BLUE LAGOON MANAGEMENT PLAN – DRAFT for Consultation

2023

Acknowledgements:

In recognition of the deep history and culture of our Municipal Area, we acknowledge the determination and resilience of the Palawa people of Lutruwita (Tasmania) who have survived invasion and dispossession, and continue to maintain their identity, culture and rights. Tasmanian Aboriginal people have cared for the Country in and around Sorell for tens of thousands of years. Sorell Council commits to recognising and celebrating Tasmanian Aboriginal people, history and culture, to demonstrating leadership in Aboriginal social justice, in partnership with Aboriginal people. Sorell Council commits to engaging with Aboriginal people on issues that affect the wellbeing of this place and its communities.

The Draft Blue Lagoon Management Plan 2023 is based on the work done by Chris and Sally Johns in the preparation of the Draft Action Plan for the Blue Lagoon Reserve.

Work carried out within the Reserve by the Southern Beaches Landcare Coastcare, Friends of Blue Lagoon, the Sorell Primary School and the Dodges Ferry Community.

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Purpose

The Blue Lagoon Management Plan (BLMP) establishes how Council will manage the natural and social values of Blue Lagoon Reserve, in collaboration with the community and stakeholders. The overarching goals of the management plan are:

- To identify, manage and protect Blue Lagoon Reserve's natural wetland environment.
- To guide the long-term restoration of the Blue Lagoon Reserve.
- To identify appropriate areas for managed recreational opportunities.
- To support funding bids and allocation of resources.
- To improve the capacity of Blue Lagoon via Integrated Water Management.
- To support local community involvement in caring for and experiencing the Reserve.

Collaboration over multiple years is key to achieving these goals, and to implementing the actions set out in the BLMP.

Executive Summary:

In the context of changing climatic dynamics, the Blue Lagoon Reserve (Blue Lagoon) plays an important role in maintaining a thriving biodiversity in the area and benefiting the health and wellbeing of the local environment and community members. Historically, Blue Lagoon was a part of natural flush from the ocean and salt marsh environment was predominant. However, with changes brought about in part by Pine trees and Marram grasses, the dune is now a permanent feature of the Blue Lagoon and a freshwater ecosystem persists. The biodiversity relies on the freshwater that is driven by stormwater from its catchment.

Management of Blue Lagoon is critical for the conservation of biodiversity, cultural heritage, social values, and recreational values. Communities are part of the conservation of Blue Lagoon and have been actively involved in many aspects of its management such as education, weed control and land management.

A significant and current management issue involves water levels in the Blue Lagoon and how these effect adjoining properties and public assets during high rainfall events. Broadly, there are two alternatives to how Blue Lagoon water levels could be managed;

1. Let the natural course decide the fate of Blue Lagoon in terms of water holding and receding, and its consequential impact on native flora and fauna and inundation of neighbouring properties and public assets; or
2. Have continuous water in the Lagoon and manage the outflow in response to future climatic variations, to ensure minimal impacts to the Lagoon water levels and inundation on neighbouring properties and public assets.

Currently, the second method is the preference of the Council. There is a temporary outflow method in place, draining on to the beach, which is activated during high rainfall events.
This temporary outflow has been activated four times already in the last two years and with changing weather patterns and land use in the catchment, the frequency will increase in coming years. This transitional phase is not suitable long term, as it will physically scour the beach, blocks beach access and is an emergency measure only.

A permanent solution is needed. There have been studies in relation to impacts on biodiversity, impacts on human health and potential costs. Studies have found that permanent water is better for biodiversity and that the engineering structures have relatively minimum impact on the sand dunes and receiving ocean water. One of the major concerns, however, is potential impact on the critically endangered Red Handfish. An independent consultant study by Marine Solutions advises there is currently no noticeable impact to the Handfish population from the proposed structure and stormwater flows. Council will continue to engage with IMAS and other stakeholders regarding the Red Handfish.

The long-term strategic approach for Blue Lagoon includes not only its water management, but also the control of weeds and proliferation of native flora and fauna (biodiversity). Significant investments have been identified in terms of managing weeds and the removal of established pine trees. Staged removal of pines and continuous plantation in and around the Blue Lagoon is suggested. Further, persistent removal of Boneseed, Tree Lucerne, Mirror bush and Cumbungi is proposed.

Furthermore, foot tracks and trails along with signage is proposed, so people have clear access and the human impact on flora and fauna is minimised. Thus, the management plan has set aside budget for trails and signposts to encourage positive recreational use and maximise the community wellbeing potential of Blue Lagoon.

Moreover, landscape level management is envisioned in this strategy by investing in catchment water management and septic tank monitoring. The strategy will influence new and existing developments on managing stormwater on site as much as possible and lower the influx of stormwater over the years. Further, investments on filtration system in the stormwater catchment will reduce deposition of debris and rubbish into the Blue Lagoon.

The proposed strategy identifies the following key activities for Blue Lagoon which are subject to funding that will need to be sourced from additional grants, and through the annual Council budget:

- Detailed flora and fauna survey ($15,000)
- Staged Pine tree removal (Stage1 $45,000)
- Revegetation ($10,000)
- Trails, tracks and signage ($36,000)
- Water quality monitoring ($10,000)
- Weed control work ($8,500)
- Cats, ducks and dogs limitation education, posters, control work ($12,000)
- Stormwater management ($195,000)
- Monitoring of onsite wastewater catchment ($20,000)
- Catchment water management ($70,000)
- Red Handfish Knowledge Hub ($35,000)

The BLMP acknowledges climate change and increased human pressure as challenges, striving to create a proactive management plan benefiting both the environment and the community.

1. Introduction

Blue Lagoon Reserve ('Blue Lagoon', 'the Lagoon' or 'the Reserve') is an important ephemeral wetland and dune system, located in the urban environment of Dodges Ferry. The Reserve is approximately 6.2 ha in area, 9 km south-east of Sorell and 24 km west of Hobart.

Under the Tasmanian Planning Scheme – Sorell, the site is within the Environmental Management Zone (EMZ) and identifies the area having significant ecological, scientific, cultural or aesthetic values. Activities within EMZ should be undertaken in accordance with management plan.

The Reserve is bounded by Carlton Beach Road, Tiger Head Road, Kannah Street and part of Red Ochre Beach. Residential development extends to the north-east and south. The Dodges Ferry Boat Ramp is to the north and accessed by Tiger Head Road. Frederick Henry Bay is to the South-west.

Figure 1: Blue Lagoon Features

Blue Lagoon Reserve is owned and managed by Sorell Council. One part of the Council owned land is developed as a playground and a second part developed as an ambulance station and sea rescue facility.

Blue Lagoon sits at the base of a drainage catchment that is 46 hectares in area. Since there is no permanent connection of the Lagoon with the ocean, water in the Lagoon depends on the rainwater harvested through its catchment. The catchment is relatively low and there is no perennial supply of water from rivulet or creeks either thus, it entirely depends on rainwater.

Blue Lagoon has seen alternate dry and wet periods over the years. However, with three consecutive La-Nina events, the Lagoon always has water since 2019. Further, with increasing population density and structural coverage in its catchment, the catchment will have flash flows of stormwater into the Lagoon as natural percolation and infiltration will be minimum absent barren soil for the water to percolate through the catchment and with increased pressure from residential developments, hard-surface runoff occurs.

Figure 2: Blue Lagoon Reserve and drainage catchment

1.1. Background

Early use and recreational values

Historically, Park Beach and Red Ochre Beach area was the territory of the Mumirimina tribe, one of the ten bands of the Oyster Bay People. The area was habitat for Mumirimina people for more than 40,000 years[1]. Blue Lagoon provided opportunities for food and shelter and cultural continuity.

Following the arrival of Europeans to the area, most of the native vegetation around the Lagoon was cleared area for various purposes. At one time this included the development of an orchard. *Pinus radiata* was planted as a wind break with the water used for irrigating the fruit trees. Over time the pines have self-seeded creating a dense forest.

Later the Reserve was a popular place for holiday makers with children using small water craft in the Lagoon. In the 1950's Blue Lagoon held water permanently up to waist depth in places which provided habitat for several small fish species as well as recreational use.

[1] https://friendsofbluelagoonsouthernbeaches.files.wordpress.com/2021/04/mumirimina-people-booklet.pdf

The waterbody is no longer used for recreational purposes given variable levels and condition. Reduced rainfall has, in the past, impacted heavily on the Lagoon. At times the Lagoon has only held water for short periods of time with an approximate depth of 20-30cm. During these times four-wheel drive vehicles have accessed the wetland damaging sensitive plant species and allowed the dumping of garden waste.

Historical change to natural course

Historically, Blue Lagoon was a dynamic environment with sand moving in response to storms and rain events. The intention of the BLMP is not to alter the course of natural phenomenon and keep the Lagoon as it is. Rather, it seeks to help natural process take their course by removing weeds, taking out Radiata Pines from building structural form in the dunes and helping percolation of water into the ocean. In doing so, the wetland will provide the community the opportunity to enjoy and learn about the environment whilst creating ambience for humans with nature.

Figure 3: Historical image of Dodges Ferry area taken on 8 April 1949 (Photo source: DNRE)

Figure 4: Historical image taken on 14 February 1969 (Photo source: DNRE)

Figure 5: Historical image taken on 19 February 1990 (Photo source: DNRE)

Changes to the catchment come from a variety of processes, such as climate change that will continue to bring unpredictable weather conditions, change in atmospheric temperature and changes in precipitation patterns and these could influence the phenology of the plants and animals. Further, an ever-increasing urbanisation and human pressure in the locality is a reality. We have seen significant growth in residential development, and the sealing of roads and establishment of stormwater drainage into the Lagoon. This inevitably puts pressure on an already stressed Blue Lagoon from direct human pressure and associated watershed impacts. Land use changes such as increased buildings, hard road surfaces and impermeable driveways along with more residential development throughout the area will undoubtedly have impacts to the flow of water above surface and recharge of the aquifers. Further, changes to the biotic environment are a natural phenomenon as a part of their response to changes in the abiotic environment.

Community engagement and management

In more recent times, the community has taken a greater role in the management of the area. Several local community groups and other stakeholders highly value the Lagoon, and act to protect and maintain the ecology of the area. They are motivated by the critical importance of the site for the wellbeing of people and the environment.

Southern Beaches Landcare Coastcare Inc (SBLC), an active community group, has been caring for the local coastal environment for over twenty years. The SBLC is dedicated to the conservation of the local environment in the Dodges Ferry, Lewisham and Primrose Sands area.

In 2007, SBLC successfully applied for an Envirofund grant from the Australian Government for the restoration and rehabilitation of the Blue Lagoon wetland. Key aspects of the Envirofund project included:

- Staged removal of identified mature Pine trees
- Revegetation with appropriate local native species
- Field days to help educate local people about the Lagoon and its environmental values
- The development of a Management Plan to guide the group and Sorell Council in joint strategic management of the Lagoon

Friends of Blue Lagoon is a community group of residents and property owners living in the Southern Beaches area who are impacted by the catchment of Blue Lagoon. This group was initially formed as a response to flooding during late autumn and winter of 2020. This group has been actively coordinating with Sorell Council, SBLC, Institute for Marine Studies (IMAS) and other stakeholders.

Sorell School Landcare, SBLC, Friends of Blue Lagoon and Sorell Council have worked jointly to remove weeds and undertake revegetation at the Lagoon for a number of years.

Stormwater challenges

There is a small capacity pipe running from the Lagoon to Red Ochre Beach which can be opened to enable high water levels to be slowly drained. The temporary outlet drain is only operational after high rainfall events and is subject to 'silting' up by windblown sand and has continuous cost to its management. This pipe is capped at the outlet end and has an open/shut valve at the inlet, with the outlet pipe reburied after each use.

In 2020, a significant rainfall event in the area inundated nearby properties with water overflowing from the Lagoon. To relieve inundation, a temporary challenge was excavated through the dunes to Red Ochre Beach. This form of temporary intervention is not ideal due to the impacts to the dune, the visual appearance and the ongoing costs.

Recent stormwater modelling for the Southern Beaches commissioned by Council has confirmed that Blue Lagoon has insufficient capacity to hold predicted future rainfall events under a changing climate. This work identified the need for a permanent outflow from Blue Lagoon. This work is also part of a broader package of stormwater management measures identified in Council's Stormwater System Management Plan and Stormwater Asset Management Plan.

Water from urban areas can contain silt, nutrients and litter significantly impacting waterways and wetlands. There is also a potential for seepage from onsite wastewater and septic systems to impact the water quality of waterways and wetlands, particularly older systems that are not subject to the same level of quarterly and annual maintenance. The Lagoon acts as a filter of silt and nutrients, however, nutrient rich water can still flow out and impact marine flora and fauna.

With a third consecutive La Niňa event in 2022, already saturated soils cannot hold or percolate more water into ground water and will eventually run-off into the stormwater system. This will lead to increased volume of water into the stormwater system and eventually on to the Lagoon. Thus, there is immediate need of response to manage the potential inundation and flooding in the area.

Figure 6: Temporary outlet from Blue Lagoon operational during peak rainfall

Figure 7: Outfall in the Blue Lagoon Beach to ease water from Blue Lagoon

1.2. Blue Lagoon Reserve Values

The values of Blue Lagoon are categorised in the following key areas:

- scientific
- cultural
- social
- landscape
- amenity
- recreation
- ecological
- threatened species

Wetlands are considered amongst the most productive habitats in the world. They have historically provided a rich food source for humans as well as important breeding and nursery habitat for numerous fish, shellfish, birds, mammals and plants.

Despite the general degradation of Blue Lagoon, the wetland is still an important habitat for native plants and animals particularly frogs and invertebrates. The Lagoon is used by both resident birds and sea birds nesting on nearby Spectacle and Little Spectacle Islands, State Nature Reserves.

