



Cardinia Western Port Green Wedge
Management Plan

Adopted May 2017

Prepared by:

Cardinia Shire Council
Strategic Planning Unit

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1 Executive summary

The *Cardinia Western Port Green Wedge Management Plan* has been prepared by Cardinia Shire Council. It provides a strategic planning framework that enables Council to take advantage of opportunities and proactively attend to challenges occurring in the Cardinia Western Port Green Wedge over the next 20 years.

Western Port's internationally recognised environment, its established agriculture industry, rich agricultural soils, ready access to water, and its extensive transportation network (connecting farmers with nearby local markets and to ports for interstate or overseas markets) creates the area's enormous (largely latent) economic potential. The management plan identifies strategies that aim to realise this potential, which will have flow-on effects on the local economy and employment, and the vibrancy of the settlements in the Green Wedge.

The management plan provides Council with a tool that can assist in influencing appropriate planning of the Cardinia Western Port Green Wedge at state level through the Metropolitan Planning Strategy *Plan Melbourne* which identifies the Western Port Green Wedge as being part of Melbourne's peri-urban area.

The management plan has an overarching vision which is underpinned by the following:

- guiding principles
- theme-based strategic directions
- precinct-based strategic directions.

Key strategies included in the management plan are:

- promoting soil-based agriculture and horticulture
- protecting the Green Wedge's valued environment and landscape, and improving its biodiversity
- providing strategic directions for the Green Wedge's townships
- planning for climate change.

Objectives, strategies and actions are provided for each theme in order to implement the management plan over the next five years.

2 Acknowledgement

Cardinia Shire Council respectfully acknowledges that the land that is the subject of the *Cardinia Western Port Green Wedge Management Plan* is the traditional land of the Mayone Buluk clan of the Boon Wurrung people and the Wurundjeri Baluk clan of the Woi Wurrung people, both of whom form part of the Kulun Nation.

After community consultation, Cardinia Shire Council uses the term 'Aboriginal' rather than 'Aboriginal and Torres Strait Islander' in all its documentation. This is in line with the National Aboriginal Community Controlled Health Organisation's (NACCHO) November 2012 resolution, whereby the term Aboriginal would be used in all correspondence and speeches (Resolution: RES 2009-10). 'Aboriginal' is deemed to represent the views and demographics within the shire.

Cardinia Shire Council acknowledges the work undertaken and the support provided by the City of Casey during the first stage of the development of this document; specifically, during the issues and opportunities paper and the *draft Western Port Green Wedge Management Plan (December 2014)*.

Cardinia Shire Council also wish to acknowledge Planisphere for assistance with the community engagement process.



3 Introduction

3.1 Background

The Western Port Green Wedge covers the southern mainly rural areas of Cardinia Shire Council and the City of Casey.

In 2010, the Victorian Government provided funding to Cardinia Shire Council and the City of Casey to support the preparation of a joint management plan for the Western Port Green Wedge. This funding was used in part to prepare a discussion paper in relation to the Western Port Green Wedge which was completed and publicly exhibited in late 2011 and the draft *Western Port Green Wedge Management Plan* (December 2014) which was exhibited in 2015.

Preparation of the management plan advanced to an initial draft prior to the release of the Victorian Government's metropolitan strategy *Plan Melbourne*. A decision was made by both councils to not advance the draft until there was greater clarity around *Plan Melbourne* and its implementation. Once *Plan Melbourne* was finalised, the draft *Western Port Green Wedge Management Plan* (December 2014) was completed and placed on public exhibition in late 2015.

The partnership between Cardinia Shire Council and the City of Casey concluded following a decision made by Cardinia Shire Council on 15 February 2016 to finalise the management plan independently within its own municipal area. This decision was made due to a divergence in the strategic direction

of both councils in relation to the management plan. The City of Casey has proceeded to prepare its management plan for that part of the Western Port Green Wedge which is within its municipal area.

It is important to acknowledge that many areas of common interest still remain, including the purpose and vision, primary industry, biodiversity protection and enhancement and the natural environment including the Ramsar Wetlands. The management plan is drafted to ensure that both Cardinia Shire Council and the City of Casey work together in pursuit of these interests.

3.2 Consultation

Extensive consultation has been undertaken as part of the development of this management plan. The involvement of and consultation with the various stakeholders from the community, agencies and government authorities has been an important component in the development of the document. Three consultation phases have informed the development of management plan, which are outlined below.

Phase 1 – Initial consultation

Phase 1 was undertaken in May 2011 and involved a number of engagement activities designed to examine the key challenges and opportunities for the Western Port Green Wedge and identify a vision for the area.

The methodology was devised to reach a broad cross section of government and agencies, industry representatives, local businesses, community organisations,

interest groups and community members. The following activities formed part of the engagement methodology:

- government and agency workshop
- key stakeholder group workshops
- community survey
- online survey
- interviews with key stakeholders.

More than 150 people participated in Phase 1.

Phase 2 – Discussion paper

The *Western Port Green Wedge Management Plan – Discussion Paper* was prepared in conjunction with the City of Casey and was developed from feedback received during Phase 1. This discussion paper was placed on exhibition for public comment from 10 October to 5 December 2011. To support this exhibition period, a series of workshops were held, which included the following.

- facilitated workshop with government and agency representatives
- facilitated workshop with key stakeholders (township committees, community groups, growers and industry representatives)
 - two evening public information sessions hosted by:
 - Cardinia Shire Council at the Cardinia Public Hall
 - City of Casey at the Pearcedale Public Hall
- interviews with key stakeholders
- online engagement via a website which hosted associated documents and questionnaires.

The purpose of the above engagement activities was to obtain feedback for the draft *Western Port Green Wedge Management Plan* as well as to gain an understanding of key issues, key opportunities, priority areas and ideas for action relating to the future land use of the area.

Twelve submissions were received.

Phase 3 – Draft Western Port Green Wedge Management Plan

The draft *Western Port Green Wedge Management Plan (December 2014)* was prepared in conjunction with the City of Casey and was exhibited for public consultation and comment from 3 August to 7 September 2015.

To support this exhibition period, a series of workshops were held, which included the following:

- two community workshops (Koo Wee Rup and Garfield)
- agency workshop (combined with the City of Casey and facilitated by Planisphere)
- Victorian Government workshop (combined with the City of Casey and facilitated by Phoenix Facilitation)
- online engagement, which included Facebook, Twitter and both council websites
- local papers
- direct mail.

Eighteen submissions were received by Cardinia Shire Council and 160 by the City of Casey.

3.3 What is a green wedge?

The term ‘green wedges’ refers to the non-urban land that surrounds the outward development of Melbourne. This land is separated from urban areas by the Urban Growth Boundary (UGB) which was put in place by the Victorian Government in 2002.

Across Melbourne, 12 green wedges are located in 17 Local government areas. The green wedges accommodate agricultural and recreational uses, as well as a variety of important functions that support metropolitan Melbourne. These include major assets such as airports, sewage treatment plants, extractive industry and landfill sites. They contain uses that support urban activity which cannot be located among normal urban development¹.

Townships also exist in green wedges, typically established to provide services in support of the primary industries pursued in the rural area.

¹ DELWP, *Preparing a Green Wedge Management Plan – Practice Note 31*, June 2015.

3.4 What is the Western Port Green Wedge?

The Western Port Green Wedge is one of the 12 green wedges on the outskirts of Melbourne located outside of the UGB and is shared with both Cardinia Shire Council and the City of Casey.

Although these areas are set aside as non-urban land through the Cardinia Planning Scheme, green wedges are continually subject to intense pressures for urban development and change. Often competing pressures occur from urban development, hobby farms, tourism, intensive agriculture and infrastructure because of the proximity to a city which has a population of approximately four and a half million people.

A proactive approach is required to ensure that these pressures are appropriately managed and that the liveability, economic values and the scenic and natural qualities of the green wedge are not eroded over time. Green wedge management plans identify these values and work with the local community to set priorities and make proposals to improve the future planning and management of these areas.

This document focuses on the Cardinia Shire section of the Western Port Green Wedge. A large proportion of this area has some of the best agricultural soil in Melbourne, providing much of Victoria's asparagus, celery, leeks herbs and silver beet. The ongoing protection of this important agricultural asset is critical to the future of the green wedge.

Land within the green wedge area has many important purposes including:

- biodiversity, providing habitat for the endangered southern brown bandicoot and the growling grass frog and the internationally significant Ramsar wetlands
- providing land for agricultural use
- recognising and protecting land that has agricultural and environmental values
- providing important natural resources, including existing sand extraction industry
- encouraging sustainable farming activities and providing opportunity for a variety of productive uses
- protecting, conserving, and enhancing the character of open rural and scenic non-urban landscapes
- providing infrastructure such as sewage treatment plants and airports
- supporting recreational activities such as the Pakenham Racing Club's Tynong Racecourse.

The liveability and economic values of the green wedge are extremely important. While green wedge land may not be actively farmed, it is still important to consider the potential use of the land.

3.5 Location

The Western Port Green Wedge is located in the southeast of Melbourne and covers an area of approximately 746 square kilometres, incorporating land within both Cardinia Shire Council and the City of Casey. Approximately 615 square kilometres of this green wedge land is located within Cardinia Shire.

Cardinia Shire localities include (but are not limited to) Bunyip, Longwarry, Modella, Catani, Heath Hill, Nyora and Lang Lang in the east. It adjoins the Bass Coast Shire and the South Gippsland Shire as well as the Western Port coast.

Map 1 outlines the Western Port Green Wedge within the metropolitan context and in relation to the other 11 green wedges.

Map 2 shows the Western Port Green Wedge study area including the main settlements and the Urban Growth Boundary.

