DRAFT

Corangamite Catchment Management Authority Biodiversity and Agricultural Natural Capital Emergency Preparedness and Response Plan

Acknowledgement

Aboriginal peoples have lived in the area now known as the Corangamite region for thousands of generations. The two Traditional Owners of the lands within the Corangamite region are the Wadawurrung and Eastern Maar. We acknowledge their Ancestors and Elders, past, present and emerging.

CCMA thanks the many regional stakeholders, groups and individuals whose contributions assisted with the preparation of this Action Plan.

Publication details

Draft Corangamite Catchment Management Authority Biodiversity and Agricultural Natural Capital Preparedness and Response Plan

This Plan seeks to improve preparedness for, response to, and recovery from emergency events as they relate to Australian Government biodiversity and agricultural natural-capital assets. This will be achieved through improved integration of assets in emergency planning, response and recovery.
The Plan will enhance the resilience of biodiversity and agricultural natural-capital assets by recognising the risks and threats posed by natural disasters and undertaking planning to improve outcomes through actions and management before, during (to the extent possible) and post-event to support recovery.

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Acronyms

CFA	Country Fire Authority
CMA	Catchment Management Authority
DEECA	Victorian Government Department of Energy, Environment and Climate Action
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FFG Act	*Flora and Fauna Guarantee Act 1988*
PBFD	Psittacine beak and feather disease
PV	Parks Victoria
SEMP	State Emergency Management Plan
VBA	Victorian Biodiversity Atlas
CCMA	Corangamite Catchment Management Authority
FFMV	Forest Fire Management Victoria
AgVic	Agriculture Victoria
EMV	Emergency Management Victoria
EMAC	Eastern Maar Aboriginal Corporation
WTOAC	Wadawurrung Tradition Owners Aboriginal Corporation
JAMBA	Japan-Australia Migratory Bird Agreement
CAMBA	China-Australia Migratory Bird Agreement
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement

1 BACKGROUND

There is a growing need to enhance preparedness for natural disasters and their impact on biodiversity and agricultural natural capital assets within the Corangamite region. Ensuring the survival of species and places helps to preserve key ecosystems services such as clean air, water, and climate regulation, all of which profoundly affect human well-being. Disaster preparedness bolsters the resilience of ecosystems, enabling them to recover and flourish following catastrophic events.

The Australian Government invited Corangamite Catchment Management Authority (CCMA) to deliver a "Biodiversity and Agricultural Natural Capital Emergency Preparedness and Response Plan" that considers the most likely natural disaster scenarios for the Corangamite Management Unit and how these scenarios can be prepared for, responded to, and recovered from. The natural disaster scenarios include fire, flood, biosecurity, landslide, coastal storm surge, drought, and blue-green algae. Better preparation and response will contribute to stronger regional economies through sectors such as agriculture.

This Plan contributes, in part, to actions under Target 17 of the *Threatened Species Action Plan 2022-32*[1] and Outcomes 1, 2 and 3 of the Natural Heritage Trust (NHT), by addressing vulnerability to extreme weather events relevant to biodiversity[2] and agricultural natural capital assets[3] identified in the management unit and improving emergency response and planning within jurisdictions. This Plan also contributes to Outcomes 1 and 3 of the Climate-Smart Agriculture Program by supporting the agriculture sector to build resilience to climate change and conserve natural capital and biodiversity on-farm.

1.1 Natural disaster and emergency events

The Plan was built on the lessons learned during CCMA's 25-year history in natural resource management and emergency response. During this time, the Corangamite region has experienced emergencies including the 2022 Victorian Floods, 2016 Geelong Floods, the Millenium Drought, 2015 Wye River Bushfire and the 1998 Linton Bushfire. These emergency events impacted many communities across the region by affecting native vegetation and biodiversity, water resources, agricultural natural-capital and other environmental assets.

In October 2022, Victorians were hit with one of the most significant flood events in the state's history after unprecedented heavy rainfall. Entire towns were evacuated, isolated, or inundated by floodwaters and the impact on communities was devastating. Within the Corangamite region, severe and major flooding occurred across the catchment disrupting communities and damaging property. Communities impacted included Geelong, Inverleigh, Winchelsea, Colac, Birregurra and large areas of the Western Lakes District.

Flooding is a natural process in the Corangamite region. The region includes the floodplains of the Barwon, Leigh and Moorabool Rivers, Lake Corangamite, the Otway Coast region and the Hovells Creek catchments, as well as the tributaries that drain to these major waterways (Corangamite Catchment Management Authority , 2018). Greater Geelong, located within the Corangamite Management Unit, has a history of significant flooding dating back to 1852. There have been 14 large

[1] https://www.dcceew.gov.au/sites/default/files/documents/threatened-species-action-plan-2022-2032.pdf

[2] Biodiversity assets refer to assets identified by jurisdictions, environment management agencies or environmental law as important to preserve during emergencies or natural disasters e.g., species, ecological communities, habitat features.

[3] Agricultural natural capital assets relate to the on-farm natural resources that we rely on for food and fibre production, including soil, air, water, riparian areas, remnant native vegetation, agroforestry and environmental plantings and animals.

floods in the region and significant flooding occurs on average every 10-12 years (Victorian State Emergency Services, 2024).

The Corangamite region has an extensive history of bushfire, with much of the forested landscape having been impacted by fire in the last 81 years. Significantly, the agricultural and native grasslands of the region have also been impacted by several very serious bushfires. The 2018 South West Complex Fires resulted in confirmed losses of 24 houses and 66 sheds, as well as thousands of head of livestock, pasture and fodder (Department of Environment, Land, Water and Planning, 2020).

On 19 September 2023, the Bureau of Meteorology declared an El Niño weather event which forecasted an increased risk of drier and hotter conditions over coming months for most of Australia. This follows a period of below average rainfall, higher temperatures, and the warmest recorded winter in 2023. As a consequence, Australia can expect an increased risk of extreme temperature shifts, like heatwaves and hotter days, and increased fire danger.

1.2 CCMA's Biodiversity

The Corangamite region is home to flora and fauna species unique to the area and is habitat for more than 300 species of fauna classified as threatened at both state and federal level. The region has significant areas of remnant vegetation in protected reserves such as the Great Otway National Park and the Port Campbell National Park but most of the estimated 66,000 ha of remnant vegetation is on private land (Corangamite Catchment Management Authority, 2022). The Great Otway National Park is a hub of biodiversity for the region and includes habitat like cool temperate rainforest, eucalypt forests and dry heathy scrub. The Great Otway National Park is a critical small mammal refuge for fauna like the Swamp Antechinus and the Long-nosed Potoroo.

Corangamite's marine and coastal environments are highly diverse, extending from Peterborough in the west to Limeburners Lagoon in Geelong in the east. Marine habitats include intertidal rocky reefs, shallow rocky reefs, deep rocky reefs, pelagic waters, sand beaches, subtidal sandy and muddy seabeds, and intertidal mudflats. Coastal habitats are dominated by a variety of vegetation, including Coastal Dune Scrub, Coastal Headland Scrub, Coastal Tussock Grassland, and Coastal Saltmarsh Ecological Vegetation Classes (Parks Victoria, 2009).

The region contains two Ramsar sites, the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula site and the Western District Lakes site. Both are habitat for threatened migratory shorebirds and numerous species of resident water birds like the Eastern Curlew, Double-banded Plover and the Red-necked Stint. Many of the migratory shorebirds that the sites support are listed under the Japan-Australia, China-Australia and Republic of Korea-Australia Migratory Bird Agreements (JAMBA, CAMBA and ROKAMBA), which foster international cooperation on conservation of the species. (Department of Climate Change, Energy, the Environment and Water, 2023) Corangamite has more than 1500 wetlands covering 63,000 ha (5% of the region). These wetlands range from large open-water saline lakes to shallow, ephemeral, freshwater meadows – many of which are rich in native flora. While 75% of the total wetland area is on public land, a large number of small wetlands are found on private land (Corangamite Catchment Management Authority, 2022).

The waterways (rivers, estuaries and wetlands) of the Corangamite region are diverse and complex ecosystems and the 'lifeblood' of many communities. They have unique environmental values, providing habitat for native fish, invertebrates and water birds, while supporting extensive vegetation communities. There are approximately 19,600 km of waterways in the Corangamite Region. The Otway National Park contains some of the most naturally intact and high-quality waterways in Australia (Corangamite Catchment Management Authority, 2022).

1.3 CCMA's Agricultural Natural Capital

Agriculture is the dominant land use within the Corangamite region, with approximately 3,450 agricultural businesses operating across 772,436 hectares. Farming enterprises include sheep and cattle grazing, dairying, cropping, forestry and viticulture.

Mixed farming and grazing is the predominant agricultural land use in the Corangamite region (66%), followed by dairy (14%), beef (7%) and sheep (5%) production. Meat and dairy products are the most valuable commodities in the region, contributing to 14% or $660 million and 15% or $546 million of Victoria's total value respectively. The region produces 16% of Victoria's hay and silage (tonnes) and 19% of its eggs (dozens).

Livestock numbers in 2005-2006 were approximately 271,000 dairy cattle, 209,000 beef cattle and 1.7 million sheep and lambs. In 2005-2006, the Corangamite region produced approximately 10% of the gross value of agricultural commodities in Victoria (Corangamite Catchment Management Authority, 2022).

The waterways in the region are a focal point for recreation and tourism and their catchments provide Corangamite communities with water for drinking, irrigation and industry. Groundwater is an important resource shared by many users, sustaining key components of the region's environment and services (Corangamite Catchment Management Authority, 2014).

The Corangamite region's agricultural natural capital supports the region's economy and agricultural productivity. Ecosystem services are provided by land, soils and waterways, including water infiltration and storage, soil stability, nutrient cycling and availability for plant growth, flood control and carbon storage.

2 OBJECTIVES OF THIS PLAN

The objectives of this plan are to improve preparedness for, and response to, emergency events where they occur through better integration of biodiversity and agricultural natural capital assets in emergency planning and response.

This includes efforts to enhance the resilience of biodiversity and agricultural assets by recognising the risks and threats posed by natural disasters and undertaking planning to improve outcomes through actions and management before, during (to the extent possible) and after to support recovery.

3 SCOPE

Within the scope of this plan is the identification and mapping of biodiversity, and agricultural natural capital assets within the Corangamite Management Unit s and the delivery of an Emergency Preparedness and Response plan that outlines:

- the role of the CCMA in emergency events,
- the identification of biodiversity and natural capital assets and their susceptibilities/threats,
- preparedness actions for each asset detailing how threats can be reduced,
- response actions for each asset in the face of an emergency scenario,
- the communication and engagement of community and stakeholders in the development of this plan,
- identified key "knowledge" gaps,
- a risk assessment and mitigation strategies for the implementation of the asset preparedness/response actions,

- monitoring and data collection

This plan will outline the preparedness and response to short term events, with the longer-term impacts from scenarios such as climate change being already integrated into CCMA strategies and planning.

The implementation of the actions recommended for each emergency scenario is not within the scope of the project, unless stated that the action is already funded by or underway within a current project.

4 ROLE OF CCMA IN EMERGENCY PREPAREDNESS AND RESPONSE

4.1 Emergency Management Framework in Victoria

Within Victoria, the overall responsibility for coordinating before, during and after major emergencies including the management of the consequences of an emergency sits with the Emergency Management Commissioner and Emergency Management Victoria (EMV). EMV was established under the *Victorian Emergency Management Act 2013* and are a central body for emergency management in Victoria.

The Victorian State Emergency Management Plan (SEMP) outlines the emergency management arrangements for Victoria to inform all levels of planning – state, regional and municipal. The SEMP details the roles and responsibilities of agencies in relation to emergency management. The SEMP is authorised through the *Victorian Emergency Management Act 2013* (Emergency Management Victoria (EMV), 2023).

4.1.1 Victorian Emergency Management Act 2013

The *Victorian Emergency Management Act* 2013 (EM Act) establishes Victoria's emergency management framework (State Government of Victoria, 2013).

4.1.2 Victorian State Emergency Management Plan 2023

The Victorian State Emergency Management Plan (2023) provides an integrated, coordinated, and comprehensive approach to emergency management at the state level. The SEMP is authorised through the EM Act which contains provisions providing for the mitigation of, response to and recovery from emergencies, and specifies the roles and responsibilities of agencies in relation to emergency management (Emergency Management Victoria (EMV), 2023).

4.1.3 Barwon South West Emergency Management Plan

The EM Act requires the preparation of regional emergency management plans (REMPs) by Regional Emergency Management Planning Committees (REMPC)and approved by the Emergency Management Commissioner. The Barwon South West (BSW) Regional Emergency Management Plan (REMP) is prepared by the BSW Regional Emergency Management Planning Committee as required by the EM Act 2013 and in accordance with the Ministerial Guidelines for preparing State, Regional and Municipal Emergency Management Plans, November 2020. The Emergency Management Commissioner (EMC) approved the BSW REMP to take effect on 30 September 2023, and it is available on the EMV website. Barwon South West Regional Emergency Management Plan | Emergency Management Victoria (emv.vic.gov.au)

The BSW REMP outlines the arrangements for emergency management in the Barwon South West Region, before, during and after emergencies and supports the region to manage its obligations, before, during and after emergencies as outlined in emergency management legislation, regulations and guidelines. It identifies the arrangements which enable the Region to coordinate resources and

achieve cohesion of effort – before, during and after emergencies and articulates the relationships between the State, Regional and local tiers, across 'before, during and after' in emergencies, The REMP also identifies current and future risks and mitigation requirements and opportunities (Barwon South West Regional Emergency Management Committee, 2023).

4.1.4 Municipal Emergency Management Plans

Municipal Emergency Management Plans (MEMPs) are prepared by Municipal Emergency Management Planning Committees. MEMPs document the agreed emergency-management arrangements for mitigation, response and recovery, and define the roles and responsibilities of stakeholders at the municipal level. At the local level, a MEMP contextualises its REMP and is informed by local and municipal risks (Emergency Management Victoria (EMV), 2023).

Figure 1 below provides a visual representation of the Emergency Management Planning Framework in Victoria.

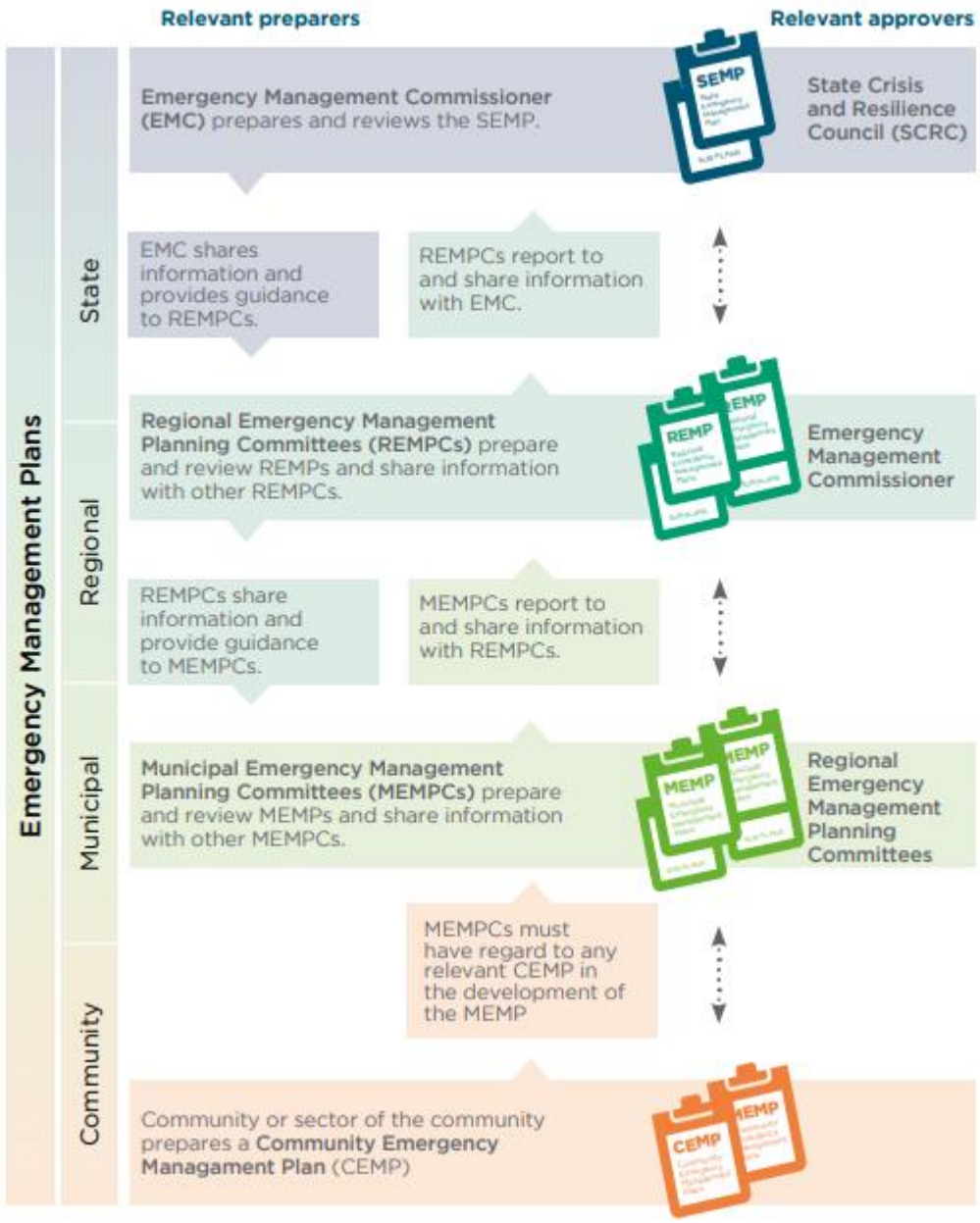

Figure 1: Framework for emergency management planning in Victoria (Emergency Management Victoria (EMV), 2023)

CCMA's Role in Emergency Management

Experience, Expertise and Knowledge

The CCMA has over 25 years' experience in planning, designing, implementing, evaluating and reporting on programs funded through the Australian and Victorian State Government. CCMA are the leading natural resource management organisation in the Corangamite region and are the preferred service deliverer of environmental, natural-resource management and sustainable agriculture projects in the region for the Australian and Victorian Governments. We have extensive experience working with land managers, communities and other organisations to protect and improve the health of the region's natural resources (water, soils, biodiversity) and to improve the health and sustainable productivity of the Corangamite region.

