



2030

NRM Strategy

NORTHERN TASMANIA







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Version 3.0



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« Cover: Shy Susan, *Tetratheca gunnii*

« Inside cover: Golden sunlight reflection on the kanamaluka / Tamar estuary (Vince Brophy)

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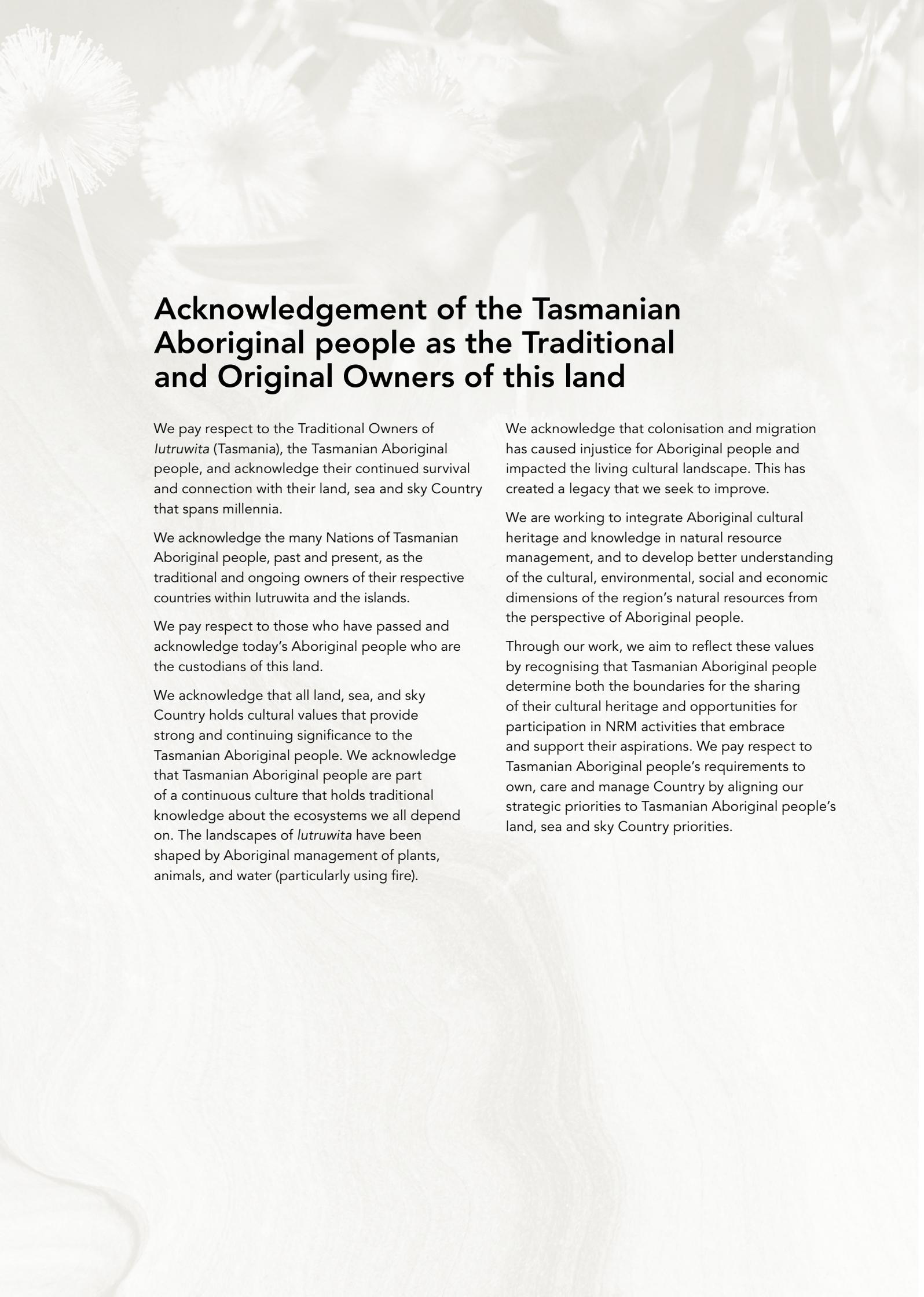
- Funding partners
- Project partners including land managers, community groups and investors
- Organisational Boards, Management Committees and NRM Advisory Committees
- Industry and sector experts
- Tasmanian Aboriginal communities and organisations
- Australian, Tasmanian and local governments
- Non-Government Organisations and
- Community members including individuals and groups.

The three Tasmanian NRM organisations worked collaboratively in the development of the 2030 NRM Strategies:



Funding partners:





Acknowledgement of the Tasmanian Aboriginal people as the Traditional and Original Owners of this land

We pay respect to the Traditional Owners of *lutruwita* (Tasmania), the Tasmanian Aboriginal people, and acknowledge their continued survival and connection with their land, sea and sky Country that spans millennia.

We acknowledge the many Nations of Tasmanian Aboriginal people, past and present, as the traditional and ongoing owners of their respective countries within *lutruwita* and the islands.

We pay respect to those who have passed and acknowledge today's Aboriginal people who are the custodians of this land.

We acknowledge that all land, sea, and sky Country holds cultural values that provide strong and continuing significance to the Tasmanian Aboriginal people. We acknowledge that Tasmanian Aboriginal people are part of a continuous culture that holds traditional knowledge about the ecosystems we all depend on. The landscapes of *lutruwita* have been shaped by Aboriginal management of plants, animals, and water (particularly using fire).

We acknowledge that colonisation and migration has caused injustice for Aboriginal people and impacted the living cultural landscape. This has created a legacy that we seek to improve.

We are working to integrate Aboriginal cultural heritage and knowledge in natural resource management, and to develop better understanding of the cultural, environmental, social and economic dimensions of the region's natural resources from the perspective of Aboriginal people.

Through our work, we aim to reflect these values by recognising that Tasmanian Aboriginal people determine both the boundaries for the sharing of their cultural heritage and opportunities for participation in NRM activities that embrace and support their aspirations. We pay respect to Tasmanian Aboriginal people's requirements to own, care and manage Country by aligning our strategic priorities to Tasmanian Aboriginal people's land, sea and sky Country priorities.

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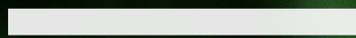
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» Caught by the fern (Luke Whitestar)

1



**Tasmanian
Natural Resource
Management**

1 Tasmanian Natural Resource Management

1.1 NRM organisations

The Northern Tasmanian Natural Resource Management Association Inc., trading as NRM North, is one of 54 natural resource management (NRM) organisations in Australia and one of three in Tasmania (alongside NRM South and the Cradle Coast Authority).

The role of NRM organisations is to protect, sustainably manage and improve natural resources for the shared environmental, cultural, social and economic benefit of the community.

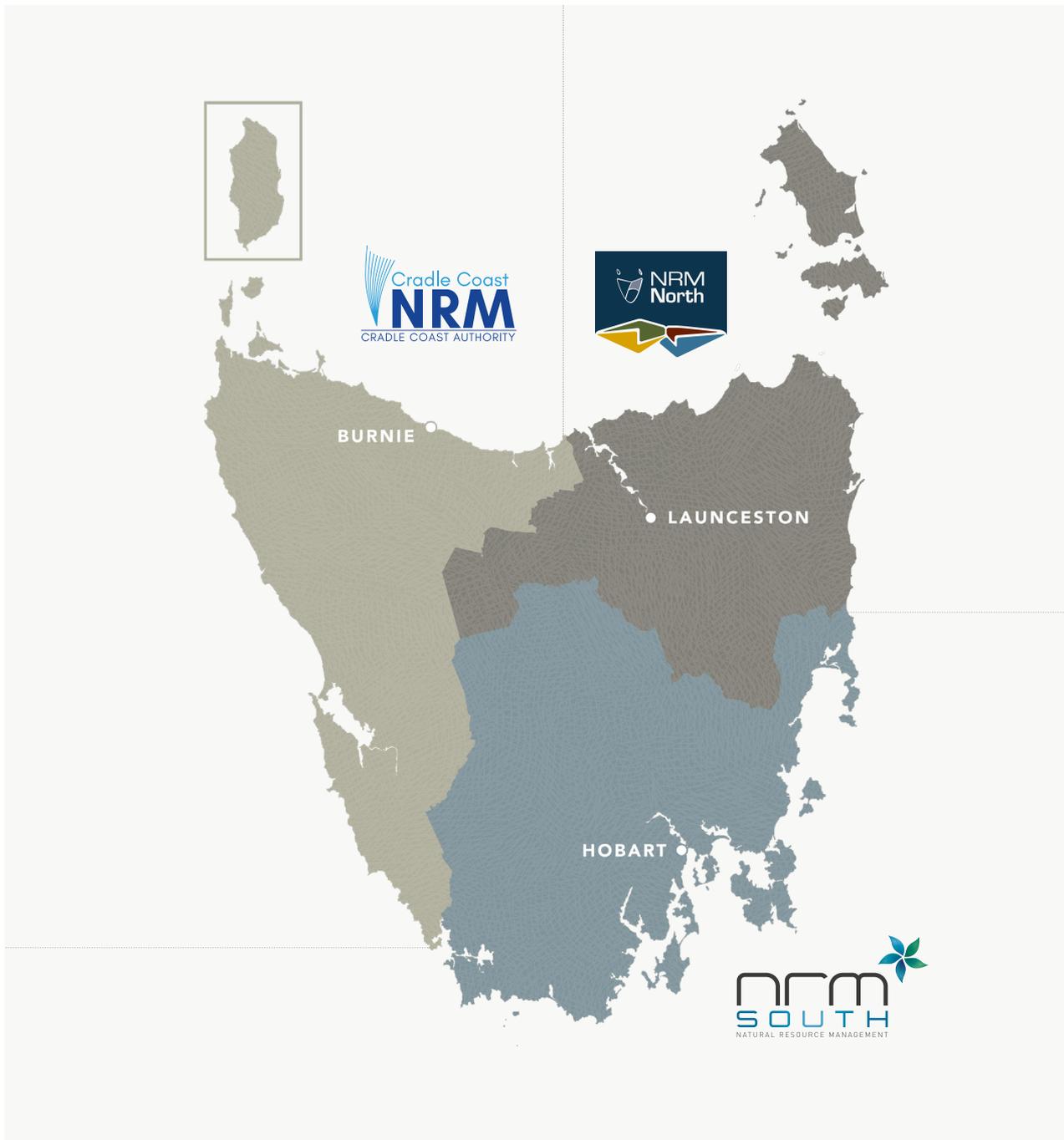


FIGURE 1: Tasmanian NRM regions

1.2 The northern region



1.98

MILLION HECTARES

1.98 million ha of natural, production, lifestyle and urban landscapes (29% of Tasmania's land area).

143

THOUSAND PEOPLE

Tasmania's northern region is home to around a quarter of the State's population.

8

MUNICIPAL AREAS

Break O'Day, Dorset, George Town, Launceston, Meander Valley, Northern Midlands, West Tamar, and Flinders (covering the eastern Bass Strait islands).



GLOBALLY SIGNIFICANT SITES

Tasmanian Wilderness World Heritage Area

Midlands biodiversity hotspot

Furneaux islands

North-east corner of Tasmania

5



RAMSAR WETLANDS

East Coast Cape Barren Island Lagoons, Logan Lagoon, Floodplain Lower Ringarooma River, Little Waterhouse Lake, Jocks Lagoon



46% OF TASMANIA'S TOTAL FARMLAND

900K HA NATIVE FORESTS



IMPORTANT REGION FOR FISHERIES, AQUACULTURE AND RECREATIONAL FISHING

ECONOMY



Revenue from primary production and tourism depends on natural assets. NRM North supports projects that bring direct and indirect benefits to Tasmania's important industry sectors, including:

Tourism \$1.5B

Forestry \$712M raw wood products

Renewable energy

Fisheries and aquaculture \$1.5B

Agriculture \$2.15B

*Approximate total state-wide production value annually

532



LISTED PLANT AND ANIMAL SPECIES



PLANTS
392 species



INSECTS
20 species



FISH
13 species



AMPHIBIANS + REPTILES
8 species



BIRDS
47 species



MAMMALS
12 species



IMPORTANT HABITATS

Riparian and remnant vegetation

Native grasslands

Saltmarsh and wetlands

Waterways (e.g. kanamaluka / Tamar, Georges, Great Forester-Brid, Ringarooma)

Seagrasses and giant kelp

Oyster reefs

FIGURE 2: Northern regional statistics

The area defined as the northern region of Tasmania covers 19,800 km² (29 percent of Tasmania's land area) and is bounded by some of Tasmania's most outstanding and picturesque landscapes; from Bass Strait, along the craggy peaks of the Western Tiers to the stunning beaches of the Bay of Fires and the unspoiled islands of the Furneaux and Kent Groups.

More than 143,000 people live in the region, with the major urban areas based around Launceston and the Tamar Valley. The valley is dissected by the iconic kanamaluka/Tamar estuary. At 70 km, it is Australia's longest navigable estuary carrying the combined flows from over 10,000 km² including the water from the North Esk, South Esk, Meander, Brumby's, Lake, and Macquarie Rivers.

The many smaller towns that service the rural and coastal communities include numerous historic villages and coastal settlements. The region is governed by the eight municipal councils of Break O'Day, Dorset, George Town, Launceston, Meander Valley, Northern Midlands, West Tamar, and Flinders (covering the eastern Bass Strait islands).

Agricultural land in the Launceston and northern region occupies 7,900 km² (40 percent of the region) which is predominantly used for grazing (23 percent of the region). Conservation and natural environments cover 6,980 km² (35 percent of the region). Most of the region's wealth is derived from industries such as agriculture, viticulture, forestry, tourism, fishing, aquaculture, and recreation – all of which depend on our natural resources. Regional agriculture alone generates more than \$798 million annually, approximately 42 percent of the state's agricultural production value, while 79 percent of Tasmania's wine is produced within the northern region. Forestry plantations cover approximately 6 percent of the northern region which are predominantly hardwood plantations of *Eucalyptus globulus* and/or *Eucalyptus nitens*, and a small proportion of softwood plantations of *Pinus radiata*. Native forests make up approximately 46 percent of the region. Most are privately owned, and 12 percent are in nature conservation reserves.



» Platypus (*Ornithorhynchus anatinus*) (Joy Kachina)

1.3 NRM North

NRM North is a not-for-profit organisation (incorporated association) established in March 2003 through a community-driven process in response to the Tasmanian Government's Natural Resource Management Framework and its enabling legislation, the Tasmanian Natural Resource Management Act 2002 (as amended).

NRM North is governed by a Management Committee comprising a skills-based board of 9 to 11 community members with skills in best practice governance, business

administration, legal and contractual issues, and the achievement of natural resource management and conservation outcomes. The Management Committee employs a Chief Executive Officer who employs a professional staff to manage NRM programs and projects across the region in collaboration with state-wide partners. NRM North's office is in Launceston, Tasmania.



FIGURE 3: Northern Tasmania NRM region



» Aurora australis, Ledgerwood Lane (James Douros)

2

VISION FOR NATURAL RESOURCE MANAGEMENT IN TASMANIA:

*Collaborative action for
healthy landscapes and
seascapes, protected natural
values, and sustainable
livelihoods and lifestyles.*



» Softly to the shadows, Royal spoonbill juvenile, *Platalea regia*, at Tamar Island wetlands (Helen Cunningham)



3



The framework

3 The framework

3.1 Purpose

The 2030 Natural Resource Management (NRM) Strategy for Northern Tasmania provides a framework to facilitate sustainable management of northern Tasmania's natural resources. The Strategy is one of three in Tasmania and is complemented by the Strategies for northern Tasmania and the Cradle Coast region. These regional Strategies are consistent with state and national policies and priorities. The shared aims of the NRM strategies are to create a balanced approach to build, support and maintain:

- Healthy, resilient, and biodiverse environments;
- Healthy and productive water and marine resources; and
- Productive and sustainable land management.

Tasmania's three regional NRM organisations recognise the delicate balance between the environmental, social, and economic needs of the community and that natural and cultural landscapes are not confined by organisational boundaries. Working together towards a single vision for natural resource management in Tasmania is essential to effective long-term outcomes.

The Strategy framework is built on natural resource assets within the state and regions. It is recognised that asset prioritisation and related opportunities and threats can differ at the regional or local scale. The Strategies reflect this complexity – with the vision, core values, aspirations and outcomes for Tasmania achieved through specific and targeted Outcomes, which are prioritised at a regional level.

In a changing world, it is important that there is a regular review and assessment of strategic approaches and priorities. The NRM Strategies are intended to not only meet the requirements under the Tasmanian *Natural Resource Management Act 2002* and the Australian Government's Regional Land Partnerships Program, but also to create a framework for ongoing review, evaluation, and re-prioritisation as part of an adaptive management approach.

NRM North is the Australian Government's service provider for the northern Tasmanian NRM Management Unit.

As a service provider, NRM North is obliged to maintain the currency of natural resource management planning and the prioritisation of management actions to ensure that:

- Projects can be identified and appropriately scaled and scoped, are based on best available scientific, economic and social information, take into account the Australian Government's investment priorities relevant to the region, and consider emerging science and innovations, climate change impacts, and the views of the community; and that
- Projects will effectively contribute to the Australian Government's six long-term outcomes, including through identification and on-going prioritisation of management actions that support the delivery of the outcomes.

The six outcomes of the current Regional Land Partnerships program are:

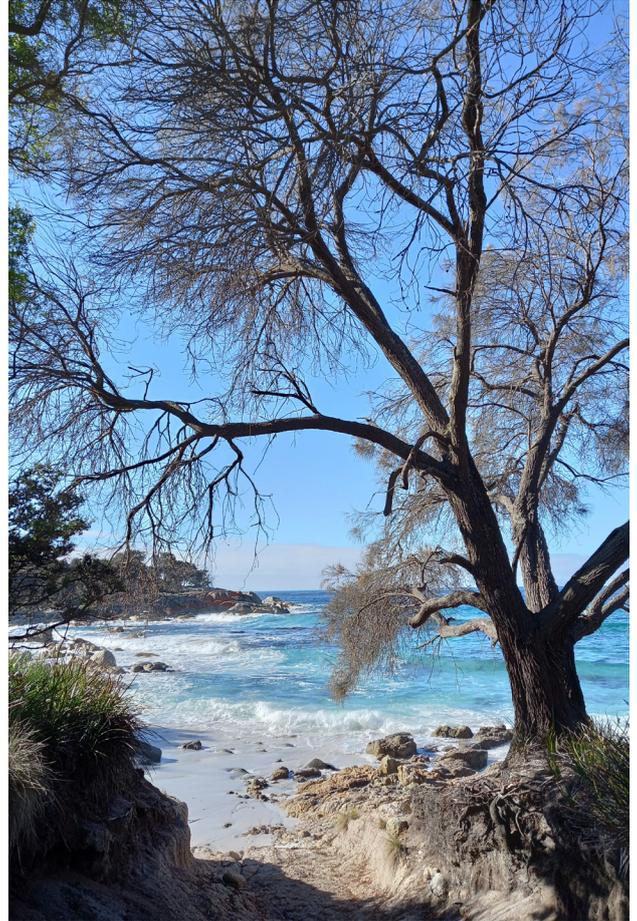
OUTCOME 1	The ecological character of Ramsar sites is maintained or improved.
OUTCOME 2	The trajectory of species targeted under the Threatened Species Strategy, and other EPBC Act priority species, is improved.
OUTCOME 3	The natural heritage Outstanding Universal Value of World Heritage properties is maintained or improved.
OUTCOME 4	The condition of EPBC Act listed Threatened Ecological Communities is improved.
OUTCOME 5	The condition of soil, biodiversity and vegetation are improved.
OUTCOME 6	Agriculture systems have adapted to significant changes in climate and market demands.

Attachment 5 to this Strategy specifies how NRM North is supporting the delivery of these outcomes, by ensuring that our regional priorities align with the Australian Government's outcomes, where appropriate.

3.2 Collaboration beyond regional boundaries

NRM North, NRM South and Cradle Coast Authority have worked together to ensure a high level of consistency across the three 2030 NRM Strategies for Tasmania. This collaborative approach builds on the previous work of the three organisations and provides a framework to:

- improve ease-of-use and accessibility of the Strategies for all stakeholders, particularly statewide and multi-region organisations;
- share information and other resources – to enable a statewide or multi-region approach to measuring success;
- promote a united state-wide approach to collectively contribute to delivering State and Australian Government policy and targets and respond to local expectations; and to
- consistently apply contemporary natural resource management planning practices.



» Seaton Cove, Bay of Fires (Lee Adamson)

3.3 Principles

The strategic framework is:

Responsive	to new approaches or information;
Adaptive	incorporating adaptive management in planning and delivery;
Relevant	to government and other investment programs as well as to community needs and expectations;
Consistent	with national and international systems including the United Nations Sustainable Development Goals; and
Informed	using evidence and sound program logic including a focus on outcomes, and a Monitoring, Evaluation, Reporting and Improvement (MERI) framework.

The following principles for natural resource management are applied through all projects and programs.



FIGURE 4: Natural resource management principles in this strategy

3.4 United Nations Sustainable Development Goals

The United Nations Sustainable Development Goals (UN SDGs) recognise environmental, economic and social aspects to sustainability and that action in one area will contribute to the outcomes in other areas. The UN SDGs provide a framework that outlines the linkages between

actions in achieving sustainability outcomes – including for development and production. The 2030 NRM Strategies have been developed with clear linkages and alignment with this global framework and the following subset of the UN SDGs. Attachment 2 provides further detail.



FIGURE 5: Subset of the United Nations Sustainable Development Goals relevant to the 2030 NRM Strategy

3.5 State-wide drivers, opportunities and threats to natural resource management

3.5.1 Policy outlook overview

Global trends in international markets, climate change and unexpected events (such as the COVID-19 pandemic) present both risks and opportunities for Australia and Tasmania, adding to uncertainty while also providing growth and development opportunities. A detailed review of the current national, state and local policy setting, risks, opportunities and local drivers is provided in Attachment 1.

In summary, at the national level, the *National Landcare Program*, *Regional Land Partnerships Program* addresses agricultural sustainability and conservation of nationally significant natural values and landscapes. As preferred service providers to the Australian Government, the three Tasmanian NRM organisations deliver services and projects to meet the specific and targeted outcomes and priorities of the Australian Government. This work aligns with programs delivered by NRM organisations across Australia and supports national policy agendas such as *Australia's Strategy for Nature 2019-2030 – Australia's national biodiversity strategy and action plan*; *Threatened Species Strategy*; *National Soil Strategy*; and the *Drought Resilience Funding Plan 2020 – 2024*.

Tasmania's policy outlook over the next five years and beyond is characterised by the drive to build the economy by expanding primary production and competitiveness of the agriculture, forestry, tourism, and fisheries sectors while significantly expanding renewable energy output and storage for export to mainland states.

Governments at state and local levels are planning for increased tourism and population growth from both interstate and international migration – attracting people to visit and make their home in the state.

Specific Tasmanian policy and agendas relevant to natural resource management include:

- The enhancement of primary production through policies and plans such the *Competitiveness of Tasmanian Agriculture for 2050 (White Paper 2020)*; *Sustainable Agri- Food Plan 2019-23*; *Strategic Growth Plan for the Tasmanian Forests, Fine Timber and Wood Fibre Industry*; *Rural Water Use Strategy and Tasmanian Biosecurity Strategy*.

- Addressing climate change through *Climate Action 21 – Tasmania’s Climate Change Action Plan* and the *Tasmanian Renewable Energy Action Plan 2020*.
- The vision for the renewable energy sector over the next 20 years, as set out in the *Tasmanian Renewable Energy Action Plan* and *Tasmanian Renewable Hydrogen Action Plan*, includes 200 percent Tasmanian Renewable Energy Target and Renewable Energy Coordination Framework.
- Protection of natural values and biodiversity through the *Tasmanian Wilderness World Heritage Area Management Plan*, management planning for national parks and reserves and environmental management planning and monitoring activities.
- Management of the health, welfare and impact of cats under the *Cat Management Act 2009 (as amended 2020)*.
- Enhancing disaster resilience and recovery through the *Tasmanian Disaster Resilience Strategy 2020-25*; *Tasmanian Fuel Reduction Plan*, and other policies and programs.
- Addressing regional and state-wide land use planning through the *Regional Land Use Strategies* and the *State-wide Planning Scheme*.

These policy drivers create both opportunities and threats to natural resources – for example:

- While expansion of water and irrigation infrastructure will support agriculture and offset rainfall uncertainty, careful management of water, soils, on-farm vegetation and biodiversity is critical.
- While growth of the tourism sector contributes to regional economies, managing impacts on sensitive landscapes is critical.
- While the growth in renewables and establishment of Tasmania as a major exporter of renewable energy will support the transition of energy systems in Australia and globally from fossil fuels to renewables-based energy generation, consideration and mitigation of local impacts on water resources and native species is critical.

Within this context, NRM organisations focus at the local level – building resilience into the management of natural resources, working in a collaborative environment with many stakeholders and partners. The aim is to balance the complex environmental, social and economic needs of the community and Tasmania’s natural resources.