Climate change is increasing the frequency, intensity and magnitude of disasters, leading to a higher number of deaths and injuries, as well as increased property and economic losses. In the past 20 years, 90% of major disasters have been caused by weather-related events such as heatwaves, storms, floods and droughts, according to the UN Office for Disaster Risk Reduction (UNISDR)[2].

As well as hydrologic functions including flood mitigation wetlands recycle carbon, nitrogen, and water to varying degrees. The removal and storage of carbon from the atmosphere is seen as an important process in reducing the greenhouse effect and the threat of global warming.

Historically, Park Beach and Red Ochre Beach area was the territory of the Mumirimina tribe, one of the ten bands of the Oyster Bay People. The area was habitat for Mumirimina people for more than 40,000 years[3]. Blue Lagoon provided opportunities for food and shelter and cultural continuity.

[2] https://www.iucn.org/resources/issues-brief/nature-based-solutions-disasters
[3] https://friendsofbluelagoonsouthernbeaches.files.wordpress.com/2021/04/mumirimina-people-booklet.pdf

Social values are often considered to be an intangible asset to a community. The social value of the environment associated with the Reserve will be experienced differently across the community. Some may value the Lagoon as an educational site for local schools, for recreation activities, as a public open space or a site containing important remnant habitat. The social values are apparent when the costs of remedial works are met by the community – for example in volunteering activities on site.

Often, wetlands not only provide habitat for wide variety of flora and fauna but also provide humans with the chance to connect with nature. Communities have felt the ever-increasing importance of Blue Lagoon, and this was especially evident during the COVID-19 period when many people were not able to travel long distance and had to work from home. At this time, Blue Lagoon provided an essential open space where people could socially distance, have a chat and find the mental restoration that comes from access to the tranquillity of nature.

Wetlands are also known to have one of the most diverse ecosystems being home to endemic plants and animals. Blue Lagoon is home to some of the threatened species like Green and Gold Frog (*Litoria raniformis*), Slender Watermat (*Lapilaena preissii*) and Fennel Pondweed (*Stuckenia pectinata*) and have potential habitat for many threatened species.

1.3. Community Consultation

The successful implementation of this management plan will be dependent on the involvement and collaboration of the local and wider community. Council will continue to seek feedback to improve and enhance the BLMP, recognising community engagement/consultation is important especially because of the changing demography, climate and landscape of Blue Lagoon.

2. Scope

The scope of the Blue Lagoon Management Plan is to outline measures to conserve or rehabilitate the Lagoon and Reserve that are to be implemented by Council and community groups in a shared, collaborate manner.

This BLMP does not specifically apply to the land occupied by the playground, the ambulance station or the nearby boat ramp. These adjoining uses, like the broader residential setting, influence the environmental performance of the Lagoon and surrounding land. Other management plans and activities however applies to these facilities.

3.0. Goals

The goals of the BLMP are:

- To identify, manage and protect Blue Lagoon Reserve's natural wetland environment
- To guide the long-term restoration of the Blue Lagoon Reserve
- To identify appropriate areas for managed recreational opportunities
- To support funding bids and allocation of resources
- To improve the capacity of Blue Lagoon via Integrated Water Management
- To support local community involvement in caring for and experiencing the Reserve

4.0. Objectives

4.1 To ensure Blue Lagoon is valued by residents of Dodges Ferry and the broader community as an ecological and culturally significant location.

4.2 To support Blue Lagoon being actively managed through an integrated approach to conserve and enhance its biodiversity values that include National and State significant species.

4.3 To provide opportunities for residents, students and visitors to connect with wetland environments through interpretive signage and informal trails, education and engagement activities.

4.4 To ensure Blue Lagoon remains key to integrated water management in the area and works as a buffer to flash floods and inundation.

4.5 To maximise Blue Lagoon's social value and capacity to improve community wellbeing, through low impact nature connection opportunities such as bird watching, photography and field naturalist activities.

5.0. Risk Management

The Blue Lagoon Reserve is owned and managed by Sorell Council with associated responsibility for risk management. This requires:

- Council to work with community groups to coordinate volunteer activities within the Reserve
- Council to co-ordinate contractors regarding WHS requirements when working within the Reserve
- Council to erect signage to educate the risks on native flora and fauna
- Council to induct volunteers on WHS before conducting any work

6. Management Strategy:

OBJECTIVE 1: TO ENSURE BLUE LAGOON RESERVE IS VALUED BY RESIDENTS OF DODGES FERRY AND THE BROADER COMMUNITY AS AN ECOLOGICAL AND CULTURALLY SIGNIFICANT LOCATION.

6.1. Flora and Fauna Inventory

The native flora and fauna in the Reserve is under threat from the dense infestation of Pine tree (*Pinus radiata*) and other weeds including boneseed (*Chrysanthemoides monilifera)*, Cumbungi (*Typha* domengenesis), urbanisation and water quality issues. The recent discovery of invasive weeds such as African Love Grass (*Eragrostis curvula*), *Asparagus* Sp. and Parramatta Grasses (*Sporobolus africanus*) in the area emphasises the need for weed control in the short-term.

However, there are good communities of wetland plants including Sedges, Reeds and Small Herbs within wetter areas.

A recent ecological assessment conducted by ERA Planning and Environment has recorded thirty-eight flora species across the site, divided in to 30 native and eight exotic/introduced species. One native species *Stuckenia pectinata* (fennel pondweed) recorded is listed as rare under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) but is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC).

Some of the species such as boneseed (*Chrysanthemoides monilifera)* and African Love Grass (*Eragrostis curvula*) are declared weeds under the Tasmanian *Weed Management Act 1999* and they are Weeds of National Significance (WONS) recognised by the Commonwealth Government as they pose significant threat to the environment. WONS are a group of weeds that have been identified by the Australian government as posing a significant threat to the country's agricultural production, environment, and natural resources. These weeds are considered to be the most difficult to control and have the greatest economic and environmental impact.

The Lagoon area contains the following vegetation communities:

Vegetation type	Area (hectares)
Freshwater aquatic sedgeland and rushland (ASF)	0.62
Acacia longifolia coastal scrub (SAL)	1.43
Marran grassland (FMG)	0.36
Regenerating cleared land (FRG)	2.14
Urban areas (FUG)	0.92
Water, sea (OAQ)	0.48
Total Area of the Blue Lagoon	6.2

The majority of the Reserve is a mixture of native and exotic species with a higher representation of native flora closer to the beach and surrounding the wetland area.

Two native vegetation communities and four additional mapping units are onsite which are detailed below. Freshwater aquatic sedgeland and rushland (ASF) is listed as vulnerable under the EPBC (subtropical and temperate coastal saltmarsh), although not listed under the Tasmanian *Nature Conservation Act 2002* (NCA). The area mapped as ASF and the area generally inundated by water can be considered wetland and therefore is considered threatened under the NCA.

Freshwater aquatic sedgeland and rushland (ASF) – Vulnerable EPBCA

This community includes wetlands dominated by sedges and rushes, with salinity ranging from fresh to brackish. A dense to sparse sward of a sedge or rush species (usually one species dominates) provides the tallest stratum in a sedge/rush wetland. This stratum can vary in height from a few centimetres in a community dominated by species of either Schoenus or Isolepis, to over three metres for a Phragmites australis community. A variety of smaller sedges and herbs commonly form a sparse to dense layer between and below this. The diversity and floristic composition of this layer are heavily dependent on the frequency of inundation and soil characteristics of the site.

Within the study area this community occurs around the boundary of the inundation area of the Lagoon and is a typical example with regards to floristics with *Juncus pallidus* (pale rush), *Juncus kraussii subsp. australiensis* (sea rush), *Lilaeopsis polyantha* (jointed swampstalks), *Baumea arthrophylla* (fine twigsedge) and *Ficinia nodosa* (knobby clubsedge). Discrete patches of *Phragmites australis* (southern reed) are also present. There are observations of *Stuckenia pectinata* (fennel pondweed) which is listed as rare under the TSPA located on the margins of the ASF community and the Lagoon. The community is listed as "vulnerable" under the EPBCA, however, it is not considered a Matter of National Environmental Significance for the purposes of Part 3 of the EPBC Act (requirements for environmental

approvals) and as such does not trigger the need for referral under the Act. The area is also listed as a threatened wetland under the NCA 2002.

Figure 8: Picture showing Aquatic sedge grasses in Blue Lagoon

Acacia longifolia coastal scrub (SAL)

This mapping unit is shrubland with a dense closed canopy. *Leucopogon parviflorus, Banksia marginata, Allocasuarina verticillata, Myoporum insulare* and *Rhagodia candolleana* may be prominent elements in this community, though *Acacia longifolia subsp. sophorae* is always dominant. The often-sparse understorey of shrubs and *graminoids* may include *Lepidosperma concavum* and herbs such as *Wahlenbergia spp., Poranthera microphylla, Dichondra repens, Gnaphalium indutum, Carpobrotus rossii, Actites megalocarpus* and *Tetragonia implexicoma*.

Within the Lagoon, this community occurs as a frontal dune system and borders onto the ASS community in the southern area of the Lagoon. The community is quite variable in floristics and has many large *Pinus radiata* (radiata pine) trees present throughout. The community is generally dominated by *Acacia longifolia subsp. sophorae* with very occasional *Banksia marginata* (silver banksia) and *Acacia melanoxylon* (blackwood).

Figure 9: Picture Showing *Acacia* species with Pines

Marram grassland (FMG)

Ammophila arenaria grassland occurs widely in coastal areas around Tasmania and on Bass Strait islands. *Ammophila arenaria* forms dense hummocks on sand dunes and beaches. It is an efficient sand binder and, historically, was widely planted to stabilise sand dunes. *Ammophila arenaria* is an invasive species and displaces native grasses such as *Spinifex sericeus* and associated species. *Ammophila arenaria* grasslands can also change the shape of dunes. Within the Lagoon the community is characterised by 100% cover of *Ammophila arenaria* (Marram grass) which is generally the case with the community.

Figure 10: Picture showing Marram grass and Pine established in the dune.

Regenerating cleared land (FRG)

Regenerating cleared land (FRG) is used to map abandoned farmland or other degraded land (e.g. abandoned mines, quarries etc.) where there has been significant natural recolonisation by native species of rushes and shrubs.

Within the Lagoon, this area occurs to the north of the Lagoon and appears to have been cleared or disturbed at some stage in the past. The majority of species that are recolonising the zone are native with the occasional introduced grass.

Urban areas (FUR)

Urban areas (FUR) include urban and suburban landscapes. These areas are largely or wholly devoid of vegetation apart from areas such as suburban gardens, street trees and parks. Dense infrastructure and buildings, usually in a geometric layout, distinguish this mapping unit. Vegetation is largely confined to gardens, lawns and parks representing common horticultural flora. The mapping unit was utilised to map areas where the public park occurs and a small zone on the western side of the Lagoon.

Water, sea (OAQ)

These are areas of fresh or saline water where there are no emergent aquatic plants. OAQ includes natural and artificial water bodies.

Fauna inventory:

ERA Planning and Environment has recorded two bird species, and two amphibian species recorded during their field survey:

- Noisy miner (*Manorina melanocephala*)
- Pacific black duck (*Anas superciliosa*)
- Common froglet (*Crinia signifera*)
- Eastern Banjo Frog (*Limnodynastes dumerili*)

None of the fauna species observed during the survey are listed under either the TSPA or the EPBC.

The Lagoon provides some moderate quality habitat for many fauna species as it provides reasonable foraging habitat for water birds and potential foraging habitat for birds of prey such as the white bellied sea eagle and the masked owl due both to the floristic characteristics onsite and its proximity to the coastal zone. However, the amenity to fauna is slightly reduced due to the Lagoon's proximity to roads and residential areas.

Overall, the Lagoon does provide habitat for several threatened fauna species along with many non-threatened species.

Haliaeetus leucogaster (white bellied sea eagle)

White bellied Sea Eagle may utilise the site for roosting in periods where it is foraging in the nearby coastal area. There is some potential that it may occasionally nest, however, the probability is considered low due to the use of the area for recreational purposes and noise from the nearby residential areas and main road.

Hirundapus caudacutus (white-throated needle tail)

White-throated Needle tail is likely to overfly the site, however, there is a lower probability that the species would roost at the site as some research suggests that the species may not alight while in eastern Australian and may roost aerially. The risk to the species with regards to the project is considered extremely low.

Litoria reniformis (green and gold frog)

It is possible that the species occurs in or surrounding the site. The habitat would be considered appropriate as the presence of several rush species provides habitat preferable to the species and the area is within the species known range.

Tyto novaehollandiae subsp. castanops (masked owl (Tasmanian))

The masked owl is likely to use the area for foraging as it contains forest and open grassy areas that the species generally requires for foraging purposes. There are no appropriate trees containing hollows appropriate for the species to nest and therefore the area is only likely to be utilised for foraging purposes.

6.2. Marine Ecology

Blue Lagoon, once an ephemeral ecosystem fed by ocean tide and occasional heavy rain in the region, is now permanently devoid of saltwater flush due to stabilised dunes. However, the marine ecosystem plays an important role directly via influencing microclimate, interactions of avian species providing food source for various species or indirectly via dune formation and other climatic influences. Thus, it is important to consider marine life and ecosystem when we talk about Blue Lagoon.

The scope of the BLMP doesn't cover the natural values assessment of the marine ecology, thus, the Plan looked at the historical and available online database to analyse the natural values in the area. The Natural Vales Atlas and EPBC Protected Matters Search Tool (PMST) have identified 15 threatened marine species and 1 threatened marine ecological community possibly occurring in the area or known to occur in the area (Appendix 2).