Figure 1. Map 1: Context Map

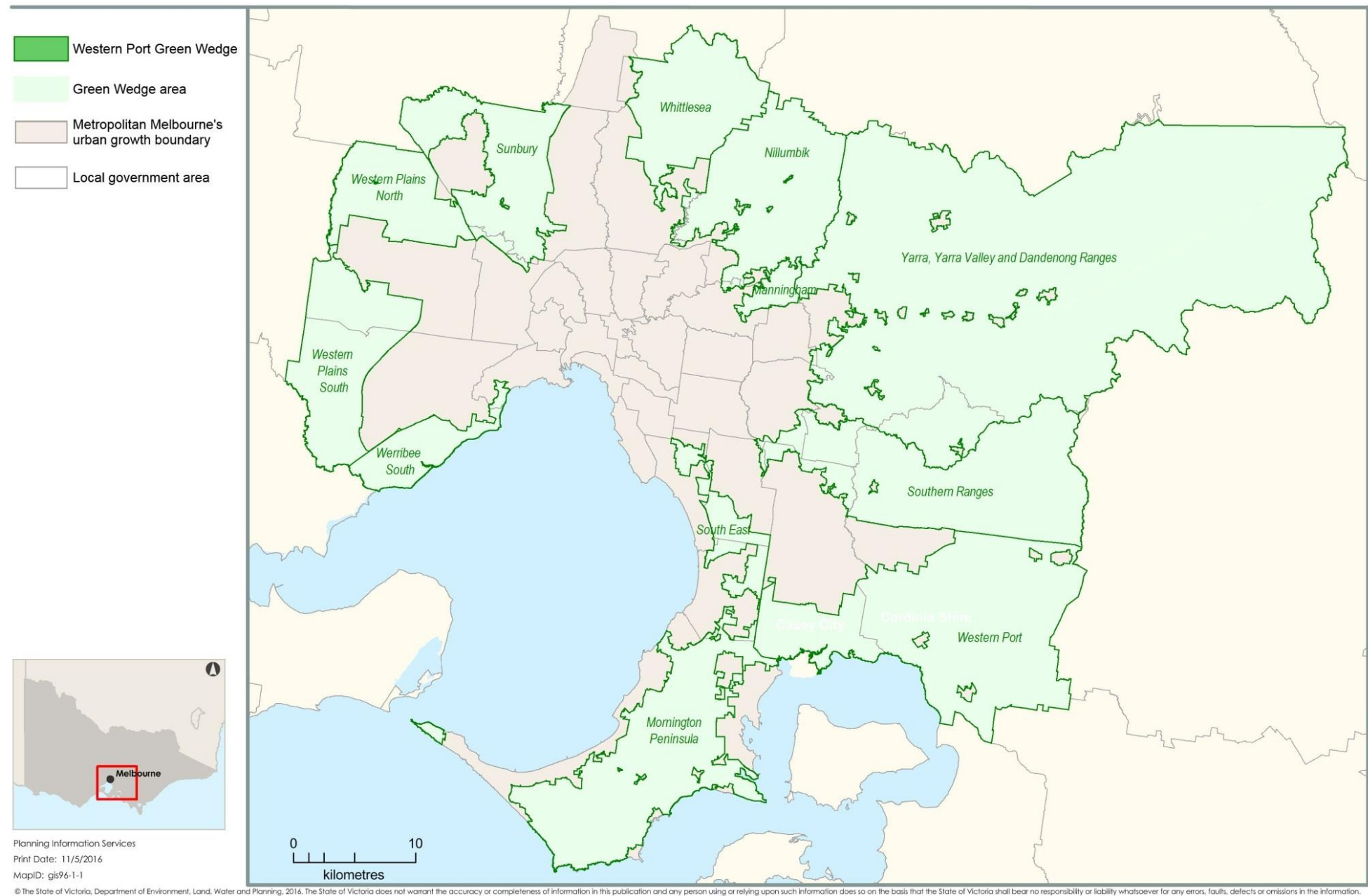
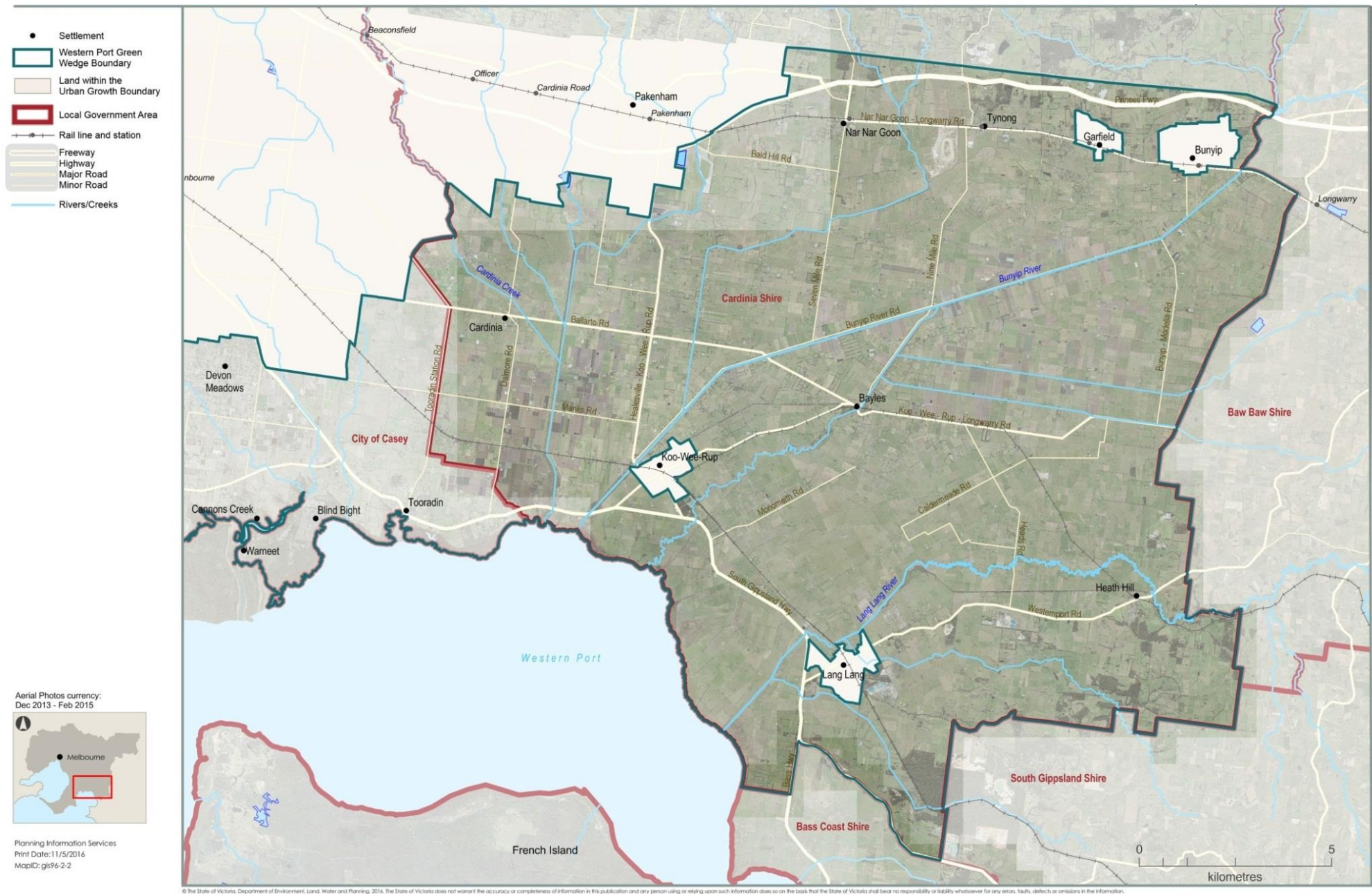


Figure 2. Map 2: Study area



3.6 State policy

State planning policies provide a Victorian strategic context in which the management plan sits.

Plan Melbourne Metropolitan Planning Strategy – 2017-2050

Plan Melbourne is the Metropolitan Planning Strategy for Melbourne and sets the vision for and guides Melbourne's growth through to the year 2050. It identifies the importance of retaining green wedges which support Melbourne through food production, critical infrastructure (such as water supply catchments and airports), sand and stone supply, biodiversity, recreation and tourism. Green wedges and peri-urban areas provide opportunities for the community to connect with nature, improving health outcomes, as well as maintaining the ecosystem services that underpin Victoria's prosperity.



Protecting the green wedges and peri-urban areas will make the state's food supply more secure in the face of increasing climate pressures on food production. It also

identifies the need to maintain permanent UGB in order to protect the values of non-urban land And reduce urban sprawl².

The relevant principles, directions and policies of *Plan Melbourne* are as follows:

Principle 1: A distinctive Melbourne

- Direction 1.4 – Support the productive use of land and resources in Melbourne's non-urban areas.
 - Policy 1.4.1 - Protect agricultural land and support agricultural production.
 - Policy 1.4.2 - Identify and protect extractive resources (such as stone and sand) important for Melbourne's future needs.

Principle 2: A globally connected and competitive City

- Direction 2.1 - Manage the supply of new housing in the right locations to meet population growth and create a sustainable city.
 - Policy 2.1.1 - Maintain a permanent urban growth boundary around Melbourne to create a more consolidated, sustainable city.

Principle 4: Environmental resilience and sustainability

- Direction 4.5 - Plan for Melbourne's green wedges and peri-urban areas
 - Policy 4.5.1 - Strengthen protection and management of green wedge land.
 - Policy 4.5.2 - Protect and enhance valued attributes of distinctive areas and landscapes.

Principle 6: Social and economic participation

- Direction 6.3 Integrate urban development and water cycle management to support a resilient and liveable city.
 - Policy 6.3.1- Reduce pressure on water supplies by making the best use of all water sources.
 - Policy 6.3.3 - Protect water, drainage and sewerage assets.
- Direction 6.5 - Protect and restore natural habitats
 - Policy 6.5.3 - Protect the coastlines and waters of Port Phillip Bay and Western Port.

² DELWP *Plan Melbourne Metropolitan Planning Strategy*, March 2017.

State Planning Policy Framework (SPPF)

The SPPF comprises of general principles for land use and development in Victoria with specific policies.

The directions of Plan Melbourne are reflected in policy contained in the SPPF of the Cardinia Planning Scheme.

Clause 9 Plan Melbourne of the SPPF requires consideration of Plan Melbourne.

The overarching policy on green wedges is located at Clause 11.06 Metropolitan Melbourne, under sub clause 11.06-7 Green wedges. Relevant strategies in relation to the protection of the green wedge are as follows:

- Ensure strategic planning and land management of each green wedge area to promote and encourage its key features and related values.
- Support development in the green wedge that provides for environmental, economic and social benefits.
- Consolidate new residential development within existing settlements and in locations where planned services are available and green wedge area values can be protected.
- Plan and protect major state infrastructure and resource assets that serve the wider Victorian community, such as airports and ports with their associated access corridors, water supply dams and water catchments and waste management and recycling facilities.

- Protecting important productive agricultural areas such as Werribee South, the Maribyrnong River flats, the Yarra Valley, Westernport and the Mornington Peninsula.
- Support existing and potential agribusiness activities, forestry, food production and tourism.
- Protect areas of environmental, landscape and scenic value such as biodiversity assets, national and state parks, Ramsar wetlands and coastal areas.
- Protect significant resources of stone, sand and other mineral resources for extraction purposes.

Clause 12.01 Biodiversity seeks to protect biodiversity and Clause 12.01-2 Landscapes seeks to improve the landscape qualities, open space linkages and environmental performance in green wedges and non-urban areas. 12.02 Coastal areas seeks to *enhance and encourage sustainable use of coastal areas*. Climate change impacts and coastal inundation and erosion are addressed in Clause 13 Environmental Risks.

Clause 14 Natural Resource Management is also of relevance and sub clause 14.01-1 Protection of agricultural land of which the objective is *to protect productive farmland which is of strategic significance in the local or regional context*.

Sub clause 14.01-2 Sustainable agricultural land use seeks *to encourage sustainable agricultural land use*.

Sub clause 14.02-2 Water quality of which the objective is *to protect water quality*.

Also of relevance is Clause 14.03 Resource exploration and extraction of which the objective is *to encourage exploration and extraction of natural resources in accordance with acceptable environmental standards and to provide a planning approval process that is consistent with the relevant legislation*.

Other planning scheme provisions

Zones

- **Green Wedge Zone (GWZ)**

The purpose of this zone is to recognise and protect non-urban land outside the UGB in the Melbourne metropolitan area for its agricultural, environmental, historic, landscape or recreational values, or mineral and stone resources. The zone provides a minimum lot size of 40 hectares unless an alternative is specified in a schedule to the zone. The creation of smaller lots is allowed under particular circumstances.

- **Green Wedge a Zone (GWAZ)**

This zone provides opportunity for most agricultural uses and limits non-rural uses to those that support agriculture or tourism provided that the amenity of residential living is protected. It seeks to protect and enhance the biodiversity, natural resources, scenic landscapes and heritage values and to promote sustainable land management. It also provides opportunity for limited residential development subject to a permit. The zone provides a minimum lot size of 8 hectares unless an alternative is specified in

a schedule to the zone. The creation of smaller lots is allowed under particular circumstances.

- **Public Conservation and Resource Zone (PCRZ)**

This zone protects and conserves the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values. It also allows for the construction of facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes.

- **Rural Conservation Zone (RCZ)**

This zone is designed to protect and enhance the natural environment for its historic, archaeological, scientific, landscape, faunal habitat and cultural values. Agriculture is allowed, provided it is consistent with the environmental and landscapes values of the area. This zone could also be applied to rural areas degraded by environmental factors such as salinity or erosion. A schedule requires specific conservation values to be stipulated. The zone provides a minimum lot size of 40 hectares unless an alternative is specified in a schedule to the zone. The creation of smaller lots is allowed under particular circumstances.

- **Special Use Zone – Schedule 1 (SUZ1) (Horticultural Preservation)**

This zone provides for the use of land for specific purposes, in this case horticultural preservation. The purpose of this zone is as follows:

- To preserve land of high agricultural quality for horticulture and other farming activities.
- To discourage non-agricultural and non-soil based uses establishing on soil of high agricultural value.
- To protect the area from the encroachment of urban and rural residential type development.
- To minimise the potential for conflict between residents and normal farming practices that are related to the conduct of agricultural activities.
- To encourage sustainable farming activities based on whole farm and catchment planning principles on an individual and community basis.

Overlays

- **Environmental Significance Overlay (ESO)**

This overlay applies to areas where the development of land may be affected by environmental constraints. It also seeks to ensure *that development is compatible with identified environmental values*.