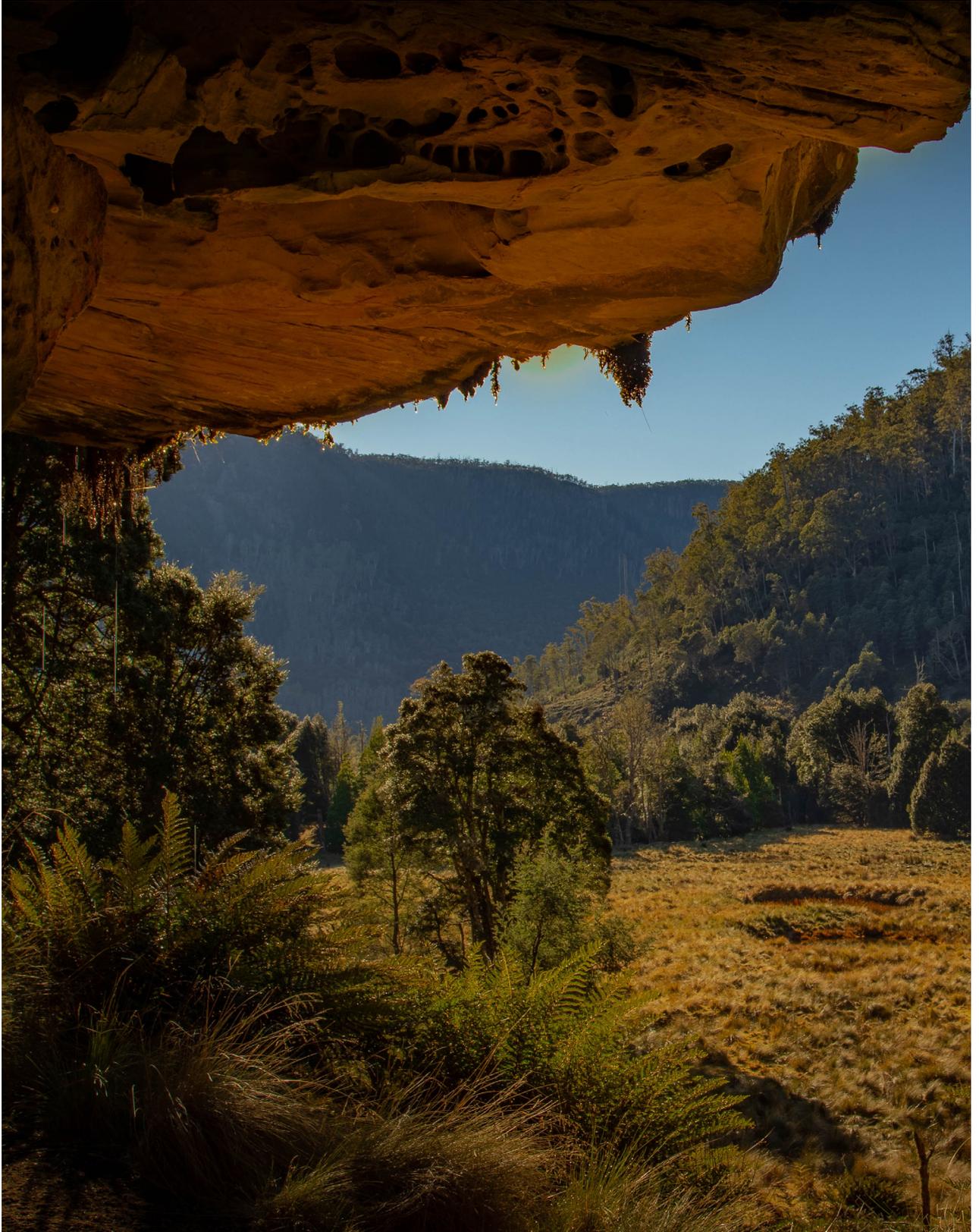
Stakeholders in the commercial and non-government sectors are also vital contributors to natural resource management in Tasmania and have a direct or aligned interest in sustainable management of natural resources in Tasmania. NRM organisations aim to partner and work with a range of stakeholders as many have policies and strategic plans that support healthy ecosystems and sustainable use of natural resources.

3.5.2 Understanding drivers and threats to natural resource management

Natural resource management in Tasmania is affected by six categories of drivers (Figure 6), which may generate both positive influences (opportunities) and/or negative pressures (challenges) for the three organisations over the period to 2030. Known threats impacting on Tasmania’s natural assets inform the selection of Priorities and mitigating Actions – these have been categorised into four key areas (Figure 6).

The impact of cumulative threats and pressures on natural assets and values is becoming increasingly important (i.e. the effect of multiple direct and indirect pressures). Sparse environmental baseline data, complex ecological processes and intensifying global issues – such as warming and climate variability – contribute to an issue that is difficult to predict, measure, assess and manage.

Limited resources coupled with system and habitat decline mean that it is not possible to manage all threats to natural resources, in all locations. For this reason, the Strategy provides a targeted approach to ensure investment is efficient and effective.



» Sandstone overhang on the upper Mersey River (Zac Healey)

DRIVERS

CLIMATE CHANGE IMPLICATIONS

A changing climate presents clear risks to the region’s resources such as reduced rainfall, increased likelihood of dry lightning strikes and bushfire risks, increased extreme weather events and potential for flooding, and increased coastal hazards. However, opportunities, such as renewable energy expansion, innovation in agriculture and forestry, and changes in suitable and profitable crops, are also emerging.

COMMUNITY ASPIRATIONS

The preferences and aspirations of community members and community groups determine many natural resource management priorities. Community perspectives underscore the need to balance economic productivity and social needs with conservation, in an environment with increasingly unpredictable ecosystem responses to changing climate. The will of the community is behind consumer choices, political decisions, and the important element of each region’s volunteer workforce. Aboriginal community groups bring specialised aspirations and unique knowledge and perspectives to natural resource management work.

GOVERNMENT POLICIES AND STRATEGIES

Although NRM organisations usually work at the regional and local scales, guidance and direction is provided by the policies and legislation managed by the Tasmanian and Australian Governments. Of particular importance are the Commonwealth EPBC Act and Threatened Species Strategy, and Tasmania’s plans for agricultural competitiveness, for land use planning and for renewable energy development.



THREATS

CLIMATE CHANGE IMPACTS

Changes to air and ocean temperatures, rainfall, evaporation, wind speed, storm frequency and sea level are all becoming apparent in Tasmania. With these changes will come impacts on our natural resources and the ecosystem services that humans rely on. Some natural resource management activities directly address these threats, and others work to improve ecosystem and human community resilience and adaptability.

HABITAT LOSS AND FRAGMENTATION

A key threatening process affecting many important biodiversity areas and communities is habitat loss. This could be because of historical conversion for agriculture, clearing for development or industry, or piecemeal and cumulative loss of ecological functions via a range of human impacts.

FIGURE 6: Drivers and threats impacting Tasmania’s natural resources

AVAILABLE FUNDING

Funding opportunities influence each NRM organisation's capacity and priorities. Important sources of funding are currently the Australian Government's National Landcare Program (and its Investment Priorities) and the Tasmanian Government (which sets Key Performance Indicators for the NRM organisations). Independent, private (commercial) and philanthropic funding sources are also emerging.



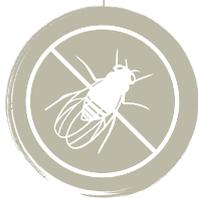
INDUSTRY PRIORITIES

Agriculture, forestry, fisheries, aquaculture, tourism, energy and manufacturing industries all exert a wide range of pressures and influences on Tasmania's natural resources. Within this broad category, there are a range of opportunities for, and risks to, natural resource management.



INCREASING HUMAN POPULATION AND CHANGING DEMOGRAPHICS

Development pressures and land-use changes (including clearing of native vegetation) are strongly linked to changing demographics. Urban expansion, increased demand for food production, tourism, increased migration to Tasmania and interest in rural and peri-urban living all drive changes in natural resource management priorities, actions and activities. In addition, the uncertainty regarding COVID-19's effects on movement of people and availability of resources may impact organisational capabilities and outputs.



BIOSECURITY THREATS

Introduced plants, animals and diseases threaten Tasmania's ecosystems and productive industries through competition for space and resources, predation and population decline, or productivity loss. Climate change is also expected to exacerbate biosecurity threats, providing increased opportunity for pests and pathogens to establish.



URBAN AND INDUSTRIAL IMPACTS

Urban and industrial impacts contribute to pollution of waterways, coastlines and the atmosphere. Poor water quality, increased carbon dioxide in the atmosphere, soil degradation, and the impacts of plastics on coasts and oceans, are all clear threats to Tasmania's natural resources.

OUTCOMES AND ACTIONS

3.5.3 Climate change in Tasmania

Central to natural resource management planning is recognition and response to the observed and projected effects of climate change. Based on higher-level emission scenario modelling of climate change – the IPCC’s SSP 8.5 projection – Tasmania can expect significant impacts over the current century. The Intergovernmental Panel on Climate Change (IPCC AR6) reports note that the changes in the climate, observed globally, are unprecedented at least in the last 2,000 years.

Locally, the *Climate Change in Australia Projections Cluster Report – Southern Slopes* identified significant climate change impacts for Tasmania (as summarised in Table 1). Climate modelling predicts Tasmania is at increased risk of wildfires and higher rainfall intensity and associated flooding with global warming. However, on an annual and decadal basis, natural variability in the climate system can act to either mask or enhance any long-term human induced trend, particularly in the next 20 years and for rainfall.

Many climate change driven phenomena are already occurring, significantly impacting people’s health and wellbeing, damaging infrastructure and enterprises, and disrupting natural ecosystems and species. The State of the Climate 2020 report prepared by the Bureau of Meteorology observes *“The greatest ocean warming in the Australian region since 1970 has occurred around south-eastern Australia and Tasmania. The East Australian Current now extends further south, creating an area of more rapid warming in the Tasman Sea where the warming rate is now twice the global average.”*

Tasmania is actively engaged with climate change projection and response through the *Climate Change (State Action) Act 2008*, Climate Futures for Tasmania initiative and the work of the Climate Futures Research Group at the University of Tasmania (UTas). While Tasmania’s *Climate Change Action Plan 2017–2021* has expired, Tasmania’s next climate change action plan is under development.



» Taylors Beach, east coast Tasmania

TABLE 1: A summary of Climate Change impacts in Tasmania (see Attachment 6 for references)

	Direction	Confidence	Tasmanian Detail
Temperature 	INCREASE ↑	Very High	By 2050, Tasmania is projected to experience an increase of at least 1.5°C, in all seasons, even if a low-emissions scenario is followed.
Extreme temperature 	INCREASE ↑	Very High	More hot days and warm spells are projected, with fewer frosts. Projections under a high emission scenario indicate an increase from 1.6 days over 35°C to up to 4.2 days, and a decrease in days under 2°C from 9.1 to 0.3 days by 2090. All scenario assessments indicate an increase in all types of high temperature extremes, including maximum daily temperatures, heatwave intensity and heatwave duration.
Rainfall 	DECREASE ↓	Medium	Strong regional differences. A decrease in spring rainfall (10-20% less rain in some areas, and up to 25% by 2050 in the central north). Large reduction in autumn rainfall (up to 50% less rain for some areas relative to 2010-2020). Some regional increases in winter rainfall over the next 20-50 years (e.g. western Tasmania).
Extreme rainfall 	INCREASE ↑	Medium	Increased intensity of extreme rainfall events is projected. Increase in extreme rainfall, particularly along east coast in summer and autumn. Frequency of westerly rain-bearing fronts is expected to decrease gradually, and east-coast lows to increase. Intermittent, more damaging, high intensity rainfall is possible.
Evaporation rate 	INCREASE ↑	High	Higher decline in soil moisture during summer and autumn in Tasmania. Increased evaporation associated with warming.
Drought 	INCREASE ↑	Medium	Episodic and regional nature of drought events will continue. Projected decrease in rainfall and increase in evaporation contribute to more time in drought. The east coast of Tasmania will stay especially drought prone.
Wind speed 	INCREASE ↑	Medium	Stronger wind speed in winter in western Tasmania, and a decrease in summer wind speed. Possible increase in extremes.
Fire weather 	INCREASE ↑	High	A harsher fire-weather climate in the future with consistent increases in fire weather projected for Tasmania. A steady increase in fire danger throughout the current century, including an increase in the length of the fire season and an increase in the number of days at the highest range of fire danger. By the end of this century: twice the fire danger, over twice the area, twice as often in Tasmania. This is an eight-fold increase in fire risk.
Sea level 	INCREASE ↑	Very High	Mean sea level will continue to rise and height of extreme sea-level events will also increase. By 2030, between 0.07-0.19 m rise from 1986-2005 sea levels is projected. By 2090, 0.27-0.66 m under low emission scenario and 0.39-0.89 m under high emission scenario. Some exposed locations are projected to see a 1-in-100-year coastal inundation event move towards an event occurring almost every year (during the annual high tide).
Ocean temperature 	INCREASE ↑	High	South-eastern Australia is a hotspot for ocean temperature changes, with projected rise of >3°C under a high emission scenario. The western Tasman Sea is considered a global ocean warming hotspot. By 2060, intense marine heatwave events are expected to increase.
Ocean acidification 	INCREASE ↑	Medium	Benthic and pelagic calcifiers, such as diatoms, molluscs and deep water coral, will show reduced calcification rates and/ or increased dissolution.

3.6 Reading this Strategy

This NRM Strategy is founded on a clear long-term Vision informed and supported by a framework of Outcomes and Actions. Aspirational Outcomes for natural resource management in the northern region of Tasmania have been developed in the context of long-term (20+ year) state-wide Outcomes. These are informed and supported by regionally identified Priorities with specific 10-year Outcomes and Actions.

The structure of the Strategy is based on the concept of Program Logic where long-term (aspirational) Outcomes are clearly defined, and Priorities, Actions, are designed to contribute to the Vision and Outcomes.

Actions are presented under three interrelated **Themes** of Land, Water and Biodiversity and are prioritised within **Asset Classes** under each Theme. **Actions** are presented in a framework that shows the connection between the overall Vision and the Outcomes and Actions.



» Feeling peckish? Purple swamphen, *Porphyrio porphyrio*, feeding (Jeremy Morante)



FIGURE 7: Strategy framework

3.7 Terminology

3.7.1 Themes

Land, Water, and Biodiversity are the key Themes (i.e. high-level categories) adopted to provide the structure of the regional NRM Strategies at the state-wide scale. These Themes are consistent with state and national policies and priorities and build upon a shared commitment to address the key issues confronting productive and environmental landscapes and achieve lasting and meaningful outcomes.

Land	Productive and sustainable land management in natural, cultural, and productive landscapes
Water	Healthy, resilient, sustainable, and productive water resources – coastal and riparian systems and fresh, estuarine, and marine water.
Biodiversity	Healthy, resilient, and biodiverse environments and species.

3.7.2 Asset Classes

Within each of the identified Themes, specific Asset Classes are identified at the state and regional scale. Asset identification provides a structure that focuses action and investment in priority areas.

3.7.3 Outcomes – measuring strategic success

Long-term (aspirational) and near-term Outcomes for Tasmanian natural resources were identified by the regional NRM organisations in consultation with stakeholders. These Outcomes form benchmarks for measuring the success of Actions described in this Strategy.

2050 Outcomes These long-term aspirational Outcomes are broad (at the Asset Class level) focus on a 20+ year timeframe at a state-wide scale. The aspirations are informed by the longer-term objectives and priorities identified in Tasmanian and Australian Government strategies and policies, long-term goals identified by stakeholders, and through research.

2030 Outcomes The medium-term outcomes have a 2030 planning horizon and are regionally specific. They apply to the Priorities within each Asset Class.

3.7.4 Priorities

Priorities are assets that have been identified under each Asset Class through a regional prioritisation process. Priorities within the Strategy are not necessarily listed in priority order. More information about the prioritisation process is in Section 4.4.

3.7.5 Actions

Actions are the identified tangible steps to address the threatening processes affecting the Priorities. Actions have been informed by extensive consultation with partners, stakeholders, investors, and the wider community. The Actions outline potential investment options that will guide specific project development and activities further refined in a Regional Investment Plan or similar document. The Actions have been developed based on best available scientific, economic and social information. The defined Actions will enable the regional organisations to identify and develop appropriate and relevant projects, taking into account any emerging science and innovations, threats, drivers or impacts, and the views and aspirations of stakeholders and project partners.

» Native coastal health

A close-up photograph of pink flowers, likely a species of heath, with green leaves and stems. The flowers are in various stages of bloom, with some fully open and others as buds. The background is a soft, out-of-focus green.

4

A shared approach

4 A shared approach

4.1 Acknowledging connections

Landscapes – living and productive – are made up of many interconnected ecosystems, communities and uses. The Themes (Land, Water, Biodiversity) of this Strategy are therefore intrinsically linked. As a result, some Priorities and Actions crossing over more than one Theme. It is recognised that the delivery of Actions can also result in improvements benefiting multiple natural, cultural, and productive systems and across Themes.

In some cases, Priorities and Actions cross regional boundaries and the relevant NRM organisations endeavour to work jointly to achieve shared objectives. These shared objectives are identified throughout the Strategy by the following icons (Figure 8). These linkages may not necessarily result in identical projects or Outcomes, but are complimentary and include cross-regional consultation and engagement.



FIGURE 8: Icons representing cross-regional linkages

4.2 Working together for Healthy Country

It is important for this Strategy to articulate the fundamental philosophy of Aboriginal land, sea, and sky Country. Country holds special meaning for Aboriginal people – it is more than the place of origin, it has cultural and spiritual meanings, including beliefs, values, obligations, connections to ancestors, creation stories and all the animals and plants. Aboriginal people know Country as an interconnected life-force with its own agency that encapsulates land, sea, and sky Country, while allowing each to exist in its own right and be interpreted in different ways.

Aboriginal land, sea, and sky Country is an important part of natural resource management – this view of Country integrates lore and respect for culture with caring for nature and landscapes. NRM organisations seek open engagement with Tasmanian Aboriginal people, seeking their priorities for actions that support their access, healing, protection and management of land, sea, and sky Country.

Working together, NRM organisations will:

- Honour, respect and value the strong physical and spiritual connection Aboriginal people have with Country and acknowledge their custodianship of land, sea, and sky Country.
- Look forward to a growing and influential role for Aboriginal people in natural resource management.
- Work respectfully, acknowledging that all landscapes are important and are integral parts of Country.
- Foster partnerships to better understand Aboriginal perspectives on natural resource management knowledge and practices.
- Support achievable projects, as identified by the Aboriginal community and organisations, through an ongoing process of consultation on project opportunities, planning and implementation.

4.3 Stakeholder engagement

The three regional NRM organisations have undertaken extensive and multi-faceted engagement with key stakeholders both state-wide and within their specific regions. The Strategies have received valuable guidance and input from the Tasmanian Aboriginal community and organisations, industry, research organisations, consultancies, Australian, Tasmanian and local

government departments, peak bodies, and community interest groups. Stakeholder aspirations have been carefully considered in the Strategy development process and – where possible – are reflected in the relevant Priorities and Actions.

Further detail regarding the stakeholder engagement process is provided in Attachment 4.

4.4 Prioritisation process

Priorities and associated Actions have been identified by evaluating known natural resource assets and threats in each region. An assessment was undertaken to determine the importance of each asset in the region, and the potential for NRM strategic investment in actions to mitigate threats and improve or stabilise the health and trajectory of that asset. This process recognises that some regional assets and values of high significance may not be readily influenced by NRM investment, noting that other strategies, policies, agencies, or interest groups may be active in the management or protection of these assets.

Unlike previous NRM strategies, the 2030 NRM Strategy focuses on those assets that the NRM organisations have a capacity, capability, and role to act upon.

The prioritisation process used all available data and expert knowledge to list potential assets on which to focus. To short-list Priorities and Actions, six key criteria were identified, reflecting strategic considerations for decision-making, and expert knowledge of the required level of investment of resources (time, money, human effort and expertise) to make a difference to the asset. The six criteria are complex considerations expressed simply, so they can be scored and compared across diverse areas of proposed intent, and then ranked. For most of the asset classes in each region, the criteria were used in a fit-for-purpose Multi-Criteria Analysis (MCA).

The criteria used were:

1 Strategic importance:	Is the asset strategically significant at a regional, state, and/or national scale (considering environmental, social, and economic implications)?
2 Influence:	Are the NRM organisations the right organisation to do this work?
3 Practicality:	Can the NRM organisations do something valuable?
4 Value:	Is action worth it when considering the likely benefit?
5 Risk:	Can the NRM organisations reduce known or likely threats by acting locally?
6 Priorities and linkages:	Is this a priority of likely funders? Does it link with Government or stakeholder policy, priorities, or other drivers?

As key sources of funding to the natural resource management sector, linkages with Australian Government (e.g. Regional Land Partnership 5-year Outcomes and Investment Priorities) and Tasmanian Government priorities have been an important consideration.

Additionally, expert and community stakeholder knowledge has been sought through consultation, with expectations and aspirations considered. This engagement phase also highlighted some limitations to the available data and potential knowledge gaps. These have been addressed as actions, if appropriate, to the broader achievement of outcomes.

It should be noted that the priorities, actions and outcomes for each prioritised asset class provide general guidance for the development of potential projects. Actions will be further assessed, refined, and developed into project designs/plans, based upon community interest and future investor potential and requirement. This phase of project development is described in Section 8.1.

Attachment 3 provides further detail on the prioritisation approach within each Theme.



» Echidna (*Tachyglossus aculeatus*) (Niki Fulton)

» Till the cows come home: Cressy highland calf (Gabi Dunn)



5



Land

5 Land

The Land Theme identifies how NRM organisations partner with land managers to support sustainable natural and production landscapes and industries in a changing environment. NRM North aims to respect and acknowledge Aboriginal understanding of land and Country, conserve natural, cultural and production values associated with these assets, and to build capacity and develop resilience across these assets to protect them from ongoing and emerging threats.

Land assets encompass topography and the soils that support agriculture, plantation forestry and natural ecosystems, the vegetation that covers and protects these soils, and cultural heritage values.

Impacts to natural and cultural values, soil condition, and vegetation are projected due to changes to land use, management practices and biosecurity threats.

Local threats and impacts can be compounded when combined with the global impacts of climate change (including changes in weather patterns and increased frequency and severity of extreme weather).

Asset Classes of Healthy Country, Resilient Landscapes and Soils and Vegetation have been developed to address these issues. Maintenance of healthy landscapes, soil and vegetation are essential components of all ecosystems – rural and urban, aquatic and terrestrial, domestic and wild. It is therefore acknowledged that the Land Theme is inextricably linked to the Themes of Water and Biodiversity, particularly in supporting vital ecosystem services. There are Priorities and Actions relevant to sustainable land management in all Themes, such as catchment management planning, soil erosion, and nutrient management and the management of important vegetation communities, including riparian vegetation.



Supporting Tasmanian Aboriginal people to increase capacity to manage, access or heal Country, based on self-determined priorities.



Building the capacity of land managers to address the risk of adverse events, protect natural capital, and take advantage of opportunities for production industries in the face of challenges such as climate change, weeds, pests and diseases.



Supporting land managers to improve soil condition and manage vegetation cover to improve natural values, biodiversity, and production outcomes and mitigate emerging risks.

5.1 Land in Tasmania

TABLE 2: A snapshot of Tasmania's land assets

77	PARCELS OF ABORIGINAL MANAGED LAND	Indigenous Protected Areas include Preminghana, Risdon Cove, Putalina, Mount Chappell, Badger Island, Babel Island, Great Dog Island, lungtalanana
	63,930 ha is under management by Aboriginal land authority	
28%	FARMLAND	Sheep farming (2,646 km ²), beef cattle farming (5,670 km ²), dairy farming (3,591 km ²) and vegetable farming (2,079 km ²) account for 56% of agricultural land area
	18,900 km ² of Tasmania is used for farming	
2,171	FARM BUSINESSES	Milk (\$475M), cattle and calves (\$342M) and potatoes (\$127M) accounted for 57% of state-wide agricultural production
	Generated \$1.68B during 2018–19, increasing from \$1.48B during 2015–16	
18	IRRIGATION SCHEMES	Dial-Blythe, Duck, Cressy Longford, Great Forester, Greater Meander, Kindred-North Motton, Lower South Esk, Midlands, North Esk, Sassafras Wesleyvale, Scottsdale, Sorell, South East (Stages 1 & 2), Southern Highlands, Swan Valley, Upper Ringarooma, Whitmore, Winnaleah
	Operated by Tasmanian Irrigation (GBE), the schemes supply over 85,000 ML of water to agriculture per year	
37%	OF FARMS WITH CONSERVATION AREAS	812 Tasmanian farm businesses have an area of land set aside for conservation or protection purposes
	Combined total of 110,770 ha	
812 K	HECTARES OF PRODUCTION FOREST	434k hectares of private timber reserves on private land. 283k plantation forest across tenures. Annual value of \$1.2B to the Tasmanian economy.
	Total area on public land	



5.2 Healthy Country

5.2.1 State-wide Outcome

By 2050, Aboriginal communities have been supported to access, heal, protect and manage land, sea and sky Country in a way that respects their knowledge and rights as Traditional Owners, according to their priorities.

5.2.2 Regional context

NRM North acknowledges the Tasmanian Aboriginal people's strong connections to the coast, land, and waterways as well as plants and animals, which are associated with traditional uses and significance in ceremony, creation stories, art and identity. Stewardship of these sites and the cultural landscapes of the whole northern Tasmanian region are not only integral to Aboriginal identity, health and wellbeing, but also to custodial representation and rights.

Sites of cultural significance are found across the region with concentrations on the coast and along river valleys that provided pathways from alpine to coastal resources for the region's Traditional Owners. Sites of significance include living cultural sites (also known as middens), burial areas, quarries, and rock art. These sites are at risk from a number of threats including a changing climate (physical degradation of sites from sea level rise, changes to ecosystem function and native species assemblages), loss of knowledge and fewer opportunities to connect to or access Country, and changes to land use and/or condition (from urbanisation, changing fire regimes, pest species including weeds, biosecurity threats).

Aboriginal-managed land in the northern region at lungtalanana (Clarke Island), Babel Island, Big Dog Island, larapuna (Eddystone Point), Wybalenna, truwana (Cape Barren Island), and tebrakunna (Cape Portland) are important places for supporting or re-establishing Aboriginal governance and reconnecting Tasmania's Aboriginal community with Country.

NRM North acknowledges that Aboriginal land, sea, and sky Country management requires culturally appropriate engagement processes to align our work with Tasmanian Aboriginal people's self-determined priorities. Working in open, respectful, and ongoing relationships with the Tasmanian Aboriginal communities, priorities and actions have been developed that support access, healing, protection and management of land, sea, and sky Country.

NRM North recognises the importance and role of Traditional Ecological Knowledge in natural resource management and aims to facilitate opportunities for the continuation or reestablishment of traditional practices by Aboriginal people who are looking after Country. Our organisation aims to support the integration of traditional land management practices, where possible and appropriate, to contribute to the Outcomes of the Strategy.



» Irapuna at dawn (Lee Adamson)

NRM North's Actions aim to support access, healing, protection and management of land, sea, and sky Country by community, and are imbedded across all three Themes (Land, Water and Biodiversity). Within the Healthy Country section, NRM North's Actions focus on partnerships with the Tasmanian Aboriginal community and organisations to conserve or restore healthy Country, build on current, and creating new, relationships and mutual understanding, provide planning support, respect Aboriginal ecological and cultural knowledge, build natural resource management capacity and career pathways, and deliver on-ground activities together.