CCMA has successfully delivered a range of Commonwealth and Victorian Government-funded programs for many years, including Environmental Contribution tranches, National Landcare Program and other Natural Heritage Trust funding iterations. Relevant activities include regional natural resource management planning, sustainable agriculture projects, floodplain management, riparian restoration projects, biodiversity projects, estuary management and supporting Traditional Owner involvement in planning and projects.

CCMA has proven expertise in developing and implementing regional strategies and plans like the Corangamite Regional Floodplain Management Strategy 2018-2028 in collaboration with stakeholders and the regional community. CCMA has healthy working relationships with Wadawurrung Traditional Owners Aboriginal Corporation, Eastern Maar Aboriginal Corporation and First Nations People of the Corangamite management unit. CCMA have built strong relationships with emergency service agencies including Country Fire Authority, Department of Energy, Environment & Climate Action and Forest Fire Management Victoria.

CCMA have experience in providing support and expertise in relation to preparedness, response, recovery, mitigation and planning for emergency events. CCMA fulfils its statutory role under the *Water Act* 1989 and the *Catchment & Land Protection Act* 1994.

CCMA have an experienced, knowledgeable and adaptable workforce with a proven record of responding quickly to emergency situations and disasters. Experienced staff are able to adapt to any situation, prioritise activities and respond with expert advice and empathy.

CCMA's Role

CCMA is responsible for the integrated planning and coordination of land, water and biodiversity management across the Corangamite Management Unit.

Our role statement within the State Emergency Management Plan (SEMP) is "to advise on flood mitigation, provide support to flood response and lead flood recovery programs if we have the resources to conduct works" (Emergency Management Victoria, 2023).

Within the SEMP, CCMA have critical tasks/activities to perform in natural emergency mitigation, response (including relief), recovery and assurance & learning. Our primary role is to provide advice and support where directed and collection of data or information during emergency flood events.

During emergency recovery, CCMA has the role of a Recovery Support Agency (RecSA). Our function is emergency recovery assistance, to provide services, personnel or materials to support or assist a Recovery Lead Agency (RecLA) like DEECA or EPA and/or members of the public for nominated recovery activities.

In one instance, for Natural Environment Recovery Coordination, CCMA fills the role of Recovery Lead Agency (RecLA) in partnership with DEECA. CCMA's function in this role is specifically to provide advice and information services to Councils and delegated public land managers and community groups.

Appendix 5 full Role Statement from the State Emergency Management Plan describing role of CMA's in mitigation, response and recovery in relation to floods, the natural environment and land.

In the case of state-wide or localised natural emergencies, CCMA's role varies depending on the natural emergency that is occurring. In general, we work to assist the lead emergency services agencies (DEECA, EPA, CFA) by providing advice, analysis and specialised knowledge pre, during or post event. For example, CCMA staff are likely to be identified as Flood Analyst or Flood Liaison Officers in the case of a flood emergency within the Corangamite management unit. (Emergency Management Victoria, 2023)

Governance arrangements.

CCMA plays a critical role in the preparation of guidelines, plans and agreed approaches for emergencies within the Corangamite management unit. Collaboration and cooperation between agencies, both locally, regionally and state-wide is vital to improve outcomes before, during and after an emergency event.

The CCMA coordinated the creation and implementation of the Anglesea River Acid Event Response Plan, an agreed approach between all relevant agencies (e.g. Surf Coast Shire Council and Environmental Protection Agency) for the emergency management of the Anglesea River during an acid event.

Other agreed framework for the effective response to emergency events that CCMA has either delivered or contributed to include:

- Corangamite Regional Floodplain Management Strategy 2018-2028
- South West Victoria Regional Response Plan for Fish Death Incidents (led by EPA)
- Regional Blue-green algae Coordination Plan 2020/21 (led by Barwon Water)
- Corangamite BGA Management and Incident Response Plan 2022/23
- Victorian BGA Circular, framework for the management of BGA blooms in Victoria (led by DEECA)

5 IDENTIFICATION OF CORANGAMITE ASSETS AND SUSCEPTIBILITY

5.1 Approach

The priority assets included in the Plan are informed by regional strategic planning documents developed in collaboration with stakeholders. Key documents include the *Corangamite Regional Catchment Strategy* and *CCMA RLP Natural Resource Management Plan* (2022-2027). The latter focuses on the Australian Government's Investment Priorities, Matters of National Environmental Significance under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and sustainable agriculture in the Corangamite management unit.

Assets were informed by the Australian Governments *Threatened Species Action Plan* (2022-20032) and the 110 priority species nominated under this plan. Feedback and input from stakeholders that contributed to the development of this Plan has also informed the inclusion of assets.

5.2 Biodiversity Assets

This section of the Emergency Preparedness Plan identifies the priority biodiversity assets found within the Corangamite management unit. These assets include but are not limited to, Matters of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) with biodiversity values, for example, locations of key listed threated species and ecological communities and Ramsar wetlands. There are no world heritage properties or national heritage places found in the Corangamite region.

Information provided for each biodiversity asset includes:

- A description of the asset and its location/s in the Corangamite management unit.
- Identification of emergency scenarios such as bushfires, drought, floods and biosecurity that pose a threat and why.
- An assessment of each asset's current susceptibility to emergency scenarios, assessed as high, medium, or low. Asset susceptibility was determined using information from Approved Conservation Advice and/or Recovery Plans for individual assets. For some assets, existing expert knowledge and/or modelling was used to assess susceptibility to emergency scenarios.

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site

The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is 22,650ha of wetlands located on the western shoreline of Port Phillip Bay and extending out onto the Bellarine Peninsula. The site comprises six distinct areas that include freshwater wetlands, estuaries, intertidal shorelines, sub-tidal beds, inland saline wetlands and a wastewater treatment facility. The site is habitat for migratory shorebirds and many species of fauna and includes extensive areas of coastal saltmarsh and seagrass.

The site regularly supports one wetland dependant ecological community and 12 fauna species listed under the EPBC Act. (Department of Environment, Land, Water and Planning, 2018)

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site	Coastal Storm Surge	Storm surges can potentially result in the erosion of shoreline habitat.	High	This Ramsar site is highly susceptible to coastal storm surges, many areas of the site are already experiencing coastal erosion and this is expected to worsen with climate change. Listed as a Priority Threat in the management plan.
	Drought	Climate change is the driving factor behind wetlands drying. Increasing temperatures and decreasing rainfall are altering the water regime and increasing salinity. This is changing the ecological character of wetlands and impacting habitat and food sources of the endangered species that rely on this system.	High	This Ramsar site is highly susceptible to drought as the wetland wetting and drying cycle is becoming more extreme, with the drying cycle becoming longer and more severe. This harsher climate will impact the ecosystem's ability to recover and regenerate.

Western District Lakes Ramsar Site

The Western District Lakes Ramsar site is located in the west of Victoria and covers approximately 32,700 ha. The site comprises nine separate lakes within the landlocked Lake Corangamite catchment, Lake Beeac, Bookar, Colongulac, Corangamite, Cundare, Gnarpurt, Milangil, Murdeduke and Terangpom. The lakes range from freshwater/brackish to hypersaline, two are seasonal or intermittent and 7 permanent or near permanent.

The site supports two nationally threated wetland dependant plant species: *Poa sallacustris* and *Lepidium aschersonii*, both listed under the EPBC Act. The site also supports a high abundance and diversity of waterbirds, 13 that are international migrants and the EPBC-listed Curlew Sandpiper (Department of Environment, Land, Water and Planning, 2018).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Western District Lakes Ramsar Site	Bushfire	A bushfire has the potential to impact water quality and damage soil. A bushfire will destroy habitat for EPBC listed threatened flora and fauna and potentially impact populations. Post event, there will be an increase in weed species and increased erosion.	High	These lakes are surrounded mainly by agricultural land, which can be open, dry and ideal for hot grass fire conditions. There are no natural barriers to prevent fire from burning right to the edge of the lakes.
	Drought	Climate change is the driving factor behind the lakes drying. Increasing temperatures and decreasing rainfall are altering the water regime and increasing salinity. This is changing the ecological character of the lakes and impacting habitat and food sources for the endangered species that rely on this system.	High	This system of lakes is highly susceptible to drying as they are shallow lakes impacted by agricultural industry, particularly the increasing of farm dams which limits water availability.

Great Otway National Park

The Great Otway National Park was established in 1981 and is a region of great biodiversity and cultural heritage. The Great Otway National Park is 103,185 ha of extensive forests and heathlands on much of the southern fall and many northern areas of the Otway Ranges. It also includes coastline between Torquay in the east and Princetown in the west.

The park contains an enormous diversity of life, it encompasses old-growth forests, cool temperate rainforests and wet forest, heathlands, large expanse of essentially unmodified coastline and important marine ecosystems. Seven national and Victorian bioregions are represented within the park and several important water catchments, including the Otway Coast basin.

The Great Otway National Park is habitat for rare and threatened species, including the Long-nosed Potoroo, Southern Brown Bandicoot, Hooded Plover, Anglesea Grevillea and the Metallic Sun-orchid (Parks Victoria, 2009).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Great Otway National Park	Bushfire	Bushfire within the Otway NP has the potential to destroy critical habitat for endangered small mammals, compromise water quality, increase erosion and damage fragile environments. Post event, there would be an increased threat of weeds and invasive species, increased erosion and overall loss of biodiversity.	High	The Otway NP is highly susceptible to bushfire. This is due to its inaccessibility for controlled burning, vegetation communities being highly flammable and high fuel loads.
	Landslide	Landslide in the Otway NP has the potential to damage habitat for flora and fauna, remove productive soil from slopes, cause sedimentation of waterways and block waterways.	High	The Otway NP is highly susceptible to landslide due to the topography and geology of the region. The high bushfire risk also increases the risk of landslide as bushfire can reduce stabilising vegetation and increase surface runoff. (Colls & Miner, 2021)
	Biosecurity – *Phytophthora cinnamomi*	Biosecurity threats, like *Phytophthora cinnamomi,* affect both native and agricultural vegetation and threatened species. There is potential for a catastrophic impact on biodiversity and post event increases in pest animals and weeds.	High	Phytophthora is already present within the Otway NP and due to its easy dispersal, the risk of further spread is high. High rainfall and high recreational use of the Otway NP increase the susceptibility of biosecurity threats.

Port Campbell National Park and Bay of Islands Coastal Park

Port Campbell National Park and Bay of Islands Coastal Park form a linear reserve along 65km of Victoria's coastline. The Park's sheer cliffs, gorges, arches and off shore limestone stacks form one of the most iconic and best known coasts in Australia.

The Park contains some of the largest and most important areas of native vegetation remaining between Portland and the Otways. Important environments include biodiverse heathlands, clifftop grasslands and wetlands which are refuge for a wide range of plants including 8 species of State significance.

The Port Campbell National Park and Bay of Islands Coastal Park is habitat for rare and threatened species, including the Rufous Bristlebird, Swamp Antechinus and Eastern Hooded Plover. (Parks Victoria, 1998)

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why

Port Campbell National Park and Bay of Islands Coastal Park	Bushfire	Bushfire within the Parks has the potential to destroy critical habitat for endangered small mammals, increase erosion and damage fragile environments. Post event, there would be an increased threat of weeds and invasive species, increased erosion and overall loss of biodiversity.	High	The Parks are highly susceptible to bushfire. This is due to some of their vegetation communities being highly flammable and others, if burnt, being significantly damaged.
	Biosecurity – *Phytophthora cinnamomi*	Biosecurity threats, like *Phytophthora cinnamomi,* affect both native and agricultural vegetation and threatened species. There is potential for a catastrophic impact on biodiversity and post event increases in pest animals and weeds.	High	Is in unknown if Phytophthora is currently within the Port Campbell National Park and Bay of Islands Coastal Park. Due to its easy dispersal and high visitation the risk of invasion is high.

Sub-tropical and Temperate Coastal Saltmarsh

Environment Protection and Biodiversity Conservation Act (1999) status – Vulnerable

Sub-tropical and temperate coastal saltmarsh can be found in many locations along the coastline of the Corangamite management unit, in particular there are extensive areas of the community found within the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

The sub-tropical and temperate coastal saltmarsh ecological community consists mainly of salt tolerant vegetation including: grasses, herbs, sedges, rushes and shrubs. Succulent herbs, shrubs and grass generally dominate and vegetation is generally of less than 0.5m height. It is usually found in coastal areas under regular or intermittent tidal influence.

Sub-tropical and temperate coastal saltmarsh provide food resources and habitat to a range of species including crabs, fish and birds. This ecological community provides critical habitat for listed threatened species such as the Orange-bellied Parrot, Green and Golden Bell frog and migratory species such as the Eastern Curlew. (Department of Sustainability, Environment, Water, Population and Communities, 2013)

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Sub-Tropical and Temperate Coastal Saltmarsh	Coastal Storm Surge	Coastal storm surge has the potential to result in landward retreat, transgression by mangroves, fragmentation and loss of habitat or function.	High	As climate change increases sea level and coastal storm surge, saltmarsh will need to retreat landward or migrate. This is a problem because currently there is little space for saltmarsh to migrate due to agriculture and current land use practises.
	Flood	Flooding has the potential to inundate coastal saltmarsh and change the salinity level of the community. Prolonged inundation or a less saline environment can lead to	Low	Saltmarshes are a wetland environment and therefore tolerant of wetting and drying cycles. However, they are susceptible to extreme

		a loss of floristic biodiversity and increased pest plant populations.		flooding and inundation which may become more frequent with a changing climate.
	Bushfire	Bushfire could lead to death and no regeneration of coastal saltmarsh species and damage to soil. Post event would see an increase in invasive weed species.	Medium	Saltmarsh is not well adapted to fire and fire is lethal to many of its species. Susceptibility is medium as increasing invasive weed species that have high fuel loads are putting saltmarsh at risk.

Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain is a type of eucalypt woodland that is restricted to Quaternary basalt soils. The tree canopy is typically dominated by the *Eucalyptus camaldulensis* (River Red Gum) though other eucalypt species may become prominent at wetter or drier sites. The understorey comprises a sparse shrub layer and species-rich ground layer of grasses and herbs.

This ecological community provides habitat for several EPBC listed threatened species; namely Grassland Earless Dragon, Plains Wanderer, Hoary Sunray and the Fragrant Leek-orchid.

Grassy Eucalypt Woodlands are endemic to Victoria and occur in small, fragmented patches across the Victorian Volcanic Plain bioregion in the south-west of the state. Areas of this ecological community can be found between Geelong in the east and Lismore on the western edge of the Corangamite management unit. (Department of the Environment, Water, Heritage and the Arts, 2009)

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Bushfire	Bushfire has the potential to markedly affect the species composition, appearance and functionality of a grassy woodland. Post event, there would be an increased threat of weeds and invasive species, increased erosion and overall loss of biodiversity.	High	Grassy Woodlands are highly susceptible to bushfire as they are adapted to burn. There are limited natural barriers on the VVP to slow a fire down and there is limited controlled burning to reduce fuel loads. Weeds are prevalent across grasslands and increase fuel load dramatically making bushfire burn hotter.

Natural Temperate Grassland of the Victorian Volcanic Plain

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

The Natural Temperate Grassland of the Victorian Volcanic Plain is a complex and inherently variable ecological community. It is mostly dominated by a ground layer of native tussock-forming perennial

grasses interspersed with a variety of herbs, mostly from the daisy, lily, pea and orchid families, occupying spaces among grass tussocks. Large shrubs and trees are absent to sparse.

The Natural Temperate Grasslands support a diversity of animal species including, skinks, snakes, birds of prey and ground-dwelling birds including the threatened Plains Wanderer. The remnants of the ecological community support few native mammal species.

The ecological community is limited to the basalt plain of Victoria and presently has a very restricted geographic distribution. Areas of this ecological community can be found between Geelong in the east and Lismore on the western edge of the Corangamite management unit (Department of the Environment, Water, Heritage and the Arts, 2008).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Natural Temperate Grassland of the Victorian Volcanic Plain	Bushfire	Bushfire has the potential to markedly affect the species composition, appearance, soil and functionality of a grassland. Critical habitat could be lost or changed. Post event, there would be an increased threat of weeds and invasive species, increased topsoil loss and overall loss of biodiversity.	High	Grasslands are highly susceptible to bushfire as they are adapted to burn. There are limited natural barriers on the VVP to slow a fire down and there is limited controlled burning to reduce fuel loads. Weeds are prevalent across grasslands and increase fuel load dramatically making bushfire burn hotter.

