEACEAE	*Xanthorrhoea australis*	southern grasstree
	PTERIDOPHYTA	
DICKSONIACEAE	*Calochlaena dubia*	common ground fern
DENNSTAEDTIACEAE	*Pteridium esculentum*	bracken
AZOLLACEAE	*Azolla rubra*	azolla

9.3 Appendix 3. Species guide for restoration of Seymour Conservation Area

Plants noted during site visit in January 2023, their (general) occurrence in different vegetation communities and suitability for revegetation within and on edges of these communities, weeds marked*.

Key:

AFS	Freshwater aquatic sedgeland and rushland
GSL	Lowland grassy sedgeland
SCH	Coastal heathland
NME	*Melaleuca ericifolia* swamp forest
SAL	*Acacia longifolia* coastal scrub
SSC	Coastal scrub
FRG	Regenerating cleared land
Reveg	Species suitable for revegetation, some species already used in revegetation
1	Occurs in this community or category

Full name	Common name	AFS	GSL	SCH	NME	SAL	SSC	FRG	Reveg
Acacia dealbata	silver wattle			1	1		1	1	1
Acacia genistifolia	spreading wattle			1			1		1
Acacia longifolia subsp *sophorae*	sydney coast wattle			1		1	1		
Acacia melanoxylon	blackwood			1	1		1		1
Acacia verticillata	prickly moses			1	1		1		
Acaena novae-zelandiae	common buzzy		1	1	1	1	1	1	
Allocasuarina littoralis	black sheoak			1			1	1	1
Almaleea subumbellata	wiry bushpea		1	1	1		1		
*Ammophila arenaria**	marram grass*					1	1	1	
*Anthoxanthum odoratum**	sweet vernalgrass*		1	1	1	1	1	1	
Austrostipa spp.	speargrass		1	1		1	1	1	1
Azolla rubra	pacific azolla	1							
Banksia marginata	silver banksia			1	1	1	1		1
Bursaria spinosa	prickly box			1	1	1	1		1
Calochlaena dubia	common ground fern		1	1	1		1	1	
Carex appressa	tall sedge	1	1	1	1	1	1	1	1
Carpobrotus rossii	native pigface					1			
Cirsium arvense	creeping thistle		1		1	1	1	1	
Daviesia latifolia	hop bitterpea			1					
Daviesia ulicifolia	yellow spiky bitterpea		1	1			1		1
Dianella revoluta	spreading flaxlily		1	1		1	1	1	1
Dichelachne crinita	longhair plumegrass		1	1			1	1	1
Dichondra repens	kidneyweed		1	1	1	1	1		
Dillwynia glaberrima	smooth parrotpea			1					
Diplarrena moraea	white flag-iris		1	1		1	1	1	1
Distichlis distichophylla	australian saltgrass				1	1	1	1	1
Drosera peltata	sundew		1	1					
Eleocharis sphacelata	tall spikesedge	1							
Empodisma minus	spreading roperush	1	1	1	1			1	
Epacris impressa	common heath			1					
Epacris lanuginosa	swamp heath		1	1					
Eucalyptus amygdalina	black peppermint		1	1				1	1