However consultation and inclusion of the Tasmanian Aboriginal community will occur beyond actions in the Healthy Country section across all Themes and in recognition of the importance of this, Aboriginal culture and knowledge is recognised in the Strategy Principles (Section 3.3).

Priorities in this strategy have been developed in consultation with Aboriginal organisations or communities and reflect their self-determined priorities and aspirations.

5.2.3 Priorities and Actions

PRIORITY LH1: Healthy Country

Engagement with Tasmanian Aboriginal people in natural resource management activities – through partnership approaches and sharing of knowledge, perspectives, and practices is considered across all Themes and Priorities.

Specific to the Land Theme, consideration is given to how NRM North can support Aboriginal communities to access, conserve or restore Healthy Country in

the northern region on lands owned or managed by Aboriginal people. NRM North's aim is to increase and encourage stronger engagement with Tasmanian Aboriginal organisations, individuals, and communities regarding their self-identified priorities for Country and to exchange information on traditional and contemporary land management practices.

Outcome:

By 2030, Aboriginal people are supported to participate in natural resource management activities from planning through to implementation across all assets. This includes implementation of actions identified in Healthy Country Plans, weed management plans, and other on-Country management plans for truwana, lungtalanana, tayaritja, Wybalenna, larapuna, and tebrakunna.



Local threats that can be addressed by NRM actions:

- Loss of tunapri
- Lack of engagement of Aboriginal youth and community
- Impact on natural and cultural values from weeds and pest plants
- Inappropriate fire regimes
- Impacts of feral animals on the ecosystem
- Stock access to Country

Actions:

- LH1.a** Support Aboriginal communities to undertake control actions for exotic or feral species to maintain natural values on Aboriginal managed lands and to monitor and manage vulnerable cultural resources and assets.
- LH1.b** Support Aboriginal communities to review and operationalise Healthy Country plans for: tayaritja (the Furneaux Islands), Wybelenna, and larapuna.
- LH1.c** Support Aboriginal communities to review and update the truwana weed management plan and support the implementation of identified actions to protect vulnerable cultural resources and places.
- LH1.d** Collaborate with Aboriginal communities to improve access to, and condition of, cultural assets through weed management, protection of native animals and plants, and management of water quality on Country.

LH1.e	Collaborate with Aboriginal communities in on ground delivery of natural resource management on Country including eradication of feral cats and restoration of native plants and mammals on lungtalanana and protection of mutton bird sites on the Furneaux islands.
LH1.f	Collaborate with Aboriginal communities and build capacity for weed management and water quality monitoring of East Coast Cape Barren Island Ramsar site on truwana.
LH1.g	Collaborate with Aboriginal communities to re-establish natural ecosystem trajectory on Country at tebrakunna.
LH1.h	Increase capacity building opportunities by engaging in cultural awareness training and support the adoption of cultural land management practices such as cool burning.
LH1.i	Cultural and environmental values are conserved and protected through the establishment of a Sea Country Indigenous Protected Area for tayaritja (the Furneaux Islands) managed by Tasmanian Aboriginal organisations.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Management planning, water quality monitoring, on-Country actions and capacity building including pest eradication, weed management, habitat protection and restoration, cultural burning, and feral animal control or eradication.
Potential collaborators	Tasmanian Aboriginal Centre, Aboriginal Land Council of Tasmania, melythina tiakana warrana Aboriginal Corporation, Aboriginal Rangers, philanthropic wildlife protection organisations, academic and subject matter experts, State Government, Australian Government, Flinders Island Council, Aboriginal communities and individuals.
Opportunities for community participation	Field days, trials, workshops, discussion groups; on-ground recovery activities on Country.

See related Priorities and Actions in the Resilient Landscapes, Wetlands and other Waterbodies, Coastal and Marine Areas, Important Biodiversity Areas, Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.



5.3 Resilient landscapes

5.3.1 State-wide Outcome

By 2050, actions have been implemented to improve the resilience of landscapes, communities, and enterprises, and the capacity to adapt to climate change.

5.3.2 Regional context

Production land management in the northern region is characterised by innovation and adaptive thinking through networking and collaboration. Land managers are supported by research agencies, secondary processors, consultants, not for profit organisations, and government agencies to improve productivity, market access, and responsible management of natural resources.

The State Government's 2050 Agrifood Plan and the Strategic Growth Plan for the Tasmanian Forests, Fine Timber and Wood Fibre Industry underscore the importance of agriculture and forestry's future growth to the regional economy.

Agricultural production in the region will be subject to the influences of global climate change. More extreme weather events and more variable weather patterns are likely to impact livestock health and welfare, and pasture and crop production. Changes in hydrology influenced by climate change will influence soil degradation processes. Changes to rainfall, temperature, frosts, and ocean temperatures will impact on crop viability, time to crop maturity, crop yields, and the incidence and severity of weeds, pests and diseases.

These impacts combined with changes in market forces and consumer demand present pressures on the sustainability of farming enterprises and ecosystem services.

The increasing occurrence of drought in the region has significantly reduced seasonal ground cover and therefore decreased the resilience of the associated grazing enterprises. Without adaptation measures, these declines will lead to increased soil erosion and carbon loss, reduced water holding capacity, and a decline in soil function, ultimately further reducing the resilience and viability of these dryland grazing systems (see also section 5.4).

There are a number of climate change adaptation and mitigation opportunities in agriculture within the region, including expansion of irrigation to provide greater reliability of water availability for crops, pasture, and horticulture; changes in enterprise mix such as planting of vineyards and other crops currently suited to warmer and dryer climates; restoration of native vegetation and the establishment of new farm forestry plantings to sequester more carbon and provide other drought resilience benefits; and encouraging the uptake of agricultural practices that maintain and improve ground cover for greater feed base resilience.



» Angus cattle on farm (Adrian James)

Enterprise suitability mapping developed in Tasmania by Natural Resources and Environment Tasmania (NRE Tas, formerly DPIPW) can be used to identify local opportunities for enterprise change and adaptation. While many land managers are aware that the climate and markets are changing, they often do not have the skills and capacity to prepare and/or adopt management practices to cater for this change.

Improving landscape and agricultural system resilience helps land managers to minimise the severity and duration of these threats and support recovery following events. NRM North has a long and successful history of working with land managers and agricultural industries to plan for and mitigate risk through improved land management approaches and capacity

building, this includes supporting land managers to undertake property planning activities and ensuring land managers have increased knowledge, networks, and awareness of locally appropriate and innovative land management and drought resilience strategies. NRM North has also successfully worked with the state government to support natural disaster recovery programs and more recently with the Australian Government on agricultural stewardship programs including the piloting of biodiversity enhancements coupled with carbon sequestration and enhancements to remnant vegetation.

For actions to mitigate impacts to soil and vegetation on-farm see also section 5.4.

5.3.3 Priorities and Actions

PRIORITY LR1: Resilient communities and industries

Climate change is likely to have a significant impact on the environment in the coming decades. More extreme weather events, changes in rainfall, temperature, frosts, and ocean temperatures will affect production outcomes (yields, crop viability, harvest times). This Strategy provides a framework to plan for the future viability of Tasmania's natural, cultural and production landscapes,

to encourage resilience to change and realise opportunity through change. Emerging markets and opportunities for carbon storage in soils and vegetation provide existing and emerging mechanisms for land managers to profit from restorative and sustainable land management. More information on climate adaptation and resilience can be found in Attachment 5.

Outcome:

By 2030, 200 land managers have adopted the knowledge, tools, or resources they need to mitigate and adapt to climate change impacts, understand emerging carbon markets and emission reduction options, and recover from extreme events.



Local threats that can be addressed by NRM actions:

- Loss of productivity due to impacts from extreme weather events
- Lack of information and planning for future climate scenarios

Actions:

- LR1.a** Improve land manager knowledge of climate change impacts and access to information and networks to support business sustainability and profitability both now and into the future.
- LR1.b** Participate in and contribute to the Tasmania Drought Resilience Adoption and Innovation Hub and increase industry knowledge of adaptation pathways to ensure communities and enterprises remain resilient to climate challenges.
- LR1.c** Develop and promote information and tools related to succession and strategic business planning.
- LR1.d** Increase the uptake of climate data for use by land managers in decision making. e.g. adoption of tools that integrate with their systems, containing existing production, water use and climate data.
- LR1.e** Provide land managers with access to information and support the diversification of land use (e.g. vary crops and crop varieties to suit integrated livestock and cropping), to be more adaptable to variable conditions.
- LR1.f** Deliver information and targeted extension to support land managers to actively participate in emerging ecosystem service and carbon market opportunities.
- LR1.g** Support the delivery of natural disaster or extreme event recovery programs.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Extension, training workshops, field days, pilot programs, social media, web-based products, podcasts.
Potential collaborators	Natural Resources and Environment Tasmania; Australian Government; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia; production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups.
Opportunities for community participation	Field days, trials, workshops, discussion forums; on-ground recovery activities.

See related *Priorities and Actions in the Soils and Vegetation Assets Classes.*



» Delamere vineyards (Adam Gibson)

PRIORITY LR2: Biosecurity

Effective biosecurity is critically important to Tasmania's natural environment and production landscapes. As biosecurity pressures and threats increase, due to increased movement of goods and people, so does the potential for weed, pest and disease incursions.

Partnerships and capacity building are vital to maintaining and improving Tasmania's biosecurity management, as the complexity of biosecurity systems increases and effectiveness of maintaining a biosecure environment relies on stakeholder capabilities, in particular land managers, and their approaches to biosecurity activities. More information on biosecurity can be found in Attachment 5.

Outcome:

By 2030, the community have increased capacity for the early detection and containment of pest, weed and disease incursions, and eradication whenever possible.

**Local threats that can be addressed by NRM actions:**

- Loss of production or cultural and environmental values due to presence or spread of weeds, pests and diseases

Actions:

LR2.a	Deliver effective and efficient management, and control programs for biosecurity risks.
LR2.b	Develop and distribute information on the impact of key biosecurity threats, prevention and management options, and management responsibilities, and promote the General Biosecurity Duty.
LR2.c	Develop and deliver biosecurity planning workshops and increase the adoption of best management practices for biosecurity on-farm and in the community (i.e. roadsides, public lands).
LR2.d	Support the identification of biosecurity risks for the Furneaux Islands and support the implementation of eradication or control activities to address priority weeds, pests, or diseases.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Extension, training workshops, field days, surveys, monitoring, incentives for on-ground works, citizen science.
Potential collaborators	Biosecurity Tasmania; Natural Resources and Environment Tasmania; Tasmanian Institute of Agriculture; Rural Business Tasmania; Department of State Growth; Tasmanian Farmer and Graziers Association; Dairy Tasmania; Wine Tasmania; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; rural supply merchants; Tasmanian Institute of Agriculture; Rural Business Tasmania; Forum of Rural Stakeholders; Sustainable Timbers Tasmania, production forestry companies; Wine Tasmania; farmer productivity, discussion and landcare groups; Tasmanian Aboriginal Centre, Aboriginal Land Council of Tasmania; truwana Rangers; TasNetworks; local governments; Australian Government.
Opportunities for community participation	Field days; on-ground eradication or control activities; discussion groups; trials; planning workshops; citizen science.

See related Priorities and Actions in the Wetlands and other Waterbodies, Important Biodiversity Areas, Threatened and Important Ecological Communities, and Threatened and Important Species Asset Classes.



» Bunny's tails (*Lagurus ovatus*) (Katie MacFarlane)



5.4 Soils and vegetation

5.4.1 State-wide Outcome

By 2050, actions have been implemented to improve soil health, vegetation cover and increased adoption of best management practices in productive agricultural landscapes.

5.4.2 Regional context

Agriculture, horticulture, and grazing are vital to the State's economy through multiple enterprises on around 1.89 million ha of farmed land. In 2019-20 this sector generated \$2.15 billion at the farm gate.

Healthy and resilient soils are the foundation of this productivity. Working landscapes that are well planned, protected by mosaics of native vegetation and managed using best available science provide the best means to ensure long term viability for Tasmanian farming industries. Action to reduce the degradation of soils from processes such as erosion, loss of soil biodiversity, nutrient imbalance and pests and diseases are fundamental steps in maintaining soil productivity. Identifying opportunities to utilise native vegetation to achieve production benefits (e.g. native vegetation shelterbelts) and protecting remnant areas of native vegetation will support ongoing sustainable production.

The Tasmanian Government has set a target for significant growth in the agriculture and food sectors of \$10 billion by 2050. Productivity improvement and sustainable growth in the farming sector are fundamental to meeting these targets. NRM organisations work in partnership with industry, land

managers, and researchers to enhance soil health, build climate resilience and minimise the impacts of invasive species such as weeds and feral animals.

Soils and vegetation in the northern region support a valuable and productive agricultural sector. Covering approximately 45 percent of the land area, agriculture is the main production land use in the region. Agricultural development has been occurring in recent years with the investment in irrigation schemes, largely in the agricultural areas of the Midlands and Meander Valley, and the Great Forester-Brid and Ringarooma catchments in the north east corner of the region. The most extensive agricultural activity in the region is grazing accounting for over 85 percent of the agricultural land use, although there is an increasing trend towards mixed enterprises and a substantial increase in irrigated grazing in recent years.

In 2019-20 the gross value of agricultural production in the Launceston and north east region was \$858 million, which was 46 per cent of the total gross value of agricultural production in Tasmania (\$2.15 billion).

The Launceston and north east region has a diverse agricultural sector. The most important commodities



» Farmland in the Ringarooma valley (Marcus Haywood)

in the region based on the gross value of agricultural production were milk (\$232 million), cattle and calves (\$164 million) and potatoes (\$65 million). These commodities together contributed 60 percent of the total value of agricultural production in the region. In 2019-20 the Launceston and north east region accounted for 97 per cent (\$936 thousand) of the total value of Tasmania's canola production (ABS 7503.0, 2021).

In 2018–19 there were 869 farms in the Launceston and north east region with an estimated value of agricultural operations of \$40,000 or more per annum. The region contains 40 percent of all farm businesses in Tasmania (ABS).

Productive and healthy agricultural soils are integral for the long-term sustainability of our agricultural systems, while native vegetation on farms improves the resilience of productive land against impacts and change and supports biodiversity and productivity, which are both important for achieving long-term sustainability.

Declining soil condition and vegetation cover can reduce productivity and animal health, impact on land and waterway conditions, and increase weed incursion and reliance on chemical inputs. NRM North works with land managers and agricultural industries to develop

and implement practices that protect the environment and improve production, focusing on actions that improve profitability, sustainability and resilience.

Land-use change, including agricultural intensification, presents a risk to the condition of soil and vegetation assets in the northern region if best management practices are not adopted. Soils most at risk from decline in condition through land-use intensification include duplex soils and soils on land classes five and six.

Improvements in the condition of soils and vegetation in the longer term will be achieved through the adoption of management practices that improve ground cover and reduce erosion in grazing and cropping areas, as well as improving the understanding and management of carbon and structural decline, salinity risks associated with irrigation, and increasing the instance and quality of native vegetation on farms.

The following Priorities were identified and described using a risk/threat-based approach. NRM North aims to support land managers to address:

- soil carbon levels, structural decline, prolonged saturation, erosion and salinisation; and.
- improve the extent and quality of on farm native vegetation.

5.4.3 Priorities and Actions

PRIORITY LS1: Soils at risk of carbon decline

Tasmanian agricultural systems have relatively high organic carbon content due to climatic and soil influences. Soil organic carbon relates directly to productivity in agricultural soils. The relationship is a function of the organic carbon content in soil improving water holding capacity and nutrient availability, in addition to improving conditions for soil biological activity.

However, the cropping systems (including root vegetables and crops that require fine seedbeds) often lead to high levels of tillage. As Tasmania was settled

by Europeans for agriculture before most of the rest of Australia, it has fields that have been tilled and cultivated for 200 years, causing significant declines in soil organic carbon and the associated problems of compaction, erosion, poor water infiltration and nutrient cycling. A more recent development is the risk of reduction in soil carbon from expansion in irrigation and the carbon losses that can result from moisture and nitrogen being available year-round. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, 100 land managers have adopted management practices to maintain and improve soil carbon levels.



Local threats that can be addressed by NRM actions:

- Loss of soil productive capacity
- Loss of vegetation and groundcover

Actions:

LS1.a Increase the adoption of cropping and cropping/ grazing rotation practices, targeting vulnerable duplex soils and class 5 and 6 land undergoing land use change.

LS1.b Increase the adoption of improved grazing management practices.

LS1.c Increase land manager awareness of and access to emerging soil and forestry carbon market opportunities.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential interventions Extension, trials and demonstrations, social media, web based educational materials; podcasts; workshops.

Potential collaborators Natural Resources and Environment Tasmania; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups; rural supply merchants; Australian Government.

Opportunities for community participation Field days, training workshops, trials, demonstration sites.

PRIORITY LS2: Soils at risk of structural decline

Soil structure is defined as the way in which soil particles, organic matter and the pore spaces between them, are arranged. Soil with good structure allows for aeration, infiltration and drainage and increased activity of beneficial soil organisms, which supports plant productivity and root growth to access water and nutrients.

Degraded soil structure is caused by compaction and results in blocks of soil that restrict root growth and plant productivity. Excessive cultivation, combined with prolonged saturation and traffic and tillage practices, can result in rapid decline in soil structure. Cropping and irrigation management practices that promote good soil structure are essential for avoiding soil structural decline and optimising productivity. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, 100 land managers have adopted management practices that maintain or improve soil structure.



Local threats that can be addressed by NRM actions:

- Prolonged saturation associated with suboptimal broadacre cropping irrigation practices and cropping/ grazing rotation practices

Actions:

LS2.a Increase the adoption of broadacre irrigation practices that reduce the risk of soil structural decline, targeting soils under irrigation.

LS2.b Increase the adoption of best practice rotational cropping/ grazing systems targeting duplex soils and soils at high risk of structural decline.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Extension, demonstrations and trials, social media, web based educational materials; podcasts; workshops.
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups industry experts; rural supply merchants; Australian Government.
Opportunities for community participation	Field days, training workshops, trials and demonstration sites.

PRIORITY LS3: Soils at risk from erosion

Soil is a foundational asset that supports production landscapes and is easily lost through erosion, which will ultimately reduce land productivity over time. Losses in soil depth do not appear significant, however a reduction in 1 mm of soil from a hectare can be equivalent to removing 10 to 15 tonnes of soil, which is a significant loss of an important asset. The rate of soil erosion depends on the climate (precipitation and wind), topography (angle and length of slope), soil properties (soil texture, soil structure and organic matter), vegetation cover, and management practices. Land management practices such as tillage or

overgrazing can lead to very high rates of erosion. Wind erosion is common on flat, bare areas with dry, sandy soils, or anywhere the soil is loose, dry, and fine grained. Most soils require at least 30 percent ground cover to prevent wind erosion. Offsite impacts of wind erosion include air pollution, health concerns and unwanted deposits on infrastructure and agricultural lands. Water erosion, caused by rainfall, results in gully and sheet erosion, and loss of topsoil and associated nutrients. It also contributes significant sediment and nutrient loads into waterways, resulting in significant decline of water quality. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, at least 100 land managers have adopted management practices that reduce the risk of soil erosion, to achieve improved soil health, productivity and resilience.

**Local threats that can be addressed by NRM actions:**

- Loss of soil productivity from wind, water and hillslope erosion

Actions:

- LS3.a** Increase the adoption of practices that improve ground cover, reduce soil erosion and increase resilience in dryland grazing systems, targeting the Northern Midlands, Fingal Valley, Dorset, and Tangumrounpeender / Waterhouse areas.
- LS3.b** Increase the adoption of cropping management practices that reduce the risks of soil erosion, targeting the Deloraine and Scottsdale-Winnaleah intensive cropping areas.
- LS3.c** Increase the adoption of broadacre cropping practices in the Northern Midlands and Fingal Valley areas to reduce the risk of water and wind erosion.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Extension, demonstrations, and trials, social media, web based educational materials; podcasts; workshops.

Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups; industry experts; rural supply merchants; Australian Government.
Opportunities for community participation	Field days, training workshops, trials and demonstration sites.



» Soils in Meander Valley (Adrian James)

PRIORITY LS4: Soils at risk from salinisation

Land management practices and climatic change are the two primary factors which, acting alone or together, impact on salinity. Salt stores are a natural feature of the Tasmanian landscape, in areas with low average annual rainfall evaporation exceeds rainfall in most months which results in salt accumulation in the soil, groundwater or bedrock below. Increased availability

of water in soils can mobilise salt stores in the soil and increase salinity in soils, groundwater or surface waters. If poorly managed, land management and use changes can increase the amount of water passing through the root zone and increase salinity. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, 100 producers have adopted management practices that reduce the risk of salinisation, to achieve improved soil health, productivity and resilience.



Local threats that can be addressed by NRM actions:

- Loss of soil productivity and ecosystem services through salinisation of soils

Actions:

LS4.a Increase the capacity of land managers to identify and manage salinity risks in the vulnerable groundwater flow systems prioritising areas of land use change and intensification.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Extension and education, social media, web based educational materials; podcasts; workshops.
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups; industry experts; rural supply merchants; Australian Government.
Opportunity for community participation	Field days, training workshops.

PRIORITY LS5: Soils at risk from acidification

Many of Tasmania's agricultural areas are relatively high-rainfall and nitrogen rich, which leads to rapid soil acidification. This results in many farm paddocks having a pH (water) below 5.5 in the topsoil. Subsurface soil acidity is more variable, as some Tasmanian soil types (particularly those with potential salinity and sodicity issues) are strongly alkaline at depth. Low soil pH in agricultural systems leads to a range of issues including aluminium toxicity and impaired performance of soil

biological function, such as legumes that fail to form relationships with rhizobia.

Awareness and adoption of pasture management practices that maintain an optimal pH, such as appropriate fertiliser and lime application, are essential to maintaining the productivity and health of northern Tasmanian soils. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, 50 land managers have adopted management practices that optimise soil pH, to achieve improved soil health, productivity and resilience.



Local threats that can be addressed by NRM actions:

- Loss of soil productivity due to increased soil acidification

Actions:

LS5 Increase the adoption of pasture management practices to effectively manage soil pH in permanent pasture systems.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government	<input checked="" type="checkbox"/> Tasmanian Government	<input checked="" type="checkbox"/> Regional or Local	<input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Extension, demonstrations, and trials.			
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Climate Change Office; Tasmanian Institute of Agriculture; Soil CRC; Rural Business Tasmania; Tasmanian Irrigation; Private Forestry Tasmania; Tasmanian Farmer and Graziers Association; Tasmanian Agricultural Productivity Group; industry experts; Rural Alive and Well; Landcare Tasmania; Southern Farming Systems; Meat and Livestock Australia; Tasmanian Drought and Innovation Hub and partners; private consultants; rural supply merchants; Forum of Rural Stakeholders; Australian Wool Innovation; Meat and Livestock Australia production forestry companies; Wine Tasmania; PotatoLink; farmer productivity, discussion and landcare groups; industry experts; rural supply merchants; Australian Government.			
Opportunity for community participation	Field days, training workshops.			

PRIORITY LS6: On farm native vegetation

On-farm native vegetation management is a significant issue due to its important role in a wide range of soil, land and biodiversity values. These relate particularly to its role in preventing soil erosion and land degradation, catchment-scale impact on hydrology and water quality, maintaining soil health and productive capacity, and as a key tool in managing and restoring areas subject to historic damage.

Opportunities for carbon farming and biodiversity stewardship are increasingly available to land managers to support revenue diversification and increase land productivity, and increasing knowledge and awareness is essential to increase the adoption of best management practices for on farm native vegetation. More information on soils, biodiversity and vegetation can be found in Attachment 5.

Outcome:

By 2030, the condition and extent of vegetation on agricultural land is maintained or improved from 2021 levels with management, planning and implementation of best management practice.



Local threats that can be addressed by NRM actions:

- Loss of productivity due to vegetation loss in agricultural areas
- Loss of ecosystems services, corridors, and biodiversity
- Impacts to water quality (sedimentation, nutrient loads) from loss of vegetation in riparian zones

Actions:

- LS6.a** Increase the adoption of best management practices and increase vegetation retention in regions of low retention in the lower Meander, Brumbys-Lake and South Esk catchments, Flinders Island, the upper Ringarooma, Great Forester-Brid catchments to increase habitat value and landscape connectivity.
- LS6.b** Increase the adoption of best management practices and increase retention of riparian vegetation to protect system resilience to flooding impacts and improve habitat connectivity.
- LS6.c** Demonstrate the economic value of retaining and establishing trees in the agricultural landscape, including supporting land managers to actively participate in emerging carbon and ecosystem service markets.
- LS6.d** Increase the adoption of best management practices to protect and offset vegetation loss resulting from expanding irrigation development.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Extension, targeted incentives, conservation covenants.

Potential collaborators Natural Resources and Environment Tasmania; Tasmanian Institute of Agriculture; University of Tasmania; Australian Government; Private Forests Tasmania; Tasmanian Irrigation; Tasmanian Farmers and Graziers Association; industry experts; Tasmanian Land Conservancy; Greening Australia; Bush Heritage Australia; community groups; productivity, discussion and landcare groups; rural supply merchants; Australian Government.

Opportunities for community participation Field days, planting days, training workshops.

See related Priorities and Actions in the Resilient Landscapes Asset Class.

» Wyniford weir at Dorset Creek (Katie MacFarlane)



6



Water

6 Water

The Water Theme encompasses Tasmania's key water assets, which include rivers and estuaries, wetlands and waterbodies, and coastal and marine systems. Tasmania's water assets are essential for clean drinking water, biodiversity, supporting aquatic ecosystem health (freshwater, wetlands, estuarine, marine). They support multiple primary industries including irrigation for agricultural production, fisheries and aquaculture production, industrial use, recreation and tourism. They also support community-dependent infrastructure systems for hydro-electric power generation, drinking water supply and wastewater treatment, ports, and marine traffic. The built environment is concentrated near the state's water assets.

Land-use and water-use activities have an impact on Tasmania's water assets – through activities that modify flows, input pollutants (e.g. nutrients, sediments, pathogens, waste), disturb or clear vegetation, or modify riverbeds, wetlands and coastal areas.