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

The White Box – Yellow Box – Blakely's Red Gum Grassy Woodland (henceforth Box Gum Grassy Woodland) is dominated, or was formerly dominated, by a range of eucalypts, most commonly including White Box, Yellow Box or Blakely's Red Gum. The ground layer of this ecological community is dominated by perennial tussock grasses, augmented by a range of forbs. Most of the ecological community's species richness is in the ground layer.

The ecological community also occurs as a "derived grassland", meaning the woodland has lost the characteristic tree layer but retains an intact ground layer.

Box Gum Grassy Woodland is a geographically widespread but highly fragmented, isolated and modified ecological community. Within the Corangamite management unit, the ecological community can be found within the Otway Plains and Central Victorian Uplands bioregions (Department of Environment, Climate Change and Water NSW, 2010).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Bushfire	Bushfire can limit recruitment, cause local extinction of fire sensitive species, increase spread of weed species and threaten fauna populations and habitat features.	High	This ecological community is highly susceptible to bushfire as it is adapted to burn, but not too frequently or too hot. Extensive, hot and frequent burning will disrupt the lifecycle processes, decreasing already limited and isolated areas of Box Gum Grassy Woodland.
	Drought	Drought could contribute to reduction in extent of this ecological community, changed species composition, loss of diversity and changes in understorey structure.	High	Box Gum Grassy Woodlands will be highly susceptible to drought as drier conditions may increase intensity and frequency of fire, which is likely to favour weed species. Decreased resilience will increase fragmentation and isolation of remnant areas which increases loss of species diversity.

Orange-bellied Parrot

Scientific name – *Neophema chrysogaster*

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Orange-bellied Parrot is a small ground-feeding parrot which migrates between Tasmania and south-east mainland Australia annually. The birds breed in Tasmania between November and March, then overwinter on the mainland between April and October. As of December 2023, there were 81* adult birds confirmed returned to breeding grounds in Melaleuca, Tasmania.

The Orange-bellied Parrot appears to be semi-nomadic during winter, moving between food sources and locations. The birds feed on seeds and flowers of low shrubs or prostrate vegetation and are usually found in locations associated with coastal saltmarsh and adjacent pastures, close to free-standing-water bodies.

Within the Corangamite management unit, there is critical known and regularly used habitat for the Orange-bellied Parrot, with the Lake Connewarre complex being of particular importance (Department of Environment, Land, Water and Planning, 2016).

*Number recorded in 2023 census by Orange-bellied Parrot Program - Department of Natural Resources and Environment Tasmania

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Orange-bellied Parrot (*Neophema chrysogaster*)	Flood	Flood has the potential to destroy primary habitat and food sources (coastal saltmarsh). Changed hydrology could impact the native species abundance and increase weed invasion.	High	Primary food sources are usually low-lying coastal saltmarshes, prone to flooding and inundation. Encroaching urban development is increasing storm water runoff into wetland areas.
	Biosecurity - Psittacine Circoviral Disease (PCD)	Potential to injure or kill individual birds.	High	Due to a small and concentrated population, the threat of a virus/disease impacting the OBP survival is high.
	Coastal Storm Surges	Storm surge has the potential to impact primary habitat for the Orange-bellied Parrot, being coastal saltmarsh.	Medium	Coastal storm surges are becoming more frequent as climate change takes effect. Coastal saltmarshes are susceptible to damage from surges, being critical habitat for the OBP means they are susceptible to any loss.

Australasian Bittern

Scientific name – *Botaurus poiciloptilus*

Environment Protection and Biodiversity Conservation Act (1999) status – Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Australasian Bittern is a stocky, thick-necked heron-like bird that occurs mainly in freshwater wetlands. The birds are cryptic and their brown to black mottled feathers aid in their concealment in vegetation. The Australasian Bittern breeds from October to February and appears to be capable of moving between habitats as suitability changes. It can occur in high densities in temporary or infrequently filled wetlands during exceptionally wet years and will also use ephemeral wetlands when moving from areas that are drying out.

The preferred habitat of the Australasian Bittern comprises of wetlands with dense vegetation, especially where there is a mosaic of cover, from 0.5-3.5m in height. They prefer foraging in still, shallow water up to 0.3m deep, particularly areas dominated by sedges, rushes and/or reeds.

In Victoria, the bird is recorded mostly in the southern coastal areas and in the Murray River region of central northern Victoria. Within the Corangamite management unit, the Australasian Bittern has been recorded in the Lake Connewarre complex and in wetlands across the western district.

The current population is estimated to be around 1300 individuals (Department of Climate Change, Energy, the Environment and Water, 2022).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Australasian Bittern	Flood	Loss of suitable habitat and primary food sources.	Medium	High flood waters prevent primary food sources from growing and birds from feeding.
	Bushfire	Has the potential to destroy habitat, food sources and change the depth of the wetland permanently. Increases the threat of weed species and predation via pest animals.	High	Bittern habitat is becoming more susceptible to bushfire with ongoing climate change and wetlands drying out for longer periods of time.
	Drought	Loss of suitable habitat and primary food sources.	Medium	Lack of available wetland areas with suitable water depth poses a risk to the required habitat and food sources for the bittern.

Swift Parrot

Scientific name – *Lathamus discolor*

Environment Protection and Biodiversity Conservation Act (1999) status – Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Swift Parrot is a medium sized, predominately green parrot with a long, maroon pointed tail. The Swift Parrot migrates between Tasmania and the south-eastern Australian mainland annually. During the autumn and winter months, the Swift Parrot forages on flowers and lerps in Eucalypt spp. before flying south to Tasmania to breed during spring and summer in tall eucalypt forests (Mowat, et al., 2021).

The population is estimated to be approximately 750 mature individuals.

The Swift Parrot has been recorded in the Geelong region most years and with greater frequency in recent years. The threatened ecological community, White Box – Yellow Box – Blakely's Red Gum Grassy Woodland, is priority habitat for the Swift parrot and is found within 4 of the Corangamite regional landscape systems (Saunders & Tzaros, 2011).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Swift Parrot	Bushfire	Potential to temporarily destroy foraging habitat and roosting trees. Could potentially lead to greater competition for food and increased predation.	High	Swift Parrots are highly susceptible to bushfire as their critical habitat is highly flammable.

				Bushfires also disrupt food availability.
	Biosecurity - Psittacine Circoviral Disease (PCD)	Potential to injure or kill individual birds.	High	Due to a small and concentrated population, the threat of a virus/disease impacting the Swift Parrot survival is high.

Eastern Hooded Plover

Scientific name – *Thinornis cucullatus cucullatus*

Environment Protection and Biodiversity Conservation Act (1999) status – Vulnerable

Flora and Fauna Guarantee Act (1988) status – Vulnerable

The Hooded Plover is a stocky, medium sized wading bird approximately 100 g in mass. The Hooded Plover inhabits ocean beaches, particularly wide beaches backed by dunes with large amounts of seaweed, creek mouths and inlet entrances. They have been known to occur on near-coastal saline and freshwater lakes and lagoons, tidal bays and estuaries, on rock platforms, or on rocky or sandy reefs close to shore.

The Hooded Plover is largely sedentary and maintains relatively consistent territories from year to year. They breed on or near beaches with nests above the high tide line from August to March. Foraging occurs during the day and at night at all levels of the beach, from the water's edge to the foredune.

The Hooded Plover is widely dispersed on or near sandy beaches in south-eastern Australia and can be found along the coast from the Queenscliff in the east through to Peterborough in the west (Department of Environment, 2014).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Eastern Hooded Plover	Coastal Storm Surge	Potential to cause destruction of nests and suitable habitat.	High	Susceptibility to storm surge is high with increasing frequency and severity. Surges are altering dunes so that they become unsuitable for breeding or habitation.

Eastern Curlew

Scientific name – *Numenius madagascariensis*

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Eastern Curlew is the largest migratory shorebird species in the world with a wingspan of approximately 110 cm and weight around 900 g. An estimated 73% of the Eastern Curlew population spends the non-breeding season in Australia between July and March.

Their preferred foraging habitat includes sheltered intertidal sandflats or mudflats that are open and without vegetation or seagrass. The species also often forages near mangroves, on salt-flats or saltmarsh, around rockpools, amongst rubble on coral reefs, and on ocean beaches near the tideline.

Whilst in Australia, the species distribution is essentially coastal, occurring in sheltered estuaries, mangrove swamps, saltmarshes, and intertidal flats, particularly those with extensive seagrass meadows. The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site regularly supports the Eastern Curlew (Department of Climate Change, Energy, the Environment and Water, 2023).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Eastern Curlew	Drought	Climate change is the driving factor behind wetlands drying. Increasing temperatures and decreasing rainfall are altering the water regime and increasing salinity. This is changing the ecological character of wetlands and impacting habitat and benthic food sources of Eastern Curlew.	High	Eastern Curlew are highly susceptible to drought as suitable wetland foraging and roosting habitat is already under pressure and continuing to decline.

Plains Wanderer

Scientific name – *Pedionomus torquatus*

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Plains Wanderer is a small, quail-like bird that is usually seen singly, particularly during the non-breeding season. The females of the species are more brightly coloured than the males, especially during the breeding season. It occurs at scattered sites in Queensland, NSW, South Australia and Victoria. The north-central region of Victoria is considered the secondary stronghold of the species.

The Plains Wanderer's population size and distribution have markedly declined due to the loss and degradation of sparse, lowland native grasslands which is the preferred habitat. The structure of the grassland is more important than the species composition in determining its suitability for the Plains Wanderer, with the species known to actively avoid areas of dense grass or other vegetation, and exhibit a strong preference for native grasslands with a sparse structure.

Habitat considered critical to the survival of the Plains Wanderer includes the Natural Temperate Grasslands of the Victorian Volcanic Plain (Department of the Environment; Government of South Australia Department of Environment, Water and Natural Resources, 2016).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Plains Wanderer	Bushfire	Can degrade or destroy habitat, increase predation, increase in weed species	High	Plains Wanderers are highly susceptible to bushfire. Their grassland habitat can become dense

				and tall after a bushfire making habitat unsuitable.
	Drought	Overgrazing of native grasslands by domestic livestock can result in temporary displacement of the species from preferred habitat on a local or regional scale, and an increase in rate of mortality.	High	Plains Wanderers are highly susceptible to drought as overgrazing can alter suitable habitat structure.
	Flood	Flooding and the follow-on prolific grass growth can be detrimental to the species as it allows the density and/or height of grass to increase to the point of becoming unsuitable for inhabitation.	High	There is a high susceptibility to flood and heavy rainfall as introduced grasses and weeds can proliferate through Plains Wanderer habitat after the flood making it unsuitable. Flood can also alter the structure of a grassland, which can take up to three years to return to suitable condition for Plains Wanderers.

Pookila / New Holland Mouse

Scientific name – *Pseudomys novaehollandiae*

Environment Protection and Biodiversity Conservation Act (1999) status – Vulnerable

Flora and Fauna Guarantee Act (1988) status – Endangered

The Pookila (New Holland Mouse) is a small, burrowing native rodent that can be distinguished from the introduced house mouse by its slightly larger ears and eyes, absence of notch on the upper incisors and absence of distinctive “mousy” odour.

The Pookila has fragmented distribution across eastern Australia, across its entire range the population size of mature individuals is thought to be less than 10,000. The species is known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes.

The Pookila is known to peak in abundance three to four years after fire during the early to mid stages of vegetation succession. It is likely that the species shelters in burrows during fire, which may allow the species to peak in a relatively short time following fire compared with other species (Threatened Species Scientific Committee (TSSC), 2010).

Within the Corangamite management unit, the Pookila has been recorded around Anglesea, in the Great Otway National Park. The species and their habitat are also likely to occur through large areas of the Great Otway National Park where small mammal refuges have been identified.

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why

Pookila/New Holland Mouse	Bushfire	Bushfire can result in lack of habitat patches of suitable successional age, size and distribution. Bushfire also increases the threat of predation via pest animals.	High	The Pookila is highly susceptible to bushfire due to its highly flammable habitat, low population numbers and fragmented distribution.
	Biosecurity	*Phytophthora cinnamomi* (PC) has the potential to cause decline and change in composition of critical habitat. Post disease, there would be an increased threat of predation and invasion of weed species causing irreparable damage to habitat.	High	The Pookila is highly susceptible to Phytophthora cinnamomi due to its fragile habitat, low population numbers and fragmented distribution. The difficult management of PC also increases the threat of this disease impacting the Pookila.

Southern Bent Wing Bat

Scientific name – *Miniopterus orianae bassanii*

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Southern Bent-wing Bat is currently recognised as a subspecies of the Common Bent-wing Bat and is the largest of the three subspecies. Mating occurs in May-June and majority of the population moves to one of two regularly used maternity caves (one in South Australia and one in Victoria) in September. They will remain in the maternity caves until February-March.

The species requires two key habitats, roost sites and foraging areas. All known roost sites are underground, predominantly in limestone caves but also in lava tunnels, coastal cliff rock crevices and man-made tunnels. Different caves are used seasonally, as the bats seek the appropriate microclimatic conditions. The Southern Bent-wing Bat has a fast, direct flight pattern and typically forages in open spaces, above the canopy in forested areas or in wetlands.

The Southern Bent-wing Bat is an obligate cave dwelling species and is distributed from south-west Victoria through to south-east South Australia. The species has been recorded in Lorne and Pomborneit and within the Great Otway National Park. All populations in Victoria are considered important, as per the National Recovery Plan, due to severe decline in numbers (Department of Environment, Land, Water and Planning, 2020).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Southern Bent Wing Bat	Biosecurity	If disease is introduced to Australia, it has the potential to decimate populations as bats have no immunity and there is currently no treatment.	High	Southern Bent Wing Bat is highly susceptible to introduced disease/virus as populations currently have no immune defence and there is no vaccine or treatment. White Nose Syndrome is of particular concern, although it is not currently in Australia.

	Drought	Drought can potentially cause reduced abundance of prey. It also results in reduced availability of water to drink.	High	Drought is likely to become more frequent and prolonged with climate change. This makes this species highly susceptible as critical wetland habitat dry out, prey is reduced, reproductive success reduces and adult mortality increases.
	Bushfire	Could impact on foraging habitat and prey availability.	High	This species is susceptible to bushfire as the fire will reduce prey availability and vegetation will potentially regenerate with a different structure. Smoke drawn into roosting caves could also negatively impact populations.

Growling Grass Frog / Southern Bell Frog

Scientific name – *Litoria raniformis*

Environment Protection and Biodiversity Conservation Act (1999) status – Vulnerable

Flora and Fauna Guarantee Act (1988) status – Vulnerable

The Growling Grass Frog is a large frog, with colour varying from dull olive to bright emerald-green on the dorsum, with large irregular golden-bronze blotches. The species is active during both the day and night and is highly mobile.

The species is usually found among vegetation within or at the edges of permanent water such as slow flowing streams, swamps, lagoons and lakes. In disturbed areas it also commonly occurs in artificial waterbodies such as farm dams or irrigation channels.

The Growling Grass Frog is endemic to south-eastern Australia and the species occurs throughout much of Victoria. Due to the isolated or fragmented habitat of the species, any viable population of the Growling Grass Frog is considered to be important. Populations of the species have been recorded at the Western District Lakes and Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar sites (Clemann & Gillespie, 2012).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Growling Grass Frog	Biosecurity - Chytridiomycosis	Potential to cause high mortality.	High	Fragmented and isolated populations increase the susceptibility of the species to disease. Disease of particular

				concern is chytridiomycosis.
	Drought	Droughts degrade and reduce habitat, decrease water quality, impact availability of food resources and increase fragmentation of populations.	High	Reduced rainfall, increased average temperatures and more frequent droughts in the future will likely contribute to the loss of previously permanent waterbodies or annually inundated areas. Decline in habitat condition or extent will result in decreased recruitment, reduced dispersal, and possible local extinctions.

Victorian Grassland Earless Dragon

Scientific name – *Tympanocryptis pinguicolla*

Environment Protection and Biodiversity Conservation Act (1999) status – Critically Endangered

Flora and Fauna Guarantee Act (1988) status – Critically Endangered

The Victorian Grassland Earless Dragon (GED) is a small lizard that lacks an external ear opening and functional ear drum. Adult Victorian GED range in size from 50-70mm snout-vent length, with a head to tail length generally less than 150mm.

The species is found in natural temperate grasslands, dominated by wallaby grasses (*Rytidosperma spp.*), spear grasses (*Austrostipa spp*.), tussock grasses (*Poa spp*.) and possibly Kangaroo Grass (*Themeda triandra*). The Victoria GED is known to use rocks and invertebrate burrows as shelter and refuge sites and the availability of these features may be a factor influencing the persistence of the species at some sites.