There are two significant species previously recorded within several kilometres of the Blue Lagoon - New Zealand Fur Seal (*Arctocephalus forsteri*) and Red Handfish (*Thymichthys* politus). As per the report to Council from Marine Solutions Pty Ltd (2022), there is no significant impact to New Zealand Fur Seal from activities in Blue Lagoon as the species is highly mobile and has wider habitat[4] range. The species is protected under TSPA 1995 as *Rare*[5]. New Zealand Fur Seal breed in Tasmania and breeding habitat for the species are typically found in structurally complex rocky habitat, where jumbled boulders provide protection to pups and lactating females[6]. The potential habitat for New Zealand Fur Seal is west and south-west rocky beach on Tiger Head. The BLMP will not have direct management implication/interaction with the species.

Another important marine species identified within several kilometres of Blue Lagoon is the Red Handfish. The species was listed in 2012 as critically endangered[7] under the EPBC. The species is listed as endangered under the TSPA[8] and critically endangered under IUCN Red list[9]. The species is highly isolated and only found in two locations across South-east Tasmania. While we do not know the exact location of these species, based on the consultation with IMAS and relevant authorities, they are present throughout the Sorell municipality[10].

According to Marine Biodiversity Hub, the Red Handfish (Thymichthys politus) is arguably one of the rarest marine fish species in the world, with an adult population estimated at about 100 in 2019[11]. The species used to be common across south-eastern Tasmania and on the north coast, and was collected and painted at the Port Arthur penal colony in the 1800s. But extensive surveys in the past 15 years at historical sighting locations across its former range found populations at only two patches of shallow rocky reef in Frederick Henry Bay.

The habitat of historical and remnant populations suggests that Red Handfish live on shallow rocky reefs that are at least partially sheltered from prevailing swells, usually in depths of less than 10m. They also appear to use seagrass areas adjacent to the reef, which may provide important nursery habitat for juveniles[12].

[4] https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=20
[5] https://www.threatenedspecieslink.tas.gov.au/Pages/New-Zealand-Fur-Seal.aspx
[6] https://www.threatenedspecieslink.tas.gov.au/Pages/New-Zealand-Fur-Seal.aspx
[7] http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=83756
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[11] https://www.nespmarine.edu.au/document/conserving-critically-endangered-red-handfish-fact-sheet
[12] https://www.nespmarine.edu.au/system/files/NESP%20red%20handfish%20fact%20sheet%20July%202019_final_2.pdf

The threats include fragmentation of the habitat, degradation of already limited habitat with urbanisation, population pressure, degradation of seaweed, competition of habitat from a native Sea Urchin, which overgrazes seaweed habitat when in high abundance, and climate change. Since the population size is extremely small and isolated exceptional care must be taken in their potential habitat. Recent success in ex-situ conservation by IMAS aquarium at UTAS is a positive sign to declining endemic Red Handfish[13]. IMAS has been able to successfully hatched over 200 juveniles in aquarium. However, in-situ conservation is critical in maintaining healthy population and cost-effective way of conservation of the species.

Marine Solutions Pty Ltd have assessed the two outlet options for Blue Lagoon (which are further detailed at section 6.12) in terms of potential impacts to the Red Handfish. This advice confirms that neither outfall option is likely to adversely impact the Red Handfish habitat.

	Option 1 Blue Lagoon Beach outfall	Option 2 Tiger Head Boat Ramp outfall
Receiving environment	Discharges into Blue Lagoon Beach to the immediate south of Tiger Head. Variable energy beach environment. Counter-clockwise eddies may form on outgoing tides due to waters discharging out of Pittwater and eddying on contact with Spectacle Islands. Storm events often correspond to higher energy environment at Blue Lagoon Beach. Scour of the beach due to the discharge may wash increased material into the marine environment increasing turbidity, along with the stormwater discharge which may have increased turbidity. Increased turbidity in the stormwater should not be confused with tannins which can make the water look dark, especially if it has been sitting in a hind dune lagoon for a time prior to discharging. Water quality will be impacted by a stratified layer of fresh, which will be mixed into the receiving environment by a combination of waves and current action, and the overall change to water quality is expected to be localised and short lived.	Discharges to the base of the Tiger Head Boat Ramp. The discharge environment is characterised by strong bimodal (tidal) currents. As the discharge is occurring onto a concrete pad there will be no scour or additional turbidity / increase in total suspended solids from the discharge. As with Option 1, the stormwater may have increased turbidity, and this should not be confused with elevated tannins. At this location, impacts to water quality will be low due to the high levels of initial dilution caused by strong tidal current flows which occur within the moorings and into the bay.

[13] https://blog.csiro.au/saving-the-worlds-rarest-fish-handfish/

	Option 1 Blue Lagoon Beach outfall	Option 2 Tiger Head Boat Ramp outfall
Stormwater quality	Some filtration of stormwater will occur via contact with sand across Blue Lagoon Beach, before stormwater enters marine environment. The stormwater inlet will be grated acting as a litter trap and reducing the amount of litter that flows from the Lagoon into the marine environment.	Some filtration of stormwater will occur via contact with grass and soil in swale, before stormwater enters marine environment. It is assumed the stormwater inlet will be grated acting as a litter trap and reducing the amount of litter that flows from the Lagoon into the marine environment.
Amenity impacts	Likely beach scouring after high rain event on Blue Lagoon Beach. This scouring will likely diminish as the beach sand is replenished with tidal movement. Discolored surface plume will likely be visible following rain.	Loss of access to small corridor of fenced area to accommodate grass swale between Blue Lagoon and Tiger Head Road. Discolored surface plume will likely be visible following rain however it may be less obvious as it combines with the flows from Pittwater which include numerous inputs.
Impacts to threatened species	Critically Endangered Red Handfish population is known within several kilometres within the Sorell municipality. Intermittent discharge will only occur during/after heavy rainfall events. Catchment runoff during these rainfall events into the nearby marine environment will impact water quality on a broader scale than this proposal (e.g. Coal River, Craigbourne Dam). Therefore, the stormwater discharging from Blue Lagoon will have negligible contribution to the potential impacts to threatened species during rainfall events. The stormwater plume will be buoyant in the marine environment, and therefore likely to mix in surface layers. Therefore, impacts to benthic habitats and species are expected to be less than for a saline or brine plume.	As for Option 1.

Recommendations:

- Council will work with local community groups and interested people to identify vertebrate and invertebrate fauna as part of its water quality monitoring activities
- A stormwater outlet will be provided to manage flood risk and will be designed to enhance the capacity of the Lagoon to filter and treat stormwater flows
- Implementation of follow-up monitoring of both the water levels and condition of the wetland and the quality/quantity of stormwater discharged
- Council will commission detailed flora and fauna survey and keep record of the data to enable future studies
- Local communities and Council to work together for the survey and follow up with community discussion forum to disseminate outcome of the survey
- Council will work with relevant stakeholders to protect and enhance the habitat for nationally significant species

6.3. Cultural Heritage

Blue Lagoon lies in the land of the Mumirimina people of the Oyster Bay tribe. The Oyster Bay people travelled through their territory on well-defined routes following seasonal foods and resources for traditional practices such as collecting and trading ochre, making stone tools, collecting reeds and grasses for baskets and ropes.

The Mumirimina people went to the coasts for shellfish and marine vegetables, to the marshes and lagoons for riverine birds and their eggs, and inland to the open forest and plains for kangaroo, wallaby and possum. The Mumirimina were dispossessed and massacred. The pakana community of lutruwita are the traditional owners and custodians of these lands.

The Lagoon is part of the living cultural landscape of all lutruwita (Tasmania) and was a much-used area for camping gathering and hunting shellfish and other food sourced from the coastal surrounds. Changes in climate, and archaeological evidence of Pakana presence in the southern beaches area provides some context to the age of the Lagoon [14]

Recommendations:

- Complete an Aboriginal heritage survey, and obtain any necessary permits, before any on ground works take place
- Council, SBLC, contractors and stakeholders will cease work immediately if any midden material or artefacts are found during works and notify Aboriginal Heritage Tasmania in accordance with an Unanticipated Discovery Plan
- Council will support and encourage education and events that engage communities and stakeholders and to improve knowledge and understanding as it relates to local indigenous culture

[14] Source: submission by Friends of Blue Lagoon in June 2021

OBJECTIVE 2: TO SUPPORT BLUE LAGOON RESERVE BEING ACTIVELY MANAGED THROUGH AN INTEGRATED APPROACH TO CONSERVE AND ENHANCE ITS BIODIVERSITY VALUES THAT INCLUDE NATIONAL AND STATE SIGNIFICANT SPECIES.

6.4. Threatened Species Conservation

Threatened species have been identified in the local area that may use the Reserve. These include the Eastern Barred Bandicoot *Perameles gunnii* listed as vulnerable under EPBC, the Green and Gold frog *Litoria raniformis* listed as vulnerable under the EPBC and the TSPA.

Red Handfish ((*Thymichthys politus*) is a critically endangered species recorded in within the Sorell municipality[15] listed by EPBC Act in 2012. The species is listed as endangered under TSPA 1995[16] and critically endangered under IUCN Red list[17]. Threatened species lists and notes on fauna identification can be obtained from www.nre.tas.gov.au.

The Reserve has the potential to be visited by other threatened species including the Swift Parrot (*Lathamus discolour*) listed as endangered under EPBC and TSPA.

Threatened fauna and flora communities may require extra resources to manage and protect them and council will provide resources as necessary to protect native flora and fauna as necessary.

Recommendations:

- A detailed vegetation survey should be undertaken to identify all plants including non-native and native including threatened species and vegetation communities
- A detailed fauna survey should be undertaken to identify all resident and transient fauna including threatened species
- Council and stakeholders to investigate funding opportunities to assist interested groups to hold field days with appropriate experts to identify threatened fauna, flora or vegetation communities
- Council to investigate creating a database to store survey and field day results to avoid threats during future on ground works
- Council to update any recorded threatened species/communities and/or in the 'Natural Values Atlas' at www.nre.tas.gov.au
- Council to manage the Reserve through signage for the education and awareness on critically endangered Handfish
- Council to prepare information sheet on Red Handfish and other threatened species with the help of stakeholders tailored to Blue Lagoon context

[15] http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=83756
[16] https://www.threatenedspecieslink.tas.gov.au/Pages/Red-Handfish.aspx
[17] https://www.iucnredlist.org/species/123423510/123424379

6.5. Urban Impact

The Reserve water and land ecosystems are impacted by activities that occur in the local area. These activities include un-authorised vehicle access, uncontrolled dogs, feral cats, the dumping of garden waste/clippings, storm water runoff, wastewater seepage and litter. The Reserve is subject to hydrological changes as a result of drainage works within the catchment.

Whilst visitors are encouraged to enjoy the Reserve, associated negative impacts on the Reserve must be addressed through management strategies and actions.

Future development within the adjoining catchment such as infill building and sub-divisions increase pressure on the Reserve's ability to remain as a sustainable functioning wetland.

Recommendations:

- Council will review subdivision applications in the catchment areas and recommend discharge management at source or divert to stormwater system to reduce the pressure on Blue Lagoon
- Council will encourage unsealed driveways, and filtration basins wherever possible to reduce the runoff and improve percolation and groundwater recharge
- Council will install, monitor and manage stormwater litter trap facilities to trap and remove any wastes being directly discharged into beach and/or Blue Lagoon

6.6. Dog Management

Consultation between the community, stakeholders and Council has determined that uncontrolled dogs are a threat to the environmental values of the Reserve.

The Reserve should not be considered as an appropriate place for an off-lead dog exercise area. The adjacent beach at Red Ochre is an off-lead dog exercise area. The council has restrictions in place for dog access during sensitive times of the year.

Control of dogs should be in the form of on- lead within the Reserve. Compliance of dog control by-laws requires educating dog owners. Communities understand local beaches can provide important breeding and foraging sites and thus, in parts of the year, the dogs are on lead and communities have been appreciating the by-law for dog control.

The Blue Lagoon is more sensitive as it provides permanent habitat, foraging sites, breeding sites for various vagrants as well as resident species.

Recommendations:

- Council to improve 'dogs permitted on lead' signage to effectively communicate with the public
- Control of dogs should be in the form of on-lead within the Reserve. Compliance officers will monitor area frequently
- Council will investigate opportunity to declare the Blue Lagoon and Red Ochre beach as Dog restriction area under *Dog Control Act 2000*
- Council will improve education to dog owners about sensitivity of the area and the *Dog Control Act 2000*
- Council to investigate the possibility of the inclusion of a leaflet with dog registration about how dog owners can enjoy their pet and help protect the environment

6.7. Weed Management

The native flora and fauna in the Reserve has been severely impacted by the dense infestation of *Pinus radiata*. The Pines shade other plants, compete for space, and change soil acidity and soil moisture. As a consequence, there is a marked absence of species that would be expected in a wetland environment. However, the pines do provide habitat and shelter for some transient fauna. It is therefore important that pine tree removal is undertaken in a staged manner along with revegetation of appropriate native species and that these plantings are given time to provide adequate shelter before treating adjoining areas.

Other weeds such as Boneseed (Chrysanthemoides monilifera) and Asparagus *Asparagus sp*. can be removed at any time.

Recommendation:

- Prior to weed removal any native flora and fauna using the area for habitat should be identified with appropriate action taken
- Priority should be given to Weeds of National Significance (WONS) and Declared Weeds in Tasmania (NRE)
- Weed removal is to be undertaken from the least affected area to the worst
- Investigate an education programme for neighbouring landowners to prevent garden plant escapees through the dumping of garden waste including pruning's and lawn clippings
- Volunteers are not to use any kind of herbicide spray application within the Reserve
- Volunteers are not permitted to use chainsaws within the Reserve
- Council and SBLC to work with volunteers to ensure that volunteers have the required knowledge in the safe use of herbicides, such as 'cut and paste' techniques
- SBLC and other volunteers undertaking weed control works are to consult the information contained in the Weed Lifecycle and Control Option section of this plan

6.7.1. Pine tree removal

Figure 11: Pine trees along looking NE from Kannah Street

Pines were planted as a part of wind breaks and over the years have self-seeded and cover most of the southern dune. Pines have established foraging and nesting habitat for some native birds, have changed the natural movement of the dunes and provided favourable conditions for establishment of opportunistic Marram grasses, highly invasive weeds. Critically, pines and marram grasses have constrained the natural process of percolation and established a permanent barrier for sea water.

