DRAFT

Wyndham Coastal and Marine Management Plan

December 9, 2019 3:08 pm



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In association with:

Project Name	Wyndham Coastal and Marine Management Plan DRAFTv5
Revision	05
Date of Issue	December 9, 2019 3:08 pm

Revision No.	Date	Detail of Revisions	Reviewed By
00	09/09/2019	NIL	TB
01	30/09/2019	Structure revised	TB
02	02/10/2019	Precinct flood modelling	WKT
03	17/10/2019	Edits as requested by Council	KH
04	26/11/2019	Edits as requested by Council	KH
05	27/11/2019	Edits as requested by Council	KH

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1 ACKNOWLEDGEMENTS

Wyndham City Council recognises Aboriginal and Torres Strait Islander peoples as the First Custodians of the lands on which Australia was founded.

Wyndham City acknowledges the Wathaurong, Woiwurrung, Bunurong and Boonwurrung peoples of the Kulin Nation as the Traditional Custodians of the lands on which Wyndham is being built.

For tens of thousands of years, the Werribee River has been a significant meeting place for Aboriginal people to build community, exchange resources, and share responsibility for its lands.

Wyndham City pays respect for the wisdom and diversity of past and present Elders. We share commitment to nurturing future generations of Elders in Aboriginal and Torres Strait Islander communities.



2 EXECUTIVE SUMMARY

The Wyndham Coastal & Marine Management Plan (CMMP) provides a five year road map to guide the future of the Wyndham coastline. The vision for the draft Plan is “To connect and enhance the unique qualities of the Wyndham coastline for greater access and enjoyment and to facilitate appropriate coastal development and tourism”. This includes the creation of accessible and connected coastal sites that can support healthy communities, our natural environments, the local economy and tourist destinations.

Wyndham City includes significant stretches of coastline fronting Port Phillip Bay. Foreshore management is shared by Council, State and Federal agencies, with limited public access in many areas. Less developed than other foreshore areas around Port Phillip Bay, the Wyndham coast is a hidden gem, yet to be discovered by many residents and visitors. Where public access and facilities are available, the coastline is well used, attracting thousands of visitors each year. Facilities support water based recreation activities and community organisations including fishing clubs and the Wyndham Coastguard. Improvement works have the potential to attract more commercial uses such as cafes, water-based equipment hire and visitor amenities. Some coastal sites are less well known and require substantial infrastructure investment to support improved public access and use for recreation activities.

There is a need to strike a balance between public use and the coastal environment to ensure that the unique landscape of the Wyndham coastline is protected. Climate change impacts including sea level rise and erosion present major challenges for Wyndham’s coastal parks, waterways and significant habitat areas. Planning for an adaptive coastline, resilient to the demands of our growing population and the challenges of climate change is a major objective of this Plan.

The Wyndham CMMP provides guidance for the future use, development and management of the Wyndham coastline. The principles of the Plan are:

Protect What’s Unique

Ensure protection and recognition of the Wyndham Coast’s unique habitat, agricultural, historic, marine sanctuary, indigenous and volcanic landscape values.

Good Planning

Develop an integrated planning framework, strategic partnerships and State Government advocacy priorities to facilitate future sustainable land use and development.

Use and Access

To improve connectivity and coastal access for Wyndham’s growing community to natural, wild places for children to play and for all people to enjoy and recreate.

Development

Ensure coastal development protects against adverse environmental impacts, responds to anticipated sea level rise, activates key activity areas and facilitates community and tourism access to the Wyndham coastline.

The Implementation Priorities of the CMMP will be used to guide the development of Precinct Plans for specific coastal areas. These Plans will provide support for future funding applications to government departments allowing for the staged implementation of the CMMP over many years.

Wyndham CMMP will establish an agreement between Wyndham City Council, as the Committee of Management of the Coastal Crown Land Reserve, and the Department of Environment, Land, Water and Planning (DELWP) on how to improve and manage the Wyndham waterfront into the long-term future.



3 INTRODUCTION

The CMMP project commenced in 2018 with community engagement activities. The key finding of the subsequent *"Issues and Opportunities Paper"* was to provide a shared path along the foreshore of Wyndham. Council is committed to continuing to plan for the Wyndham coastline and this draft Coastal and Marine Management Plan is provided for review and comment by the public and all stakeholders.

Urban Initiatives was engaged by Wyndham City Council in September 2019 to prepare a draft Coastal and Marine Management Plan (CMMP).

The Wyndham Coastal and Marine Management Plan (CMMP) consolidates background research and analysis including:

- An exploration of Aboriginal cultural values in coastal areas and to better understand the significance of coastal sites for Aboriginal community members;
- Marine and coastal interactions, opportunities and risks in the face of climate change;
- Exploration of the rich history as an independent agricultural community;
- Wyndham as an amalgamation of well-established historic areas and recently developed areas;
- Background research to identify the preferred alignment of the Wyndham Bay Trail; and
- A risk management study of farming practices adjacent to the Coastal Crown Land Reserve in Werribee South.

A healthy marine and coastal environment is a dynamic, constantly changing system in response to processes like sea and air temperature, nutrient flows and ocean currents. Natural processes continue to shape landforms while ecosystems (vegetation and other living communities) support numerous plants and animals.

The Victorian community benefits from the range of environmental, social, cultural and economic services provided by the marine and coastal environment, and not least for its intrinsic value - the value it has in itself, regardless of its value to humans.

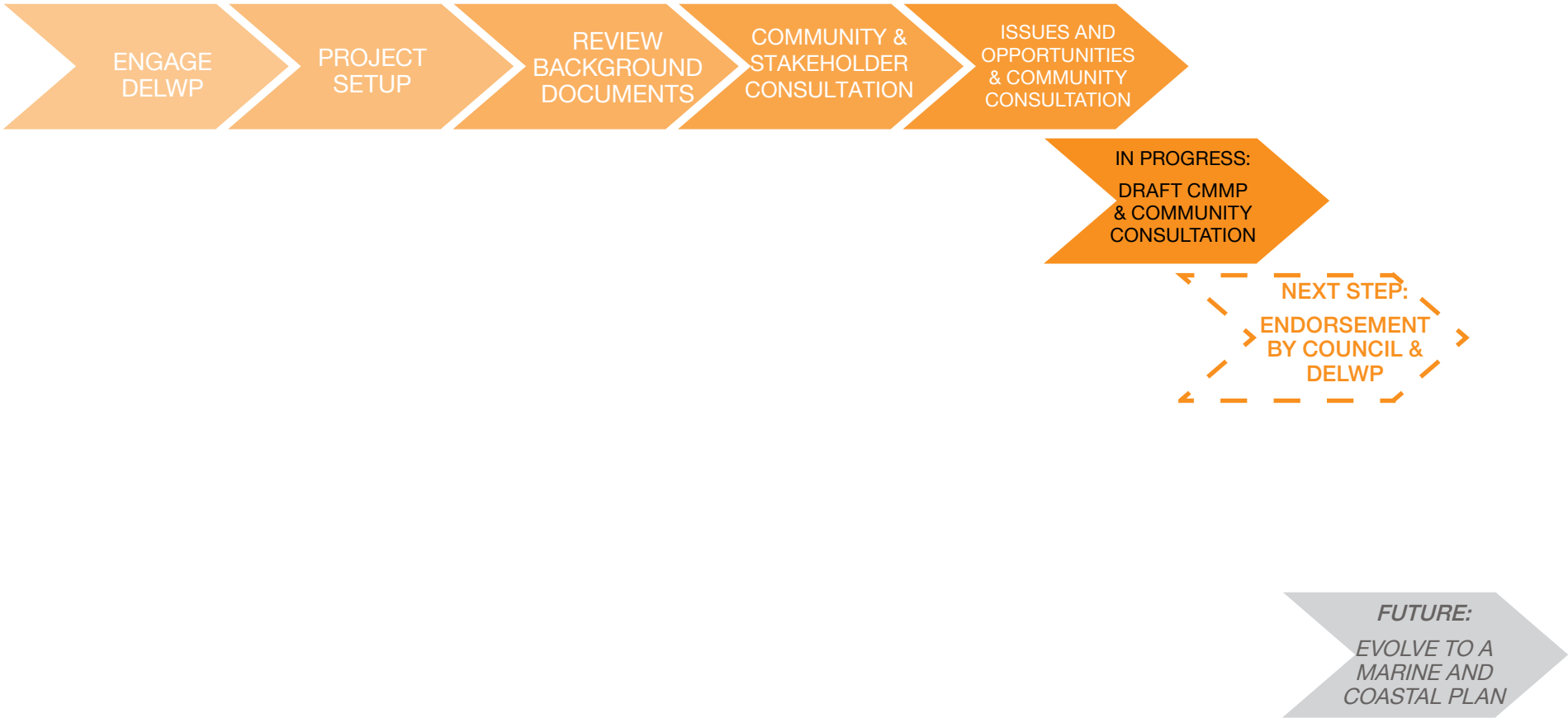
The CMMP will provide strategic direction and policy on coastal use, management and development. It will facilitate clear decision-making where Council, private or government entities encounter overlapping values and competing demands.

The business/implementation plan component of the CMMP will guide the subsequent development of detailed master plans and decision making on works for various parts of the foreshore area. This plan will also identify potential funding opportunities.

Submission and comments received on this draft will be considered as appropriate. A final Coastal and Marine Management Plan, amended as appropriate, will be prepared for adoption by Council and subsequent submission to the Minister for Environment, Climate Change and Water, for approval.

3.1 Timeline

The following steps have either been completed or are required as next steps in the preparation of a Coastal and Marine Management Plan:







4 STRATEGIC CONTEXT

4.1 Guiding documents

There are a range of Federal and State Government documents that have informed the development of this CMMP. The key documents are summarised here. A full list of all relevant Federal, State and Local documents is included in Appendix 1.

4.1.1 Marine and Coastal Act 2018

In August 2018, the State Government introduced the Marine and Coastal Act. This Act requires that Coastal Management Plans consider management of the marine environment.

The adjacent Figure 1 shows the hierarchical relationships between the Marine and Coastal Act, other documents described in this section, and the development of this CMMP.

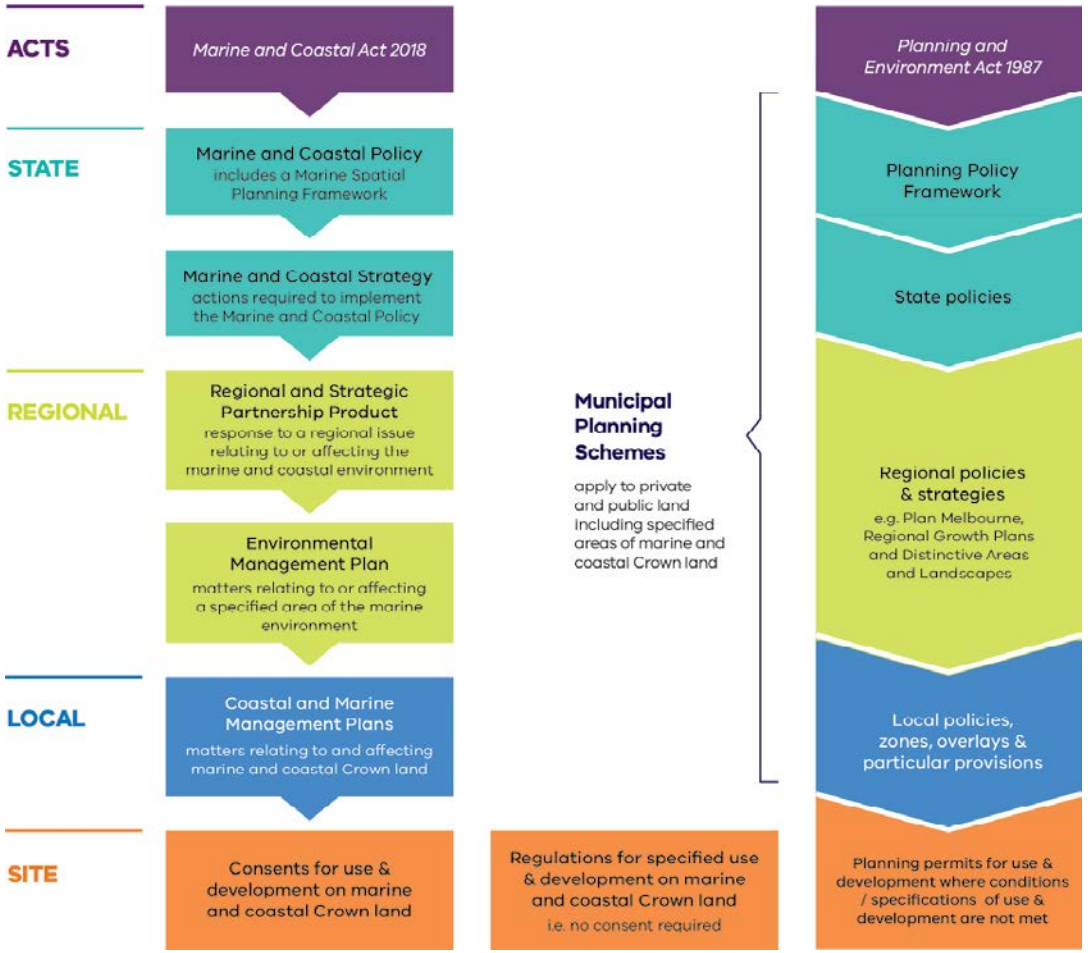


Figure 1 Relationship between the Marine and Coastal Act 2018 and the broader land use planning system from draft Marine & Coastal Policy DELWP, 2019

4.1.2 Draft Marine & Coastal Policy (2019)

DELWP has recently completed a draft Marine & Coastal Policy (2019) which builds on the Victorian Coastal Strategy (2014) and fills identified gaps. It is currently available for public consultation and a final policy will be released at the end of 2019.

Consultation with DELWP to inform the development of this Coastal and Marine Management Plan has been extensive prior to and following the release of the Policy.

***Marine and Coastal Act 2018* objectives**

The *Marine and Coastal Act 2018* outlines the following objectives for the planning and management of the marine and coastal environment in Victoria:

a. to protect and enhance the marine and coastal environment

b. to promote the resilience of marine and coastal ecosystems, communities and assets to climate change

c. to respect natural processes in planning for and managing current and future risks to people and assets from coastal hazards and climate change

d. to acknowledge Traditional Owner groups' knowledge, rights and aspirations for land and Sea Country

e. to promote a diversity of experience in the marine and coastal environment

f. to promote the ecologically sustainable use and development of the marine and coastal environment and its resources in appropriate areas

g. to improve community, user group and industry stewardship and understanding of the marine and coastal environment

h. to engage with specified Aboriginal parties, the community, user groups and industry in marine and coastal planning, management and protection

i. to build scientific understanding of the marine and coastal environment.

Figure 2 Marine and Coastal Act 2018 Objectives from the draft Marine & Coastal Policy, DELWP, 2019

To achieve the nine objectives of the Marine and Coastal Act 2018 DELWP has listed the following *"Planning and Decision Pathway"* steps:

Acknowledge

Understand and acknowledge the rights and aspirations of the Traditional Owner groups for land and Sea Country.

Protect and enhance

Protect and if possible enhance environmental and cultural values.

Respect natural processes

Understand the dynamic natural processes of the marine and coastal environment.

Strengthen resilience to climate change

Understand the current and future stressors from climate change and assess how well the marine and coastal environment can cope with and adapt to change and how that can be strengthened.

Use and develop sustainably

Consider the impacts and benefits of existing and new use and development on the environment, other users and the prosperity of current and future generations.

These steps should be considered through:

- Taking a stewardship approach to how we care for and manage the marine and coastal environment;
- Building knowledge and understanding of the condition and values of the marine and coastal environment;
- Collaborating across the breadth of people and organisations involved in marine and coastal management to deliver an integrated and coordinated approach; and
- Engaging with the wide variety of communities and user groups that value the marine and coastal environment.

Key principles from the Marine & Coastal Policy to be considered in the Coastal and Marine Management Plan include:

- Integrated coastal zone management;
- Ecosystem based management; and
- Ecologically sustainable development.

Refer Fig. 3 right.

Principle	What this means for planning and decision making
Integrated coastal zone management	Integrated coastal zone management is the process for managing all coastal issues in a framework integrated across biota and habitats, time and space, and levels of government. To achieve this planning and decision making should consider: • impacts on the whole physical system from the catchment to the coast, along the coast, out to sea, and within and under land and water • impacts and issues across different land tenures and reservations (public and private) • different organisations' responsibilities and roles (national, state, regional, local) • other polices, plans and planning process applying to the area • the impact on different users and between different users of this area • long and short-term impacts on the environment, society and economy.
Ecosystem-based management	The structure and function of marine and coastal ecosystems is fundamental to the current and future use and enjoyment of the marine and coastal environment, its resources, and the goods and benefits the ecosystem provides. To achieve this planning and decision making should consider: • ecosystem connections • connections across space and time • dynamic nature of ecosystems • scientific and cultural knowledge • the impacts both cumulative and incremental on ecosystems of many decisions (small and large)
Ecologically sustainable development	Use and development that affects the marine and coastal environment focuses on improving the total quality of life of Victorians for current and future generations in a way that maintains the ecological processes on which life depends. Use and development will affect (positively or negatively) environmental, social, cultural and economic values. In making decisions around what is appropriate any adverse impacts on values, including cumulative effects, need to be weighed against the benefits of the use and development. One tool that may assist decision-makers with this assessment is a system of environmental economic accounting. Victoria is adopting such a system to measure the condition of the state's environmental assets and transparently value their goods and benefits alongside more traditional accounting for economic and social goods and benefits.

Figure 3 Checklist for how the principles can be considered from draft Marine & Coastal Policy DELWP, 2019

Principle	What this means for planning and decision making
Evidence-based decision making	Utilise best available and relevant scientific, social, cultural and economic knowledge and physical evidence as the basis for decision making, recognising that information will be limited.
Precautionary	If there are threats of serious or irreversible environmental or other damage, lack of full certainty should not be used as a reason for postponing measures to prevent environmental or other degradation. Any precautionary measures adopted should be proportionate to the risk from the threat.
Proportionate and risk-based	Actions should be proportionate to the risk. Risks should be assessed considering the likelihood and consequence of a threat affecting a value in the marine and coastal environment. Risk assessment should be in accordance with international standards. Management and regulatory processes should be proportionate to the risks involved.
Adaptive management	Mechanisms or processes should allow for monitoring and reporting of condition and pre-empts changes in the future. Adaptive management improves the situation based on the reporting information or acting once pre-emptive triggers are reached.

Figure 4 Checklist for how the principles can be considered from draft Marine & Coastal Policy DELWP, 2019

Key principles from the Marine & Coastal Policy to be considered in the Coastal and Marine Management Plan include:

- Evidence-based decision making;
- Precautionary;
- Proportionate and risk-based; and
- Adaptive management.

Refer Fig. 4 above.

4.2 Strategic Documents Informing The Preparation of Coastal & Marine Management Plans

The State strategies, plans and guidelines informing the preparation of Coastal and Marine Management Plans include:

4.2.1 The Guidelines for the Preparation of Coastal Management Plans (2017)

The Guidelines prepared in 2017 by DELWP provides guidance on the preparation of a CMP. However, the 2018 Marine and Coastal Act and subsequent draft Policy are now considered more relevant.

4.2.2 The Bay Blueprint (2017)

The Association of Bayside Municipalities provides a framework for planning for climate change impacts in Port Phillip Bay.

4.2.3 Plan Melbourne (2017)

Plan Melbourne informs the Wyndham Bay Trail alignment by encouraging and facilitating the creation of a network of cycling links, including for recreational purposes, across Melbourne. In particular, the Plan promotes the benefits of safe and bicycle-friendly environments which encourage under-represented groups, such as women, children and families to consider cycling.

4.2.4 The Victorian Memorandum for Health and Nature (2017)

This document recognises that parks and open spaces are critical for well-being and liveability as places that provide for physical exercise, relaxation, play, learning and discovery.

4.2.5 The Western Metropolitan Region Trails Strategic Plan (2017)

A 14 km trail following the coastline is outlined in the Western Metropolitan Region Trails Strategic Plan, connecting Werribee South Beach to Skeleton Creek Trail in Cheetham Wetlands. It proposes the additional actions of providing directional and etiquette signage as well as upgrading the existing path to a 'Regional Trail' standard.

4.3 Local context

At a local level there are numerous documents that support and inform the development of this Coastal and Marine Management Plan.

4.3.1 Wyndham 2040, Community Plan (2017)

Aims to support recreation that meets the outlined aspirations and support communities which are healthy, liveable and socially connected.

4.3.2 Wyndham Environment & Sustainability Strategy, 2016-2040 (2016)

This Strategy addresses the key environmental issues for Wyndham City with the focus on achieving a more sustainable future.

4.3.3 Wyndham Open Space Strategy 2045 (2016)

This document recognises the importance and value of open space to the Wyndham community and makes recommendations to protect and improve open space values over the next 30 years.

4.3.4 Wyndham City Forest & Habitat Strategy, 2017-2040 (2017)

Aims for Wyndham to be a vibrant living ecosystem with shade and green spaces that support healthy communities and resilient, connected, natural environments.

4.3.5 Wyndham Integrated Water Cycle Management Plan (2017)

Outlines Wyndham City's plan to manage water supply and quality over the years to come. The Plan recognises the social, economic, & environmental values of water to its community.

4.3.6 The Wyndham Integrated Transport Strategy (WITS) (2016)

Outlines the City's aspirations for making walking and cycling more comfortable and convenient. More specifically, the Strategy commits to building a connected and accessible walking and cycling network so physical activity becomes a part of daily travel. WITS also establishes a target to triple the walking and cycling mode share by 2040.

4.3.7 Draft Pedestrian and Cycling Strategy (2017)

Sets a key objective to achieve a cycle network that will enable residents to cycle safely anywhere within the municipality in a direct and efficient manner and that cycling and transport infrastructure meets the needs of all cyclists within Wyndham.

4.3.8 Wyndham Coastal Management Plan Community Engagement Report (2018)

Guides the future planning and development of coastal land from Werribee River to Point Cook Coastal Park. It summarises the community desires around safety, infrastructure & facilities, cleanliness and walking & cycling trails.

4.3.9 The Werribee South Green Wedge Policy and Management Plan (2017)

Recognises the 'natural and highly scenic setting' of waterfront areas, attracting more than 200,000 visitors per year. The Management Plan reaffirms the intention to complete the Wyndham Bay Trail and outlines a future direction to increase bicycle and pedestrian travel through adjoining residential developments to the precinct. The Plan also identifies that land acquisition is possibly required at points along the coastline where the Coastal Reserve is narrow. The plan seeks to protect private farm land and protect the coastline through re-vegetation, erosion prevention, remediation, cleaning and maintenance, sand renourishment and other conservation works.



5 THE STUDY AREA

5.1 Background

Wyndham is blessed with an abundance of spectacular natural attractions, particularly to the south of Werribee, which features scenic waterway corridors including Werribee River, wetlands, sanctuaries and coastline. Wetland and sanctuary areas near Point Cook attract more than 200,000 visitors per year.

The population has increased by 110,000 over the previous decade to 255,322 and will continue to grow to almost half a million by 2041.

Attracted by its relative affordability, lifestyle opportunities and proximity to education and employment options in Melbourne and Geelong. Large families comprise the key demographic in many areas of Point Cook, Williams Landing, Wyndham Vale and Manor Lakes.

Growth interfaces are rapidly pushing towards the Urban Growth Boundary, to both the south and west of the municipality. In particular, new communities at Point Cook West, East Werribee Employment Precinct, Black Forest Road South, Alfred Road and Riverwalk are in planning or underway, with an expectation of an additional 45,000 residents and 58,000+ jobs.

Aviators Field, near the Point Cook RAAF Base, will accommodate 414 hectares of new residential dwellings and associated facilities, as well as to the southwest in Werribee Junction, Mambourin and Bayview. Wyndham Harbour also continues to be delivered and Werribee progressively strengthens as a designated major city centre under the State Government's Western Growth Plan.

5.2 Land ownership and management

Land ownership and management throughout Wyndham, especially along the coastline, is complex. Some areas are vested in government organisations such as Melbourne Water and Parks Victoria, some in private ownership like Wyndham Harbour and the market garden farmland. Public access isn't permitted at Point Cook RAAF Base, owned by the Department of Defence.

Figure 5 (over) outlines land ownership and management along the Wyndham coastline.



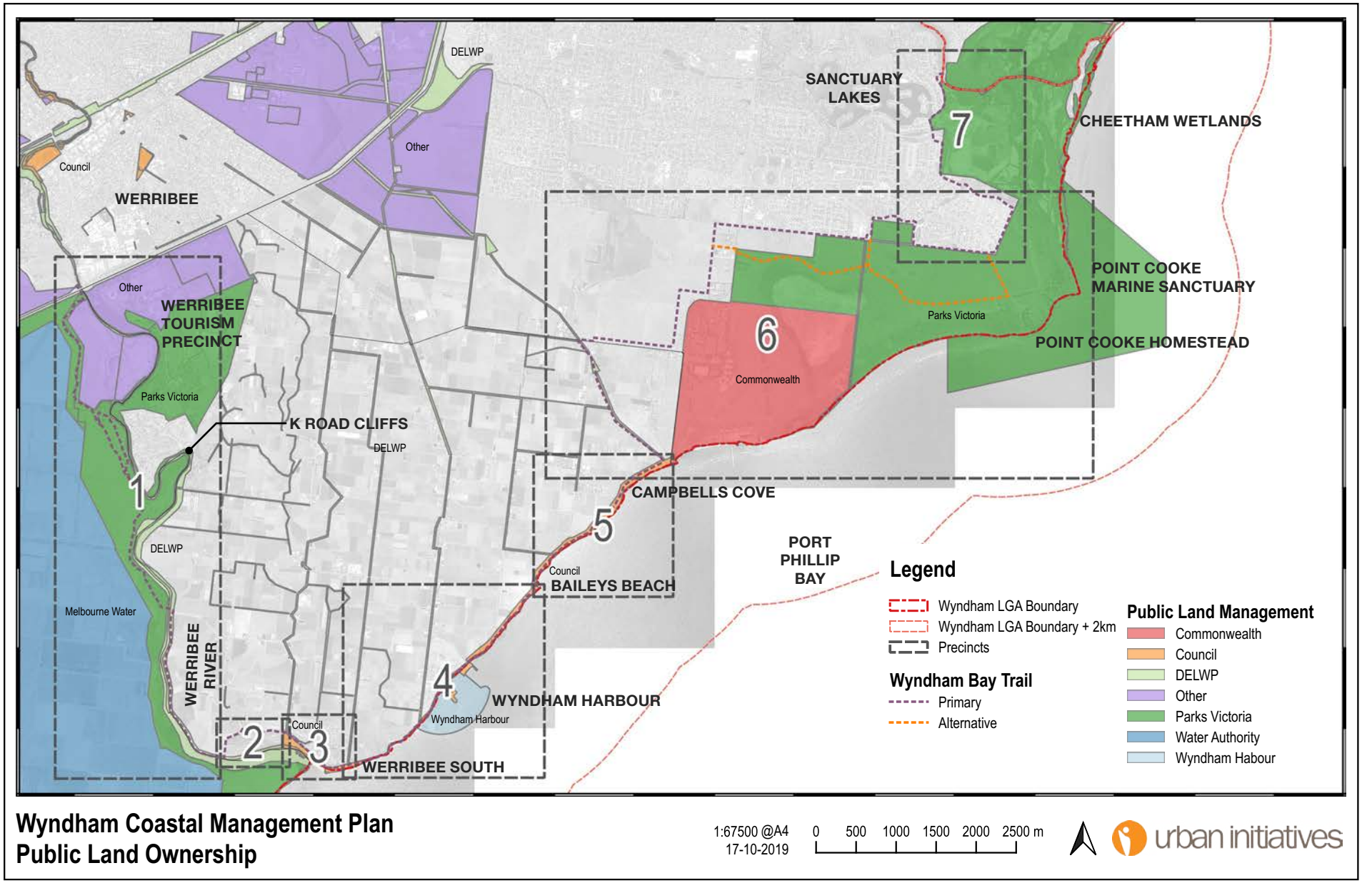


Figure 5 Public Land Ownership

5.2.1 Complexity of coastal and marine management

To emphasise the complexity of the coastal and marine environment a full list of stakeholders involved in the supervision and management of the study area is tabled below.

Table 1. **Stakeholders within the study area.**

Stakeholder	Role, Responsibility & Interest
Wyndham City Council	Wyndham Council is responsible for the management of the Crown Land Coastal Reserve extending between Werribee South Beach and Campbells Cove on the behalf of DELWP. Council also owns several open space sites including Graham's Reserve Wetland and Price Reserve in Werribee South.
Department of Environment Land Water and Planning	The Department of Environment Land Water and Planning (DELWP) is Victoria's lead government agency responsible for sustainable management of public land, water resources, climate change, forests and ecosystems. DELWP administers the Coastal Management Act 1995 and plays an important role in planning for the coast and approval of coastal developments on Crown Land. DELWP also manages sections of Werribee River Park.
Parks Victoria	Parks Victoria manage Werribee River Park and Point Cook Coastal Park. Parks Victoria is the appointed Local Port Manager for Port Phillip, under the Port Management Act 1995, and is also the declared waterway manager for its waters under the Marine Safety Act 2010. Responsibilities include the management and operation of the port including recreational boating activities, as well as the provision and maintenance of navigation aids, piers, jetties and other facilities.
Melbourne Water	Western Treatment Plant Melbourne Water manages Melbourne's water supply catchments, most of Melbourne's sewage, rivers, creeks and major drainage systems throughout the Port Phillip and Westernport region.

Stakeholder	Role, Responsibility & Interest
Environment Protection Authority	Environment Protection Authority Victoria (EPA Victoria) is part of the environment portfolio charged with protecting the Victorian environment. EPA's role is to regulate pollution and administer the Environment Protection Act 1970.
City West Water	City West Water provides drinking water, sewerage, trade waste and recycled water services to customers in Melbourne's central business district, and the inner and western suburbs. The western suburbs has the greatest concentration of industrial customers in Victoria and some of the largest single water users while also receiving less rainfall than other parts of Melbourne. Each year City West Water supplies around 93 billion litres of drinking water and transfers approximately 94 per cent of the sewage and trade waste to Melbourne Water's Western Treatment Plant in Werribee.
Port Phillip and Westernport Catchment Management Authority	The Port Phillip and Westernport Catchment Management Authority (PPWCMA) is one of ten regional Catchment Management Authorities. It is the peak natural resource management body in the Port Phillip and Western Port region and oversees the implementation of the Regional Catchment Strategy. The PPWCMA works with a range of stakeholder groups and delivers integrated catchment management and sustainability of the region's catchment assets by building cooperation, coordination and partnerships amongst these groups. The PPWCMA has powers and functions under the Catchment and Land Protection Act 1994.
Department of Defence / RAAF	Point Cook RAAF Base is the birthplace of the Australian Air Force and the oldest continually operating military airfield in the world. The main function of the base is training, and it also houses the RAAF Museum.
Wyndham Harbour	Wyndham Harbour is located at Werribee South and the only safe harbour for boat mooring between Williamstown and Geelong along the north-western shores of Port Phillip Bay. The development is being undertaken by a consortium of private Melbourne-based investors committed to delivering a vibrant and sustainable community which embraces all aspects of waterfront living.
Department of Transport, Better Boating Victoria	Better Boating Victoria, has been tasked with overseeing a program of recreational boating reforms including the abolition of parking fees at boat launch facilities across Victoria.