The combined influence of climate change, development and land use change, human movement and population change, and ageing infrastructure, is increasing pressure on water assets. Climate-driven events (such as drought, bushfire and flood) will be ongoing issues in managing water resources. These threats and changes will result in new and emerging priorities over time, which may need to be addressed to adequately protect and manage the identified Water Assets.

Protection and management of water resources is closely linked with land management, including some actions listed in the Land Theme (e.g. soil and erosion management and resilient landscapes) and Biodiversity Theme (e.g. aquatic threatened species and important vegetation communities, including riparian vegetation). The delivery of actions across all Themes will contribute to the health of Tasmania's water resources.



The movement of fresh surface and groundwaters through the landscape supports ecological, economic, and social values. Ecological values of catchments and estuaries, and current and emerging threats in receiving waters are used to identify Priorities and Actions for rivers, floodplains, and estuaries.



Wetlands and other waterbodies include internationally recognised wetlands of significance under the Ramsar Convention, which support high-value ecological communities. Nationally and regionally important wetlands and other water bodies are recognised for their conservation value.

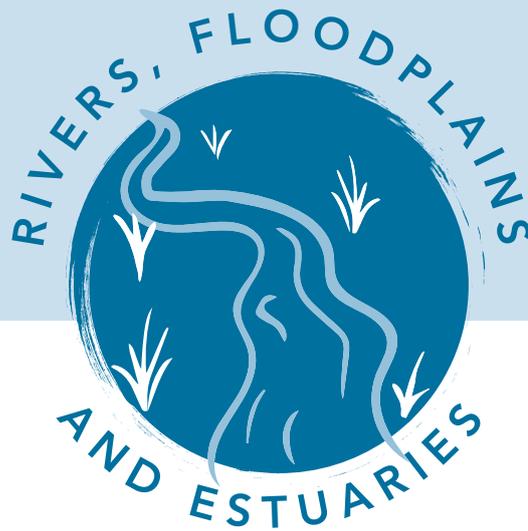


Coastal and marine areas encompass a wide variety of landscapes and habitat types. Important coastal and marine areas can be identified by high value habitats or species. To enhance ecological, social, and economic values, identified Actions will build resilience to pressures and emerging threats across regional Priorities.

6.1 Water in Tasmania

TABLE 3: A snapshot of Tasmania's water assets

48	WATER CATCHMENTS Approximately 150,000 km of river systems	Longest rivers: <ul style="list-style-type: none"> • South Esk – 252 km (North) • Derwent – 239 km (South) • Arthur – 172 km (Cradle Coast)
10	RAMSAR WETLANDS Internationally significant wetlands covering 26,000 ha	<ul style="list-style-type: none"> • 10 Ramsar wetlands ranging in size from 7 ha to 4,517 ha • 89 nationally important wetlands ranging in size from 1 ha to 16,070 ha
113	ESTUARIES Moderate to large in size	<ul style="list-style-type: none"> • 68 critical/high conservation value estuary systems
3,030	KM OF COASTLINE 2,237 km of mainland coastline	<ul style="list-style-type: none"> • 900 beaches • 9 Interim Marine and Coastal Regionalisation of Australia bioregions • Over 300 islands with 10 over 5,000 ha in size
10	MARINE CONSERVATION AREAS Covering 135,000 ha	<ul style="list-style-type: none"> • 7 Marine Nature Reserves • 3 Australian Marine Parks



6.2 Rivers, floodplains and estuaries

6.2.1 State-wide Outcome

By 2050, actions have been implemented to improve waterway health and the condition of riparian vegetation for improved health and function of rivers, floodplains and estuaries.

6.2.2 Regional context

There are nearly 40,000 km of rivers and creeks draining 15 major catchments in the northern region. Creeks and streams, of varied sizes and often ephemeral, make up over half of these drainage systems. Rivers in the north and east of the region generally drain to wetlands, bays and estuaries which provide a range of environmental and socioeconomic values. The majority of large rivers and their catchments in the region drain into the kanamaluka / Tamar estuary.

The smaller catchments of the Georges and the Great Forester-Brid are connected to estuaries with high conservation values and are experiencing increased pressures from urbanisation and agricultural development. The condition of some reaches of rivers in the Ringarooma catchment have declined and are currently in poor condition. Agricultural development will increase in this catchment with increased water security through the development of irrigation schemes, and this may further increase pressures on rivers in the catchment.

Irrigation development in the northern region is extensive, with schemes covering much of the Midlands, Meander, and Great Forester-Brid catchments. Improved water access under these schemes has seen intensification of grazing and dairy in the region with resultant pressures on river health, including water quality, particularly where stock are able to access streams and where riparian buffers are inadequate to filter runoff. Many streams in dairy and grazing areas in the region have poor or no riparian vegetation with floodplain areas often subject to intense grazing or cropping pressures. The northern region also includes large urban areas where both infill and greenfield development are ongoing. Increased imperviousness, and loss of natural stream function through man-made drainage in these areas, is placing increasing pressures on water quality and natural values associated with streams and estuaries.

Priorities and Actions are focused on improving riparian management and reducing diffuse pollutant loads.

There are 48 catchments in Tasmania, 13 of which are in the northern region including:

- Tamar Estuary
- Meander
- Brumbys-Lake
- Macquarie
- South Esk
- North Esk
- Pipers
- Little Forester
- Great Forester-Brid
- Boobyalla- Tomahawk
- Ringarooma
- Furneaux
- Musselroe-Ansons
- Georges
- Scamander-Douglas



» kanamaluka / Tamar estuary from the Batman bridge (Sam Jack)

6.2.3 Priorities and Actions

PRIORITY WR1: Great Forester-Brid catchment

The Great Forester-Brid catchment is situated between the Boobyalla-Tomahawk and Little Forester catchments on the north coast of Tasmania. Its headwaters originate at Mt Maurice, and it enters the sea at the estuary near Bridport. Forestry and agriculture are the main catchment activities, with small scale tin mining occurring on the Aaron River near Mt Stronach. Clearing of riparian vegetation, agricultural and in some cases forestry activities impact on water quality. The Great Forester Irrigation Scheme has been operating for many years, with the dam located on an unnamed tributary of the Great Forester River. The Scottsdale Irrigation

Scheme has also recently commenced operations within the catchment, with additional supply diverted from the St Patricks River to enable supplementary filling of the dam.

Based on a water quality improvement plan, improvement in riparian management to increase vegetation and remove stock from waterways; and adoption of improved land management practices to reduce diffuse pollutants represent the best opportunities to improve water quality and ecosystem health.

Outcome:

By 2030, improve aquatic ecosystem health and water quality in the Great Forester-Brid catchment through implementation of the water quality improvement plan, which will result in reduction of pollutant loads from diffuse sources, including modelled 19% reduction in nitrogen, 38% reduction in phosphorous, 22% reduction in sediments and 60% reduction in enterococci.

Local threats that can be addressed by NRM actions:

- Diffuse pollutant loads—nitrogen, phosphorous, sediments, enterococci
- Streambank and sheet erosion

Actions:

- WR1.a** Increase streamside protection by restricting stock access from waterways and improving riparian management in dairy and grazing areas.
- WR1.b** Improve dairy effluent management.
- WR1.c** Increase the adoption of cropping management practices to reduce nutrient loss and increase groundcover.
- WR1.d** Collaborate on the development of state-wide stormwater planning policy and promote the adoption of water sensitive urban design. Increase community awareness of the use of raingardens and improve industry knowledge of soil and erosion control practices in new developments.

Implementation

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Riparian fencing and off-stream water infrastructure incentives, extension, training workshops, policy development.
Potential collaborators	Private land managers, Dorset Council, water quality experts, landcare groups; Department of Justice; Local Government Association of Tasmania; community groups; productivity, discussion and landcare groups; rural supply merchants.
Opportunities for community participation	Field days, planting days, education and awareness, citizen science, on-ground implementation.

See related Priorities and Actions in the Wetlands and other Waterbodies, Threatened and Important Ecological Communities, and Threatened and Important Species Asset Classes.



» Little Blue Lake, near South Mount Cameron in north east Tasmania

PRIORITY WR2: Georges catchment

The George River catchment is a comparatively small coastal catchment located on the north-east coast of Tasmania. The George River and its main tributary the Ransom River, capture runoff from most of the catchment, while the remainder is drained by small, ephemeral streams and creeks that flow into Georges Bay or the Bay of Fires to the north of St Helens. Land use in the upper catchment is a mix of forestry, dairy and grazing, while the lower catchment is used for agriculture and contains smaller rural properties. Georges Bay, into which the majority of runoff flows, has been extensively developed for oyster farming.

Water quality in Georges Bay is influenced by grazing, forestry, septic, agriculture, sewage treatment plants, urban stormwater as well as the water movement and flushing associated with Georges Bay entrance and ocean boundary. Based on a water quality improvement plan, improvement in riparian management to increase vegetation and remove stock from waterways; adoption of improved land management practices to reduce diffuse pollutants; and improved urban stormwater management represent the best opportunities to improve water quality and ecosystem health.

Outcome:

By 2030, improve ecosystem health and water quality in the Georges catchment through implementation of the water quality improvement plan, which will result in reduction of pollutant loads from diffuse sources, including modelled 4% reduction in nitrogen, 6% reduction in phosphorous, 3% reduction in sediments and 30% reduction in enterococci.

Local threats that can be addressed by NRM actions:

- Diffuse pollutant loads – nitrogen, phosphorous, sediments, enterococci
- Streambank and sheet erosion

Actions:

- WR2.a** Improve streamside protection by restricting stock access from waterways and improving riparian management in dairy and grazing areas.
- WR2.b** Improve dairy effluent management.
- WR2.c** Increase the adoption of best management cropping practices to reduce nutrient loss and increase groundcover.
- WR2.d** Collaborate on the development of state-wide stormwater planning policy and promote the adoption of water sensitive urban design. Increase community awareness of the use of raingardens and improve industry knowledge of soil and erosion control practices in new developments.

Implementation:

Investment opportunity	<input type="checkbox"/> Australian Government	<input checked="" type="checkbox"/> Tasmanian Government	<input checked="" type="checkbox"/> Regional or Local	<input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Riparian fencing and off-stream water infrastructure incentives, extension, training workshops, policy development.			
Potential collaborators	Private land managers, Break O'Day Council, water quality experts, landcare groups, river trusts; Department of Justice; Local Government Association of Tasmania; Dairy Tasmania, Tasmanian Farmers and Graziers Association; community groups; productivity groups, rural supply merchants.			
Opportunities for community participation	Field days, planting days, education and awareness, citizen science.			

PRIORITY WR3: kanamaluka/Tamar estuary and Esk rivers system

The kanamaluka / Tamar estuary and Esk rivers catchment is the largest catchment system in the state and the region, draining approximately 15 percent of the area of Tasmania and six major rivers, including the North and South Esk, Macquarie, Meander, Brumbys and Lake Rivers. The estuary itself is unique in the state for its length and biodiversity and is classified as having critical conservation significance. The kanamaluka / Tamar estuary also supports a range of social and economic values, with a commercial port and industrial precinct at Bell Bay, aquaculture near the mouth of the estuary, and recreational activities such as fishing, yachting, rowing and kayaking, and tourism.

Water quality improvement planning and investment planning have resulted in significant investment in catchment works to improve streamside protection and land management practices. Improvement in riparian management to increase vegetation and remove stock from waterways; adoption of improved grazing, dairy and cropping management practices to reduce diffuse pollutants; and improved urban stormwater management represent the best opportunities to improve water quality and ecosystem health.

Outcome:

By 2030, improve ecosystem health and water quality in the kanamaluka/ Tamar estuary and Esk rivers system through implementation of the water quality improvement plan, which will result in reduction of pollutant loads from diffuse sources including modelled 4% reduction in total nitrogen loads, 4% reduction in total phosphorous loads, 6% reduction in total suspended solids loads, and 23% reduction in enterococci loads from diffuse sources.

Local threats that can be addressed by NRM actions:

- Diffuse pollutant loads—nitrogen, phosphorous, sediments, enterococci
- Streambank and sheet erosion
- Wetland infill

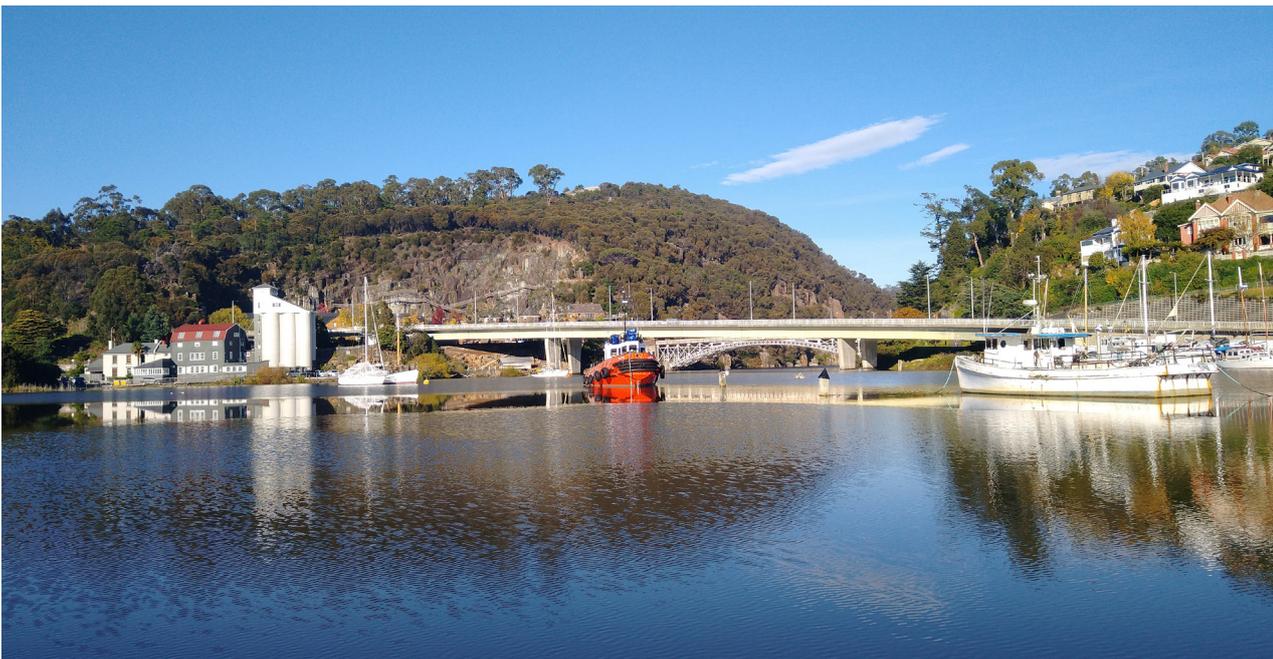
Actions:

- | | |
|--------------|---|
| WR3.a | Coordinate waterway monitoring and reporting to inform decision-making and improve management practices through the Tamar Estuary and Esk Rivers (TEER) Program. Support and facilitate catchment planning and investment to improve ecosystem health. |
| WR3.b | Increase streamside protection by restricting stock access to waterways in dairy and grazing areas. |
| WR3.c | Improve dairy effluent management practices. |
| WR3.d | Increase the extent and condition of riparian vegetation within streamside protection projects. |
| WR3.e | Collaborate on the development of state-wide stormwater planning policy and promote the adoption of water sensitive urban design. Increase community awareness of the use of rain gardens and improve industry knowledge of soil and erosion control practices in new developments. |
| WR3.f | Increase the adoption of best management cropping practices to reduce nutrient loss and increase groundcover. |
| WR3.g | Facilitate knowledge and planning for improved management of tidal riparian and wetland areas. |

Implementation:

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	<ul style="list-style-type: none"> Riparian fencing and off-stream water infrastructure incentives, dairy effluent infrastructure incentives, policy development, extension, training workshops. Tamar Estuary and Esk Rivers (TEER) science partnership program.
Potential collaborators	<ul style="list-style-type: none"> TEER Program partners: Tasmanian Government, Natural Resources and Environment Tasmania, Environment Protection Authority, City of Launceston Council, West Tamar Council, Meander Valley Council, Northern Midlands Council, George Town Council, TasWater, Hydro Tasmania, TasPorts, Bell Bay Aluminium, TEMCO 32 South, Petuna Aquaculture, Dairy Tasmania, University of Tasmania Institute of Marine and Antarctic Studies, Master Builders Tasmania. Tamar Estuary River Health Action Plan (RHAP) Program partners (Tamar Estuary Management Taskforce and Catchment Works Program) Department of State Growth, Natural Resources and Environment Tasmania, Environment Protection Authority, City of Launceston Council, West Tamar Council, Meander Valley Council, Northern Midlands Council, George Town Council, TasWater, Hydro Tasmania, Dairy Tasmania, Tasmanian Farmers and Graziers Association. Tamar NRM; Community groups; productivity, discussion and landcare groups; rural supply merchants Water quality, flood management, sediment transport and other estuarine management experts.
Opportunities for community participation	Citizen science monitoring, field days, training workshops.

See related Priorities and Actions in the Coastal and Marine Areas, Threatened and Important Ecological Communities, and Threatened and Important Species Asset Classes.



» kanamaluka / Tamar estuary near Launceston (Sam Jack)

PRIORITY WR4: Ringarooma catchment

The Ringarooma River catchment is located in the northeast of Tasmania with headwaters on the northern slopes of Ben Nevis and Mount Maurice. The river flows in a northerly direction past the towns of Branxholm, Derby, Pioneer and Gladstone, before discharging into Boobyalla Inlet and Ringarooma Bay. The Floodplain Lower Ringarooma River Ramsar Wetland site is located downstream from Gladstone. Approximately 25 percent of the land across the Ringarooma River catchment has been cleared for grazing and cropping, whilst approximately nine percent of the land consists of forestry plantations, most of which are located in the upper catchment.

The Upper Ringarooma Irrigation Scheme has been operating for a number of years with irrigation water stored in the Dunns Creek Dam.

Based on a water quality improvement plan completed in 2021, improvement in riparian management to increase vegetation and remove stock from waterways; adoption of improved land management practices to reduce diffuse pollutants; and improved urban stormwater management represent the best opportunities to improve water quality and ecosystem health.

Outcome

By 2030, improve ecosystem health in the Ringarooma catchment through implementation of the water quality improvement plan, which will result in reduction of pollutant loads from diffuse sources including modelled 5% reduction in total nitrogen loads, 5% reduction in total phosphorous loads, 3% reduction in total suspended solids loads from diffuse sources.

Local threats that can be addressed by NRM actions:

- Diffuse pollutant loads – nitrogen, phosphorous, sediments, enterococci
- Streambank and sheet erosion

Actions:

- WR4.a** Increase streamside protection by restricting stock access to waterways and increasing the adoption of land and riparian management practices to reduce pollutant loads.
- WR4.b** Improve dairy effluent management practices.
- WR4.c** Increase the adoption of best management cropping practices to increase groundcover and reduce erosion.

Implementation

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Riparian fencing and off-stream water infrastructure incentives, extension, training workshops, policy development.
Potential collaborators	Adjacent land managers; Dorset Council; water quality experts; landcare groups; community groups; productivity, discussion and landcare groups; rural supply merchants.
Opportunities for community participation	Field days, planting days, education and awareness.

See related Priorities and Actions in the Wetlands and other Waterbodies Asset Class.



6.3 Wetlands and other waterbodies

6.3.1 State-wide Outcome

By 2050, actions have been implemented to improve or maintain the ecological character and resilience of Tasmania's wetlands and waterbodies

6.3.2 Regional context

There are 32 wetlands listed among Important Wetlands of Australia within the northern region. Of these, five are listed under the Ramsar convention. Important wetlands in northern Tasmania include sphagnum and bogs in the western part of the region; freshwater marshes on wetter areas of the Midlands, the north east, and on Flinders and Cape Barren Island; inland saline wetlands in drier parts of the Midlands; and estuarine wetlands, including those permanently or intermittently connected to the sea.

Wetlands and waterbodies support a wide range of natural, cultural, recreational, and commercial values, and the majority have been subject to significant pressures since Europeans arrived in the region. Changes in drainage through construction of levees and dams, water extraction, flow releases and wetland infill have modified these assets, along with impacts from weeds, pests and diseases, and agricultural practices. Sedimentation and high levels of nutrients are two water quality threats faced by many of the wetlands and water bodies in the northern region. Wetlands and waterbodies are important for managing carbon emissions, with emerging opportunities for land managers to access 'teal carbon' markets by improving farm dam management and accounting for carbon storage in wetlands and waterbodies.

East Coast Cape Barren Island Lagoons Ramsar site is located on the eastern shore of Truwana / Cape Barren Island in the Furneaux Group of islands, and covers approximately 10 percent of the island, which is owned and managed by the Aboriginal community. The site provides habitat for a wide range of vegetation communities and species and its remoteness enables it to remain in pristine condition.

The Floodplain Lower Ringarooma River wetland is a Ramsar site in north east Tasmania with regionally rare flora and fauna, significant wetland types, and migratory and rare birds, fish and macroinvertebrates.

McKerrows Marsh is a riparian wetland located immediately above the limit of tidal influence on the Great Forester River. It contains the largest remnant blackwood swamp forest in north east Tasmania and is home to a diversity of flora and fauna including many threatened species and communities.

Diana's Basin is a coastal wetland located north of the township of Scamander. It has high conservation estuarine values and the surrounding land supports threatened vegetation communities such as *Eucalyptus ovata*.

Priorities and Actions aim to reduce local threats to the ecological character of Ramsar sites and important wetlands in the region.

6.3.3 Priorities and Actions

PRIORITY WW1: East Coast Cape Barren Island Lagoons

This site located on truwana / Cape Barren Island consists of over 100 wetlands in a natural or near-natural condition. It provides the most extensive example of a system representative of progradation of coasts in the Tasmanian Drainage Division, a process that is uncommon in southern Australia. It includes eight Ramsar wetland types.

The site is important for maintaining the biological diversity of the biogeographic region. It contains a large range of Tasmanian wetland vegetation types, including 13 wetland communities. It also has a high diversity of habitats and species present including 13 species uncommon in Tasmania. More information on this Ramsar site can be found in Attachment 5.

Outcome:

By 2030, the ecological character of the East Coast Cape Barren Island Lagoons Ramsar site is maintained or improved by monitoring its condition and reducing threats.

Local threats that can be addressed by NRM actions:

- Inappropriate fire regimes
- Weeds, pests and disease
- Vehicle and stock access to wetlands

Actions:

- WW1.a** Evaluate current condition of ecological character and identify and assess risks from key threats.
- WW1.b** Support the truwana / Cape Barren Island community and Rangers to implement actions to reduce threats to ecological character, in a way that respects their natural and cultural values and invites the inclusion of traditional ecological knowledge.
- WW1.c** Restrict vehicle and stock access to wetlands.
- WW1.d** Improve management of ecological character by including the use of appropriate fire regimes

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Riparian fencing infrastructure incentives, traditional ecological knowledge of fire regimes, condition and risk assessment, capacity building.

Potential collaborators Cape Barren Island community, Aboriginal community, Aboriginal Land Council of Tasmania including the truwana Rangers, Natural Resources and Environment Tasmania; adjacent land managers, academic experts, Flinders Council; Australian Government.

Opportunities for community participation Field days, citizen science.

See related Priorities and Actions in the Healthy Country Asset Class.

PRIORITY WW2: Floodplain Lower Ringarooma River

The Flood Plain Lower Ringarooma River Ramsar site is located on the north east coast of Tasmania, approximately 60kms east of Bridport. The site consists of 3 zones – coastal, estuarine and freshwater. It is altered from its natural condition with large scale sedimentation from historic mining having impacted on the site before its listing. Over 60% of the site is owned by a private landholder, with areas within the site and directly adjacent to the site used for dairy production.

The rest of the site is Crown land reserved in two reserves - Cameron Regional Reserve in the freshwater zone and the coastal and estuarine zone at the northern end of the site which is reserved as part of the Boobyalla Conservation Area. Over half of the site in the Cameron Regional Reserve has been operated under a temporary grazing lease. More information on this Ramsar site can be found in Attachment 5.

Outcome:

By 2030, the quality and extent of wetland vegetation for the Lower Floodplain Ringarooma River Ramsar site has measurably improved against 2019 baseline condition, and the risk of excessive nutrient eutrophication has reduced by reducing diffuse pollutants from adjacent land areas by 20% modelled reduction in total nitrogen and total phosphorous from 2019 baseline condition.

Local threats that can be addressed by NRM actions:

- Diffuse pollutants and habitat altering access from grazing and dairy land use
- Invasive weed incursion
- Stock access

Actions:

- WW2.a** Increase wetland and habitat protection by restricting stock access from waterways and wetlands and improve riparian management in dairy and grazing areas.
- WW2.b** Improve dairy effluent management.
- WW2.c** Control invasive weeds and improve biosecurity practices.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government	<input checked="" type="checkbox"/> Tasmanian Government	<input checked="" type="checkbox"/> Regional or Local	<input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Riparian fencing and dairy effluent infrastructure incentives, weed control.			
Potential collaborators	Natural Resources and Environment Tasmania; Irrigation Tasmania, University of Tasmania; adjacent land managers, Birdlife Tasmania; Dorset Council; Australian Government.			
Opportunities for community participation	Field days, planting days.			

See related Priorities and Actions in the Rivers, Floodplains and Estuaries Asset Class.

PRIORITY WW3: Logan Lagoon

The Logan Lagoon Ramsar site on Flinders Island supports eight near pristine representative wetland types and contains features that have geoconservation significance at a regional scale. Two sites within the Lagoon are listed in the Tasmanian Geoconservation Database for their conservation significance. The Ramsar site supports three wetland-dependent nationally listed fauna species and two threatened flora species as well

as three regionally threatened vegetation communities and a regionally threatened species. There are 21 migratory bird species that have been recorded using the site and it regularly supports over one percent of the population of several species of waterbird. More information on this Ramsar site can be found in Attachment 5.

Outcome

By 2030, the ecological character of the Logan Lagoon Ramsar site is maintained or improved.