Long term ecology of the Blue Lagoon is impacted by the invasive weeds and pines. Blue Lagoon as a wetland has its primary function of storing water during heavy rain and slowing dissipating them onto the ocean via permeable sand dunes. However, due to established Pines and Marram grasses this key function is constrained. Thus, during large flood events, we observe much of the low-lying areas inundated unless the waters are physically removed from the Lagoon. While there is immediate need to remove the pines, a staged approach is necessary to minimise disruption to the current ecosystem. Thus, there is need of a staged approach to remove pines and establish native trees so native birds and other wildlife can forage and build their nests in their natural trees.

Recommendations:

- Council will work with stakeholders to identify key pine trees to be removed at various stages and assign contractors for removal
- Council will work with stakeholders on whether to leave tree limbs and logs within the Reserve from fire hazard and habitat for species perspective
- Pines will be removed during dry periods to reduce the chance of machinery bogging and disturbing to the Lagoon
- Larger pine logs can be retained and positioned within the Reserve to provide habitat. Smaller trees and limbs are to be chipped for use as mulch around new plantings

6.8. Hybrid Ducks Free zone:

Native or local ducks are not the same as what we see every day in our waterbodies. Australia is home to 17 native duck species and Tasmania has 11 of them. Generally, Mallards are seen to compete with our native ducks. Mallards are introduced species from the Northern hemisphere, they are bigger, aggressive and have a wider range of food than our native species. Generally, native species cannot compete with these introduced species. Significant concerns have been raised due to cross-breeding of similar looking native Pacific Black Ducks with Mallards. Cross-breeding causes hybridisation and hybrids have serious impacts on native species around the globe. It is important for every one of us to take care of our native species which plays an integral part in sustaining our biological diversity. Introduced species such as Mallards can cause serious impacts on native species and outcompete them, thereby leading to decline in population or eventual extinction.

Mallard and Pacific Black Duck (Hybrid) photo credit: Jason Graham

Why they are important

- We have to understand native ducks play important role in ecological balance by feeding in algae, preventing unwanted algal bloom, feed on pests that checks diseases
- They act as an important vector for seed dispersal
- They are important ecological indicators, they can respond to slight changes in the environment and allow us to act quickly
- They provide economic value to our livelihood
- They are important ecotourism assets

Recommendations:

- Encourage locals/tourists to not feed, water or shelter mallards as this helps their competition with native species
- Educate domestic duck owners to restrict their pet ducks to keep within their boundary and not dump in public places
- Create awareness among the school kids and local communities on identification of hybrid and native species

OBJECTIVE 3: TO PROVIDE OPPORTUNITIES FOR LOCAL RESIDENTS AND LOCAL AND REGIONAL STUDENTS TO CONNECT WITH WETLAND ENVIRONMENTS THROUGH INTERPRETIVE SIGNAGE AND INFORMAL TRAILS AND EDUCATION AND ENGAGEMENT ACTIVITIES.

COVID-19 has taught us all that locally available natural escape is best medication at times when people cannot travel distance, and Blue Lagoon provided a great escape for many local residents. Locals understand Blue Lagoon is critical for such recreation and learning opportunity for schools and university students.

6.9. Access Management

Access should be managed to allow public use of the Reserve while protecting its environmental values. Existing trails can be rationalised with some closed and revegetated.

6.9.1 Access Road delineation

Access to the Reserve is required for both vehicles (including emergency vehicles) and pedestrians carrying out on ground works and passive recreation. Vehicle access can be controlled by using lock-down posts and fencing. Vehicle access points should be kept away from roadway corners and located where there will be minimum impact on vegetation. Tracks should be located away from the Lagoon edge keeping to higher ground where possible.

Recommendations:

- Council will work with stakeholders on the location, standard and retention/closure of all tracks to maximise track network efficiency while minimising impacts
- Following a trail audit Council will work with local stakeholders to rehabilitate trails no longer required
- The use of track hardening materials will be limited within the Reserve ensuring any material used is free of contaminants including weed seed and soil pathogens.
- Council will investigate funding opportunities for seating and interpretive signage at located to be identified
- Council will continue to assess walkways and trails for risks and hazards as part of its normal Reserve maintenance regime

6.9.2. Interpretative signage installation

Signs can be used to direct, inform and assist visitors to help connect with the natural area, and protect its values. In consultation with stakeholders, council will renew existing signage and install new signage that encourages nature connection without impacting beauty of the landscape.

Recommendations:

- Council will investigate the need for and funding opportunities for prohibited activity signage e.g., no motorbikes and horses etc
- Council will investigate funding opportunities to erect walkway signs that notify suitability for wheelchair or pram use at the beginning and end of suitable paths
- Council to investigate funding opportunities for interpretive signage to inform and educate visitors and the wider community about the environmental and recreational values and significant features of the Reserve
- Council will work with the community including schools in designing interpretive signage

6.10. Landscape management

The Reserve currently has a role in the wider landscape of the southern beaches area, both as green space and habitat for our native plants and animals. Increased population growth with associated changes to the surrounding area, combined with possible negative impacts of climate change, will put pressure on the sustainability of local wetlands and their fauna and plant communities. The Reserve will have a role to play in the future preservation of the natural remnant wetland environment in the Dodges Ferry area.

The Reserve is too small to support any populations of large fauna. Animals particularly birds move in and out of the Reserve as food sources and water levels change. However, the Lagoon is large enough to support viable populations of smaller vertebrate and invertebrate fauna. Links or vegetation corridors that animals can move through should be developed and maintained between the Reserve, public and private land areas as well as to larger bushland areas to the east.

Recommendations:

- Private landowners be encouraged to conserve small patches of remnant vegetation to provide corridors for native animals to traverse the landscape
- Sorell Council to work with local community groups and stakeholder government agencies to maintain vegetation corridors along the Coastal Reserve linking the Reserve to vegetated areas along Red Ochre Beach and Tiger Head
- Council to designate high activity area where current parking is for beach access and maintain the area with consultation with the locals
- Council to formalise walkways and parking areas and erect signposts to properly guide local commuters

6.11. Vegetation maintenance

The timing and frequency of regular vegetation maintenance activities including mowing, slashing or pruning to take into account the requirements of flora communities such as flowering times.

Recommendation:

- Council to investigate the appropriate mowing/slashing timing to encourage the development of native grasses, sedges and reeds
- Council will liaise with local community groups to manage the vegetation in the area and to control weeds

Figure 12: Potential access and Pine tree removal site

OBJECTIVE 4: TO ENSURE BLUE LAGOON REMAINS KEY TO INTEGRATED WATER MANAGEMENT IN THE AREA AND WORKS AS A BUFFER TO FLASH FLOODS AND INUNDATION.

6.12. High Rainfall Events

During high rainfall events neighbouring private properties and public assets are subject to the risk of inundation and the failure of septic systems. One of the potential high rainfall event impacts of wetlands within an urban environment is the conflict between protecting property and the sustainable management of wetland environments.

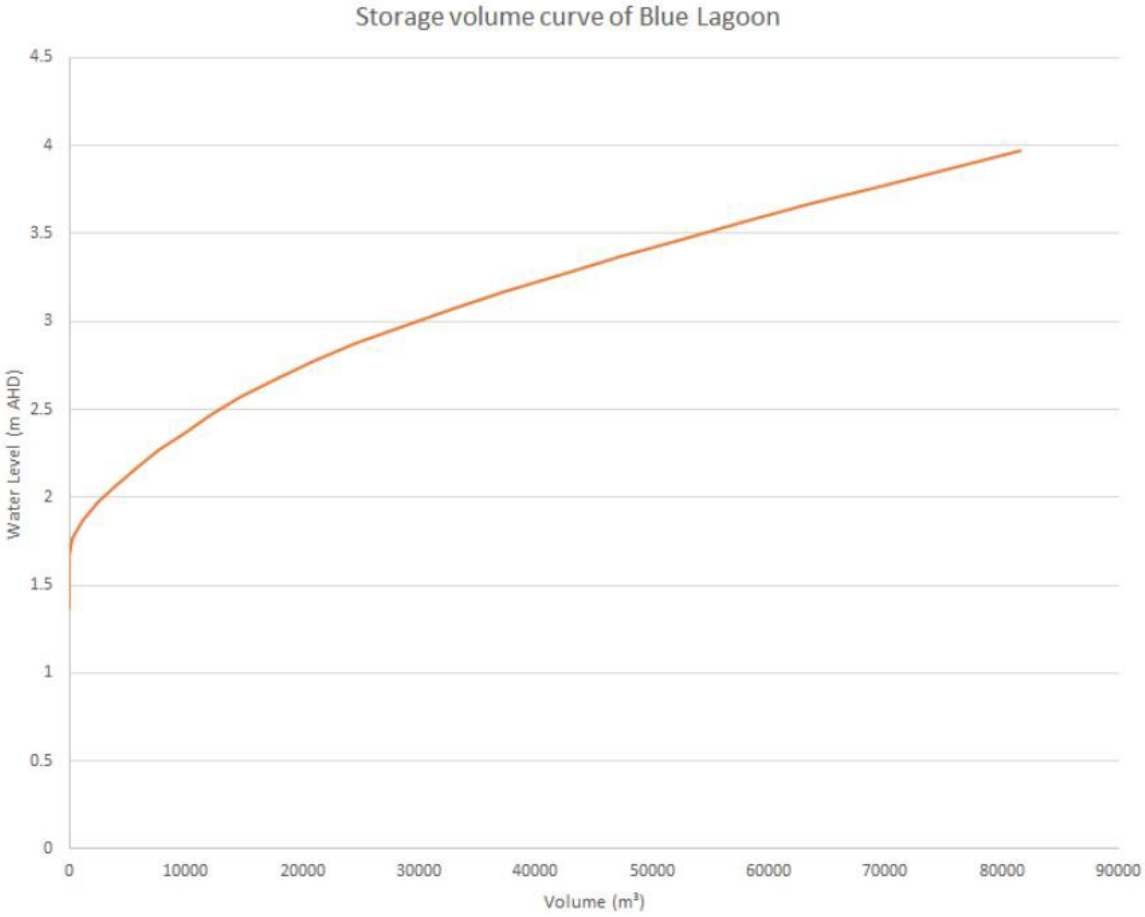

Figure 13: Storage volume of Blue Lagoon calculated by Entura 2021

A high rainfall event in autumn 2009, and associated flooding of Blue Lagoon highlighted the need for a more sustainable management of the Lagoon overflow. Members of the community and SBLC called a meeting with Council to express concerns over public safety and the negative environmental impacts of the flood outflows. High rainfall events from 2020 to 2022 caused inundation to properties along Kannah Street and the adjoining playground. To relieve this inundation, Council excavated a temporary outfall on the beach.

The excavation of temporary outfalls on the beach is not ideal. From an environmental perspective, the excavated outfalls impact the beach environment and cause sedimentation to receiving waters. From a flood mitigation perspective, the outfalls are not simple to excavate and there is a delay between the event and the outfall. It is evident that a permanent outfall is necessary to mitigate flood risk with more certainty and less environmental risk.

From 2020 to 2022, Council consulted broadly with the local community and obtained independent engineering and environmental advice with respect to outfall options. Over this time, Council also engaged Entura to prepare a Stormwater System Management Plan (SSMP) which includes 1% Annual Exceedance Probability (AEP) overland flood modelling based on future climate change scenarios. The SSMP modelled 1%, 5% and 10% rain events on Blue Lagoon and determined that a permanent outfall was necessary to manage flood risk.

Initial Option Tiger Head Boat Ramp outfall	Revised Option Blue Lagoon Beach outfall
An open swale and 300mm piped outlet from the Lagoon to the boat ramp. An open grass swale to the immediate west of the playground will feed a 300mm pipeline. The pipeline will be directionally drilled from the northwest corner of the playground, under Tiger Head Road to emerge at the base of the boat ramp. The pipe is to discharge into shallow water immediately alongside the jetty and disperse on a concrete base underneath the jetty, with a proposed footing approx. 1m wide and 2 m long. Near the base of the boat ramp, an overflow tee junction with flap is proposed to allow the system to function during king tides and/or storm surges.	A 600mm piped outlet from the Lagoon to the beach with flows dissipated over the beach. The proposal includes the construction of a 1m high x 1.7m wide concreate headwall to accommodate a 600mm diameter outlet pipe. The pipe will be trenched to vegetation, then directionally drilled under the vegetated dune, discharging above mean high tide level. An inlet grill will be installed to reduce the amount of litter escaping the beach marine environment and blockage of the pipe. The discharge point will be disguised with rock pitching and endemic plantings. It is expected that a temporary scour zone will form after heavy rain events and be replenished by natural tidal deposition.

The initial concept was to provide an outlet adjacent to the jetty at Tiger Head Beach. This concept required a swale drain along Kannah Street adjacent to the playground before being piped under the boat ramp and jetty car park. A number of concerns were raised by the community regarding this option. In response, Council advised the community that planning for the outlet would shift to an outlet at Blue Lagoon Beach.

In 2022, Council made a Development Application (DA) for a permanent piped outlet from the Lagoon through to the beach above high tide level based on analysis of flood modelling outcomes and the effects of outfall from the model. This included a projected water level of 2.6m as a peak estimate under a specific condition - specifically, a rainfall event with an Annual Exceedance Probability (AEP) of 63%. If a 600mm pipe is installed at 1.4 meters for outfall, the water level is projected to retreat from this 2.6m peak within a 12-hour period following the rain event.