Stakeholder	Role, Responsibility & Interest
Bunurong Land Council	The Bunurong Land Council is a Traditional Owner organisation of the South Eastern Kulin Nation representing the Traditional lands of the Bunurong language group, ancestors, places and the cultural environment.
Boon Wurrung Foundation	The Boon Wurrung Foundation represents the traditional people and custodians of the lands from the Werribee River to Wilsons Promontory and are proud members of the Kulin People – the Boonwurrung and Woiwurrung.
Wurundjeri Woi Wurrung	Traditional Owners of a large area in and around Melbourne.
Wathaurung Aboriginal Corporation	The Wathaurung Aboriginal Corporation are the Registered Aboriginal Party (RAP) for land in Wyndham located west of the Werribee River. The organisation works to protect coastal and riverine cultural heritage sites within Melbourne Water and Parks Victoria managed sites within their RAP area. There are no coastal sites managed by Council within the Wathaurung RAP area, therefore the recommendations of this Coastal and Marine Management Plan do not extend into the Wathaurung RAP area.
Association of Bayside Municipalities	The Association of Bayside Municipalities (ABM) is a local government association representing the interests of the 10 councils with frontage to Port Phillip on various coastal and marine issues to improve the overall management of the Port Phillip environment. The ABM represents its members through a range of political, community and media outlets.
Committees including:	
• Rural District Advisory Committee (DAC)	Council committee that represents rural communities and farming interests with representatives from each of Wyndham's agricultural areas.
• Werribee South Green Wedge Steering Committee	Steering committee that represents the interests of Werribee South farmers and residents in a range of local issues.
Community Groups including:	
• The Werribee River Association;	Works to protect and enhance the natural environment of the whole of the Werribee River and acts strategically and practically in an effort to gain support for the health of the people and the rivers, creeks, wetlands, estuaries and coastline of the Werribee catchment.

Stakeholder	Role, Responsibility & Interest
• Wyndham Boatshed Association;	Represents boatshed owners along the Port Phillip Bay coastline, west of Melbourne between Point Cook and Werribee South. The 143 boatsheds are situated on the Werribee South Foreshore Reserve at Campbells Cove and Baileys Beach.
• Beach Patrol 3030;	Beach Patrol 3030 is helping to clean Wyndham's beaches, rivers and creeks through the work of local resident members and community members.
• Point Cook Open Spaces; and	Point Cook Open Spaces work to protect, improve and enjoy the existing open spaces in the Point Cook area by making all areas clean, well-tended and attractive. Their works makes residents aware of the benefits of using our open spaces for passive and physical activities and to foster greater use of those resources.
• Werribee Volunteer Coast Guard.	The F10 Werribee Flotilla responds to a variety of marine incident types, rescuing many recreational boaters each year. They work in support of other agencies in response to events such as marine fires and medical evacuations from vessels. The Coast Guard is also a registered training organisation delivering accredited training to volunteers and the public.
Community Recreation Fishing Clubs	The Werribee South Fishing Club and the Werribee Anglers Club connect recreational fishers to the coastline through their community recreation activities.
Werribee South Ratepayers Association	The Werribee South Ratepayers Association represents the interests of residents and farmers based in the Werribee South Green Wedge Intensive Agriculture Precinct.
Local residents	Local residents of coastal residential communities in Point Cook, Wyndham Harbour and Werribee South.


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5.3 Strategic Planning

5.3.1 Planning zones

There are already significant planning controls across the study area, and these serve to protect important elements of Wyndham's coastal and marine environment.

These elements are described in detail in Section 7.2.

The adjacent plan shows the location and extent of planning zones within Wyndham.

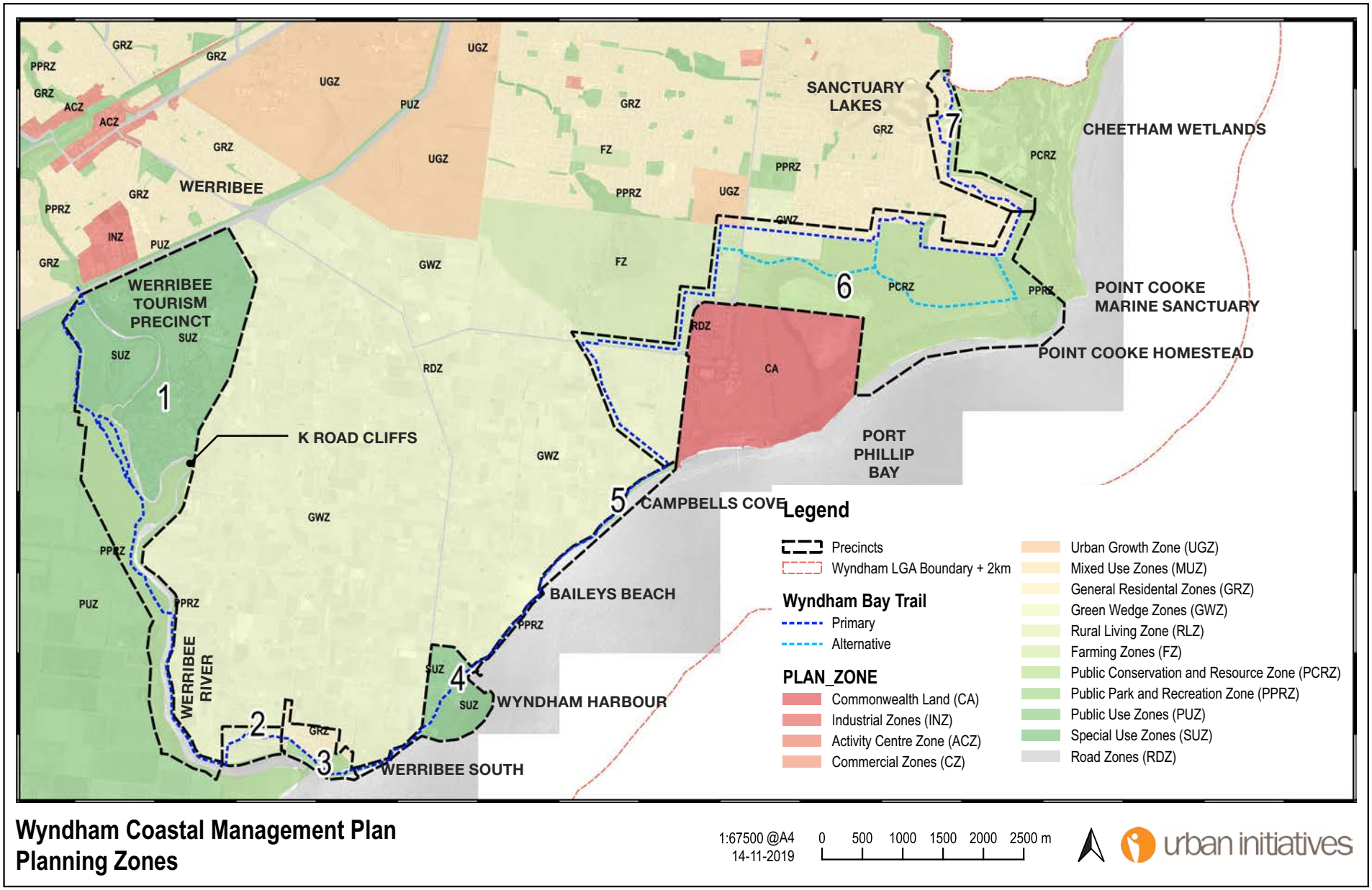


Figure 6 Planning Zones

Market Gardens & Intensive Agriculture Precinct (IAP)

Within the Green Wedge Zone, in Werribee South, are the market gardens. These market gardens encompass a total irrigated cultivation area of approximately 3,100 hectares on rich basaltic soils, derived from volcanic lava flows, and is strategically referred to as the Intensive Agriculture Precinct (IAP).

The Werribee South 'Green Wedge Zone' resulted from the Victorian State Government's 'Melbourne 2030' Policy in 2002. The Werribee South Green Wedge Policy and Management Plan provides a framework for the sustainable management of the green wedge, seeking to ensure that any proposed use or development is generally consistent with the Plan.

The Plan divides the green wedge into a series of functional precincts differentiated by their primary role and features. These roles are also reflected in the way the green wedge has been zoned into a series of different land use zones, and in some cases reflected in different planning scheme overlays.

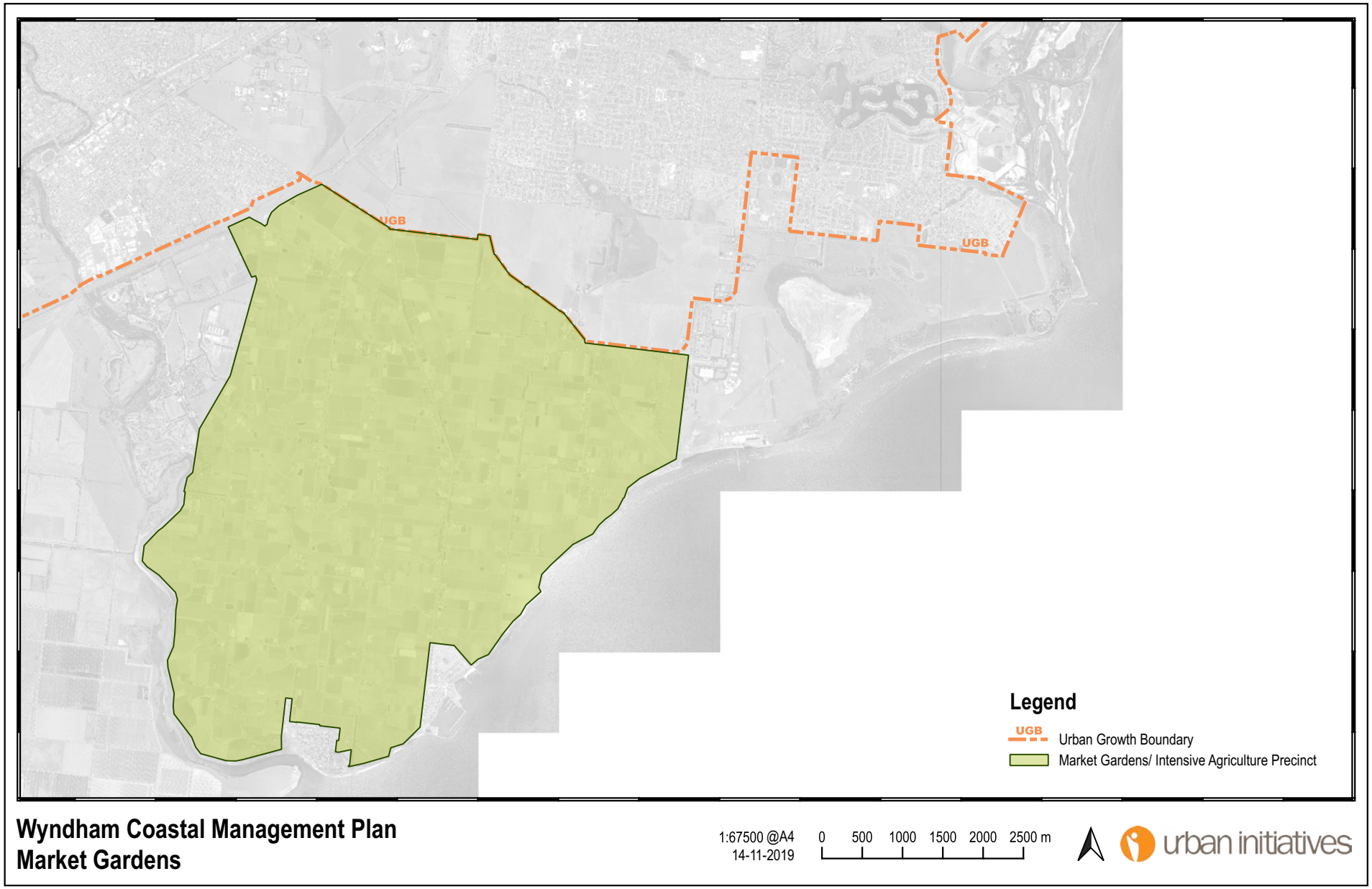


Figure 7 Intensive Agriculture Precinct (IAP) dominated by market gardens

5.3.3 Planning overlays

The adjacent plan shows the location and extent of planning overlays within Wyndham.

The study area, and especially along the Werribee River, is dominated by Heritage and Environmental Significance overlays.



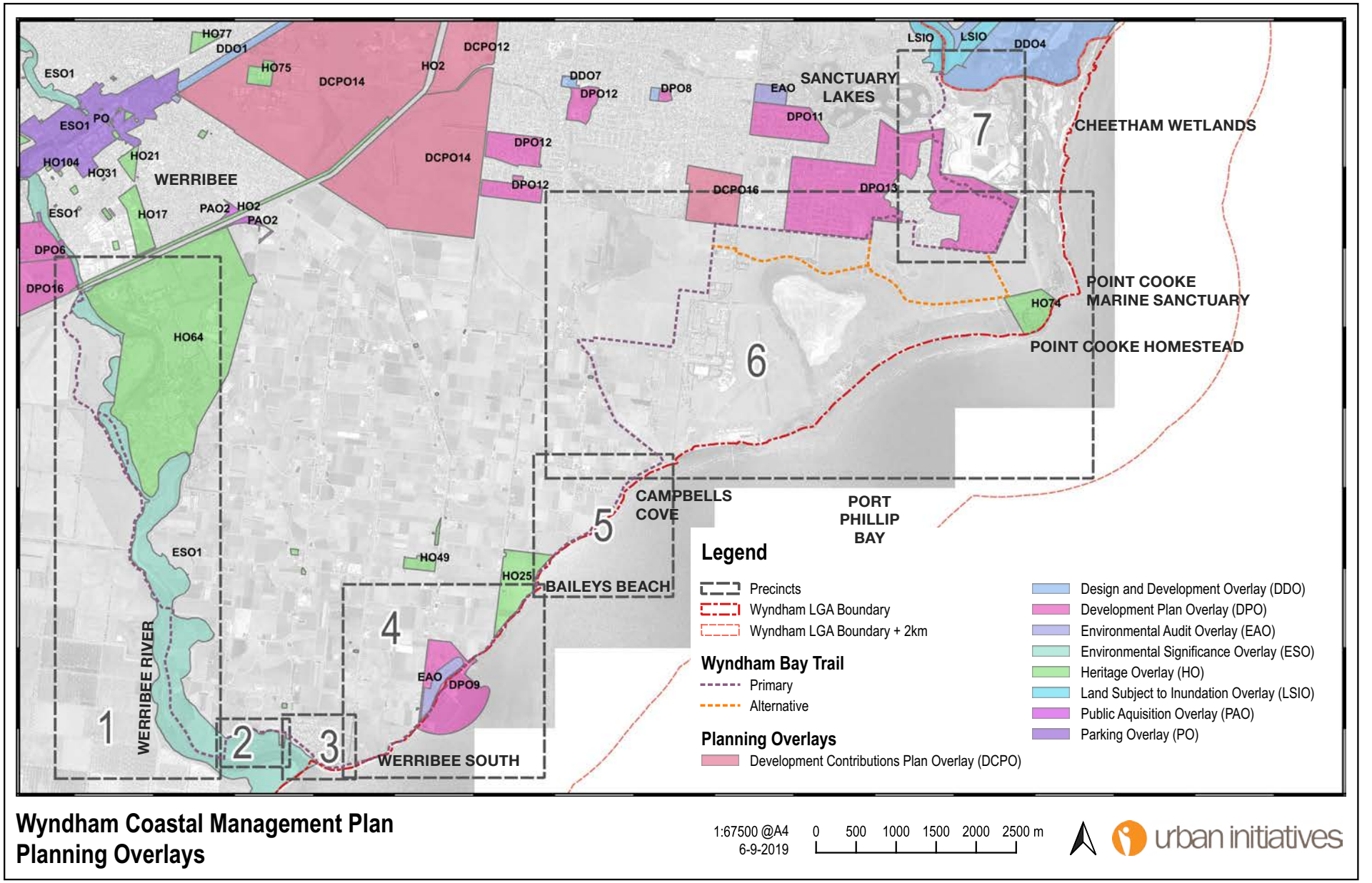


Figure 8 Planning Overlays

5.4 Geology and soils

The characteristics of the region's soils strongly relate to the coastal environment and underlying geology of the area.

5.4.1 Lithology/Bedrock

The Werribee River is derived from loose soils washed down from the upstream catchment. These soils are typically highly fertile which makes them suited for market gardens.

The central section of the study area is overlaid on basalt from a volcanic lava flow.

The northern section contains some low-lying geology that is subject to tidal inundation.



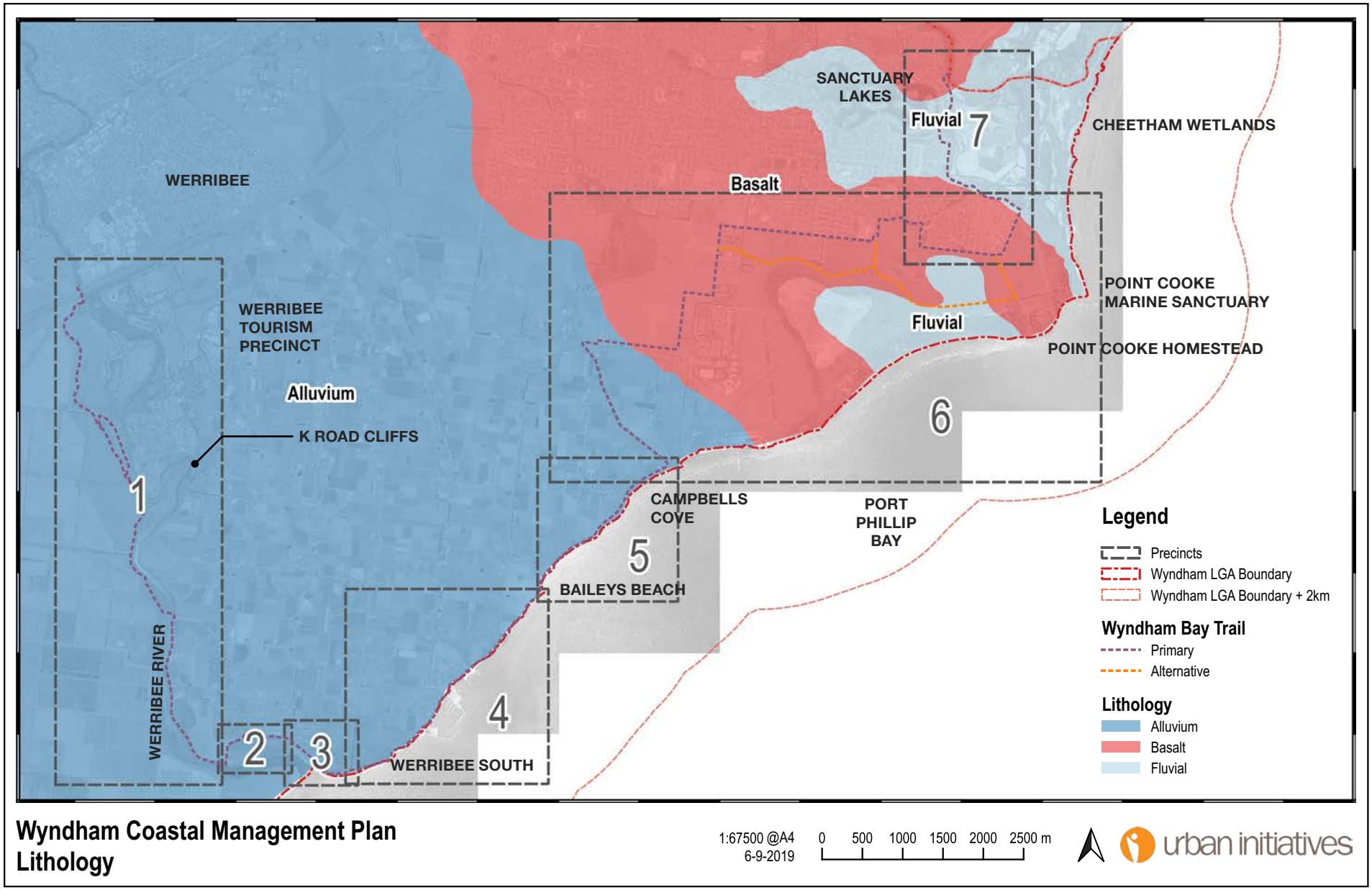


Figure 9 Lithology

5.4.2 Geomorphology/Landform

The Werribee River and market gardens precinct are comprised of terraces, plains and coastal floodplains. The soils are a distinctive red colour.

The central section of the study area, derived from basalt, has weathered to soils with poor drainage which often results in shallow root development.

The northern sections are low-lying and subject to seawater mixing with the river water, especially during high or king tides.



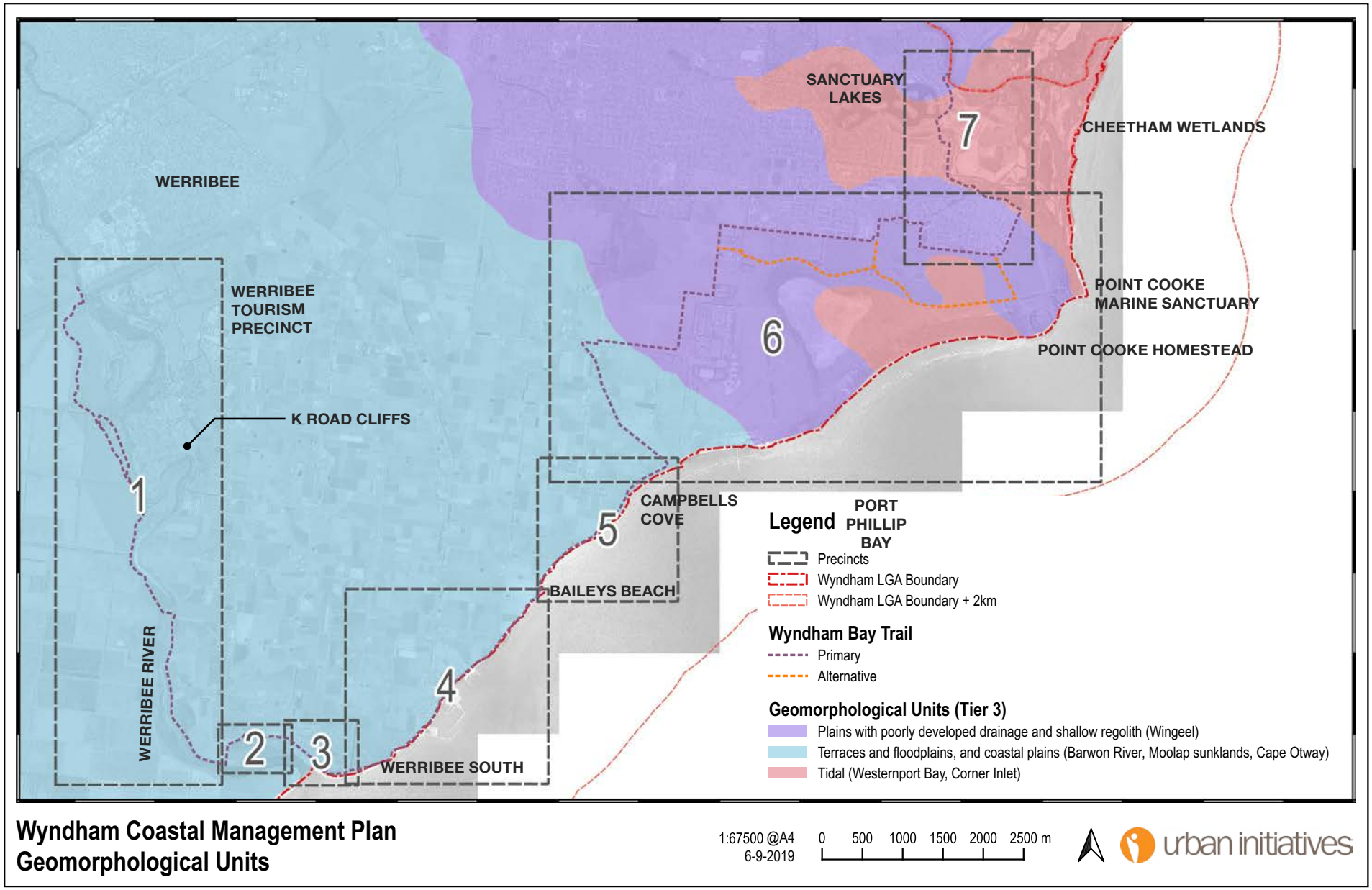


Figure 10 Geomorphological Units

5.4.3 Coastal Acid Sulphate soils

The Werribee River and areas subject to tidal inundation are acid sulphate soils. These soils are largely benign if left undisturbed.

However, if disturbed, the soil can react with oxygen to produce sulphuric acid.

This results in detrimental impacts to the environment including acidification of water and soil, de-oxygenation of water, poor water quality, dissolution of soil, rock and concrete, and corrosion of metals.

Sometimes the impact of acid sulphate soils can be extreme resulting in mass fish death.



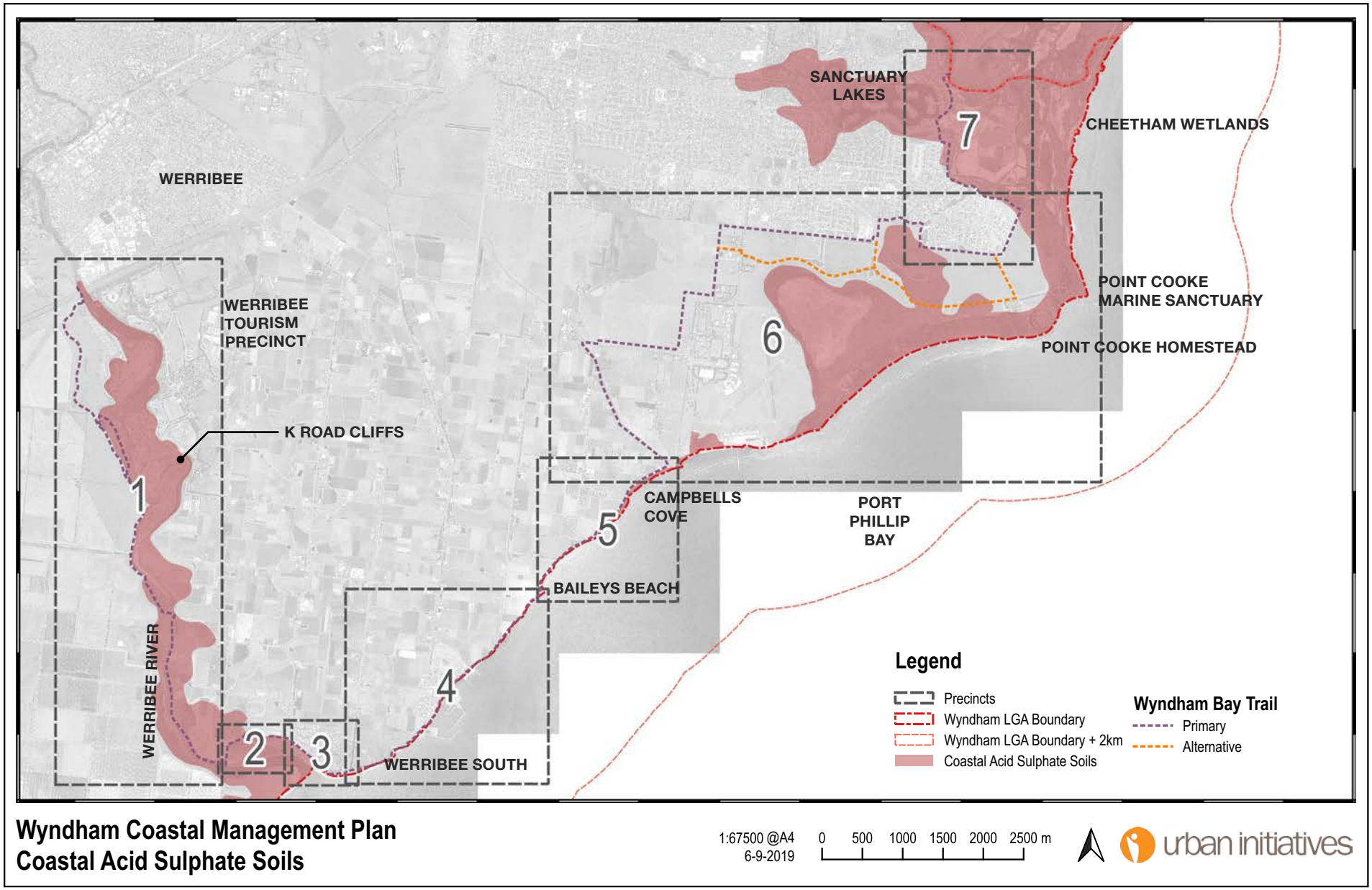


Figure 11 Coastal Acid Sulphate Soils

5.5 Coastal vegetation

There are unique qualities of vegetation within the study area, including areas that are internationally recognised, and other nationally and state protected flora species.

These elements are described in detail in Section 7.1.2.

5.5.1 Pre-1750 vegetation

Prior to European settlement the study area supported a number of biologically diverse ecosystems.

The adjacent plan show the pre-1750 ecological vegetation classes (EVCs) including Plains Grasslands (EVC 132), Plains Grassy Woodland (EVC 55) and large areas of Coastal Saltmarsh (EVC 9).