Local threats that can be addressed by NRM actions:

- Diffuse pollutants from grazing land use
- Weeds, pests and disease
- Feral pigs and cats
- Inappropriate fire regimes
- Inappropriate recreational use

Actions:

WW3.a	Improve water quality by restricting stock access to waterways in adjacent grazing areas to reduce diffuse pollutant inputs.
WW3.b	Improve fire regimes through fire planning and management informed by traditional ecological knowledge.
WW3.c	Control invasive weeds and improve biosecurity practices.
WW3.d	Reduce the predation pressure from feral pigs and cats. Evaluate opportunities to eradicate feral species (pigs and cats); implement on-ground actions as appropriate.
WW3.e	Develop and implement an education and awareness campaign to improve recreational use and reduce vehicle access.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Riparian fencing infrastructure incentives, weed control and biosecurity, fire management, education and awareness. Evaluate feral species control or eradication measures, with on-ground implementation as appropriate.
Potential collaborators	Adjacent land managers, Natural Resources and Environment Tasmania (PWS & Biosecurity Tasmania), Flinders Council, University of Tasmania, Birdlife Tasmania; Tasmanian Aboriginal Centre and Aboriginal Rangers, truwana Rangers; Australian Government.
Opportunities for community participation	Field days, training workshops, citizen science, monitoring programs, on-ground implementation.

PRIORITY WW4: McKerrows Marsh

McKerrows Marsh is a significant wetland in the north-east of Tasmania, near Bridport. The marsh is part blackwood-paperbark swamp and part sedgeland and is located immediately upstream of the tidal area of the Great Forester River. It is the largest example of remnant *Acacia melanoxylon* (blackwood) swamp forest

in the north-east of Tasmania – all other significant areas of blackwood forest are located in the north-west of Tasmania. The marsh is home to a diversity of flora and fauna including many threatened species and vegetation communities.

Outcome:

By 2030, threats from surrounding land use, grazing and livestock, and weeds will be reduced against 2018 baselines.

Local threats that can be addressed by NRM actions:

- Degradation of wetland vegetation from stock access
- Diffuse pollutants from grazing land use
- Invasive weed incursion

Actions:

WW4.a Establish risk assessment for weed management and stock access.

WW4.b Improve wetland vegetation protection by restricting stock access and improving adjacent grazing management.

WW4.c Control weeds on adjacent properties and improve biosecurity practices.

Implementation

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Incentive payments for fencing infrastructure, weed control, biosecurity planning, education and engagement.
Potential collaborators	Natural Resources and Environment Tasmania; adjacent land managers, Dorset Council, University of Tasmania; Australian Government.
Opportunities for community participation	Education and awareness.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries Asset Class.

PRIORITY WW5: Diana's Basin

Diana's Basin is made up of three linked wetland areas which include Diana's Basin, Little Basin and Crockers Arm. The central wetland area is Diana's Basin, which is the largest of the three wetlands. To the north of Diana's Basin is Little Basin and to the south of Diana's Basin is Crockers Arm. Crockers Arm is divided from the main body of Diana's Basin by the Tasman Hwy, while Little Basin is connected to Diana's Basin by a narrow channel of water.

It has been assessed as a particularly good representative example of a natural or near-natural wetland, characteristic of the region, and while further investigation is required, it is not ruled out as potentially meeting the criteria for Ramsar listing.

Outcome:

By 2030, the ecological character of Diana's Basin will be understood and threats from surrounding land use will be reduced against 2022 baselines.

Local threats that can be addressed by NRM actions:

- Diffuse pollutants from adjacent land use
- Invasive weed incursion
- Impacts from campsite and vehicle access

Actions:

WW5.a Undertake ecological character condition assessment of Diana's Basin.

WW5.b Establish baselines and risk assessment for weed management and water quality.

WW5.c Improve vegetation condition through weed control.

WW5.d Improve water quality by reducing sediment loads from adjacent land use.

WW5.e Restrict vehicle access and reduce impacts from camping.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Ecological character assessment, weed management, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Northeast Bioregional Network, Birdlife Tasmania; Break O'Day Council, Australian Government.

Opportunities for community participation Field days, education and awareness.



6.4 Coastal and marine areas

6.4.1 State-wide Outcome

By 2050, actions have been implemented to improve management and human use of coastal and marine areas to build resilience to threatening processes.

6.4.2 Regional context

The northern Tasmania region has more than 2,000 km of coastline, including beaches and rocky shorelines, sand dunes, marine habitats and coastal islands. The coastline is dominated by sandy shorelines interrupted by rocky headlands. Coastal landforms are among the most dynamic and rapidly changing landforms on earth, and these active processes (dune and beach mobility, shoreline erosion, or sea cliff slumping) are sensitive to disturbances that can quickly and significantly modify natural processes.

Coastal areas in the region support a range of ecological, social, and cultural values. Cultural heritage sites, including Aboriginal middens, can be found along many of the region's shorelines. Critical breeding sites for many shorebirds can be found along the coast and on the islands, and the only remaining native angasi oyster reef in Australia occurs in this region. The region's coastlines continue to support traditional cultural practices including birding and collection of coastal resources for traditional uses.

Pressures in the coastal area include tourism, recreation, urban and industrial development, as well as climate change impacts such as sea level rise, storm surge, inundation, and erosion. Integrated and coordinated management of these areas will be required to allow for

retreat of environmental, social, and economic assets as the impacts of climate change are realised.

The region's marine areas are characterised by cool to cold temperate waters that support a wide diversity of species and ecological communities. Australia's Great Southern Reef, which surrounds Tasmania, is a global hotspot for macroalgal biodiversity and endemism including saltmarshes and seagrass beds that provide essential ecosystem services and significant carbon storage, as well as rocky reef kelp habitat that supports productive marine industries including a range of fisheries.

Rapidly increasing sea surface temperature continues to impact significantly on marine areas and ecosystems, including pole-ward range shifts for many marine species and introduction of northern species into Tasmanian waters. Combined with pressures from marine industries such as fishing and aquaculture, and pollutants from catchments, plastics and boat waste, climate change will continue to modify marine ecosystems and impact threatened species. Coordinated and integrated management of coastal and marine areas is imperative for managing the range of pressures contributing to the change in condition of these assets.

6.4.3 Priorities and Actions

PRIORITY WC1: Seagrass habitat

Seagrass plays an important role in the ecology and health of estuarine systems, as it is known to provide important ecosystem services including nutrient cycling, sediment stabilization and enhanced biodiversity. Recently seagrass ecosystem services have been found to have significant economic value to recreational and commercial fishers, due to their importance as nursery habitat for fisheries species.

Importantly, carbon storage in subtidal and intertidal ecosystems such as seagrasses, known as blue carbon, makes a disproportionately large contribution to global carbon sequestration.

Seagrass extent has declined along the coast of northern Tasmania over several decades. Declines in seagrass have significant ecological, social and economic impacts. Understanding local threats and drivers of decline in seagrass, and taking action to reduce those threats is important to maintain and increase blue carbon and marine biodiversity outcomes.

Outcome:

By 2030, local threats to seagrass habitat will be better understood and reduced against 2022 baselines.



Local threats that can be addressed by NRM actions:

- Lack of knowledge of condition and trends
- Boating practices
- Stormwater quality

Actions:

WC1 Identify and reduce local threats to seagrass habitat in the kanamaluka / Tamar estuary, Georges Bay, Anson's Bay and the North East Inlet on Flinders Island.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Monitoring, education and awareness.

Potential collaborators Break O'Day Council, Tamar Estuary and Esk Rivers Program, Flinders Council, George Town Council, University of Tasmania, MAST, CSIRO, Natural Resources and Environment Tasmania.

Opportunities for community participation Citizen science, field days.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries Asset Class.

PRIORITY WC2: Offshore Islands

Giant Kelp Forest of South East Australia occur on rocky substrates in cold, nutrient rich waters. They require water temperatures between 5°C and 20°C and their growth is limited by the availability of nitrate. Giant Kelp forests stretch from the ocean floor to the sea surface, with the ecological community generally limited to areas deeper than 8m below sea level. The cornerstone species of the ecological community is *Macrocystis pyrifera*, also known as giant kelp.

The ecological community is characterised by a closed to semi-closed surface or subsurface canopy of *Macrocystis pyrifera*, so the community no longer exists if this species is lost or removed. The ecological community is defined by its forest-like structure, so *Macrocystis pyrifera* growing at shallower depths is not conducive to vertical structure or which are floating as wrack are not considered part of the ecological community.

Outcome:

By 2030, local threats to giant kelp habitat will be better understood and reduced against 2022 baselines.



Local threats that can be addressed by NRM actions:

- Lack of regional knowledge for decision making
- Overgrazing by long spine sea urchins
- Thermal tolerance of *Macrocystis*

Actions:

WC2.a	Work with marine stakeholders to monitor remnant populations of giant kelp habitat in the kanamaluka / Tamar estuary and on the north east coast and identify priority areas to reduce local threats from sea urchins.
WC2.b	Develop partnerships with marine stakeholders to identify priority areas for giant kelp habitat restoration.
WC2.c	Implement actions to reduce the threats to giant kelp habitat on the north east coast.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Monitoring, education and awareness, re-seeding with thermal tolerant <i>Macrocystis</i> strains, urchin density management.
Potential collaborators	Institute of Marine and Antarctic Science, Tamar Estuary and Esk Rivers Program, Natural Resources and Environment Tasmania - Marine Farming Branch, Break O'Day Council.
Opportunities for community participation	Citizen science, field days.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries Asset Class.

PRIORITY WC3: Temperate coastal oyster beds and reefs

Shellfish reef ecosystems occur when high densities of shellfish, typically oysters or mussels, form three dimensional reefs that create habitat structure for other species and act as the foundation of aquatic ecosystems. These ecosystems support unique communities and provide important ecosystem services such as fish habitat, coastal protection, erosion mitigation, pH buffering and nutrient cycling.

Shellfish reef ecosystems all over the world are in decline, with a single *Ostrea angasi* shellfish reef, comparable in size to historical reef systems, known to exist in Australia in Georges Bay, northern Tasmania. Actions to reduce local threats and restore local shellfish reef structures will be essential for protecting and maintaining this important ecological community.

Outcome:

By 2030, local threats to native shellfish reefs will be better understood and reduced against 2022 baselines.



Local threats that can be addressed by NRM actions:

- Physical damage from boat users or harvesting practices
- Smothering from sedimentation

Actions:

- WC3.a** Improve understanding of local threats to the native shellfish reef and develop an education and awareness program for local waterways users.
- WC3.b** Develop partnerships with marine stakeholders and Aboriginal communities to protect and restore the native shellfish reef in Georges Bay.
- WC3.c** Increase the extent of woody cover and the density, diversity and extent of native riparian vegetation in the Georges River to reduce bed and bank erosion and sedimentation.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Education and awareness, reef restoration.

Potential collaborators Break O'Day Council, Natural Resources and Environment Tasmania – Living Marine Resources and Marine Farming Branch, IMAS, The Nature Conservancy.

Opportunities for community participation Field days, community and boater education events.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries Asset Class.

PRIORITY WC4: Coastlines vulnerable to erosion and inundation

Coastal erosion and inundation events are projected to increase in frequency and severity with continuing sea level rise. Land use planning and adaptive management is necessary to ensure that this hazard to natural and social values, and the associated economic impact, is minimised. Restoring coastal habitats, i.e. 'soft engineering' solutions, present innovative solutions to mitigate inundation and erosion.

There is also a critical need to create refuges for intertidal and coastal habitats that will be inundated with sea level rise. Opportunities to recognise the economic value of carbon storage in intertidal and subtidal habitats are emerging, which may act as incentives to create refuges and allow vegetated intertidal habitats to retreat from sea level rise.

Outcome:

By 2030, coastal land managers have improved knowledge of effective management responses to protect natural coastal assets from climate change.



Local threats that can be addressed by NRM actions:

- Risks to natural assets associated with sea level rise and storm surge, such as lack of refugia for sea level rise retreat

Actions:

WC4.a	Support local government to develop consistent interpretation of Coastal Erosion and Inundation Codes, the Coastal Refugia overlay, and policies under the Tasmanian Planning Scheme and Local Provision Schedules.
WC4.b	Increase knowledge and awareness to support coastal land managers to implement management actions to adapt to sea level rise and variability, and work with land managers to identify and implement opportunities for blue carbon sequestration.

Implementation:

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Capacity building initiatives, education and awareness, policy development.
Potential collaborators	Natural Resources and Environment Tasmania, Tasmanian Climate Change Office, Coastal local governments, Local Government Association of Tasmania, coastal landcare groups.
Opportunities for community participation	Citizen science, on-ground works.

See related Priorities and Actions in the Coastal and Marine Areas, Rivers, Floodplains and Estuaries, and Threatened and Important Ecological Communities Asset Classes.

» Grass tree, *Xanthorrhoea arenaria*, at Narawntapu national park (Meghan Bond)



7

Biodiversity

7 Biodiversity

The Biodiversity Theme encompasses the full variety of life found in the state, including all species of plants, animals, fungi, microorganisms and the ecosystems in which they live. While biodiversity refers to all living things, the NRM organisations focus on natural assets native to the state.

Ecologically functioning systems are those that can maintain their biodiversity and ecological processes. A highly functioning ecosystem can support the full complement of its biodiversity and contribute to a range of ecosystem services. By contrast, poorly functioning ecosystems lose biodiversity and other resources such as soil, water, and nutrients, leading to the local extinction of species. A highly functioning ecosystem is more resilient and has a greater capacity to adapt to change while maintaining similar function, structure, and composition. By protecting and conserving areas that support biodiversity, the diversity of genes, species, communities, and ecosystems is also maintained.

It is the suite of species and ecosystems that provide the services for our health and well-being, including clean water, air, shelter, and food.

Many agencies and individuals are working to protect and maintain Tasmania's high value habitat for threatened species, important biodiversity areas and ecological communities. Tasmania's NRM organisations work with partners to achieve shared strategic outcomes. Community and partner involvement in biodiversity programs range from monitoring, research, and on-ground restoration activities.

There is overlap between the Biodiversity, Land and Water Themes, including the maintenance of biodiversity on farms and resilient landscapes (Land Theme) and the prioritisation of Ramsar sites and aquatic and coastal habitats that support threatened species and ecological communities (Water Theme). The delivery of actions across all Themes will contribute to the health of Tasmania's biodiversity resources.



Important biodiversity areas are significant because they are home to a diversity of biota and include formally recognised sites such as World Heritage Areas, important reserves, recognised biodiversity hotspots or Key Biodiversity Areas.



Threatened ecological communities include the communities listed under the EPBC Act and NC Act. Regionally or locally important and emerging priority ecological communities are also recognised.



Threatened species include species listed under the EPBC Act and TSP Act. Important species recognises that there are regionally or locally important species, as well as emerging threatened species.

7.1 Biodiversity in Tasmania

TABLE 4: A snapshot of Tasmania's biodiversity assets

42%

PARKS AND RESERVES

Tasmania has 19 national parks and 823 natural reserves, covering 42% of the main island. This includes the Tasmanian Wilderness World Heritage Area

The TWWHA is 15,800 km², which is almost 25% of the state. It meets seven of the 10 UNESCO World Heritage criteria.

7

COMMONWEALTH-LISTED COMMUNITIES

Ecological communities listed as being under threat

These communities are diverse ranging from alpine to rainforest, buttongrass plains, wetlands and grasslands.

39

STATE-LISTED COMMUNITIES

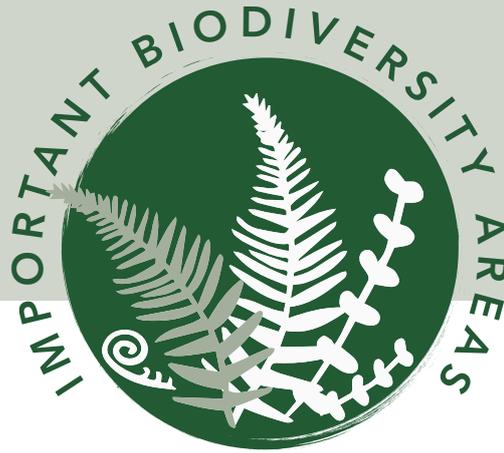
23 state-listed threatened forest communities and 16 state-listed threatened non-forest communities

State-wide, there are 39 listed communities. These include 23 forest communities and 15 non-forest communities.

689

LISTED PLANT AND ANIMAL SPECIES

- 493 plant species
- 19 fish species
- 37 bird species
- 117 insect species
- 9 amphibian and reptile species
- 14 mammal species
- Threatened Species Protection Act 1995 and Environment Protection and Biodiversity Conservation Act 1999



7.2 Important biodiversity areas

7.2.1 State-wide Outcome

By 2050, actions have been implemented that reduce threats to the natural values of Tasmania's important biodiversity areas

7.2.2 Regional context

The northern region of Tasmania has a wide natural diversity of plant and animal species with a high degree of endemism, including several areas that represent high value and unique biodiversity. The region maintains a large proportion of natural vegetation extent, in comparison to many regions across Australia, which provides a strong basis for future management. Biodiversity is important for environmental, social, economic, and cultural values in the region and provides a range of essential ecosystem services and is of very high intrinsic social value; it affects soil, water and air quality, and provides valuable biological resources.

Native vegetation covers approximately 60 percent of the region's terrestrial area, with more than 40 ecological vegetation communities across ten native vegetation groups. With approximately 50 percent of the regions natural vegetation found in reserves on public and private land, these reserves, national parks, and the Tasmanian Wilderness World Heritage Area (TWWHA) are important biodiversity assets in the region.

Management of the region's native vegetation is a critical component of sustainable agricultural management, particularly as it protects soils, helps to manage water tables, and sustains viable habitat for a diverse range of plant and animal species. A high proportion of remnant vegetation on private land is found in fragmented in catchments used for agriculture and settlements. (See section 5).

The Northern Midlands bioregion represents a nationally recognised biodiversity hotspot. While landscape function is degraded substantially across much of the floodplains of the Northern Midlands, there is significant potential to secure, buffer, and connect remnant vegetation patches in the bioregion.

The north east corner of the region represents an important biodiversity area and is likely to be significantly influenced by the impacts of climate change. Building habitat connectivity between the north east coastal plains and the north east highlands in the area provides opportunities to improve landscape function, create connectivity for retreat, and maintain largely intact biodiversity values of the area.



» Eastern Barred Bandicoot, *Perameles gunnii* (Peter Jolly)

The Furneaux Islands is a group of approximately 100 islands located off the north east of Tasmania. The largest islands in the group are Flinders Island, Truena / Cape Barren Island, and Lungtalanana / Clarke Island. The Furneaux group hosts a number of important and threatened species, but many of the islands are impacted by introduced and invasive species with Lungtalanana impacted by severe fires significantly impacting endemic flora and fauna.

Careful management of native habitat and biosecurity, and a reduction in weeds, pests and disease, present opportunities to create safe havens for important and threatened species including the reintroduction of small mammals to Lungtalanana (also see section 5.0).

Actions prioritised for important biodiversity areas aim to mitigate threats, build resilience, and preserve and support natural biodiversity in these areas.

7.2.3 Priorities and Actions

PRIORITY B11: North east corner of Tasmania

The north east corner of Tasmania is an area of high biodiversity and natural values. Ranging from the Tangumrounpeender / Waterhouse Point Conservation Area on the north coast around to the Chain of Lagoons on the east coast, this area includes several conservation areas including the Cape Portland Key Biodiversity Area and the mainland coastal areas of the Furneaux bioregion (IBRA 7).

Property planning with traditional owners and public and private land managers, protection of sensitive habitat through covenanting, and increasing implementation of best management practices on-ground resulting in improved connectivity, weed and pest management, and appropriate fire management regimes represent important opportunities for securing biodiversity values in this area.

Outcome:

By 2030, the number of hectares in the north east corner of Tasmania, managed under best management practice or covenants, has been increased by 10% from 2022 levels.

Local threats that can be addressed by NRM actions:

- Habitat fragmentation
- Lack of planning for connectivity
- Invasive species – weeds, pests and disease
- Inappropriate fire management regimes

Actions:

- B11.a** Identify areas of high conservation value and establish covenants with land managers to reconnect and buffer native vegetation and river systems to increase resilience and connectivity.
- B11.b** Raise awareness of land managers and the community of the natural values and the importance of managing biodiversity assets within the north east corner of Tasmania.
- B11.c** Increase the adoption of property management planning modules considering production and conservation values identified in the north-east corner of Tasmania.
- B11.d** Increase capacity to reduce threats from ecosystem altering invasive weeds, stock and inappropriate fire regimes.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Incentive payments, conservation covenants, education and awareness.

Potential collaborators Tasmanian Land Conservancy; Break O'Day Council, Northeast Bioregional Network; community and landcare groups; melythina tiakana warrana Aboriginal Corporation (mtwAC); Birdlife Tasmania; Sustainable Timbers Tasmania; Forest Practices Association; production forestry companies; land managers; Australian Government; Dorset Coastal Working Group, local land managers.

Opportunities for community participation Planting days, field days, citizen science, cultural gatherings.

See related Priorities and Actions in the Healthy Country, Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.

PRIORITY BI2: Midlands Biodiversity Hotspot

The Tasmanian Midlands bioregion is one of 15 national biodiversity hotspots and is home to endemic plant species, endemic freshwater molluscs and invertebrates. The area contains 32 nationally recognized threatened species and more than 180 species listed as threatened under state legislation. It also contains several wetlands of national and regional significance.

The high degree of habitat fragmentation resulting from its land use history is the most significant threat to

the Midlands Biodiversity Hotspot, including extensive clearing for agriculture and plantation forestry. Native vegetation remnants in the Midlands are small and scattered, and protected areas constitute less than two percent of the bioregion. Property planning with traditional owners and public and private land managers, and increasing connectivity, represent important opportunities for securing biodiversity values in this area.

Outcome:

By 2030, the number of hectares in the Midlands Biodiversity Hotspot, under best management practice or covenants, has been increased by 10% from 2020 levels.



Local threats that can be addressed by NRM actions:

- Habitat fragmentation
- Lack of knowledge or appropriate planning
- Invasive species – weeds, pests and disease
- Inappropriate fire management regimes

Actions

- BI2.a** Identify areas of high ecological value and work with land managers to reconnect and buffer native vegetation and river systems to increase connectivity.
- BI2.b** Raise awareness of land managers and the community of the natural values and the importance of managing biodiversity assets within the Midlands Biodiversity Hotspot.
- BI2.c** Increase the adoption of property management planning modules considering production and conservation values identified in the Midlands Biodiversity Hotspot.
- BI2.d** Increase capacity to reduce threats from ecosystem altering invasive weeds, stock and inappropriate fire regimes.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Incentive payments, conservation covenants, education and awareness.

Potential collaborators NRM South, Natural Resources and Environment Tasmania; Tasmanian Land Conservancy, Tasmanian Institute of Agriculture; Bush Heritage Australia; Greening Australia, University of Tasmania, Landcare Tasmania; Landscape Recovery Foundation; Irrigation Tasmania; Private Forests Tasmania; Forest Practices Association; Threatened Plants Tasmania; local land managers.

Opportunities for community participation Planting days, field days, citizen science.

See related Priorities and Actions in the Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.

PRIORITY B13: Tasmanian Wilderness World Heritage Area (TWWHA)

The Tasmanian Wilderness World Heritage Area (TWWHA) covers 15,800 square kilometres. It was designated in 1982 and fulfils seven out of ten criteria for World Heritage listing. It is listed for both natural and cultural values.

The area of TWWHA within the northern Tasmania region is 1,352 km². With over 370 km of the boundary of the World Heritage area within the northern region,

and approximately 160 neighbouring private properties, this presents a significant risk of weed, disease and pest incursion into the TWWHA. Actions are focused on education and awareness and capacity building for adjacent land managers to reduce the risk of weed, pest and disease incursion into the TWWHA.

Outcome:

By 2030, there is a reduction in the risk of weeds and disease introductions into the TWWHA, through an active education campaign at 100% of key entrances to the TWWHA, implementing biosecurity controls and promoting a greater understanding of the importance of biosecurity in or near the TWWHA.

**Local threats that can be addressed by NRM actions:**

- Limited community knowledge of biosecurity risks
- Invasive species – weeds, pests and disease

Actions:

- B11.a** Develop and deliver an education and awareness campaign at key entrances to the TWWHA and for neighbouring land managers in the region, to increase knowledge of biosecurity threats to the TWWHA, focusing on weeds and diseases and improved biosecurity practices.
- B11.b** Reduce feral animal pressures that impact on TWWHA values.
- B11.c** Implement weed management actions on neighbouring properties in the region, road networks and key entrances bordering the TWWHA to address invasive weed threats.

Implementation:

Investment opportunity	✓ Australian Government	✓ Tasmanian Government	✓ Regional or Local	✓ Private or philanthropic
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Potential delivery methods Targeted incentives, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; landcare or community groups; Bush Heritage Australia; Biosecurity Tasmania; surrounding land managers.

Opportunities for community participation Volunteering for education and awareness.

PRIORITY BI4: Furneaux Islands

The Furneaux Islands are an area of high biodiversity and natural values. With approximately 100 islands, notably Flinders, Truwana / Cape Barren, Lungtalanana / Clarke Island, Badger, Chappel, Great Dog and Babel Islands and many others, this area has two Ramsar wetlands, several reserves and conservation areas, the islands of the Furneaux bioregion (IBRA 7), and the Eastern and Central Flinders Island Key Biodiversity Areas (KBA), Chalky, Big Green and Badger KBA, Babel

KBA, Franklin Sounds KBA and Forsyth, Passage and Gull Islands KBA. See Attachment 5 for information on Eastern Barred Bandicoots and Eastern Quolls.

Property planning and restoration with traditional owners and public and private land managers; and increasing connectivity represent important opportunities for securing biodiversity values in this area.

Outcome:

By 2030, biosecurity is improved and threats from introduced and invasive species are reduced throughout the Furneaux Islands.

Local threats that can be addressed by NRM actions:

- Predation and habitat damage from feral animals
- Invasive species – weeds, pests and disease

Actions:

- BI1.a** Aboriginal communities implement actions from the Healthy Country Plan to control weeds on Truwana.
- BI1.b** Reduce or eradicate, if possible, feral pig and feral cat numbers on islands in the Furneaux group.
- BI1.c** Develop implementation protocols and monitoring for the Furneaux Islands group Biosecurity Plan to reduce biosecurity risks and prevent re-incursions of invasive species.

Implementation:

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Weed control, feral animal control, biosecurity planning, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Flinders Island Council; Tasmanian Aboriginal Centre, Aboriginal Land Council of Tasmania, Flinders Island Aboriginal Association; farmer productivity, discussion and landcare groups; Birdlife Tasmania; farmer productivity, discussion and landcare groups.