Historical records of the Victorian GED are from Melbourne City and the Keilor Plains including greater Geelong. Recent records indicate that the species has undergone a severe decrease in its geographic range. Due to the limited number of known sites and reduced distribution, all remaining known occurrences are considered critical habitat. Critical habitat for the Victorian GED, Natural Temperate Grasslands, is a EPBC Act listed critically endangered ecological community (Robertson & Evans, 2009).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Victorian Grassland	Bushfire	Bushfires may damage grasslands by altering vegetation composition and	High	Dry season fires are anticipated to increase in

Earless Dragon		structure, reducing the availability of prey, and increasing mortality.		severity and frequency as climate change impacts progress.
	Drought	Droughts reduce ground cover resulting in exposure to higher temperatures and desiccation that increase mortality rates of eggs and hatchlings and reduce suitable foraging conditions. Over-grazing during drought exacerbates these impacts and increases exposure to predation and spread of weeds.	High	The areas that the GED could occur are regions attractive for native, domestic and introduced grazing animals. The longevity and intensity of droughts in southeast Australia is expected to increase as climate change impacts progress.

Adamson's Blown-grass

Scientific name – *Lachnagrostis adamsonii*

Environment Protection and Biodiversity Conservation Act (1999) status – Endangered

Flora and Fauna Guarantee Act (1988) status – Endangered

Adamson's Blown-grass (*Lachnagrostis adamsonii*) is a grass of the Family Poaceae growing to 70 cm in height and forms delicate, open inflorescences up to 25 cm in length that remain partly enclosed by the upper leaf sheath until late maturity, often drying to a pale golden colour. Leaves grow to 25 cm long and 3.5 mm wide but are often folded or inrolled. The light green or occasionally purple-tinged spikelets are 3–4 mm in length, the upper glume longer than the lower glume. Lemmas are awned from near the apex, the fine awn being straight or gently curved and 0.5–1.5 times the length of the lemma.

The species habitat occurs along slow-moving creeks, depressions and drainage lines that are seasonally inundated or waterlogged and usually moderately to highly saline. The species also appears to prefer sites that have some shelter from the wind.

Adamson's Blown-grass is endemic to south-western Victoria, where it occurs from Clifton Springs near Geelong to near Coleraine. The species was known to occur at 68 locations but with decline and loss of species from many sites, this number is believed to be substantially fewer. Sixteen important populations have been identified, five of these sites can be found within the Corangamite management unit at Barunah, Dereel, Eurack and Moorabool (Murphy, 2010).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Adamson's Blown-grass	Bushfire	Intense bushfire has the potential to affect the soil and regeneration. Critical habitat could be lost or changed. Post event, there would be an increased threat of weeds and increased topsoil loss.	High	With more frequently and longer drought periods, the threat of intense bushfire may increase.
	Drought	Drought has the potential to damage critical wetland habitat and reduce the water table.	High	Adamson's Blown-grass is highly susceptible to drought due to its inability to migrate to other suitable habitat. As our climate is changing, ongoing dry/drought conditions will become more common which will pose a serious threat to remaining limited populations.

5.3 Agricultural Natural Capital Assets

This section of the Emergency Preparedness Plan identifies the Agricultural Natural Capital Assets found within the Corangamite management unit. These assets are the on-farm natural resources that we rely on for food and fibre production, including soil, air, water, riparian areas, remnant native vegetation, agroforestry and environmental plantings and animals.

This Plan focuses on the natural capital assets on Corangamite farms that support agricultural production. Agricultural commodities themselves such as livestock, crops and their quality are beyond the scope of this document.

Information provided for each agricultural natural capital asset includes:

- A description of the asset and its location/s in the Corangamite management unit.
- Identification of emergency scenarios such as bushfires, drought, floods and biosecurity that pose a threat and why.
- An assessment of each asset's current susceptibility to emergency scenarios, assessed as high, medium, or low.

Agricultural Soils

Soil types in the Corangamite management unit reflect the great diversity of their geological origins landforms, climate, age and degree of weathering. Healthy soils support local life in various forms, like agriculture and forestry.

High production soils in the south-west of the region are generally in fair to good condition. However, high fertility, high rainfall, the topography and land-use in these localities make these soils prone to landslides, waterlogging and soil structure decline. These soils are also prone to acidification. Medium production value soils, mostly found on the Victorian Volcanic Plains, are the most widespread soil type in the region. They are generally in average condition (Corangamite Catchment Management Authority, 2022).

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Soils	Bushfire	Bushfire will remove ground cover, exposing soils and potentially leading to topsoil loss via wind and water erosion, scorching and nutrient loss. Bare ground after wildfire can lead to invasion/increase of weed species.	High	Bushfires in most areas of the Corangamite region are difficult to manage or control and can burn for considerable areas, particularly in the southern landscape systems. Vegetation across the management unit creates heavy fuel loads which burn hotter, increasing the risk of scorching and bare ground. Peat soils in the southern area are particularly susceptible and will burn for extended periods of time. Overgrazing of remaining vegetation after fire and supplementary feed can lead to increase of weed populations.
	Flooding	Flooding has the potential to cause sheet, rill and gully erosion in all soil types. Flood can remove topsoil and cause contamination if flood waters are carrying toxic materials.	High	Within the Corangamite management unit there are a number of floodplains, and the northern areas are highly susceptible to sheet and rill erosion. In the south where slopes are steeper, the ranges are highly susceptible to landslide. Increasing urbanisation is reducing the region's natural capacity to cope with excess water.
	Drought	Drought can cause reduction in ground cover, exposing soils and potentially leading to topsoil loss via wind erosion, scorching and nutrient loss. Drought has the potential to increase salinity. Over grazing during drought can lead to invasion/increase of weed species.	High	Drought is predicted to become more common as climate change takes effect.

Water

The waterways of the Corangamite management unit are diverse and complex ecosystems and the lifeblood of many communities. The have unique environmental values, support extensive vegetation communities and their catchments provide our community with water for drinking, irrigation and industry (Corangamite Catchment Management Authority, 2022).

There are approximately 19,600km of waters in the Corangamite management unit and three important Water Supply Proclaimed Areas (WSPA) that supply domestic and farm water to areas within and adjacent to the region.

Regional and local aquifers flow throughout the Corangamite region. Water from these aquifers is pumped out for irrigation, stock and domestic purposes. The quality of this water is important for many rural asset managers across the region (Corangamite Catchment Management Authority, 2014).

This plan will focus on emergency situations that impact waterways like rivers, creeks and streams and include water sources valuable to farms like dams, ground water and irrigation channels.

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Water	Blue-green Algae	Water not suitable for consumption by human or animals.	High	Agriculture is the dominant land use within the Corangamite region, the increasing nutrient load (fertilisers) from farming run off can lead to serious Blue Green Algae outbreaks.
	Drought	Drought directly impacts the available water in the landscape which is vital for growing food and fibre. Drought has the potential to lead to loss of water-reliant flora and fauna (e.g. threatened fish species) and increase pressure on water tables via extraction.	High	Drought is predicted to become more common as climate change take effect.
	Flood	Flooding has the potential to cause sedimentation of waterways and contamination of waterbodies.	High	Erratic and unpredictable weather is making heavy rainfall in short periods of time more common. Increased urbanisation is reducing the region's natural capacity to cope with excess water.
	Bushfire	Water quality after bushfire can decline. Water quantity may decline after bush fire, leading to limited water availability in storage and the landscape.	High	Contamination of waterways and waterbodies can occur from soil, ash, burnt material, erosion, dead livestock and fire retardant. Lack of water quality and quantity will impact agricultural industries.

Vegetation (remnant, native planted, agroforestry and plantation)

In the Corangamite region, vegetation on farms comes in many forms, crops, pasture (native and exotic), riparian areas, revegetation areas, plantations and remnant native vegetation. All of these vegetation types play a role in keeping agriculture in the region healthy and productive.

The native vegetation on farms occurs in remnant or revegetated patches, isolated paddock trees and in riparian zones beside waterways. There is an estimated 66,000ha of remnant vegetation on private

land within the Corangamite region. (Corangamite Catchment Management Authority , 2018) Native vegetation is important for providing habitat and shelter for native and domestic animals. These corridors of vegetation allow for the movement of native animals through the agricultural landscape, reducing the fragmentation and isolation of species.

Agroforestry is enabling farmers to improve the environmental and economic values of their land through the integration of trees and shrubs into the farming landscape.

Vegetation on farms, in all its forms, provide a variety of benefits to agricultural production and for environmental conservation. These benefits include; providing shelter for livestock and native fauna, providing habitat for pollinators, storing carbon, producing timber and rehabilitating unproductive or damaged land.

Asset	Emergency scenario	Why it poses a threat	Susceptibility	Why
Vegetation	Bushfire	Bushfire can lead to loss of biodiversity, increase threat of weed species and perennial/native pasture loss.	High	
	Drought	Drought has the potential to cause increased flora mortality and loss of biodiversity.	High	Drought will cause increased grazing pressure on stressed pasture and native vegetation which could lead to irreversible damage and loss of flora species from the ecosystems. Drought is predicted to become more common as climate change take effect.
	Biosecurity	Biosecurity threats have the potential to cause mass vegetation mortality and loss of biodiversity.	High	Biosecurity threats will impact not just the vegetation and cause negative impacts on the environment but will also impact the health of Victoria's communities and economy. Biosecurity can impact Australia's ability to export which would severely impact our economy.

6 ASSET PREPAREDNESS

6.1 Preparedness actions for protecting Biodiversity assets

This section outlines preparedness actions that could be undertaken for each biodiversity asset to reduce the threat of relevant emergency scenarios such as bushfires, drought, floods, diseases, and pests. Tables for each biodiversity asset include:

- Suggested preparedness actions.
- Where the action should be undertaken.
- The organisation or group that could undertake or is already undertaking the action.

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site	Coast Storm Surge	Currently there is little that can be done to prepare for coastal storm surges. Action is usually in response to an event.	Ocean facing locations: Werribee River/Avalon, Swan Bay, Mud Islands	Best placed: Parks Victoria or Melbourne Water (Werribee River only)	Partially – There is currently planning around the Regional and Strategic Partnership (RaSP) for the Port Phillip Bay Western Shoreline which was established under the Marine and Coastal Act 2018.
	Drought	Water level management in locations where possible	Lake Connewarre complex	Best Placed: CCMA	Yes – managed via CCMA obligations under the Water Act 1989
		Weed and pest animal (rabbit) management for vegetation protection	Whole site	Best Placed: Parks Victoria	Yes – weeds and pest animals controlled through CCMA/PV Ramsar Site On-ground Works Program

Western District Lakes Ramsar Site

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Western District Lakes Ramsar Site	Bushfire	Ecological/fuel management burns for protection of threatened species	Public land at Lake Beeac, Corangamite, Bookar	Best placed: Parks Victoria or CFA	Yes – these sites are not high priority for burning and are often missed.
		Monitor fuel loads	Public land at Lake Beeac, Corangamite, Bookar	Best placed: Parks Victoria	Yes – fuel loads are monitored through CCMA/PV Ramsar Site On-ground Works Program
	Drought	Monitoring of NaCL levels	All 9 lakes	Best Placed: CCMA	Yes – data is collected CCMA EC5 Ramsar Site Management Program and stored in an internal data set

					plus on the CCMA WaterWatch portal.
		Water level management via Woady Yaloak Diversion Scheme.	Lake Corangamite and Lake Gnarpurt	Best Placed: CCMA	Yes – managed via CCMA obligations under the Water Act 1989
		Weed and pest animal (rabbit) management for vegetation protection	All 9 lakes	Best Placed: Parks Victoria	Yes – weeds and pest animals controlled through CCMA/PV Ramsar Site On-ground Works Program

Great Otway National Park

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Great Otway National Park	Bushfire	Weed management	Entire site	Best placed: Parks Victoria	Yes
		Monitor fuel loads	Entire site	Best placed: Parks Victoria or FFMV	Yes
		Planned burning/firebreaks where appropriate	Priority small mammal refuges	Best placed: Parks Victoria or FFMV	Partially – planned burning and fuel breaks are actively used within the Great Otway National Park, but are generally used for town/residential asset protection.
	Landslide	Currently there is little that can be done to prepare for landslide. Action is usually in response to an event.	Areas of high susceptibility	Best Placed:	
		Maintain and update landslide threat/susceptibility mapping	Areas of high susceptibility	Best Placed: Parks Victoria	
	Biosecurity – Phytophthora cinnamomi	Phosphite application – aerial, hand, vehicle	Priority protection areas, small mammal refuges (eg. Carlisle Heath)	Best Placed: Parks Victoria, DEECA	Yes – There is a current permit with AVPMA for Parks Victoria to apply Phosphite as a treatment for *Phytophthora cinnamomic.* This permit was gained via the

					Wild Otways Initiative (program now ended).
		Hygiene training and implementation	Whole of management unit	Best Placed: CCMA	Yes - Phytophthora cinnamomic hygiene training was funded through the Wild Otways Initiative (program ended). Training is still occurring infrequently at request.
		Disease mapping	Entire site	Best Placed: Parks Victoria	Partially - Phytophthora cinnamomic mapping was funded through the Wild Otways Initiative (program ended). Mapping is still occurring in priority locations.

6.1.1 Port Campbell National Park and Bay of Islands Coastal Reserve

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Port Campbell National Park and Bay of Islands Coastal Park	Bushfire	Weed management	Entire site	Best placed: Parks Victoria	Yes
		Monitor fuel loads	Entire site	Best placed: Parks Victoria or FFMV	Yes
		Planned burning/firebreaks where appropriate	Priority vegetation communities and habitat	Best placed: Parks Victoria or FFMV	Partially – planned burning is actively used within Port Campbell National Park and Bay of Islands Coastal Park, but are generally used for town/residential asset protection.
	Biosecurity – Phytophthora cinnamomi	Phosphite application – aerial, hand, vehicle	Priority protection areas; for example heathland	Best Placed: Parks Victoria, DEECA	No
		Hygiene training and implementation	Whole of management unit	Best Placed: CCMA	Yes - Phytophthora cinnamomic

					hygiene training was funded through the Wild Otways Initiative (program ended). Training is still occurring infrequently at request.
		Disease mapping	Entire site	Best Placed: Parks Victoria	

Sub-tropical and Temperate Coastal Saltmarsh

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Sub-tropical and Temperate Coastal Saltmarsh	Coastal Storm Surge	Currently there is little that can be done to prepare for coastal storm surges. Action is usually in response to an event.	N/A	Best placed: Parks Victoria or Land Manager	N/A
	Flood	Currently there is little that can be done to prepare for flood in coastal saltmarsh. Action is usually in response to an event.	N/A	Best Placed: Parks Victoria or Land Manager	N/A
	Bushfire	Weed management	Lake Connewarre complex, Swan Bay	Best Placed: Parks Victoria or Private Landholders	Yes – Weed management of saltmarsh is occurring via CCMA/PV Ramsar Site On-Ground Works program on public land. CCMA Bellarine Peninsula Saltmarsh Restoration Program is funding private landholders on Swan Bay and Lake Connewarre to control weeds on saltmarsh on private land.
		Fire breaks to protect saltmarsh	Priority areas on public land (where possible) – Lake Connewarre Complex, Swan Bay	Best Placed: Parks Victoria or CFA	No

Grassy Eucalypt Woodlands of the Victorian Volcanic Plain

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Bushfire	Ecological/fuel management burns	Priority sites on public land	Best placed: Parks Victoria or FFMV	Yes – Parks Victoria in partnership with WTOAC have been conducting ecological burns with funding through Protecting the Victorian Volcanic Plains Program.

Natural Temperate Grasslands of the Victorian Volcanic Plain

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Natural Temperate Grassland of the Victorian Volcanic Plain	Bushfire	Ecological/fuel management burns	Priority sites on public land	Best placed: CFA	Yes – CFA burn roadsides as part of their fuel reduction burning annually. Parks Victoria in partnership with WTOAC have been conducting ecological burns with funding through Protecting the Victorian Volcanic Plains Program.
		Weed management	Priority sites on public land	Best placed: Parks Victoria or Land Manager	

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Bushfire	Ecological/fuel management burns regime based on recovery plan recommendations	Known locations	Best placed: CFA, DEECA or Land Managers	
		Weed management	Known locations	Best placed: Land Managers, Parks Victoria or DEECA	

	Drought	Weed management	Known locations	Best placed: DEECA, Parks Victoria or Land Manager	

Orange-bellied Parrot

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Orange-bellied Parrot	All	Monitor populations and habitat.	Priority locations: Lake Connewarre	Best placed: Zoos Victoria	Yes – monitoring occurring with funding from CCMA Protecting Priority Threatened Species of the Corangamite Coast and CCMA Tasmanian Threatened Parrot Flyways Program.
		Improving and building resilient habitat via weed control, grazing control	Priority locations: Lake Connewarre	Best placed: Parks Victoria, Private Landholders (in partnership with public land managers)	Yes – was occurring with funding from Protecting Priority Threatened Species of the Corangamite Coast (program ended), work continuing with the CCMA Bellarine Peninsula Saltmarsh Restoration.
	Flood	Currently there is little that can be done to prepare for flood. Action is usually in response to an event.	N/A	Best placed:	N/A
	Biosecurity	Test any dead OBP for threatening diseases	Across known range	Best placed: Zoos Victoria	
	Coastal Storm Surges	Currently there is little that can be done to prepare for coastal storm surges. Action is usually in response to an event.	N/A	Best placed:	N/A

Australasian Bittern

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?