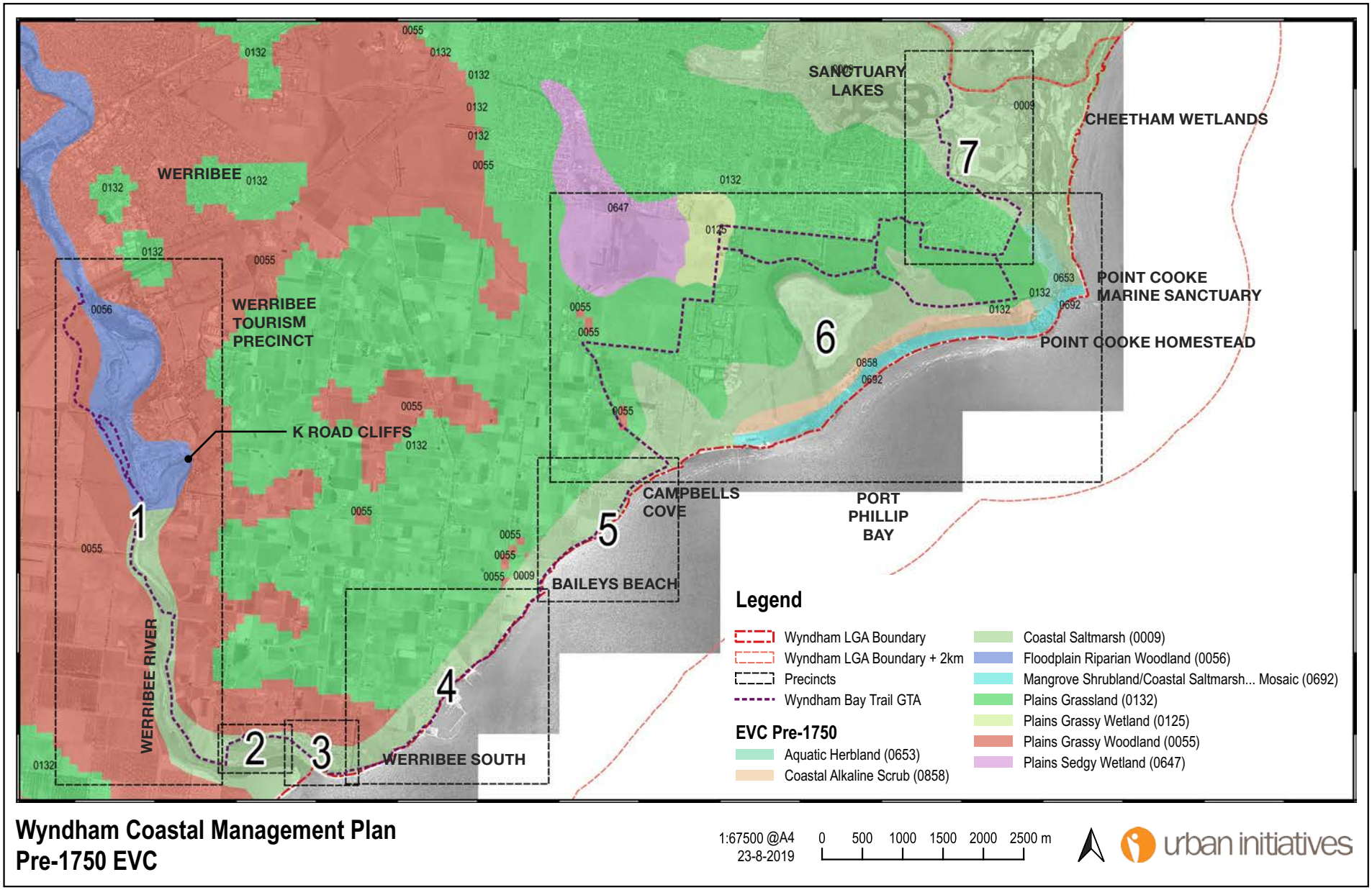


Figure 12 EVC Pre-1750

5.5.3 2005 vegetation

The adjacent plan shows the substantial contraction of ecosystems since European settlement.



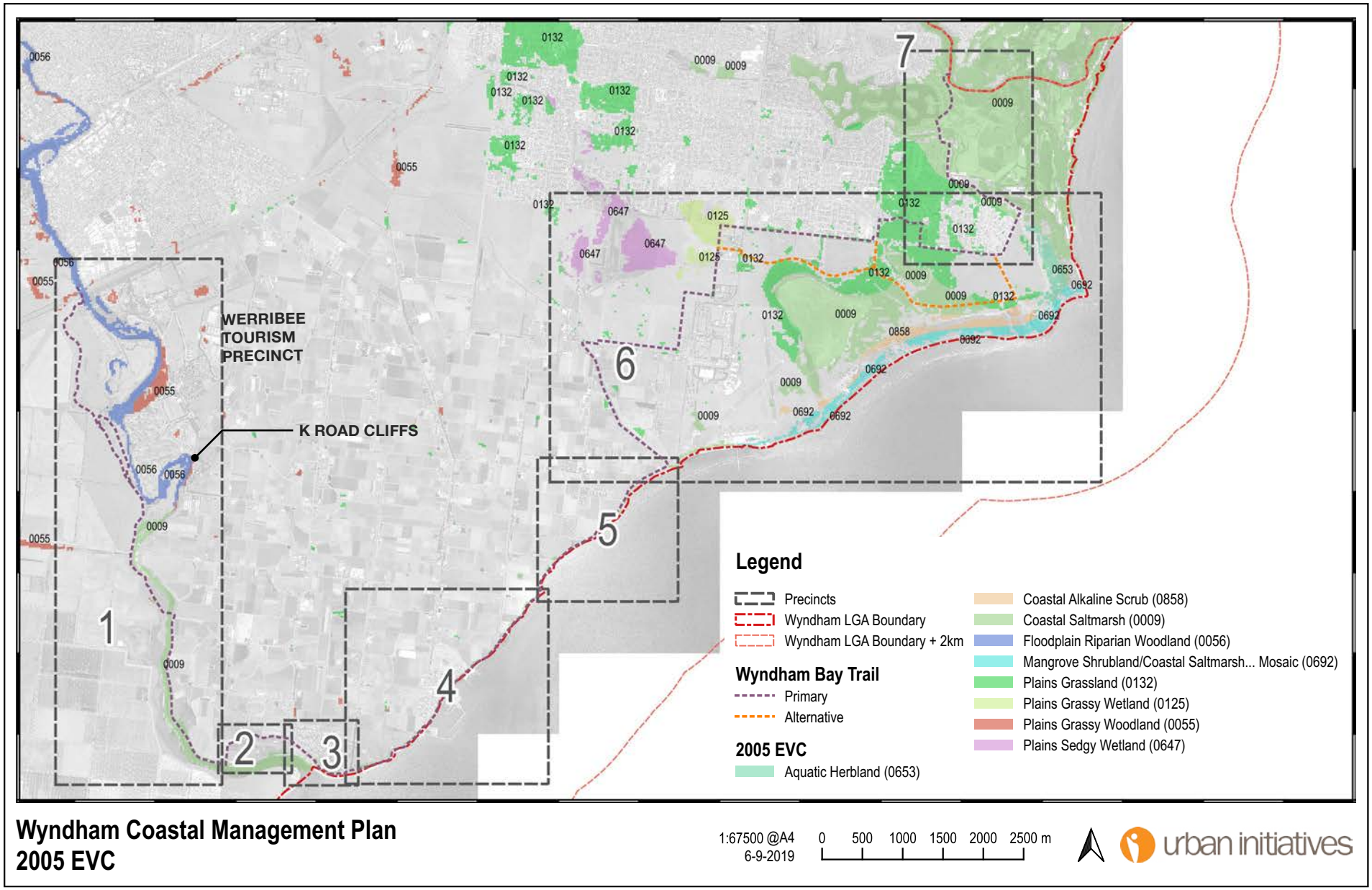


Figure 13 EVC 2005

5.5.4 Endangered and threatened vegetation

As at 2005 the remaining ecological vegetation classes (EVCs) within the study area are classified as Endangered or Vulnerable as shown in the adjacent plan.

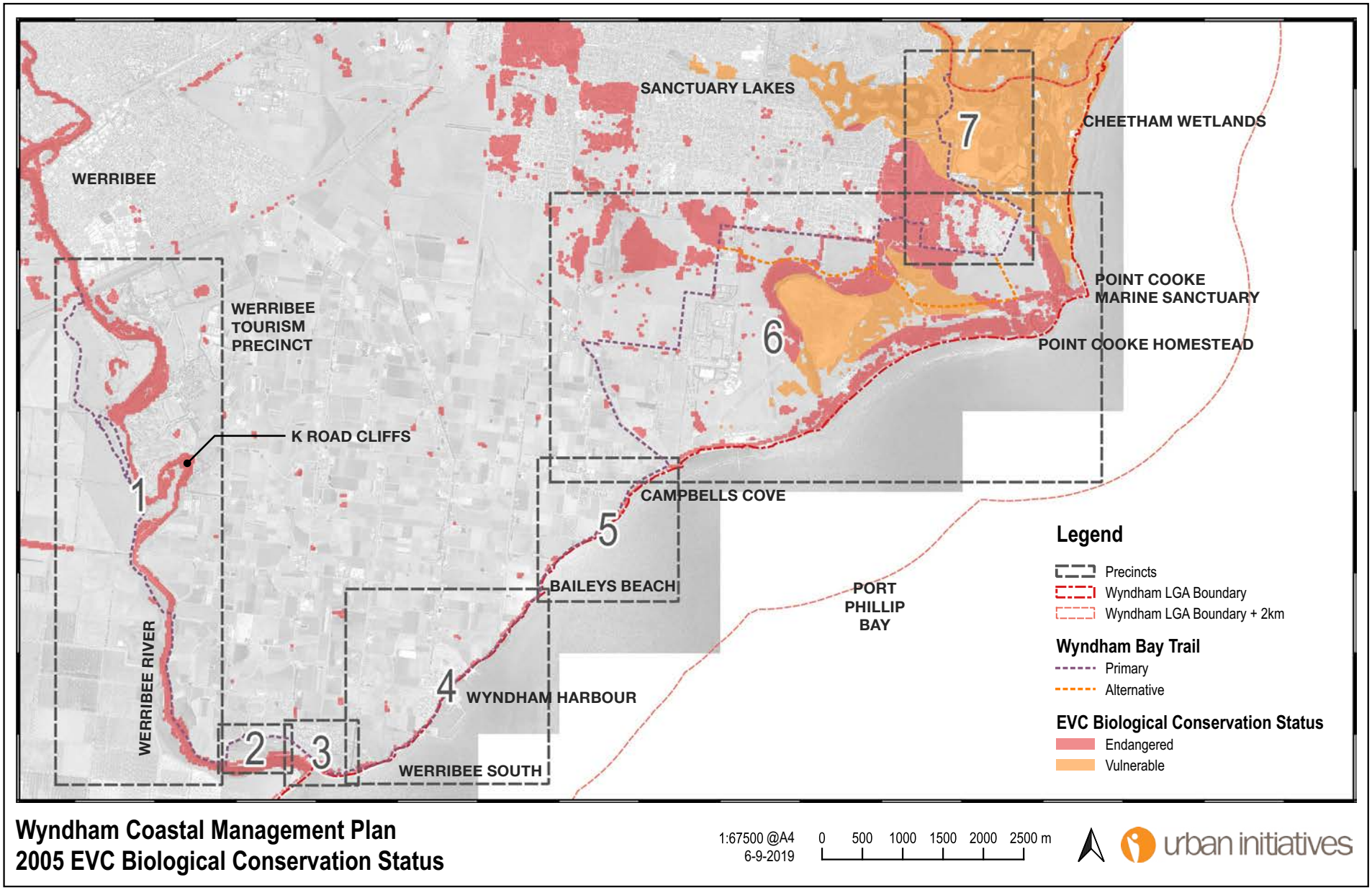


Figure 14 EVC 2005 Biological Conservation Status

5.5.5 Rare and threatened plant species

As a consequence of contracted ecosystems there are numerous rare and threatened plant species supported in the study area. The adjacent plan maps rare and threatened plant species as at 2014.

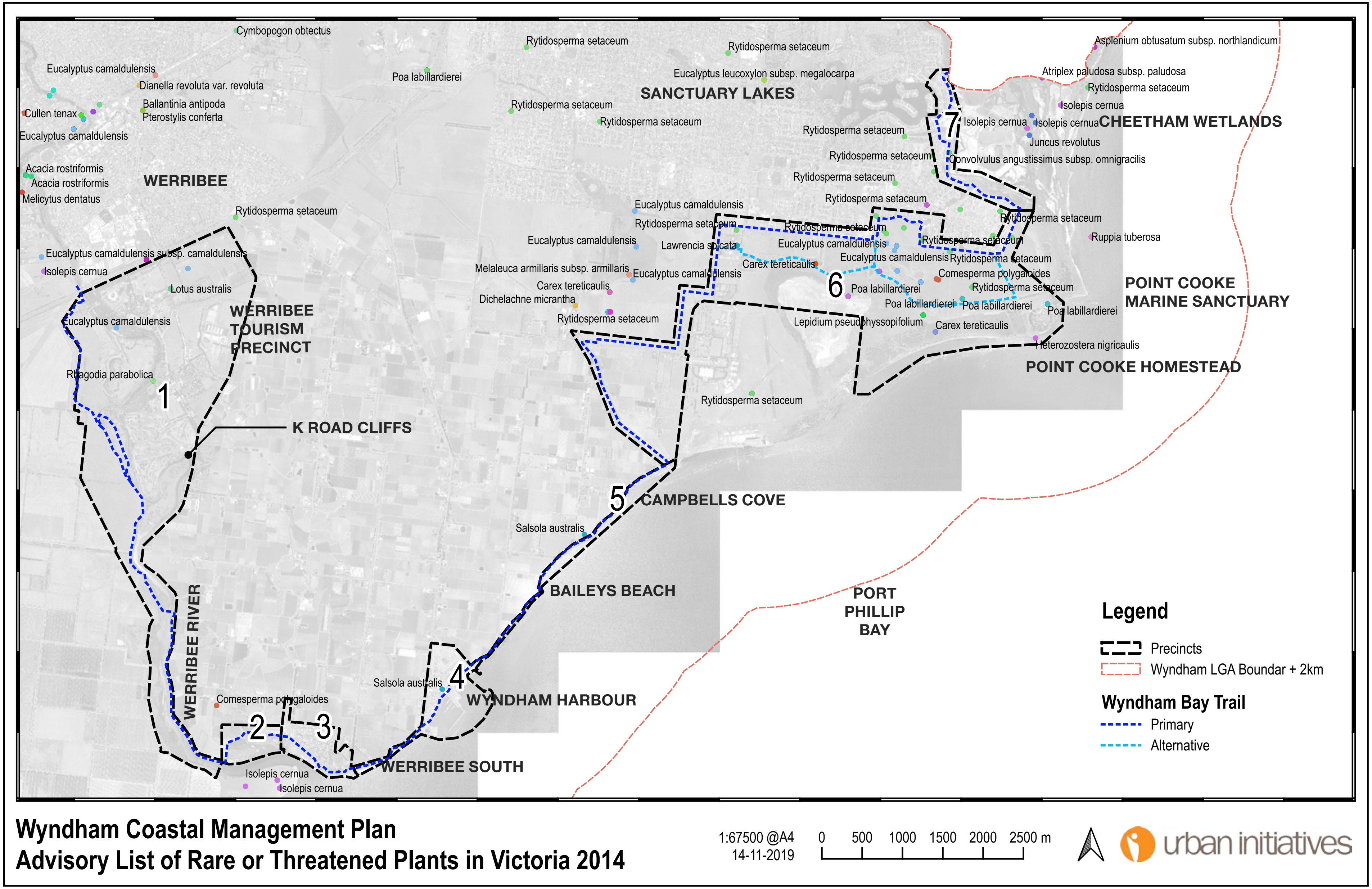


Figure 15 Advisory List of Threatened Plants

5.5.6 Threatened Species

The study area supports a number of species identified by the Atlas of Living Australia as threatened, as shown in the adjacent plan.

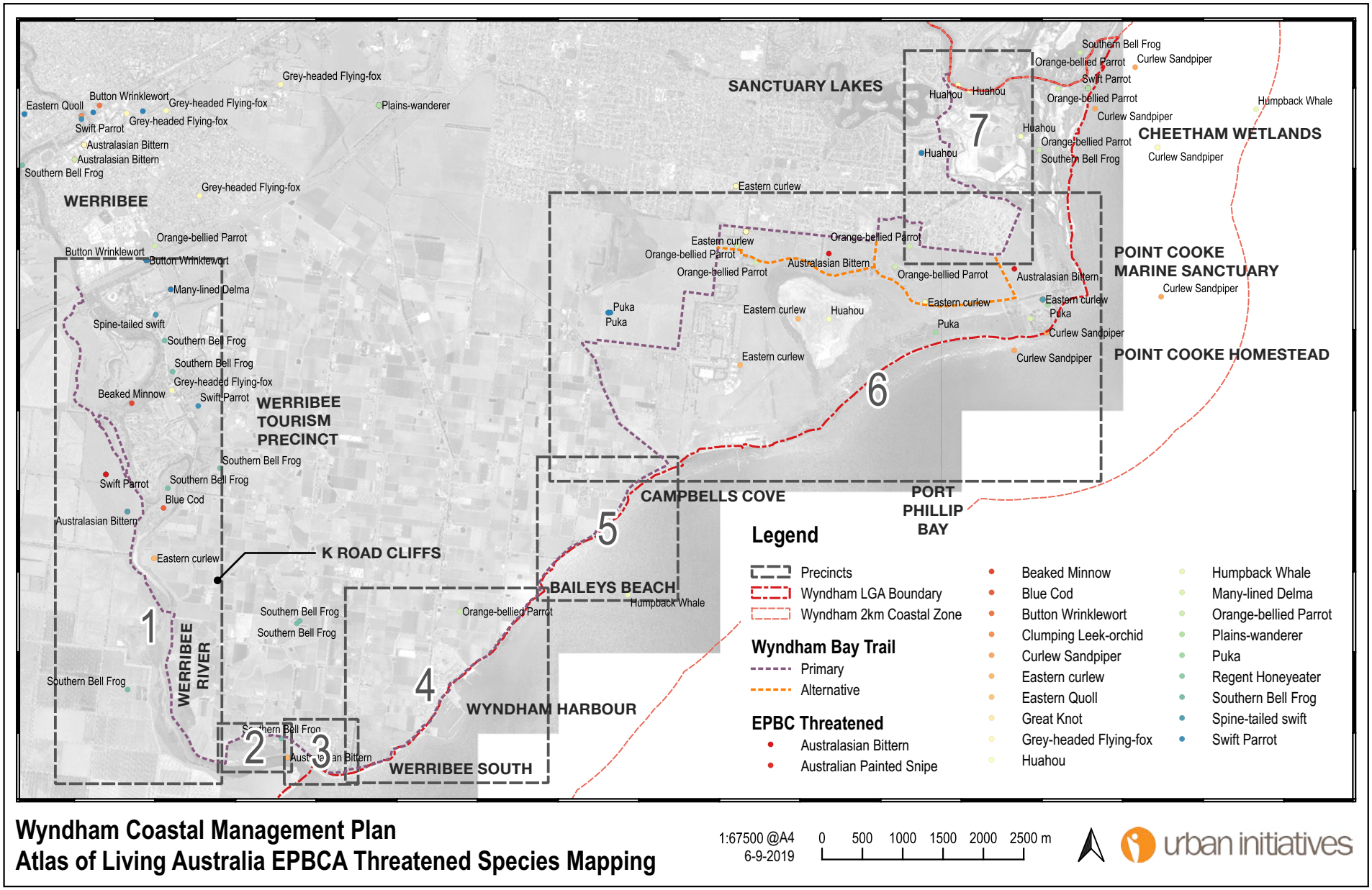


Figure 16 EPBC Act Threatened Species

5.5.7 Threatened Vertebrates

Numerous vertebrates within the study area are identified as threatened and are shown in the adjacent plan.

These include internationally protected migratory species, the critically endangered Growling Grass Frog and other state and nationally protected fauna species.

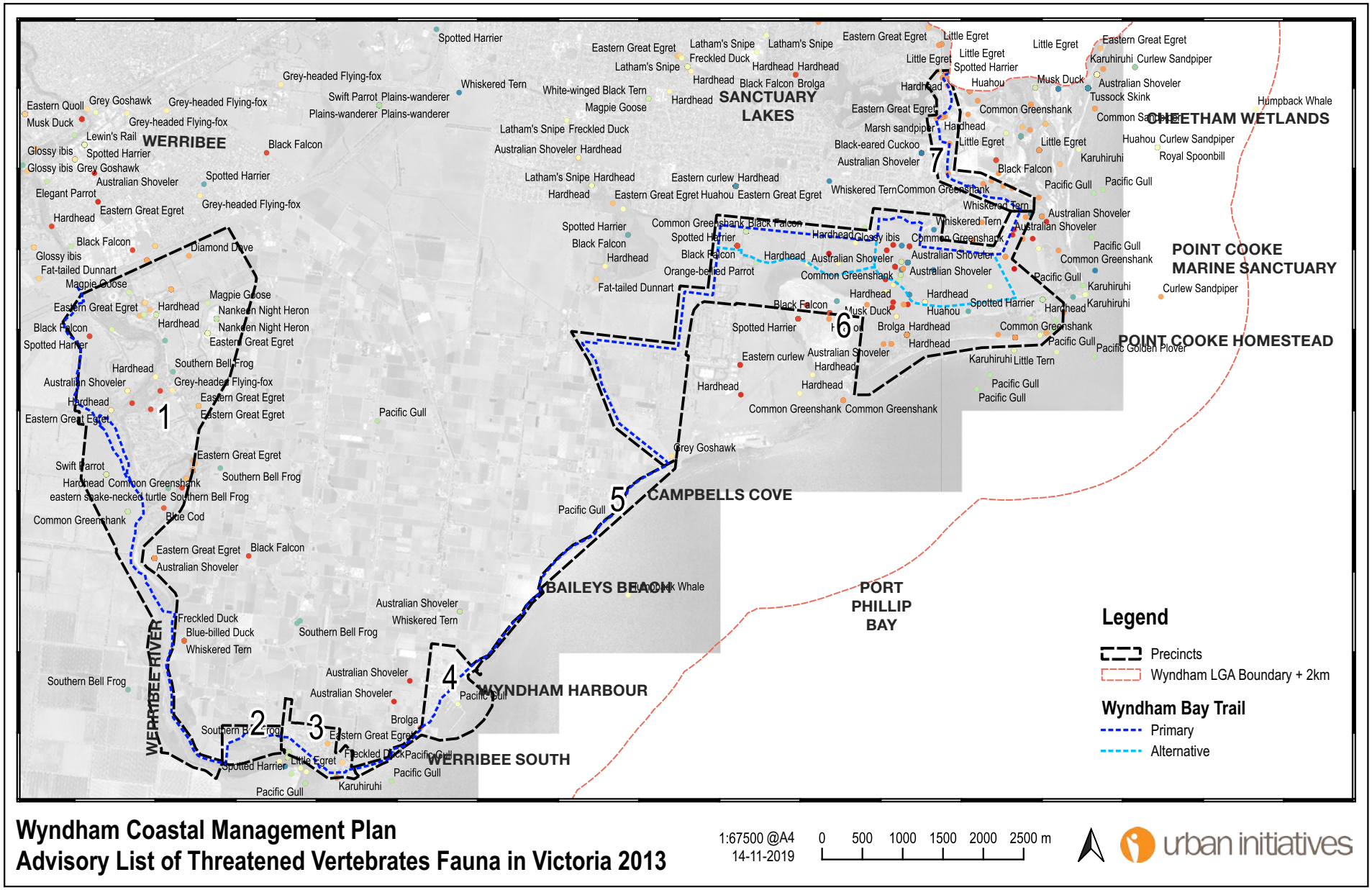


Figure 17 Advisory List of Threatened Vertebrates Fauna

5.6 Waterways and wetlands

5.6.1 River Systems

The Werribee River is the key watercourse in the study site, however there is also an extensive network of open drains that correlate to the intensive agriculture precinct, and two large lakes within the north on Parks Victoria and RAAF land. Sanctuary Lakes and Cheetham Wetlands are in the far north of the study site.

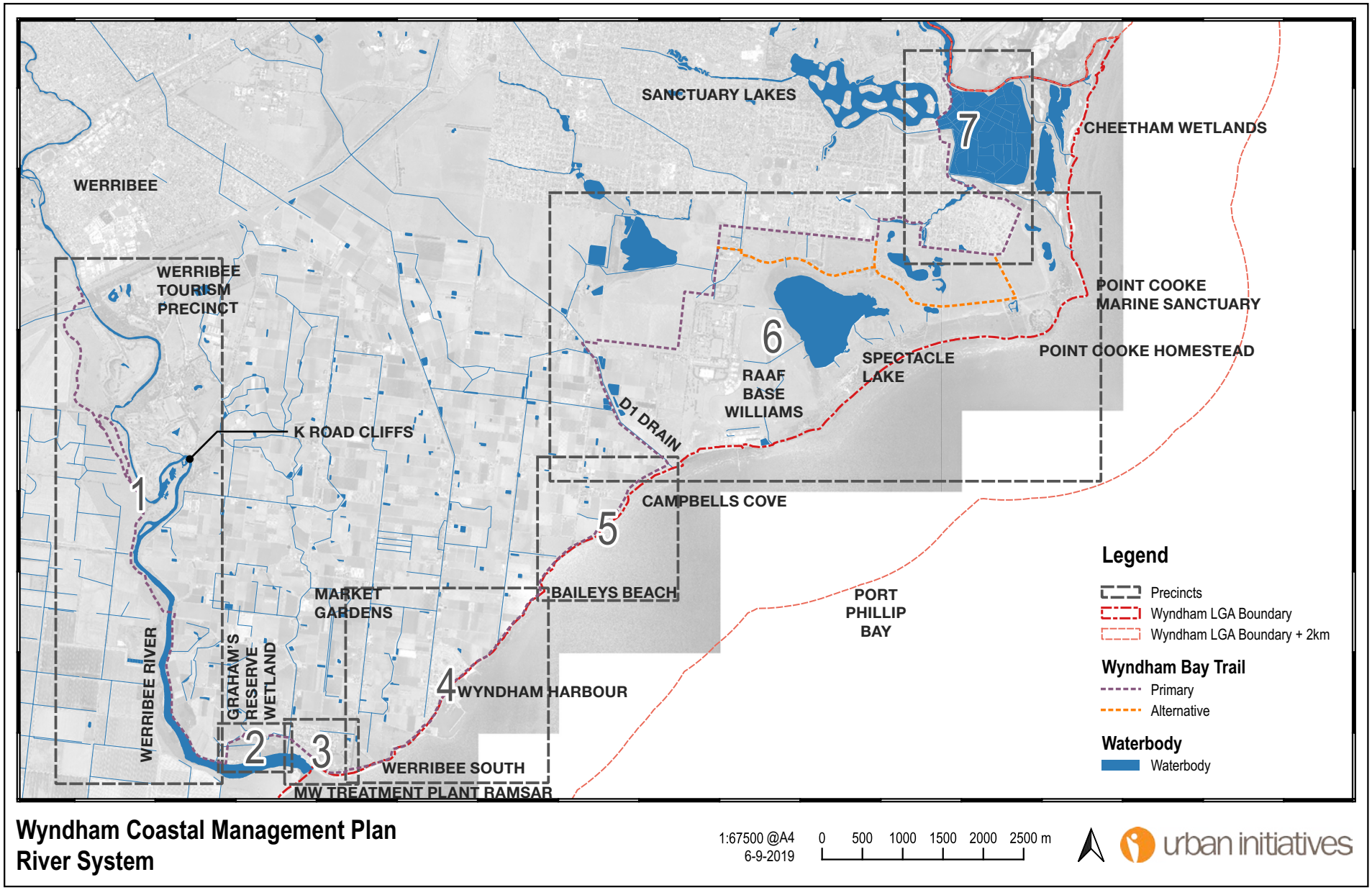


Figure 18 River System

5.6.2 RAMSAR sites

The study area is adjacent to or incorporates areas recognised under the Convention on Wetlands (Ramsar, Iran 1971) for its high value as habitat for waterbirds. These RAMSAR wetlands are shown in the adjacent plan.

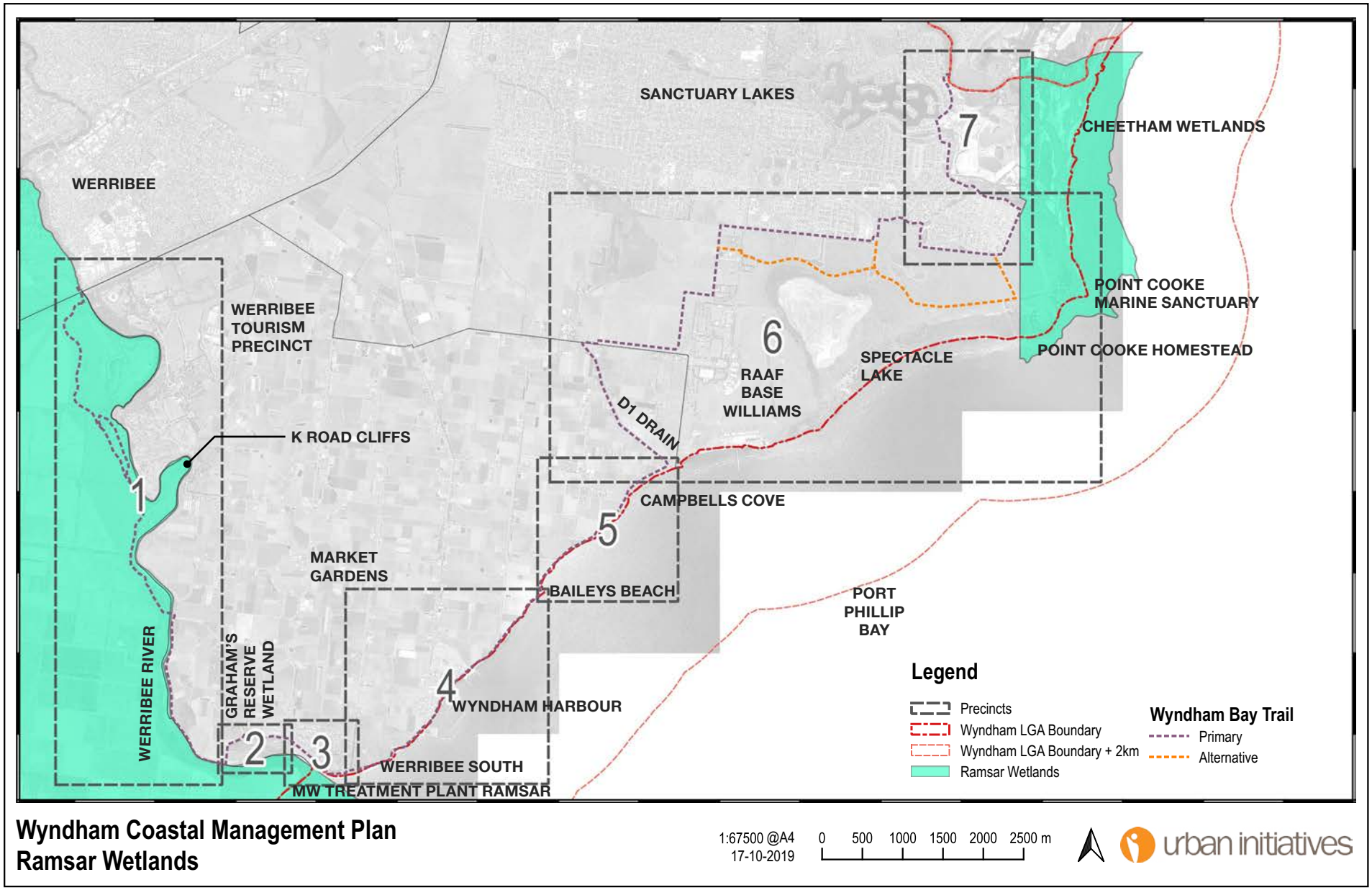


Figure 19 Ramsar Wetlands

5.7 Marine environment

The littoral zone is the marine environment that extends from the high water mark, which is rarely inundated, to shoreline areas that are permanently submerged.

This zone of the marine environment is economically valuable, supporting commercial and recreational fishing, diving and other tourism activities.