- **Land Subject to Inundation Overlay (LSIO)**

This overlay applies to land in either rural or urban areas that is subject to inundation, but is not part of the primary floodway.

- **Restructure Overlay (RO)**

This overlay applies a restructure plan to old and inappropriate subdivisions as a condition of development approval. It seeks to preserve and enhance the amenity of an area and reduce the environmental impacts of dwellings and other development.

Particular provisions

- **Clause 57 Metropolitan Green Wedge Land**

This clause applies to land outside of the UGB (unless otherwise specified). The purpose of this clause is to:

- Protect metropolitan green wedge land from uses and development that would diminish its agricultural, environmental, cultural heritage, conservation, landscape natural resource or recreation values.
- To protect productive agricultural land from incompatible uses and development.
- To ensure that the scale of use is compatible with the non-urban character of metropolitan green wedge land.
- To encourage the location of urban activities in urban areas.
- To provide transitional arrangements for permit applications made to the responsible authority before 19 May 2004.

The clause also provides for additional controls on uses of green wedge land above and beyond those authorised under the other zones that make up the green wedge.

Practice notes

The Victorian Government have a series of practice notes on the operation of the Victorian Planning Provisions (VPP).

Preparing a Green Wedge Management Plan – Planning Practice Note 31

This practice note is to help guide the preparation of green wedge management plans and outlines the general requirements that should be met in the preparation of the document.

The *Cardinia Western Port Green Wedge Management Plan* has been prepared in accordance with this practice note and responds appropriately to all of the policy outlined above.

3.7 Local policy

Local planning policies provide a local and regional strategic context in which the management plan sits.

Local Planning Policy Framework (LPPF)

The *Municipal Strategic Statement* (MSS) provides the vision for land use planning and development within Cardinia Shire and identifies the following in relation to the green wedge.

Clause 21.01 Cardinia Shire key issues and strategic vision identifies Western Port as a major landscape feature and that a key influence within the shire is *urban growth, including urban pressures on the rural hinterland and management of green wedge*

areas. The following relevant key issues are identified:

- The protection of environmentally significant areas including the northern hills and the Western Port coast.
- The protection and management of biodiversity.
- The protection of the Koo Wee Rup swamp area which contains important groundwater reserves and horticultural soils in the Western Port basin.
- The management of urban growth, including urban pressures on the rural hinterland.
- The protection and sustainable use of agricultural land.

Clause 21.02 Environment identifies that the majority of Cardinia Shire is located within the Western Port catchment, which is a Ramsar wetland.

Of relevance is sub Clause 21.02-2 Landscape of which the objective is to *recognise and protect the diverse landscape and areas of significant landscape value*. It identifies the following relevant key issues:

- Protecting significant landscapes, including the protection of the specific features of each landscape.
- Recognising that the landscape is an important element in the sustainable development of tourism in the municipality.
- Recognising the pressures to develop land in locations of high scenic value.

Clause 21.02-3 Biodiversity identifies the diverse environment that is Cardinia Shire.

The objective is to *achieve a net gain in the quantity and quality of native vegetation in the municipality*.

Clause 21.03 Settlement and housing provides guidance in relation to rural townships and identifies that *setting clear limits for development of the townships and designing with regard to the surrounding unique characteristics of the townships* as key issues.

Clause 21.04 Economic Development is also of relevance. The objective of sub Clause 21.04-2 Agriculture is to *maintain agriculture as a strong and sustainable economic activity within the municipality*. The following key issues are also identified:

- Maintaining and protecting high value of agricultural land within the municipality.
- Protecting productive agricultural land from incompatible uses and inappropriate development and subdivision, including non-soil based farming on lands with high soil quality.
- Accessing sustainable water supplies for agricultural activities.
- Recognising the impact of intensive farming on surrounding uses.
- Developing Green Wedge Management Plans to fulfil statutory, strategic, environmental, economic and social requirements.

Further strategic work is identified at this clause and requires the preparation of *Green Wedge Management plans for the three green wedges in conjunction with the relevant councils and government departments*.

Clause 22.02 Sand extraction – Lang Lang to Grantville region identifies that this region contains significant sand resources which are expected to become a major source of sand for the Melbourne supply area over the next 10 to 20 years.

The objective of this clause is to *protect sand resources in the Lang Lang – Grantville area and to provide for the extraction of these resources and rehabilitation of sites in a manner which protects the significant environmental, social and economic values of the area.*

3.8 Council Plan

The *Council Plan* (2013–17) sets out a medium- to long-term vision for how Council will respond to the opportunities and challenges facing Cardinia Shire.

Council's vision is *Cardinia Shire will be developed in a planned manner to enable present and future generations to enjoy and experience the diverse and distinctive characteristics of our Shire.*³

The Council Plan has been amended for the period 2016–17. The following relevant key challenges have been identified.

Managing the natural and built environment, including climate change.

- The quality of our natural and built environments affects our communities. They must be developed and managed in

a way that contributes to the health and safety of present and future generations.

- Existing natural environmental values such as biodiversity and waterways need to be protected and improved.
- Climate change is affecting our agricultural areas, community health, parks and recreational facilities.

Supporting and increasing agricultural productivity

- With the majority of Cardinia Shire's land being rural, the hills and southern rural regions are important to the economy at a local and national level.
- Council needs to protect and strengthen these areas, and recognises that agriculture is facing pressure from the changing world economy, changing climate and other environmental conditions, as well as the demands of development and the ageing of our farming community.
- Council will take up every opportunity to enhance agricultural production particularly in the southern rural region (Bunyip Food Belt) by using recycled water from the Eastern Treatment Plant at Carrum.

Section 3 Our environment is relevant; the objective is *we will continue to continue to plan and manage the natural and built environment for present and future generations.*

Action 3.5.4 of the Council Plan seeks to *ensure the planning of rural (green wedge) areas protects and enhances important agricultural, environmental, natural*

resource, infrastructure and recreational values.

The objective at Section 4 Our economy is *we will create and support local employment and business opportunities for our community and the wider region.*

Section 4.2 Maintain strong agricultural activities.

In order to achieve the above, the following actions are listed:

- 4.2.1 Support our farmers and growing agricultural industry in adapting to the changing economy and climate.
- 4.2.2 Identify innovative ways to value add to the region's primary production and transportation.
- 4.2.3 Advocate for the development of roadways to value add to the region's primary production and transportation.

³ Cardinia Shire Council, *Council Plan 2013-17*



4 Purpose and vision

4.1 Management plan purpose

The management plan is a strategic framework which will guide the planning of the southern (primarily rural) areas of Cardinia Shire Council over the next 20 years. It is envisaged that a review will be undertaken every five years. However, it is not intended that the review will make significant changes to the vision, objectives and actions (unless required). It may identify emerging issues, remove completed actions and identify any new actions in response to new and emerging issues.

The management plan brings together a range of objectives, strategies and actions to help protect, improve and promote the area's important economic, social and natural assets in the face of the challenges and pressures which arise from its location at the edge of metropolitan Melbourne and in the face of a changing environment.

An **objective** articulates what the structure plan aims to achieve in relation to a particular theme, such as the goal intended to be attained or the desired outcome.

Strategies and **actions** are similar; they both provide a solution to achieving the objective. However, for the purpose of this structure plan, **strategies** relate to the method or processes used to achieve the objective, such as how Council will assess and guide proposals within the green wedge.

Actions relate to more tangible or measurable tasks; an action is a task that can be allocated, placed within a timeframe, and may even need specific funds allocated.

The management plan achieves:

- identifies the values and features of the Cardinia Western Port Green Wedge across a range of thematic areas, including biodiversity, agriculture and horticulture, water, climate change, cultural heritage and more
- provides objectives, strategies and actions to protect and improve the quality of these important assets
- identifies areas of commonality through the identification of precincts and sets out the preferred future land uses in these areas
- acknowledges and responds to the needs and values of the local community
- identifies priority actions and further work that is required to successfully manage the Cardinia Western Port Green Wedge into the future.

4.2 Vision

A vision for the Western Port Green Wedge was developed through background research and extensive stakeholder consultation involving the primary industry, local government, state and federal government agencies, utility and service providers, environmental groups, resident associations and property owners and occupiers.

This was undertaken in 2011 as part of the preparation of the project's *Western Port Green Wedge Management Plan Discussion Paper, October 2011* jointly with the City of Casey.

Some minor amendments have been made to the vision to make it more Cardinia specific.

The vision is:

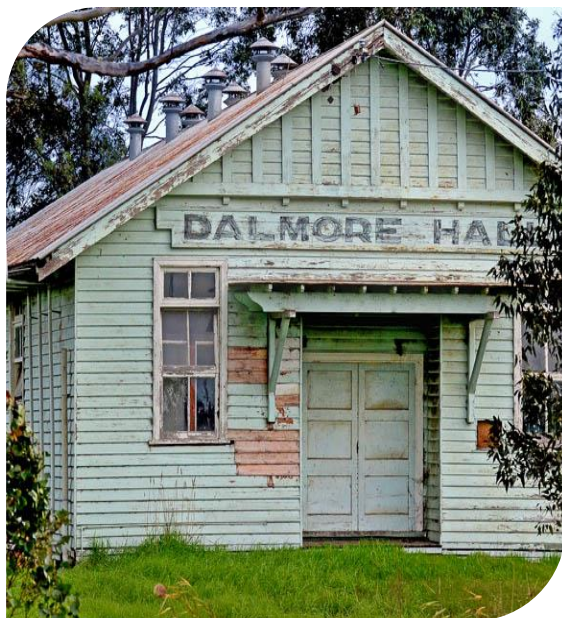
The Cardinia Western Port Green Wedge will be a permanent green and rural area. It will remain an internationally significant biodiversity habitat, while also strengthening its agricultural and horticultural role to become a truly innovative and productive farming district. Agriculture, horticulture and soil based food production for the long-term food security of Victoria is at the heart of this vision.

Best practice integrated water management will lead to improved water quality and a reduced risk of flooding with improved ecological conditions in Western Port Bay and local biodiversity will be protected, as will habitats for threatened species.

The green wedge will be home to small, clearly defined settlements that have a strong identity, provide jobs and services for the local community and support the agricultural and horticultural pursuits of the green wedge.

The local economy will be driven by its agriculture, horticulture and extractive industry. The Cardinia Western Port Green Wedge provides the opportunity to accommodate a further third airport to serve the long-term needs of Southeast Melbourne and Gippsland as identified in *Plan Melbourne*.

The Cardinia Western Port Green Wedge will be the permanent edge to Melbourne's southeast.



5 Land use history

The Western Port Green Wedge boundaries about the Western Port coast, the low lying former Koo Wee Rup and Dalmore swamps, (which together formed the largest swamp in Victoria), as well as pockets of more elevated land to the north. The inland Koo Wee Rup Swamp was dominated by permanently inundated reeds and rushes and the coastal Dalmore Swamp featured dense scrub and swamp paperbark. These swamps created a natural barrier between Melbourne and West Gippsland.

5.1 Indigenous cultural heritage

The Western Port area is a part of the traditional country of the Mayone buluk and Yallock balug clans of the Bun Wurrung people and the Bulug willam clan of the Woi Wurrung.⁴ For tens of thousands of years, the ancestors of these groups experienced extremes of environmental fluctuation from volcanic eruption, the ice age (during which sea levels dropped and dry land extended to Tasmania creating the Bassian Plain, a vast grassland and hunting territory) and then climatic warming (when this plain was inundated) leading to the creation of Western Port as it is now seen.

⁴ Canning, S. & Thiele, F. *Indigenous Cultural Heritage and History within the Metropolitan Melbourne Investigation Area*, Australian Cultural Heritage Management, report for to the Victorian Environmental Assessment Council, 2010.

The Boon Wurrung and the Woi Wurrung people are part of the broader alliance of the Kulin Nation which also includes the Watha Wurrung, the Djaja Wurrung and the Taung Wurrung peoples who all shared a common language.⁵

The Boon Wurrung, with their hunter/gatherer lifestyle, followed traditional routes along the coast, creeks and riversides. Some of these routes were mapped by William Thomas who was appointed Assistant Protector of the Aborigines in 1837 by Baron Glenelg, the British Secretary of State for the Colonies. On arriving in Victoria, the Chief Protector, George Augustus Robinson, allocated him the Port Phillip, Western Port and Gippsland districts which include the entirety of the study area. He travelled extensively with the Aboriginal peoples of these districts including the sea coast from Western Port to Port Phillip and drew a map in 1840, which showed some of these journeys.