Australasian Bittern	All	Monitor populations and habitat.	Known habitat	Best placed: Birdlife Australia or CCMA	Yes in limited locations – CCMA are monitoring Australasian Bittern habitat in the PPB&BP Ramsar Site via the Ramsar Site Management On-ground works program.
		Improving and building resilient habitat via weed control, grazing control	All known habitat	Best placed: Land Managers, Parks Victoria or Private Landholders (in partnership with public land managers)	
	Flood	Currently there is little that can be done to prepare for flood. Action is usually in response to an event.	N/A	Best placed:	N/A
	Bushfire	Controlled burning/fire breaks for protecting wetlands	Priority locations	Best placed: CFA or FFMV	
		Ecological burning regime based on recovery plan recommendations	Priority locations	Best placed: CFA or FFMV	
	Drought	Water managers are aware of the species water requirements.	Habitat where water level can be controlled	Best placed: CCMA	Yes in limited locations – CCMA are monitoring water level in Bittern habitat in the PPB&BP Ramsar Site via Environmental Water Entitlements.

Swift Parrot

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Swift Parrot	All	Monitor populations and habitat.	Priority habitat	Best placed: Birdlife Australia or Land Manager	Yes – Swift Parrot Search with Birdlife Australia to take place in April and August 2024. Survey of numbers plus rapid habitat assessments.

		Improving and building resilient habitat via on ground action. E.g, weed control	Priority habitat	Best placed: Land Manager	No
	Bushfire	Ecological/controlled burning of habitat to increase species richness and diversity	Known habitat	Best placed: FFMV or CFA	Partially – some Swift Parrot habitat is potentially part of planned burning regimes. Planned burns are not for ecological reasons and may damage critical habitat.
		Controlled grazing of domestic livestock to reduce fuel loads and prevent high intensity bush fire that can damage habitat	Known habitat	Best placed: Land managers or Private Landholders	
	Biosecurity - Psittacine Circoviral Disease (PCD)	Test any dead Swift Parrot for PCD and threatening diseases	Across known range	Best placed: Zoos Victoria	

Eastern Hooded Plover

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Eastern Hooded Plover	All	Monitor populations and habitat.	Known locations and habitat	Best placed: Birdlife Australia or Land Managers	Yes – Birdlife Australia are working in partnership with Land Manager and volunteers as part of the Beach Nesting Bird Project to monitor Hooded Plover populations and habitat along the Victorian coastline.
	Coastal Storm Surge	Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known coastal habitat	Best placed: Parks Victoria, Land managers	Yes - Land Managers like Great Ocean Road Coast and Parks Authority, Parks Victoria or Barwon Coast Committee of Management have coastal habitat

					protection and restoration embedded into their conservation plans.

Eastern Curlew

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Eastern Curlew	All	Monitor populations and habitat.	All known habitat	Best placed: Birdlife Australia or Land managers	Yes – Birdlife Australia conduct regular counts with the assistance of volunteers via the Australian Shorebird Monitoring Project.
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	Best placed: Parks Victoria, Land managers	Yes – Habitat improvement work occurring through CCMA/PV Ramsar Site On-ground Works Program. Australia Shorebird Monitoring Project by Birdlife Australia also works to protect and improve critical habitat.
	Drought	Water managers are aware of the species water requirements.	Known habitat where water levels can be controlled	Best placed: CCMA	

Plains Wanderer

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Plains Wanderer	All	Monitor populations and habitat.	All known populations	Best placed: Zoos Victoria or Land managers	Yes - Zoos Victoria are working with the National Recovery Team and other partners as part of their Fighting Extinction Program to

					support the Plains Wanderer.
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	Best placed: Zoos Victoria or Land managers	Yes - Zoos Victoria are working with the National Recovery Team and other partners as part of their Fighting Extinction Program to support the Plains Wanderer habitat.
	Bushfire	Ecological burning regime based on recovery plan recommendations	All known habitat	Best placed: CFA, DEECA, Traditional Owners	Yes – CCMA in partnership with Wadawurrung Traditional Owners are undertaking cultural burning.
		Controlled grazing for fuel/biomass reduction	All known habitat	Best placed: Private landholders (in partnership with Plains Wanderer expert)	
	Drought	Grazing control/management	All known habitat and populations	Best placed: Private landholders (in partnership with Plains Wanderer expert?	
	Flood	Manage known habitat to build resilience	All known habitat	Best placed: Land managers	Yes - Zoos Victoria are working with the National Recovery Team and other partners as part of their Fighting Extinction Program to support the Plains Wanderer habitat.

Pookila / New Holland Mouse

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Pookila / New Holland Mouse	All	Monitor populations and habitat.	All known populations	Best placed: Zoos Victoria or Parks Victoria	Yes - Zoos Victoria are working partners as part of their

					Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to support the Pookila and determine population trends via long term surveying.
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	<u>Best placed</u>: Zoos Victoria, Parks Victoria or Land Managers	Yes - Zoos Victoria are working with partners as part of their Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to protect Pookila habitat.
	Bushfire	Planned burning/firebreaks where appropriate	Priority small mammal refuges (eg. Carlisle Heath)	<u>Best placed</u>: Parks Victoria or FFMV	
		Appropriate planned burning regimes	Priority small mammal refuges (eg. Carlisle Heath)	<u>Best placed</u>: Parks Victoria or FFMV	
	Biosecurity - Phytophthora cinnamomi	Phosphite application – aerial, hand, vehicle	Priority protection areas, small mammal refuges (eg. Carlisle Heath)	<u>Best Placed</u>: Parks Victoria	Yes – Phytophthora cinnamomi treatment started via the Wild Otways Initiative. This program has now finished but work is continuing and permit for phosphite application valid until 2025
		Hygiene training and implementation	Across the Corangmite management unit	<u>Best Placed</u>: CCMA	Yes – Wild Otways Initiative, program ended June 2023 but work continuing
		Disease mapping	Great Otway National Park	<u>Best Placed</u>: Parks Victoria, DEECA	Yes – Wild Otways Initiative, program ended June 2023 but work continuing.

Southern Bent-wing Bat

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Southern Bent-wing Bat	All	Monitor populations and maternity/roosting caves	All known populations	Best placed: Zoos Victoria	Yes - Zoos Victoria are working with partners as part of their Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to monitor population and maternity/refuge sites.
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	Best placed: Parks Victoria or Land Manager (in partnership with Zoos Victoria)	
	Biosecurity – White-nose Syndrome	Testing of dead bats	Across range	Best Placed: Zoos Victoria	Yes - Zoos Victoria are working with partners as part of their Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to investigate disease, including White-nose Syndrome.
		Hygiene training and hygiene measures implemented for caving community	Whole of management unit	Best Placed: Zoos Victoria	
		Disease mapping	Across range	Best Placed: Zoos Victoria	Yes - Zoos Victoria are working with partners as part of their Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to investigate disease,

					including White-nose Syndrome.
	Drought	Water managers are aware of the species water requirements.	Catchment with known habitat where water levels can be controlled:	Best placed: CCMA	
	Bushfire	Appropriate planned burning regimes	Across range	Best placed: Parks Victoria, FFMV or CFA	

Growling Grass Frog / Southern Bell Frog

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Growling Grass Frog	All	Monitor populations and habitat	All known populations	Best placed: Land Managers	
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	Best placed: Land managers	Partially – weed control in habitat occurring through CCMA/PV Ramsar Site On-ground Works Programs. Although not directly for the benefit of the Growling Grass Frog, work will have beneficial impact to habitat.
	Biosecurity - Chytridiomycosis	Testing of frogs suspected to be infected with Chytridiomycosis	Across range	Best Placed:	
		Disease mapping	Across range	Best Placed: Zoos Victoria	Partially - Zoos Victoria is researching the role of Chytridiomycosis in the decline of frog numbers but not in the Growling Grass Frog species specifically.
	Drought	Water managers are aware of the species water requirements.	Catchment with known habitat where water levels can be controlled:	Best placed: CCMA	Yes in limited locations – CCMA are monitoring water level for species requirements via Environmental Water

					Entitlements management.

Victorian Grassland Earless Dragon

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Victorian Grassland Earless Dragon	All	Monitor populations and habitat	All known populations	Best placed: Zoos Victoria	Yes - Zoos Victoria are working with partners as part of their Fighting Extinction Program and Wildlife Conservation Master Plan 2019-2024 to determine size and location of surviving populations
		Improving and building resilient habitat via on ground action. Eg, weed control or revegetation	All known habitat	Best placed: Land managers	Yes – Critical habitat is being improved or protected via CCMA Protecting the Victorian Volcanic Plains Program. Although work of this program is not specifically for the species, it will benefit survival of the Victorian GED.
	Bushfire	Ecological burning regime based on recovery plan recommendations	Known and potential habitat	Best placed: DEECA or RAP	Partially - CCMA in partnership with WTOAC have been conducting ecological burns with funding through Protecting the Victorian Volcanic Plains Program. Although not specifically for the Victoria GED, this form of burning will benefit the species.

		Controlled grazing for fuel/biomass reduction	Known and potential habitat	Best placed: CCMA, Private landholders (in partnership with land managers)	
		Planned burning/firebreaks where appropriate	Known population locations	Best placed: CFA or DEECA	
	Drought	Grazing control/management	Known and potential habitat	Best placed: CCMA, Private landholders (in partnership with land managers)	

Adamson's Blown-grass

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Adamson's Blown-grass	All	Monitor populations	All known populations	Best placed: DEECA	
		Improving and building resilience of species via weed control	All known populations	Best placed: Land managers or private landholders (in partnership with land managers)	
	Bushfire	Controlled grazing for fuel/biomass reduction	Known and potential habitat	Best placed: Private landholders (in partnership with land managers)	
		Planned burning/firebreaks where appropriate	Known population locations	Best placed: CFA	
	Drought	Grazing control/management	??	Best placed: CCMA, Private landholders (in partnership with land managers	
		Water managers are aware of the species water requirements.		Best placed: CCMA	

6.2 Preparedness actions for protecting Agricultural natural capital assets

This section outlines preparedness actions that could be undertaken for agricultural natural-capital assets in the Corangamite management unit to reduce the threat of relevant emergency scenarios such as bushfires, drought, floods, diseases, and pests. Tables for each asset include:

- Suggested preparedness actions.
- Where the action should be undertaken.
- The organisation or group that could undertake or is already undertaking the action.

Agricultural Soils

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Soils	Bushfire	Fuel reduction/ planned/ecological burning in forests and woodlands	All of management unit	Best placed: CFA, FFMV or Traditional Owners	Yes
		Strategic fuel break maintenance	All of management unit	Best placed: CFA or FFMV	Yes
		Create or maintain fuel breaks on private property	All of management unit	Best placed: Private Landholders	Yes
		Develop and implement property fire plans	All of management unit	Best placed: Private Landholders	Yes
	Flood	Maintain or increase vegetation/groundcover on private and public land	All floodplains	Best placed: Land Managers, Private landholders (in partnership with land managers)	Yes
		Disseminate correct and useful information about preparing for flood and how to protect assets	All of management unit	Best placed: CCMA	
	Drought	Assist with making properties drought resilient	All of management unit	Best placed: CCMA	Yes – Protecting the Environment via On-farm Water Efficiency Project
		Disseminate correct and useful information about coping with drought and how to protect assets	All of management unit	Best placed: Agriculture Victoria or CCMA	
		Promote creating or maintaining healthy waterways and vegetation cover	All of management unit	Best placed: CCMA	Yes – Small Block Big Dreams Project

Water

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Water	Blue-green Algae	Disseminate correct information about the impacts and cause of Blue-green Algae in waterways	All of management unit	Best placed: CCMA	Yes
	Drought	Promote and implement wise use of water sources	All of management unit	Best placed: CCMA	Yes
	Flood	Maintain and/or create riparian buffer zones	All of management unit	Best placed: Private Landholders	Yes – Barwon Flagship Project and the Living

					Moorabool project are large scale riparian rehabilitation projects. The Rivers of Gold, City to Sea and Delivering Integrated Catchment Management for the Gellibrand Projects are working to improve waterway and catchment health.
	Bushfire	Fuel reduction/ planned/ecological burning in forests and woodlands	All of management unit	Best placed: CFA, FFMV or Traditional Owners	Yes
		Maintain strategic fuel breaks	All of management unit	Best placed: CFA, FFMV	Yes

Vegetation (remnant, native planted, agroforestry and plantation)

Asset	Emergency scenario	Actions	Where	Who	Is action current underway?
Vegetation	Bushfire	Invasive weed control to reduce fuel load	All of management unit	Best placed: Land Managers or Private Landholders	Yes
		Fuel reduction/ planned/ecological burning in forests and woodlands	All of management unit	Best placed: CFA, FFMV or Traditional Owners	Yes
		Strategic fuel break maintenance	All of management unit	Best placed: CFA, Parks Victoria or FFMV	Yes
		Create or maintain fuel breaks on private property	All of management unit	Best placed: Private Landholders	Yes
		Develop and implement property fire plans	All of management unit	Best placed: Private Landholders	Yes
	Drought	Promote creating or maintaining healthy waterways and vegetation cover	All of management unit	Best placed: CCMA	Yes – Barwon Flagship Project and the Living Moorabool project are large scale riparian rehabilitation projects. The Rivers of Gold, City to Sea and Delivering

					Integrated Catchment Management for the Gellibrand Projects are working to improve waterway and catchment health.
	Biosecurity	Maintain biosecurity provisions and individual farm biosecurity plans	All of management unit	Best placed: Private Landholders	
		Provide current information about biosecurity risks to agriculture and how to prepare and protect assets	All of management unit	Best placed: Agriculture Victoria	Yes

7 ASSET RESPONSE

7.1 Response actions for protecting Biodiversity assets

This section of the plan outlines the Response and Recovery actions that could be undertaken for CCMA's biodiversity assets in the case of a relevant emergency scenario like bushfire, flood or biosecurity. This section will include where the action would need to be undertaken and who would be best placed to undertake the action.

CCMA have critical tasks/activities to perform in natural emergency mitigation, response (including relief), recovery and assurance & learning. Our primary role is to provide advice and support were directed and collection of data or information during emergency flood events.

During emergency recovery, CCMA has the role of a Recovery Support Agency (RecSA). Our function is emergency recovery assistance, to provide services, personnel or materials to support or assist a Recovery Lead Agency (RecLA) like DEECA or EPA and/or members of the public for nominated recovery activities.

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site	Coastal Storm Surge	Monitor impacts during the event	Ocean facing locations: Werribee River/Avalon, Swan Bay, Mud Islands	Best placed: Parks Victoria
	Drought	Protect vegetation – pest animal (rabbit) and weed control	Whole site	Best placed: Parks Victoria
		Deliver water for the environment if possible	Known locations where water can be managed/delivered	Best placed: CCMA
After event has occurred				

	Coastal Storm Surge	Assessment of the impact	Known impacted site. Locations may vary depending on the direction the beach is facing, swell, current and wind.	Best placed: Parks Victoria Others who could do it:
		Closure of impacted area if required – for example if the site is unsafe and to prevent further impacts	Known impact sites.	Best placed: Parks Victoria Others who could do it:
		Plan for restoration	Known impact sites.	Best placed: Parks Victoria Others who could do it:
	Drought	Ensure on-going pest animal and weed control to protect native vegetation	Whole site	Best placed: Parks Victoria
		Assess and monitor impact to and/or recovery of vegetation	Known impacted sites	Best placed: Parks Victoria
		Plan for restoration (if required)	Known impacted sites	Best placed: Parks Victoria
		Deliver water for the environment	Known locations where water can be managed/delivered	Best placed: CCMA

Western District Lakes Ramsar Site

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Western District Lakes Ramsar Site	Bushfire	Supress fire/s and undertake protection of sensitive areas (locations of threatened species)	Known locations being impacted.	Best placed: CFA or FFMV
	Drought	Protect vegetation – pest animal (rabbit) and weed control	Whole site	Best placed: Parks Victoria
		Monitor water level and quality to assist with management	Whole site	Best placed: CCMA
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Parks Victoria
		Plan for restoration	Known impact sites	Best placed: Parks Victoria
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Parks Victoria
	Drought	Ensure on-going pest animal and weed control to protect native vegetation	Whole site	Best placed: Parks Victoria
		Assess and monitor impact to and/or recovery of vegetation	Known impacted sites	Best placed: Parks Victoria
		Plan for restoration (if required)	Known impacted sites	Best placed: Parks Victoria

		On-going water level and quality monitoring	Whole site	Best placed: CCMA

Great Otway National Park

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Great Otway National Park	Bushfire	Supress fire/s and undertake protection of sensitive areas (locations of small mammal refuges or fire sensitive vegetation)	Known locations being impacted.	Best placed: CFA or FFMV
	Landslide	Monitor impact area damages and size	Known impact sites	Best placed: Parks Victoria or Emergency Services
	Biosecurity	Monitor impact area damages and size	Known impact sites	Best placed: Parks Victoria
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Parks Victoria
		Plan for restoration	Known impact sites	Best placed: Parks Victoria
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Parks Victoria
	Landslide	Assessment of the impact	Known impact sites	Best placed: Parks Victoria or Emergency Services
		Plan for restoration	Known impacted sites	Best placed: Parks Victoria
	Biosecurity – Phytophthora cinnamomi	Assessment of the impact	Known impact sites	Best placed: Parks Victoria
		Plan for restoration	Known impact sites	Best placed: Parks Victoria
		Phosphite application to prevent future damage – aerial, hand, vehicle	Known impact sites and mapped priority protection areas, small mammal refuges	Best placed: Parks Victoria