Qualities of the marine environment are described in detail in Section 8.1.2.

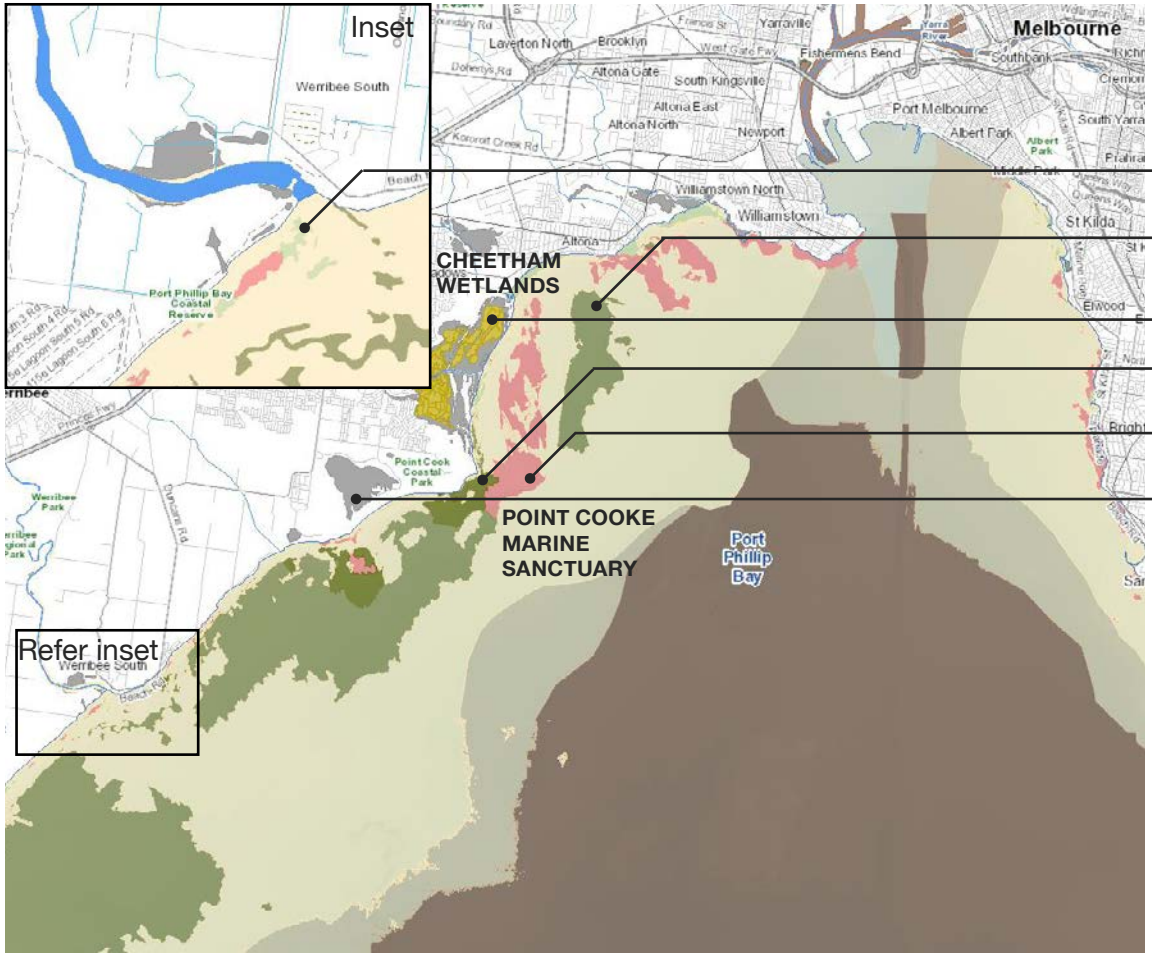
5.7.1 Marine based vegetation

The study area contains several areas of ecological importance.

Shallow sub-tidal reefs are highly accessible components of the marine environment in Wyndham. However, these reef ecosystems are subject to particular pressures arising from urban human activities.

Protected marine systems of particular value within Wyndham are:

- Cheetham Creek wetlands; and
- Point Cooke Marine Sanctuary.



Combined Biotope Classification Scheme (CBICS) (littoral and sub littoral marine-based vegetation)	
Seagrass on sediment	Sub littoral
Seaweed on sediment	Sub littoral
Sediment - mud	Littoral
Seaweed on rock	Sub littoral
Reef/rock substratum	Sub littoral
Saltmarsh coastal vegetation	Littoral

Figure 20 Marine-based vegetation mapping (CBICS)

5.8 Coastal processes

Although the previous plans have shown marine and coastal vegetation and ecosystems as discrete entities, in reality, there are complex interactions between all these ecosystems that make up the coastal and marine environment.

The adjacent plan illustrates in simplified format some of these interactions within the Wyndham coastal and marine environment.

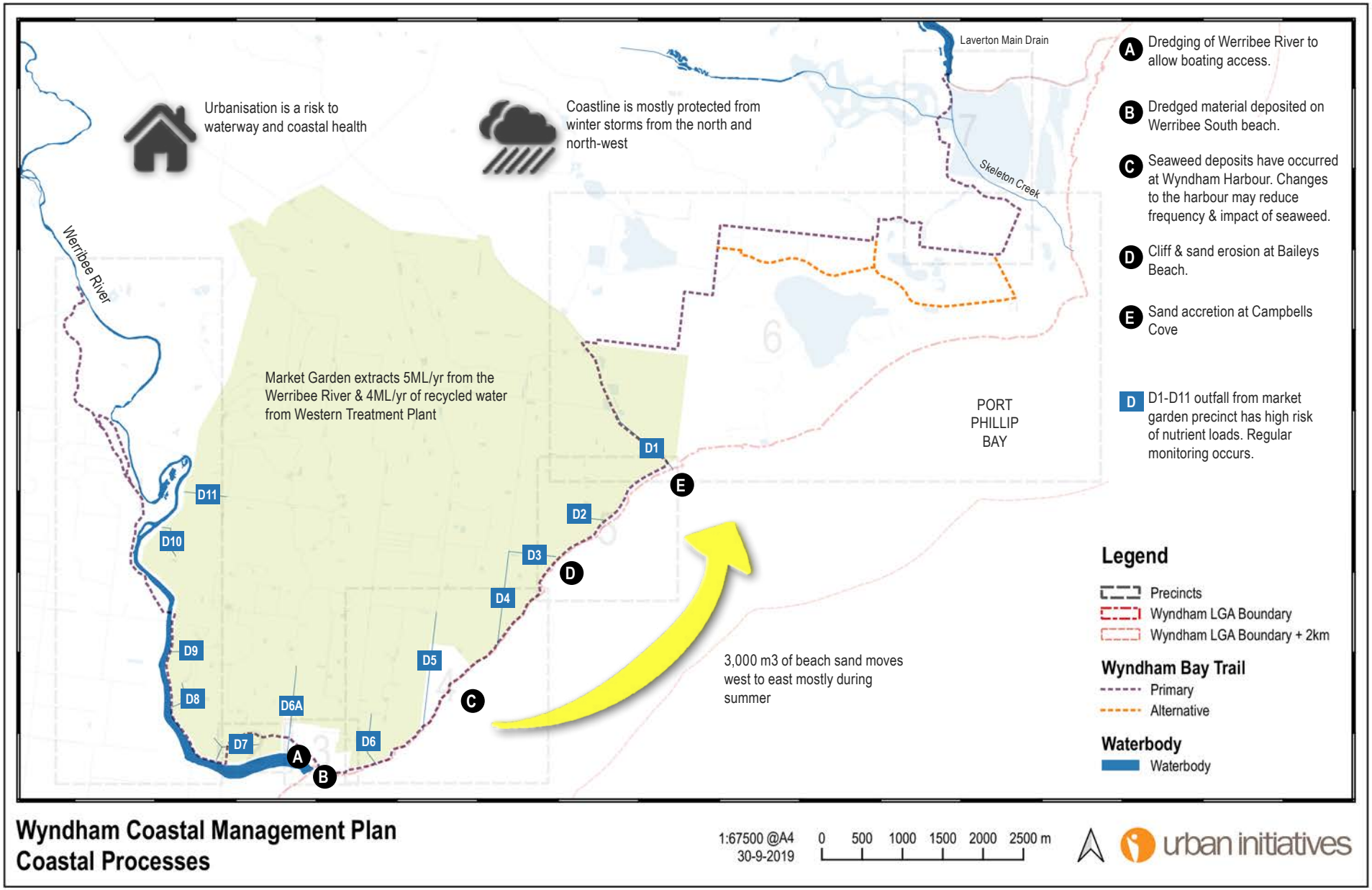


Figure 21 Coastal Processes

5.9 Wyndham Bay Trail alignment

The merits of encouraging walking and cycling through good footpaths and connectivity, opportunities for physical activity, neighbourhood amenity, sustainability, accessibility, transport and community safety are well established. Engagement during August 2018 made clear that the community valued the amenity of walking and cycling trails in the region. Walking, bicycle or shared use paths in the Werribee area include the Werribee River Walk or the Werribee Central River Walk, Federation Trail, Skeleton Creek Trail and Lollipop Creek Trail. These trails are mostly located north of the Princes Highway.

The respondents identified their desire for the Council to develop new shared paths or connections across Wyndham, and particularly from Wyndham Harbour to Point Cook. The strong growth and development of Wyndham supports the extension of a shared trail network to connect already established and thriving seaside and leisure culture along the foreshore. An existing portion, the Werribee South beach walk, connects the Werribee South boat ramp up to Wyndham Harbour.

A key connection along the Werribee River from Werribee central to Werribee South and the coastline, is proposed. This alignment avoids high-speed roads in Werribee South, often used by tractors and trucks, which are regarded as unsuitable for cycling and walking.

An off road, shared path connection between Wyndham Harbour and Point Cook has not been developed. The RAAF base prevents the shared path alignment following the coastline and necessitates an inland diversion before returning to the coastline at Point Cook Coastal Park.

The following plan indicates the general alignment of the Wyndham Bay Trail. For secondary shared path alignments refer to the precinct plans in Section 9.

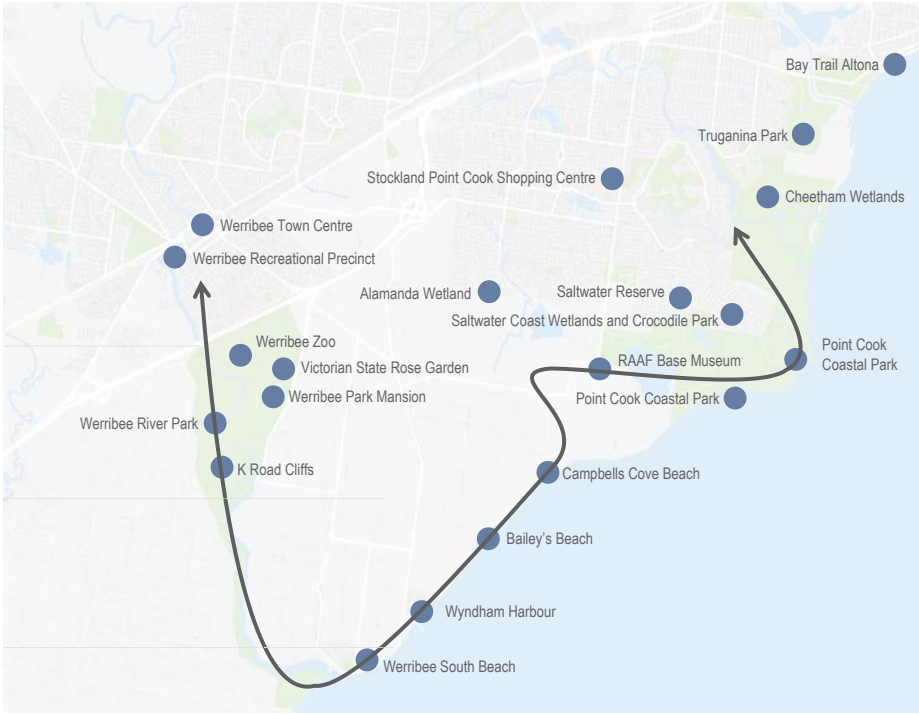


Figure 22 Conceptual alignment of Wyndham Shared Trail relative to existing destinations from Wyndham Bay Trail - Shared Path Alignment, GTA, 2019

The State Government's Open Space Strategy, Linking People and Spaces 2010, identified the missing Bay Trail Link between the Werribee River and Point Cook Coastal Park as a key strategic objective.

The development of the Wyndham Bay Trail would also support the State Government goals of developing better health and community well-being by embedding these principles into urban design.

The proposed alignment is expected to invigorate underutilised river and coastal environments where there is currently very little existing pedestrian and cycling infrastructure.

Although a conceptual design for the shared path alignment has been proposed the detailed design for the route has not been finalised.

Successful integration of the shared trail network with the existing network at both ends is essential and special care must be given to safety issues and legibility for pedestrians and cyclists at these transition points.

Some of these transition points are identified in Figure 24.

1. New connection to Federation Trail/Werribee River Trail
2. Western side of Werribee River Park
3. New river crossing
4. Eastern side of Werribee River
5. South side of Beach Road
6. South side of Campbells Cove Road
7. West side of D1 Drain
8. North side (but offset from) Aviation Road, within Aviators Field PSP Area
9. Connect to proposed Lincoln Heath South Shared Path
10. Connect along Point Cook Homestead Road
11. East side of emerging Saltwater Coast development
12. New wetland crossing to Sanctuary Lakes
13. Connection to existing Coastal Trail/Skeleton Creek Trail



Figure 24 Preferred alignment of Wyndham Bay Trail from Wyndham Bay Trail - Shared Path Alignment, GTA, 2019 (modified)





6 COMMUNITY AND STAKEHOLDER ENGAGEMENT

6.1 Community engagement

One of the key success factors for this engagement was to engage with the 'hard to reach' or 'quiet majority' and to gather data from both the general community and the small groups of people who spend a lot of time using the coast.

The CMMP community engagement process commenced in February 2018 and included place-based pop-up engagements in four locations across the municipality, a range of online tools, as well as workshops with stakeholders. A total of 152 surveys were completed, including 34 online and 118 at pop up events.

QUOTES

"I value the uniqueness of the area, the river, estuary, red cliffs, the agricultural and cultural heritage, and the walking, bike path along the foreshore"

"I love and value the scenery. It is such a beautiful spot. I like going for walks and swimming in the water. The birdlife is fantastic and you see different kinds at different times of the year. The marine life is varied year-round and sometimes you can spot dolphins! I love it here!"

"The coastline is unique in that it is generally free from housing development and has a rural/almost pristine feel about it"

"Untouched area of great development opportunity. Nice quiet areas on the bay-not far from Melbourne city. Some areas it almost feels like no-one has ever been there."

In June, 2018 a further pop up community engagement session was hosted at the National Disability Insurance Scheme Expo held in Wyndham. This provided an opportunity to discuss what would make the coast more accessible for people living with a disability.

Over 80 disability support service agencies were present at the Expo and participants attended to collect information for their use under the NDIS program. The engagement session was hosted as a joint exercise between Wyndham Council and Parks Victoria Rangers from parks in Melbourne Western suburbs.

Respondents indicated that Wyndham Harbour (51%), Werribee South Beach and Boat Ramp (46%) and Point Cook Coastal Park (32%) are the most accessible coastal sites for people living with disabilities. The least accessible coastal site was K Road Cliffs (16%), followed by Campbells Cove and Baileys Beach (19%), which is consistent with low levels of visitation.

Respondents indicated that sealed paths (67%), accessible public toilets (64%) and disabled car parking (50%) make coastal areas more accessible to them. A range of pathway improvements including gently graded paths (43%), boardwalks or jetties (33%) and tactile surface indicators (22%) were also considered to improve accessibility. The benefits of all abilities playground equipment was appreciated by 36% of respondents and widely supported in informal discussions.



7 EXISTING CONDITIONS, ANALYSIS AND AIMS

Increased use, development and access to the Wyndham coastline presents significant opportunities to attract new visitors, as well as encourage regular visitors to stay longer and to return more often to enjoy what the area has to offer.

If not managed, this will lead to greater conflict between users and exceed the carrying capacity of sites.

This section describes and analyses the existing conditions expressed during community consultation including what residents value most and their ideas and aspirations for the Wyndham coastline.

Each identified theme results in a specific aim or aims. These aims will guide any future development to ensure that the existing qualities of the coastline so valued by the community are maintained and enhanced.

7.1 Protect what's unique

7.1.1 Cultural Values

Connecting with the past is important in such a rapidly growing urban area where there is so much focus on new development. Protection of buildings, relics and areas ensures that links with the past are preserved and appreciated.

The Werribee River is the key waterway around which different Traditional Owner responsibilities and rights have been negotiated long before European settlement in Wyndham. On the western side of the River, the Wathaurung Aboriginal Corporation is the Registered Aboriginal Party (RAP) that has a statutory role in the management of Aboriginal heritage values and culture, under the Victorian Aboriginal Heritage Act, 2006.

For land east of the Werribee River, including areas between Werribee South and Point Cook, three Traditional Owner organisations are recognised as having traditional connections to the land. Contemporary community organisations representing these groups include:

- Bunurong Land Council;
- Boon Wurrung Foundation; and
- Wurundjeri Woi wurrung.

Together with the Wathaurung Aboriginal Corporation, these organisations represent the interests of Traditional Owners of the Woiwurrung, Wadawurraung and Boonwarrung language groups.

A range of Aboriginal cultural assets can be found along the Wyndham coastline including scattered artefacts, landscape features, archaeological and geological formations.

Historically, Aboriginal groups negotiated passage through and used the land, sharing its food, shelter and resources and sites of cultural significance.

Each group holds distinct stories and connection to the land and its own interpretations of its cultural values and significance. This diversity can be better understood and integrated into planning outcomes along the Wyndham coastline.

As part of the community engagement process, meetings were held with each of the Traditional Owner groups based east of the Werribee River. These meetings were held to understand what Aboriginal groups value most about the Wyndham coastline and how Council can work with them to plan for the future improvement of Council managed coastal sites. Refer Table 2 (pages 69 - 70) a summary of values and priorities for each of the Traditional Owner organizations.

Each of the meetings with Traditional Owner groups have opened up pathways for further discussions in the implementation of the Coastal and Marine Management Plan. The Wyndham Bay Trail project has the potential to connect path users with Aboriginal culture, as users move through country, connecting Traditional Owner values and connections to the coastline with contemporary use and coastal access. As a shared path project, with Traditional Owners being involved from pre-concept planning, presents a great opportunity to share Aboriginal values with community members on a number of different levels.

Future precinct master plan development is the preferred planning framework for further discussions with Traditional Owner groups (as legislated in the new Marine & Coastal Act 2018 and with supporting actions in the forthcoming Marine & Coastal Policy), allowing an expansion of the knowledge shared in the initial engagement process. This provides an opportunity to plan inclusively, incorporating Aboriginal narratives and themes into master plans alongside the preparation of Cultural Heritage Management Plans, and Council's additional legislated responsibilities, to manage construction processes in implementation project stages.

There is also a rich social and farming history at Werribee South and a number of sites along the Wyndham Coastline with remnants of European settlement. Key sites include those associated with the Chirnside family at Werribee Mansion and the Homestead at Point Cook Coastal Park.

Aim:

To protect and promote sites and stories of cultural significance.



Table 2. **Traditional Owner Group Engagement Summary**

Traditional Owner Group	Key findings, issues and themes
Boon Wurrung Foundation	A meeting with a Boon Wurrung Foundation elder indicated a strong connection with Port Phillip Bay and the Wyndham coastline. Wyndham's growing and multi-cultural community is seen as an opportunity to connect all people through a connection to Aboriginal culture and country. Connecting residents with Wyndham's Aboriginal cultural heritage is considered to have the potential to enrich everyone's experience of visiting the coast and to impart a sense of Aboriginality in the user experience. It is considered that Aboriginal themes and values should be applied to master planning for coastal sites, providing a connection between traditional Aboriginal culture and the modern Australian community. It was suggested that ancient stories relating to the coastline could be shared through interpretive materials or installations, including the story of the creation of Port Phillip Bay, the Werribee River as a boundary and junction of the Werribee River and the Yarra River within Port Phillip Bay. A story regarding the Port Phillip Bay dolphins was also discussed. For Boon Wurrung community members, the ability to reconnect with country includes the ability to walk the length of the coastline. This provides a connection between significant destinations, places and ancestral remains within the coastal landscape. The mouth of the Werribee River is a very important location for community members. The ability to observe the night sky from the coast is also important for some community members. There is a desire to work with Council to share themes and historical information and to develop protection measures in significant locations with high landscape values, ancestral remains and artefacts.

Traditional Owner Group	Key findings, issues and themes
Bunurong Land Council	Bunurong people traditionally used the coastline within Wyndham as a travel route and as a food source with intertidal reefs used for fishing and large shore birds used for food. Coastal grasses were collected and used to make baskets. Sand dunes were often used for burials, being easier to dig than the surrounding basalt plains. Swales between dunes provided protection. The coast and dunes remain significant landscape elements for Bunurong people and have continually allowed community members to reconnect with country. Being on the coastline allows a reconnection with ancestors and cultural practices. An ability to move along the length of the coastline is essential to being able to reconnect with country. Songlines in the night sky can be observed by community members from along the coastline. There are a number of Bunurong specific, and broader Kulin Nation narratives and themes that Council could consider in planning for the future of the Wyndham coastline. These include a story regarding the Werribee River, the creation of Port Phillip Bay and the meeting of the Yarra and Werribee Rivers in Port Phillip Bay. Seasonal movement along the coastline, use of fire to manage the landscape and the night sky provide narratives and themes for consideration in future coastal planning projects.
Wurundjeri Woi Wurrung	At a meeting with three Wurundjeri Woi Wurrung elders and archaeology staff it was noted that Cultural Values Recordings would be required to discuss coastal cultural issues. These meetings would ideally be hosted onsite with a large group of elders present. Onsite meetings are required to understand how the Wurundjeri Woi Wurrung people value Wyndham's coastline. This request is noted for future consideration. Wurundjeri Woi Wurrung staff are interested in working with Council to share their knowledge and experiences in land and sea management elsewhere on the Victorian coastline and to discuss suitable engagement methods for future master planning and precinct planning exercises that would appropriately allow for Wurundjeri Woi Wurrung participation in planning outcomes.

There is also a rich social and farming history at Werribee South and a number of sites along the Wyndham coastline with remnants of European settlement. Key sites include those associated with the Chirnside family at Werribee Mansion and the Homestead at Point Cook Coastal Park.

Aim:

To protect and promote sites and stories of cultural significance.

7.1.2 Marine and coastal ecosystems, native vegetation, habitat values and biodiversity

Victoria's marine and coastal environment contains a diverse and unique mix of plants, animals, soils, seas and waterways that function together as ecosystems including heathlands, intertidal mudflats, sponge gardens and kelp forests. A range of habitat types, where an organism or population naturally occurs, are based on the underlying geological features. These ecosystems and associated habitats are home to more than 12,000 plant and animal species, many not found elsewhere in the world.

Ecosystems have value in their own right (intrinsic value) regardless of their value to humans. This includes their uniqueness, diversity of genetic information, and the components that make up their structure and function (e.g. native flora and fauna).

Ecosystems also provide a vast range of values and benefits that humans rely on such as clean air, food, nutrient cycling processes, cultural practices, industry, and recreational opportunities. The number and quality of values and benefits provided to society depends on the health and extent of an ecosystem. An ecosystem in good condition has the ability to function and generate more goods and services than one in poor condition.

The health and function of marine and coastal ecosystems and associated habitats are being threatened by human uses and developments. Population growth and urbanisation is reducing and fragmenting surviving habitats, pollution of waterways and soils is disrupting ecosystems processes, and invasive species and increasing extraction of natural resources are changing ecosystem species composition.

Major threats to the area include:

- Overgrazing and cultivation of crops in close proximity to waterways;
- Erosion and pollution associated with nearby urban development;
- Unrestricted pedestrian and vehicle access;
- Predation of native fauna by cats and foxes; and
- Clearing of native vegetation surrounding river systems and higher up the catchment.

Invasive species of flora or fauna threaten native biodiversity due to their ability to change and destroy habitats and ecosystems and readily re-invade from adjoining land where eradication works have not been undertaken.

Wyndham's City Forest & Habitat Strategy commits to enhancing habitat corridors. Maintaining native vegetation to a high standard is resource intensive in harsh coastal environments. Native vegetation provides a natural form of soil stabilisation through the binding action of plant and tree root systems which assists with erosion prevention.

Removal of native vegetation generally requires Government approval. However, particular caution is needed with the thinning or removal of vegetation in areas where soils are identified as unstable.

Flora and fauna sites of significance include coastal vegetation generally, Graham's Reserve Wetland salt marsh ecosystem, Point Cook Coastal Park, Cheetham Wetlands and Point Cooke Marine Sanctuary.

Point Cook Coastal Park (Parks Victoria)

The sense of remoteness at Point Cook Coastal Park, and its role as a 'refuge from urban development', are its defining features.

Expansive views within the park, from across Port Phillip Bay to Mornington Peninsula, the Dandenongs and along the coast towards the city and the Bellarine Peninsula, are highly valued.

Views inland are dominated by the You Yangs, the Brisbane Ranges and open plains.

Seven Ecological Vegetation Classes (EVCs) are present within Point Cook Coastal Park and Cheetham Wetlands. The seven EVC's present are Berm Grassy Shrubland, Coast Banksia Woodland, Coastal Dune Scrub, Coastal Saltmarsh, Coastal Tussock Grassland, Estuarine Flats Grassland and Plains Grassy Wetland. It is considered a state-significant reserve as it is the only park in the region that contains four of these EVC's in one location.

Cheetham Wetlands (Parks Victoria)

Cheetham Wetlands was listed under the Convention on Wetlands (Ramsar, Iran 1971) in recognition of its high value as habitat for waterbirds.

It is one of eleven wetlands of international significance in Victoria and is one of the remaining wintering sites for the critically endangered Orange-bellied Parrot (*Neophema chrysogaster*). It also hosts shorebirds of international importance, including the Double banded Plover, Curlew, Red Necked Stint, Sharp Tailed Sandpiper and Pied Oystercatcher.

Point Cooke Marine Sanctuary (Parks Victoria)

Point Cooke Marine Sanctuary is the largest of three marine sanctuaries in Victoria. The sanctuary covers 292 hectares on the north-west side of Port Phillip Bay at Point Cook.

It extends along 3.4 kilometres of coast from the high water mark to between 750 metres and 1.1 kilometres offshore, from just west of Point Cook Homestead to the Cheetham Wetlands.

The sanctuary also forms part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site, along with nearby

Point Cook Coastal Park and Cheetham Wetlands. It came into effect on 16 November 2002 and incorporates the existing Point Cook Marine Reserve, which was proclaimed under the Fisheries Act 1982.

The sanctuary is less than four metres deep, with surface water temperatures averaging 20.4°C in the summer and 11.4°C in the winter. It is not subject to large waves, strong currents or swell, but in strong westerly conditions waves can reach heights of two metres. Natural hydrodynamic events such as storm surges displace seaweed and kelp communities, erode beaches and deposit sand over the reefs. During periods of strong winds wrack can form a thick blanket over the intertidal area.

There are no rivers or creeks that flow directly into the sanctuary, but nearby freshwater runoff, phytoplankton blooms and disturbance of nearby fine sediments frequently create turbid conditions.

The main habitats protected by the sanctuary include narrow beaches of mud and sand, low intertidal and shallow sub-tidal basalt reef with algae and associated epibenthic fauna, and the water column. Six species of marine flora and fauna, including the ghost shrimp *Axiopsis werribee*, are believed to be at their distributional limits within the sanctuary.

The shoreline geology is basalt; the remains of lava flow across the plains of northern Port Phillip Bay. Sand patches and associated seagrass *Zostera muelleri* beds extend across a wide band of the intertidal reef. Intertidal areas have important social and cultural values and are subject to human pressures including collection, trampling and pollution.

The sanctuary protects feeding areas for thirty internationally important migratory seabirds and shorebirds. Saltmarsh, dunes, sandy beaches, intertidal reefs and mudflats, offshore banks, waters and wetlands adjacent to the sanctuary provide roosting and foraging habitat.

Forty-four threatened bird species have been recorded in or in the immediate surrounds of the sanctuary. These include the critically endangered Orange-bellied Parrot *Neophema chrysogaster*, Australian Painted Snipe *Rostratula australis* and the Intermediate Egret *Ardea intermedia*.

Aims:

To maintain and enhance native vegetation, habitat and biodiversity.

To apply ecosystem-based management to create and maintain healthy, functioning, resilient marine and coastal ecosystems.

7.1.3 Enhanced amenity

Key features of the foreshore that provide local distinctiveness are the existing view lines to the You Yangs, Mount Dandenong and the city skyline, which are considered significant features of the Green Wedge and coastal environment. These and other key viewing points should be identified and protected.

The Bay Trail needs to support recreational demand in a way that does not compromise the area's natural qualities. Delivering a trail which is low impact and responsive to the natural environment is essential. This is further detailed in the form of Precinct Plans later in this document.

The corridor along the coastline is currently well-vegetated. This vegetation serves as a wind break from bay winds and salt spray, as well as providing privacy and deterring intrusion. Vegetation is also critical in many areas to the stability of the landform with slopes and beaches being prone to erosion. The foreshore vegetation also provides habitat for a large number of animal species and should not be removed to create new vantage points.

There is a range of building structures on the foreshore including boatsheds, which in some locations are a key influence on local character. Leases are provided for buildings used for community, recreational or commercial purposes.

Redevelopment or upgrades along the coastline offer opportunities to deliver good design outcomes appropriate to the coastal environment. Commercial service opportunities exist in several areas, but public benefit, sensitive siting, design, scale and amenity are all key considerations. The Victorian Coastal Strategy (2014) building policy promotes coastal dependency, sustainability, equity and community need in relation to the development and management of buildings on the coast.

A more holistic and integrated approach is also required in relation to signage, lighting, street furniture and landscaping. Better wayfinding and information signage, improved connectivity, a clear hierarchy of paths and lighting in appropriate locations will improve the overall distribution of visitors.

Aims:

Protect the unique heritage and ties into the existing colourful foreshore character of the place.

Improve the ability to cope with the challenges of seaside environment, day and night and year-round.



7.2 Good planning

7.2.1 Partnerships

Wyndham City Council has foreshore management responsibility for Crown land and Council owned public land. Parks Victoria (PV) has management responsibility beyond the low water mark. The Department of Environment, Land, Water and Planning (DELWP) represents the Crown as the landowner. Other key partners include RAAF, Melbourne Water, and Wyndham Harbour.

Aims:

Coordinate priorities and resources between agencies.

Formalise liaison and collaboration arrangements.

7.2.2 Strategic Planning

Planning and managing the integration of Coastal Crown Land Reserve with surrounding land uses is a significant planning challenge to minimise conflict between activities.