The concept for a 600mm piped outlet also attracted community concern. In response to this, the DA is on hold pending further investigation and response by Council to the EPBC referral regarding potential impacts to the Red Handfish (referred to in Section 6.2).

Also in 2022, Council successfully applied for $1.8 million in funding under the Coastal and Estuarine Risk Mitigation Program (CERMP). This funding is to be used to upgrade 25 stormwater outlets across the Southern Beaches to reduce or remove erosion risk and to improve water quality.

Figure 14: Blue Lagoon looking NE following a high rain event August 2022

The permanent outlet is considered essential infrastructure to better manage flood and environmental risk. In providing a permanent solution, the key points considered include:

- Investigate an engineering solution that allows the Lagoon to fill to a manageable and environmentally beneficial level before overflowing
- Investigate the construction of a weir and penstock that will permanently set an identified water level
- Seek expert advice in regards to best practice methods of works in wetlands and waterways and apply for the appropriate permits from DNRE
- Investigate the placement of clean stone in the outfall stream bed to reduce erosion in future flood events
- Investigate the removal of pine trees adjacent to the outfall (and south of the current Lagoon location) as part of the initial phase of pine tree removal, which will increase the overall holding water storage capacity of the area
- Improve Kannah Street road-side drainage
- Investigate revegetation and rehabilitation work for disturbed areas upon completion of works
- Developing a water quality monitoring regime for the stormwater network
- Utilise the CERMP funding for water quality treatment in larger catchments upstream of Blue Lagoon in locations suitable for ongoing maintenance access
- Investigate the potential impacts of seepage from septic systems to the water quality of waterways and wetlands
- Investigate the impact of nutrient rich water while flowing on to the open beach/sea to marine flora and fauna
- Investigate the impacts of siltation/debris carried by the flooded water from lagoon on popular swimming spot in the locality

Recommendation:

- Council and stakeholders facilitate a permanent outfall to address the negative impact of high rainfall events while allowing for future mitigation works to be strategically planned to ensure the sustainable management of the wetland
- Council to investigate potential impact of outflow from lagoon to the ocean ecology
- Council and stakeholders to identify opportunity for integrated wetland management that allows permanent water to retain in the Lagoon and that can buffer high intensity rainfall before discharging to the ocean
- Council and stakeholders to identify potential opportunity to partnership on continuous monitoring of threatened species
- Council to disseminate information relating to flood prone sites and potential adaptation measures to respond to the future events

6.13. Climate Change

It is beyond the scope of this plan to accurately predict possible impacts of Climate Change on the Reserve however some potential issues can be identified.

6.13.1. Rainfall

Drought or reduced annual rainfall will impact water levels significantly impacting flora and fauna habitat. The success of revegetation works may be impacted as well. Establishment watering may be required to ensure revegetation survival rates. As across other landscapes there may be changes to plant communities including threatened species.

Sudden high rainfall events may impact stream dynamics from the associated catchment runoff resulting in localised flooding. The capacity of infrastructure to cope with storm events as well as debris build-up may be an impacted. Changes to infrastructure and/or increased maintenance schedules will have increased associated costs.

6.13.2. Sea level rise

Blue Lagoon may be impacted by predicted sea level rise through the potential of the Lagoon's outflow to have a reduced ability for the Reserve to shed excess water during storm events.

6.13.3. Drought and increased temperature

With increased temperature, there are widespread triggers to flora and fauna. One we cannot notice but happens over time is the phenology of plants and animals. Phenology changes with change in temperature and generally with increased temperature, plants annual cycle of growth and reproduction is shortened which has potential to impact everything that surrounds it.

Further, longer and frequent drought seasons brings major changes to immediate water dependent species like frogs and birds. Other species such as plants will have altered response to their growth and ability to perform ecological services. Future events are likely be more erratic, cycles of drought/flood are likely be more frequent.

Recommendations:

- Council will work with community groups and stakeholders to investigate possible ways of monitoring negative impacts of climate change on Blue Lagoon
- Stakeholders will be consulted if any remedial works are required
- Council will provide water for revegetation plantings where possible
- Council will seek opportunity to have permanent water in the Lagoon for dry periods

6.14. Water quality management

Water quality within the Lagoon is impacted by various land uses within the catchment and adjacent properties. Uses include recreational, emergency services buildings, car parks, roads and private dwellings. The catchment is largely a residential area with little further opportunity for subdivision. It is reasonable to expect that many dwellings in the catchment will be enlarged and updated over time. Surface cover will be more impermeable in coming years and less opportunities for ground water recharge.

Impacts to water quality include:

- Sediments from urban areas, building and development and roads impact on fresh water and marine aquatic ecosystems
- Pathogens from wastewater system leaks and animal faeces impact on water quality and can lead to beach closures
- Chemicals entering waterways through spills, some construction activities or illegal chemical disposal into storm water drains can lead to the death of plants and animals within the Lagoon
- Nutrients including fertilisers, detergents and decaying organic matter can result in excessive algal and weed growth
- Gross pollutants and urban litter including plastic and paper can impact fauna through ingestion and/or snaring as well as the leaching of chemicals from the decomposition of various materials

Figure 15: Water quality test being undertaken by Council during high water level in Blue Lagoon

Recommendations:

To help reduce the negative impacts of urban development on the Lagoon and waterways Council will investigate the potential for developing policies and actions for:

- Integrated Water Cycle Management (IWCM) – integrated management of all water sources to maximise benefits to the community and environment
- Water Sensitive Urban Design (WSUD) – minimising the impact of urban development on waterways/bays and promoting water conservation
- Where Council becomes aware of failing on-site wastewater management systems, owners will be required to upgrade systems
- Council will continue to provide householders with information on how to maintain onsite wastewater systems and continue with monitoring practices
- Continue to require construction sites to apply the 'Soil and Water Management on Building and Construction Sites' or any other management resources that Council considers appropriate
- Utilise the CERMP funding for water quality treatment in larger catchments upstream of Blue Lagoon in locations suitable for ongoing maintenance access
- Council will explore opportunities identified in the Stormwater System Management Plan (SSMP) to divert some stormwater drainage in the vicinity of Signal Hill Road from Blue Lagoon to the upgraded Seventh Avenue outfall (due 2024)
- Council to work with local communities to organise a 'clean up Australia day' event, in March each year, to pick up litter from Blue Lagoon
- Council to work with residents to investigate setting up the monitoring of water entering and within the Lagoon to direct appropriate remedial actions
- Council to work with local community groups/schools and other non-government organisations to encourage environmental awareness activities, such as the connectivity of households to wetlands
- Council will lobby TasWater to provide reticulated sewerage for the Southern Beaches area along side of investing options for small-scale Council or community owned systems

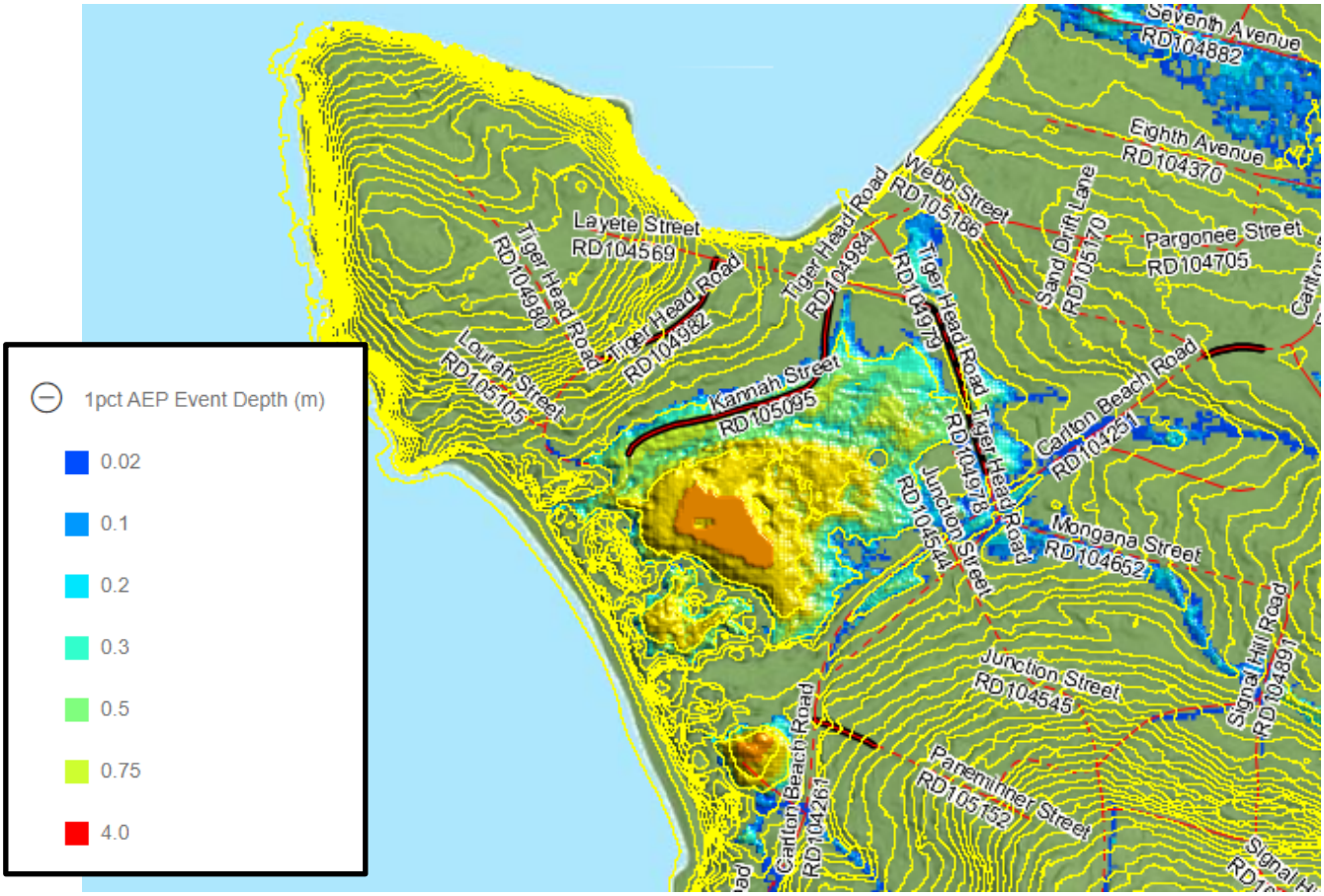

Figure 16: Council flood modelling for 1% AEP event

OBJECTIVE: 5 TO MAXIMISE THE RESERVE'S SOCIAL VALUE AND CAPACITY TO IMPROVE COMMUNITY WELLBEING, THROUGH LOW IMPACT NATURE CONNECTION OPPORTUNITIES SUCH AS BIRD WATCHING, PHOTOGRAPHY, AND FIELD NATURALIST ACTIVITIES.

Goal 1 of Australia's Strategy for Nature is to connect all Australians with nature, recognising that nature connection is essential to our long-term mental and physical health. Blue Lagoon enhances community health and wellbeing through attributes associated with biodiversity as well as the opportunities of social interaction, physical activity, and mental restoration it provides. With community engagement, Blue Lagoon can be established as a key site for the human wellbeing benefits that stem from nature connection, ecological education and environmental awareness.

6.15. Community Support and Resources

Facilitating the community to connect with the Lagoon is a key element of protecting and enhancing the natural values of the Reserve. Nature connection at the site can be facilitated in many ways including events such as an annual National tree planting day for schools and the community. Interest in holding field days and/or workshops such as water quality monitoring, frog identification and planting days should be investigated.

Effective management of the Reserve will require Council to work closely with SBLC other environmental organisations and stakeholders.

Volunteering in conservation and ecological restoration activities has been shown to result in significant health and wellbeing benefits – physical fitness, social connectivity, life satisfaction, mental restoration and feeling a sense of place. Volunteers provide many different levels of expertise as well as time and physical labour. However, environmental care groups have limited resources and whilst they are an important asset they can only contribute to the best of their respective volunteers.

Potential Activities might include:

- Indigenous cultural education and celebration events
- Revegetation sites: 'National tree planting day' for Schools and community
- 'Weed Buster' event
- Flora and Fauna surveys
- Frog Identification workshop/field day
- 'Clean Up Australia Day' Events
- Volunteer training
- Water Quality Monitoring (Community & School)

Council will partner with the following groups and organisations as key stakeholders:

- Wildcare (PWS)
- IMAS
- TPT (Threatened Plants Tasmania)
- Landcare Tasmania
- CVA (Conservation Volunteers Australia)
- TasTAFE
- Dodges Ferry Primary School
- Sorell School Landcare group
- UTAS
- SBLC
- Friends of Blue Lagoon

Recommendations:

- Council will investigate the suitability of the Reserve as a possible Land for Wildlife site
- Council to work with SBLC to compile a list of interested local participants to working bees
- Council to work with SBLC in supporting the administration of volunteers as well as materials
- Council will continue to support volunteer groups and provide assistance and equipment when possible
- Council will work with SBLC to identify and encourage other volunteer groups and organisations including university research students to participate in surveys and field days etc
- Council will work with local communities to invite school groups to participate in on ground works such as weed removal and revegetation
- Council to work with local community groups to encourage the Sorell School Landcare Group to undertake water quality monitoring activities using SBLCs' equipment
- Council will support and encourage education and events that engage local communities and stakeholders and to improve knowledge and understanding

7: Management strategy

The following Values and Resources section has been incorporated into a Management strategy to make it easier to allocate resources to various tasks.

For example, when actions are required in relation to Access Management then the relevant section can be consulted for the appropriate actions. Indication has been given for each action to how Council, SBLC and stakeholders can work together to effectively achieve desirable outcomes.