Full name	Common name	AFS	GSL	SCH	NME	SAL	SSC	FRG	Reveg
Eucalyptus globulus subsp. *globulus*	tasmanian blue gum			1					1
Eucalyptus ovata	black gum			1	1			1	1
Eucalyptus viminalis	white gum			1	1			1	1
Euryomyrtus ramosissima	rosy heathmyrtle			1					1
Ficinia nodosa	knobby clubsedge	1	1	1	1	1	1	1	1
Hakea teretifolia	dagger needlebush			1	1		1		1
Hibbertia procumbens	spreading guineaflower		1	1					1
Hibbertia riparia	erect guinea-flower		1	1					1
*Holcus lanatus**	yorkshire fog		1	1		1	1	1	
Hypochaeris radicata	rough catsear		1	1			1	1	
Hypoxis glabella	yellow star		1	1			1		
Juncus kraussii	sea rush		1	1	1	1	1	1	1
Juncus pallidus	pale rush	1	1	1	1	1	1	1	1
Juncus planifolius	broadleaf rush		1	1	1	1	1	1	
Juncus procerus	tall rush		1	1	1	1	1	1	1
Kennedia prostrata	running postman			1	1		1	1	
Lepidosperma concavum	sand swordsedge		1	1		1	1	1	
Lepidosperma gladiatum	coast swordsedge					1	1		
Lepidosperma spp.	swordsedge		1	1	1		1	1	
Leptocarpus tenax	slender twinerush		1	1	1		1	1	
Leptospermum lanigerum	woolly teatree			1			1		1
Leptospermum scoparium	prickly tea tree			1	1		1	1	1
Leucopogon parviflorus	coast beardheath		1	1		1	1		1
Lobelia anceps	angled lobelia		1	1	1	1	1		
Lobelia pedunculata	matted lobelia		1	1	1			1	
Lomandra longifolia	sagg		1	1	1	1	1	1	1
Melaleuca ericifolia	coast paperbark			1	1		1	1	1
Melaleuca gibbosa	slender honeymyrtle			1	1		1		1
Microlaena stipoides	weeping grass		1	1	1		1	1	
Monotoca elliptica	tree broomheath		1	1	1		1		1
Oxalis perennans	grassland woodsorrel		1	1	1		1	1	
Ozothamnus costatifructus	east coast everlastingbush						1		1
Patersonia occidentalis	long purpleflag		1	1			1		
Phragmites australis	southern reed	1							
Phyllota diffusa	heath bushpea		1	1			1		
Pimelea glauca	smooth riceflower					1			
Pimelea humilis	dwarf riceflower		1	1			1	1	
Pimelea linifolia	slender riceflower		1	1			1		
Poa labillardierei	silver tussockgrass		1	1	1	1	1	1	1
Poa poiformis	coast tussockgrass					1			1
Pomaderris elliptica var. diemenica	tasmanian yellow dogwood			1	1		1		1

Full name	Common name	AFS	GSL	SCH	NME	SAL	SSC	FRG	Reveg
Pteridium esculentum	bracken		1	1	1	1	1	1	
Pultenaea juniperina	prickly beauty			1		1			1
Rhagodia candolleana	coast saltbush			1	1	1	1		1
*Rubus fruticosus**	blackberry*		1	1	1	1	1	1	1
Rytidosperma caespitosum	common wallabygrass		1	1	1	1	1	1	
Rytidosperma spp.	wallaby grass		1	1	1	1	1	1	
Schoenus apogon	common bogsedge	1	1	1	1		1	1	
Senecio linearifolius	cobweb fireweed groundsel		1	1	1	1	1	1	
Solanum laciniatum	kangaroo apple			1			1	1	
Spinifex sericeus	beach spinifex					1			
Spiranthes australis	lowland spiral-orchid		1	1			1		
Stylidium graminifolium	narrowleaf triggerplant		1	1		1	1	1	
Tetragonia implexicoma	bower spinach			1	1	1	1	1	1
Themeda triandra	kangaroo grass		1	1	1	1	1	1	
Triglochin procerus	water ribbons	1							
*Ulex europaeus**	gorse		1	1	1	1	1	1	
*Vinca major**	blue periwinkle*				1	1	1		
Wahlenbergia spp.	bluebell		1	1	1	1	1	1	
Xanthorrhoea australis	southern grasstree		1	1					

9.4 Appendix 4. Threatened fauna recorded within 5 km

Species that have been recorded within 5 km (Natural Values Atlas January 2023) (including marine species).

Key:
Bold recorded on site or within 500 m
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; CD = Conservation Dependent