Land ownership across the Wyndham coastline is complex, mixed and provides limited public access in some areas. Major land uses interfacing with the Crown Land Coastal Reserve include:

- The Werribee South Green Wedge intensive agriculture area;
- Wyndham Harbour;
- The Western Treatment Plant managed by Melbourne Water;
- The Point Cook Coastal Park managed by Parks Victoria; and
- The Point Cook RAAF Base managed by the Department of Defence.

The Werribee South Intensive agriculture area is a significant local employer and a portion of Melbourne's 'food bowl'. It is estimated that Werribee South produces 10% of Victoria's vegetables. The area produces the majority of Victoria's brassica and leafy green vegetables including cauliflower, broccoli, lettuce, cabbage and onion.

The area has a history of cultivation extending back to the early 1900s under the Closer Settlement Scheme and then as a Soldier Settlement after World War 1.

The proximity of the Werribee South Agricultural Precinct and the coastal environment interface provides a unique opportunity to connect visitors with agricultural food production in a coastal setting.

The Werribee South Green Wedge Management Plan recognises the challenges of appropriately managing the food production and increased public coastal access.

Concern has been expressed by some farmers regarding the ability for the two land uses to co-exist including:

- Public health risks of spraying pesticides, the smell of fertiliser and use of irrigation water;
- Concern that the Werribee South road network is incapable of safely accommodating cyclists; and
- Bringing new people into the area increases security issues including break ins to farming machinery and increased stolen produce from farms.

There is a growing recognition of the importance of supporting Melbourne green wedge agriculture areas to ensure that they can continue to provide a sustainable food source as Melbourne continues to grow. There is also a growing recognition of the social and economic benefits of recreational paths and tourism activities in Green Wedge areas including the Werribee South Agricultural Precinct.

There are many examples in Victoria where the two land uses coexist well, including:

- Existing shared paths adjacent to market gardens in Bacchus Marsh, Merrimu and Dingley;
- Existing regional rail trails between Wangaratta and Bright and through Warburton and Yarra Valley where shared paths connect users with agricultural landscapes and associated “paddock to plate” tourism opportunities; and
- Proposed shared paths to be developed by Yarra Ranges Council between Mount Evelyn to Monbulk and by the City of Casey connecting Pearcedale, Clyde and Tooradin taking shared path users through green wedge, intensive agriculture areas.

A risk management study of agriculture interface areas has assisted in establishing design principles for the development of the Bay Trail adjacent to agricultural properties along the proposed Wyndham Bay Trail route. This is outlined in Section 9.5 & 9.7.

The section of the Wyndham Bay Trail that adjoins the Werribee South Agriculture Precinct provides a unique opportunity to connect shared path users with the local coastline and market gardening landscape. Careful management of the farming interface edge is required to ensure the Bay Trail provides a positive outcome for both farmers and shared path users into the future.

Improving environmental values and increased community access to the coastline must be carefully considered, especially in areas adjacent to farmland properties.

Aims:

Support the long-term use and development of the agricultural precinct for high intensity agriculture.

Ensure that the coastal environment meets the needs of the majority of users.

Remove any private encroachments onto Crown land.



7.2.3 Community stewardship

The Wyndham coastline is actively cared for by many hard working and committed volunteer groups. The social networks and community development opportunities provided by active community organisations is considered a significant social capital asset.

Groups currently active in caring for coastal areas include:

- The Werribee River Association;
- Wyndham Boatshed Association;
- Beach Patrol 3030;
- Point Cook Open Spaces;
- Werribee South Volunteer Coast Guard;
- Community based clubs such as the Werribee South Fishing Club, and
- Werribee South Ratepayers Association.

These groups have established long-term commitments to significant beach clean-up, vegetation management, citizens science, search and rescue and other community led programs along the Wyndham coastline, often in collaboration with Council, State agencies and academic institutions.

Aim:

Support community groups developing and delivering foreshore programs.



7.3 Use and access

7.3.1 Shared Space

The Wyndham coastline attracts growing numbers of local visitors and tourists annually. Demand for beach areas, boat launch and picnic facilities is anticipated to grow significantly in the coming years.

Providing a Bay Trail will naturally attract a new range of users to the area. The merits of encouraging walking and cycling through good footpaths and connectivity, opportunities for physical activity, neighbourhood amenity, sustainability, accessibility, transport and community safety are well established.

The impacts of increased visitation on the environmentally - significant areas will need to be managed sensitively, including the impacts of litter, and on wildlife.

More broadly, consideration will need to be given to the interface between the shared path corridor and abutting residential areas including Werribee South, Baileys Beach and Campbells Cove boat sheds.

In and adjacent to the water consider appropriate measures to protect swimmers, snorkellers, divers and other vulnerable users from impacts of boats and jet skis.

Aim:

To increase access to natural and wild places for all people to enjoy and recreate.

7.3.2 Activation and Safety

Respondents indicated that many of the locations on the Wyndham Coast were isolated and felt unsafe, especially Campbells Cove and the Point Cook Homestead site. Some boat shed owners indicated several recent break-ins reported to the police.

Some respondents indicated that nudists were still using the beach even though signs have been installed; and this created a sense of unease.

The length between Werribee River Park and Werribee South is long (~6km) with limited road access. Emergency access and/or new bailout points need to be carefully considered.

Successful integration of the shared trail network with the existing network at both ends is essential and special care must be given to safety issues and legibility for pedestrians and cyclists at these transition points.

The foreshore presents a variety of public safety risks including personal safety, vandalism, drain outfalls, poorly designed or maintained infrastructure, and natural hazards such as erosion and bank instability, tree branches and roots.

Aims:

Improve public safety.

Identify and reduce hazards.

7.3.3 Access

Convenient and safe access to the foreshore is a community priority as well as connecting important destinations.

The detailed design, delivery and operation of the Bay Trail should consider the following factors:

- Create a new ramp or bridge connection from the Federation Trail and Werribee River Trail across the Werribee River and under the Princes Freeway. Gradients, surfaces and connections to be improved and linked to the trail on the western side of the Werribee River.
- Alignment to be developed by DELWP (planned and constructed) following the existing informal track along the western side of Werribee River.
- New bridge to cross back to east side of river will require planning and expenditure by DELWP.
- Trail could run broadly along alignment of informal tracks on east side of river. Investigate purpose of informal access roads along the alignment, and whether they need to be formalised. In any case, provision could be made for access along the shared path if access is very infrequent.
- Sensitivity required around Graham's Reserve Wetland, but improved pedestrian access is also desired to the river edge. Connection in to existing shared path in Werribee South.
- A few small drains and culverts will need to be traversed between Werribee River Park and Werribee South.

Aims:

Enable better accessibility for all along the coastline and consider an ageing population.

To integrate public realm and the needs of pedestrians with the requirements of Wyndham Bay Trail cyclists.



7.4 Development

7.4.1 Climate Change and Adaptation

Coastal settlements around Port Phillip Bay, experiencing significant increases in population and density, are highly exposed to a range of climate change impacts. Climate change is exacerbating existing threats and introducing new ones, such as:

- Rising sea levels leading to more inundation and erosion;
- Increased frequency and severity of extreme weather events and storms;
- Changes in ocean temperatures, currents and ocean acidification;
- Changes to water quality and storm water management including the quality, quantity and frequency of storm water entering Port Phillip Bay and the Werribee River;
- Changes in the range, distribution and abundance of both introduced and native plants and animals, including new pests taking advantage of a changed climate; and
- Coastal squeeze as coastal ecosystems are forced inland with sea level rise and meet man-made barriers such as roads and housing.

Wyndham's Integrated Water Cycle Management Plan provides a strategic framework for managing water quality entering the Werribee River and Port Phillip Bay. Water quality issues include:

- Irrigation and drainage channels contributing excess nutrients, fertilizers and other chemicals to the bay;
- Excess algae resulting in blue-green blooms;
- Poor river flows inhibiting fish breeding; and
- Dredging may allow salty water in to aquifers.

Industries such as fishing and tourism will be affected by changing species distribution and increasing storm and erosion events. Recreational opportunities on the coast will change as beaches and cliffs erode.

A healthy marine and coastal environment is resilient, adapting to or tolerating change without losing its original function. It is also the ability to overcome or bounce back from a disruption. A more resilient system also provides certainty for industries and communities that rely on its resources from a liveability and economic perspective.

New climate change hazard assessment knowledge and improved modelling is available to better understand future risks of sea level rise and storm surge events.

Aim:

Protect against adverse environmental impacts, and respond to anticipated sea level rises, storm surge events and higher tides.



Sea level rise	More frequent and extensive inundation of low lying areas Cliff, beach and foreshore erosion Altered saltmarsh and mangrove habitats Damaged infrastructure, e.g. seawalls, jetties, roads, walking tracks Loss of and damage to private property
More frequent and extreme storm events	Intense and destructive flooding of land and buildings Loss of and damage to private property Cliff beach and foreshore and erosion Pollution from sewer overflows
Changing sea temperatures	Species distribution shifts Spread of invasive species and diseases Increased sea surface temperatures and altered currents Changes in phenology such as phytoplankton blooms
Altered patterns of wet and dry periods	Changed salinity, nutrient and sediment flows Changes estuaries, greater extremes of high and low freshwater input Reduced water clarity Increased frequency and intensity of fires on land, with impacts beyond
Ocean acidification	Declining shellfish and other species Impacts on early life stages of species Loss of plankton base for food webs, affecting fisheries
Vegetation changes	Loss of species and habitat Ecological shifts Increased fire risk

Figure 25 Ways that climate change will affect the coast from Guidelines for the Preparation of Coastal Management Plans, DELWP, 2017

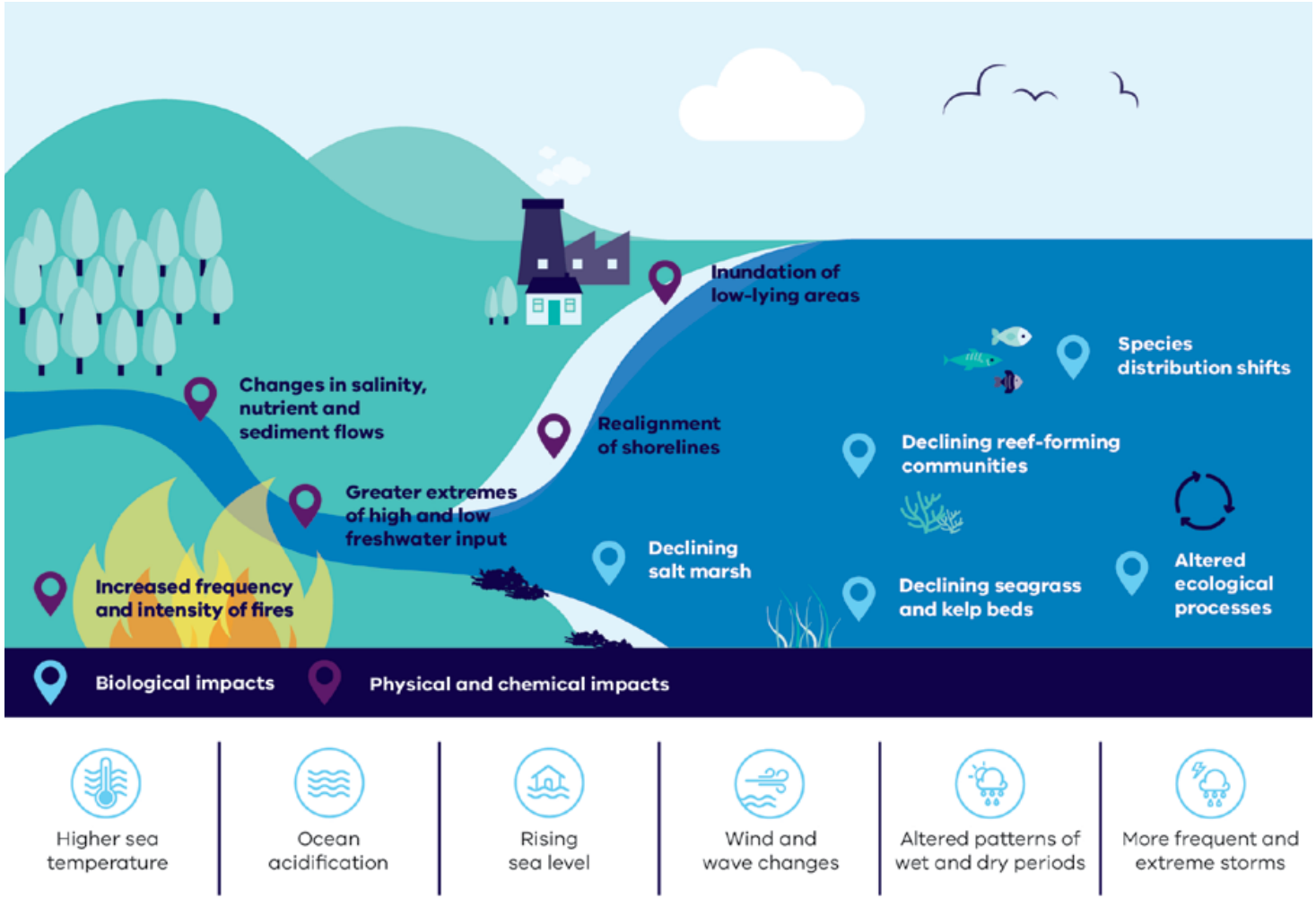


Figure 26 Impacts of climate change on the marine and coastal environment from the draft Marine & Coastal Policy, DELWP, 2019

7.4.2 Infrastructure and Facilities

Population growth increases pressure on infrastructure, such as walking tracks, visitor facilities, lifesaving clubs and recreational club houses, boat ramps and marinas.

Many people would like to see more toilets, waste collection, seating, shading, BBQ's, playgrounds and other amenities. There were also a few requests to increase car parking, fix up some roads, and to trim back trees and shrubs to make it safer for drivers, cyclists and pedestrians.

A range of State and Federal funding grants are available to Council to assist in the design and construction of community infrastructure projects.

Aim:

Implement and fund opportunities based on needs, opportunities and priorities.

7.4.3 Economic Development Opportunities

The Wyndham coastline presents a number of economic development issues and opportunities for coastal communities and business operators.

The shared trail is anticipated to generate repeat visits by encouraging visitors to return to experience other attractions at a later stage.

Many people would like to see more cafés and restaurants, development of the Point Cook Homestead, and more developments similar to Wyndham Harbour.

The following services are considered to have the greatest potential to increase tourism spending within local communities located along the Wyndham coastline:

- Food and beverage businesses including those in the Werribee Tourism Precinct, Wyndham Harbour, local fish and chip shops and cafes;
- Accommodation businesses which extend the time visitors spend in the local area including hotels, caravan parks and farm and home stays;
- Retail providers who provide visitors with opportunities to buy meals and food products and supply locally produced farm and other products;
- Providers of recreation experiences such as fishing charters, tours and ferry boat rides; and
- Fuel suppliers – filling the tank for the return journey.

During community consultation there were over 70 specific comments mentioning walking and cycling trails; 50 via the online and hard copy surveys and a further 22 comments via the mapping tool. These included requests for the Bay trail to be extended, connections to be made between Point Cook Coastal Park and Werribee, and Sanctuary Lakes and Wyndham Harbour, the walking trail to be extended from Wyndham Harbour to Campbells Cove and the linking of the Point Cook Coastal Park to the Cheetham Wetlands.

Aims:

Optimise connectivity between key features and destinations for users.

Facilitate future sustainable land use, development and tourism.

7.4.4 Environmental management

Over 50 comments were raised about keeping the coastline clean making this issue the second most popular topic highlighted during the engagement.

The top three issues regarding keeping the coastline clean were the smell of seaweed accumulations, the rubbish being dumped along the coast, and the need to clean up the beaches more regularly.

There were many comments about keeping the beach/es clean to enable people to swim.

Seaweed

Key areas of concern related to seaweed accumulations and the associated odour which are known to occur every few years between Werribee South and Altona. Seasonal accumulations fluctuate depending on off shore growth and shedding, wind and tidal patterns.

During February and March 2018, a large accumulation of seaweed washed up at Wyndham Harbour. The deposit of seaweed generated an extremely strong smell and was a major concern for many residents.

Since the recent accumulation, the developer of Wyndham Harbour has commenced work to re-model the shape of the northern bay. It is anticipated that this remodelling work will help prevent the seaweed from accumulating and redirect it further along the coastline.

Hobsons Bay City Council has a policy that encourages community members to remove seaweed from local beaches for use as mulch and in garden composting. They also run seminars and guided coastal walks to instruct residents on how to use seaweed at home. These programs could assist in reducing problematic accumulations at Wyndham Harbour.

Litter & rubbish dumping

Rubbish dumping along the coast is a major issue. Wyndham's Waste & Litter Strategy 2016 - 2040 provides a strategic framework for managing litter entering the Werribee River and Port Phillip Bay.

Council has recently trialled the installation of "Seal The Loop" bins at a number of beaches and popular fishing sites along the Werribee River, with the aim of reducing the amount of fishing litter such as hooks and lines being left behind.

Council is also committed to reducing the amount of litter entering waterways though the use of gross pollutant traps on creeks and tributaries to capture litter before it enters waterways.

In recent years, Council has installed hundreds of grated entry pits on drains to prevent litter from entering waterways from surrounding roadside areas.

Aim:

Reduce or eliminate waste entering the Werribee River and Port Phillip Bay.

Reduce or eliminate rubbish dumping along the coastline.

Consider alternative strategies to manage seaweed accumulation.



8 VISION, PRINCIPLES AND RECOMMENDATIONS

The Vision, in relation to the use, protection, management and custodianship of the Wyndham coastline:

- Encapsulates the long-term aspirations for this important public space;
- Provides a foundation for a structure of management principles, strategies and actions; and
- Is shared by Council, the Wyndham community and wider stakeholders.

Development of the Vision has drawn heavily on consultation, research and investigations. Of particular importance and relevance to the community is the need to connect the foreshore, increase amenity and preserve the coastal character including protection of vegetation and sites of cultural significance.

Vision:

To connect and enhance the unique qualities of the Wyndham coastline for greater access and enjoyment and to facilitate appropriate coastal development and tourism.

The Planning and Decision Pathway (refer Figure 27 below) indicates how guiding principles must be considered in decision-making.

This section establishes principles to protect and enhance the themes and values identified in the previous section. These principles serve as the foundation for behaviours, and the chain of reasoning.

The order of the principles also apply a hierarchy for decision-making.

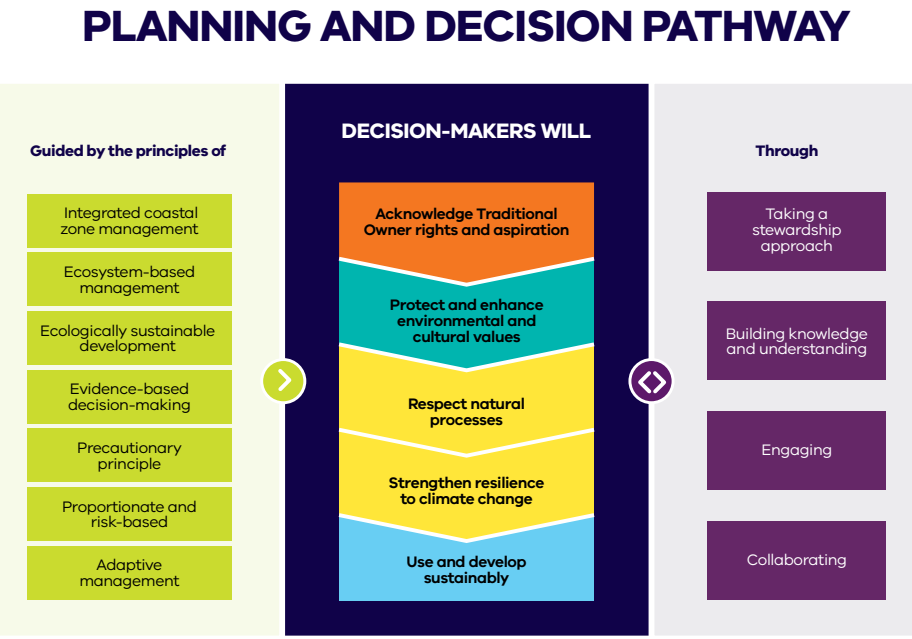


Figure 27 The Planning and Decision Pathway from draft Marine & Coastal Policy, DELWP, 2019

8.1 Principle 1: Protect What's Unique

Ensure protection and recognition of the Wyndham coastline's unique habitat, agricultural, historic, marine sanctuary, indigenous and volcanic landscape values.

8.1.1 Cultural Values Recommendations

a. Continue to engage with each Traditional Owner organisation and local Aboriginal community members to:
   - Continue to explore Aboriginal cultural values in coastal areas;
   - Better understand the significance of coastal sites for Aboriginal community members; and
   - Develop several Aboriginal narratives. Requires further community engagement initiatives.

b. Work with local historical organisations to focus on identifying significant post European settlement, places, people and events.

c. Integrate interpretation of local Aboriginal and post-settlement content into the implementation of the shared trail.

d. Protect heritage landscapes and sites using Cultural Heritage Management Plans and other heritage management tools, especially in locations where coastal infrastructure is improved.

8.1.2 Marine and coastal ecosystems, native vegetation, habitat values and biodiversity recommendations:

a. Ensure that native vegetation is not removed to create or maintain coastal views.

b. Maintain and enforce planning controls related to the removal of native vegetation.

c. Maintain and enforce the use of experienced contractors to undertake any approved works.

d. Prepare Vegetation Management Plans for all coastal habitat areas.

e. Consider transitioning to plant species with the abilities to withstand more saline growing conditions.

8.1.3 Enhanced Amenity Recommendations:

a. Apply a more consistent approach to building and infrastructure design, scale, materials and finishes.

b. Consider opportunities to connect growing local communities with nature and the unique Wyndham coastal environment.

c. Identify remnant vegetation sites, key habitat areas and improve connectivity along the coastline through contiguous revegetation and, where possible, make connections inland.

d. Identify pest and weed issues and plan actions to reduce their impact on the values of the coastal environment.

e. Work with adjoining land owners and managers to develop a coordinated pest and weed management strategy ensuring species are targeted, reducing costs and providing better treatment coverage.

f. Balance removal of weeds with replacement of similar habitat to avoid unintended consequences to other species; and

g. Seek input from the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) regarding control techniques for identified animal and plant pests.



8.2 Principle 2: Good Planning

Develop an integrated planning framework, strategic partnerships and State Government advocacy priorities to facilitate future sustainable land use and development.

8.2.1 Partnership Recommendations

a. Utilise the most recently available data regarding sea level rise projections and the outcomes of the DELWP Port Phillip Bay Coastal Hazard Assessment to sustainable manage future development along the Wyndham coastline.

b. Continue participation in climate change adaptation planning activities and projects led by DELWP, the Association of Bayside Municipalities, Melbourne Water and the Municipal Association of Victoria (MAV).

c. Work with Melbourne Water to:

- Understand plans for the Western Treatment Plant especially in relation to its management as a RAMSAR site for significant bird life; and
- Maximise future habitat outcomes on both sides of the Werribee River and at Graham's Reserve Wetland;

d. Continue to work in partnership with Parks Victoria to ensure trail connections, recreation needs and community access to a range of park based programs, services and facilities is maximised; and

e. Develop relationships with the Point Cook RAAF base to better understand their operations and management at the coastal edge.

8.2.2 Strategic Planning Recommendations

a. Specific recommendations for the development of the Wyndham Bay Trail in proximity to the Werribee South market gardens includes:

- The Wyndham Bay Trail shall be constructed as a shared trail in Werribee South to facilitate walking and cycling through the Agricultural Precinct.
- The Bay Trail path ideally be located 10 metres from the planted edge of farming areas, to minimise the likelihood of path users coming into contact with agricultural chemicals and irrigation water.
- In narrow sections of the Crown Land Coastal Reserve where a 10 metre setback cannot be achieved, a physical barrier be constructed to minimise potential spray drift onto the shared path. The barrier could be a side wall to a boardwalk or a planted row of vegetation, up to 1.6 metres in height.
- Boundary fence examples in Bacchus Marsh and Merrimu be adopted to minimise the risk of farm equipment and produce theft from the shared path side. Boundary fencing design to consider the use of barbed wire and chicken wire for pest control, as appropriate.
- Provide farmers adjacent to the Bay Trail path with guidance regarding the safe and efficient use of agricultural chemicals and irrigation water.

b. Build relationships with the farming community in Werribee South to support sustainable farming practices and to manage usage conflicts at the coastal edge.

c. Where there is no existing strategic framework to support recommendations additional policies may be required.

8.2.3 Community Stewardship Recommendations

a. Develop or maintain partnerships with community organisations and academic institutions who address climate change adaptation, litter and water quality issues.

b. Develop a scheduled grants application process.

c. Support and fund community-based groups via Council's community grants to better meet their needs and aspirations.

d. Support new stewardship groups based in coastal areas.

e. Include coast care groups in Council's "Building Block" program and "Green Living Series" to encourage volunteer recruitment and leadership development.

f. Support corporate partnership opportunities such as the recent initiative led by the Beach Patrol 3030 with Hungry Jacks staff to raise awareness about littering and environmental impacts from high litter generating local businesses.

g. Offer letters of support for external funding grant applications.



8.3 Principle 3: Use and access

To improve connectivity and coastal access for Wyndham's growing community to natural and wild places for children to play and for all people to enjoy and recreate.

8.3.1 Shared Space Recommendations

a. Educating visitors about the importance of the marine environment through signage and educational tools in implementation.

b. Sensitively design and construct the Bay Trail to protect the marine environment.

c. Minimise the risk of intrusion onto farmland by people and domestic animals.

8.3.2 Activation & Safety Recommendations

a. Activate previously inactive zones with consideration of impacts beyond the site.

b. Careful siting of infrastructure and facilities to maximise passive surveillance.

c. Facilitate appropriate increased public use and access.

d. Build upon CPTED considerations and improved permeability.

8.3.3 Access Recommendations

a. Maintain protection of the abutting Market Gardens while also protecting users from the impacts of farming activities such as spraying, dust and use of mechanical equipment.

b. Prioritise improvements to make coastal areas accessible for all community members including:

- Information about the accessibility of coastal sites;
- Sealed paths, Gently graded paths, Boardwalks or jetties;
- Tactile Surface indicators;
- Disabled car parking;
- Beach matting;
- All terrain wheelchairs;
- All abilities playground equipment; and
- DDA compliant public toilet.



8.4 Principle 4: Development

Ensure coastal development protects against adverse environmental impacts, responds to anticipated sea level rises, activates key activity areas and facilitates community and tourism access to the Wyndham coastline.

8.4.1 Climate change and adaptation recommendations

a. Undertake a climate adaptation assessment of all Council coastal infrastructure, low lying public open space areas and community assets as improved sea level rise hazard mapping becomes available. More detail of how this may be achieved is explored in Figure 28.

b. Locate and design all new facilities to mitigate against long-term climate change impacts in coastal areas. Possible scenarios are explored in Figure 29.

c. Identify climate change risks at a local level, and develop suitable design and management responses via master planning of key activity nodes including:

- Future protection works such as coastal erosion mitigation options;
- Shared trail in boardwalk format (refer Figure 30);
- Beach renourishment opportunities (refer Figure 31); and
- Future storm water management improvements.

d. Prioritise the use of soft coastal engineering interventions such as beach renourishment and stabilizing sand bags in preference to groynes and sea walls.



RESOURCE 1: ADAPTATION PATHWAYS

A how to formula for local government

In order to effectively undertake adaptation planning within local government the following needs to be considered before commencing:

- An understanding of the organisations view of climate change adaptation, thus assisting with framing the process
- Existing strategies or policies which can be linked to, leverage or influence adaptation options
- Senior management or political support for exploring or investing in adaptation options
- Opportunities to collaborate within the organisation and beyond
- Appetite for organisational change

There are many resources which outline recommended approaches to undertaking climate change adaptation planning within local government (see Bosomworth, ICLEI, Inglis, Turner and UKCIP in bibliography).

However they all have the following basic principles:

- Gain the evidence base – consider the geomorphology of the site and non-climate pressures such as population growth and development. Determine the combined coastal and catchment inundation impacts and how it progressively affects current land use, infrastructure capacities, strategic coastal assets, development and foreshore management. It is also vital to identify the objectives of the site, which may be derived from unique site assets, values and uses.
- Determine key roles and responsibilities – determine which areas will be affected, what changes are required and who will be responsible for each. Consider modelling, planning, resourcing, design, implementation and maintenance.
- Develop adaptation pathways with tipping points – including climate and opportunistic tipping points with timelines for key action areas. Ensure consistency and integration with existing infrastructure (both public and private), land use and asset provision or enhancement.
- Provide for flexible pathways – provide avenues for flexible and newer solutions as well as regional solutions. Set long-term adaptation pathways linked to adaptation planning, with clear goals (setting three and five year goals works well in the standard local government capital works budget forecasting).

Goals need to be set for key areas including:

  - > asset management
  - > infrastructure engineering
  - > strategic planning
  - > capital works and project management
  - > foreshore management
  - > parks and open space
  - > drainage engineering
  - > risk management
  - > building projects.
- Apply adaptation pathways to annual planning – integrate adaptation planning into key policy and capital works concept plans to ensure integrated and consistent approach to selected adaptation pathways.
- Monitor and evaluate – monitor key indicators that lead to tipping points. Monitor for maladaptation and unintended consequences as a result of implemented initiatives. Learn and adapt the pathway plans over time, as information becomes available and scenarios change. See Figure 7.