Opportunities for community participation Citizen science, field days, weed management.

PRIORITY B14: Furneaux Islands

Outcome:

By 2030, the cat population on lungtalanana is eradicated and populations of at least two native mammals are reintroduced.

Local threats that can be addressed by NRM actions:

- Feral cat populations
- Limited biosecurity planning and management

Actions:

- B14.e** Eradicate cats using the appropriate mix and application of control methods for eradication, informed by other eradication programs.
- B14.f** Implement an intensive eradication effort and monitor the change in cat numbers.
- B14.g** Develop a Biosecurity Plan for lungtalanana to prevent reintroduction of cats to the island.
- B14.h** Increase habitat values using methods such as mosaic burning to support reintroduced populations of Eastern Barred Bandicoots and Eastern quolls, and assess opportunities for reintroduction or enhancement of New Holland Mouse populations.
- B14.i** Reintroduce Eastern Barred Bandicoots, Eastern Quolls, and other small mammals to lungtalanana using best practice reintroduction methods and healthy source populations.
- B14.j** Monitor the health and reproductive success of Eastern Barred Bandicoots, Eastern quolls, and other small mammals at lungtalanana.

Implementation:

Investment opportunity	<input checked="" type="checkbox"/> Australian Government	<input checked="" type="checkbox"/> Tasmanian Government	<input checked="" type="checkbox"/> Regional or Local	<input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Pest eradication, biosecurity planning, monitoring, reintroduction of small mammals using traditional ecological knowledge.			
Potential collaborators	Tasmanian Aboriginal Centre; Natural Resources and Environment Tasmania; Biosecurity Tasmania; University of Tasmania; philanthropic wildlife protection organisations; Australian Government; other regions or communities that have implemented cat eradication strategies.			
Opportunities for community participation	Field days, training workshops, planting days, citizen science.			

See related Priorities and Actions in the Healthy Country, Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.



» Mt Strzelecki, Flinder Island (Iris Brown)



7.3 Threatened and important ecological communities

7.3.1 State-wide Outcome

By 2050, actions have been implemented that reduce impacts to Tasmania's threatened and important ecological communities.

7.3.2 Regional context

Important and threatened ecological communities are predominantly vegetation communities, which are groups of plants found growing together in many places with a given species composition and sometimes geology. They are most often described by the dominant species or group of species.

The northern Tasmanian region contains approximately 60 percent natural landscapes supporting various terrestrial habitats such as dry forests, woodlands, she-oak forests, wet forest, rainforest, grasslands, and coastal and alpine heathland. Some of the most significant native grasslands remaining in south-east Australia are found in the northern region. More than 40 nationally and state recognised terrestrial threatened ecological and vegetation communities are found in the region, including the following nationally threatened ecological communities:

- Subtropical and Temperate Coastal Saltmarsh;
- Tasmanian forests and woodlands dominated by Black (*E. ovata*) or Brookers Gum (*E. brookeriana*);
- Alpine Sphagnum Bogs and associated fens;
- *Eucalyptus ovata* – *Callitris oblonga* forest
- Tasmanian white gum (*Eucalyptus viminalis*) wet forest;

- Lowland Native Grasslands; and
- Giant Kelp Marine Forests of South East Australia (see Coastal and Marine Areas in Water Theme).

Ecological communities can be impacted by local threats such as habitat loss and fragmentation of important areas, weeds and diseases, invasive species, change in water regime, pollution, and inappropriate fire regimes. In addition, climate change represents a significant global threat to the preservation of important and threatened ecological communities.

While approximately 50 percent of the extent of the northern region's threatened ecological and vegetation communities is within the National Reserve System, some communities are poorly represented with the remainder largely restricted to areas on private land. Actions prioritised in this Strategy identify how NRM North can work with private and public land managers to protect and maintain threatened and important ecological communities. Successful implementation of these Actions will also assist with the protection of habitat for a wide range of flora and fauna species and improve landscape connectivity.

7.3.3 Priorities and Actions

PRIORITY BC1: Tasmanian forests and woodlands dominated by Black Gum (*Eucalyptus ovata*) or Brookers Gum (*Eucalyptus brookeriana*) Threatened Ecological Community

Tasmanian forests and woodlands dominated by either Black Gum or Brookers Gum (*Eucalyptus ovata* and *Eucalyptus brookeriana*) only occurs in Tasmania. Both these species are associated with moist sites, occurring on the margins of swampy flats and in well-drained gullies. *Eucalyptus ovata* are typically found on moist, fertile soils over a wide range of geologies. *Eucalyptus*

brookeriana are generally located on moist rocky soils, alluvial deposits near streams or the margins of blackwood swamp as well as in gullies and gully headwaters in eastern Tasmania.

More information on this ecological community can be found in Attachment 5.

Outcome

By 2030, all areas of Black Gum or Brookers Gum forest and woodland communities have been identified and assessed, and priority areas have increased protection from agricultural threats including land clearing.



Local threats that can be addressed by NRM actions

- Land clearing, habitat loss and fragmentation
- Invasive species – weeds, pests and disease
- Inappropriate fire regimes

Actions

- BC1.a** Identify and assess the extent and condition of remnants on private land and protect areas of high value through conservation mechanisms with land managers.
- BC1.b** Protect remnant vegetation with a suite of on-ground actions including, for example, fencing, feral animal control, weed management, fuel-reduction work, fire planning, and management of unregulated clearing.
- BC1.c** Reduce gorse infestations to mitigate fire threats in remnants located along the St Pauls River.
- BC1.d** Increase awareness of the values and regulatory protection of Black or Brookers Gum to reduce rates of clearing, modification, and conversion.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Vegetation assessments, targeted incentives for fencing infrastructure, conservation agreements, weed management and feral animal control, fire planning and management informed by traditional ecological knowledge, education and awareness.
Potential collaborators	Tasmanian Land Conservancy; Natural Resources and Environment Tasmania; local land managers; Tasmanian Farmers and Graziers Association; Forest Practices Authority; Sustainable Timbers Tasmania; Forico; farmer productivity, discussion and landcare groups.
Opportunities for community participation	Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Species Asset Class.

PRIORITY BC2: *Eucalyptus viminalis* – *Eucalyptus globulus* coastal forests and woodlands

These are communities dominated by either *Eucalyptus viminalis* (white gum) or *Eucalyptus globulus* (blue gum) in coastal sites and are distinct from the *Eucalyptus viminalis* wet forest recently listed under the EPBC Act. The dominant trees are most often 10 to 20 m tall but can reach up to 30 m in fire-protected sites. The community generally occurs at relatively exposed sites in coastal and near-coastal areas such as the east

coast of Tasmania and Furneaux Islands. In the northern Tasmania region the community is mostly found on the Furneaux Islands, where it occurs in relatively sheltered inland sites on deeper soils and with understorey species that commonly include broadleaved shrubs.

More information on this ecological community can be found in Attachment 5.

Outcome

By 2030, the condition of 30% of key sites for *E. viminalis* – *E. globulus* coastal forest and woodland has been enhanced through the implementation of actions reducing anthropogenic threats, and threats from weeds and fire management.

Local threats that can be addressed by NRM actions

- Land clearing, habitat loss and fragmentation
- Invasive species – weeds, pests and disease
- Inappropriate fire regimes

Actions

BC2.a Identify and assess extent and condition of *E. viminalis* – *E. globulus* coastal forest and woodland remnants on private land in the Break O’Day and Flinders Island municipalities.

BC2.b Protect *E. viminalis* – *E. globulus* coastal forest and woodland including, for example, fencing, weed control, fuel-reduction work, fire planning, and management of unregulated clearing in the Break O’Day and Flinders Island municipalities.

Implementation

Investment opportunity

- | | | | |
|---|--|---|--|
| <input checked="" type="checkbox"/> Australian Government | <input checked="" type="checkbox"/> Tasmanian Government | <input checked="" type="checkbox"/> Regional or Local | <input checked="" type="checkbox"/> Private or philanthropic |
|---|--|---|--|

Potential delivery methods

Vegetation assessments, targeted incentives for fencing infrastructure, conservation agreements, weed management and feral animal control, fire planning and management informed by traditional ecological knowledge, education and awareness.

Potential collaborators

Natural Resources and Environment Tasmania; Tasmanian Land Conservancy, Break O’Day Council, Tasmanian Farmers and Graziers Association; Flinders Council, local land managers; Northeast Bioregional Network; local farmer productivity, discussion and landcare groups.

Opportunities for community participation

Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Species Asset Classes.

PRIORITY BC3: Tasmanian white gum (*Eucalyptus viminalis*) wet forest

Tasmanian white gum (*Eucalyptus viminalis*) wet forest was nominated for listing as a threatened ecological community in 2016. Following public consultation the threatened ecological community was listed in October 2021.

The community consists of wet sclerophyll forest with an open, tall canopy dominated by *Eucalyptus viminalis*,

secondary tree layer and understorey generally consisting of broad-leaved shrubs and ferns. It only occurs in Tasmania and mainly within the central north (including northern and Cradle Coast regions), though scattered remnants occur elsewhere in the state.

More information on this ecological community can be found in Attachment 5.

Outcome

By 2030, the condition of 30% of key sites for Tasmanian white gum *Eucalyptus viminalis* wet forest has been enhanced through the implementation of actions reducing anthropogenic threats, and threats from weeds and fire management.

Local threats that can be addressed by NRM actions

- Land clearing, habitat loss and fragmentation
- Invasive species – weeds, pests and disease
- Inappropriate fire regimes

Actions

- BC3.a** Identify and assess the extent and condition of *E. viminalis* remnants on private land and protect areas of high value through conservation mechanisms with land managers.
- BC3.b** Protect remnant *E. viminalis* vegetation with a suite of on-ground actions including, for example, fencing, feral animal control, weed management, fuel-reduction work, fire planning, and management of unregulated clearing.
- BC3.c** Increase awareness of the values and regulatory protection of *E. viminalis* to reduce rates of clearing, modification, and conversion.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Vegetation assessments, creation of a mobile application to identify location of threatened communities, targeted incentives for fencing infrastructure, conservation agreements, weed management and feral animal control, fire planning and management informed by traditional ecological knowledge, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; Forest Practices Authority; Tasmanian Land Conservancy; Meander Council; Break O'Day Council; Dorset Council; local land managers; community groups; Sustainable Timbers Tasmania; the Tasmanian Aboriginal community.
Opportunities for community participation	Field days, education and awareness, data gathering.

See related Priorities and Actions in the Healthy Country and Threatened and Important Species Asset Classes.

PRIORITY BC4: Lowland Native Grasslands Threatened Ecological Community

Lowland Native Grasslands of Tasmania ecological community is typically found in valley bottoms and on gentle slopes below 600 m. Tasmania’s native grasslands are dominated by a single species, either kangaroo grass or silver tussock grass, but supports a rich diversity of other species such as lilies, daisies and orchids. The community generally occurs in

the Tasmanian Midlands, Derwent Valley, east coast and southeast Tasmania, with localised areas of the community in the northwest and on Flinders and Cape Barren Islands in Bass Strait.

More information on this ecological community can be found in Attachment 5.

Outcome

By 2030, there has been a 30% increase in the number of hectares of grassland that is being managed under specific grassland friendly management agreements.



Local threats that can be addressed by NRM actions

- Land clearing, habitat loss and fragmentation
- Invasive species – weeds, pests and disease
- Inappropriate fire regimes

Actions

- BC4.a** Identify and assess extent and condition of remnants of Lowland Native Grasslands on private land in the Northern Midlands, Launceston, and Meander Valley municipalities.
- BC4.b** Protect areas of high value grasslands through conservation mechanisms.
- BC4.c** Increase the adoption of best land management practices, including, for example, weed, fertiliser and fire management.
- BC4.d** Raise awareness about the importance of the native grassland communities to reduce rates of decline through clearing and conversion.
- BC4.e** Manage ecosystem altering invasive weed threats such as serrated tussock and African lovegrass that impact lowland grassland communities.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Vegetation assessments, targeted incentives for fencing infrastructure, conservation agreements, weed and pasture management, fire planning and management informed by traditional ecological knowledge, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Land Conservancy, Bush Heritage Tasmania; local land managers, Northern Midlands Council, City of Launceston Council, Meander Valley Council; the Tasmanian Aboriginal community.
Opportunities for community participation	Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Species Asset Classes.

PRIORITY BC5: Riparian vegetation

Riparian scrub grows along streams, creeks, rivers and around other water bodies such as lakes, lagoons and wetlands. This scrub community is 2 to 5 m in height and, while variable, is characterised by riparian species such as river tridentbush, southern grevillea,

woolly tea-tree, dogwood and caterpillar wattle. Other species such as native olive, prickly bottlebrush paperbark, Tasmanian currajong and pinkwood are also regularly present. Eucalypts are sparse or absent in this type of scrub.

Outcome

By 2030, the condition of priority remnant riparian vegetation has improved through the prevention of stock access, weed control, and revegetation.



Local threats that can be addressed by NRM actions

- Land clearing, habitat loss and fragmentation
- Invasive species – weeds, pests and disease
- Wetland infill

Actions

BC5.a Identify and assess extent and condition of remnant riparian vegetation communities on private land on Flinders Island, and in the North Esk, South Esk, Meander, Macquarie, Brumbys-Lake, Georges, Great Forester-Brid and Ringarooma catchments.

BC5.b Protect areas of high value riparian vegetation through stock exclusion, weed control, fuel-reduction work, fire planning, and revegetation of areas to reduce fragmentation and buffer remnant patches.

Implementation

Investment opportunity	<input type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Vegetation assessments, targeted incentives for fencing infrastructure, conservation agreements, weed management, fire planning and management informed by traditional ecological knowledge, riparian revegetation, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Land Conservancy, Forest Practices Association; Sustainable Timbers Tasmania; Private Forestry Tasmania; Tasmania Landcare, local government, landcare groups; local land managers; the Tasmanian Aboriginal community.
Opportunities for community participation	Field days, planting days, education and awareness.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries, Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.

PRIORITY BC6: Subtropical and Temperate Coastal Saltmarsh Threatened Ecological Community

Saltmarsh are habitats which are defined by the presence of plants that are salt tolerant and subject to waterlogging. The ecological community is present in Queensland, NSW, WA, SA, Victoria and Tasmania and occurs in the intertidal zone in coastal areas under regular or intermittent tidal influence, often restricted to the upper intertidal environment.

In the northern Tasmania region saltmarshes are mostly found in low energy environments of estuaries and embayments and often dominated by glasswort species, native grasses and rushes and in some areas the threatened sea lavender. Invasive rice grass is a major threat and is absent in some areas and well established in others. More information on this ecological community can be found in Attachment 5.

Outcome

By 2030, a key threat to the region's saltmarsh, the invasive weed *Spartina anglica*, is reduced in areal extent at priority saltmarsh sites in the kanamaluka / Tamar estuary, and Dorset and Break O'Day municipalities.



Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Lack of community awareness
- Invasive species – *Spartina anglica*
- Sea level rise

Actions

- BC6.a** Monitor saltmarsh condition, extent and threats in the kanamaluka / Tamar estuary, and Dorset and Break O'Day municipalities.
- BC6.b** Undertake control actions for *Spartina anglica* in identified priority saltmarsh sites to maintain the rice grass free zone in the northern end of the kanamaluka / Tamar estuary.
- BC6.c** Establish and protect buffer zones to allow for retreat and expansion at priority saltmarsh community sites to address impacts of projected sea level rise.
- BC6.d** Continue education and awareness of the values of and threats to saltmarsh ecological communities.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Citizen science monitoring, weed management, retreat planning, community education.

Potential collaborators Natural Resources and Environment Tasmania; Local government; local land managers; TEER Program; University of Tasmania; academic experts; local community groups.

Opportunities for community participation Citizen science, field days, training workshops.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries, Threatened and Important Ecological Communities and Threatened and Important Species Asset Classes.

PRIORITY BC7: Other emerging priority communities such as iconic plant communities in key locations

The list of nominated ecological communities that have been approved for assessment under the EPBC Act are detailed annually in the Finalised Priority Assessment

List (FPAL), which will be monitored for emerging ecological communities that are significant in the region.

Outcome

By 2030, there has been an improvement in the condition of the relevant community through the identification and mitigation of key threatening processes.



Actions

- BC7** Monitor emerging priorities from a local, state and national perspective – where a community has been newly listed or identified at a local scale, undertake a prioritisation process to determine the need for, and type of action.



» Saltmarsh species, *Sarcocornia quinqueflora* (Sam Jack)



7.4 Threatened and important species

7.4.1 State-wide Outcome

By 2050, actions have been implemented that reduce impacts to Tasmania's threatened and important species.

7.4.2 Regional context

A wide range of native species inhabit the northern Tasmania region and many of these species have important conservation, social or economic value. Notably, the Furneaux Island group supports breeding habitat for some of the most significant migratory seabird colonies in Australia, including extensive shearwater rookeries and breeding sites for Cape Barren Geese and White-fronted Terns.

Threatened species are impacted by localised threats such as habitat fragmentation that can be mitigated, or the global threat from climate change that is harder to address. Generally, these species are listed under state or federal legislation to support their protection. Approximately 70 percent of the state's threatened flora species can be found in the northern region of Tasmania. A number of these rare species can only be found in the northern region and have limited distribution, such as the Shy Susan shrub – *Tetratheca gunnii* and the Graveside Leek-orchid – *Prasophyllum taphanx*.

The northern region contains an estimated 83 of Tasmania's threatened fauna species. These include iconic vertebrate species such as Wedge-tailed Eagles, as well as Spotted-tail Quolls, Forty-spotted Pardalotes, shorebirds, giant and burrowing crayfish, and stag beetles. While strong populations of some of Australia's most iconic species such as the Eastern Barred Bandicoot can still be found in the region, many of the 28 indigenous mammals have undergone substantial decline in their range, such as the Forester Kangaroo which has experienced a 90 percent reduction in its range since European settlement.

Species that have been prioritised in this strategy include:

- mammals – Spotted-tail Quoll, New Holland Mouse, and Eastern-barred Bandicoot;
- birds – Shearwaters, Shorebirds, Australasian Bittern, Forty-spotted Pardalote, Swift Parrot, and Raptors and Masked Owls.
- aquatic species – Green and Gold Frogs, Galaxiids, Australian Grayling, Giant Freshwater Crayfish and Burrowing crayfish;
- insects – Ptunarra Brown Butterfly; and
- plants – Shy Susan, Davies Waxflower and Graveside Leek-orchid.



» Wedge-tailed eagle, *Aquila audax*, in flight (Warren Cameron)

Actions prioritised in this Strategy will support improved management of threatened and important species, and focus on extent, condition, and connectivity of critical habitats, mitigating immediate and emerging threats, and supporting breeding and reproductive success. Where locations and habitats of species coincide, for example the Spotted-tail Quoll and New Holland Mouse, investment to improve the habitat and connectivity of one species will have broader benefits for other species. This also holds true where actions to address threats to threatened ecological communities or important biodiversity areas intersect with locations and habitats of species, actions to improve the landscape may also benefit the species.

The Australian Government's Threatened Species Strategy 2021 identifies 100 Priority Species, of which there are 12 in the northern region. A full list of EPBC listed species in the region can be found in Attachment 5.

7.4.3 Priorities and Actions

PRIORITY BS1: Eastern barred Bandicoot

The Eastern Barred Bandicoot is a small mammal which occurs only in south-eastern Australia. According to the Recovery Plan for Eastern Barred Bandicoot (mainland), the “Tasmanian and mainland populations are recognised as distinct subspecies, although these have

not been formally named”. The mainland subspecies is believed to be extinct in the wild and now only occurs in captive and reintroduced populations. More information on this species can be found in Attachment 5.

Outcome

By 2030, Eastern Barred Bandicoot populations are enhanced against 2020 baselines by protecting key areas of habitat and improving habitat connectivity and feral animal control.



Local threats that can be addressed by NRM actions

- Habitat clearing, fragmentation and degradation
- Predation by cats
- Road mortality

Actions

- BS1.a** Increase habitat values for key populations of Eastern Barred Bandicoots in urban and rural landscapes, with a focus on the West Tamar and Westbury / Cressy areas.
- BS1.b** Monitor population to increase knowledge of status and threats.
- BS1.c** Investigate management options and increase awareness for identified high incidence road mortality areas in the region.
- BS1.d** Reduce the predation pressure from feral cats on Eastern Barred Bandicoot and other small mammals, in priority areas, using a suite of control techniques.
- BS1.e** Promote responsible cat management in urban and urban-fringe populations and facilitate implementation of the northern regional cat management strategy.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Contracted on-ground works, targeted incentives, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; Tasmanian Land Conservancy; Local land managers, West Tamar Council, Meander Valley Council, Tasmanian Government; University of Tasmania; wildlife experts; local landcare and community groups.
Opportunities for community participation	Field days, planting days, citizen science.

See related Priorities and Actions in the Healthy Country and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS2: Spotted-tailed Quoll

The Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) is a large carnivorous marsupial that is found in a range of habitats throughout mainland Tasmania and Australia. The Tasmanian species is distinct from the

mainland populations, enough to warrant a subspecies although a subspecies has not yet been classified. More information on this species can be found in Attachment 5.

Outcome

By 2030, Spotted-tailed Quoll populations are enhanced against 2022 baselines by protecting key areas of habitat and improving habitat connectivity of key populations.

**Local threats that can be addressed by NRM actions**

- Habitat loss and fragmentation
- Road mortality

Actions

BS2.a Monitor population to increase knowledge of status and threats.

BS2.b Protect and restore coastal heathland habitat in the George Town and Dorset municipalities.

BS2.c Increase connectivity of coastal heathland communities in priority population areas in the George Town and Dorset municipalities.

BS2.b Investigate management options for identified high incidence road mortality areas in the region.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Contracted works, targeted incentives, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; State Growth; local land managers, University of Tasmania; wildlife experts; local land managers; George Town Council; Dorset Council, Tasmanian Land Conservancy; Forest Practices Authority.

Opportunities for community participation Field days, planting days, citizen science.

PRIORITY BS3: New Holland Mouse

The New Holland Mouse (*Pseudomys novaehollandiae*) is a small, nocturnal native rodent found in a small number of disjunct populations on the north and north-east coast of Tasmania including Flinders Island. Recent surveys

have observed the New Holland Mouse on Flinders Island for the first time in 17 years. More information on this species can be found in Attachment 5.

Outcome

By 2030, New Holland Mouse populations are enhanced against 2020 baselines by protecting key areas of habitat and improving habitat connectivity of key populations.

Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Feral animals

Actions

- BS3.a** Undertake long term population monitoring to increase knowledge of status and threats, and to understand habitat requirements.
- BS3.b** Identify and protect high priority habitat areas, including monitoring and management of feral animals.
- BS3.c** Increase the adoption of appropriate fire regimes, informed by traditional ecological knowledge and fire management practices.
- BS3.d** Reduce the predation pressure from feral cats on New Holland Mouse and other small mammals, in priority areas, using a suite of control techniques.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Population monitoring, conservation agreements, feral animal control, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; local land managers, University of Tasmania; wildlife experts; local land managers; Biosecurity Tasmania; Dorset Council; Flinders Council; Tasmanian Land Conservancy; University of Tasmania; Tasmanian Aboriginal Centre; Aboriginal Land Council of Tasmania.
Opportunities for community participation	Field days, education and awareness.

See related Priorities and Actions in the Healthy Country and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS4: Australasian Bittern

The Australasian Bittern (*Botaurus poiciloptilus*) is a large heron-like bird. The species is poorly studied in many of its habitats as it is difficult to detect. There is low confidence with current population estimates,

however the population is believed to be less than 1,000 individuals. The species is believed to be still declining, at least on mainland Australia. More information on this species can be found in Attachment 5.

Outcome

By 2030, the conservation status of Australasian Bittern is better understood and anthropogenic impacts to the Australasian Bittern will be better understood and reduced from 2022 levels.

Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Wetland infill

Actions

BS4.a Monitor and assess the regional conservation status of the Australasian Bittern in freshwater and brackish swamps in the northern and eastern coastal plains, to identify and confirm habitat requirements and evaluate local threats and establish baselines.

BS4.b Protect and re-establish wetland vegetation to increase available habitat extent for Australasian Bittern.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Acoustic monitoring, citizen science monitoring, conservation planning, targeted incentives and conservation agreements, wetland restoration.

Potential collaborators Natural Resources and Environment Tasmania; Tasmanian Land Conservancy; local land managers; University of Tasmania; Birdlife Australia; wildlife and bird experts; local land managers; Tasmanian Aboriginal Centre; Aboriginal Land Council of Tasmania.

Opportunities for community participation Citizen science monitoring, field days, planting days, education and awareness.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class.

PRIORITY BS5: Forty-spotted Pardalote

The Forty-spotted Pardalote (*Pardalotus quadragintus*) is a tiny bird found only in Tasmania. It now occurs in only a few small areas of dry forest that contain *Eucalyptus*

viminalis (white gum) trees, on which it is exclusively dependent. More information on this species can be found in Attachment 5.

Outcome

By 2030, the conservation status of Forty-spotted Pardalote populations on Flinders Island is better understood and priority habitat areas are identified and protected.

**Local threats that can be addressed by NRM actions**

- Habitat loss and fragmentation

Actions

BS5.a Monitor and assess the conservation status in the only known habitat area in the region, on Flinders Island, to establish baselines.

BS5.b Protect priority habitat values for the Forty-spotted Pardalote.

Implementation**Investment opportunity**

Australian Government



Tasmanian Government



Regional or Local



Private or philanthropic

Potential delivery methods

Population monitoring, conservation agreements and targeted incentives, education and awareness.

Potential collaborators

Natural Resources and Environment Tasmania; Tasmanian Land Conservancy; local land managers, University of Tasmania; Birdlife Tasmania; Flinders Island Landcare; Birdlife Australia; wildlife experts; local land managers; Tasmanian Aboriginal Centre; Aboriginal Land Council of Tasmania.

Opportunities for community participation

Education and awareness, citizen science monitoring.

See related Priorities and Actions in the Healthy Country and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS6: Shearwaters

The Short-tailed Shearwater is a dark brown coloured seabird. It is the most numerous seabird in Australia. The bird breeds over summer, migrating to breeding grounds on islands along the south-east and south coast of Australia. Adults remain with chicks until they are large enough to fend for themselves, before migrating

north-east through the central Pacific Ocean, spending the summer winter at sea in the northern Pacific off Japan, Siberia and Alaska. Over 18 million birds make the migration with flocks of up to 60,000 birds per hour being sighted. More information on these species can be found in Attachment 5.