Common name	**9.4.1.1.1.1 Scientific name**	**Tas. status TSPA 1995**	**Cwth status EPBC 1999**	**Comments**
Fairy tern	***Sterna nereis nereis***	**v**	**VU**	**Coastal shoreline species, losing nesting habitat to beach erosion but SCA restoration will improve catchment to coast environmental condition.**
Green and golden frog	***Litoria raniformis***	**v**	**VU**	**Recorded on site, habitat in wetlands and streams in SCA, restoration will benefit this species**
Gunns screw shell	***Gazameda gunnii***	**v**		**Seashell, sub-tidal and offshore on sand**
Hooded plover	***Thinornis rubricollis***		**VU**	**Coastal shoreline species, many records on both beaches, losing nesting habitat to beach erosion but SCA restoration will improve catchment to coast environmental condition.**
Little tern	***Sterna albifrons sinensis***	**e**		**Coastal shoreline species losing nesting habitat to beach erosion but SCA restoration will improve catchment to coast environmental condition.**
Blue Warehou	***Seriolella brama***		**CD**	**Pelagic fish, 5–300 m depth**
Southern right whale	***Eubalaena australis***	**e**	**EN**	**Marine species, recorded within 500 m offshore from SCA**
Tasmanian devil	***Sarcophilus harrisii***	**e**	**EN**	**Potential hunting and denning habitat on site and nearby.**
Wedge-tailed eagle	***Aquila audax fleayi***	**e**	**EN**	**Recorded on site, hunting and perching habitat available**
Australian grayling	*Prototroctes mareana*	v	VU	Potential habitat in Doctors Creek, other streams running to the sea and Templestowe Lagoon
Black-browed albatross	*Diomedea melanophrys* subsp. *melanophrys*	pe	PVU	Southern ocean bird, visits Tasmania, likely to hunt offshore but may rest on rocky headlands
Blind velvet worm	*Leucopatus anophthalmus*	e	EN	Unlikely on site but recorded in this part of Tasmania, known habitat is beneath stones and rotten logs in sclerophyllous forests and shrubland
Eastern barred bandicoot	*Perameles gunnii*		VU	Recorded within 5kms, likes grassy habitat for foraging within reach of forest for refuge.
Humpback whale	*Megaptera novaeangliae*	e		Marine species, recorded within 5 km
Leatherback	*Dermochelys coriacea*	v	VU	Marine species, recorded within 5 km

turtle				
Loggerhead turtle	*Caretta caretta*	e	EN	Marine species, recorded within 5 km
New Zealand fur seal	*Arctocephalus forsteri*	r		Marine species recorded within 5 km
Shy albatross	*Diomedea cauta* subsp. *cauta*	pv	PVU	Southern ocean bird, breeds on islands off Tasmania, may visit, likely to hunt offshore but may rest on rocky headlands
Swift parrot	*Lathamus discolor*	e	CR	Very likely to forage in Blue and Black Gums on site, requires tree hollows (mature gums) preferably in blue gums for nesting.
White-bellied sea-eagle	*Haliaeetus leucogaster*	v		Potential foraging and nesting habitat in wetlands, coastline, ocean and rocky headlands.
White-throated needletail	*Hirundapus caudacutus*		VU	*High aerial species but rests in trees, may use habitat on site

9.5 Appendix 5. Threatened flora previously recorded within 5 km of site

(Natural Values Atlas January 2023)

Key:
Bold recorded within 500 m
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
Amphibromus neesii	**southern swampgrass**	**r**		**Recorded within 500 m behind Seymour beach dunes, likes marshy habitat, potential habitat in wetlands in Seymour Conservation Area (SCA).**
Glycine microphylla	**small-leaf glycine**	**v**		**Recorded within 500 m close to SCA on Long Point, more potential habitat available**
Bertya tasmanica subsp. *tasmanica*	tasmanian bertya	e	EN	Limited potential habitat available, prefers riparian sites, sandy loam soils.
Caladenia congesta	Blacktongue finger-orchid	e		Potential habitat on site in forest and woodlands, known to appear following hot fire
Calystegia soldanella	sea bindweed	r		Potential habitat and likely on site, prefers coastal sands
Carex gunniana	mountain sedge	r		Prefers sandy heath and littoral sands, dry forest and rough pasture, potential habitat on site
Cryptandra exilis	slender pearlflower	e	VU	Coastal heath and shrubby forest may proliferate following fire, potential habitat on site.
Epacris grandis	Tall heath	e	EN	Prefers sheltered riparian slopes, unlikely here
Eucalyptus barberi	barbers gum	r		Known on rockplate edges in dry forest, unlikely here
Lachnagrostis billardierei subsp. *tenuiseta*	small-awn blowngrass	r		Coastal sand dune species, likely on site
Lotus australis	australian trefoil	r		Potential habitat on site dune communities
Olearia hookeri	Crimsontip daisybush	r		Recorded on dolerite at Templestowe Flats 3 km NW of SCA, potential here
Pimelea flava subsp. *flava*	yellow riceflower	r		Likes shrubby eucalypt forest, coastal soils, potential habitat here
Plantago debilis	shade plantain	r		Found in boulder crevices and both wet and dry forest/woodland on the East Coast and in the north-east, potential habitat on site.
Polyscias sp. Douglas-Denison	ferny panax	e		Occurs in dry rocky sites including ironbark forests, unlikely here
Pterostylis grandiflora	superb greenhood	r		Occurs in north and east Tasmania in heathy open forests, and in grassy coastal she-oak woodland possible habitat here.
Spyridium lawrencei	small-leaf dustymiller	v	**EN**	Likes disturbance, shrubby vegetation, possible here