Figure 28 Adaptation Pathways from The Bay Blueprint 2070, ABM, 2017

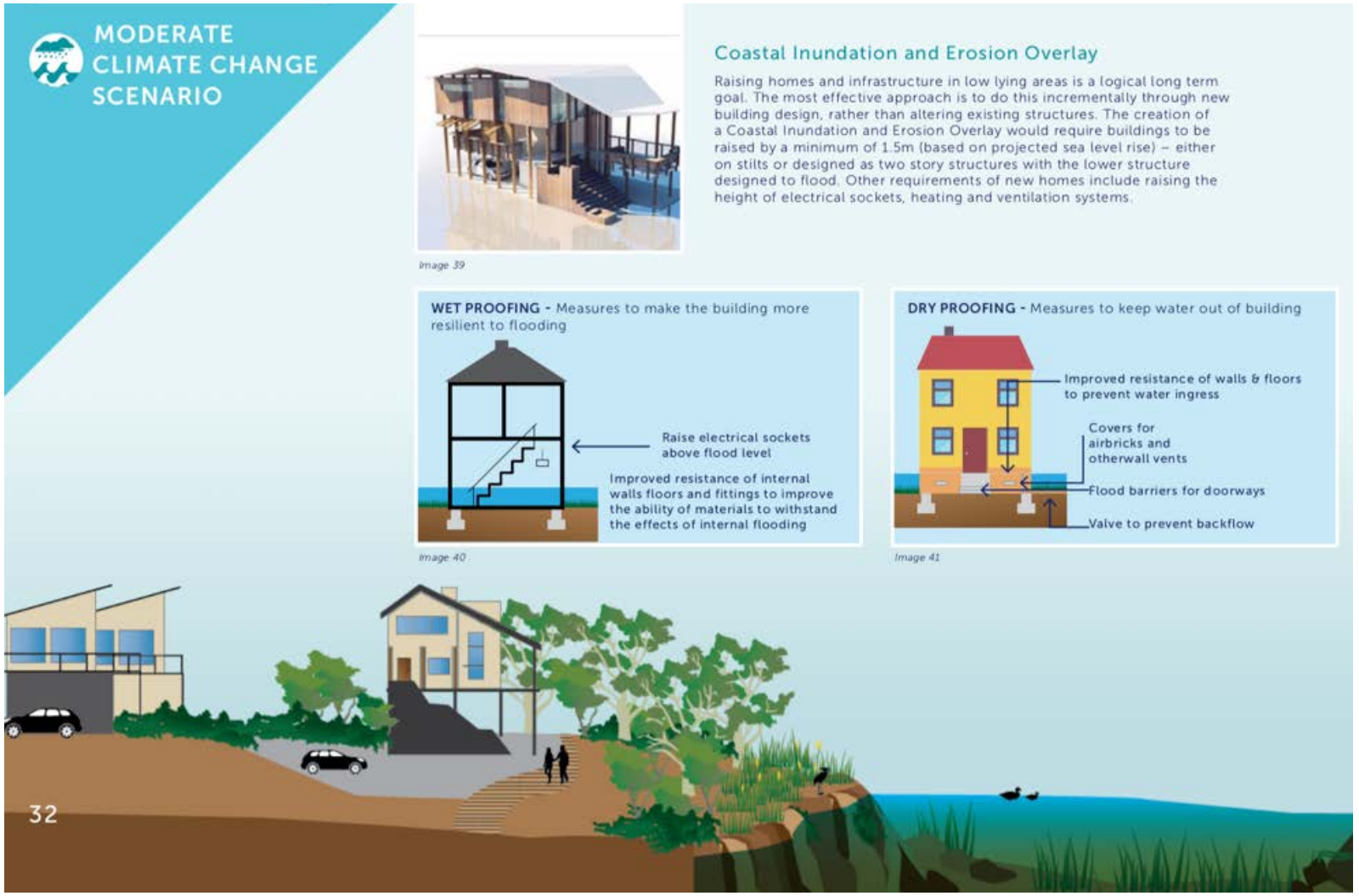


Figure 29 Coastal inundation and erosion case study from The Bay Blueprint 2070, ABM, 2017



Figure 30 Boardwalks to access eroding sites in a controlled way from The Bay Blueprint 2070, ABM, 2017



Figure 31 Sand renourishment case study from The Bay Blueprint 2070, ABM, 2017

8.4.2 Infrastructure and Facility Recommendations

a. Consider infrastructure and facility development carefully particularly community buildings in low lying areas. Increased floor levels may be required.

b. Maintain good quality road surfaces and prune vegetation to maintain clear sightlines.

8.4.3 Economic development recommendations

a. Link key destinations and provide wayfinding signage to encourage return and repeat visitation.

b. Broaden the audience, numbers and frequency of visitation to the Werribee Tourism Precinct.

c. Offer more services, attractions and destinations based on the Wyndham coastline to support local tourism development.

d. Continue to collaborate with the developers of Wyndham Harbour to support the Harbour's emerging role as a major tourist destination, departure point for coastal recreation experiences and its growing residential community;

8.4.4 Environmental management Recommendations

a. Collect water quality data at targeted coastal sites for long-term monitoring.

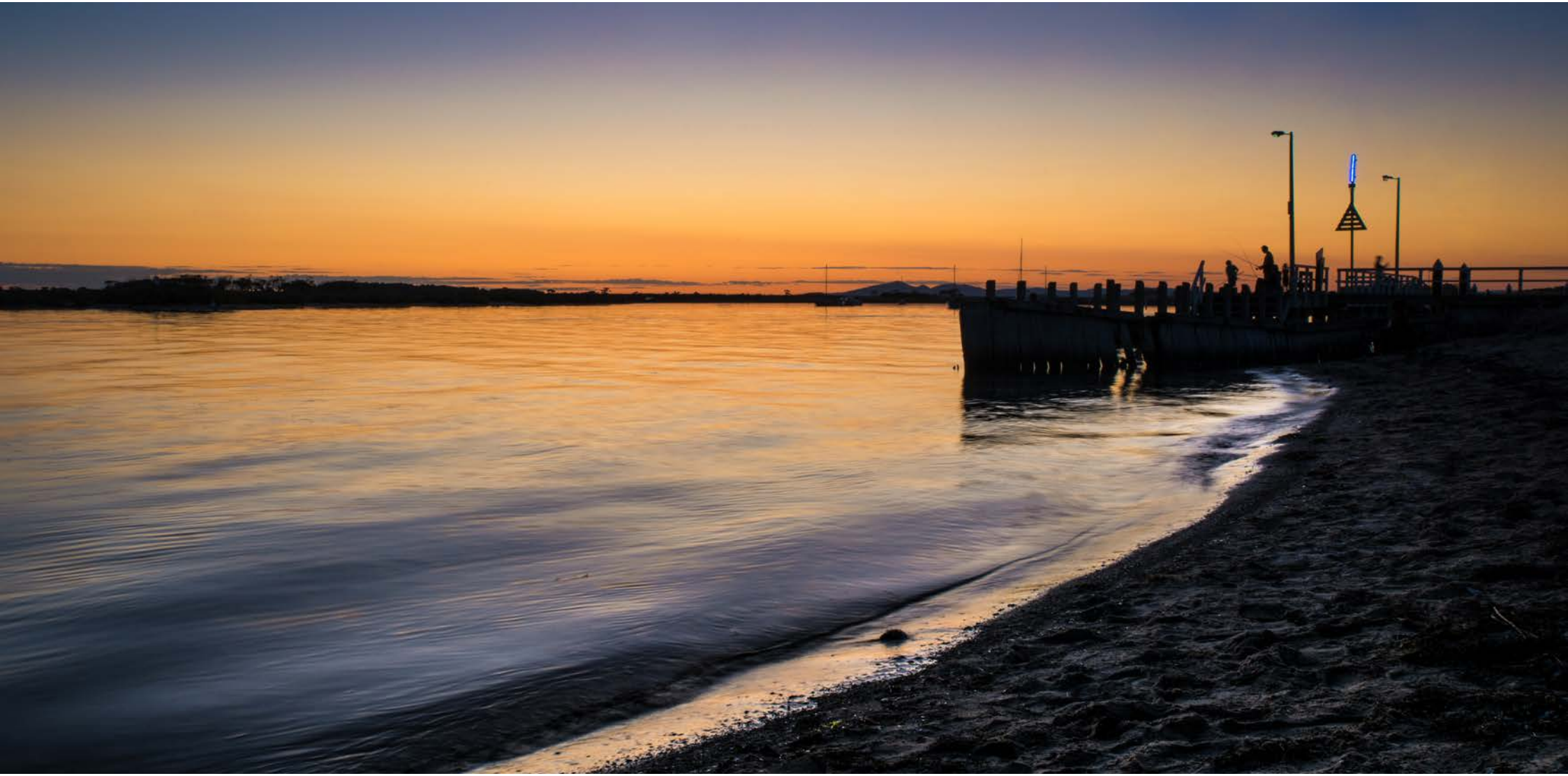
b. Evaluate water quality data to measure the success of upstream intervention works.

c. Trial new litter management tools and technologies.

d. Consider opportunities for alternative use of seaweed, including community use and training.

e. Further educate the community on the cost of rubbish dumping.







9 PRECINCT PLANNING

9.1 Overview

The whole of foreshore strategies and recommendations detailed in the preceding sections shall be applied at a local precinct level to provide a framework for a range of local recommendations. Precinct plans allow for the exploration and development of ideas and recommendations. These ideas and recommendations can then be integrated at the detailed design phase.

Table 3. **Precinct descriptions**

Precinct #	Precinct Name	Description
1	Werribee River	Extends from Werribee Township to Graham's Reserve Wetland near Werribee South and follows the Werribee River
2	Graham's Reserve Wetland	A small precinct adjacent to Werribee South with particular environmental sensitivity
3	Werribee South	Suburb with village feel and a key boating departure point. Also adjacent to areas of ecological importance
4	Wyndham Harbour	An emerging major tourist destination, departure point for coastal recreation experiences and a growing residential community
5	Baileys Beach and Campbells Cove	These beaches are the hidden gem of the coastline. They are adjacent to the market garden precinct and the boat sheds offer a distinctive character
6	D1 Drain to Point Cook Homestead Road	The D1 Drain, managed by Southern Rural Water, is the key to creating a shared path connection between Campbells Cove and Point Cook
7	Point Cook Township	Predominantly residential character with connections to other trail experiences

Issues to be considered throughout all precinct plans include:

- A geotechnical study of the entire Wyndham coastline to provide a better understanding of future erosion risks;
- Coastal erosion mitigation options;
- Beach renourishment opportunities;
- Vegetation management plans for all coastal habitat areas including consideration of plant species adaptation abilities to more saline growing conditions;
- Strategies for pest and weed management;
- Assessment of long term regional needs for additional boat launch facilities to serve Melbourne's western suburbs;
- Increased floor levels for community buildings in low lying areas; and
- Future storm water management improvements.

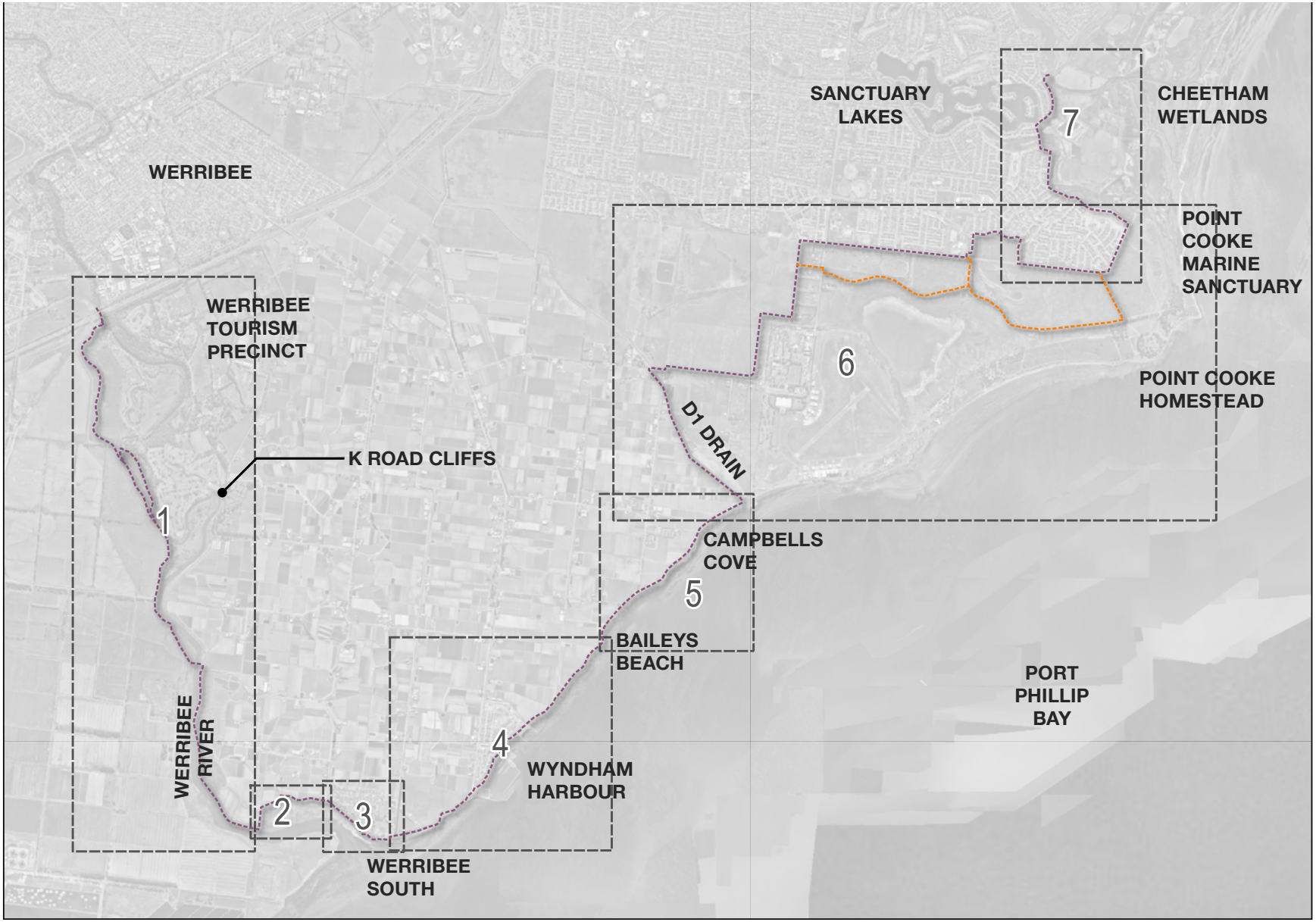


Figure 32 Overall Precinct Plan

The proposed shared path route will generally follow the route outlined below:

- From the Princes Freeway to the western side of Werribee River for approximately 5km;
- A crossing over the Werribee River (to be constructed);
- Continue along the river's edge for approximately 2km;
- At the edge of Graham's Reserve Wetland, the path is proposed to go inland and to the east to join Beach Road (or adjacent to Beach Road);
- Continue along Beach Road as it meets the mouth of Werribee River where it enters Port Phillip Bay;
- Continue along the coastline for approximately 6km;
- Upon reaching the "D1 drain", the proposed shared path route will head north-west in line with the D1 drain, towards Aviation Road;
- Turn to the east just north of Aviation Road and follow it to where it joins Point Cook Road (the proposed placement of the shared path route is likely to be set-back from the road edge based on future redevelopment reference designs for the Aviators Field PSP Area);
- Head east at Point Cook Homestead Road all the way along before heading north to meet the Cheetham Wetlands; and
- Cross the Cheetham Wetlands via a footbridge to meet the existing shared path adjacent to and crossing over Skeleton Creek.

9.2 Precinct 1 – Werribee River

A Werribee River and Coastal route would provide a natural and highly scenic walking and cycling environment, accessing new recreational and open space areas.

Opportunities

- High value visual qualities derived from proximity to Werribee River.
- Tourism destinations: Werribee Town Centre, Werribee Recreational Precinct, Werribee Open Range Zoo, Victorian State Rose Garden, Werribee Park Mansion, Werribee River Park and K Road Cliffs.

The following identifies opportunities, constraints and considerations as they relate to sections of the Werribee River Precinct:

Precinct 1.1 Werribee Town Centre

- Create a new ramp or bridge connection from the Federation Trail and Werribee River Trail across the Werribee River and under the Princes Freeway.

Precinct 1.2 Werribee River (West)

- Parks Victoria management limits Council's influence.
- Gradients, surfaces and connections to be improved and linked to the trail on the western side of the Werribee River.

Precinct 1.3 Werribee Tourism footbridge

- DELWP management limits Council's influence.
- Opportunity to use the existing footbridge to the Werribee Tourism Precinct.
- Alignment to be developed by DELWP (planned and constructed) following existing informal track along western side of Werribee River.
- K Road Cliffs identified as the least accessible coastal site (16%).
- K Road precinct Master Plan has been adopted.

Precinct 1.4 New bridge

- DELWP management limits Council's influence.
- New bridge to cross back to east side of river will require planning and expenditure by DELWP.

Precinct 1.5 Werribee River (East)

- Trail could run broadly along alignment of informal tracks on east side of river. Investigate purpose of informal access roads along the alignment. If access is very infrequent provision could be made for access along the shared path.
- Length between Werribee River Park and Werribee South is long (~6km) with limited road access. Emergency access and/or new bailout points need to be carefully considered. A few small drains and culverts will need to be traversed along this length.

Refer Figure 33 (next page).

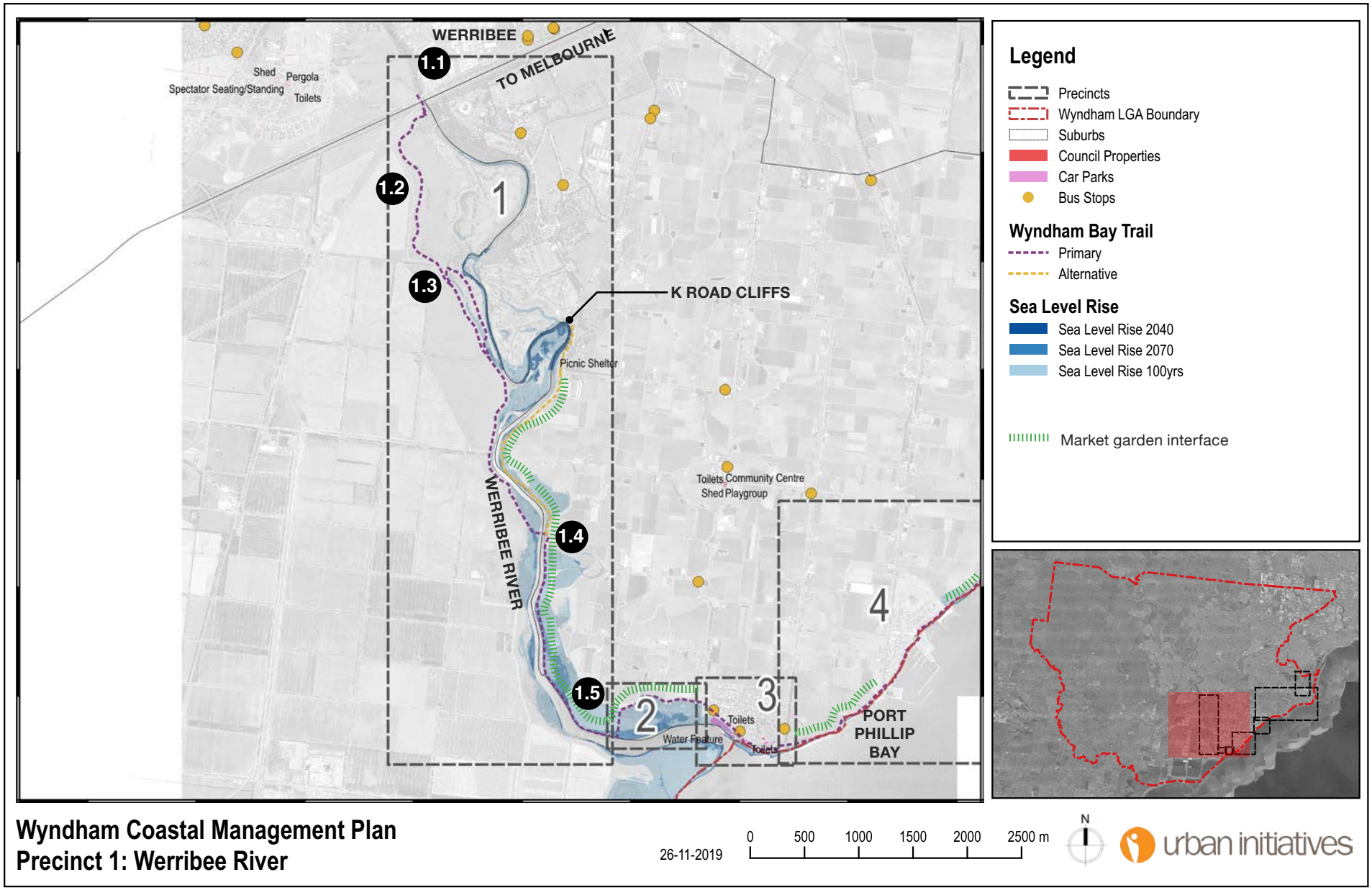


Figure 33 Precinct Plan 1: Werribee River

9.3 Precinct 2 - Graham's Reserve Wetland

Graham's Reserve Wetland is almost unknown to Wyndham City residents and visitors. It includes high quality bird habitat and contains rare indigenous vegetation of high regional conservation significance. It is currently difficult to access which has also resulted in less habitat fragmentation. Any interventions in the Wetland should be minimal, prioritise pedestrian access and facilitate bird watching and other eco-based tourism experiences.

The sensitive development of the Wetland also offers an opportunity to collaborate with Melbourne Water to better understand future plans for the adjacent Western Treatment Plant. In particular, its management as a RAMSAR site for significant bird life, and to discuss ways of maximising future habitat outcomes on both sides of the Werribee River.

The Wetland provides a significant opportunity to improve recreational access to the Werribee River. Fishing platforms could formalise fishing locations, reducing erosion along the river bank. Platforms could also provide viewing opportunities for bird and nature photography at the river edge.

Opportunities

- Tourism destination: Graham's Reserve Wetland

The following identifies opportunities, constraints and considerations as they relate to sections of the Graham's Reserve Wetland Precinct:

Precinct 2.1 New rest stop

- Provide new facilities at the north west of the site to enjoy aspect across Graham's Reserve Wetland, across the river to the RAMSAR site.

Precinct 2.2 Pedestrian access within Graham's Reserve Wetland

- Sensitivity is required around Graham's Reserve Wetland, but improved pedestrian access is also desired.

Precinct 2.3 Shared path connection

- Shared path goes around the perimeter of, but does not enter, Graham's Reserve Wetland and connects to the existing shared path in Werribee South.

Refer Figure 34 (next page).



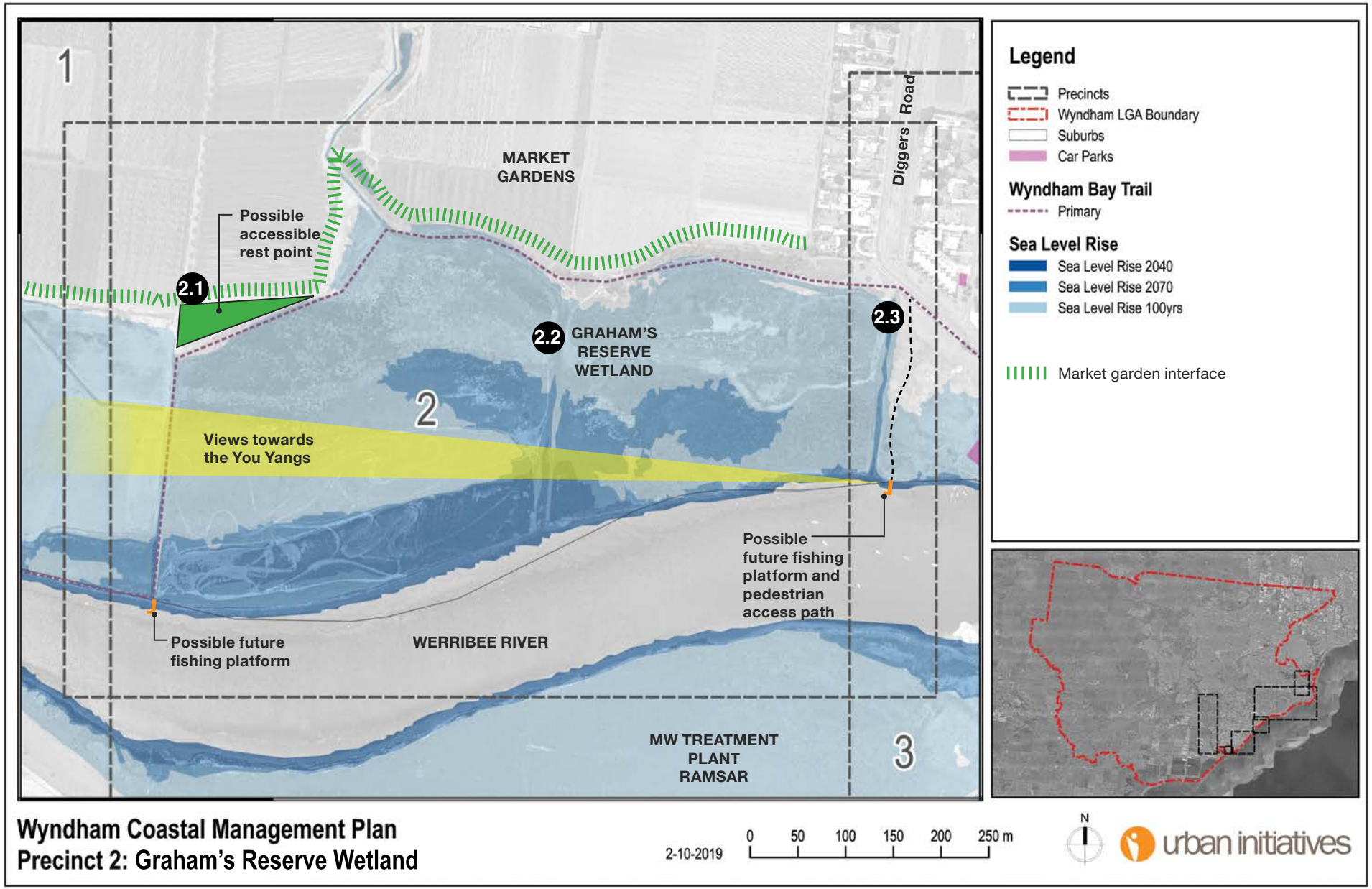


Figure 34 Precinct Plan 2: Graham's Reserve Wetland



9.4 Precinct 3 – Werribee South

Werribee South is immediately adjacent to areas of ecological importance including wetlands, sanctuaries and coastal saltmarsh. These areas provide habitat for over 300 species of birds including internationally protected migratory species, and the critically endangered Growling Grass Frog.

It is also a popular boating departure point and is a predominantly low density residential area with a village feel. The township area has important sight lines to the bay and river mouth, across the Werribee River and into the agricultural / rural character of the Melbourne Water Western Treatment Plant and westward to the You Yangs. There are also views towards the Melbourne CBD from the eastern end.

The foreshore is largely a narrow strip of coastal land that is characterised by steep embankments, retaining walls, and limited sections of beach. The beach is categorized as a shell grit beach, comprising of sand with large amounts of shell, and is the only one of its kind in Victoria. A number of recreation facilities are located along the length of the study area including boat ramps, a jetty, a caravan park, a playground, sporting facilities, picnic areas and shared pathways.

The foreshore is used predominantly by local residents, with visitors largely coming for day use. Visitor numbers peak in the summer period. Visitors are mainly from within Wyndham and the western metropolitan suburbs, attracted to the foreshore for a wide range of coastal recreational activities including walking, cycling, boating, fishing and beach activities.

The current location of the road restricts expansion of the foreshore reserve. This has implications for locating recreation facilities within the reserve.

The Werribee South Foreshore Reserve is Crown Land, for which Council is designated Committee of Management.

Price Reserve, a Council owned sports ground is also located within the Werribee South township. Price Reserve consists of a senior football / cricket oval, pavilion, tennis courts, public toilet block, informal BMX track, playground and associated parking area. The sporting facilities are not heavily utilised. The Werribee South Cricket Club use the Reserve over the summer months. The Werribee South Tennis Club is active on an informal basis over the summer months.

Opportunities

- Develop Werribee South Beach into a tourism destination.

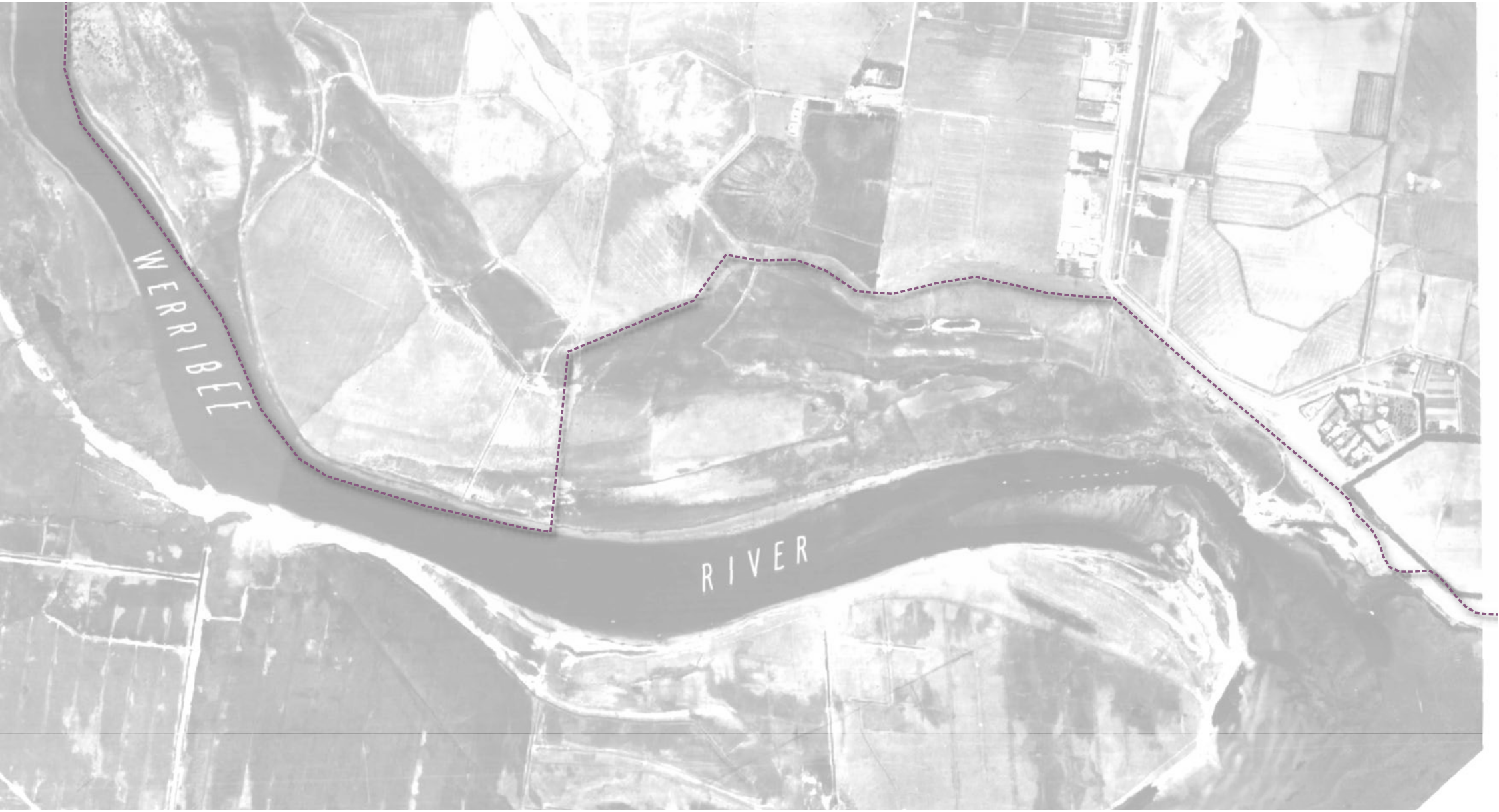


Figure 35 Precinct 3: Werribee South in 1945
Note the low housing density at Werribee South, and the spit at the mouth of the Werribee River

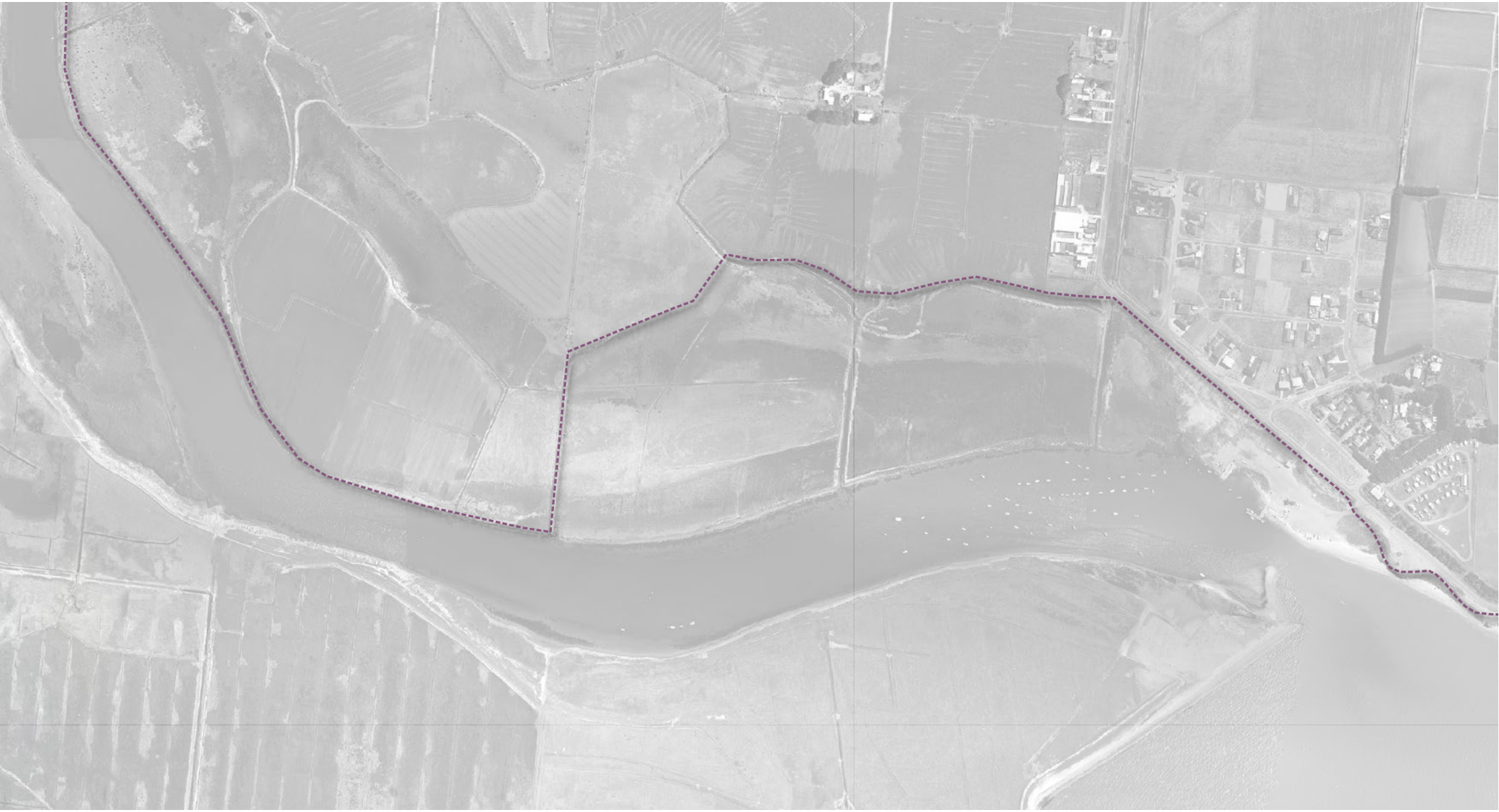


Figure 36 Precinct 3: Werribee South in 1972

Note the increase in housing density at Werribee South, and the reshaping of the mouth of the Werribee River including the southern peninsula



Figure 37 Precinct 3: Werribee South in 2019

Note further reshaping of the mouth of the Werribee River including the southern peninsula. Werribee South has noticeably developed since 1972 with increased housing density, boat jetties, car parking, and a widened beach.