7.1. Management activities and expected outcomes:

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
Flora and fauna	Flora and Fauna Survey	Sorell Council/FBL/SBLC	Detailed flora and fauna inventory record keeping/have separate sheet for yearly inventory record	With the support from local communities, Sorell council to conduct detailed survey of the Blue Lagoon to identify and keep record of flora and fauna in the area	$15,000.00	Operational budget and community volunteer resources	Council to seek operating cost with support from local in-kind support
Management plan	Review of Reserve Management Plan	Sorell Council/SBLC	New Management plan endorsed by relevant stakeholder	New management plan will cover issues that were not fulfilled by the current management plan and will be based on changed circumstances for years ahead	$25,000.00	Operational budget	Council to engage NRM facilitator
Pine removal	Pine Tree removal	Sorell Council/SBLC	Trees removed over three years' time and native plants being planted	Council to engage contractor to remove pine tree on staged manner and communities to plant native plants in coordination with the council	$45,000.00	seek external funding	Council to seek external funding opportunity to staged removal of Pines
Revegetation	Aboriginal Heritage survey undertaken if necessary and permit gained	Sorell Council	Report from Aboriginal Heritage	If no AH found work will proceed or if AH found actions taken consistent with recommendation from AHT	$5,000.00	Operational budget and community support	Council to provide purchase of plants and equipment in support of communities for plantation and management
	Revegetation work as required	FBL/SBLC/Sorell Council	areas of pines will be replaced by native trees and shrub species	With wider community involvement, plantation of natives will be planted gradually over the years	$5,000.00	Operational budget from NRM	in support of local community groups

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
	Monitoring and maintenance work	SBLC/Sorell Council	Native species are well stablished	Local communities and council will take the leadership in maintaining the Reserve for better ecological services	$6,000.00	Operational budget from Depot/NRM	Council will regulate and maintain with community group support
Tracks and trails	Blue Lagoon Trail audit	Sorell Council/FBL/SBLC	Access trail identified and established	Access trail to be audited and implement if there are any unnecessary trails that should be blocked or restricted.	$20,000.00	External funding opportunity	Council to seek external funding opportunity to establish permanent walking trails in and around
	Regular audit of hazard	Sorell Council	Safe Blue Lagoon with no record of major incident in the area	Sorell Council to conduct regular audit of the signpost, walking trail and other potential hazards	$6,000.00	Operational budget from Depot	Council to keep audit record and share with community group deemed necessary
	Improved signpost and track access signage	Sorell Council/FBL/SBLC	well established signpost and guideposts in and around the Lagoon	Identify areas where signpost is required and coordinate with community groups on content of guidepost to erect	$10,000.00	Capital budget and external funding opportunity	Council and local community groups to identify priority signage erection opportunity and implement

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
Education and awareness	Education and awareness	Sorell Council/SBLC/School/FBL	Everyone understands their role and engagement on Blue Lagoon	Council and community groups organise regular training and refresher events to neighbouring properties and communities to educate on importance of the Lagoon, their roles and responsibilities	$2,500.00	Community support program and liaise with external resources	Council to collaborate with stakeholders to run community training
	Community Species Identification training	SBLC/Sorell Council	Local community interest group are able to identify and locate threatened species in the area	Council together with community group will organise one day field session with expert on identification of threatened species	$2,000.00	Operational budget through NRM	Council to organise training
	Social media post	Sorell Council	Sorell Council posting regular updates on Social media	Sorell council to regularly update posts on social media about events on Blue Lagoon	$500.00	Operational budget	Council to regularly post on social media
	School education	Sorell Council/SBLC/School	At least 1 School event in a year organised	School kids are aware of the natural Reserve and species in the Reserve, understand the significance of conservation	$2,500.00	Operational budget	Council to organise event to include schools and communities
	Community plantation	SBLC/School/Sorell Council/FBL	increased flora density and diversity in the Reserve	Plantation carried out with suitable native plants remarking special occasion/events/national and international calendar	$5,000.00	Operational budget and community support	Council to organise plantation as per necessary with the support from local community groups

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
	Vandalism Reporting	Communities	reduced vandalism and aware community	Broader community engagement on signage and park properties and reporting of vandalism encouraged in the community	-	Community engagement and reporting	Council will collaborate with local community groups and set up mechanism to report vandalism if existing mechanism is deemed unsuitable
Water quality	Improve water quality	Sorell Council	Water quality is not degraded to alter the wetland ecosystem	Council to conduct regular water quality testing to ensure it is free from any contamination (organic and inorganic) and create a log for future reference	$5,000.00	Operational budget and external funding opportunity	Council to run frequent water quality testing with EHO
Weed control	Weed control work	Sorell Council/SBLC	No new weed infestation and weeds are controlled towards eradication	Council to work with local communities to manage weeds and conduct regular inspection of the weeds. Provide assistance to local community groups if they need help for working bees on safely disposing weeds	$3,000.00	Operational budget and community support	community groups to conduct regular weeding and special weeding to be conducted Council at defined time
	Weed Identification training	Sorell Council	Communities can identify major invasive weed species	Council to organise weed control training to interested local communities on highly invasive weeds and make communities able to identify highly invasive weeds so they can take control actions promptly	$500.00	Operational budget	Council to seek funding from stakeholders to organise training

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
Weed control	Restrictive access to volunteers	Sorell Council	Community groups well aware of their role and engagement	Council to ensure community groups are not using chemicals and chainsaws and uncontrolled groups of people to conduct any weed control events or community events within Reserve	-		Regular communication with working bees on weed control and safe disposal
	Mowing and slashing to encourage the development of native grasses	SBLC/School/Sorell Council/FBL	increased flora density and diversity in the Reserve and decreased weeds	Council will liaise with communities to conduct special mowing and slashing to encourage the development of native grasses and sedges and reeds over introduced species	$5,000.00	Operational budget	Council to engage Depot to regularly slashing and mowing to encourage native growth
	Special weed control action	Sorell Council	No major species invasion	as per the recommendation from community group if the infestation is large and cannot be done by working bee	-	Operational budget	Deemed necessary council will conduct special weed control work
	Rubbish removal	Sorell Council/SBLC	No rubbish in the Reserve throughout the year	community groups can collect the rubbish during working bee and council to collect them and handle safely	-	Operational budget	Council will liaise with community group to pick-up of rubbish collected from working bees

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
	Weed register	SBLC/School/Sorell Council/FBL	List updated in weed register	Council will keep record of weed register and update every year	-	Operational	All stakeholders and Council will work to update weed register that will help plan for future
Acknowledgement of Aboriginal Heritage	Acknowledgement Signage to Aboriginal communities	Sorell Council	Signage acknowledging aboriginal communities through signpost or accepted media	Council to erect Acknowledgement signpost on prominent location with consultation from AHT	$1,500.00	Capital budget and external funding opportunity	Council to consult with stakeholder on Signage design and interpretation and installation
Cats and dogs	Declare Cat prohibited area	Sorell Council	On Feral/Stray cats in the Lagoon	Council to declare Blue Lagoon as important ecosystem and declare Cat prohibited area	$2,500.00	Operational budget from NRM and external funding opportunity	Council to liaise with stakeholder in developing and implementing cat prohibited area
	Dog Compliance monitoring	Sorell Council	Blue Lagoon is safe from Dogs for biodiversity and human beings	Sorell Council to conduct regular inspection for dogs compliance and respond to complaints from residents	$2,500.00	Operational budget	Council to liaise with stakeholder in developing and implementing Dog compliance

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
	Access and dog management	SBLC/School/Sorell Council/FBL	Dogs on the lead and have no impact on native flora and fauna	Community education program and council to identify areas where fencing and gated points are required to exclude uncontrolled access. Council to erect signpost if necessary	$3,500.00	Operational budget and external funding opportunity	Council to consult with stakeholders to implement dogs on the lead and erect signpost where necessary
Ducks	Community education on Hybrid Mallard	SBLC/School/Sorell Council/FBL	Hybrid Mallard population declining	community awareness and training to identify hybrid mallards and education on not feeding hybrid	$3,500.00	Capital budget and external funding opportunity	Council to prepare materials and signpost on Ducks education, seek support from Glenorchy Council on their experience
Stormwater management	Blue Lagoon Water height gauge	Sorell Council	Visible height Gauge installed	Sorell Council to install height gauge in an appropriate area to make it visible for everyone in the area	$200.00	external funding opportunity liaise with capital work on stormwater program	Council to seek opportunity to install permanent water gauge

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
Stormwater management	Metal mesh along the outfalls/GPT on Blue Lagoon	Sorell Council	Litters and wastes are not entered via stormwater outfalls in Blue Lagoon	Sorell council to install metal mesh to block waste litters from entering on to the Blue Lagoon and regularly monitor and remove any litters from pits/manholes or GPT	$45,000.00	Capital budget and external funding opportunity	Council to apply for funding opportunity to update outfalls/GPT to filter wastes and regular removal of wastes trapped there
	Ensure permanent water level	Sorell Council/FBL/SBLC	Blue lagoon has permanent water at acceptable level and provides wetland services to community	Research and identify the acceptable water level to optimum wetland performance and weeds control which will provide support to high rainfall events as filter for litters and suspended solids	-	Capital budget and external funding opportunity	Council to seek expert advice so ecological integrity is maintained
	Regular monitoring of stormwater pipes	Sorell Council/FBL/SBLC	Stormwater pipes are not blocked and have clean water inflow to the Lagoon	Council will regularly monitor and clean the stormwater inflow pipes for sediments and litter adjacent to the Lagoon as part of its maintenance regime	$5,000.00	Operational budget	Council to regularly inspect the stormwater pipes and maintain as necessary

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
Stormwater management	Promote water sensitive urban design	Sorell Council/communities	Communities aware and implement water sensitive urban design	Communities and council to engage local communities and planners to promote water sensitive urban designs to decrease the pressure on Lagoon and mitigate the inundation during high rainfall events	$70,000.00	Operational budget and external funding opportunity	Council to seek funding opportunity to implement planning designs for new dwellings and update current dwellings to comply with water sensitive urban design
	Permanent outflow	Sorell Council	Permanent outflow constructed	Council to construct permanent outflow to control stormwater during high rainfall events by coordinating with relevant stakeholders like IMAS, Derwent Estuary, UTAS and other stakeholders. The construction should consider all aspects of biodiversity and ecological balance together with community sentiment.	$150,000.00	Capital budget and external funding opportunity	Council to seek funding opportunity to design and construct ecologically sound and sustainable permanent outflow

	Outcomes Title	Responsibility	Indicator of success	Remarks	Estimated Cost	Resources opportunity	Partnership
	Monitoring of septic tanks	Sorell Council	Septic tanks are not leaking and contaminating water system of Blue Lagoon	Council to conduct regular inspection of septic tanks in watershed region of the Blue Lagoon	$20,000.00	Operational budget and external funding opportunity	Council to arrange regular inspection of septic tanks in the catchment with random sampling each year
Red Handfish Knowledge Hub	Designate Blue Lagoon as knowledge hub for Red Handfish	Sorell Council	Number of posters/signpost erected, events organised and wider community awareness created	Council takes pride on having the Sorell municipality as the only area in the continent to have Red Handfish and will take the opportunity to educate local as well as tourist about conservation of the species	$35,000	Capital, Operational and external funding opportunity	Council to partner with IMAS to develop the roadmap

7.2. Timeline of the activities with budget:

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Flora and Fauna Survey	Sorell Council/FBL/SBLC																		$15,000.00
Review of Reserve Management Plan	Sorell Council/SBLC																		$25,000.00
Pine Tree removal	Sorell Council/SBLC																		$45,000.00
Aboriginal Heritage survey undertaken if necessary and permit gained	Sorell Council																		$5,000.00
Revegetation work as required	FBL/SBLC/Sorell Council																		$5,000.00

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Monitoring and maintenance work	SBLC/Sorell Council																		$6,000.00
Blue Lagoon Trail audit	Sorell Council/FBL/SBLC																		$20,000.00
Regular audit of hazard	Sorell Council																		$6,000.00
Improved signpost and track access signage	Sorell Council/FBL/SBLC																		$10,000.00

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Education and awareness	Sorell Council/SBLC/School/FBL																		$2,500.00
Community Species Identification training	SBLC/Sorell Council																		$2,000.00
Social media post	Sorell Council																		$500.00
School education	Sorell Council/SBLC/School																		$2,500.00
Community plantation	SBLC/School/Sorell Council/FBL																		$5,000.00

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
water quality monitoring	Sorell Council																		$5,000.00
Vandalism Reporting	Communities																		-
Weed control work	Sorell Council/SBLC																		$3,000.00

Activities	Responsibility	Month												Year				Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Weed Identification training	Sorell Council																		$500.00
Restrictive access to volunteers	Sorell Council																		-
Mowing and slashing to encourage the development of native grasses	SBLC/School/Sorell Council/FBL																		$5,000.00
Special weed control action	Sorell Council																		-

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Rubbish removal	Sorell Council/SBLC																		-
Acknowledgement Signage to Aboriginal communities	Sorell Council																		$1,500.00
Declare Cat prohibited area	Sorell Council																		$2,500.00
Dog Compliance monitoring	Sorell Council																		$2,500.00

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Access and dog management	SBLC/School/Sorell Council/FBL																		$3,500.00
Community education on Hybrid Mallard	SBLC/School/Sorell Council/FBL																		$3,500.00
Blue Lagoon Water height gauge	Sorell Council																		$200.00
Red Handfish Knowledge Hub	Sorell Council																		$35000.00

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Stormwater management study	Sorell Council																		$50,000.00
Metal mesh along the outfalls/GPT on Blue Lagoon	Sorell Council																		$45,000.00
Ensure permanent water level	Sorell Council/FBL/SBLC																		-

Activities	Responsibility	Month												Year					Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Regular monitoring of stormwater pipes	Sorell Council/FBL/SBLC																		$5,000.00
Promote water sensitive urban design	Sorell Council/communities																		$70,000.00

Activities	Responsibility	Month												Year				Estimated Cost
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Permanent outflow	Sorell Council																		$150,000.00
Monitoring of septic tanks	Sorell Council																		$20,000.00

8. Weed Register:

After each working bee or weed identification, council or community group will report weeds to weed register as below:

Species Name	*Species Priority List*	*PID or property address*	*Location (eg km & direction from nearest town/ road address etc)*	*Image Link*	*Property Contact Name*	*Phone number/e-mail*	*Historical record*	*Easting*	*Northing*	*Position Accuracy (m)*	*Treatment Date*	*Treatment Used (eg herbcide and rate)*	*Applicant*	*Approx Individuals Count*	*Approx. Coverage Area (m2)*	*Recommendation/follow-up action*

9. Weed Lifecycle and Control Options

(Warning: Use herbicides with great care)

- Always follow the label instructions.
- Always read MSDS.
- Keep both documents with chemical used.
- Before you start, get advice from relevant government agencies, or the manufacturer.
- Some ‘off-label’ herbicide uses are permitted, and are recommended in this plan. Contact the Department of Primary Industry Parks Water and Environment or the Registrar of Pesticides for more information.
- Note that with further research and improved herbicides, the most appropriate control methods may change over time.
- It is critical that this information is revised and updated periodically to ensure the most effective control method for a given situation is being used.
- Weed lifecycle and control options can be photocopied, stapled together, and used by volunteers in the field at working bees.