Outcome

By 2030, threats in key population areas, including from feral carnivores, to burrow-nesting seabirds in the Furneaux Island group will be reduced.

**Local threats that can be addressed by NRM actions**

- Predation by domestic dogs and cats
- Breeding failure from human disturbance and rodent predation on eggs
- Suboptimal harvesting practices
- Invasive species – weeds, pests and disease
- Suboptimal fire regimes

Actions

- BS6.a** Develop and implement community awareness campaigns to reduce human disturbance and domestic dog impacts on burrow nesting seabirds on the Furneaux Islands.
- BS6.b** Assess impacts of rodents on breeding success at priority nesting sites on the Furneaux Islands and implement control programs if required.
- BS6.c** Establish a citizen science program and assist the local Aboriginal community to monitor population status to manage appropriate shearwater harvesting practices.
- BS6.d** Control invasive species and rehabilitate habitat areas, including the establishment of appropriate fire regimes informed by traditional ecological knowledge.
- BS6.e** Control invasive pest populations on the Chalky, Big Green and Badger Island Groups.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Monitoring, education and awareness, rodent and other pest control, targeted incentives for habitat restoration, fire planning and management.
Potential collaborators	Natural Resources and Environment Tasmania; local land managers, University of Tasmania; Birdlife Tasmania; Birdlife Australia; wildlife experts; local land managers. Tasmanian Aboriginal communities; local land managers; Flinders Island Landcare.
Opportunities for community participation	Field days, training workshops, education and awareness.

See related Priorities and Actions in the Healthy Country and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS7: Shorebirds

The Hooded Plover is a medium size wading bird. Both male and females have a black ‘hood’ and white ‘collar’ across the back of the neck. There are two subspecies of Hooded Plover with separate ranges – the western occurring in Western Australia; and eastern which occurs in South Australia, Victoria, NSW and Tasmania. Hooded Plover live on or near sandy beaches, with nests located on flat beaches above high tide mark, on stony terraces adjacent to beaches, or on the sides of sparsely vegetated dunes. Many threats relate to predation and human disturbance of nests and chicks,

with other threats caused by loss and fragmentation of appropriate coastal habitat.

Actions to reduce threats to Hooded Plover will also benefit other shorebirds including other listed species with similar ranges such as the Little Tern and Greater Sand Plover, as well as the Lesser Sand Plover restricted to the north coast of Tasmania, as well as the White Fronted Tern and other shorebirds that experience similar threats. More information on these species can be found in Attachment 5.

Outcome

By 2030, long-term monitoring of resident shorebird populations is showing stable or increasing populations compared to 2019 estimates.



Local threats that can be addressed by NRM actions

- Predation by domestic dogs and cats
- Breeding failure from human and other disturbance

Actions

- BS7.a** Continue long-term resident shorebird monitoring program on the north east coast of Tasmania.
- BS7.b** Protect key nesting sites near busy beaches to raise community awareness and reduce threats from domestic dogs and cats, and human disturbance.
- BS7.c** Promote responsible cat ownership and facilitate the implementation of the northern regional cat management strategy.
- BS7.d** Undertake community education and awareness activities to reduce human disturbance at key sites on the north east coast of Tasmania.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Citizen science monitoring, fencing infrastructure for nesting sites, education and awareness, conservation planning.

Potential collaborators Natural Resources and Environment Tasmania; Parks and Wildlife; local land managers, University of Tasmania; Birdlife Tasmania; Birdlife Australia; wildlife experts; local land managers; Tasmanian Aboriginal communities; local land managers; Biosecurity Tasmania; George Town Council, Dorset Council, West Tamar Council; Break O’Day Council; Tamar NRM.

Opportunities for community participation Citizen science, field days, training days, education and awareness.



» Hooded plovers and terns (Sam Jack)



» Wedge-tailed Eagle, *Aquila audax* (Marcus Haywood)

PRIORITY BS8: Raptors

The Wedge-tailed Eagle subspecies *Aquila audax fleayi* occurs only in Tasmania and is distinguished by its size (being Australia's largest bird of prey) and wedge-shaped tail. It kills and scavenges on animals including reptiles, birds and mammals, across a wide range of habitats, from the coast to highland areas.

The White-bellied Sea-eagle has white on the head and underparts and dark grey on the back and wings and

is the second largest bird of prey in Australia. It can be found on the coast and some way inland. Birds form permanent pairs that inhabit territories throughout the year. It feeds off aquatic species and builds nests in trees up to 30 m off the ground.

More information on these species can be found in Attachment 5.

Outcome

By 2030, anthropogenic impacts to priority raptors will be better understood and reduced from 2020 levels, and the conservation status of Wedge-tailed Eagles, White-bellied Sea-eagles are better understood.

Local threats that can be addressed by NRM actions

- Breeding failure from human disturbance
- Habitat loss and fragmentation

Actions

- BS8.a** Investigate factors related to breeding success and identify limits to acceptable disturbance of nest sites for priority raptors in the West Tamar and Break O'Day municipalities.
- BS8.b** Deliver an education and awareness campaign to increase the adoption of management and development practices that recognise critical factors to nesting success.
- BS8.c** Undertake monitoring to determine the trajectory of raptor populations in priority areas.
- BS8.d** Identify key population areas for White-bellied Sea-eagles and implement actions to protect and enhance coastal vegetation habitat values.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Research and monitoring, education and awareness, conservation agreements and targeted incentives, riparian or coastal revegetation.
Potential collaborators	Natural Resources and Environment Tasmania; Forest Practices Authority; University of Tasmania; West Tamar council; Break O'Day council; local land managers; Landcare Tasmania; landcare and community groups; Forico; North-east Bioregional Network, Bookend Trust.
Opportunities for community participation	Education and awareness, citizen science monitoring.

PRIORITY BS9: Masked Owls

The Tasmanian Masked Owl (*Tyto novaehollandiae castanops*) is a subspecies of Masked Owl which occurs only in Tasmania. Its population has been estimated to comprise approximately 500 breeding pairs. It is a large

bird with a mask-like facial disc and distinctive husky, screeching call. More information on this species can be found in Attachment 5.

Outcome

By 2030, the conservation status of masked owls is better understood and anthropogenic impacts to masked owls will be reduced from 2022 levels.

**Local threats that can be addressed by NRM actions**

- Habitat loss and fragmentation
- Secondary poisoning from rodenticides

Actions

BS9.a Identify and map nesting habitat for Masked Owls to inform the development of an education campaign to minimise threats.

BS9.b Deliver an education campaign to increase community awareness of the threats from vehicle collisions, secondary poisoning, and loss of nesting habitat.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Research, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Forest Practices Authority; University of Tasmania; Local government; local land managers.

Opportunities for community participation Education and awareness.

PRIORITY BS10: Swift Parrots

The Swift Parrot (*Lathamus discolor*) is a small, largely nectar-feeding fast flying parrot which spends its winter in south-eastern mainland Australia before migrating to Tasmania in late winter/early spring to breed. During the breeding season, nectar from Tasmanian blue gum

(*Eucalyptus globulus*) and black gum (*Eucalyptus ovata*) flowers is the primary food source for the species. More information on this species can be found in Attachment 5.

Outcome

By 2030, there is no loss in extent of breeding habitat for Swift Parrots from 2022 known levels through regenerating degraded habitat, protecting prime habitat and implementing other emergency interventions as appropriate for the species.



Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Breeding failure from human disturbance

Actions

- BS10.a** Identify nesting sites and priority habitat for Swift Parrots on the east coast.
- BS10.b** Protect Swift Parrot nesting sites through land conservation mechanisms (e.g. covenant or management agreement) in identified habitat and implement habitat improvement measures and revegetation.
- BS10.c** Reduce the loss of habitat due to illegal firewood harvesting, using strategies such as education and awareness campaigns and supporting the development a sustainable firewood certification scheme.

Implementation

Investment opportunity	✓	Australian Government	✓	Tasmanian Government	✓	Regional or Local	✓	Private or philanthropic
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Potential delivery methods Population and habitat assessment, targeted incentives and conservation agreements, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Forest Practices Authority; Tasmanian Land Conservancy; University of Tasmania; Sustainable Timbers Tasmania; Local government; local land managers.

Opportunities for community participation Education and awareness.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class

PRIORITY BS11: Green and Gold Frogs

The Green and Gold Frog (*Litoria raniformis*) is a large frog (up to 80 mm long) which occurs in Tasmania and south-eastern mainland Australia. Despite the name, its coloration varies considerably, but all adults have a pale green stripe down the middle of the back and turquoise

thighs. In Tasmania, the species occurs in lowland areas in the south-east and north, breeding in permanent freshwater lagoons, generally with emergent vegetation. More information on this species can be found in Attachment 5.

Outcome

By 2030, the habitat and trajectory of four populations of green and gold frogs (*Litoria raniformis*) are secured and stabilised.

Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation

Actions

BS11.a Monitor and assess the regional conservation status of the green and gold, to identify and confirm habitat requirements and evaluate local threats and establish baselines.

BS11.b Protect and restore high value habitats, including reconnecting wetlands with vegetated areas required for frog life cycle.

BS11.c Develop and implement an education and awareness campaign and citizen science monitoring program.

Implementation

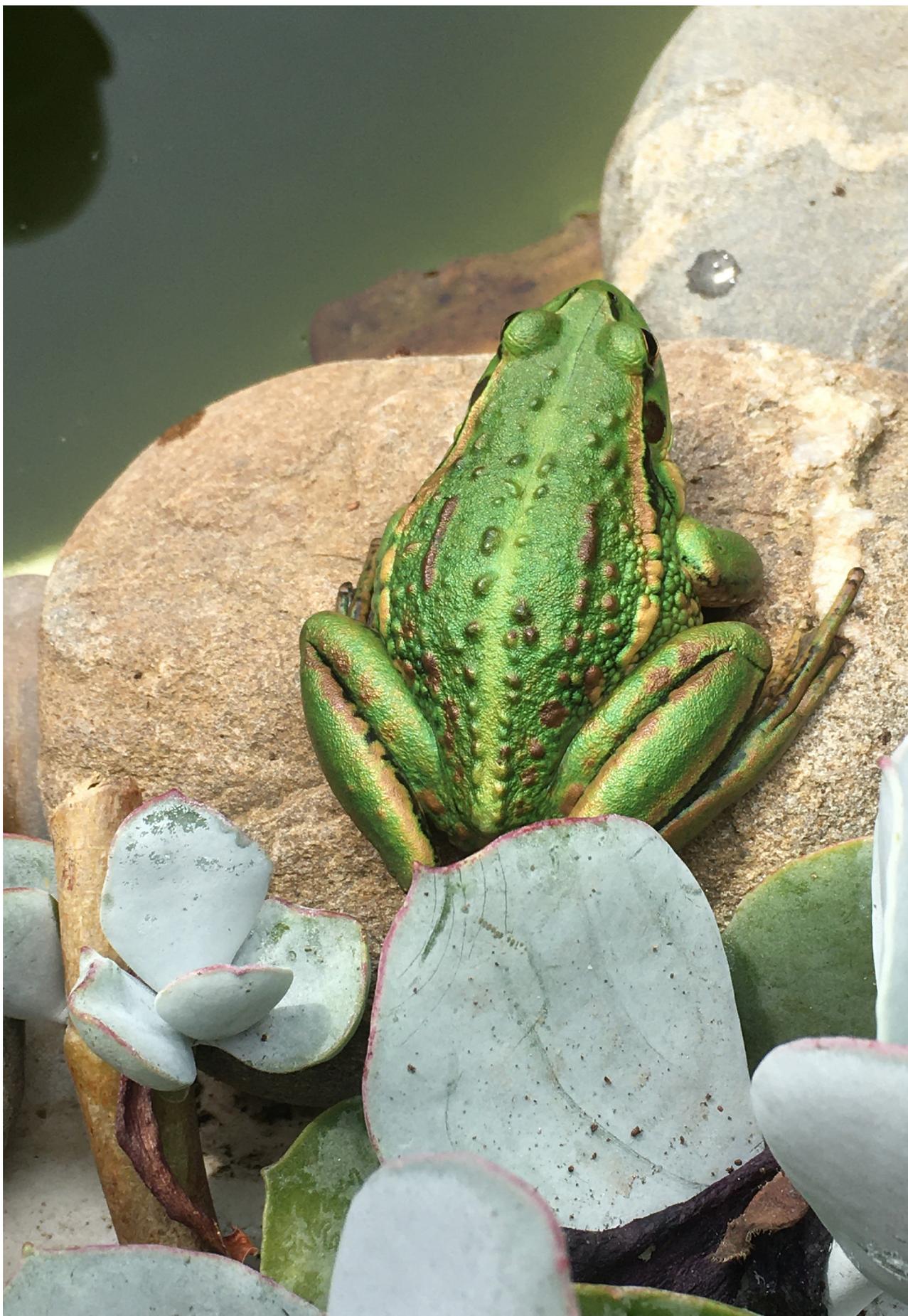
Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Citizen science monitoring, targeted incentives and conservation agreements, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Queen Victoria Museum; Forest Practices Authority; University of Tasmania; Local government; local land managers; landcare and community groups.

Opportunities for community participation Citizen science monitoring.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class.



» Green and gold frog, *Litoria raniformis* (Darren McPhee)



» Liffey Falls (Amanda Locatelli)

PRIORITY BS12: Galaxiids (Swan, and Eastern Dwarf)

The Swan Galaxias (*Galaxias fontanus*) is a small native freshwater fish (up to 135 mm long). The species is restricted to a few very small populations in headwater streams in eastern Tasmania, which have been protected in the past from invasive introduced fish such as trout and Redfin Perch. These remaining populations include

nine natural populations (all occurring in the Swan River and Macquarie River catchments and between upper St Pauls River in the north and Rocka Rivulet in the south) and a small number of translocated populations.

More information on these species can be found in Attachment 5.

Outcome

By 2030, the extent of high-quality habitat for Swan galaxias and Eastern Dwarf galaxias has been increased, and threats reduced.

**Local threats that can be addressed by NRM actions**

- Introduced species – redfin perch, trout, gambusia
- Habitat disturbance and modification

Actions

- BS12.a** Develop an education campaign about the impact of introduced fish species on native fish in relevant fishing communities, to increase the adoption of appropriate biosecurity practices.
- BS12.b** Investigate and develop genetic solutions for the control of Gambusia to safeguard native flora, fauna, and waterways.
- BS12.c** Restore or improve riparian vegetation and aquatic habitat, and limit risks of range extension of introduced fish species into upper reaches of rivers.
- BS12.d** Reduce diffuse pollutants and sediment inputs from local catchments to improve river health and water quality.

Implementation

Investment opportunity	✓	Australian Government	✓	Tasmanian Government	✓	Regional or Local	✓	Private or philanthropic
Potential delivery methods	Education and awareness campaign, genetic Gambusia control, targeted incentives for improved riparian restoration and management.							
Potential collaborators	Natural Resources and Environment Tasmania; Inland Fisheries Service; recreational fishing communities; land managers.							
Opportunities for community participation	Field days, training workshops, education and awareness.							

See related Priorities and Actions in the Rivers, Floodplains and Estuaries and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS13: Australian Grayling

The Australian Grayling (*Prototroctes maraena*) is a native fish which migrates between fresh and marine waters. The species occurs in coastal rivers and streams in New South Wales, Victoria and Tasmania. In Tasmania,

the Australian Grayling has been found in northern, eastern and western rivers. More information on this species can be found in Attachment 5.

Outcome

By 2030, the number of barriers to migration of native fish species, including Australian Grayling, has decreased.

Local threats that can be addressed by NRM actions

- Habitat connectivity and barriers to migration

Actions

BS13 Improve fish passage in priority river systems to improve habitat connectivity for migratory native fish species, including Australian Grayling.

Implementation

Investment opportunity	<input checked="" type="checkbox"/> Australian Government <input checked="" type="checkbox"/> Tasmanian Government <input checked="" type="checkbox"/> Regional or Local <input checked="" type="checkbox"/> Private or philanthropic
Potential delivery methods	Removal of barriers to fish migration or installation of fish passage infrastructure, education and awareness.
Potential collaborators	Natural Resources and Environment Tasmania; Inland Fisheries Service; recreational fishing communities; land managers; Irrigation Tasmania; TasWater; Hydro Tasmania
Opportunities for community participation	Field days, training workshops, education and awareness.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS14: Giant Freshwater Crayfish

The Giant Freshwater Crayfish (GFC), *Astacopsis gouldi* (also referred to as 'Giant Freshwater Lobster') is the world's largest freshwater crustacean, growing to up to

6 kg and living up to 60 years. The species is endemic to rivers of northern Tasmania. More information on this species can be found in Attachment 5.

Outcome

By 2030 recovery plan actions are implemented to contribute to protection of the Giant Freshwater Crayfish in north eastern catchments.



Local threats that can be addressed by NRM actions

- Loss of instream habitat, riparian vegetation and stream shading
- Increased sedimentation

Actions

- BS14.a** Identify stream reaches in the Great Forester-Brid, Ringarooma, and Pipers River catchments to re-instate riparian vegetation and instream habitat.
- BS14.b** Increase community awareness and participation in Giant Freshwater Crayfish conservation management activities through citizen science monitoring.
- BS14.c** Reduce catchment sediment loads (i.e. stock exclusion, best management practice (BMP) cultivation practices, forestry management practices).

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Citizen science monitoring, stream reach prioritisation, targeted incentives and conservation agreements, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; recreational fishing communities; Forest Practices Authority; University of Tasmania; land managers; Sustainable Timbers Tasmania; private forestry; Huon Aquaculture; local land managers.

Opportunities for community participation Citizen science monitoring, field days and training workshops, education and awareness.

See related Priorities and Actions in the Rivers Floodplains and Estuaries and Threatened and Important Ecological Communities Asset Classes.

PRIORITY BS15: Burrowing crayfish

The Mt Arthur Burrowing Crayfish (*Engaeus orramakunna*) is a medium-sized burrowing crayfish growing to a length of about 8 cm. The species is among the most terrestrial of the burrowing crayfish in Tasmania. The Mt Arthur Burrowing Crayfish is known from a range of approximately 300 square km centred on Mt. Arthur in north-east Tasmania.

The Furneaux Burrowing Crayfish (*Engaeus martigener*) is a medium-sized burrowing crayfish; its carapace grows to a length of about 25 mm. The species is distinctively coloured with predominantly purple hues.

The Furneaux Burrowing Crayfish is found only on Flinders Island and Cape Barren Island in Bass Strait.

The Central North Burrowing Crayfish (*Engaeus granulatus*) is a medium-sized, burrowing crayfish, typically brownish and normally reaching a length of less than 10 cm. It is endemic to Tasmania, occurring only within a roughly rectangular area between the Mersey River and Port Sorell, northern Tasmania, in seepages, wetlands and stream banks. More information on these species can be found in Attachment 5.

Outcome

By 2030, there has been a reduction in damage to burrowing crayfish habitat through an increased uptake of strategies such as riparian stock exclusion in priority reaches.

Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Stock trampling
- Altered drainage and hydrological regimes

Actions

BS15.a Protect areas of remnant habitat, and identify and rehabilitate areas of lost habitat, by excluding stock, restoring suitable vegetation, or reinstating appropriate drainage.

BS15.b Monitor the abundance of burrows and change in population over time to determine the effectiveness of management interventions, in priority areas including Mt. Arthur, Mt. Munro (Cape Barren), Strzelecki/Darling Range (Flinders), Rubicon catchment and Surveyors Creek.

Implementation**Investment opportunity**

Australian Government



Tasmanian Government



Regional or Local



Private or philanthropic

Potential delivery methods

Population monitoring, targeted incentives and conservation agreements, improved stock management and revegetation, restoration of hydrological regimes.

Potential collaborators

Natural Resources and Environment Tasmania; recreational fishing communities; Forest Practices Authority; University of Tasmania; land managers; Sustainable Timbers Tasmania; private forestry; local land managers; landcare or community groups.

Opportunities for community participation

Education and awareness.

See related Priorities and Actions in the Rivers, Floodplains and Estuaries and Threatened and Important Ecological Communities and Asset Classes.

PRIORITY BS16: Ptunarra Brown Butterfly

The Ptunarra Brown Butterfly (*Oreixenica ptunarra*) is a small brown and orange butterfly found only in Tasmania. The species occurs in *Poa* tussock grassland and grassy shrubland and woodland above 400 m

in the north-west plains, Central Plateau, southern Midlands, the Steppes, and the eastern highlands. More information on this species can be found in Attachment 5.

Outcome

By 2030, priority sites for Ptunarra Brown Butterfly are identified and threats are managed.



Local threats that can be addressed by NRM actions

- Habitat loss and fragmentation
- Populations of European wasps

Actions

BS16.a Survey sites across the Ptunarra Brown Butterfly range and identify key sites to reduce threats.

BS16.b Implement biannual European wasp control for populations in identified sites using poison wasp traps and other technologies.

BS16.c Increase the adoption of best management practice and reduce the threat of grazing pressure and pasture improvement in the Northern Midlands including the implementation of ecologically appropriate fire regimes to maintain habitat values.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Surveys and monitoring; pest control; habitat restoration.

Potential collaborators Natural Resources and Environment Tasmania; Forest Practices Authority; Tasmanian Land Conservancy Forico; University of Tasmania; Tasmanian Aboriginal communities and Aboriginal Rangers.

Opportunities for community participation Citizen science monitoring.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class.

PRIORITY BS17: Shy Susan

Shy Susan (*Tetratheca gunnii*) is critically endangered plant known from only a handful of locations in a very limited distribution on serpentinite substrates in

the foothills of the Dazzler Range near Beaconsfield, northern Tasmania. More information on this species can be found in Attachment 5.

Outcome

By 2030, the conservation status of Shy Susan is secured through viable wild populations and viable ex-situ collections.

Local threats that can be addressed by NRM actions

- Competition and browsing pressure

Actions

BS17.a Implement the Shy Susan Adaptive Management Plan to control competition and browsing pressures at known population sites.

BS17.b Identify potential sites for additional ex-situ populations and establish new populations to increase the genetic diversity of the ex-situ collections of Shy Susan.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Monitoring, fencing and guards for plants, maintenance of ex-situ collections.

Potential collaborators Natural Resources and Environment Tasmania; Royal Tasmanian Botanical Gardens; Tasmanian Seed Conservation Centre, Threatened Plants Tasmania.

Opportunities for community participation Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class.

PRIORITY BS18: Davies Waxflower

The Davies Waxflower is a medium shrub that grows to around 3 m tall. Recruitment is from seed with flowers adapted to pollination by non-specialised insects and birds. Large amounts of seed are produced but few seeds have been found in the soil-bank. Long

term viability of seeds in the soil-bank is not known. Germination appears to be triggered by events such as flood and fire though low numbers of seedlings are seen without the stimulus of fire. More information on this species can be found in Attachment 5.

Outcome

By 2030, the conservation status of Davies Waxflower is secured through viable wild populations and the establishment of additional ex-situ populations.

Local threats that can be addressed by NRM actions

- Competition and browsing pressure

Actions

BS18.a Monitor population at one wild site on the northern bank of the George River and four ex-situ sites and implement management actions to maintain a stable population.

BS18.b Supplement existing ex-situ site at George River using 200 plants from the Royal Tasmanian Botanical Gardens and maintain the existing ex-situ site at Granite Knob by replacing browsing guards as required.

BS18.c Establish three new ex-situ site plantings with 100 plants: one at George River and two at Constable Creek.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Monitoring, fencing and cage guards to protect plants, maintenance of ex-situ populations, education and awareness.

Potential collaborators Natural Resources and Environment Tasmania; Royal Tasmanian Botanical Gardens; Tasmanian Seed Conservation Centre; Threatened Plants Tasmania.

Opportunities for community participation Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Ecological Communities Asset Class.

PRIORITY BS19: Graveside Leek-orchid and other threatened orchids

The Graveside Leek-orchid is a small fleshy terrestrial orchid that has a single green onion like leaf and tiny light-green flowers with pinkish-purple markings. It is

restricted to a single location near Campbell Town, Tasmania. More information on this species can be found in Attachment 5.

Outcome

By 2030, weed control and grazing pressure have been reduced, and appropriate fire regimes have been developed and implemented at key sites for the Graveside Leek-orchid and other threatened orchids.



Local threats that can be addressed by NRM actions

- Inappropriate fire regimes
- Human disturbance
- Competition from weeds
- Grazing pressure

Actions

BS19.a Monitor key threatened orchid species populations and implement on-ground actions, such as appropriate fire regimes, to enhance habitat values and reduce threats.

BS19.b Implement weed control actions and reduce grazing pressure by caging individual Graveside-leek Orchid plants during flowering and seeding periods to improve germination success and identify suitable areas for translocation to establish additional populations.

Implementation

Investment opportunity Australian Government Tasmanian Government Regional or Local Private or philanthropic

Potential delivery methods Monitoring, fire management, weed control, cage protection for individual plants, establish additional populations.

Potential collaborators Natural Resources and Environment Tasmania; Royal Tasmanian Botanical Gardens; Tasmanian Seed Conservation Centre; Landscape Recovery Foundation Threatened Plants Tasmania; land managers.

Opportunities for community participation Field days, education and awareness.

See related Priorities and Actions in the Threatened and Important Ecological Asset Class.