Figure 38 Precinct 3: Contemporary Werribee South

The following identifies opportunities, constraints and considerations as they relate to sections of the Werribee South Precinct:

Precinct 3.1 Werribee South Boat Ramp

- Werribee South Beach and Boat Ramp was identified by Wyndham residents as a very accessible coastal site (46%);
- Limited capacity to expand or add additional ramps due to river depth and dredging requirements. Boat ramp management was recently taken over by Department of Transport under the Better Boating Victoria program; and
- A number of improvements to the fish cleaning table have been identified including shade and a sink for fresh water fish cleaning.

Precinct 3.2 Public toilet

- New facility to include a family-friendly change room and storage area for beach and water based recreation equipment.

Precinct 3.3 Gateways and connectivity

- Vacant land is an opportunity to create a 'Summer Fun' gateway.
- Unify the Werribee South beach precinct, and connect Price Reserve, skate ramp, beach and Caravan Park. This may require a separate Master Plan which also considers Urban Design principles to determine how this precinct is shaped.

Precinct 3.4 Werribee South Beach

- Upgrade Beach amenity and visitor facilities.
- Install bike-friendly equipment including a drinking fountain, bike maintenance equipment post, bike parking, shade and picnic facilities.
- Accessible beach matting in partnership with a suitable service provider.
- Poor quality sand due to natural shell grit sand composition and dredging. Explore opportunities for beach grooming and beach renourishment to improve the quality of the sand and beach experience.
- Explore opportunities to protect beach areas through beach renourishment and soft engineering interventions rather than structural works such sea walls.
- Trial the use of plant materials that are adaptive to more saline growing conditions to protect future habitat values.

Precinct 3.5 Beach Road South

- Trail widening and upgrade of existing shared path and/or footpath to a regional shared path standard along south side of Beach Road.
- Retaining walls and coastal engineering works may be required to mitigate impacts of coastal erosion.
- Formalisation or adjustment of car parks along Beach Road, preserving an alignment for shared path on south (bay) side of car park.

Refer Figure 3939 (page 115).

Intensive Agriculture Interface Considerations & Tourism Development Opportunities

Werribee South is principally a residential township supporting the adjoining agricultural area, but also incorporates many features that serve a strong tourism and residential base connected to the coastline.

Based on the strengths of the settlement and a desire to retain its scale and ambience, it is considered that additional land uses would add significant value to the local visitor offering currently available on the coastline including:

- Services associated with the boat ramps including chandlery, food and drink services;
- Seasonal pop-up retail services;
- A mixed use business venue and restaurant;
- Small scale, boutique hotel accommodation;
- Visitor facilities hub;
- Weekend farmers market and;
- A shared path connection to the Werribee Park Tourism Precinct in K Road.

Preparation of a structure plan and urban design framework for the Werribee South township to protect the residential community and build the potential and performance of the settlement as a recreation and tourism hub would have a broad range of community and economic benefits.



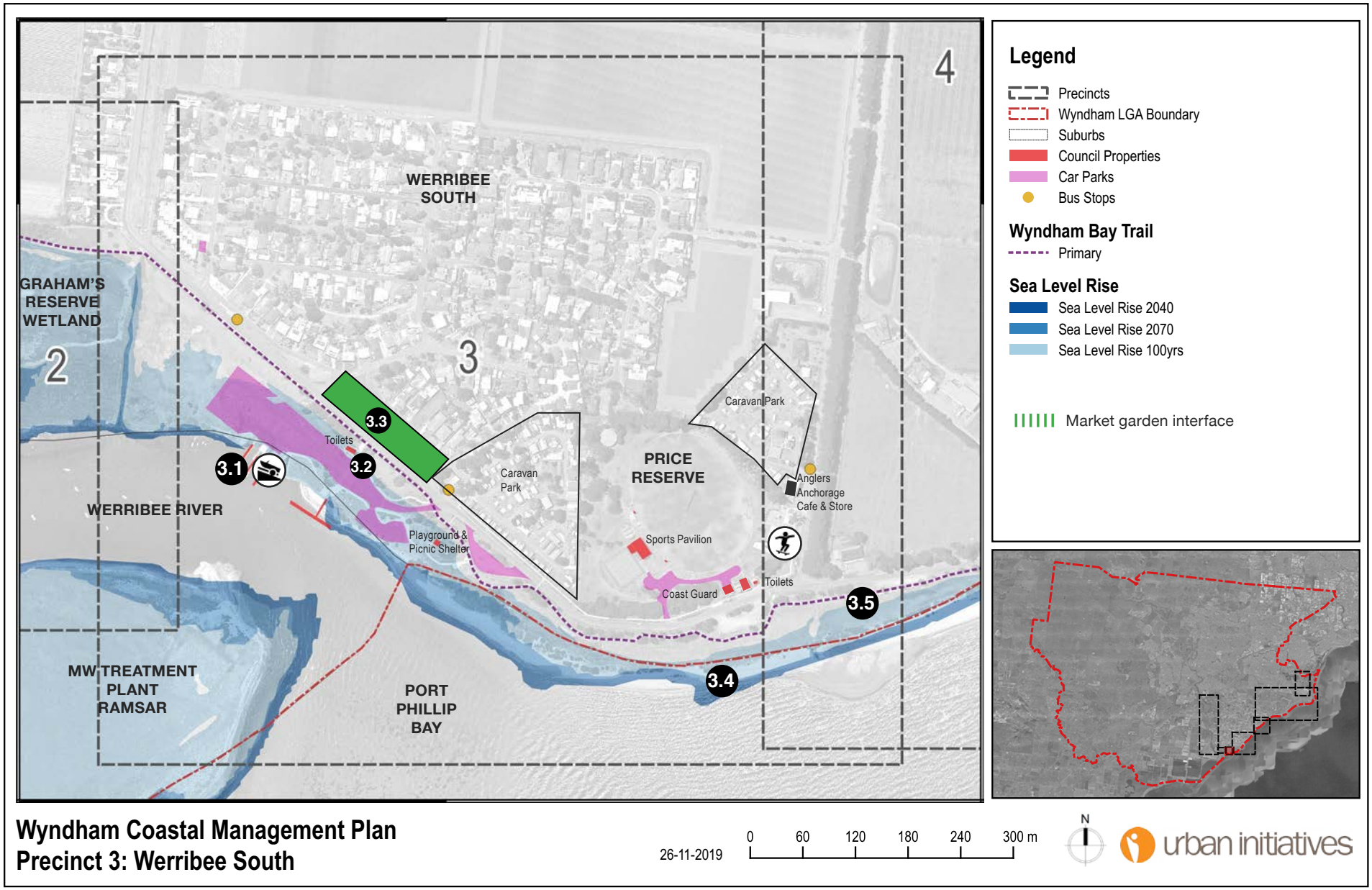


Figure 39 Precinct Plan 3: Werribee South

9.5 Precinct 4 – Wyndham Harbour

Wyndham Harbour is an emerging major tourist destination and departure point for coastal recreation experiences. It has a growing residential community and is the most accessible coastal site on the Wyndham coastline (51%).

Opportunities

- Develop an alignment of the trail that navigates the Market Gardens while remaining in touch with the coastline;
- Preserve existing view lines across Port Phillip Bay to Mount Dandenong and the city skyline, which are considered significant features of the Green Wedge and coastal environment;
- Possible improvements to increase public accessibility:
  - Sealed paths, including gently graded paths, boardwalks or jetties and tactile surface indicators;
  - Accessible public toilets; and
  - Disabled car parking.
- Tourism destination: Wyndham Harbour

The following identifies opportunities, constraints and considerations as they relate to sections of the Wyndham Harbour Precinct:

Precinct 4.1 Market Gardens South

- Improve amenity to beach and foreshore areas;
- Buffer treatment to market gardens where there is less than 10m from shared path;
- Canopy shade trees to be provided on the roadside; and
- Consider possible pause point at small beach, and possible opportunities for beach renourishment.

Precinct 4.2 Wyndham Harbour South

- Improved connection from Beach Road to existing Bay Trail to be delivered under Wyndham Harbour Development Plan.

Precinct 4.3 Wyndham Harbour

- Existing Bay Trail along frontage of Wyndham Harbour is good standard and provides some facilities.
- Good connections (bike parking etc.) should be provided around shops, as this would be a popular launching or rest point.
- Support the efforts of the Wyndham Harbour developers to build on the appeal of the area as a tourist destination.
- Explore activation opportunities for the small beach areas and possibly within the harbour as part of a school holiday/summer holiday program.

Precinct 4.4 Wyndham Harbour North

- Sealed path and footbridge required across the existing drain.
- Trail widening and upgrade of existing informal track alignment footpath to a regional shared path standard.

Precinct 4.5 Crawfords Road

- Crawfords Road could be a key departure point with formalised car parking and/or turnaround facilities.
- Shared path to continue on the east side of vehicular access.

Precinct 4.6 Market Gardens South

- Foreshore width is very narrow. Consider elevated and visually lightweight boardwalk in this location.
- Buffer treatment to market gardens where there is less than 10m from shared path/boardwalk.
- Consider possible pause point at small beach, and opportunities for beach renourishment.
- Farming interface and emergency access issues require consideration.

Refer Figure 41 (page 119).

Intensive Agriculture Interface Considerations & Tourism Development Opportunities

The Werribee South intensive agriculture area is primarily used for the relatively uniform production of vegetables including cauliflower, cabbage and fennel. There are a range of opportunities allowable under the Green Wedge Zone to support local tourism, especially within coastal interface areas, including:

- Diversification of production to winemaking, viticulture, aquaculture, hydroponics, horticulture and other plant production that could serve as a recreation and tourism generator;
- Recreation and tourism engagement through farm visits including:
  a. Production – Opportunities to 'harvest' and pick your own food;
  b. Education - Learn about the region, its community, produce, history, the growing and harvesting processes and how to prepare and work with produce through demonstrations and classes;
  c. Purchase – either through farm gate experiences or a market/ exhibition space showcasing the produce of the region and providing a point of sale;
- Small scale bed and breakfast and host farm accommodation offering overnight stays without the loss of productive farm land; and
- A restaurant with a seating capacity up to 150 persons offering paddock to plate dining experience that operates in conjunction with local agricultural production.

Wyndham Harbour provides an establishing residential community offering a range of housing choices, a marina and safe harbour. The foreshore development provides take away foods, a cafe, fishing, boating and sailing moorage. Wyndham Harbour offers the greatest opportunities to further develop a broad range of visitor and recreation attractions including:

- Potential for a ferry service to Melbourne offering both a commuting and weekend leisure service;
- A residential hotel, restaurants, a micro-brewery and complementary uses;
- Quay Boulevard already provides for a pizza restaurant and plans are mooted for a function centre. There is some scope for further complementary uses of this nature;
- The Quay and associated breakwaters are already an attraction for fishermen. The further development of the marina environs for fishing would expand this as a local draw card;
- The sheltered waters of the harbour and its environs could be used as part of a water-based sports and recreation area including wind sailing, sailing, para gliding and water skiing and summer season water based play equipment; and
- The use of agricultural land directly opposite or adjacent to Wyndham Harbour for agricultural-based sales, a market or for some other form of agriculture based innovation would further activate the Precinct and expand the range of visitor attractions on offer.



Figure 40 Precinct 4: Wyndham Harbour

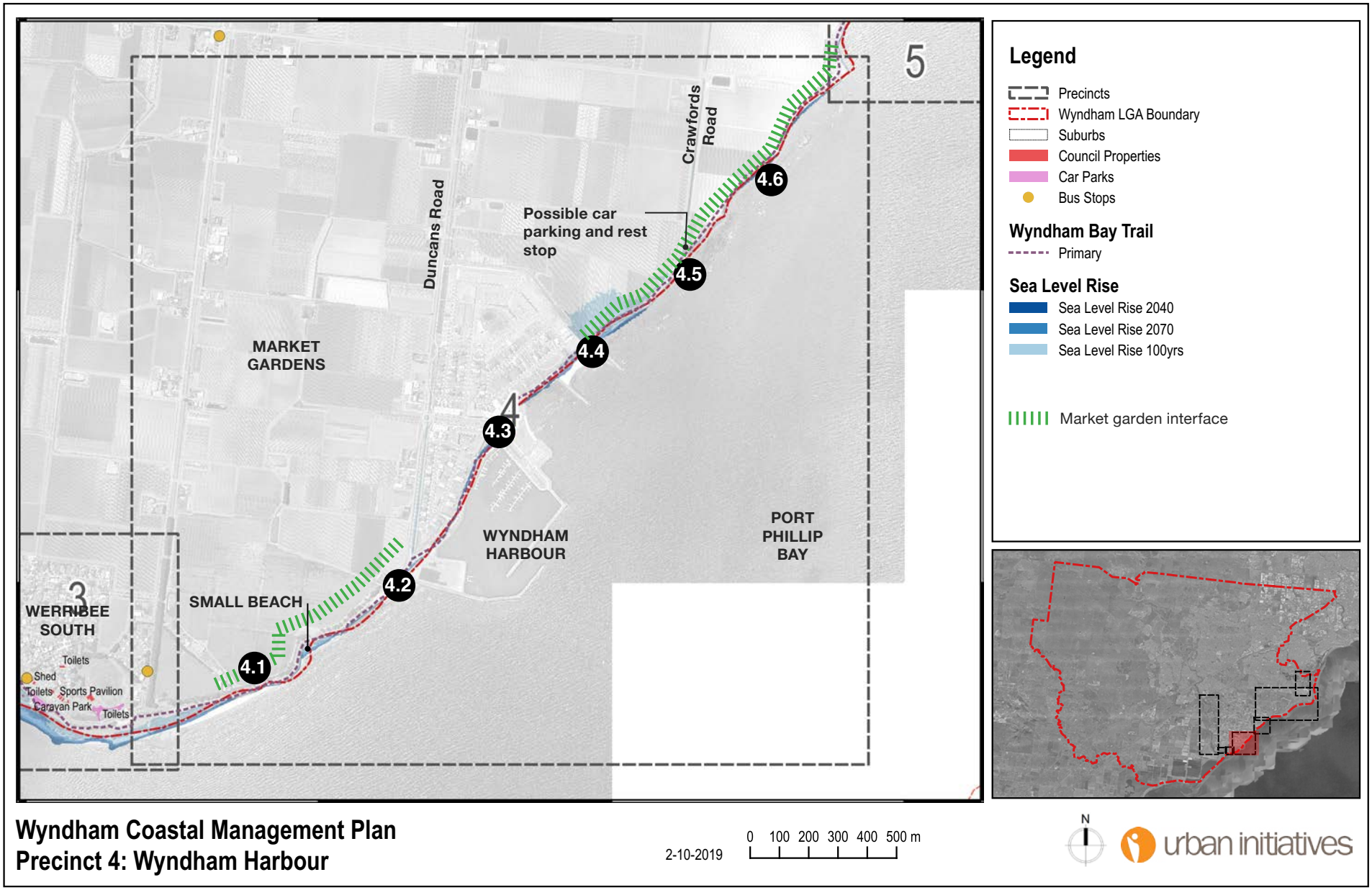


Figure 41 Precinct Plan 4: Wyndham Harbour



Figure 42 Precinct 4: Area now known as Wyndham Harbour in 1945
Note the dominance of market gardens



Figure 43 Precinct 4: Area now known as Wyndham Harbour in 1972
Note the development of a number of residences along Duncans Road



Figure 44 Precinct 4: Wyndham Harbour in 2019
Note the extensive development of housing and construction of the harbour, groynes and jetties. Drain outfall 4 to the north of Wyndham Harbour has been realigned. Small beaches have also been established south of drain outfalls 4 & 5.



9.6 Precinct 5 – Baileys Beach and Campbells Cove

These beaches are the hidden gem of the coastline with relatively poor vehicular access, adjacent to the market garden precinct.

Opportunities

- Possible accessibility improvements:
  - Sealed paths, including gently graded paths, boardwalks or jetties and tactile surface indicators;
  - Accessible public toilets; and
  - Disabled car parking.
- Thoroughly investigate erosion and the movement of sand along the coast between Baileys Beach and the D1 Drain.
- Tourism destinations: Baileys Beach & Campbells Cove.

The following identifies opportunities, constraints and considerations as they relate to sections of the Baileys Beach and Campbells Cove Precinct:

Precinct 5.1 Baileys Beach

- Baileys Beach is a low accessibility coastal site (19%).
- Baileys Beach requires erosion mitigation works adjacent to the road edge. Explore opportunities to manage erosion through beach renourishment and soft coastal engineering works.
- Create 30km/hr shared zone in place of the roadway with vehicular access to boat sheds. Redirect shared path user vehicles to Campbells Cove car park.
- Sand erosion occurs at Baileys Beach and is periodically relocated.
- Steps down to the beach are currently bluestone cobbles and replacement is scheduled.

Precinct 5.2 Campbells Cove south

- Improve triangular open space area near Cunninghams Road intersection to create new pause point.
- Beach renourishment could be used to improve the beach in the vicinity of Cunninghams Road. It may be possible to trap a proportion of transient sand using coastal engineering techniques, provided this can be achieved without de-stabilisation of the foreshore to the east.
- Shared path to align with the south side of Campbells Cove Road to avoid vehicular conflicts at the intersection.
- Footbridge or structure for drain crossing required.

Precinct 5.3 Campbells Cove Boat sheds

- Campbells Cove is a low accessibility coastal site (19%);
- Shared path to be located on the South side of Campbells Cove Road, and above the predicted sea level rise levels.
- Consider utilising open space areas between boat sheds with picnic and shade facilities and/or other public realm improvements.
- Investigate ad hoc beach stabilization including car tyres etc. and ramps, groynes and concrete aprons etc. built in front of the boatsheds to remove hazards and provide improved beach access subject to tidal patterns.
- Narrow foreshore reserve and erosion issues may require beach renourishment with sandbags or similar infrastructure to support shared path. Where possible consider replacing vegetation to provide additional stability. In particularly narrow sections consider elevated and visually lightweight boardwalk or shared zone.

- Boat sheds are currently leased on Crown Land and have the option to build up to fortify against predicted extreme weather events and sea level rise at the lessees' cost. Management policies, legislative frameworks and administration of the boatsheds are the subject of a separate Council policy (the Boatshed Management Policy).
- This area may require more detailed investigation including design guidelines to address sea level rise issues affecting the boat sheds.

Precinct 5.4 Campbells Cove north

- Foreshore is not as constrained in the north so the shared path can align with the south side of Campbells Cove Road.
- Encourage shared path users to use the Campbells Cove car park.
- Consider suitability of public toilets at this location.
- Path alignment to avoid sensitive cultural heritage site, boat shed access and vehicles.
- Consider the future provision of picnic facilities, seating and shade to improve community use and amenity.
- Install bike-friendly equipment including a drinking fountain, bike maintenance equipment post, bike parking, shade and picnic facilities.

Refer Figure 45 (page 127).





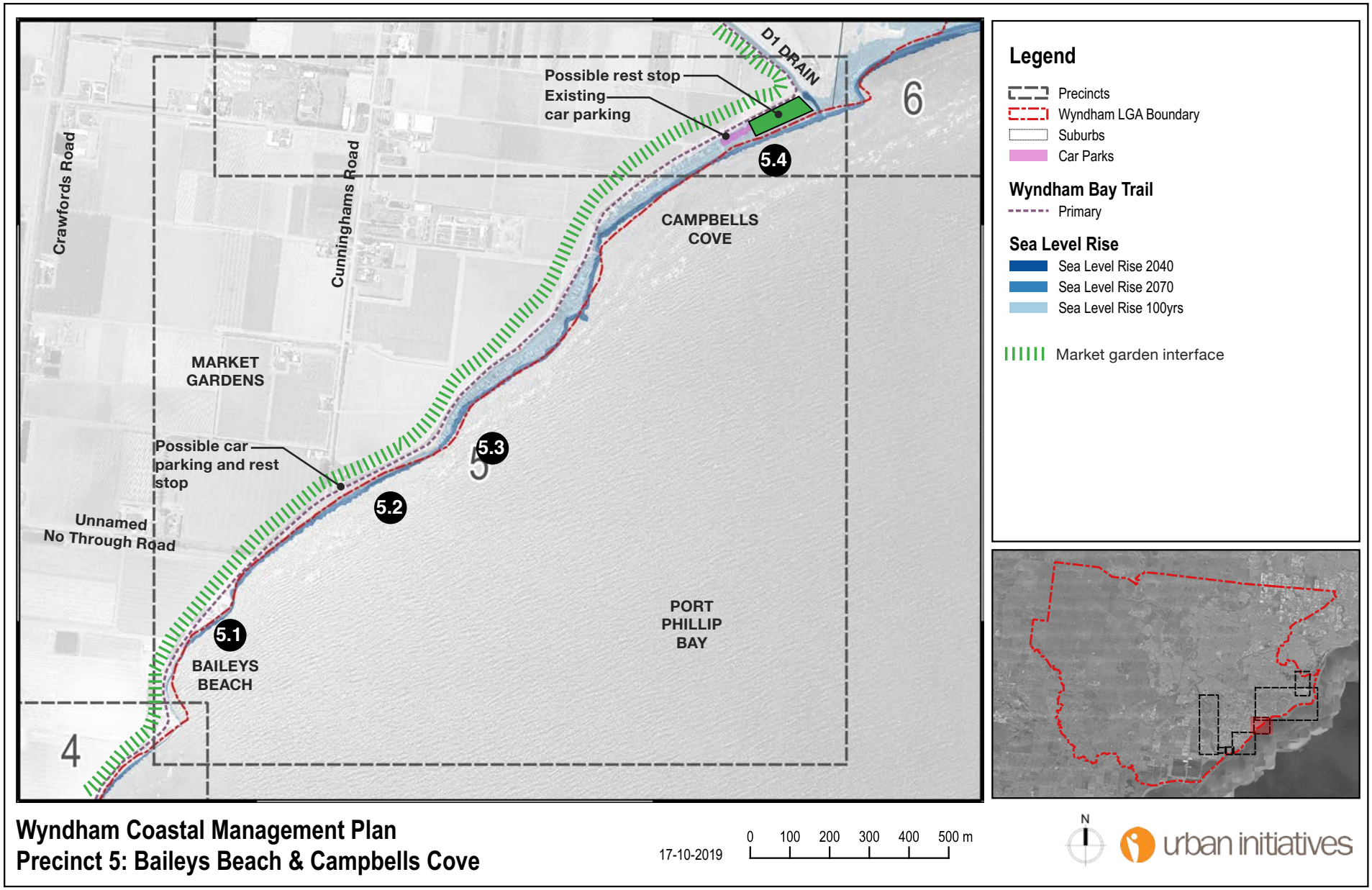


Figure 45 Precinct Plan 5: Baileys Beach and Campbells Cove



9.7 Precinct 6 – D1 Drain to Point Cook Homestead Road

Work with Southern Rural Water to negotiate public access along the D1 Drain to create a linear path connection between Campbells Cove and Point Cook.

Continue to develop relationships with the Point Cook RAAF Base to understand their future military use and planning priorities for land adjoining Campbells Cove.

There are also opportunities to develop a long-term vision between Council and Parks Victoria, to maximise community access to a range of park based programs, services and facilities managed by both organisations.

Opportunities

- Avoid physical constraints – alignment navigates around Point Cook RAAF Base while remaining in touch with the coastline.
- Tourism destinations: RAAF Base Museum, Point Cook Coastal Park, Point Cook Homestead, Point Cooke Marine Reserve.

The following identifies opportunities, constraints and considerations as they relate to sections of the D1 Drain to Point Cook Homestead Road Precinct:

Precinct 6.1 D1 Drain (West)

- Trail widening and upgrade of existing vehicle access track from Campbells Cove to the eastern side of the Drain D1 corridor. Maintain maintenance vehicle access.
- Provide a buffer treatment to market gardens where there is less than 10m from shared path.

Precinct 6.2 Point Cook RAAF Base Williams

- Point Cook RAAF Base is located immediately north of Campbells Cove.
- Public access is extremely limited.
- The area is bushfire prone and the site has a number of culturally significant sites.

Precinct 6.3 Cunninghams Road

- A separated pedestrian and cyclist crossing is required at Cunninghams Road.
- This would likely be on the south side of the existing bridge, so the trail continues along the east side of the D1 Drain.

Precinct 6.4 Aviation Road

- A pedestrian/cycling bridge provided over the drain would be required at Aviation Road.
- Shared path shall be located on the north side (but offset from) Aviation Road.
- A future trail extension is proposed to continue along the D1 Drain and connect with the East Werribee Employment Precinct.

Precinct 6.5 Aviators Field

- Continue to work with the Victorian Planning Authority to negotiate a shared path alignment through the Aviators Field PSP Area.
- Suitable crossings can be considered as the PSP design is developed.

Precinct 6.6 Lincoln Heath South

- The alignment is proposed to connect into Fongeo Drive, along the southern boundary of Lincoln Heath South PSP Area.
- An alternative route could be provided via Point Cook Homestead Road, subject to Parks Victoria approval.

Precinct 6.7 Point Cook Homestead

- North side of Point Cook Homestead Road
- The westernmost properties located on the northern side of Point Cook Homestead Road do not fall within a PSP area, so planning would need to consider how to run the shared path through, or in front of, these properties.
- Subject to further investigations, land in the road reserve could potentially accommodate the shared path, with appropriate protection.

Precinct 6.8 Point Cook Coastal Park

- Point Cook Coastal Park is identified as an accessible coastal site (32%)
- Parks Victoria is currently reviewing its master plan for Point Cook Coastal Park.
- There are opportunities to work with Parks Victoria to fully integrate shared paths and the Bay Trail into their trail networks. Community use of the Park would be significantly improved through the creation of a shared path network and would capitalise on proximity to the coastline and bay improving its visual appeal.
- An alternative connection to Main Drive should be considered to provide future access to the Point Cook Homestead, Point Cook Coastal Park, & Point Cooke Marine Reserve, subject to Parks Victoria & DELWP approval, including:
  - The Point Cook Sanctuary Extension is an alternative path that could run closer to Spectacle Lake along Main Drive before following Side Entrance Road for access to the Point Cook Coastal Park Picnic Area.
  - Direct access to the Point Cook Coastal Park Picnic Area adds significant recreational benefits to the Bay Trail, providing a natural rest-stop for those making longer journeys.
  - The Point Cook Homestead Extension would provide a shared path link to the Homestead, a greater length of trail through Point Cook Coastal Park while simultaneously facilitating increased visitation to the Homestead.
  - Explore opportunities with Park Victoria for increased water based recreation activities for Wyndham residents through community based recreation and private service providers based within Point Cook Coastal Park.

Refer Figure 46 (next page).