9.1 Mirror Bush (*Coprosma repens*)

Status: Environmental Weed

Lifecycle Notes:

- Lifecycle Perennial, life span 10 + years
- Method of Reproduction:
    - Seed
    - Fleshy berries (spread by birds)
    - vegetative rooting of lower branches Flowering Spring to Summer
- Seed Set Late Summer to Autumn
- Seed Production and viability Unknown
- Seed Survival in Soil Unknown
- Other Seedlings germinate and survive better in protected areas i.e. under other shrubs

Control Options:

Hand removal: Plants up to 300 mm tall are easily removed especially when soil is moist.
Cut and Paste: Use undiluted Glyphosate 360 ml/l. Dab the stump within 30 seconds of cutting

Ideal Control Times: All year round

9.2 Radiata pine - Seedlings to 3 metres – (*Pinus radiate)*

Status: Environmental Weed

Lifecycle Notes:

- Lifecycle Perennial, life span 80 – 100 years
- Method of Reproduction
    - Seed
- Flowering Late Winter – early Spring
- Seed Set Late Summer (18 months after flowering)
- First Cones Produced Eighth year
- Seed Production and Viability Large quantity of seed produced, 80% viability
- Seed Survival in Soil Up to 10 years

Control Options:

Hand pulling: Plants less than 300 mm tall are easily removed especially when soil is moist.

Hand removal: Sawing Plants to 3m. Cut off below first branch, within 5 cm of soil surface

Ideal Control Times: Control effective for most of the year

9.3 Bone seed (Chrysanthemoides monilifera)

Status: Weed of National Significance WONS

Lifecycle Notes:

- Lifecycle Perennial, 10 to 20 years
- Method of Reproduction
    - Seed spread by birds and animals that eat the fruit
    - Humans through weed removal activities and soil waste.
- Flowering Late Winter to Spring
- Seed Set November to December
- First Seed Produced Second year, (occasionally first year)
- Seed Production and Viability Up to 50,000 in one season, 60% viability, down to 25% after 3 years.
- Seed Survival in Soil 10 to 15 years
- Other Seedlings can look like Banksia seedlings. Adult plants can be confused with Boobialla (Myoporum sp).

Control Options:

Hand Removal: Seedlings less than 900mm tall are easily removed especially when soil is moist. Brush-cutting is **NOT** recommended.

Cut and Paste: Use of undiluted Glyphosate 360 ml/l herbicide. Cut the stump and dab within 30 seconds

Foliar Spray: **NOT** recommended for volunteers

Ideal Control Times: Cut and dab any time except mid-winter.

9.4 Tree lucerne (Chamaecytisus palmensis)

Status: Environmental Weed

Lifecycle Notes:

- Lifecycle Small, evergreen tree to 5m tall, to 10 years.
- Method of Reproduction
    - Seed spread by water
    - humans through weed removal activities and soil waste
    - Mass germination following fire and soil disturbance.
- Flowering Late Spring to Summer
- Seed Set Autumn to late Winter
- First Seed Produced Second year
- Seed Production and Viability Large quantities of seed; enhanced germination after fire or soil disturbance.
- Seed Survival in Soil Persistent seed bank reported.
- Other **Toxic seed.** Widely planted in agriculture as a fodder crop.

Control Options:

Hand Removal: Seedlings less than 900mm tall are easily removed especially when soil is moist. Brush-cutting **NOT** recommended. Plants can re-sprout from cut stumps.

Cut and Paste: Small plants to 3m tall use undiluted Glyphosate 360 ml/l herbicide. Cut the stump and dab within 30 seconds.

Foliar Spray: **NOT** recommended for volunteers.

Ideal Control Times: Cut and dab any time.

9.5. African Love grass *Eragrostis curvula*

Status: Weed of National Significance (WONS)

Lifecycle Notes:

- African lovegrass is a densely tufted, perennial (long-lived) grass growing from 30 to 120 cm high. The leaves are dark green to blue-green, narrow, and 25 to 35 cm long. The flowering stems rise above the tufted leaves and carry a loose fanlike grey-green flower-head.
- Seeds germinate in spring and autumn. Growth slows or ceases in winter and plants re-sprout the following spring as temperatures rise. Flowering begins in early summer and ripe seeds are present from January to March.
- African lovegrass prefers disturbed soils on roadsides, riverbanks and waste places, from which it can invade adjacent degraded pastures and native grasslands. African lovegrass is generally unpalatable, produces copious seed, and can rapidly spread over and dominate degraded pastures.
- Method of Reproduction
    - Seed spread by air, water and soil
    - humans through weed removal activities and soil waste
    - Mass germination following fire and soil disturbance.
- Spread of African lovegrass is by seed. The seed is light and can be blown short distances by wind.
- Seed is also spread in mud on footwear, animal hooves and pelts, machinery and vehicles, and as an impurity of pasture hay. An important means of spread is in contaminated soils and gravels used in road.

Control Options:

Hand Removal: Single or small numbers of African lovegrass plants can be removed by hoeing

Cut and Paste: Flupropanate (20 - 30 ml/10 L) - Apply at any time of the year. Autumn / winter application provides better control and helps reduce seed production in the following season.

Foliar Spray: **NOT** recommended for volunteers.

Ideal Control Times: Cut and dab any time

9.6. Cumbungi / Bullrush (*Typha latifolia)*

Status: Non declared Environmental Weed

Lifecycle Notes:

- Cumbungi (also known as bullrush) is a name given to a group of three similar plant species found in Tasmania. Cumbungi (*Typha latifolia*) is a weed, (introduced from the northern hemisphere), while broadleaf cumbungi (*T. orientalis*) and narrowleaf cumbungi (*T. domingensis*) are native to Tasmania.
- The grass-like leaves are thick and spongy, and are borne on either side of a stout, cane-like stem growing to 2.5 m high. The flower head is produced in summer. Each stem produces one flower head divided into an upper spike of male flowers, and below this a cylindrical spike of female flowers.
- For the introduced cumbungi, the female (or lower and cylindrical) part of the flower head is blackish-brown in colour, 100-200 mm long and 15-30 mm in diameter.
- Method of Reproduction
    - Cumbungi reproduces in two ways: long distance dispersal by seed, and the spread of dense infestations from rhizomes (underground stems).
    - Cumbungi seed may be transported by wind and water, in mud on the feet of birds and livestock, and on machinery.

Control Options:

Hand Removal: Small plants can be removed by hand-pulling or with a spade. Make sure all pieces of the roots and rhizomes are removed, otherwise the plant can quickly regrow.
Larger infestations can be removed by mechanical excavation. Care must be taken to avoid damage to the structure of the waterway.
Repeatedly cutting all leaves at 50-150 mm below the water surface can be used to control small infestations. First cut when the flowering period is well advanced (around January), with follow up cuts at 4 to 6 weekly intervals.

Cut and Paste: A limited number of herbicides are registered for use on cumbungi in Tasmania due to problems with off-target effects on rivers

Foliar Spray: NOT recommended for volunteers.

10.0. Appendix 1

Table 1: Flora Species

Common name	Scientific name	Date	Comment e.g. pH, Salinity,
Coastal wattle	*Acacia longifolia sub sophorae*	2009	Affected by high water
Blackwood	*Acacia melanoxylon*	2009	
Black Wattle	*Acacia mearnsii*	2009	Replacement planting required
Silver Wattle	*Acacia dealbata*	2009	
Silver Banksia	*Banksia marginata*	2009	
Yellow Spiky Bitter Pea	*Daviesia*	2009	Replacement planting required
Short Stem Flax- lily	*Dianella brevicaulis*	2009	
Hopbush	*Dodonaea viscosa*	2009	
Pale Rush	*Juncus pallidus*	2009	
Sagg	*Lomandra longifolia*	2009	
Coast Tussock Grass	*Poa poiformis*	2009	
Native Geranium	*Pelargonium australe*	2009	

Table 2: Flora Species Observed in 2021 (by ERA Planning and Environment)

Common Name	Scientific Name	Year
Silver wattle	*Acacia dealbata subsp. Dealbata*	2021
Coast wattle	*Acacia longifolia subsp. Sophorae*	2021
Black wattle	*Acacia mearnsii*	2021
Blackwood	*Acacia melanoxylon*	2021
Sea celery	*Apium prostratum subsp. prostratum*	2021
Silver banksia	*Banksia marginata*	2021
Fine twigsedge	*Baumea arthrophylla*	2021
Fen sedge	*Carex gaudichaudiana*	2021
Swampwort	*Centella cordifolia*	2021
Yellow spiky bitterpea	*Daviesia ulicifolia subsp. ulicifolia*	2021
Shortstem flaxlily	*Dianella brevicaulis*	2021
Broadleaf hopbush	*Dodonaea viscosa subsp. spatulata*	2021
White gum	*Eucalyptus viminalis subsp. viminalis*	2021
Clubsedge	*Ficinia nodosa knobby*	2021
Sawsedge	*Gahnia filum chaffy*	2021
Australian sweetgrass	*Glyceria australis*	2021
Native indigo	*Indigofera australis*	2021
Sea rush	*Juncus kraussii subsp. australiensis*	2021
Pale rush	*Juncus pallidus*	2021
Common blowngrass	*Lachnagrostis filiformis*	2021
Common rapiersedge	*Lepidosperma filiforme*	2021
Jointed swampstalks	*Lilaeopsis polyantha*	2021
Sagg	*Lomandra longifolia*	2021
Lake watermilfoil	*Myriophyllum salsugineum*	2021
Southern storksbill	*Pelargonium austral*	2021
	Phragmites australis	2021
Tussock grass	*Poa labillardierei*	2021
Tussock grass	*Poa poiformis*	2021
Coastal saltbush	*Rhagodia candolleana subsp. candolleana*	2021
Fennel pondweed	*Stuckenia pectinate*	2021
Bridal creeper	*Asparagus asparagoides*	2021
Creeping orache	*Atriplex prostrata*	2021
Yorkshire fog	*Holcus lanatus*	2021
Noonflower	*Lampranthus glaucus*	2021
	Pandanus sp.	2021
Radiata pine	*Pinus radiate*	2021
Creeping brookweed	*Samolus repens var. repens*	2021
Running marshflower	*Villarsia reniformis*	2021

Table 3: Fauna Species List

Common name	Scientific name	Date	Comment e.g. pH, Salinity,
Eastern Banjo Frog	*Limnodynastes dumerili*	2009	Calling August September
Spotted Marsh Frog	*Limnodynastes tasmaniensis*	2009	Calling August September

Table 4: Avian Species List

Common name	Scientific name	Date	Comment e.g. pH, Salinity,
Pacific black duck	*Anas superciliosa*	2009	Nesting, winter 2009
Little Pied Cormorant	*Phalacrocorax melanoleucos*	2009	Frequent visitor winter 2009
White Faced Heron	*Egretta novaehollandiae*	2009	Nesting late August in pine trees
Yellow-tailed Black-cockatoo	*Calyptorhynchus funereus*	2009	Frequent visitor, feeds on pine cones

Table 5: Invertebrate Species List (yet to be surveyed)

Common name	Scientific name	Date	Comment e.g. pH, Salinity,

11.0. Appendix 2

Protected Matters Search tool outcome

Following data is generated by protected matters search tool developed by Department of Climate Change, Energy, the Environment and Water18. This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The report provides the mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory Reserves, listed threatened, migratory and marine species, listed threatened ecological communities and other information could be useful as an indicator of potential habitat value. The mapped locations have been collated from a range of data sources at various resolutions as acknowledged at the end of this report.

Not all species listed under the EPBC Act have been mapped (see below) and therefore this report is a general guide only. Where data is available to support mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information to inform a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery, thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps, thematic spatial data and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or a large number of maps are required in a short time-frame, maps are derived or supplemented either with 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two-kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.). In the early stages of the distribution mapping process (1999 - early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping.

[18] https://pmst.awe.gov.au/#/map?lng=147.6119560003281&lat=-42.85895343085857&zoom=18&baseLayers=Imagery&l=14,15

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities – as there may be a delay of several days in the mapping being made available for reporting after a listing even;
- some terrestrial species that overfly the Commonwealth marine area;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, may only have been mapped for recorded breeding site; and
- seals which may have only been mapped for breeding sites near the Australian continent.