7.1.1 Port Campbell National Park and Bay of Islands Coastal Reserve

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Port Campbell National Park and Bay of Islands Coastal Reserve	Bushfire	Supress fire/s and undertake protection of sensitive areas (locations of fire sensitive vegetation or critical habitat)	Known locations being impacted.	Best placed: CFA or FFMV
	Biosecurity	Monitor impact area damages and size	Known impact sites	Best placed: Parks Victoria
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Parks Victoria

		Plan for restoration	Known impact sites	Best placed: Parks Victoria
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Parks Victoria
	Biosecurity – Phytophthora cinnamomi	Assessment of the impact	Known impact sites	Best placed: Parks Victoria
		Plan for restoration	Known impact sites	Best placed: Parks Victoria
		Phosphite application to prevent future damage – aerial, hand, vehicle	Known impact sites and mapped priority protection areas, small mammal refuges	Best placed: Parks Victoria

Sub-tropical and Temperate Coastal Saltmarsh

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Sub-tropical and Temperate Coastal Saltmarsh	Coastal Storm Surge	Monitor impacts during the event	Known locations being impacted	Best placed: Parks Victoria, Land Manager
	Flood	Monitor impacts during the event	Known locations being impacted	Best placed: Parks Victoria, Land Manager
	Bushfire	Supress fire/s and undertake protection of threatened areas	Known locations being impacted	Best placed: CFA
After event has occurred				
	Coastal Storm Surge	Assessment of the impact	Known impact sites	Best placed: Parks Victoria
		Plan for restoration	Known impact sites	Best placed: Parks Victoria
	Flood	Assessment of the impact	Known impact sites	Best placed: Parks Victoria or Land Manager
		Plan for restoration	Known impacted sites	Best placed: Parks Victoria or Land Manager
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Parks Victoria or Land Manager
		Plan for restoration	Known impact sites	Best placed: Parks Victoria or Land Manager
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Parks Victoria or Land Manager

Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				

Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Bushfire	Supress fire/s and undertake protection of threatened areas if burn frequency/intensity does not fit requirements of the ecological community	Known locations being impacted	Best placed: CFA or DEECA
		Protect from accidental damage during fire suppression. Example, ensure caution when using machinery for construction of control lines	Known locations being impacted – sites with known threatened flora (i.e. native orchid) populations.	Best placed: CFA or DEECA
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration	Known impact sites	Best placed: Land Manager or DEECA
		Monitor for changes in species composition, appearance and functionality.	Known impact sites	Best placed: Land Manager or DEECA
		Plan and implement post-fire weed and pest animal control	Known impacted sites	Best placed: Land Manager

Natural Temperate Grasslands of the Victorian Volcanic Plain

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Natural Temperate Grassland of the Victorian Volcanic Plain	Bushfire	Supress fire/s and undertake protection of threatened areas if burn frequency/intensity does not fit requirements of the ecological community	Known locations being impacted	Best placed: CFA or DEECA
		Protect from accidental damage during fire suppression. Example, ensure caution when using machinery for construction of control lines	Known locations being impacted – sites with known threatened flora (i.e. native orchid) populations.	Best placed: CFA or DEECA
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration	Known impact sites	Best placed: Land Manager or DEECA
		Monitor for changes in species composition, appearance and functionality.	Known impact sites	Best placed: Land Manager or DEECA
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Land Manager

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Bushfire	Supress fire/s if burn frequency/intensity does not fit requirements of the ecological community	Known locations being impacted	Best placed: CFA or DEECA
	Drought	Exclude stock where possible	Known locations being impacted	Best placed: Land Manager
		Protect vegetation – control pest animals (rabbits)	Known locations being impacted	Best placed: Land Manager
		Monitor impact on vegetation	Known locations being impacted	Best placed: Land Manager
After event has occurred				
	Bushfire	Assessment of the impact	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration	Known impact sites	Best placed: Land Manager or DEECA
		Monitor for changes in species composition, appearance and functionality.	Known impact sites	Best placed: Land Manager or DEECA
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Land Manager
	Drought	Assessment of the impact	Known impact sites	Best placed: Land Manager
		Exclude stock where possible	Known impact sites	Best placed: Land Manager
		Protect vegetation – control pest animals (rabbits)	Known impact sites	Best placed: Land Manager
		Plan for restoration	Known impact sites	Best placed: Land Manager

Orange-bellied Parrot

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Orange-bellied Parrot	Flood	No actions possible		
	Biosecurity - Psittacine Circoviral Disease (PCD)	Test any dead Orange-bellied Parrot	Where they occur	Best placed: DEECA or Zoos Victoria
		Monitor wild and captive populations	Known locations	Best placed: Zoos Victoria
	Coastal Storm Surge	No actions possible		
After event has occurred				
	Flood	Assess impact to Orange-bellied Parrot habitat	Known impact sites	Best placed: Land Manager or DEECA

		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA in consultation with National Recovery Team
		Monitor wild populations	Known locations	Best placed: Zoos Victoria
		Plan and implement post-flood weed and pest animal (fox and cat) control	Known impact sites	Best placed: Land Manager
	Biosecurity - Psittacine Circoviral Disease (PCD)	Test any dead Orange-bellied Parrot	Where they occur	Best placed: DEECA or Zoos Victoria
		Monitor wild and captive populations	Known locations	Best placed: Zoos Victoria
	Coastal Storm Surge	Assess impact to Orange-bellied Parrot habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA in consultation with National Recovery Team
		Monitor wild populations	Known locations	Best placed: Zoos Victoria
		Plan and implement post-flood weed and pest animal (fox and cat) control	Known impact sites	Best placed: Land Manager

Australasian Bittern

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Australasian Bittern	Flood	No actions possible		
	Bushfire	Supress fire/s that threatened habitat	Known locations	Best placed: CFA
		Protect habitat from accidental damage during fire suppression. Example, ensure caution when using machinery for construction of control lines	Known locations	Best placed: CFA or DEECA
	Drought	Protect vegetation – control weeds and pest animals (rabbits)	Known locations	Best placed: Land Manager
		Deliver water for the environment	Known locations where water can be managed/delivered	Best placed: CCMA
		Exclude stock from habitat where possible	Known locations being impacted	Best placed: Land Manager
		Monitor populations	Known locations	Best placed: Land Manager
After event has occurred				
	Flood	Assess impact to Australasian Bittern habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA

		Monitor populations	Known locations	Best placed: Land Manager
		Plan and implement post-flood weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
	Bushfire	Assess impact to Australasian Bittern habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Plan and implement post-fire weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
	Drought	Assess impact to Australasian Bittern habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Ensure ongoing weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
		Deliver water for the environment	Known locations where water can be managed/delivered	Best placed: CCMA
		Exclude stock from habitat where possible	Known locations being impacted	Best placed: Land Manager

Swift Parrot

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Swift Parrot	Bushfire	Protect habitat from accidental damage during fire suppression. Example, prevent loss of habitat trees being felled during control line construction, no backburning with habitat woodlands.	Known locations	Best placed: CFA
	Biosecurity - Psittacine Circoviral Disease (PCD)	Test any dead Swift Parrots	Where they occur	Best placed: DEECA or Zoos Victoria
		Monitor wild populations	Known locations	Best placed: Zoos Victoria
After event has occurred				
	Bushfire	Assess impact to Swift Parrot habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA in consultation with National Recovery Team
		Monitor wild populations	Known locations	Best placed: Land Manager or DEECA
	Biosecurity - Psittacine	Test any dead Swift Parrots	Where they occur	Best placed: DEECA or Zoos Victoria

	Circoviral Disease (PCD)	Monitor wild populations	Known locations	Best placed: Land Manager or DEECA

Eastern Hooded Plover

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Eastern Hooded Plover	Coastal Storm Surge	No actions possible		
After event has occurred				
	Coastal Storm Surge	Assess impact Eastern Hooded Plover habitat	Known impact sites	Best placed: Land Manager
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager
		Monitor wild populations	Known locations	Best placed: Land Manager

Eastern Curlew

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Eastern Curlew	Drought	Protect vegetation – control weeds and pest animals (rabbits)	Known locations	Best placed: Parks Victoria or Land Manager
		Deliver water for the environment	Known locations where water can be managed/delivered	Best placed: CCMA
		Monitor populations	Known locations	Best placed: Land Manager
After event has occurred				
	Drought	Assess impact to habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Ensure ongoing weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
		Deliver water for the environment	Known locations where water can be managed/delivered	Best placed: CCMA

Plains Wanderer

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Plains Wanderer	Bushfire	Supress fire/s that threaten habitat areas if burn frequency/intensity does not fit requirements for increasing species richness and biodiversity	Known locations	Best placed: CFA

		Protect habitat from accidental damage during fire suppression. Example, do not put mineral earth control line through known populations	Known locations	Best placed: CFA or DEECA
	Drought	Protect vegetation – control weeds and pest animals (rabbits)	Known locations	Best placed: Land Manager
		Exclude stock from habitat where possible	Known locations being impacted	Best placed: Land Manager
		Monitor populations	Known locations	Best placed: Land Manager
	Flood	No actions possible		
After event has occurred				
	Bushfire	Assess impact to Plains Wanderer habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Plan and implement post-fire weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
	Drought	Assess impact to Plains Wanderer habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Ensure ongoing weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
		Exclude stock from habitat where possible	Known locations being impacted	Best placed: Land Manager
	Flood	Assess impact to Plains Wanderer habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager

Pookila / New Holland Mouse

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Pookila/New Holland Mouse	Bushfire	Supress fire/s that threatened habitat areas if burn frequency/intensity does not fit requirements for increasing species richness and biodiversity	Known locations	Best placed: CFA

		Protect priority habitat from accidental damage during fire suppression. Example, do not put mineral earth control line through known populations	Known locations	Best placed: CFA
	Biosecurity – Phytophthora cinnamomi	Monitor impact area damages and size	Known impact sites	Best placed: Parks Victoria
		Monitor populations	Known locations	Best placed: Parks Victoria
After event has occurred				
	Bushfire	Assess impact to Pookila habitat	Known impact sites	Best placed: Parks Victoria
		Plan for restoration of habitat	Known impact sites	Best placed: Parks Victoria in consultation with the National Recovery Team
		Monitor populations	Known locations	Best placed: Parks Victoria in consultation with the National Recovery Team
		Plan and implement post-fire weed and pest animal (fox and cat) control	Known impact sites	Best placed: Parks Victoria
	Biosecurity – Phytophthora cinnamomi	Assess impact to Pookila habitat	Known impact sites	Best placed: Parks Victoria
		Plan for restoration of habitat	Known impact sites	Best placed: Parks Victoria
		Monitor populations	Known locations	Best placed: Parks Victoria

Southern Bent-wing Bat

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Southern Bent-wing Bat	Biosecurity – White Nose Syndrome	Monitor populations for spread of disease	Known locations	Best placed: DEECA or Zoos Victoria
		Close known roosting and maternity caves to public access to stop/slow spread of disease	Known locations	Best placed: Land Manager
	Drought	Deliver water for the environment to known wetland foraging habitat	Known locations where water can be managed/delivered	Best placed: CCMA
		Monitor populations	Known locations	Best placed: Zoos Victoria
	Bushfire	Supress fire/s that threatened roosting or maternity caves	Known locations	Best placed: CFA
After event has occurred				

	Biosecurity – White Nose Syndrome	Assess impact to Southern Bent-wing Bat populations	All known populations	Best placed: Zoos Victoria in consultation with the National Recovery Team
	Drought	Assess impact to foraging habitat (particularly wetlands)	Known impact sites	Best placed: Land Manager
		Plan for restoration of foraging habitat	Known impact sites	Best placed: Land Manager in consultation with National Recovery Team
		Monitor populations	Known locations	Best placed: Zoos Victoria in consultation with the National Recovery Team
	Bushfire	Assess impact to Southern Bent-wing Bat populations	All known populations	Best placed: Zoos Victoria in consultation with the National Recovery Team
		Plan for restoration of foraging habitat	Known impact sites	Best placed: Land Manager in consultation with National Recovery Team

Growling Grass Frog / Southern Bell Frog

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Growling Grass Frog	Biosecurity – Chytridiomycosis	Monitor populations for new outbreak or spread of disease	All known locations	Best placed: Land Manager or Zoos Victoria
		Monitor the impact of the disease on populations	Known locations	Best placed: Zoos Victoria or DEECA
		Maintain healthy disease-free assurance colonies in captivity		Best placed: Zoos Victoria
	Drought	Deliver water for the environment to known habitat	Known locations where water can be managed/delivered	Best placed: CCMA
		Monitor populations	Known locations	Best placed: Land Managers
After event has occurred				
	Biosecurity – Chytridiomycosis	Assess impact to populations	All known impacted populations	Best placed: Zoos Victoria
		Assess need for re-introductions and translocations		Best placed: Zoos Victoria
		Monitor populations for new outbreak or spread of disease	All known populations	Best placed: Land Manager or Zoos Victoria

	Drought	Assess impact to habitat	Known impact sites	Best placed: Land Manager
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager
		Monitor populations	Known locations	Best placed: Land Manager

Victorian Grassland Earless Dragon

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Victorian Grassland Earless Dragon	Bushfire	Supress fire/s that threaten habitat areas if burn frequency/intensity does not fit requirements for increasing species richness and biodiversity	Known locations	Best placed: CFA
		Protect habitat from accidental damage during fire suppression. Example, do not put mineral earth control line through known populations	Known locations	Best placed: CFA or DEECA
	Drought	Protect vegetation – control weeds and pest animals (rabbits)	Known locations	Best placed: Land Manager
		Exclude stock from habitat where possible	Known locations	Best placed: Land Manager
		Monitor populations	Known locations	Best placed: Land Manager or Zoos Victoria
After event has occurred				
	Bushfire	Assess impact to habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Plan and implement post-fire weed and pest animal control	Known impact sites	Best placed: Land Manager
	Drought	Assess impact to habitat	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration of habitat	Known impact sites	Best placed: Land Manager or DEECA
		Monitor populations	Known locations	Best placed: Land Manager
		Ensure ongoing weed and pest animal control	Known impact sites	Best placed: Land Manager
		Exclude stock from habitat where possible	Known locations being impacted	Best placed: Land Manager

Adamson's Blown-grass

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Adamson's Blown-grass	Bushfire	Supress fire/s that threaten populations	Known locations	Best placed: CFA
		Protect populations from accidental damage during fire suppression. Example, do not put mineral earth control line through known populations	Known locations	Best placed: CFA or DEECA
	Drought	Control weeds and pest animals (rabbits)	Known locations	Best placed: Land Manager
		Exclude stock from populations where possible	Known locations	Best placed: Land Manager
		Monitor populations	Known locations	Best placed: Land Manager
		Deliver water for the environment	Known populations where water can be managed/delivered	Best placed: CCMA
After event has occurred				
	Bushfire	Assess impact to populations	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration	Known impact sites	Best placed: Land Manager or DEECA
		Exclude stock from populations where possible	Known impact site	Best placed: Land Manager
		Plan and implement post-fire weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
	Drought	Assess impact to populations	Known impact sites	Best placed: Land Manager or DEECA
		Plan for restoration	Known impact sites	Best placed: Land Manager or DEECA
		Ensure ongoing weed and pest animal (rabbit) control	Known impact sites	Best placed: Land Manager
		Exclude stock from populations where possible	Known impact sites	Best placed: Land Manager

7.2 Response actions for protecting Agricultural natural capital assets

This section of the plan outlines the Response and Recovery actions that could be undertaken for CCMA's agricultural natural capital assets in the case of a relevant emergency scenario like bushfire, flood or biosecurity. This section will include where the action would need to be undertaken and who would be best placed to undertake the action.

The responsibility for the overall coordination of response to agricultural emergency rests with Emergency Management Victoria (EMV). Under state arrangements, through DEECA, Agriculture Victoria has a lead role in implementing agriculture response activities which includes responsibilities outlined in the SEMP. Agriculture Victoria is a group within DEECA with a focus on supporting agriculture to prepare for and recover from agricultural emergencies.

DEECA (Ag Vic) is the key support agency that takes a lead role in the provision of agricultural response, relief and recovery services to primary producers across all hazards. DEECA (Ag Vic) is a control agency for biosecurity emergencies affecting agriculture.

The responsibility for overall coordination of agricultural emergency recovery in Victoria rests with Emergency Recovery Victoria (ERV). ERV also has the responsibility for regional coordination of recovery while coordination of recovery at a local level is the responsibility of municipal councils. Every recovery activity has a Victorian Government lead agency (RecLA), often with several other agencies (RecSAs) supporting them. (State of Victoria, 2023)

During emergency events impacting agricultural natural capital, CCMA have critical tasks/activities to perform in natural emergency mitigation, response (including relief), recovery and assurance & learning. Our primary role is to provide advice and support were directed and collection of data or information during emergency flood events.

During emergency recovery phase, CCMA are a Recovery Support Agency (RecSA). CCMA's function is emergency recovery assistance, to provide services, personnel or materials to support or assist a Recovery Lead Agency (RecLA) like DEECA or EPA and/or members of the public for nominated recovery activities.