9.6 Appendix 6. Weeds recorded previously within 5 km and this survey

Weeds found on site this survey or known to be present are **in bold**. Others were recorded on NVA and should be alerts (January 2023)

Scientific name	**Common name**	**Control methods**
Lycium ferocissimum	**African boxthorn**	**Cut and paint with glyphosate or foliar spray standing plant**
Rubus anglocandicans	blackberry	Hand pull juveniles, cut and paint with glyphosate. Foliar spray with broad leaf target herbicide
Rubus fruticosus	**blackberry**	**Hand pull juveniles, cut and paint with glyphosate. Foliar spray with broad leaf target herbicide.**
Chrysanthemoides monilifera subsp. *monilifera*	boneseed	Hand pull or dig out, bag and dispose carefully of fertile material. Cut and paint with glyphosate. Foliar spray with broad leaf target herbicide.
Cirsium arvense	**Californian thistle**	**Hand pull or dig out, bag and dispose carefully of fertile material. Foliar spray rosettes with broad leaf target herbicide**
Salix x fragilis nothovar. *fragilis*	crack willow	Hand pull juveniles, cut and paint with glyphosate
Ulex europaeus	**gorse**	**Hand pull juveniles, cut and paint with glyphosate. Foliar spray with broad leaf target herbicide. Burn or slash and follow up treatment of regrowth with broad leaf target herbicide.**
Ammophila arenaria	**marram**	**Contain strategy as so invasive on dunes. Treat small isolated patches to achieve success in areas of good native vegetation or revegetation.**
Genista monspessulana	**Montpellier broom or canary broom**	**Cut and paint with glyphosate**
Cortaderia sp.	**pampass grass**	**Hand pull or dig out, bag and dispose carefully of fertile material. Foliar spray large plants with herbicide**
Paspalum dilatatum	**paspalum**	**Grassy weed common and extensive in disused agricultural areas. Spray out to replant natives in revegetation areas. Can grow mixed with native grasses, herbs and shrubs so avoid spraying these patches. Dense patches of paspalum are good to spray and revegetate.**
Vinca major	**periwinkle**	**Repeated foliar spraying with glyphosate for several years. Hand pull small patches. Regular follow up will be necessary.**
Pinus radiata	**pine**	**Hand pull individual wildlings, cut down with saw or chainsaw large individual trees, cut below lowest branch.**
Sporobulus africanus	**rats tail grass**	**Grassy weed common and extensive in disused agricultural areas. Spray out to replant natives in revegetation areas. Can grow mixed with native grasses, herbs and shrubs so avoid spraying**

		these patches. Dense patches of rats tail are good to spray and revegetate.
Onopordum acanthium	**scotch thistle**	**Hand pull or dig out, bag and dispose carefully of fertile material. Foliar spray rosettes with broad leaf target herbicide**
Osteopermum fruiticosum	**shrubby daisy bush**	**Contain strategy advisable as so invasive on dunes. Treat small, isolated patches to achieve success in areas of good native vegetation or revegetation areas. Repeated foliar spraying with glyphosate for several years as rhizomes resprout. Can cut and paint individuals by locating main stem, be sure to carefully remove from site fertile material.**
Erica lusitanica	**Spanish heath**	**Hand pull or dig out, cut and paint with glyphosate, bag and dispose carefully of fertile material. Foliar spray clumps with broad leaf target herbicide.**
Anthoxanthem odoratum	**sweet vernal grass**	**Grassy weed common and extensive in disused agricultural areas. Spray out to replant natives in revegetation areas. Can grow mixed with native grasses, herbs and shrubs so avoid spraying these patches. Often with Yorkshire fog so patches of these are good to spray and revegetate.**
Lupinus arboreus	**tree lupin**	**Hand pull or dig out, cut and paint with glyphosate, bag and dispose carefully of fertile material.**
Holcus lanatus	**Yorkshire fog**	**Grassy weed common and extensive in disused agricultural areas. Spray out to replant natives in revegetation areas. Can grow mixed with native grasses, herbs and shrubs so avoid spraying these patches. Often with sweet vernal grass so these patches are good to spray and revegetate.**

9.7 Appendix 7. Plants photographed during the survey

Daviesia ulicifolia yellow spiky bitterpea, forming seed pods in January, in heathland near wetland, great for revegetation, attractive, prickly and therefore good for use in barrier plantings (looks a bit like gorse).