One of these tracks passed around the east side of the Western Port study area from Gippsland, linking up with well-established trails through the Berwick and Pakenham areas to Dandenong. Another track along the west side of the bay passed near the Tooradin area before joining the track to Dandenong.

⁵ Rhodes, D. & Bell, J *Shire of Cardinia Urban Growth Corridor Aboriginal Heritage Study*, report to the Shire of Cardinia, 2004.

The Boon Wurrung and the Woi Wurrung peoples intermarried and traded, moving freely (in accordance with mutually understood protocols) across each other's territories. According to some observers, their contact was so frequent and so amicable, that boundaries between them may not necessarily have been rigidly defined.

Their movements were seasonal. During summer months they travelled along major streams, fishing for eels, and hunting and snaring game such as kangaroos, wallabies, possums, wombats and emus. They gathered plant foods, ate swamp-dwelling plants like the roots of rushes, and collected wild honey. In the cooler months, the Boon Wurrung people moved inland seeking shelter and gathered pith of tree ferns and fished Cardinia Creek.

The land was well watered and was managed to provide plentiful food resources and shelter for its numerous inhabitants for over 40 millennia. In common with the practice of Aboriginal people throughout Australia, they skilfully used fire to clear forest areas into patchwork patterns to foster new plant growth; particularly grasses to attract game and to promote the growth of herbs, tubers, native fruits and nuts to balance their diet and to forestall bush fire conflagration.

The Kulin people had a rich spiritual life which centred on connections with Bunjil, the spirit who created the land, their custodianship and protection of it and with the rhythms of the seasons. They created

sites that contain important evidence of a distant past and to which they attribute spiritual meaning.

Most of the Western Port Green Wedge has not been surveyed in any detail to establish the Aboriginal archaeological values which remain there. The largest and most significant sites found to date have been on elevated land on the swamp periphery, south of Pakenham. Further research is required to clearly identify Aboriginal heritage values in the study area.

5.2 European settlement

European settlement of the area quickly led to the end of the traditional lifestyle of the Aboriginal peoples as they lost access to traditional lands and waterways, hunting grounds were reduced and traditional food sources disappeared. Hunger, conflict with Europeans, as well as the introduction of new diseases (to which the Indigenous peoples had no immunity) led to rapid population decline and loss of territory. It also meant that the relationship between the natural environment in the Western Port area and human activity changed from one of harmony to one of seemingly constant struggle as Europeans sought to tame the land by removing vegetation, draining it and opening it up for agricultural production and passage through to East Gippsland.

Permanent European settlement of the area occurred progressively from the 1830s. Typical early uses included fishing, grazing and farming. However, intensive farming was

hindered by dense vegetation, the threat of flooding and the extensive swamps.⁶

In the 1870s the Lands Department decided to drain the Koo Wee Rup Swamp so that it could be farmed and the Koo Wee Rup Drainage Committee was formed to oversee the process. The main channel connecting the Cardinia Creek and a number of smaller drains were excavated from 1876 using shovels and wheelbarrows, but these initial efforts proved unsuccessful and major floods still occurred. The drainage system was extended from 1889 with the construction of the Bunyip Main Drain to channel the Bunyip River through to Western Port Coast.⁷



Station Street Koo Wee Rup during the 1934 flood.⁸

The first village settlement was then built but flooding occurred again in 1893 leading to further widening and deepening of the main drain. Drainage works were completed by

⁶ Canning, S and Thiele, F), *Indigenous Cultural Heritage and History within the Metropolitan Melbourne Investigation Area*, Australian Cultural Heritage Management, report for to the Victorian Environmental Assessment Council 2010.

⁷ Graeme Butler and associates), *Cardinia Shire (Emerald and Cranbourne Districts) Heritage Study*, 1998.

⁸ Casey Cardinia Links to our past

1897. The new drainage system and drought then led to the soil shrinking and compacting with the land surface dropping as a consequence. A major flood in 1900 caused damage to crops and livestock and a new round of widening and extension of the drainage system took place as a result. Nevertheless, the area was proving to be fertile land for horticulture and in the early 1900s the area became the potato capital of Victoria.⁹

Around this time, the hills to the north of the Koo Wee Rup Swamp were extensively cleared. This in turn led to erosion of the drains because of increased runoff, and sedimentation in the lower parts of the system. In 1917, the Koo Wee Rup Flood Protection District was proclaimed to oversee an improved drainage system for the whole area (this resulted from severe flooding again in 1911). The needs of World War I promoted vegetable growing in the area, and also led subsequently to land subdivision for the creation of small-holdings for returned soldiers which were known as soldier settlements.¹⁰

Major floods in 1923 and 1924 and the super flood of 1934 caused significant damage and the latter made more than 1,000 people homeless. The 1936 Royal Commission was set up to produce an improved scheme with new levees, the

removal of sediment, and a further extension of the system.

By the time of World War II, potato growing in the area had ceased due to market fluctuations, and the area then became the prime supplier of Melbourne's milk and vegetables. Through the 1950s and 1960s this trend was accelerated by an influx of growers who were forced out of Melbourne's traditional market gardens in Dingley and Oakleigh by urban expansion. Potatoes again took over as the dominant land use, replacing dairying, which moved further out to Gippsland. New sources of water were needed to provide for this expansion and a permit system was introduced in the 1950s to allow farmers to pump water directly from the main drain. Only minor flooding occurred after this time and the construction of the Tarago Reservoir in 1969 also enabled better downstream flood control.¹¹

Groundwater was also being extracted from the aquifers from 1922 for stock and domestic requirements. This process went unchecked until water levels in the aquifers had dropped by 15 metres and in the 1967–68 drought they fell below pumping levels and no water could be extracted. The area was declared a groundwater conservation area in 1971, which controlled the rate and volume of water that could be extracted and prohibited new bores in some areas.¹²

5.3 Pressures for change

The Western Port Green Wedge has a history of struggle between retaining and protecting the natural environment from urban development and human activity. This is not a situation unfamiliar to the Green Wedge areas across Victoria.

The Western Port Green Wedge has many significant environmental values, while also being a very important agricultural area. The natural environment will continue to pose challenges as the predicted impacts from climate change, such as more frequent inundation, increased storm events and changes to crops. This will create pressure on both the environmental and agricultural values of the area.

As Melbourne's population continues to grow, the inevitable urban development pressures on the Western Port Green Wedge will continue. It is likely pressure to expand the UGB in order to accommodate new urban development, rural living, hobby farms and other uses that may compromise the potential productivity of the land will continue. Pressure is also likely on the Green Wedge area to accommodate state infrastructure in order to support metropolitan Melbourne.

The current and future pressures on the Cardinia Western Port Green Wedge are described in more detail in Section 7.

⁹ Graeme Butler and associates), *Cardinia Shire (Emerald and Cranbourne Districts) Heritage Study*, 1998..

¹⁰ Rhodes, D. & Bell, J, *Shire of Cardinia Urban Growth Corridor Aboriginal Heritage Study*, report to the Shire of Cardinia, 2004.

¹¹ Graeme Butler & Associates. (1998), *Cardinia Shire (Emerald & Cranbourne Districts) Heritage Study*.

¹² Rhodes, D. & Bell, J, *Shire of Cardinia Urban Growth Corridor Aboriginal Heritage Study*, report to the Shire of Cardinia, 2004.

5.4 Attributes and values

While pressures for change will continue (as outlined in Section 5.3), the Cardinia Western Port Green Wedge is also home to important assets that have value in their own right and have a significant role to play in making Melbourne a great city. These include sand extraction (significant sand resources exist, particularly around Lang Lang), sewage treatment plants and other important infrastructure such as airports.

While green wedges play an important role in providing infrastructure for metropolitan Melbourne, this needs to be balanced with a healthy green wedge environment. This creates a healthy eco system that supports healthy communities, agricultural production, recreation and tourism.

Today, the majority of the study area is used for agricultural purposes. The region produces livestock, vegetables, cut flowers and orchard fruits, but particularly high in vegetable production with almost 90 per cent of Victoria's asparagus is produced in and around Koo Wee Rup; celery (50%) and leeks (71%) account for significant proportions of the state's output.

Within the Casey-Cardinia Green Wedge, agriculture employs approximately 2,000 people and contributes an estimated \$400 million to the local economy, making it the most valuable and productive green wedge area in Melbourne¹³.

The green wedge also accommodates other rural uses such as grazing, horse and greyhound breeding and training, beef production, hobby farms, rural living, nature conservation and the various settlements.

It has recreation assets such as the Pakenham Racing Clubs' new Tynong Racecourse and equestrian facilities. The green wedge also has some highly significant biodiversity assets including internationally recognised wetlands, and habitats for endangered species including the southern brown bandicoot and the growling grass frog.

A number of rural townships and settlements are located in the green wedge, including:

- **Large rural townships**
 - Garfield
 - Bunyip
 - Koo Wee Rup
 - Land Lang
 - Nar Nar Goon
- **Small rural townships**
 - Bayles
 - Cardinia
 - Tynong
- **Rural localities**
 - Iona
 - Cora Lynn
 - Catani
 - Heath Hill
 - Caldermeade
 - Monomeith

- Modella
- Yannathan¹⁴.

These townships play an important role within the green wedge, providing opportunities for non-urban township living, as well as providing a focus for the local provision of services, schools and employment.

The Cardinia Western Port Green Wedge also has a number of existing tourist attractions and potential exists to expand tourism opportunities that complement the other values of the green wedge, particularly including increased food-based tourism and eco-tourism that has minimal impact on the green wedge environment.



Southern brown bandicoot
Photo: John Petrucka

¹³ Integrated Water Management Plan

¹⁴ Cardinia Planning Scheme, Clause 21.03-3 Rural townships

5.5 Community values and priorities

The Western Port Green Wedge is home to more than 20,000 people, all of whom have different experiences and relationships with the green wedge. Over half of these people live in the rural townships; the remainder live on rural properties.

Many of these community members and local stakeholders were involved in the development of the *Western Port Green Wedge Management Plan Discussion Paper (October 2011)* and final management plan through engagement activities that included workshops, community surveys, online surveys and interviews with key stakeholders.

These engagement activities were designed to examine the key challenges and opportunities for the Western Port Green Wedge, identify a vision for the areas and explore potential actions for the draft *Western Port Green Wedge Management Plan*. Feedback collected during the exhibition of the discussion paper informed the content of the draft and the final document.

A report summarising the feedback from community consultation in 2011 is available separately. This report was prepared by Capire Consulting Group and is called the *Western Port Green Wedge Management Plan – Community Stakeholder Engagement Summary of Findings (May 2011)*. Key findings of this report are available in Table1.