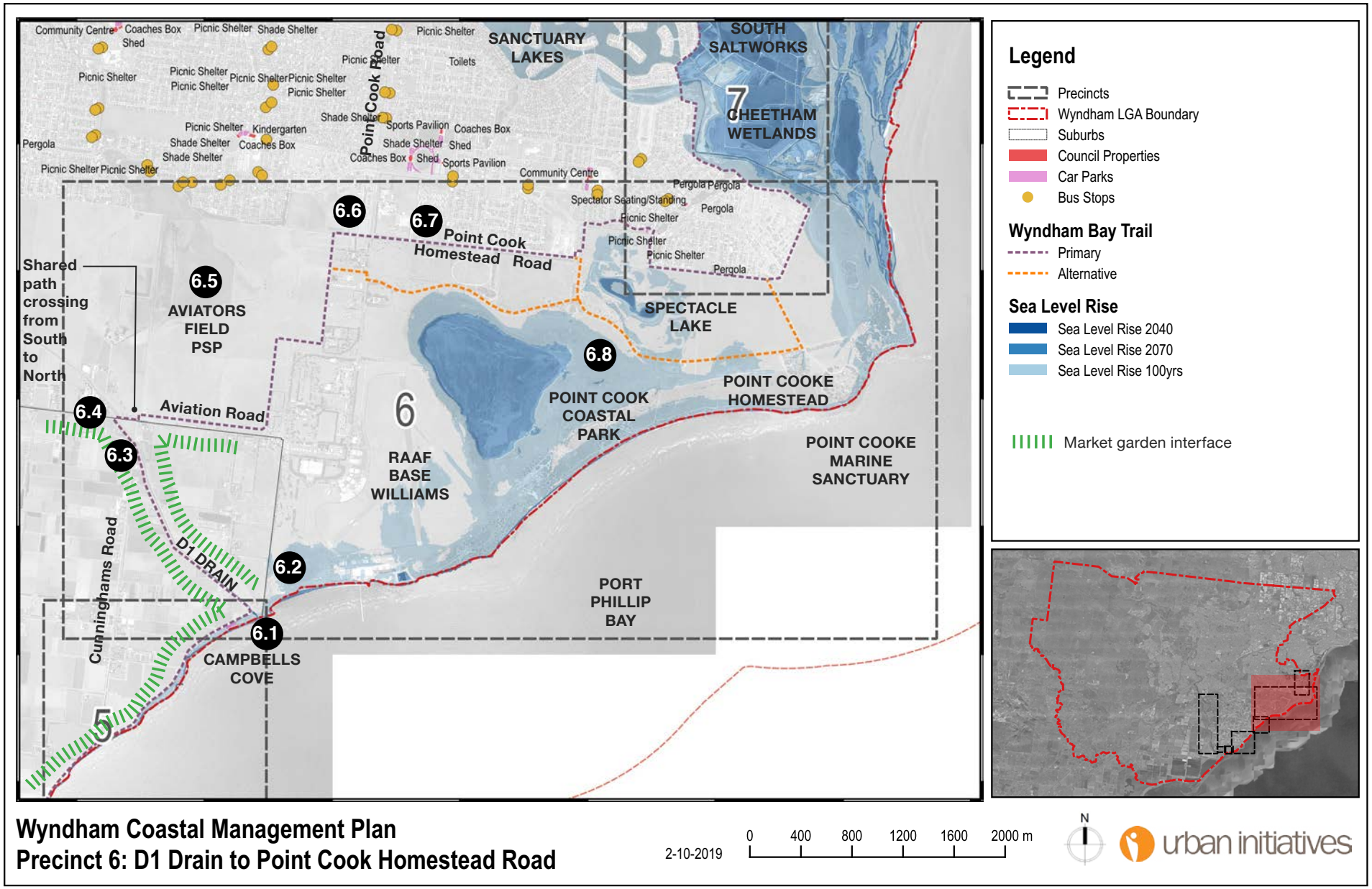


Figure 46 Precinct Plan 6: D1 Drain to Point Cook Homestead Road

9.8 Precinct 7 – Point Cook Township

The trail moves into predominantly residential areas from this point, however, these are key connections to other trail experiences.

The following identifies opportunities, constraints and considerations as they relate to sections of the Point Cook Township Precinct:

Precinct 7.1 Saltwater Coast

- From the eastern end of Point Cook Homestead Road a shared path extends along the east side of emerging Saltwater Coast housing development via Sunman Rise and Billecart Drive.
- The timeframe for delivery of missing sections of the shared path is uncertain due to a combination of fragmented land ownership and development staging.
- The path resumes along the north side of Citybay Drive and terminates at the northern side of Skoda Circuit.
- The continuity and width of shared paths along Point Cook Homestead Road needs to be assessed.

Precinct 7.2 Sanctuary Lakes

- New wetland crossing to connect to the existing trail at Sanctuary Lakes Boulevard.
- Trail needs to be elevated over Cheetham Wetlands with appropriate environmental sensitivity and pedestrian and animal management.

Precinct 7.3 Point Cook

- From Sanctuary Lakes Drive connect to the Skeleton Creek Trail.
- From Sanctuary Lakes Drive connect to the Bay West Trail (Hobsons Bay Coastal Trail) to the west side of the West Gate Punt via Altona, Seaholme, Williamstown and Newport. The Bay West Trail extends to the east via the Punt to the Bay Trail in Port Melbourne, then continues along the eastern side of the bay in various forms as far as Seaford. Along the way, the Bay and Bay West Trails cross various other paths, including the Eastlink Trail and Maribyrnong River Trail.
- Developments in Fisherman's Bend will also provide improved connectivity from the Punt to the CBD.

Refer Figure 47 (next page).



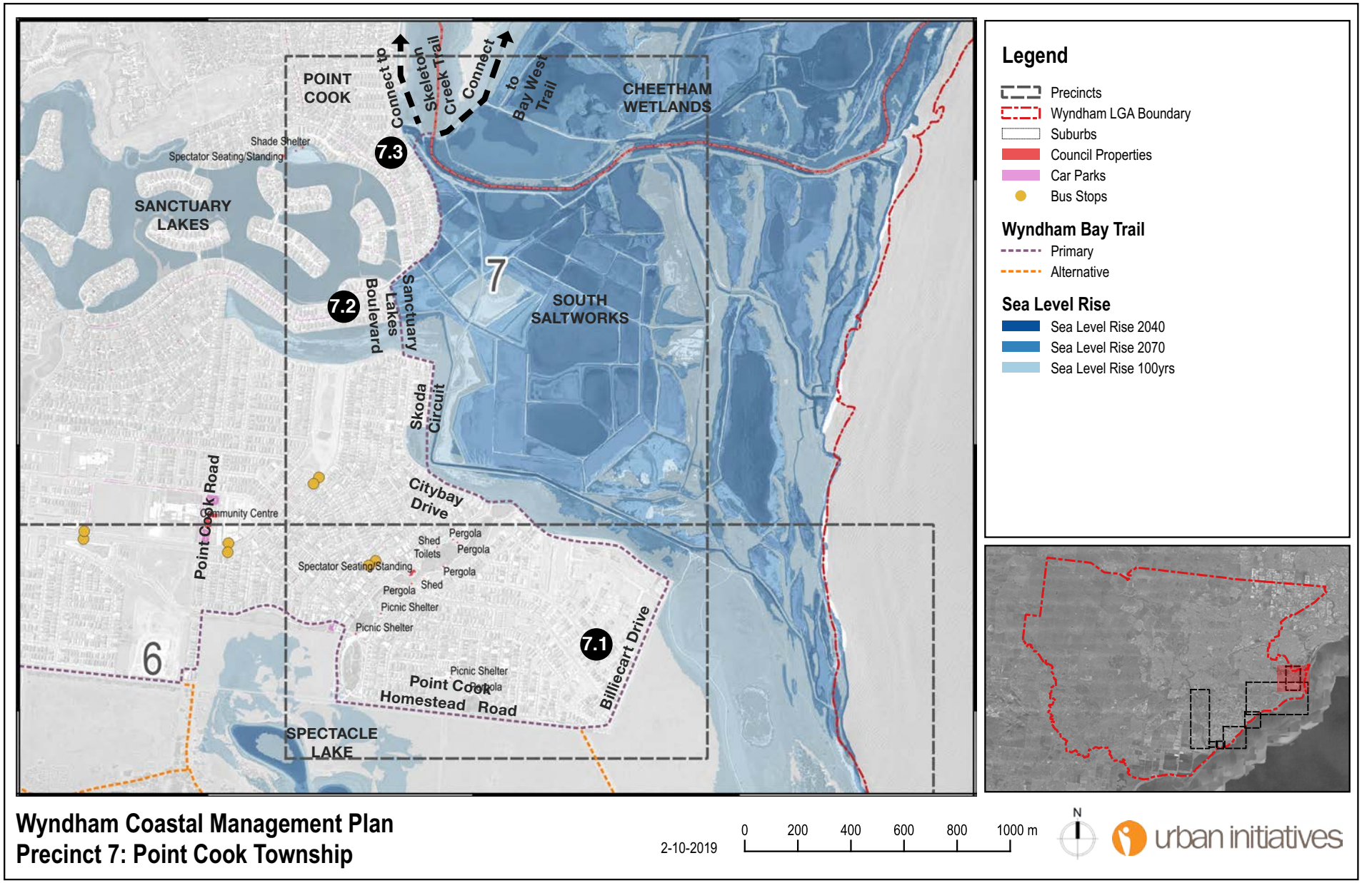


Figure 47 Precinct Plan 7: Point Cook Township



10 BUSINESS / IMPLEMENTATION PLAN

Table 4. **Implementation Priorities**

Year	Precinct	Planning & Capital Works	Indicative Cost Estimates
1	1	1. Construction implementation of the K Road Cliffs Master Plan	$1,500,000
	7	2. Planning and design of missing Bay Trail Path sections in Point Cook	$50,000
	3	3. Werribee South Beach amenity improvements & seasonal beach activation planning	$30,000
2	1	1. Construction implementation of the K Road Cliffs Master Plan	$1,500,000
	7	2. Cheetham Salt Works Footbridge Precinct Planning and design development to connect with the Hobsons Bay Trail	$80,000
	7	3. Construction of missing Bay Trail path connections in Point Cook	$520,000
	3	4. Werribee South Beach amenity improvements & seasonal beach activation implementation	$300,000
3	5	1. Campbells Cove & Baileys Beach Precinct Planning	$80,000
	7	2. Cheetham Salt Works Footbridge connection detailed design, statutory planning approvals and funding applications	$80,000
4	6	1. D1 Drain Bay Trail Connection Precinct Planning	$80,000

Year	Precinct	Planning & Capital Works	Indicative Cost Estimates
	5	2. Campbells Cove & Baileys Beach Precinct Plan detailed design, statutory planning approvals and funding applications	$80,000
	7	3. Cheetham Salt Works Footbridge construction	$4,200,000
5	3	1. Werribee South Precinct Planning	$50,000
	5	2. Campbells Cove & Baileys Beach upgrade construction works	TBC
	6	3. D1 Drain Bay Trail Connection detailed design, statutory planning approvals and funding applications	TBC
6	3	1. Werribee South Precinct detailed design, statutory planning approvals and funding applications	TBC
	5	2. Wyndham Harbour to Baileys Precinct Planning	$80,000
	6	3. D1 Drain Bay Trail Construction	TBC

Table 5. **Advocacy Priorities**

Precinct	Key Advocacy with State & Other Agencies	
High Priority		
4	1.	Support Wyndham Harbour to develop its profile as a major tourism destination through increased public access programs and activation initiatives and improved connectivity to the Werribee Tourism Precinct.
3 & 4	2.	Support proposals and developments that add value to local tourism opportunities and visitor amenities within the Werribee South Green Wedge Precinct, Wyndham Harbour and at Werribee South Beach.
1 - 3	3.	Work with Parks Victoria, DELWP, VicRoads and Melbourne Water to improve shared path access connections along the Werribee River to the coastline.
1 - 3	4.	Support Melbourne Water to develop and implement the Lower Werribee River Recreation Strategy.
7	5.	Work with Parks Victoria and DELWP in the design of the Cheetham Saltworks Footbridge.
3 - 7	6.	Work with DELWP in their trial Regional & Strategic Partnership (RASP) Plan to plan for climate change impacts on the Wyndham and Hobsons Bay coastlines.
6	7.	Continue advocacy efforts with the Victorian Planning Authority for a Bay Trail connection through the Aviators Field PSP Area.
6	8.	Work with Southern Rural Water & DELWP to establish an agreement for public access along the D1 Drain between Campbells Cove and Aviation Road and establish a future Bay Trail connection.
5	9.	Continue to advocate for DELWP Beach Renourishment Program funding for Campbells Cove.
3	10.	Advocate for Public Transport Victoria investment in upgrade works at Werribee South Boat Ramps.
1 - 7	11.	Continue to support DELWP in the Port Phillip Bay Hazard Assessment Project to assess climate change impacts within Port Phillip Bay.

Precinct	Key Advocacy with State & Other Agencies
3 - 7	12. Continue to advocate for good planning outcomes for Port Phillip Bay through participation in the work of the Association of Bayside Municipalities.
1 - 7	13. Continue to support the work of the Integrated Water Management Forum for the Werribee River Catchment to advocate for improved water quality outcomes for the Werribee River and Port Phillip Bay.
Medium Priority	
1 & 2	14. Work with Melbourne Water and DELWP to explore opportunities for increased public access on the east side of the Werribee River between K Road Cliffs and Graham's Reserve Wetland.
1 - 7	15. Continue to work with the Victorian Fisheries Authority to improve recreational fishing access facilities along the Werribee River and Wyndham coastline.
1, 6 & 7	16. Advocate for good Bay Trail alignment outcomes through the review of the Point Cook Coastal Park Master Plan and the Werribee Park Master Plan led by Parks Victoria.

11 APPENDICES

11.1 Legislative & Policy Framework

Legislation
• Land Act 1958 • Marine Act 1968 • Environment Protection Act 1970 • Crown Land (Reserves) Act 1978 • Pollution of Waters by Oil and Noxious Substances Act 1986 • Emergency Management Act 1986 • Planning and Environment Act 1987 • Flora and Fauna Guarantee Act 1988 • Housing Act 1993 • Native Title Act 1993 • Catchment and Land Protection Act 1994 • Coastal Management Act 1995 • Heritage Act 1995 • Fisheries Act 1995 • Port Management Act 1995 • Port Services Act 1998 • Local Government Act 1999 • Environment Protection and Biodiversity Conservation Act 1999 • Aboriginal Cultural Heritage Act 2006 • Disability Discrimination and Other Human Right Legislation Amendment Act 2009 • Climate Change Act 2010 • Marine Safety Act 2010 • Port Phillip Bay Environmental Management Plan 2017-2027 • Marine and Coastal Act 2018

State Policies and Plans
• Victorian's Native Vegetation Management: A framework for Action 2002 • State environment protection policy (water of Victoria) 2003 • Victorian Coastal Acid Sulfate Soils Strategy 2009 • The West Growth Corridor Plan 2012 (VPA) • Victorian Coastal Strategy 2014 • Regional Catchment Strategy for Port Phillip and Westernport 2015 • Marine and Coastal Reforms Transition Plan 2017 (DELWP) • The Guidelines for the Preparation of Coastal Management Plans 2017 (DELWP). • The Bay Blueprint, 2017 (Association of Bayside Municipalities) • Victorian planning provisions, including the State planning policy frameworks • Plan Melbourne (2017) • Victorian Memorandum for Health and Nature (2017) • draft Marine & Coastal Policy (2019)

Local

- Wyndham Integrated Transport Policy (2016)
- Wyndham Integrated Transport Strategy (2016)
- Werribee South Green Wedge Policy and Management Plan (Exhibition Version, 2016)
- Wyndham's Council Plan (2017)
- Integrated Water Cycle Management Plan and Forest and Habitat Strategy (2017)
- Wyndham Cycle Strategy (2017)
- Western Metropolitan Region Trails Strategic Plan (2017)
- Wyndham Waste & Litter Strategy 2016 - 2040
- Wyndham Coastal Management Plan Community Engagement Report (2018)
- Local planning policy framework

11.2 Ecological Vegetation Classes

11.2.1 Otway Plain EVC 9: Coastal Saltmarsh



Description:
Occurs on and immediately above marine and estuarine tidal flats and contains distinct floristic communities as bands or zones in the same location, depending on the positioning of the various floristic communities in relation to the saline environment. Consists of a range of life forms including succulent herbs, low succulent shrubs, rushes and sedges.

Life Forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	1	10%	MS
Small Shrub	1	5%	SS
Prostrate Shrub	1	5%	PS
Medium Herb	3	15%	MH
Small or Prostrate Herb	1	5%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	1	1%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Soil Crust	na	10%	S/C
Total understorey projective foliage cover		**65%**	

LF Code		Species typical of at least part of EVC range	Common Name
MS		*Sclerostegia arbuscula*	Shrubby Glasswort
MS	r	*Avicennia marina ssp. australasica*	White Mangrove
SS		*Suaeda australis*	Austral Seablite
SS		*Frankenia pauciflora var. gunnii*	Southern Sea-heath
PS		*Wilsonia humilis*	Silky Wilsonia
MH		*Sarcocornia quinqueflora*	Beaded Glasswort
MH		*Samolus repens*	Creeping Brookweed
MH		*Hemichroa pentandra*	Trailing Hemichroa
LNG		*Juncus kraussii ssp. australiensis*	Sea Rush
MNG		*Triglochin striatum*	Streaked Arrowgrass
MNG		*Distichlis distichophylla*	Australian Salt-grass

Recruitment:
Continuous

Organic Litter:
10% cover

Weediness:
There are no consistent weeds in this EVC.

Ecological Vegetation Class bioregion benchmark

Victoria
The Place To Be

11.2.2 Otway Plain EVC 55: Plains Grassy Woodland



Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Otway Plain bioregion

EVC 55: Plains Grassy Woodland

Description:
An open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	80 cm	10 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus ovata*	Swamp Gum
	Eucalyptus camaldulensis	River Red-gum
	Eucalyptus melliodora	Yellow Box
	Eucalyptus viminalis	Manna Gum
	Eucalyptus leucoxylon	Yellow Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	2	10%	T
Small Shrub	1	1%	SS
Prostrate Shrub	2	5%	PS
Large Herb	1	5%	LH
Medium Herb	10	20%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	9	35%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Allocasuarina littoralis*	Black Skeoak
T	*Acacia melanoxylon*	Blackwood
T	*Banksia marginata*	Silver Banksia
MS	*Acacia paradoxa*	Hedge Wattle
SS	*Pimelea humilis*	Common Rice-flower
PS	*Bossiaea prostrata*	Creeping Bossiaea
PS	*Astroloma humifusum*	Cranberry Heath
MH	*Hypericum gramineum*	Small St John's Wort
MH	*Oxalis perennans*	Grassland Wood-sorrel
SH	*Dichondra repens*	Kidney-weed
SH	*Poranthera microphylla*	Small Poranthera
LTG	*Austrostipa rudis*	Veined Spear-grass
LNG	*Gahnia radula*	Thatch Saw-sedge
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Carex breviculmis*	Common Grass-sedge
MTG	*Lomandra filiformis*	Wattle Mat-rush
MTG	*Schoenus apogon*	Common Bog-sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

EVC 55: Plains Grassy Woodland - Otway Plain bioregion

Recruitment:
Continuous

Organic Litter:
10 % cover

Logs:
10 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Plantago lanceolata*	Ribwort	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Centaurium erythraea*	Common Centaury	high	low
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Anthoxanthum odoratum*	Sweet Vernal-grass	high	high
MNG	*Romulea rosea*	Onion Grass	high	low
MNG	*Briza maxima*	Large Quaking-grass	high	low
MNG	*Briza minor*	Lesser Quaking-grass	high	low

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11.2.3 Otway Plain EVC 56: Plains Grassy Woodland



Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Otway Plain bioregion

EVC 56: Floodplain Riparian Woodland

Description:
An open eucalypt woodland to 15 m tall over a medium to large shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. Occurs along the banks and floodplains of the larger meandering rivers and major creeks, often in conjunction with one or more floodplain wetland communities. Elevation and rainfall are relatively low and soils are fertile alluviums subject to periodic flooding and inundation.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	80 cm	15 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus camaldulensis*	River Red-gum
	Eucalyptus ovata	Swamp Gum

Life Forms:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	3	10%	MS
Large Herb	3	5%	LH
Medium Herb	4	10%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	2	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	5	15%	MTG
Medium to Tiny Non-tufted Graminoid	3	10%	MNG
Scrambler or Climber	1	5%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Bursaria spinosa ssp. spinosa*	Sweet Bursaria
MS	*Acacia pycnantha*	Golden Wattle
MS	*Myoporum sp. 1*	Sticky Boobialla
LH	*Senecio glomeratus*	Annual Fireweed
MH	*Rumex brownii*	Slender Dock
SH	*Dichondra repens*	Kidney-weed
SH	*Crassula helmsii*	Swamp Crassula
SH	*Selliera radicans*	Shiny Swamp-mat
SH	*Hydrocotyle sibthorpioides*	Shining Pennywort
LTG	*Lomandra longifolia*	Spiny-headed Mat-rush
LTG	*Poa labillardierei*	Common Tussock-grass
LNG	*Phragmites australis*	Common Reed
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Austrodanthonia penicillata*	Slender Wallaby-grass
MTG	*Dianella revoluta s.l.*	Black-anther Flax-lily
MTG	*Bulbine bulbosa*	Bulbine Lily
MNG	*Triglochin striatum*	Streaked Arrowgrass
MNG	*Schoenus nitens*	Shiny Bog-sedge
MNG	*Distichlis distichophylla*	Australian Salt-grass
SC	*Cassytha melantha*	Coarse Dodder-laurel
SC	*Calystegia sepium*	Large Bindweed

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

EVC 56: Floodplain Riparian Woodland - Otway Plain bioregion

Recruitment:
Episodic/Flood. Desirable period between disturbances is 10 years.

Organic Litter:
40 % cover

Logs:
30 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Rosa rubiginosa*	Sweet Briar	low	high
LH	*Rumex conglomeratus*	Clustered Dock	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Rumex crispus*	Curled Dock	high	high
LH	*Helminthotheca echioides*	Ox-tongue	high	high
LH	*Aster subulatus*	Aster-weed	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus asper s.l.*	Rough Sow-thistle	high	low
LH	*Plantago lanceolata*	Ribwort	high	high
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Plantago major*	Greater Plantain	high	low
MH	*Brassica fruticulosa*	Twiggy Turnip	high	high
MH	*Atriplex prostrata*	Hastate Orache	high	high
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Cyperus eragrostis*	Drain Flat-sedge	high	high
MTG	*Bromus catharticus*	Prairie Grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	high
MNG	*Paspalum distichum*	Water Couch	high	high

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11.2.4 Otway Plain EVC 132: Plains Grassland



Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Otway Plain bioregion

EVC 132: Plains Grassland

Description:
Treeless vegetation dominated by largely graminoid and herb life forms. Shrubs and trees may be also occasionally present.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	3	10%	LH
Medium Herb	10	20%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	13	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	10%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Eryngium ovinum*	Blue Devil
LH	*Senecio quadridentatus*	Cottony Fireweed
MH	*Calocephalus citreus*	Lemon Beauty-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Leptorhynchos squamatus*	Scaly Buttons
MH	*Geranium retrorsum* s.l.	Grassland Crane's-bill
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Elymus scaber* var. *scaber*	Common Wheat-grass
MTG	*Schoenus apogon*	Common Bog-sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass

Recruitment:
Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

EVC 132: Plains Grassland - Otway Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Plantago lanceolata*	Ribwort	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	high
MH	*Leontodon taraxacoides* ssp. *taraxacoides*	Hairy Hawkbit	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	high
MH	*Trifolium striatum*	Knotted Clover	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	high
MTG	*Nassella neesiana*	Chilean Needle-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low

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11.2.5 Victorian Volcanic Plain EVC 9



EVC/Bioregion Benchmark for Vegetation Quality Assessment

Otway Plain bioregion

EVC 132: Plains Grassland

Description:
Treeless vegetation dominated by largely graminoid and herb life forms. Shrubs and trees may be also occasionally present.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	3	10%	LH
Medium Herb	10	20%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	13	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	10%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Eryngium ovinum*	Blue Devil
LH	*Senecio quadridentatus*	Cottony Fireweed
MH	*Calocephalus citreus*	Lemon Beauty-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Leptorhynchos squamatus*	Scaly Buttons
MH	*Geranium retrorsum* s.l.	Grassland Crane's-bill
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Elymus scaber* var. *scaber*	Common Wheat-grass
MTG	*Schoenus apogon*	Common Bog-sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass

Recruitment:
Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Ecological Vegetation Class bioregion benchmark

Victoria
The Place To Be

11.2.6 Victorian Volcanic Plain EVC 125



Description:
This EVC is usually treeless, but in some instances can include sparse River Red Gum *Eucalyptus camaldulensis* or Swamp Gum *Eucalyptus ovata*. A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	5	5%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	3	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	8	30%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Epilobium billardierianum*	Variable Willow-herb
LH	*Villarsia reniformis*	Running Marsh-flower
LH	*Epilobium billardierianum ssp. cinereum*	Grey Willow-herb
MH	*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH	*Lilaeopsis polyantha*	Australian Lilaeopsis
MH	*Utricularia dichotoma s.l.*	Fairies' Aprons
SH	*Eryngium vesiculosum*	Prickfoot
SH	*Neopaxia australasica*	White Purslane
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Juncus flavidus*	Gold Rush
LTG	*Deyeuxia quadriseta*	Reed Bent-grass
LTG	*Amphibromus nervosus*	Common Swamp Wallaby-grass
LTG	*Poa labillardierei*	Common Tussock-grass
MTG	*Triglochin procerum s.l.*	Water Ribbons
MTG	*Glyceria australis*	Australian Sweet-grass
MTG	*Juncus holoschoenus*	Joint-leaf Rush
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis acuta*	Common Spike-sedge
MNG	*Eleocharis pusilla*	Small Spike-sedge

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
20% cover

Logs:
5 m/0.1 ha.(where trees are overhanging the wetland)

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

EVC 125: Plains Grassy Wetland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Cirsium vulgare*	Spear Thistle	high	high
MH	*Leontodon taraxacoides ssp. taraxacoides*	Hairy Hawkbit	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
TTG	*Cyperus tenellus*	Tiny Flat-sedge	high	low

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11.2.7 Victorian Volcanic Plain EVC 132



EVC 132_63: *Low-rainfall* Plains Grassland

Description:
Treeless vegetation mostly < 1 m tall dominated by largely graminoid and herb life forms. Occupies cracking basalt soils prone to seasonal waterlogging in areas receiving < 500 mm annual rainfall.

Life forms:

Life form	#Spp	%Cover	LF code
Small Shrub*	1	5%	SS
Prostrate Shrub	1	5%	PS
Large Herb*	2	5%	LH
Medium Herb	8	20%	MH
Small or Prostrate Herb*	3	10%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	10	30%	MTG
Medium to Tiny Non-tufted Graminoid*	2	5%	MNG
Bryophytes/Lichens and Soil Crust**	na	20%	BL

* Largely seasonal life form
** Note: treat as one life form in this EVC

LF Code	Species typical of at least part of EVC range	Common Name
SS	*Pimelea curviflora* s.s.	Curved Rice-flower
PS	*Atriplex semibaccata*	Berry Saltbush
LH	*Ptilotus macrocephalus*	Feather-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Plantago gaudichaudii*	Narrow Plantain
MH	*Maireana enchylaenoides*	Wingless Bluebush
MH	*Calocephalus citreus*	Lemon Beauty-heads
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Oxalis perennans*	Grassland Wood-sorrel
SH	*Chamaesyce drummondii*	Flat Spurge
SH	*Goodenia pinnatifida*	Cut-leaf Goodenia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
MTG	*Austrostipa scabra*	Rough Spear-grass
MTG	*Austrostipa nodosa*	Knotty Spear-grass
MTG	*Whalleya proluta*	Rigid Panic
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
TTG	*Centrolepis strigosa* ssp. *strigosa*	Hairy Centrolepis
TTG	*Centrolepis aristata*	Pointed Centrolepis
SC	*Convolvulus erubescens* spp. agg.	Pink Bindweed

Recruitment:
Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Victoria The Place To Be

EVC 132_63: *Low-rainfall* Plains Grassland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Plantago lanceolata*	Ribwort	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Leontodon taraxacoides* ssp. *taraxacoides*	Hairy Hawkbit	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	low
MH	*Trifolium striatum*	Knotted Clover	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	low
MTG	*Nassella neesiana*	Chilean Needle-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low

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11.2.8 Victorian Volcanic Plain EVC 647



EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 647: Plains Sedgy Wetland

Description:
Occurs in seasonally wet depressions on volcanic and sedimentary plains, typically associated with fertile, silty, peaty or heavy clay paludal soils. Primarily sedgy-herbaceous vegetation, sometimes with scattered or fringing eucalypts or tea-tree/paperbark shrubs in higher rainfall areas. A range of aquatic herbs can be present, and species-richness is mostly relatively low to moderate, but higher towards drier margins.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	5%	LH
Medium Herb	5	40%	MH
Small or Prostrate Herb	5	10%	SH
Large Tufted Graminoid	2	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	4	25%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG

LF Code		Species typical of at least part of EVC range	Common Name
LH		*Epilobium billardierianum*	Variable Willow-herb
MH		*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH		*Myriophyllum simulans*	Amphibious Water-milfoil
MH		*Stellaria angustifolia*	Swamp Starwort
MH		*Lilaeopsis polyantha*	Australian Lilaeopsis
SH		*Neopaxia australasica*	White Purslane
SH		*Lobelia pratioides*	Poison Lobelia
SH	v	*Helichrysum aff. rutidolepis (Lowland Swamps)*	Pale Swamp Everlasting
SH		*Eryngium vesiculosum*	Prickfoot
LTG		*Carex tereticaulis*	Hollow Sedge
MTG	k	*Lachnagrostis filiformis (perennial variety)*	Wetland Blown-grass
MTG		*Lachnagrostis filiformis*	Common Blown-grass
MTG		*Glyceria australis*	Australian Sweet-grass
MNG		*Eleocharis acuta*	Common Spike-sedge
MNG	v	*Amphibromus sinuatus*	Wavy Swamp Wallaby-grass

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Logs:
5 m/0.1 ha.(where trees are overhanging the wetland)

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	*Juncus bulbosus*	Bulbous Rush	high	high

Ecological Vegetation Class bioregion benchmark

Victoria
The Place To Be

11.2.9 Victorian Volcanic Plain EVC 653



Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 653: Aquatic Herbland

Description:
Herbland of permanent to semi-permanent wetlands, dominated by sedges (especially on shallower verges) and/or aquatic herbs. Occurs on fertile paludal soils, typically heavy clays beneath organic accumulations.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	10%	LH
Medium Herb	5	40%	MH
Small or Prostrate Herb	2	10%	SH
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	4	10%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Total understorey projective foliage cover		**85%**	

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Villarsia reniformis*	Running Marsh-flower
MH	*Myriophyllum simulans*	Amphibious Water-milfoil
MH	*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH	*Potamogeton pectinatus*	Fennel Pondweed
MH	*Marsilea drummondii*	Common Nardoo
SH	*Azolla filiculoides*	Pacific Azolla
SH	*Lobelia pratioides*	Poison Lobelia
SH	*Lemna disperma*	Duckweed
LNG	*Eleocharis sphacelata*	Tall Spike-sedge
MTG	*Triglochin procerum s.l.*	Water Ribbons
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Glyceria australis*	Australian Sweet-grass
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis pusilla*	Small Spike-sedge
MNG	*Eleocharis acuta*	Common Spike-sedge

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Aster subulatus*	Aster-weed	high	low
LH	*Rumex crispus*	Curled Dock	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	high
MH	*Cotula coronopifolia*	Water Buttons	high	high
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Romulea rosea*	Onion Grass	high	low

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be