Acaena novaezelandiae, buzzy, flourishing on the dunes, famous for its sticking-to-socks seeds, but an excellent ground cover and habitat plant for invertebrates and skinks, good to promote as a barrier to foot traffic.

Acacia sophorae, coast wattle, forming seed pods in January, strong structural plant, thrives on dunes and back dunes, important cover plant, can be dominant so use strategically in revegetation.

Banksia marginata, silver banksia, mature specimen, strong structural cover, great for birds, yellow-tailed black cockatoo and honey eaters love them, insects, flourishing in heathland and shrub communities adjacent to the wetlands, species used in revegetation projects on site and doing well.

Carpobrotus rossii, pig face, on dunes above Templestowe lagoon, with sagg, bracken and coast wattle, great for erosion control plantings

Carpobrotus rossii, pig face, on granite sands, Long Point, with Juncus kraussii (dark seed head in background) and Ficinia nodosa (pale round seed heads foreground)

Epacris lanuginosa, swamp heath, in heathlands adjacent to wetlands

Eucalyptus viminalis, white gum, distinctive smooth white bark with ribbons, lanceolate leaves, opposite when juvenile, planted in early revegetation project.

Eucalyptus ovata, black gum, regenerating in grassland and heathland, important to monitor

and promote eucalypt regeneration – identify and stake or guard them to protect individuals from browsing, trampling and other damage. Restoring threatened black gum communities may eventuate from managing their regeneration.

Ficinia nodosa, knobby club rush, stylish and one of the key species in grasslands, heathlands and wetlands as ground cover and habitat for small birds, invertebrates, reptiles.

Hakea teretifolia, dagger needlebush, one of the common shrubs in the conservation area, attractive and flowering in January, important for birds, insects and as a cover plant.

Hakea teretifolia, dagger needlebush, growing in heathland, occasional in grassland and on the edges of wetland communities with paperbark and coast wattle

Hibbertia procumbens, spreading guineaflower, regenerating in revegetation area, beautiful flowering plant, attractive to insects, important ground cover.

Juncus planifolius, broadleaf rush, growing prolifically in grassland and heathland, attractive dark seed head – with introduced Anthoxanthum odoratum, sweet vernal grass, pale seed head, which is broadly established in the grassland where clearing occurred. Extensive areas of sweet vernal grass are ideal for revegetation projects.

Lobelia anceps, angled lobelia, mauve, lobed flower, scrambling and scattered through dunes, heathland and grassland, flowering late summer to autumn, growing here with coastal saltbush, and buzzy

Melaleuca ericifolia, swamp paperbark, foliage, with Lobelia anceps flowering, and leaves of sagg

Leptospermum scoparium, prickly tea tree, loves wet areas, grows with swamp paperbark and in heathland, good revegetation plant.

Lepidosperma gladiatum, coast sword sedge, integral dune plant

Osteospermum fruiticosum, shrubby daisybush, prolific coastal weed, covers dunes, control will require diligence and perseverance, cut and paint woody stems, safe removal of any fertile material, containment may be best strategy, revegetate with competitive natives such as coastal saltbush.

Ozothamnus costatifructus, growing on back dunes, only found in coastal forest and woodland, uncommon plant.

Pimelea humilis, dwarf pimelea, growing in back dunes in shrubland, heathland and grassland here with protection of a sagg, Lomandra longifolia.

Pimelea glauca, smooth riceflower, on dune above Templestowe Lagoon.

Spinifex sericeus, spinifex, female inflorescence, designed to go spinning down the beach in the wind.

Spinifex sericeus, spinifex, on the dunes of Seymour Beach with coast wattle and marram grass.