Table 1. Summary of key findings from public consultation held in 2011

Theme	Feedback
Agriculture	<ul style="list-style-type: none"> • A primary value and key asset needing protection • Need for clear zoning based on land capability, soil and commodity studies • Need for improved management of farms, including incentives for farmers to stay on the land and to improve farming practices • Need for better management of interface between residential and farming areas into the future • Key challenge of managing succession planning for ageing farmers; potentially need greater flexibility for farmers to subdivide or to undertake complementary activities such as farm gate sales or food tourism
Biodiversity	<ul style="list-style-type: none"> • Biodiversity identified as a valuable asset, particularly the internationally recognised Ramsar wetlands and endangered species such as the southern brown bandicoot and the growling grass frog • Potential strategies included building on the bio-links programs with incentives to revegetate or help improve them • Suggestions included developing bio-links from Cranbourne Botanic Gardens south to the coast as well as east to Bayles to help protect native flora and fauna • Specific comments regarding the alignment of some bio-links and also concerns regarding how these had been identified and whether they would be effective • An integrated approach to ensure that agriculture and water management helps to improve habitats for valued species was also supported
Urban development pressures	<ul style="list-style-type: none"> • Widespread opposition to further subdivision in the green wedge • Seventy-two submissions explicitly opposed subdivision and advocated for the Urban Growth Boundary to be the permanent edge to Melbourne, and two petitions with 70 signatures opposed subdivision • Some submissions suggested that infill development could be encouraged in small settlements to make them more viable and others felt that a buffer zone between agricultural and residential areas could minimise conflict and that rural living could act as this buffer • Future growth at the Port of Hasting was highlighted along with the impact this will have on freight movement and travel patterns across the area
Water	<ul style="list-style-type: none"> • Flooding seen as a major concern for the green wedge and many linked this to runoff from new development and hard surfaces in the catchment areas • Water-sensitive urban design (WSUD) was advocated to reduce the severity of flooding along with an integrated approach to water management; the impacts of runoff on the Western Port seagrass and saltmarsh ecosystems were a concern for some respondents • The need to address rising sea levels was raised with suggestions to restrict inappropriate development and to promote revegetation along the coast
Recreation and tourism	<ul style="list-style-type: none"> • Key opportunity for leisure and tourism that complements the green wedge to improve the local economy (e.g. educational tourism, agricultural schools, tourism connected to local produce, and eco-tourism along the coast) • Support for a walking track along the Western Port coast although some concern about its impact on the Ramsar wetlands and its practicability • Support for rail trails and equestrian trails if they can be put in place without threatening local habitats, and particular support was given to a bicycle trail along the South Gippsland rail easement

Theme	Feedback
Heritage	<ul style="list-style-type: none"> • Support for Aboriginal heritage to be highlighted in the <i>Green Wedge Management Plan</i> • Others felt that heritage generally should be stronger and that more effort could be made to celebrate the history of the Koo Wee Rup swamp and its settlements
Landscape features and rural amenity	<ul style="list-style-type: none"> • Opportunities for a rural lifestyle in the area are valued; people have chosen to live in the green wedge as they believe it is protected from urban expansion and they want it maintained as a rural area
Uncertainty	<ul style="list-style-type: none"> • Concerns raised around the future of the Urban Growth Boundary and uncertainty about whether there would be further changes and therefore if it can be regarded as the permanent edge to Melbourne. • Some scepticism about how a management plan can be effective if the boundary continues to change.



6 Guiding principles

The Cardinia Western Port Green Wedge has a range of highly important assets that need to be protected and enhanced. However, its location means that it is likely to continue to experience pressure for urban development and have rural and urban interface issues.

The management plan aims to balance these competing values. Planning and management decisions related to land within the Cardinia Western Port Green Wedge need to have regard to the guiding principles listed below.

Regard should also be given to all relevant theme-based strategic directions set out in Section 7 as well as the location of specific precinct-based strategic directions set out in Section 8.

Principle 1

Agriculture, horticulture and soil based food production will be prioritised and protected. Opportunities for new soil-based agriculture and horticulture will be encouraged and promoted.

Principle 2

Continue to support the principles of a local food system and advocate for and promote healthy and sustainable food production for primary food producers.

Principle 3

Proposals for local and state infrastructure should respond to the key values of the Cardinia Western Port Green Wedge, and

any potential impacts on the values of the green wedge should be minimised and mitigated, while taking into account the needs of the local community.

Principle 4

Land uses should be located as directed by the precinct-based strategic directions set out in Section 8.

Principle 5

Sites of environmental significance, including Ramsar wetlands and the habitat of noted fauna such as the southern brown bandicoot and the growling grass frog, will be protected and enhanced and their contribution to the biodiversity of the Cardinia Western Port Green Wedge will be recognised in decision making.

Principle 6

Sites of cultural heritage will be protected and enhanced and their contribution to the identity and history of the Cardinia Western Port Green Wedge will be recognised in decision making.

Principle 7

The economic and social benefits of existing and planned tourism and recreation assets will be protected and promoted through integrated planning mechanisms.

Principle 8

Biodiversity and agricultural outcomes will be integrated by recognising ecosystem services which can improve agricultural efficiency.



7 Theme-based strategic directions

This section of the document provides a summary of each of the themes that are relevant for the management of the Cardinia Western Port Green Wedge. The themes addressed in this section are as follows:

1. Indigenous and post-contact heritage
2. Landscape
3. Visitation and recreational land uses
4. Soils and land capability
5. Water
6. Ground water
7. Agriculture and horticulture
8. Climate change
9. Urban development
10. Infrastructure and transport
11. Extractive industry.

7.1 Indigenous and post-contact heritage

Background and context

Council is committed to the recognition and ongoing protection of Indigenous heritage with its first *Reconciliation Action Plan (RAP)* being adopted by Council on 15 June 2015.

The RAP is a four-year business plan documenting what Cardinia Shire Council will do within its sphere of influence to contribute to reconciliation in Australia. It outlines practical actions the organisation can take to build strong relationships and enhance respect with Aboriginal people.

The RAP is an extension of Council's Statement for Reconciliation (Council Meeting 18 February 1997), which recognises the Boonwurrung and Wurundjeri people as the original inhabitants of the Cardinia Shire region and acknowledges the right of Aboriginal people to live according to their own values and customs.

The Cardinia Western Port Green Wedge has a unique and rich Indigenous and post-contact history. As set out in Section 5 (Land Use History), the Boon Wurrung and Woi Wurrung people have an ancient association with the land, hunting and gathering along the coast, in the Koo Wee Rup and Dalmore swamps and camping in the surrounding higher ground. Many cultural heritage sites have been identified around those former swamps and also along the Western Port coast where shell middens and artefact scatters have been discovered.

In more recent times, floods, drainage, reclamation and resettlement schemes have transformed the land. Heritage properties remain in the area, serving as reminders of early European settlement.

The community consultation undertaken in developing the discussion paper confirmed the value of the green wedge's Indigenous and post-contact heritage to the community.

There were suggestions that more effort should be made to maintain, enhance and celebrate the historical features of the Koo Wee Rup Swamp, its associated settlements as well as the settlements along the Western Port coast.

While some measures are already in place to protect and celebrate the land's history through the Cardinia Planning Scheme and local initiatives (such as the Koo Wee Rup Swamp Historical Society and Museum, other historical societies and community organisations), additional measures could be explored.

This can be achieved by undertaking a Cultural Landscape Assessment of the former Koo Wee Rup and Dalmore swamps in order to identify landscape features and sites of both historical and Aboriginal significance.

Both Indigenous and non-Indigenous peoples have shaped the landscape of the former Koo Wee Rup swamp into the agricultural land and drains we see today. The network of drainage canals are still a dramatic landscape in the former Great Swamp area.¹⁵ A number of significant bridges connecting the land between these canals were identified in the *Cardinia Shire (North) Heritage Study*, Graeme Butler and associates (1996). Many of the timber bridges over the drains are thought to have been constructed after the 1934 floods, but they do provide evidence of the large scale swamp drainage projects carried out in many parts of the shire. There have also been changes to some bridges with renewal of stringer supports, decks and balustrades. The timber bridges are significant as they are evidence of the extensive swamp drainage

project and the development of transport networks when the swamp was turned into rich farming land.¹⁶ Given the time that has passed since the 1996 work undertaken by Graeme Butler and associates, a review of the bridges needs to be undertaken to establish their suitability for protection in the Cardinia Planning Scheme. A planning scheme amendment needs to be undertaken to include any new significant bridges within the Schedule to the Heritage Overlay and update the mapping of the bridges already included in the Schedule to the Heritage Overlay in the Cardinia Planning Scheme.

Cultural landscapes provide a sense of place and identity, they map our relationship with the land over time, and they are part of our national heritage and each of our lives.

They are sites that are associated with a significant event, activity, person or group of people and range in size from thousands of acres of rural land to historic homesteads. They can also be grand estates, farmland, public gardens and parks, university campuses, cemeteries, scenic highways and industrial sites. They are works of art, narratives of cultures, and expressions of regional identity.

Objective

- Identify, protect, celebrate and promote the heritage values, history, Indigenous cultural heritage and post-contact heritage in the Cardinia Western Port Green Wedge and its history.

Strategies

- Promote greater community knowledge and understanding of Aboriginal cultural heritage in the Western Port area.
- Protect sites of heritage significance through the *Cardinia Planning Scheme*.
- Explore additional ways to protect and celebrate the history of the green wedge.
- Recognise the inclusion of Aboriginal peoples' families and groups currently living in the green wedge in local initiatives, activities and decision making.

Actions

- A1:** Explore the opportunity to establish a local gathering and healing place in the green wedge*.
- A2:** Generate publicity and promotion of relevant activities and aspirations of the *Cardinia Shire Council Reconciliation Action Plan 2015–19* using a mix of traditional and online communication tools*.
- A3:** Undertake site visits and a review of the bridges identified in the *Cardinia Shire (North) Heritage Study*, Graeme Butler and associates (1996).
- A4:** Conduct a cultural landscape assessment of the Cardinia Western

¹⁵Graeme Butler and associates, *Cardinia Shire (North) Heritage Study*, 1996.

¹⁶ Graeme Butler and associates, *Cardinia Shire (North) Heritage Study*, 1996.

Port Green Wedge to determine the cultural landscape significance of the former Dalmore and Koo Wee Rup swamp environs and the Western Port coastline. The assessment should include consideration of Indigenous history, sites of Aboriginal heritage value, the drainage of the swamp, former railway lines and bridges and the Soldier Settlement period.

- A5:** Undertake a planning scheme amendment to map the bridges identified in the Schedule to the Heritage Overlay in the Cardinia Planning Scheme, include any new bridges identified or other sites of cultural significance.

**Action also exists in Cardinia Shire Council Reconciliation Action Plan 2015–19*

7.2 Landscape

Background and context

The Cardinia Western Port Green Wedge has a unique landscape and scenic quality. This is reminiscent of the area's pre-European form which was dominated by the Dalmore and Koo Wee Rup swamps, pockets of more elevated land to the north and the subsequent historical layers of settlement and drainage which have affected the landscape.

Cardinia Creek and other creek corridors are key landscape assets within the Cardinia Western Port Green Wedge. These corridors have significant areas of remnant vegetation that could play an important role in protecting biodiversity in the green wedge. Creeks that have been modified as part of

the drainage of the swamps are also important markers of the history of the area.

Some areas already have planning controls in place in order to protect the landscape, such as the Significant Landscape Overlays (SLO) for Lang Lang-Heath Hill and the Western Port Coast. However, most of the green wedge has not yet been considered for landscape protection.

The value of this landscape is based on its natural and scenic qualities and its cultural values relating to historical events and associated land use patterns which are still evident today. *The Cardinia Shire Local Heritage Study Review 2012* notes the following examples:

- Aboriginal traditional usage and spiritual association
- the extraordinary engineering feat of successfully draining the former Koo Wee Rup Swamp including the extensive drainage systems
- construction of historical railway lines and bridges
- the pastoral era and settling of the land
- the Soldier Settlement area.

The Cardinia Shire Local Heritage Study Review 2012 describes the cultural layers and landscape of the former swamp as follows:

The changes brought about by [the Selection Era] profoundly altered the pre-Contact landscape. They created the distinctive rural landscape strongly characterised by undulating pasture in the lower-lying areas with the more

steeply rolling hills and densely vegetated northern areas of the Shire, defined by hedgerows, windbreaks, tree rows and clusters of farm buildings and mature exotic trees that is an important part of Cardinia's character today. The extent of agricultural occupation was extended greatly by the draining of the Koo-Wee-Rup Swamp at the end of the 19th century and intensified through soldier settlement after the First World War [and] the construction of railway lines, including the Gippsland Line, the Great Southern Railway and the Strzelecki Line. The farming area created by the swamp drainage scheme in particular, has a unique character defined by the network of drains along with infrastructure such as bridges, culverts and crossings, which is overlaid upon the remnants of the pastoral era landscape such as hedgerows and windrows.

A comprehensive landscape assessment would provide an opportunity to consider the whole of the former swamp the Western Port coast (which has not been assessed).

Objective

Protect and enhance the unique and attractive landscapes in the Cardinia Western Port Green Wedge.

Strategies

- Encourage the application of landscape controls to ensure the landscape values of the Cardinia Western Port Green Wedge are appropriately protected.