The breeding sites may be important for the protection of the Commonwealth Marine environment. Nationally Important Wetlands are not a Matter of National Environmental Significance and do not have protection under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). They may however provide habitat and support other listed species that are protected under the EPBC Act. Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Listed Threatened Ecological Communities

				Presence	
Community ID	**Community Name**	**Threatened Category**	**Website**	**Rank**	**Text**
78	Tasmanian white gum (Eucalyptus viminalis) wet forest	Critically Endangered	Species Profile and Threat Database (SPRAT)	Likely	Community likely to occur within area
77	Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana)	Critically Endangered	Species Profile and Threat Database (SPRAT)	Likely	Community likely to occur within area
107	Giant Kelp Marine Forests of South East Australia	Endangered	Species Profile and Threat Database (SPRAT)	May	Community may occur within area

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
69374	*Seriolella brama*	Blue Warehou	Fish	Known	Species or species habitat known to occur within area	Conservation Dependent						Species Profile and Threat Database (SPRAT)
69402	*Thunnus maccoyii*	Southern Bluefin Tuna	Fish	Likely	Species or species habitat likely to occur	Conservation Dependent						Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					within area							Database (SPRAT)
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	Likely	Species or species habitat likely to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed			Species Profile and Threat Database (SPRAT)
64418	*Brachionichthys hirsutus*	Spotted Handfish	Fish	May	Species or species habitat may occur within area	Critically Endangered						Species Profile and Threat Database (SPRAT)
64859	*Caladenia saggicola*	Sagg Spider-orchid	Plant	Known	Species or species habitat known to occur within area	Critically Endangered						Species Profile and Threat Database (SPRAT)
83756	*Thymichthys politus*	Red Handfish	Fish	Likely	Species or species habitat likely to occur within area	Critically Endangered						Species Profile and Threat Database (SPRAT)

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
862	*Calidris tenuirostris*	Great Knot	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area			Species Profile and Threat Database (SPRAT)
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Likely	Species or species habitat likely to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area			Species Profile and Threat Database (SPRAT)
36	*Balaenoptera musculus*	Blue Whale	Mammal	Likely	Species or species habitat likely to occur within area	Endangered	Migratory	Migratory Marine Species			Cetacean	Species Profile and Threat Database (SPRAT)
25977	*Ceyx azureus diemenensis*	Tasmanian Azure Kingfisher	Bird	May	Species or species habitat may occur within area	Endangered						Species Profile and Threat Database (SPRAT)
64456	*Diomedea sanfordi*	Northern Royal Albatross	Bird	Likely	Foraging, feeding or related	Endangered	Migratory	Migratory Marine Birds	Listed			Species Profile and

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					behaviour likely to occur within area							Threat Database (SPRAT)
418	*Pardalotus quadragintus*	Forty-spotted Pardalote	Bird	Likely	Species or species habitat likely to occur within area	Endangered						Species Profile and Threat Database (SPRAT)
66491	*Thalassarche chrysostoma*	Grey-headed Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
16542	*Lepidium hyssopifolium*	Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed	Plant	Likely	Species or species habitat likely to occur within area	Endangered						Species Profile and Threat Database (SPRAT)
77672	*Antipodia chaostola leucophaea*	Tasmanian Chaostola Skipper, Heath-sand Skipper	Insect	May	Species or species habitat may occur	Endangered						Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					within area							Database (SPRAT)
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
299	*Sarcophilus harrisii*	Tasmanian Devil	Mammal	Likely	Species or species habitat likely to occur within area	Endangered						Species Profile and Threat Database (SPRAT)
40	*Eubalaena australis*	Southern Right Whale	Mammal	Known	Species or species habitat known to occur within area	Endangered	Migratory (as Balaena glacialis australis)	Migratory Marine Species			Cetacean	Species Profile and Threat Database (SPRAT)
879	*Charadrius mongolus*	Lesser Sand Plover, Mongolian Plover	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed			Species Profile and Threat Database (SPRAT)

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
89104	*Leucochrysum albicans subsp. tricolor*	Hoary Sunray, Grassland Paper-daisy	Plant	May	Species or species habitat may occur within area	Endangered						Species Profile and Threat Database (SPRAT)
89224	*Thalassarche cauta*	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
855	*Calidris canutus*	Red Knot, Knot	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area			Species Profile and Threat Database (SPRAT)
26033	*Pterodroma leucoptera leucoptera*	Gould's Petrel, Australian Gould's Petrel	Bird	May	Species or species habitat may occur within area	Endangered						Species Profile and Threat Database (SPRAT)
64435	*Aquila audax fleayi*	Tasmanian Wedge-tailed	Bird	Likely	Species or species	Endangered						Species Profile

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
		Eagle, Wedge-tailed Eagle (Tasmanian)			habitat likely to occur within area							and Threat Database (SPRAT)
1001	*Botaurus poiciloptilus*	Australasian Bittern	Bird	Likely	Species or species habitat likely to occur within area	Endangered						Species Profile and Threat Database (SPRAT)
333	*Dasyurus viverrinus*	Eastern Quoll, Luaner	Mammal	Likely	Species or species habitat likely to occur within area	Endangered						Species Profile and Threat Database (SPRAT)
66651	*Perameles gunnii gunnii*	Eastern Barred Bandicoot (Tasmania)	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
90381	*Thinornis cucullatus cucullatus*	Eastern Hooded Plover, Eastern Hooded Plover	Bird	Known	Species or species habitat known to occur	Vulnerable			Listed - overfly marine area (as Thinornis			Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					within area				rubricollis rubricollis)			Database (SPRAT)
13910	*Glycine latrobeana*	Clover Glycine, Purple Clover	Plant	May	Species or species habitat may occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
64470	*Carcharodon carcharias*	White Shark, Great White Shark	Shark	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Marine Species				Species Profile and Threat Database (SPRAT)
15450	*Stenanthemum pimeleoides*	Spreading Stenanthemum, Propellor Plant	Plant	May	Species or species habitat may occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
26179	*Prototroctes maraena*	Australian Grayling	Fish	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
64445	*Pachyptila turtur subantarctica*	Fairy Prion (southern)	Bird	Known	Species or species habitat known to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
76215	*Xerochrysum palustre*	Swamp Everlasting, Swamp Paper Daisy	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
1828	*Litoria raniformis*	Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog	Frog	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
1061	*Macronectes halli*	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
86380	*Limosa lapponica baueri*	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
64438	*Fregetta grallaria grallaria*	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
682	*Hirundapus caudacutus*	White-throated Needletail	Bird	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Terrestrial Species	Listed - overfly marine area			Species Profile and Threat Database (SPRAT)
67051	*Tyto novaehollandiae*	Masked Owl (Tasmanian)	Bird	Known	Breeding known to	Vulnerable						Species Profile

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
	castanops (Tasmanian population)				occur within area							and Threat Database (SPRAT)
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
64462	*Thalassarche steadi*	White-capped Albatross	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
64463	*Thalassarche salvini*	Salvin's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
64460	*Thalassarche bulleri*	Buller's Albatross, Pacific Albatross	Bird	Likely	Foraging, feeding or related behaviour	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					likely to occur within area							Database (SPRAT)
82273	*Thalassarche bulleri platei*	Northern Buller's Albatross, Pacific Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable			Listed (as Thalassarche sp. nov.)			Species Profile and Threat Database (SPRAT)
82270	*Diomedea antipodensis gibsoni*	Gibson's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable			Listed (as Diomedea gibsoni)			Species Profile and Threat Database (SPRAT)
17067	*Caladenia caudata*	Tailed Spider-orchid	Plant	Known	Species or species habitat known to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
85451	*Parvulastra vivipara*	Tasmanian Live-bearing Seastar	Seastar	May	Species or species habitat may	Vulnerable						Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
					occur within area							Database (SPRAT)
89223	*Diomedea exulans*	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
89221	*Diomedea epomophora*	Southern Royal Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
75183	*Dasyurus maculatus maculatus (Tasmanian population)*	Spotted-tail Quoll, Spot-tailed Quoll, Tiger Quoll (Tasmanian population)	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable						Species Profile and Threat Database (SPRAT)
82950	*Sternula nereis nereis*	Australian Fairy Tern	Bird	Likely	Breeding likely to occur within area	Vulnerable						Species Profile and Threat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status		Cetacean Status	Website
												Database (SPRAT)
64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)
64458	*Diomedea antipodensis*	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed			Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
39	*Caperea marginata*	Pygmy Right Whale	Mammal	May	Foraging, feeding or related behaviour		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat

Listed Migratory Species

Species ID	Scientific Name	Common Name	Class	Presence Rank	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
					may occur within area						Database (SPRAT)
38	*Megaptera novaeangliae*	Humpback Whale	Mammal	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	Likely	Species or species habitat likely to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
36	*Balaenoptera musculus*	Blue Whale	Mammal	Likely	Species or species habitat likely to occur within area	Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
64456	*Diomedea sanfordi*	Northern Royal Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

Species ID	Scientific Name	Common Name	Class	Presence Rank	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
					within area						
66491	*Thalassarche chrysostoma*	Grey-headed Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
832	*Tringa nebularia*	Common Greenshank, Greenshank	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
59309	*Actitis hypoleucos*	Common Sandpiper	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
64470	*Carcharodon carcharias*	White Shark, Great White Shark	Shark	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
59300	*Xenus cinereus*	Terek Sandpiper	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
82849	*Sternula albifrons*	Little Tern	Bird	May	Species or species habitat may occur within area		Migratory	Migratory Marine Birds	Listed (as Sterna albifrons)		Species Profile and Threat Database (SPRAT)
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
1061	*Macronectes halli*	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
844	*Limosa lapponica*	Bar-tailed Godwit	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
682	*Hirundapus caudacutus*	White-throated Needletail	Bird	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
83288	*Lamna nasus*	Porbeagle, Mackerel Shark	Shark	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
64462	*Thalassarche steadi*	White-capped Albatross	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64463	*Thalassarche salvini*	Salvin's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64460	*Thalassarche bulleri*	Buller's Albatross, Pacific Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

Species ID	Scientific Name	Common Name	Class	Presence		Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
				Rank	Text						
612	*Myiagra cyanoleuca*	Satin Flycatcher	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
895	*Charadrius bicinctus*	Double-banded Plover	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
40	*Eubalaena australis*	Southern Right Whale	Mammal	Known	Species or species habitat known to occur within area	Endangered	Migratory (as Balaena glacialis australis)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
678	*Apus pacificus*	Fork-tailed Swift	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Birds	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
872	*Arenaria interpres*	Ruddy Turnstone	Bird	Known	Species or species habitat		Migratory	Migratory Wetlands Species	Listed		Species Profile and

Listed Migratory Species

Species ID	Scientific Name	Common Name	Class	Presence Rank	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
					known to occur within area						Threat Database (SPRAT)
43	*Lagenorhynchus obscurus*	Dusky Dolphin	Mammal	May	Species or species habitat may occur within area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
882	*Charadrius veredus*	Oriental Plover, Oriental Dotterel	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
849	*Numenius phaeopus*	Whimbrel	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
875	*Calidris alba*	Sanderling	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
879	*Charadrius mongolus*	Lesser Sand Plover, Mongolian Plover	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
89224	*Thalassarche cauta*	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
82651	*Ardenna grisea*	Sooty Shearwater	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Birds	Listed (as Puffinus griseus)		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
89223	*Diomedea exulans*	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
89221	*Diomedea epomophora*	Southern Royal Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
860	*Calidris ruficollis*	Red-necked Stint	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
863	*Gallinago hardwickii*	Latham's Snipe, Japanese Snipe	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
862	*Calidris tenuirostris*	Great Knot	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
865	*Pluvialis squatarola*	Grey Plover	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
82404	*Ardenna carneipes*	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area		Migratory	Migratory Marine Birds	Listed (as Puffinus carneipes)		Species Profile and Threat Database (SPRAT)
851	*Tringa brevipes*	Grey-tailed Tattler	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed (as Heteroscelus brevipes)		Species Profile and Threat Database (SPRAT)

Listed Migratory Species

				Presence							
Species ID	**Scientific Name**	**Common Name**	**Class**	**Rank**	**Text**	**Threatened Category**	**Migratory Status**	**Migratory Category**	**Marine Status**	**Cetacean Status**	**Website**
850	*Philomachus pugnax*	Ruff (Reeve)	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Likely	Species or species habitat likely to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
855	*Calidris canutus*	Red Knot, Knot	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
845	*Limosa limosa*	Black-tailed Godwit	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)
858	*Calidris melanotos*	Pectoral Sandpiper	Bird	Known	Species or species habitat		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and

Listed Migratory Species

Species ID	Scientific Name	Common Name	Class	Presence		Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
				Rank	Text						
					known to occur within area						Threat Database (SPRAT)
64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64458	*Diomedea antipodensis*	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
25545	*Pluvialis fulva*	Pacific Golden Plover	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)

Biologically Important Areas

Species ID	Scientific Name	Common Name	Species Group	Behaviour	Presence	Website
82651	Ardenna grisea	Sooty Shearwater	Seabirds	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
82652	Ardenna tenuirostris	Short-tailed Shearwater	Seabirds	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
1085	Eudyptula minor	Little Penguin	Seabirds	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
1018	Pelecanoides urinatrix	Common Diving-petrel	Seabirds	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
1036	Pterodroma mollis	Soft-plumaged Petrel	Seabirds	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
82345	Thalassarche cauta cauta	Shy Albatross	Seabirds	Foraging likely	Likely to occur	Species Profile and Threat Database (SPRAT)
81317	Balaenoptera musculus brevicauda	Pygmy Blue Whale	Whales	Foraging	Likely to be present	Species Profile and Threat Database (SPRAT)
40	Eubalaena australis	Southern Right Whale	Whales	Connecting habitat	Known to occur	Species Profile and Threat Database (SPRAT)
40	Eubalaena australis	Southern Right Whale	Whales	Known core range	Known to occur	Species Profile and Threat Database (SPRAT)