Themeda triandra, kangaroo grass, a mature specimen, clustered seed heads darker than the pale, (often present) sweet vernal grass

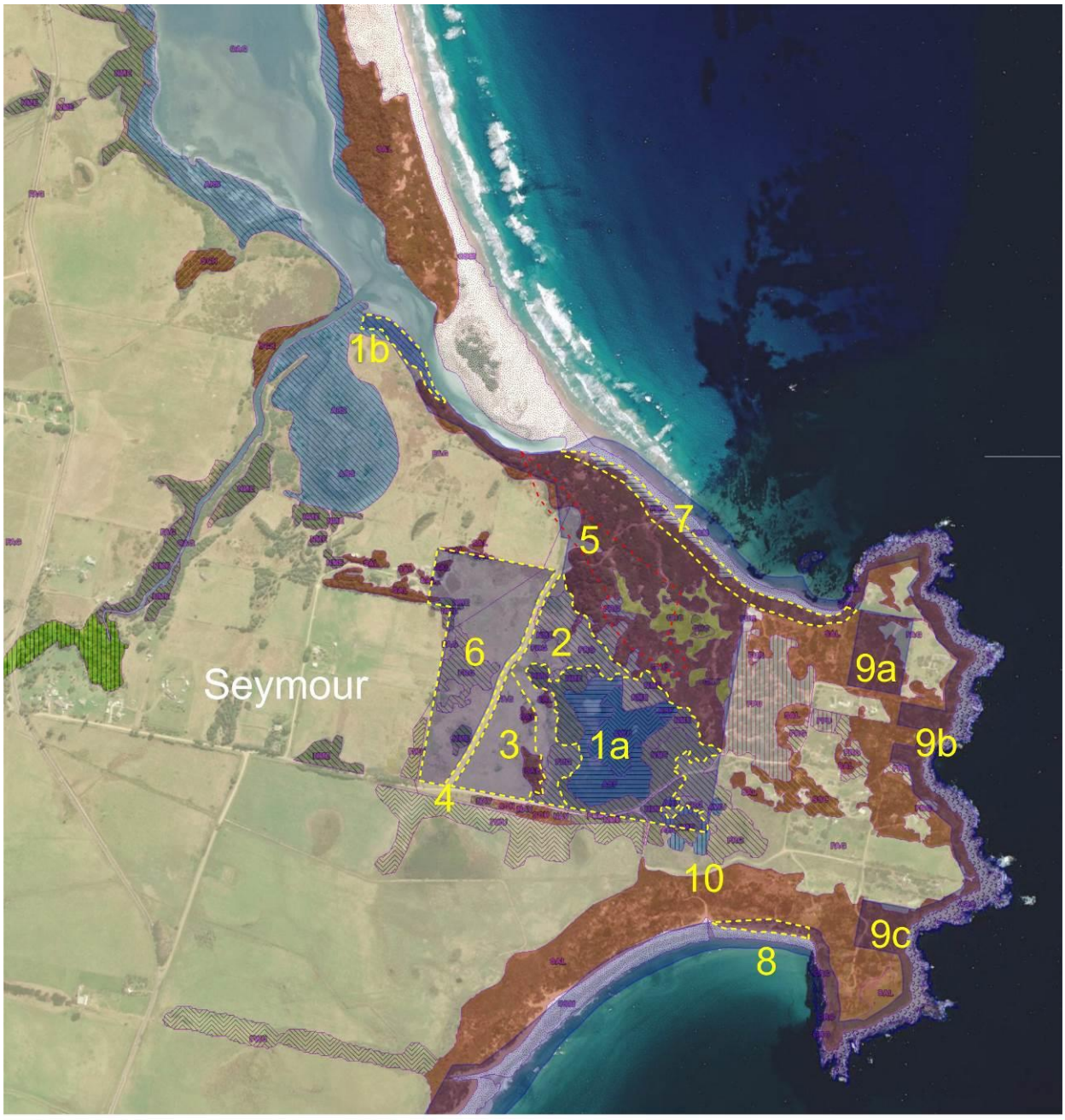
Themeda triandra, kangaroo grass, distinctive seed heads, closer shot

Wahlenbergia sp., bluebell, growing in the grassland with sagg and kangaroo grass

Wahlenbergia sp., bluebell, on dunes with bracken and coastal saltbush

Xanthorrhoea australis, grasstree, spectacular seedheads, with Poa labillardierei, silver tussock grass and introduced fog grass, coast wattle, silver banksia and swamp paperbark in the background.

9.8 Appendix 8 TASVEG Live map Seymour Conservation Area



TASVEG Live base showing: Management areas 1 to 10 Area of High Coastal Acid Sulfate Soils
(provided by Daniel Steiner, SCAGI)

(provided by Daniel Steiner, SCAGI)