Actions

- A6:** Conduct a cultural landscape assessment of the Cardinia Western Port Green Wedge to consider the cultural landscape significance of the former Dalmore and Koo Wee Rup swamp environs and the Western Port coastline. The assessment should include consideration of Indigenous history, the drainage of the swamp, former railway lines and bridges and the Soldier Settlement period.
- A7:** Investigate the application of the appropriate planning overlays on the relevant sites as a result of the landscape assessment and undertake a planning scheme amendment to implement the appropriate overlays.

7.3 Environmental significance

Background and context

A number of habitat corridors exist within the Cardinia Western Port Green Wedge. These corridors aim to create a healthy landscape which protects important habitats and helps restore a sustainable environment in terms of land management, waterways and native vegetation. This may be achieved through a program of revegetation and land management which aims to link habitats or improve connectivity by using core areas of native vegetation and natural ecosystems. Potential habitat corridors are shown on Map 3 which includes identified areas of biodiversity significance.

Cardinia Shire Council has based its biodiversity planning on the development of habitat corridors. This is largely through the *Biolinks Project Action Plan 2008* which covers much of the Western Port Catchment and tends to focus more on land management outcomes.

Waterway corridors also play an important role in providing biodiversity links and building natural system resilience.

The foreshore and surrounding waters of Western Port were listed as the Western Port Ramsar Site in 1982. The site consists of shallow intertidal mudflats, seagrass and fringing saltmarsh and mangrove habitats which support a large number of migratory shorebirds and other waterbirds, fish and marine invertebrates. Due to its marine

nature, the site provides habitat year round and is an area of refuge for waterbirds during summer and drought. This area is recognised and protected within the Cardinia Planning Scheme through zones and overlays.

The management plan and the State Government's Sub-Regional Strategies for the southern brown bandicoot and the growling grass frog provide an opportunity to update and better integrate biodiversity planning for the Cardinia Western Port Green Wedge. Information on bio sites and habitats which have been ranked for their ecological significance should be incorporated into the planning of the green wedge, especially for some extensive habitats of national significance. Additionally, the importance of the Ramsar wetlands as nesting sites for migrating birds should be recognised.

Studies have shown that where native vegetation drops below 30 per cent across the landscape large groups of animals disappear. A coverage of 30 per cent must be an aspirational target for vegetation extent across the green wedge, although this may have to be compromised in specific precincts where other outcomes may also be considered.¹⁷

Map 3, (Figure 3) illustrates habitat corridors and biodiversity regions in the Cardinia Western Port Green Wedge.

¹⁷ Barrett, G., *Birds on Farms: Ecological management for agricultural sustainability*. Supplement to Wingspan, Vol. 10, No. 4. Birds Australia, Hawthorn., 2000.

Objective

Protect and enhance biodiversity and habitats within the Cardinia Western Port Green Wedge, especially for rare or endangered flora and fauna.

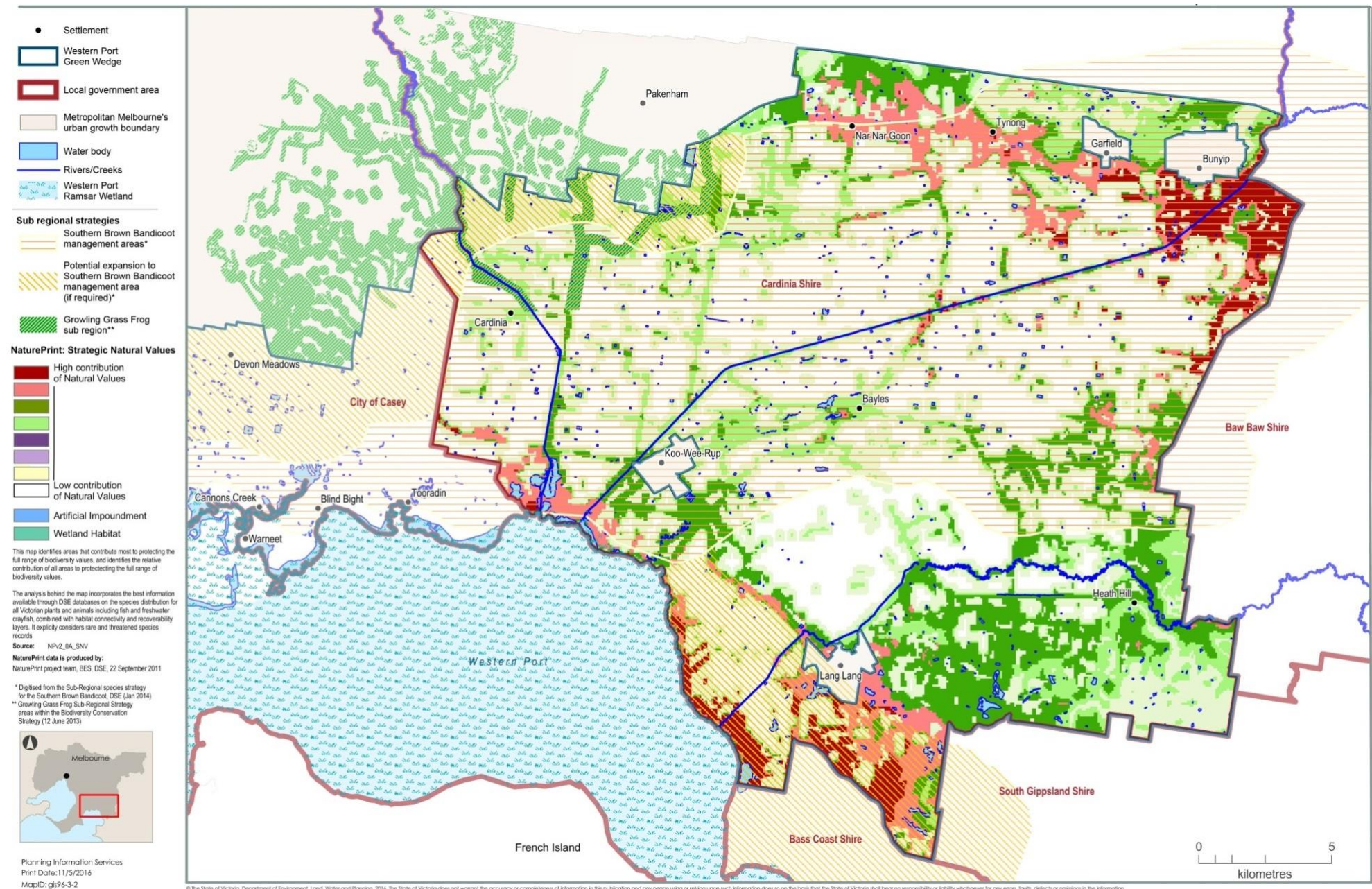
Strategies

- Identify and protect fauna and flora and habitats of local, state, national and international importance.
- Use S173 agreements where possible as mechanisms to create bio links in order to protect biodiversity values.

Actions

- A8:** Develop a Biodiversity Conservation Strategy to provide direction and a framework to guide future initiatives and works that promote biodiversity on public and private land.
- A9:** Develop and seek funding for a *Pest Animal Strategy* to coordinate pest control programs on public and private land.
- A10:** Develop a bio-link plan that directs minimum standards for corridors and their locations across the landscape.

Figure 3. Map 3: Habitat corridors and biodiversity



7.4 Visitation and recreational land uses

Background and context

The Cardinia Western Port Green Wedge has a range of land uses and varied history that provide the potential for visitors and recreation industry. Opportunities for visitation are low in the Cardinia Western Port Green Wedge; however, these opportunities can be expanded on. It is important to note that the green wedge lacks the natural visitor drivers available in neighbouring Yarra Ranges Shire Council, Bass Coast Shire Council and the Mornington Peninsula Shire Council; however, visitor opportunities do exist.

The discussion paper considered a number of attractions which could be used to promote a local visitor industry and enhance recreation opportunities for the local community, such as cycling, food tourism and a rail trail.

Although the visitor offer is only modest at present, a number of opportunities were identified which could be developed and promoted to support local agriculture, generate employment opportunities, engender community pride, enhance the area's biodiversity, and create recreation opportunities for local residents. Feedback gained through consultation generally supported these opportunities but with reservations about impacts on biodiversity in terms of recreation along the Western Port

Coast and in areas with high biodiversity value.

It was identified that a rail trail along the former South Gippsland railway reserve between Clyde and Koo Wee Rup and through to Lang Lang would be an invaluable recreation resource for the local and wider community.

The Cardinia Western Port Green Wedge also has scope to build a successful visitor industry based on its fresh and healthy local produce. It is in a position to take advantage of its close proximity and accessibility to potential customers and visitors located in the growing metropolitan area. Community markets already help this profile, but a further initiative would be to develop a Bunyip Food Trail linking local and regional food outlets such as farm sales and specialist local food shops. The food trail could help market and promote local asparagus, other vegetables, wine, and even fish and seafood from Western Port Bay.

Visitation

It is important that proposed visitor uses within the green wedge make a positive contribution to the local economy and provide local employment opportunities. There needs to be a balanced approach between supporting new and growing businesses and protecting the green wedge environment and rural assets on which the business is based.

Caldermeade Farm, Cora Lynn Cheese Factory and the Warrook Cattle Farm are good examples of tourism in the green wedge, with a strong direct link to an existing or new agricultural use. The agricultural use must be critical to the operation of the proposed tourism offer.

It is important to ensure that visitation in the green wedge is sustainable with a cautious approach to new and expanding development with high standards of design, location and siting.



Caldermeade farm (2014)

The Cardinia Western Port Green Wedge has rich agricultural and engineering history that is important to understanding the agricultural environment that we see today. It is imperative that this rich history is conveyed to the community in order to continue to raise awareness of the importance of the green wedge, the environmental values of the landscape and the broader region to ensure its ongoing protection and viability.

The *Cardinia Shire Tourism Strategy* (May 2013) identifies that the visiting friends and relatives (VFR) market is strong. Trends indicate a growing emphasis on social tourism whereby people want to reconnect either with family members, friends or work colleagues. This can be a short break away from home or sharing leisure activities.¹⁸ It is important that tourism in the green wedge supports this market, particularly within and surrounding the townships.

Recreation

Proposed recreation opportunities are to be low impact activities that are situated in natural outdoor settings to help protect the natural setting of the green wedge.

Trails provide a significant proportion of recreation within the green wedge. Three types of trails exist in Cardinia Shire, on road, off road and road side trails, which are utilised by a range of users from horse riders, pedestrians, cyclists and mountain bike riders. It is important that proposed trails have minimal impact on the environment, particularly areas with high environment significance.

Trails assist with the connection of townships, parks, key tourism destinations and existing links. They also provide links within and outside of the shire into neighbouring municipalities.

¹⁸ *Cardinia Shire Tourism Strategy*, Cardinia Shire Council, May 2013

Currently, the townships in the green wedge are connected only by road and the townships of Bunyip, Garfield, Tynong and Nar Nar Goon are connected by the Gippsland railway line. The connectivity of these towns could be improved with the implementation of a shared path that runs adjacent to the railway line, from the growth corridor through to the adjoining municipality, Baw Baw Shire. Not only would this benefit from a tourism perspective (particularly VFR), but it also improves the liveability of the green wedge by providing alternative transport and recreation options, particularly useful for the younger demographic commuting for employment, social and education purposes.

During consultation for the draft *Western Port Green Wedge Management Plan* (December 2014) the current Victorian Government advised that they want to retain the option of returning the train passenger service to Leongatha, therefore (at the time of writing this document) the rail corridor needs to be retained to future-proof the reconnection of this service. While the railway line is not in service it is still technically active.

If the position of the Victorian Government changes in the future, Council would continue to support the implementation of the rail trail. However, in the interim, a trail adjacent to the railway line could be investigated.



South Gippsland Railway in Lang Lang (2014)

A number of the bridges over the drains, (particularly in Dalmore) are of timber construction that require upgrading before any pedestrian or cycle use.

While these connections are important, they are aspirational at this stage with higher priority connections being sought within the shire and a lack of internal and external funding required to undertake such projects. The landscape of the green wedge is swampy and low lying, contains important vegetation with numerous creek crossings which increase the costs to implement shared paths.

For the purposes of this plan, these actions are aspirational and are outside of the scope of this document. In the meantime, Council will continue to advocate for the investigation and construction of such connections.