PRIORITY BS20: Emerging priorities

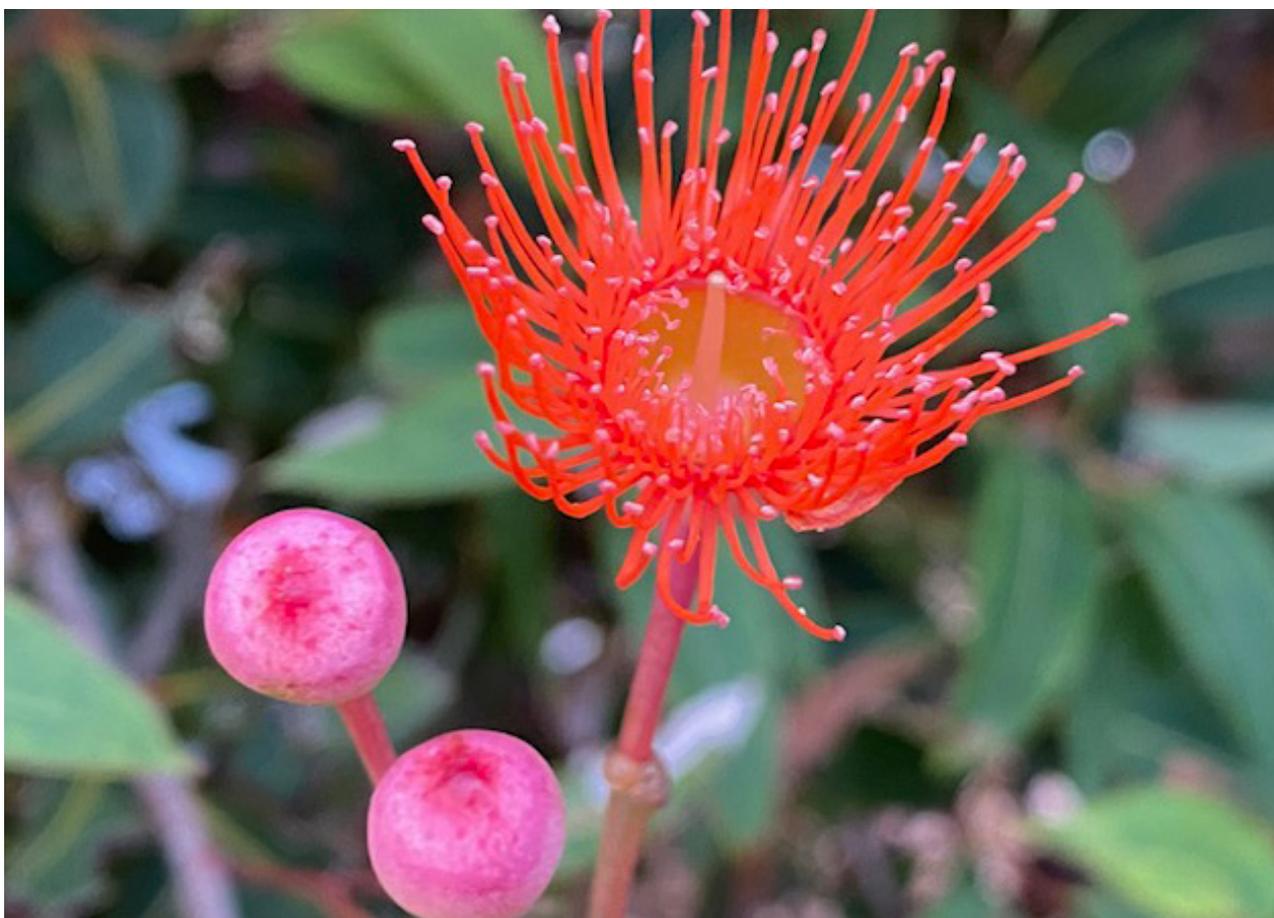
The list of nominated species that have been approved for assessment under the EPBC Act are detailed annually in the Finalised Priority Assessment List (FPAL), which will be monitored for emerging species that are significant in the region.

Outcome

By 2030, emerging priorities are assessed, and regional threatened species prioritisation has been completed or updated.

Actions

- BS20.a** Work with government and conservation partners to monitor emerging priorities from a local, state, and national perspective. Where a species has been newly listed or identified at a local scale, undertake a prioritisation process to determine the feasibility and need for action as required.
- BS20.b** Work with NRET and conservation partners to update the state-wide threatened species prioritisation and/or undertake a prioritisation process to determine the need for action.



» Flowering gum in bloom (Linda Jackson)



» Pink waratah, *Telopea truncata* (Karley Murphy)

A close-up photograph of a pink flower, likely a Protea, with a large white number '8' overlaid in the center. The flower's petals are vibrant pink and yellow, and the central part shows a cluster of small, rounded buds. The background is a soft, out-of-focus green.

8

Implementation

8 Implementation

8.1 Project development

The Strategy identifies the priorities, actions, and outcomes for each prioritised asset class to guide the development of potential projects (identified in Sections 5, 6 and 7). Project designs/plans aligned with the Strategy may be further assessed, refined, and developed during the preparation of Regional Investment Plans and/or in response to investor requests, tender or funding application requirements, or emerging needs.

Each project design/plan will outline, as appropriate, specific, measurable, attainable, realistic and timebound outcomes, methods, baselines, deliverables, monitoring indicators, budgets, measures of success, adaptive management processes, and an evaluation and improvement framework.

All projects will be developed and designed with the funding body/bodies, project partners and in consultation with stakeholder groups to maximise opportunities at the regional level. Projects will effectively contribute to the Outcomes of the Strategy, and those of the funding body/bodies (e.g. the outcomes defined under the Regional Land Partnerships/National Landcare Program, Australian Government).

It is acknowledged that data is deficient for many Priorities identified in the Strategy. Expert technical knowledge was sought to develop appropriate Actions in the Strategy. As projects are developed, NRM organisations will continue to seek expert advice where required to complement available scientific data and address data deficiency. The collection of baseline data may be a component of some project designs/plans.

Regional Investment Plans, or similar documents will be dynamic and will be modified on an as needs basis, such as when new issues or opportunities arise (see Section 8.3).

As Priorities and Actions are developed into Projects, the NRM regions will apply principles and processes to select and rank activities and interventions which are cost effective and demonstrate value for investment (see Attachment 3 and 5). Regional Investment Plans will be developed to identify and describe the types of delivery mechanisms in projects to ensure delivery is cost-effective and outcome focused.

8.2 Partnerships: the way we work

Tasmania's regional NRM organisations work in collaboration with industries, communities, NGOs, specialist groups, research organisations and governments (including GBEs). This Strategy provides a framework that considers community values, expert knowledge and scientific evidence, with the aim to focus the efforts of the NRM organisations.

Critical to the effective and successful delivery of natural resource management projects in the region is the active involvement of individuals, communities, organisations, businesses and all levels of government. Partnerships provide opportunities to for broader involvement in natural resource management. Through the process of project development, the NRM organisations will continue to work with existing and new partners to:

- Understand diverse views and find commonality, where appropriate;
- Be informed and to inform decision-makers about regional natural resource management priorities;
- Target action in prioritised areas and achieve the best outcomes possible with the resources available;
- Identify opportunities to improve natural resource management practices;
- Facilitate collaboration across multiple partners, in priority areas; and
- Advocate for investment into identified regional natural resource management priorities.

8.3 Emerging priorities

New priorities are likely to emerge in and across the three Themes during the life of this strategy. Emerging issues may stem from new or changed threats, or shifts in drivers such as government priorities, regional, local or community concerns.

The regional NRM organisations will monitor emerging priorities from a local, state, and national perspective.

As an example, the list of nominated species, ecological communities and key threatening processes that have been approved for assessment by the Minister responsible for the EPBC Act are detailed annually in the Finalised Priority Assessment List (FPAL). Relevant Actions have been identified in the Strategy to support/reduce threats to species and communities currently listed under the EPBC Act – the Regions will monitor the FPAL list annually to assess and prioritise new Actions for emerging species and communities that are scheduled to be assessed for the EPBC Act.

The process to monitor for emerging issues will involve the periodic review of:

- Relevant government policies, strategies, and positions;
- Changes in the listing of species or ecological communities under relevant legislation;
- Updates to recovery plans, listing statements or conservation advice;
- Key advances or updates on threatening processes, strategies or technological developments to address threatening processes;
- Regular communication and consultation with key stakeholders including local and regional organisations (e.g. Government, research institutions, GBEs and NGOs, etc); and
- Reports on the work of our partners and stakeholders.

The Multi-Criteria Decision Analysis process (see Attachment 3) will be used to determine if the emerging issue will change current priorities or actions. This assessment will also consider the resources required. For example, while a priority may emerge or change, it may not be feasible to alter current priorities or actions to address the emerging one.

Projects based on emerging priorities may be included in the Regional Investment Plan from time to time.

8.4 Reviewing the Strategy

The 2030 NRM Strategy provides the framework for natural resource management delivery in Tasmania to 2030. It is a statutory requirement (under Tasmanian legislation) that this Strategy is reviewed at least every 5 years. While the planning horizons of the strategy are to 2030, a review will be undertaken in 2027. This review will inform the development of any required updates to Outcomes, Priorities, Actions, or other elements of the strategies.

The review will assess the extent the Strategy has achieved its outcomes – including the extent to which Priorities have been addressed, or Actions have been completed.

As a part of the review of the strategy, the following Key Evaluation Questions will be considered:

1. Strategic alignment and appropriateness:

- a) Are the Outcome statements for each Asset Class still appropriate, or should they be modified?
- b) Are the Priorities or Actions in each Asset class still relevant and appropriate?

2. Progress and impact:

- a) What was the level of investment secured to deliver the strategy?
- b) What proportion of Priorities or Actions identified in the Regional Strategy plan have been addressed (in part or in full)?
- c) Have the funded projects contributed to the achievement of the Outcome statements for each Theme?

3. Adaptability:

- a) Have emerging priorities been identified since the strategy was developed? Were they addressed in any way?
- b) Are there any new or changed focus areas that should be addressed by the strategy?
- c) What were the key learnings from project implementation, including any constraints, and the implications for the strategy?

4. Engagement and sustainable outcomes:

- a) Are the identified UN SDGs being addressed in the delivery of projects?
- b) Has Aboriginal participation, culture and knowledge been included in relevant projects?
- c) Were stakeholder aspirations reflected adequately in the strategy?
- d) What was the percentage of projects delivered in partnership with stakeholders (with shared aspirations)?

8.5 Measuring project success

A MERI (Monitoring, Evaluation, Reporting and Improvement) framework will be used to assess progress on achieving outcomes of funded projects. This framework embeds adaptive management and establishes a measure of success for a project.

The specific MERI framework used for each project will be developed on a case-by-case basis, but will broadly cover the approach described by the Australian Government (<http://www.nrm.gov.au/publications/meri-strategy>):

Monitoring: Collection of data and information.

Evaluation: Analysing monitoring data, assessing what it means and making informed judgements about the success of a project (or program) and potential improvements.

Reporting: Communicating what was found from monitoring and evaluation. It is about sharing information, including about achievements and lessons learnt.

Improvement: Using this information to improve the way things are done.

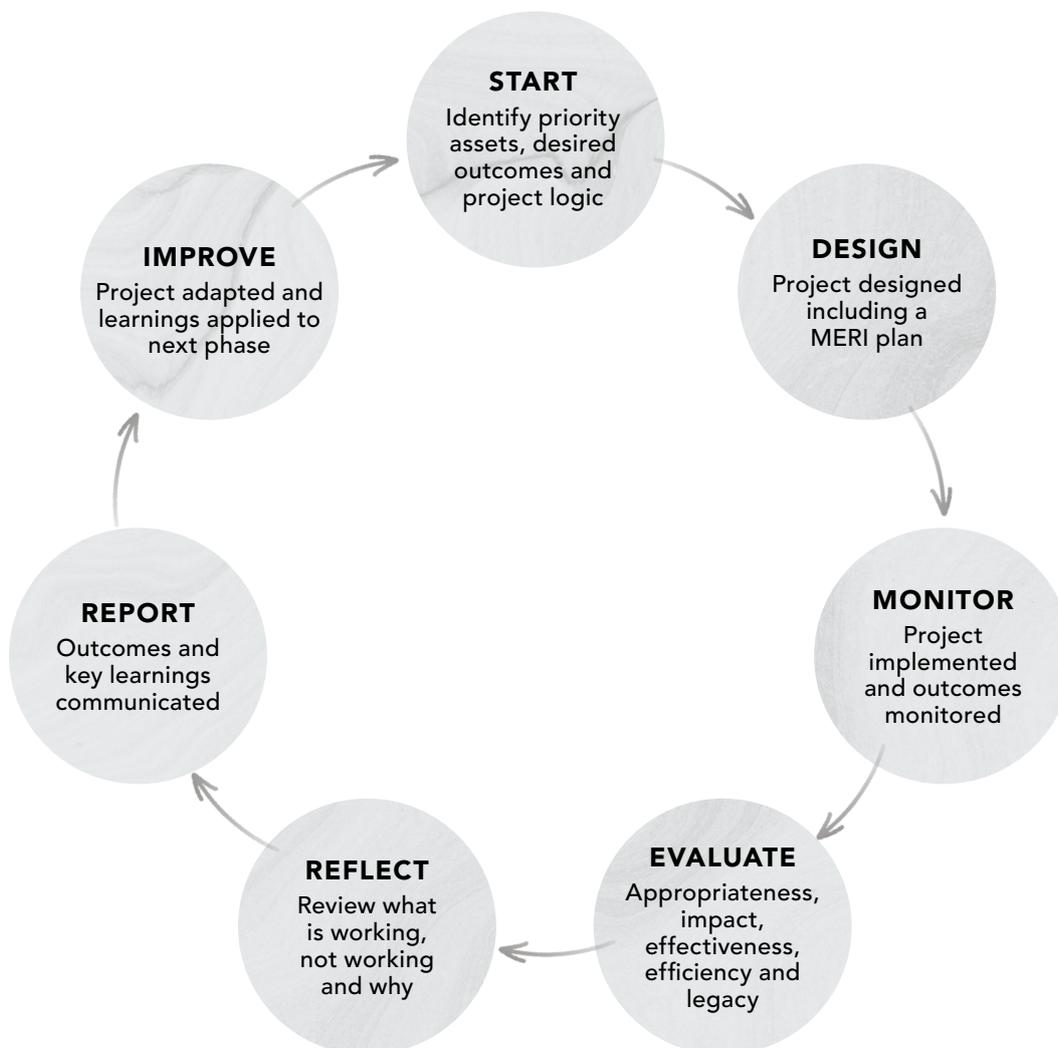
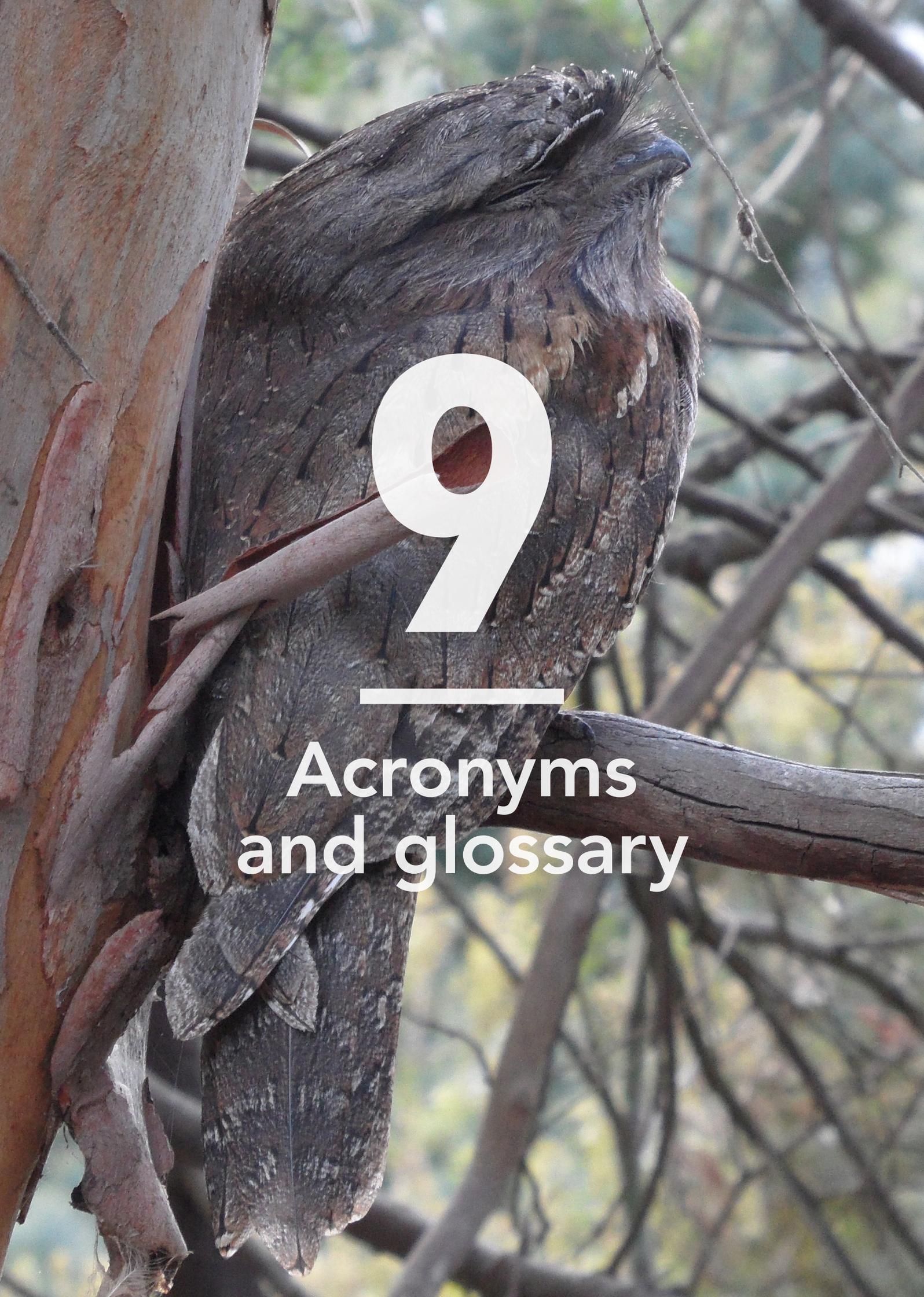


FIGURE 9: Project level MERI processes that support adaptive management and continuous improvement

» Tawny frogmouth, *Podargus strigoides* (Tony Roberts)

A woodpecker with brown and grey feathers is perched on a tree trunk. A large, white, stylized number '9' is overlaid on the bird's body. The background shows a network of tree branches and green foliage.

9

Acronyms
and glossary

9 Acronyms and glossary

9.1 Acronyms

ALCT	Aboriginal Land Council of Tasmania	km	kilometres
ANU	Australian National University	km²	square kilometres
AWI	Australian Wool Innovation	LIST	Land Information System Tasmania
BMP	Best Management Practice	MAST	Marine and Safety Tasmania
CCA	Cradle Coast Authority	MCA	Multi-criteria Analysis
CRC	Cooperative Research Centre	MERI	Monitoring, Evaluation, Reporting and Improvement
COVID-19	2019 novel coronavirus disease; also COVID	MLA	Meat and Livestock Australia
CSIRO	Commonwealth Scientific and Industrial Research Organisation	NC Act	<i>Nature Conservation Act 2002</i> (Tasmanian)
DAWE	Department of Agriculture, Water and the Environment	NRM	Natural Resource Management
DEP	Derwent Estuary Program	NGO	Non-government organisation
NRET	Department of Natural Resources and Environment Tasmania	PFT	Private Forests Tasmania
EFM	Ecologically Friendly Moorings	PWS	Tasmania Parks and Wildlife Service
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)	RACT	Royal Automobile Club of Tasmania
FPA	Forest Practices Authority	RLP	Regional Land Partnerships
FPAL	Finalised priority assessment list	STT	Sustainable Timbers Tasmania
GBE	Government Business Enterprise	TEER	Tamar Estuary and Esk Rivers
ha	hectares	TFGA	Tasmanian Farmers and Graziers Association
IFS	Inland Fisheries Service	TLC	Tasmanian Land Conservancy
IMAS	Institute for Marine and Antarctic Studies	TSP Act	<i>Threatened Species Protection Act 1995</i> (Tasmanian)
IPA	Indigenous Protected Area	TWWHA	Tasmanian Wilderness World Heritage Area
IPCC	Intergovernmental Panel on Climate Change	UN SDGs	United Nations – Sustainable Development Goals
IUCN	International Union for the Conservation of Nature	UTas	University of Tasmania
KBA	Key Biodiversity Area	WQIP	Water Quality Improvement Plan

9.2 Glossary

Tasmanian Aboriginal people and community	This is the name used for the First Tasmanians and their descendants throughout the Strategies. We acknowledge that some organisations and individuals prefer First Nations People, or Indigenous people.
Actions	Actions are the identified tangible steps to address the threatening processes affecting the Priorities, and outline potential investment options that will guide specific project development and activities further refined in a Regional Investment Plan or similar document.
adaptive management	The principle of observing, recording and monitoring project delivery mechanisms and resulting responses in order to inform changes and different approaches for future work. This involves regularly evaluating and analysing progress to adapt management decisions as required, resulting in robust decision-making in the absence of certainty.
anthropogenic	Originating in or from human activity.
Asset Class	Within each of the identified Strategy Themes, specific Asset Classes are identified at the state and regional scale. Asset identification provides a structure that focuses action and investment in priority areas.
assets	Natural resource assets represent a specific form of natural value, and its interaction with economic and social values. This includes natural values such as a species, ecological community or character description, water body, geographical area, or a combination of soil type and land use. Asset Classes are used to classify assets within the Strategy Themes.
best management practice (BMP)	Methods that have been determined to be the most effective and practical means of achieving a positive outcome. These are methods that are supported by best available science, as well as government, industry, and/or certification programs, and have been practically applied and tested through adaptive management processes.
biodiversity	The variety of all life forms on earth - the different plants, animals and micro-organisms, their genes, and the terrestrial, marine and freshwater ecosystems of which they are a part.
biosecurity	The management of risks to the economy, the environment, and the community, of pests and diseases entering, emerging, establishing, or spreading.
blue carbon sequestration	Blue carbon refers to the contribution of coastal vegetated ecosystems to global carbon sequestration.
carbon storage	Retain carbon and keep it from entering Earth's atmosphere.
citizen science	The practice of public participation and collaboration in scientific research to increase scientific knowledge.
collaborator	NRM organisations rely on project collaborators, groups or organisations that help facilitate project outcomes through mechanisms such as: in-kind commitment, associated services and endorsement. This may include project participation through activities such as citizen science, or participating in project governance.
conservation covenant	A voluntary agreement made between a landholder and an authorised body (for conservation purposes in an NRM context).
ecological character	Referring to Ramsar-listed wetlands: the combination of the ecosystem components, processes, benefits and services that characterise the wetland at a given point in time.
ecological community	A naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat.
ecosystem function	The combined effects of all natural processes that sustain an ecosystem.

emerging priority	NRM priority based on new information or changing circumstance that arises during the life of the plan.
endemic	Native and restricted to a certain place.
fragmentation	Relating to habitat, a process during which a large expanse of habitat is transformed into a number of smaller patches.
hydrology	The distribution and movement of water.
indicators	Measuring success in delivery towards achieving outcomes.
intertidal	The zone where the ocean meets the land between high and low tides.
invasive species	A species occurring, as a result of human activities, beyond its accepted normal distribution and which threatens valued environmental, agricultural or other social resources by the damage it causes.
Key Biodiversity Areas	Key Biodiversity Areas are sites of global importance to the planet's overall health and the persistence of biodiversity. The Key Biodiversity Area Partnership is an international programme supporting nationally led efforts to identify areas that are critical for the survival of unique plant, animals and ecological communities.
land manager	Any person or group of people with responsibility for managing land, including but not limited to land owners and lease holders, farmers, government or privately owned entities.
lutruwita	The Tasmanian Aboriginal name for the land, sea and sky Country now called Tasmania, agreed under the Aboriginal and Dual Naming Policy. Some Tasmanian Aboriginal people prefer the name <i>trowunna</i> , and this is acknowledged, but has not been used throughout the Strategies.
management actions	Are developed as a part of the project implementation process, within specific projects, as project-related activities.
net primary productivity, or NPP	The gross primary productivity minus the rate of energy loss to metabolism and maintenance.
Outcomes	Long-term (aspirational) and near-term Outcomes for Tasmanian natural resources were identified by the regional NRM organisations. These Outcomes form benchmarks for measuring the success of Actions described in this Strategy.
partner	Partners are organisations who have a formal relationship with NRM organisations through an existing mechanism such as a grant deed, contract or other agreement.
peri-urban	Transition from rural to urban land uses located between the outer limits of urban or regional centres and the rural environment.
Priorities	Priorities are assets that have been identified under each Asset Class through a regional prioritisation process.
production landscape	Landscapes on which primary or other production occurs for economic outcome.

Ramsar Convention/site	Ramsar Convention on Wetlands of International Importance is an international treaty for the conservation and sustainable use of wetlands
recognised biodiversity hotspots	Areas that are acknowledged in scientific literature, management plans or other technical references as having high biodiversity and important conservation values.
reforestation	The intentional replanting of forests and woodlands that have been depleted, usually through deforestation or land clearing.
Regional Land Partnerships	"As the largest component of the Australian Government's National Landcare Program, the Regional Land Partnerships investment is being delivered through a reformed regional model that supports a range of projects contributing to four environment and two sustainable agriculture outcomes. The program logic provides an overview of Regional Land Partnerships outcomes and how these outcomes will be achieved through the implementation of services appropriate to priority actions identified in plans, strategies, reports and advice."
Regional Land Partnerships 5-Year Outcomes	Long term outcomes in the RLP Program Logic will be achieved through 5-year outcomes in each of the environment and agriculture outcomes.
rodenticide	Pesticides that specifically kill rodents, including mice and rats.
Themes	Land, Water, and Biodiversity are the high-level categories, adopted as Themes, to provide the structure of the regional NRM Strategies at the state-wide scale.

10 Attachments

The following documents provide further context or background relevant to the Strategy. This information is available on the Tasmanian NRM websites:

<https://nrmsouth.org.au/>

<https://nrmnorth.org.au/>

<https://www.cradlecoast.com/>

Ref.	Document	Description
A1	Tasmanian NRM policy context and drivers	A description of the current policy setting, risk and opportunities arriving from global and local drivers.
A2	Tasmanian NRM linkages with UN SDGs	A table summary of priorities and linkages with UN SDGs.
A3	Tasmanian NRM prioritisation process	A summary of the MCA prioritisation process undertaken for each theme.
A4	Stakeholder engagement	A summary of the stakeholder engagement processes undertaken for strategy development.
A5	NRM planning linkages with Regional Land Partnerships Outcomes	A detailed outline of the strategic and planning linkages with the Australian Government's Regional Land Partnerships program.
A6	References and relevant resources	A summary of key reference documents.

» Old stable in Lilydale



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Level 2, 63–65 Cameron St, Launceston TAS 7250
03 6333 7777 | www.nrmnorth.org.au | @nrmnorth
www.facebook.com/NRMNorthTas