Agricultural Soils

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Agricultural Soils	Bushfire	Supress fire/s where known asset is threatened	At known impact sites	Best placed: CFA
		Implement fire control lines and back-burning where required and protect asset from accidental damage during these activities	At known impact sites	Best placed: CFA or Private Landholders
		Monitor impacts as event progresses	At known impact sites	Best placed: Emergency Services and/or Emergency Management Victoria
	Flood	Disseminate correct and current information about flood waters progression, levels, expected peak, etc	Whole of management unit	Best placed: Emergency Services and/or Emergency Management Victoria in consultation with CCMA
		Provide support where possible, for example allocate materials in a communal space for sandbagging	At known impact sites	Best placed: Emergency Services or Local Government
		Monitor impacts as event progresses	At known impact sites	Best placed: CCMA

	Drought	Disseminate correct and useful information about coping with drought and how to protect assets	Whole of management unit	Best placed: Agriculture Victoria or CCMA
		Provide support where possible, for example supplementary feed for stock, assistance with fencing to protect sensitive areas	At known impact sites	Best placed: Agriculture Victoria or CCMA
		Monitor impacts as event progresses	At known impact sites	Best placed: CCMA
After event has occurred				
	Bushfire	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Rapid reinstatement of damaged fencing	Known impact sites	Best placed: Private Landholder, CFA, FFMV or Agriculture Victoria
		Plan for restoration – reinstatement of healthy ground cover	Known impact site	Best placed: Private Landholder, Agriculture Victoria or CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
	Flood	Assessment of impact	Known impact sites	Best placed: Private Landholder or CCMA
		Rapid reinstatement of damaged fencing	Known impact sites	Best placed: Private Landholder
		Plan for restoration – design erosion control	Known priority impact sites	Best placed: CCMA
		Implement erosion control	Known priority impact sites	Best placed: CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
	Drought	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Plan for restoration – reinstatement of healthy ground cover	Known impact site	Best placed: Private Landholder, Agriculture Victoria or CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria

		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria

Water

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Water	Blue-green Algae	Monitor impacts as event progresses	At known impact sites	Best placed: CCMA
		Disseminate correct and current information about Blue-green Algae health risks, where the bloom is occurring, etc	Whole of management unit	Best placed: CCMA
		Close waterways/waterbodies impacted by bloom	At known impact sites	Best placed: CCMA or Land Managers
	Flood	Disseminate correct and current information about flood waters progression, levels, expected peak, etc	Whole of management unit	Best placed: Emergency Services and/or Emergency Management Victoria in consultation with CCMA
		Monitor impacts as event progresses	At known impact sites	Best placed: CCMA
	Drought	Disseminate correct and useful information about wise water use and how to protect water assets	Whole of management unit	Best placed: Agriculture Victoria or CCMA
		Provide support where possible, for example assistance with fencing to protect sensitive waterways or wetland areas	At known impact sites	Best placed: Agriculture Victoria or CCMA
		Monitor impacts as event progresses	At known impact sites	Best placed: CCMA
	Bushfire	Monitor impacts as event progresses	At known impact sites	Best placed: Emergency Services and/or Emergency Management Victoria
		Supress fire/s where known asset is threatened	At known impact sites	Best placed: CFA
		Implement fire control lines and back-burning where required and protect asset from accidental damage during these activities	At known impact sites	Best placed: CFA or Private Landholders
After event has occurred				
	Blue-green Algae	Assessment of impact	Known impact sites	Best placed: CCMA

	Flood	Assessment of impact	Known impact sites	Best placed: Private Landholder or CCMA
		Rapid reinstatement of damaged fencing	Known impact sites	Best placed: Private Landholder
		Plan for restoration – design erosion control	Known priority impact sites	Best placed: CCMA
		Implement erosion control	Known priority impact sites	Best placed: CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
	Drought	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
	Bushfire	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Rapid reinstatement of damaged fencing to protect waterways and/waterbodies	Known impact sites	Best placed: Private Landholder, CFA, FFMV or Agriculture Victoria
		Plan for restoration – reinstatement of healthy ground cover	Known impact site	Best placed: Private Landholder, Agriculture Victoria or CCMA

Vegetation (remnant, native planted, agroforestry and plantation)

Asset	Emergency scenario	Actions	Where	Who
While event is occurring				
Vegetation	Bushfire	Supress fire/s where known asset is threatened	At known impact sites	Best placed: CFA or FFMV
		Implement fire control lines and back-burning where required and protect asset from accidental damage during these activities	At known impact sites	Best placed: CFA, FFMV or Private Landholders
		Monitor impacts as event progresses	At known impact sites	Best placed: Emergency Services and/or Emergency Management Victoria

	Drought	Disseminate correct and useful information about coping with drought and how to protect assets	Whole of management unit	Best placed: Agriculture Victoria or CCMA
		Provide support where possible, for example supplementary feed for stock, assistance with fencing to protect sensitive areas	At known impact sites	Best placed: Agriculture Victoria or CCMA
		Monitor impacts as event progresses	At known impact sites	Best placed: CCMA
	Biosecurity	Monitor spread or new outbreaks	Whole of management unit	Best placed: Agriculture Victoria
		Implement biosecurity response plans for eradication or containment	At known impact sites	Best placed: Agriculture Victoria
		Disseminate correct information about the threat and how to protect assets	Whole of management unit	Best placed: Agriculture Victoria
After event has occurred				
	Bushfire	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Rapid reinstatement of damaged fencing	Known impact sites	Best placed: Private Landholder, CFA, FFMV or Agriculture Victoria
		Plan for restoration – reinstatement of vegetation via natural regeneration or revegetation	Known impact site	Best placed: Private Landholder or CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
	Drought	Assessment of impact	Known impact sites	Best placed: Private Landholder or Agriculture Victoria
		Plan for restoration – reinstatement of vegetation via natural regeneration or revegetation	Known impact site	Best placed: Private Landholder or CCMA
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria

	Biosecurity	Assessment of impact	Known impact sites	Best placed: Agriculture Victoria
		Provide recovery programs where possible	Known impact sites	Best placed: Agriculture Victoria
		Provide technical advice to farm businesses and primary producers on re-establishment or alternative strategies	Known impact sites	Best placed: Agriculture Victoria
		Continue to monitor for new outbreaks	Whole of management unit	Best placed: Agriculture Victoria

8 COMMUNITY/STAKEHOLDER ENGAGEMENT

This section outlines CCMA's approach to developing and communicating this plan to stakeholders, including how we will support (and integrate this plan into) Commonwealth, state and territory government efforts to identify and incorporate biodiversity and agricultural natural-capital assets into emergency response management and planning systems.

8.1 Engagement, Collaboration and Coordination activities

CCMA has over 25 years' experience working with stakeholders and building strong resilient relationships. We have created excellent relationships built on trust and co-operation with emergency services, biodiversity and sustainable agriculture stakeholders and First Nations People in the Corangamite management unit.

The approach used by CCMA to develop and communicate this plan to stakeholders has included:

- Providing initial information about the project to stakeholders via meetings (in-person and online), phone calls and email in January 2024.
- CCMA assessed the ideal level of involvement of stakeholders against the IAP2 spectrum for public participation.
- Providing stakeholders with early indications of advice or input that may be asked for and inviting feedback on preferences regarding stakeholder method of engagement in January and February 2024.
- Provide information via existing forums that stakeholders are already involved with and meet regularly. Examples include DEECA and Parks Victoria working group meetings for Barwon South-West, regular liaison with Local government agencies including GORCAPA and Regional Floodplain Committee meetings.
- Providing multiple and flexible opportunities for input, plus targeted contributions sort at key points during the development process. This includes CCMA inviting stakeholders to provide feedback on:
    - The draft list of biodiversity and agricultural natural capital assets proposed for inclusion in the Plan during January and February 2024.
    - Initial information describing each asset and the appropriate preparedness, response and recovery actions during February and March 2024.
    - The full draft Plan and mapping in April 2024.

Stakeholders have been providing valuable feedback that has been guiding the development of the draft Plan. Meetings, emails and discussions with stakeholders like Agriculture Victoria, DEECA Threatened Species/Natural Environment and Forest Fire Management Victoria are helping to define and shape the preparedness, response and recovery actions detailed in the Plan.

CCMA have drawn on relevant existing information developed in partnership with stakeholders in the development of this Plan. For example, the *Corangamite Regional Catchment Strategy* and *Corangamite RLP Natural Resource Management Plan*. These plans describe the region's desired outcomes and priority assets, identified in partnership with regional biodiversity, sustainable agriculture stakeholders and First Nations People.

8.2 Supporting Commonwealth, state and territory government in future response to extreme events

The creation of an emergency preparedness and response plan for the CCMA that identifies the management unit's biodiversity and agricultural natural capital assets will help to support the Commonwealth, state and territory governments efforts in future response to extreme events.

This plan will identify Corangamite's biodiversity and natural capital assets and the extreme events that could and/or will impact them, this information will be shared with government openly throughout the plan's creation process on completion. This will allow the government to identify the priority assets within the Corangamite region, but also those assets that cross boundaries of neighbouring CMA's, ensure that local CMA and Commonwealth and state government asset information is in alignment and identify gaps in knowledge and mapping of these assets.

By working with multiple, relevant stakeholders throughout the emergency preparedness and response plans development, CCMA will ensure that our preparedness, response and recovery actions are cohesive and integrated with neighbouring CMA's and emergency response authorities like Forest Fire Management Victoria and Emergency Management Victoria. Commonwealth, state and territory governments will then have open access to these actions through the submission of the draft and final plans. The actions laid out in the plan will support interstate and national response to future emergency events by clearly defining the role and actions of the CCMA in the case of an event that impacts the Corangamite and surrounding regions.

Collaboration with emergency agencies and other NRM management authorities to align biodiversity and agricultural natural capital asset mapping across the Corangamite management unit and neighbouring CMA areas will help to consolidate and improve the state governments understanding of priority assets, their location and vulnerability to extreme events.

Using mapping and data already available to CCMA, we will promote and identify our biodiversity and agricultural assets to assist the future preparedness and response to extreme events at a local and regional scale. Recently, CCMA have influenced the preparedness for and response to bushfire in relation to EPBC listed small mammals within the Great Otway National Park as part of the Wild Otways Initiative. The research and mapping of refuges for small mammals like the Swamp Antechinus and Southern Brown Bandicoot was shared with Forest Fire Management Victoria and Parks Victoria to improve the approach for protecting our threatened small mammals during planned burning activities and wildfire response. This led to direct action during a planned burning operation in the form of targeted water bombing of a refuge gully in the Otway ranges in order to protect Swamp Antechinus habitat and prevent damage to the tiny refuge from fire.

CCMA plan to use learning from the sharing of this information and its implementation in the stakeholder engagement phase of this plan. We can draw on our significant experience in interagency collaboration to provide the Commonwealth and State government the information needed to guide future planning and response actions to extreme events that will impact our management unit and those surrounding us.

This process of creating a new emergency preparedness and response plan will also support the Commonwealth, state and territory government to identify knowledge gaps and areas where more

information is required. This will shape where future resources from government can be directed to best improve our knowledge and data on the impact and response of extreme events on our assets.

8.3 Raising Public Awareness

After the Plan has been finalised and approved, CCMA will promote it to the public via CCMA's website and social-media platforms.

Beyond the life of this project, additional funding will be required to raise public awareness.

8.4 Education and Training

CCMA will encourage emergency management authorities to incorporate the Plan into their education and training programs. CCMA will actively promote our biodiversity and agricultural natural capital assets and the emergency management information and/or data relevant to emergency services and agencies like Forest Fire Management Victoria, Agriculture Victoria or DEECA (Threatened Species/Natural Environment) to assist in the improvement of our statewide and regional preparedness and response to extreme events.

8.5 Key gaps

This section of the Plan identifies gaps in the preparedness, response and recovery actions for biodiversity and agricultural natural capital assets.

General gaps that have been identified by CCMA and stakeholders are listed below.

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Funding to support ongoing implementation, improvement and promotion of this Plan is a key gap.

9 LEGAL FRAMEWORK

9.1 Emergency management

The *Victorian Emergency Management Act 2013* (EM Act) establishes Victoria's emergency management framework. The State Emergency Management Plan (SEMP) is authorised through the EM Act which contains provisions providing for the mitigation of, response to and recovery from emergencies, and specifies the roles and responsibilities of agencies in relation to emergency management.

The *EM Act* requires the preparation of regional emergency management plans (REMPs) by Regional Emergency Management Planning Committees (REMPC)and approved by the Emergency Management Commissioner.

EM Act: https://www.legislation.vic.gov.au/in-force/acts/emergency-management-act-2013/021
SEMP: https://www.emv.vic.gov.au/responsibilities/state-emergency-management-plan-semp

Barwon South West Regional Emergency Management Plan

This Regional Emergency Management Plan (REMP) has been prepared by the Barwon South West Regional Emergency Management Planning Committee (REMPC) and is approved by the Emergency

Management Commissioner. There are also Municipal Emergency Management Planning Committee (MEMPCs) which are comprised of representatives from the municipal councils.

The Emergency Management Act 2013 (External link) requires each REMPC to develop and maintain a comprehensive emergency management plan (Plan) for the region that seeks to reduce:

- the likelihood of emergencies;
- the effect of emergencies on communities; and
- the consequences of emergencies for communities

This plan supports holistic and coordinated emergency management arrangements within the region. It is consistent with and contextualises the State Emergency Management Plan (SEMP). The REMP is a subordinate plan to the SEMP. (Barwon South West Regional Emergency Management Committee, 2023)

Occupational Health and Safety

CCMA is firmly committed to the effective management of occupational health, safety and wellbeing of all our employees, board members, those contracted to perform work on behalf of the CCMA, volunteers and visitors to the Authority's premises and locations where work and activities are being carried out.

The CCMA is committed to provide safe and healthy working conditions for the prevention of work-related injury and ill health. This commitment incorporates the mental health and wellbeing of employees.

Our Occupational Health and Safety Policy underpins this commitment and aims to minimise the risk of injury and illness to our employees through an occupational health and safety system that provides for the identification and assessment of hazards and risks, consultation, education and monitoring of the work environment and work sites and providing the resources for its successful implementation and continuous improvement.

CCMA is committed to meeting its obligations under the Occupational Health and Safety Act 2004 and the Workers Compensation Act 1987.
We are achieving our commitment by:

- Identifying and assessing hazards and risks
- Aiming to eliminate hazards or put in place effective controls to reduce OHS risks
- Integrating OHS into all organisational activities
- Fostering consultation within the CCMA
- Undertaking OHS reporting at all levels throughout the organisation (including positive performance indicators) by providing information relevant to the audience
- Educating employees on health and wellbeing practices
- Ensuring our OHS Committee is energised and meets regularly
- Viewing OHS compliance as our baseline safety target
- Encouraging a proactive hazard and incident reporting culture
- Providing an effective rehabilitation and return to work for injured employees
- Providing appropriate information, instruction, training and supervision
- Providing adequate and safe plant, facilities, equipment and protective clothing
- Driving continual improvement by ongoing review of safety system effectiveness
- OH&S Committee and Management monitoring Worksafe's direction and current priorities

Environment Protection

Matters of National Environmental Significance

The *Environment Protection and Biodiversity Conservation* Act 1999 (EPBC Act) and regulations are Australia's main national environmental legislation. (Department of Climate Change, Energy, the Environment and Water, 2023)

The EPBC Act helps to:

- protect the environment, especially protected matters
- conserve our biodiversity - the variety of all life forms in Australia
- protect and manage our important natural and cultural places
- assess the environmental impact of projects, and decide whether to approve them
- control how plants and animals, including specimens and products, move in and out of Australia
- promote ecologically sustainable development through careful use of our natural resources
- appreciate the role of Indigenous peoples in protecting and sustainably using the environment
- promote using Indigenous peoples' knowledge, with their permission and cooperation.

State Flora & Fauna

The Flora and Fauna Guarantee Act 1988 (the FFG Act) is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes.

The FFG Act places importance on prevention to ensure that more species do not become threatened in the future. The Act emphasises the importance of cooperative approaches to biodiversity conservation and recognises that all government agencies and the community need to participate in the conservation effort.

The Act's objectives aim to conserve all of Victoria's native plants and animals. (State Government of Victoria, 2024)

10 RISK MANAGEMENT INCLUDING MITIGATION STRATEGIES

This section outlines the key overarching risks associated with the implementation of this Plan's actions and how they can be mitigated.

Table 1 outlines the key overarching risks associated with implementation of preparedness, response and recovery actions for biodiversity and agricultural natural-capital assets, and risk mitigation actions.

Ratings for the likelihood, consequence and overall risk were assigned using the CCMA Protocols and Resources Document for Regional NRM Incidents and CCMA Risk Management Framework.

Table 1: Key overarching risks associated with implementation of asset preparedness and response actions.