The Pakenham Racing Clubs' new Tynong Racecourse is located within the Cardinia Western Port Green Wedge. It is a newly established racecourse that provides a significant recreation and tourism facility with economic benefits for not only Tynong, but the broader region and the state. If in the future, the racecourse requires expansion into the surrounding land, it is to be undertaken in a careful, planned manner with minimal impact on the environment. Consideration also needs to be given to the economics of access to the racecourse for trainers.

Objective

Encourage opportunities for recreation and tourism that are linked to local strengths including food, trails and education with minimal impact on the green wedge environment.

Strategies

- Support ecological or farm-based tourism linked to suitable agricultural uses which support short stay accommodation.
- Ensure new and growing visitation businesses have a strong link to an agricultural use, based on the strengths and assets of the green wedge and have

minimal adverse impact on the environment.

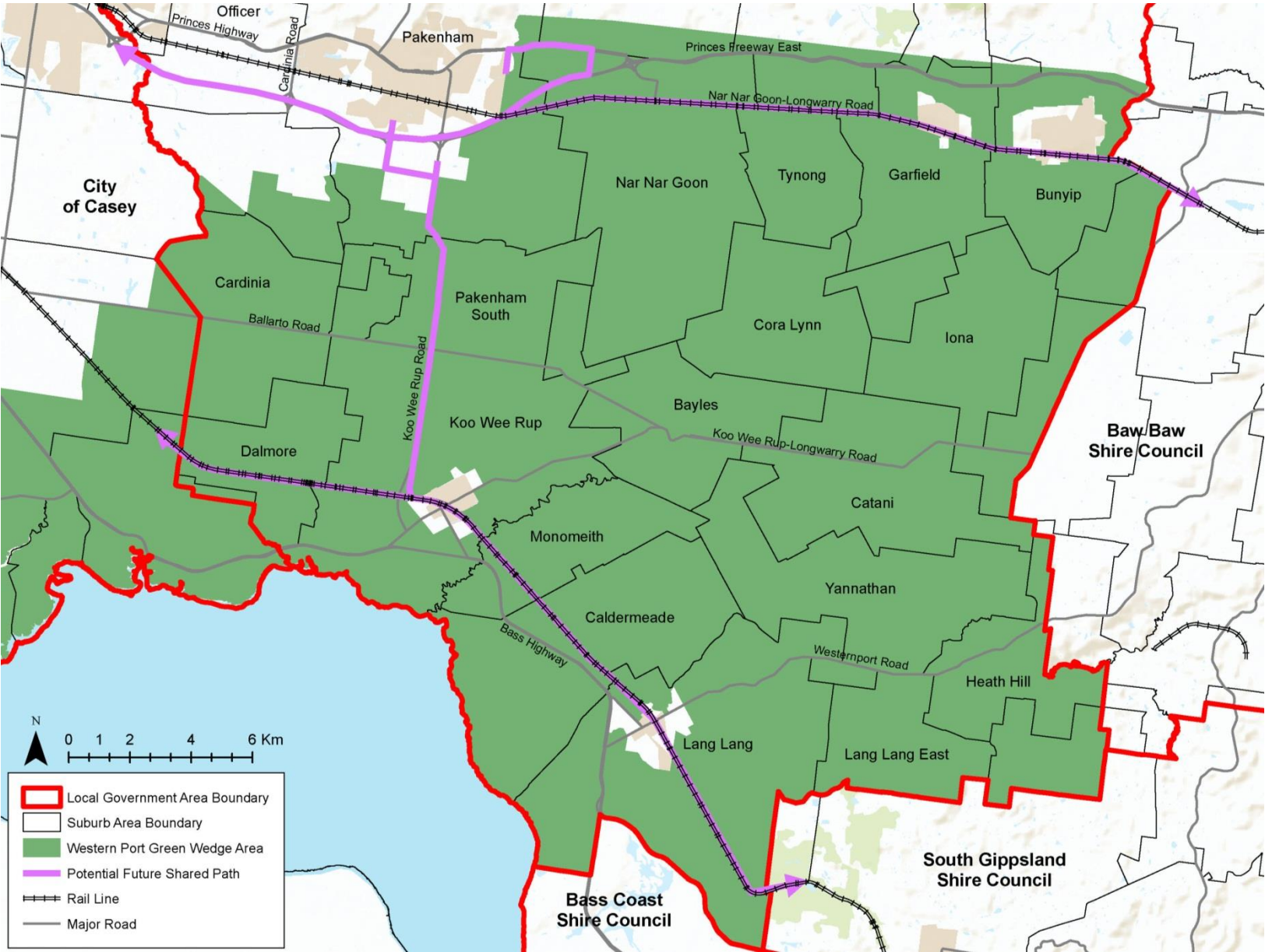
- Increase the opportunities to learn about the history of the green wedge.
- Develop a network of walking and cycling trails to provide recreation and connection opportunities for local residents and visitors.

Actions

- A11:** Address visitation in the green wedge as part of a local green wedge policy in the Cardinia Planning Scheme.
- A12:** Advocate for the construction of a shared trail from Beaconsfield to Nar Nar Goon along the Gippsland Railway Line rail reserve (also known as the Bairnsdale Line) through to Bunyip and connecting to Baw Baw Shire.
- A13:** Advocate for the construction of a shared trail from Dalmore through to Lang Lang along the former South Gippsland Railway Line rail reserve.
- A14:** Advocate for the construction of a shared path along Koo Wee Rup Road.
- A15:** Undertake an interpretation and way finding strategy for the shared trails within the green wedge to help tell the stories of the Cardinia Western Port Green Wedge to inform and navigate people through their surroundings.
- A16:** Ensure that pedestrian and bicycle connectivity is achieved and with minimal impact on the environmental values of the green wedge as part of *Review of the 2003 Cardinia Pedestrian and Bicycle Strategy (2007)* by engaging with all stages of the project.

- A17:** Prepare a fact sheet on the history of the Cardinia Western Port Green Wedge to emphasise the importance of its engineering feats, the importance of its agricultural pursuits as well as the environmental values of the landscape and the broader region.
- A18:** Promote the business opportunities of the Bunyip Food Trail to local agribusiness via industry associations.

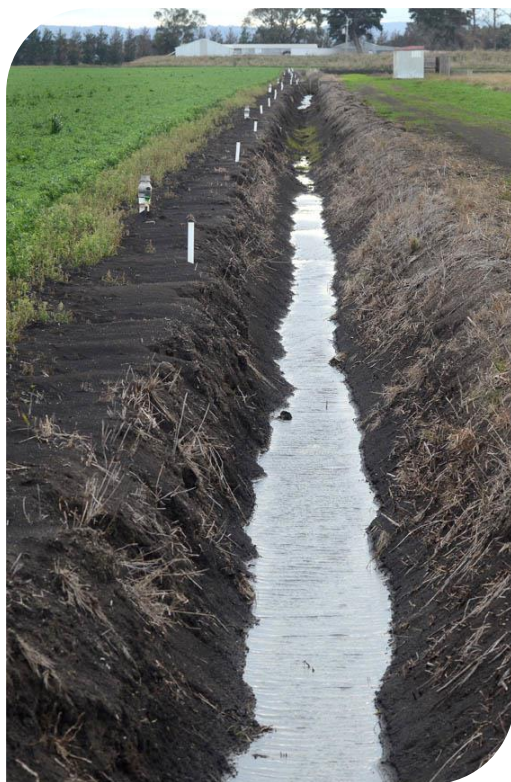
Figure 4. Map 4: Proposed future shared paths



7.5 Soils and land capability

Background and context

Soil is a finite natural resource and therefore requires sustainable management and planning in order to remain as a valuable resource for the future. The soils in the study area are recognised for their productivity and capability for extractive industry, intensive agriculture, as well as for their role in maintaining and supporting biodiversity.



Farming (2014)

Special Use Zone – Schedule 1 (Horticultural Preservation)

The SUZ1 applies to a large portion of the Cardinia Western Port Green wedge and was implemented before the new format planning schemes were introduced in 1997. Its application was consistent with the findings of the *Rural Planning Priorities for the Westernport Region – A Strategic Statement 1994* and recognises that soil is a finite resource and inappropriate use, development or subdivisions will result in the permanent loss of this valuable resource.

The location of the SUZ1 was consistent with the existing Horticultural Preservation Zone (HPZ) that existed in the former Pakenham and Cranbourne Planning Schemes. The location was based on the recommendation of Dr Ian Sargeant who completed the *Soil Quality Assessment Horticultural Preservation Zone Amendment L71* and the *Soil Quality Report (Shire of Cranbourne)*. The *Land Capability Study for Cardinia Shire* (February 1997) supported the findings of Dr Sargeant¹⁹.

The purposes of the SUZ1 are to:

- preserve land of high agricultural quality for horticulture and other farming activities
- discourage non-agricultural uses and non-soil based uses establishing on soil of high agricultural value

- protect the area from the encroachment of urban and rural residential type development
- minimise the potential for conflict between residents and normal farming practices that are related to the conduct of agricultural activities
- encourage sustainable farming activities based on whole farm and catchment planning principles on an individual and community basis.

It is acknowledged that this work is now more than 20 years old and a review of the soil types and the extent of the SUZ1 are required.

Research was commissioned through the former Department of Primary Industries (DPI) to investigate and map the soil capabilities in the area. The research found four types of soil groupings as follows:

Northern Area (Nar Nar Goon, Garfield, Bunyip)

The north area consists of shallow lighter soils over clay subsoils generally on a granitic rolling terrain. Traditionally these soils have been used for extractive industry and fruit growing, but slope and associated erosion is a limiting factor.

Central Area (Koo Wee Rup, Iona, Bayles)

The central area consists of the floodplains and peaty swamps of the Western Port Basin. Most of this area consists of clays with limited drainage as well as the peaty soils which are cultivated for asparagus and other forms of horticulture. Despite their qualities for specialised crops, in general

¹⁹ Cardinia New Format Planning Scheme, Report of the Panel and Advisory Committee, August 1998.

these soils are not as resilient as the sandy soils of the west and east.

Victoria is the largest producer of asparagus and the majority is produced primarily around Koo Wee Rup and Dalmore.²⁰ In 2008, Victoria was the leading state in Australia for the production and export of fresh asparagus, producing 95 per cent of the national asparagus crop; a gross value of 95 per cent of \$41.42million.²¹

The soil type and terrain (relatively flat) of this area are key elements to the success of the growth of asparagus. It is critical that the soil and the landscape are appropriately protected to safeguard the asparagus industry.

Southern Area (Lang Lang)

The east area consists of sandy soils similar to those in the west. Much of this land is on steeper terrain which means that it may not be accessed easily; however, it is in great demand for quarrying for sand and gravel to provide for Melbourne's cement industry.

The capability of these soils for agricultural production has been assessed taking into account soil qualities, topography, drainage and climate as part of the *Assessment of climate change impacts on agricultural production in the Western Port Green Wedge* (January 2012) report prepared by DPI. The results of this assessment (versatility

²⁰DPI, *Assessment of climate change impacts on agricultural production in the Western Port Green Wedge*, January 2012.

²¹ (ABS: Agriculture 2007-08).

analysis) is included as Map 5 (Figure 5) and shows that the whole area is at least moderately suitable for growing a range of agricultural and horticultural commodities, and that much of the area has very high versatility (i.e. it has capacity to sustain multiple agricultural uses). This flexibility will increase in value as the progressive impacts of climate change and higher temperatures are felt in the coming decades. The versatile soils will allow for changes in farming practice with respect to crops and plant varieties.

The land versatility map (Map 5, Figure 5) should be used to guide the formulation of planning controls that reflect the suitability of different parts of the area for different agricultural uses and practices. The process should review the existing schedules to the Green Wedge Zones and the SUZ1 in order to develop more comprehensive and customised controls for the entire study area that reflect the capability of local soils.

Restructure Overlay (RO)

The Restructure Overlay (RO) exists, most notably around Bunyip and Garfield. The purpose of this overlay is to identify old and inappropriate subdivisions that require a restructure from subdivision into urban-sized lots prior to the introduction of planning controls, generally in the late 1800s and early 1900s. The areas that were subdivided often weren't serviced, located on topography that was not suited to urban development, flood prone and heavily vegetated. This also occurred on viable agricultural land within the Koo Wee Rup Flood Protection District. This control allows

for the consolidation of this land, to improve and support the agricultural viability.