Risk	Likelihood	Consequence	Risk Rating	Risk mitigation action	Residual risk
The health, safety and wellbeing of employees or contractors is impacted by	Unlikely	Catastrophic	High	The philosophy of protecting life and property will take precedence.	Moderate

their role in responding to an emergency event.				Emergency services training and accreditation pathways are implemented.	
Unintended ecosystem destruction occurs because of emergency response actions.	Unlikely	Moderate	Moderate	Preparedness plan is provided to emergency services agencies for use in incident control centres. The plan is socialised through REMPC and MEMPCs.	Low
Resources are not available to implement this Plan.	Unlikely	Moderate	Moderate	A partnership approach is used through CMA collaboration, REMPC and MEMPC to ensure actions are met.	Low
Public communication fails	Possible	Minor	Medium	Preparedness plan is provided to emergency service agencies including communications teams for use in incidents. Early establishment of information sharing pathways with community.	Low
Emergency services communications regarding the Plan failure	Unlikely	Moderate	Moderate	CCMA participates in Regional and Municipal Emergency Management Planning Committees.	Low
Inability to retain and capture relevant corporate knowledge and skills including NRM outcomes	Very Likely	Moderate	High	Information storage via electronic and hard copy systems, as well as staff training and internal/external communications	Medium
Technological systems fail	Possible	Severe	High	CCMA ICT Disaster Recovery Plan Procedure is put in place.	Medium
The Plan is not implemented by emergency services organisations.	Unlikely	Moderate	Moderate	Seek funding to implement the plan.	Low

11 MONITORING AND DATA

This section outlines the nature of data collected or used as part of this Plan and how it will be accessed, shared, analysed and stored by CCMA and accessible to the Australian Government.

Table 2 below describes what data has been utilised, whether it is held publicly or privately and how it can be viewed online, accessed and downloaded. CCMA has included maps in Appendix 1 and 2 for each of the assets and susceptibility to bushfire and flood. The maps are categorised into landscape system within the Corangamite Management Unit, being Basalt Plains, Bellarine Surf Coast, Otway Coast, Barwon Plain, Heytesbury, Western District Lakes, Northern Uplands and Cities Ballarat and Cities Geelong.

All data utilised for information in this Plan (including mapping) was already available to the CCMA (whether publicly available or had been previously sourced). All data is able to be shared upon request with federal or state government departments and agencies.

Table 2: Data source summary

Data Source	Description	Private or Public

Victorian Biodiversity Atlas	The VBA is the primary data source for flora and fauna sightings including threatened species across Victoria for the full period of record. Anyone observing a threatened species can submit their observations and have them uploaded to the atlas once verified by DEECA administrators. Organisations implementing this Plan and undertaking emergency preparedness, response and recovery activities can access and view VBA species locations, which are publicly available online: • VBA: https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas. • DEECA's Naturekit Victoria mapping tool: https://www.environment.vic.gov.au/biodiversity/naturekit. • The data can be downloaded from: https://www.data.vic.gov.au/. These are the preferred sources of species observations as they are the most up-to-date and are user-friendly and fit for purpose. CCMA has also utilised 'restricted' VBA data which is only accessible from the VBA on request/not for the general public. These are species that are likely to be poached or negatively impacted by people knowing their whereabouts	Public (some restricted)
Habitat Distribution Model	The Arthur Rylah Institute and Victorian Government Department of Energy, Environment and Climate Action have developed habitat distribution models for almost all of Victoria's terrestrial flora and fauna species, with published versions currently available for all listed rare and threatened species. New and relevant species observations along with continual improvements for information technology will provide opportunities to refine and maintain the usefulness of these products. Organisations implementing this Plan and undertaking emergency preparedness, response and recovery activities can access, view and download species habitat distribution models, which are publicly available online. Maps showing both habitat distribution models and Victorian Biodiversity Atlas species observations can be viewed and downloaded on Naturekit, making it a valuable planning tool: DEECA's Naturekit Victoria mapping tool: https://www.environment.vic.gov.au/biodiversity/naturekit.	Public
Mapping of Victorian Ecological Vegetation Classes	Mapping of Victorian Ecological Vegetation Classes (EVCs) considered to be likely equivalents to the EPBC-listed threatened ecological communities. This is consistent with EVCs identified in the Conservation Advice and National Recovery Plan for the ecological community (DSE, 2005). This data can be downloaded from Victoria's DataVic open data platform: https://discover.data.vic.gov.au/dataset/native-vegetation-modelled-2005-ecological-vegetation-classes-with-bioregional-conservation-sta.	Public
Ramsar Site Mapping	The Victorian Government's mapping of Ramsar Convention of Wetlands of International Importance shows the location and boundary of Ramsar sites. This data can be downloaded from Victoria's DataVic open data platform:Ramsar Wetland Areas in Victoria at 1:25 000 - Dataset - Victorian Government Data Directory .	Public
Victorian Land Use Information System	The Victorian Land Use Information System (VLUIS) dataset has been created by the Spatial Information Sciences Group of the Agriculture Victoria Research Division in the former Department of Environment and Primary Industries Victoria. The method used to create VLUIS is significantly different to traditional methods used to create land use information and has been designed to create regular and consistent data over time. It covers the entire landmass of Victoria and separately describes the land tenure, land use and land cover for each cadastral parcel across the state. The land cover data is sourced (created) annually whilst the land tenure and land use data is available bi-annually (DJPR, 2024). This data can be downloaded from the Victorian Resources Online platform: Victorian Land Use Information System (VLUIS) | VRO | Agriculture Victoria	Public
Rivers, Wetlands and Estuaries	CCMA priority waterways are derived from HY_WATERCOURSE, WETLAND_CURRENT, ESTUARIES sourced from DataShare – State Government of Victoria	Public
Small Mammal Refuges	Small Mammal Refuges were developed from 2020-2023 as part of the Wild Otways Initiative by Barbara Wilson Pty Ltd to identify high value areas where EPBC listed small mammals were persisting in the landscape (as per live and camera trapping). The layer is	Public

	intended to guide land managers on prioritisation of management actions for threatening processes and rehabilitation of habitat. Data can be accessed by request from CCMA and can be viewed on the Wild Otways Initiative Portal – here	
Phytophthora Protection Areas	Phytophthora Priority Protection Areas were developed by Barbara Wilson Pty Ltd as part of the 2020-2023 Wild Otways Initiative. The areas were identified through an extensive stakeholder engagement process involving local land managers and experts, as well as through ground truthing. The identified areas have realistic and achievable management outcomes for preventing the spread of Phytophthora and/or treating the disease. Data can be accessed by request from CCMA and can be viewed on the Wild Otways Initiative Portal - here	Public
Coastal Erosion Susceptibility	Coastal Erosion Sucepbility is accessible from The Victorian Government Department of Energy, Environment and Climate Action's CoastKit resource which is Victoria's marine and coastal interactive web-mapping portal for managers, researchers, consultants and community. CoastKit provides a central repository for marine and coastal data with intelligent in-built tools. This data can be accessed online or downloaded from the marine and coastal knowledge platform: CoastKit (marineandcoasts.vic.gov.au)	Public
Revegetation and Derived Native Grassland	Based on CCMA outputs reporting data that can be de-identified and accessed by request. De-identified data can also be viewed on the Corangamite Natural Resources Management Portal: National Resource Management Portal (ccmaknowledgebase.vic.gov.au)	Public
Soil Erosion and Landslide Data	CCMA in partnership with the Victorian Government Department of Energy, Environment and Climate Action commissioned a series of erosion and landslide susceptibility datasets that were developed by AS Miner Geotechnical (2006) which can be accessed by request from CCMA and viewed on the Corangamite Natural Resources Management Portal: National Resource Management Portal (ccmaknowledgebase.vic.gov.au)	Public
Flood threat Mapping	The flood data available includes the 1 in 100 year riverine flood extent (developed by CCMA) as well as inundation to 1-in-100 year storm tide level from 2009 (developed by Victorian Government Department of Energy, Environment and Climate Action as SLR00CM_ST_2009 Flood investigations involve a detailed technical analysis of historic information to determine future flooding possibilities and their impacts. Community participation and ground-truthing are essential parts of investigations. The map or data is available from CCMA on request be viewed on the Corangamite Natural Resources Management Portal: National Resource Management Portal (ccmaknowledgebase.vic.gov.au)	Public
Fire threat mapping	This data was provided by DEECA based on Phoenix Rapidfire (fire simulator) modelling across Victoria, which modelled over 70,000 fires across the state and classified fire intensity and frequency to assess overall bushfire risk. Fire intensity can be indicative of flame height, and therefore threatening arboreal animals, whereas fire count intensity indicates likelihood of an area being impacted by fire (or the number of times a modelled fire passed through an area – IE that area's flammability).	Private

12 KEY ORGANISATIONS FOR PLAN DELIVERY

This section of the Plan lists the key organisations involved in emergency event preparedness, response and recovery within the CCMA management unit and what their role is in relation to this Plan.

The SEMP outlines the roles and responsibilities of agencies in emergency management via the web-based document: Roles and Responsibilities - Emergency Management Victoria, available on online at emv.vic.gov.au.

Victorian Government Department of Energy, Environment and Climate Action (DEECA)

DEECA bring together Victoria's energy, environment, water, agriculture, forestry, resources, climate action and emergency management functions into a single department. This is to maximise connection between environment, community, industry and economy. DEECA aims to tackle climate

change and protect natural environment for future generations and improve the liveability of Victoria.

DEECA, within the SEMP, have functions and activities in emergency event mitigation, response and recovery. As a state government agency, they will work with all CMA's on the collation and integration of emergency data and planning for improved emergency preparedness and response for statewide and regional emergency in the future.

DEECA – Forest Fire management Victoria

FFMV works with Country Fire Authority (CFA), Fire Rescue Victoria (FRV), other emergency services and communities across Victoria to deliver the best local approaches to managing bushfire risk in Victoria. FFMV manage emergency events through planning, prevention and preparedness for bushfire and activities in response and recovery. FFMV partners also include forest contractors, who play a valuable role in responding to bushfire and recovery works following bushfires, storms and floods.

Their objectives include: providing an integrated approach to land management to reduce bushfire risk, minimising the impact of major bushfires on the environment and delivering coordinated community and environmental recovery management after fire or other emergency. (State Government of Victoria, 2024)

DEECA – Agriculture Victoria

Agriculture Victoria works with Victorian farmers and industry to prepare for, respond to and recover from natural disasters, including floods and storms. This includes delivering technical information and supporting events to support farm business recovery. Agriculture Victoria has a lead role in implementing agriculture response activities which includes responsibilities outlined in the SEMP.

Country Fire Authority (CFA)

CFA works with Victoria's emergency services to protect lives and property through operational response during fire emergency and the promotion of community safety and education. When performing its operations, the CFA work to protect biodiversity and agricultural assets on private property.

Parks Victoria

Parks Victoria are responsible for managing land and marine parks, reserves, wetlands and coastline and the native plants and animals species that inhabit them. They are responsible for ensuring the parks are healthy and resilient for future generations by protecting and enhancing environmental and cultural values. Parks Victoria have functions and responsibilities during emergency event mitigation, response and recovery for the natural environment as support agency and partner in the whole-of-government planning and response program. They support DEECA as part of Forest Fire Management Victoria to prepare for, fight and recover from bushfire on public land. (Parks Victoria, 2024)

Eastern Maar Aboriginal Corporation

Registered Aboriginal Party for the western and south-western catchments of the Corangamite management unit. Responsible for managing and protecting Aboriginal cultural heritage and representing the interests of the Eastern Maar Peoples. EMAC can provide support and advice to ensure that emergency management is culturally sensitive and protects Aboriginal values.

Wadawurrung Traditional Owners Aboriginal Corporation

Registered Aboriginal Party for the eastern catchments of the Corangamite management unit. Responsible for managing and protecting Aboriginal cultural heritage and representing the interests

of the Wadawurrung Peoples. WTOAC can provide support and advice to ensure that emergency management is culturally sensitive and protects Aboriginal values.

Local Government/Council – Surf Coast Shire, Colac Otway Shire, City of Greater Geelong, Corangamite Shire, Golden Plains, Ballarat and Moorabool

Responsible for leading multi-agency municipal emergency management planning, response and recovery and localised services in response and recovery during and after an event. The nature and extent of work carried out by councils during an event will depend on the capacity and particular circumstances of the event. Most activities will be carried out supported by or in conjunction with government departments. Councils will lead the preparation of municipal emergency management plans (MEMP) and coordination of MEMP committee meetings involving local emergency management agencies.

Local Authorities – Great Ocean Road Coast and Parks Authority, Barwon Coast Committee of Management

Local authorities like Great Ocean Road Coast and Parks Authority and Barwon Coast Committee of Management have a responsibility to protect, conserve, enhance and manage public land. They have a responsibility to address the impacts of climate change and severe weather events. (Great Ocean Road Coast and Parks Authority, 2024)

When performing their operations, the local authorities work to prepare biodiversity assets on public land for emergency events and create resilience.

Victoria State Emergency Services (VicSES)

Victoria State Emergency Service (VICSES) is a volunteer-based organisation providing emergency assistance to minimise the impact of emergencies and strengthen the community's capacity to plan, respond and recover, when emergencies occur. VICSES is the control agency for storm, flood, earthquake, tsunami and landslide throughout Victoria.

Zoos Victoria

Zoos Victoria are a zoo-based conservation organisation fighting extinction through actions like recovery programs to support critically endangered Victorian, terrestrial, vertebrate species. (Zoos Victoria, 2024) Zoos Vic advice will ensure the that the Plans actions for preparedness, response and recovery are protective for threatened biodiversity assets and all wildlife.

Birdlife Australia

Birdlife Australia are Australia's leading bird conservation organisation, working to recover wild bird species. Birdlife Australia advice will ensure the that the Plans actions for preparedness, response and recovery are protective for threatened avian biodiversity assets.

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APPENDIX 1 – Mapping of Biodiversity assets

APPENDIX 2 – Mapping of Agricultural Natural Capital assets

APPENDIX 3 – Mapping of threats at a regional scale

APPENDIX 4 – Multijurisdictional inventory of Biodiversity and Agricultural Natural Capital assets.

APPENDIX 5- State Emergency Management Plan – Role Statement – Catchment Management Authorities

Catchment Management Authorities

Catchment Management Authorities (CMAs) are responsible for the integrated planning and coordination of land, water and biodiversity management in all catchment and land protection regions. CMAs have a key role to advise on flood mitigation, provide support to flood response, and lead flood recovery programs where they have the resources to conduct works.

Mitigation

Activity	Critical task alignment / activity source
Advise and assist local government in the incorporation of flood related planning controls in planning schemes	1.2
Prepare flood response action plans for internal use focused on the collection of flood related data, flood level, flood photography, and hydrographics	1.3
In partnership with local government, prepare and implement local floodplain management plans in accordance with the regional floodplain management strategy and community expectations	1.4
Assist with specific strategic and regional (non-urban) works and measures in accordance with responsibilities under the regional floodplain management strategy or catchment management strategy in consultation with expert advice	1.4, 1.5
Prioritise regional flooding issues in cooperation with local government, VICSES and the community	1.5, 6.4

Activity	Critical task alignment / activity source
Participating agency for the following flood mitigation activities: • Legislative policy framework including floodplain management strategy, reform (lessons learnt) • Land use planning (Strategic and statutory) • vegetation/waterway management • Flood emergency planning including readiness	Table 8: Participating agencies for mitigation

Response (including Relief)

Activity	Critical task alignment / activity source
Advise government on regional priorities for floodplain management activities through the implementation of regional floodplain management strategies	4.1
In partnership with support and control agencies, collect, maintain and enhance flood information	4.4
Monitor significant flood events and collect flood data in conjunction with local government	4.5
Provide flood advice to local government and the community in general	4.5
Advise local government and other authorities on planning permit referrals, building issues and infrastructure management within floodplains	4.6
Assist local government, the BoM and DEECA support the development, maintenance and upgrading of regional flood warning systems	4.6

Activity	Critical task alignment / activity source
Support response agencies at the regional level through the provision of flood advice, including flood extent and severity during major flood events	4.6
Support response agencies through the provision of advice on emergency stabilisation and other activities to arrest river breakaways, and the removal of debris accumulation threatening structural stability of public assets in consultation with expert advice	3.2, 11.3, 18.4
Support community education and involvement on flooding issues	6.4
Assess all river waterway damage that poses a threat to the stability of river systems	11.1, 18.1, 18.2

Recovery

Activity	Critical task alignment / activity source
Recovery Lead Agency (RecLA) responsible to provide advice and information services to Councils and delegate public land managers and community groups (with DEECA and supported by DTP and EPA)	11.3 Table 18: Recovery coordination: Natural environment
Recovery Support Agency (RecSA) to: • relevant land managers to undertake erosion control on public land to help manage risk to public safety, natural and cultural assets and values, and infrastructure • DEECA to in its role to survey and protect threatened bird, marsupial, aquatic and plant species and develop and implement protection activities to support ecosystem recovery and regeneration	Table 18: Recovery coordination: Natural environment

Activity	Critical task alignment / activity source
• support DEECA, EPA and PV in fish death clean-ups where the fish death event is due to natural causes, and where the CMA has the resources. The CMA will lead a local fish death clean-up and larger scale clean-ups depending on resource availability	18.4
• restore, clear and rehabilitate waterways managed by CMAs, and support DEECA and PVin their lead role of rehabilitating, restoring and reinstating public land and tourism and visitor assets. DEECA or PV are directly responsible for managing to mitigate risks, as well as public land and assets CMAs are responsible for.	18.3, 18.5, 19.3
Lead agency responsible to develop and prioritise bushfire and flood recovery programs for CMA assets/waterways	18.2
Support DEECA to deliver its recovery activities to: • restore impacts of river erosion where there is an immediate danger of the formation of river breakaways and/or immediate danger to CMA assets	18.3
• implement balanced bushfire and flood recovery programs consistent with funding allocated	18.4, 19.5
Implement bushfire and flood damage restoration programs for bushfire and flood affected waterways	18.4

Assurance and Learning

Activity	Critical task alignment / activity source
Monitor and report on performance of regional floodplain management strategies	21.4