Land outside of the RO also needs to be considered for consolidation to improve the economic viability of agricultural land and to further support the purpose of the SUZ1. The retention of larger lots is a significant factor supporting the longevity of agricultural businesses and the potential for agricultural diversification and production in the future.²²

Map 6 (Figure 6) shows the nature and types of soil in the Cardinia Western Port Green Wedge. A further important consideration is the potential occurrence of coastal acid sulphate soils (CASS) in some of the low-lying coastal areas of the green wedge. CASS are naturally occurring soils that contain iron sulphides, which when disturbed and exposed to air, can oxidise and result in sulphuric acid. Sulphuric acid can mobilise heavy metals in the soil such as iron, aluminium and arsenic, which can have serious detrimental effects on soil and water, such as:

- acidification and deoxygenation of water and soil leading to compromised fresh surface and groundwater potability and soil fertility
- deoxygenation of soil
- fish kills
- corrosion of metals.

²² Buxton, M. & Choy, D.L., *Change in Peri-urban Australia: Implications for Land Use Policies*, presented to the State of Australian Cities Conference, Adelaide Australia., 2007.

It is important that activities that may disturb CASS (such as agricultural works involving drainage, infrastructure works, development and extractive industry) are avoided or carefully managed in areas that have been identified as potential CASS.

Map 6 (Figure 6) shows the potential extent of coastal acid sulphate soils in the Cardinia Western Port Green Wedge.

Objective

Recognise the versatility of soils in the Cardinia Western Port Green Wedge and protect and enhance their capability to support productive farming and biodiversity, and ensure that these activities are not detrimental to the environment.

Strategies

- Ensure that green wedge soils and their versatility are recognised as a finite resource and are protected accordingly.
- Support natural systems by ensuring salinity and discharge of nutrients are managed, including through the use of management plans.

Actions

A19: Undertake soil type mapping of the land within and adjacent to the SUZ1.

A20: Based on the findings of the soil mapping, review the extent of the SUZ1 and the schedules to the Green Wedge Zones. Undertake a planning scheme amendment to adjust the boundaries of the SUZ1 and amend the Schedules to the Green Wedge Zones.

A21: Continue to work with the WPCMA and DEDJTR to develop a sustainable planning and management framework for food production, agriculture and other uses on green wedge soils.

Figure 5. Map 5: Agricultural biophysical land versatility regions

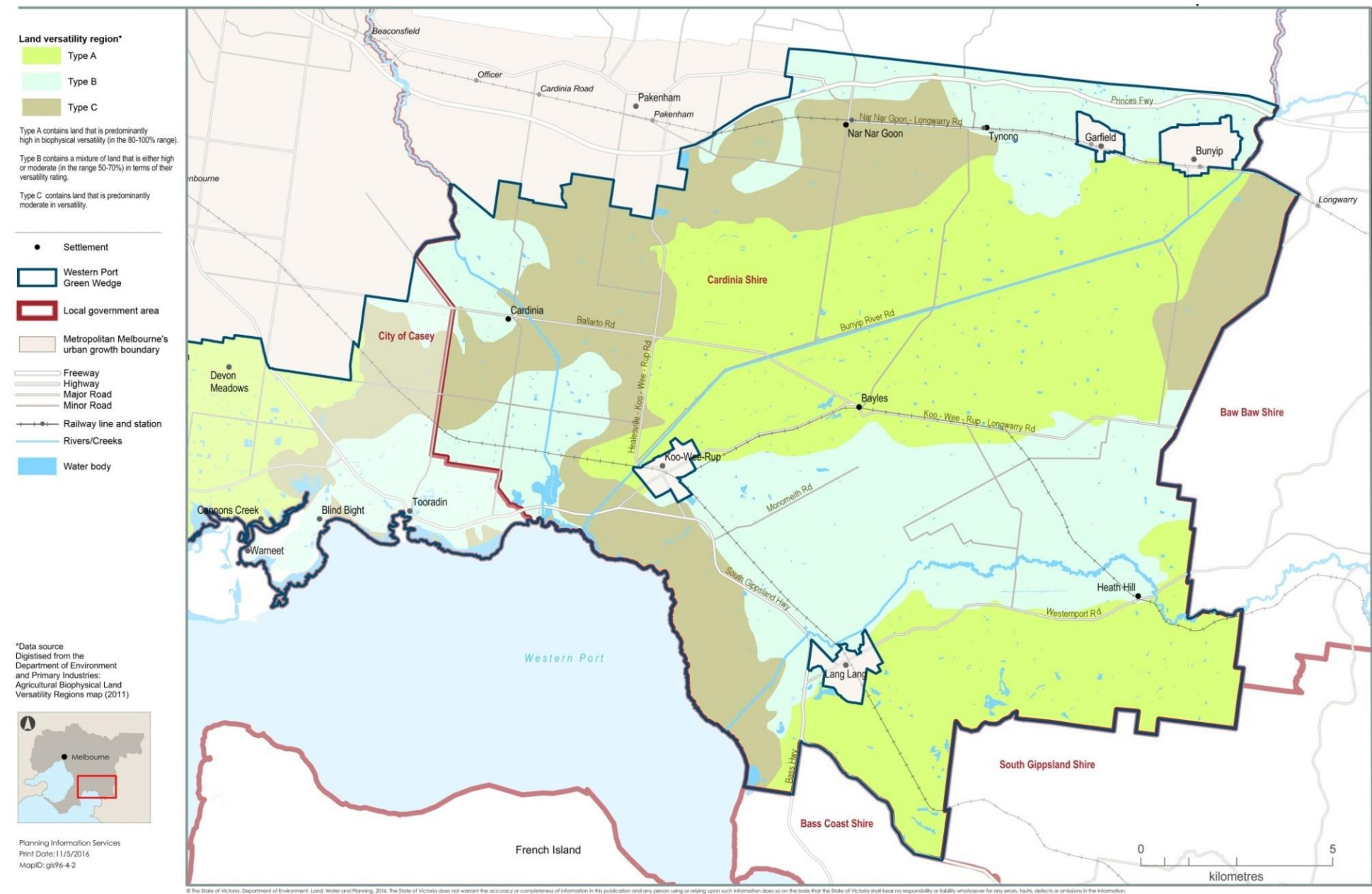
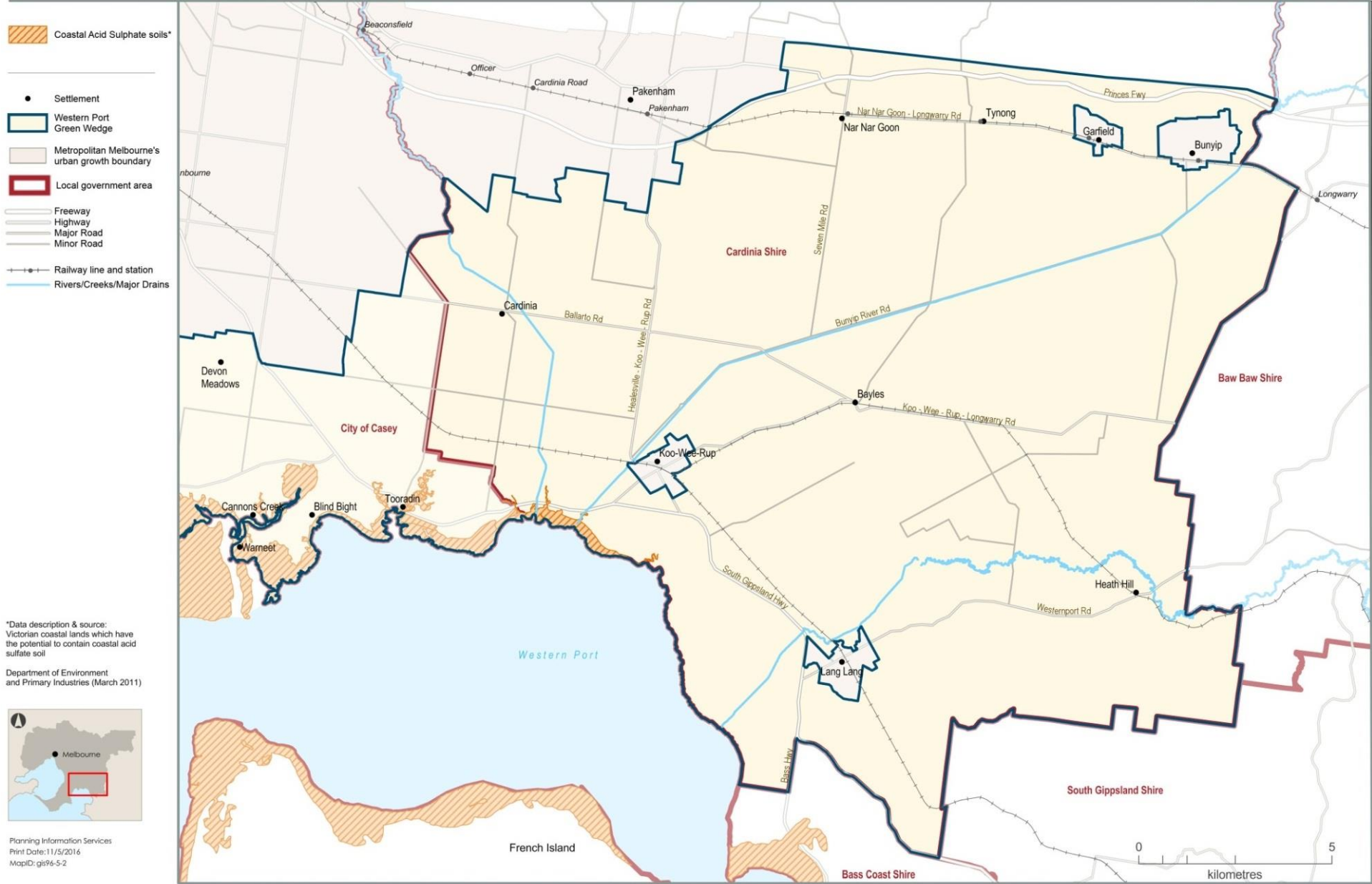


Figure 6. Map 6: Coastal acid sulphate soils



7.6 Water

Background and context

Access to and the quality of water supply is a critical issue in the Cardinia Western Port Green Wedge. It is central to the success of the agricultural and horticultural industries and to the enhancement of the environment. Some of the important functions that the waterways in the Cardinia Western Port Green Wedge provide include:

- habitat for threatened species such as the growling grass frog, Australian grayling and dwarf galaxias
- habitat corridors linking southern brown bandicoot populations and facilitating bird and animal movement through the landscape
- the conveyance of flood waters and drainage of important agricultural land.

Prior to European settlement the Koo Wee Rup and Dalmore swamps combined to be Victoria's largest swamp. Although it was reclaimed and drained last century, water systems in the green wedge still reflect that history. The network of drains is part of the landscape and the area still floods at regular intervals, most recently on 5–6 February 2011. Planning controls are in place to restrict opportunities for development in areas that are liable to flooding.

Major waterways in the Cardinia system are Cardinia, Toomuc, Deep, Ararat, The Langwarrin and Clyde creeks. Historically, these waterways did not exist or were disconnected from Western Port by the former Koo Wee Rup Swamp. Now many of

the waterways in this system support multiple and varied uses and values, including flood mitigation, recreational use, Indigenous and European heritage values and significant animal species. Vegetation communities of very high conservation significance, including Swampy Riparian Woodland, coastal saltmarsh and mangroves, are also a feature of this system.



Drain crossing (2014)

Waterway health

Challenges for waterway health in this system include managing urban growth, and balancing multiple waterway management

objectives such as flood mitigation, habitat protection and/or social uses.²³

The Lang Lang River (particularly the lower section), which was channelised as part of the works associated with draining the Koo Wee Rup Swamp, contributes sediment to Western Port Bay. However, the lower section of the Lang Lang River will continue to adjust its channel shape to compensate for historic straightening.

It was noted in the discussion paper that the *Regional River Health Strategy 2007* has classified the quality of all four water catchments in the Cardinia Western Port Green Wedge as poor and that this compares unfavourably with the condition of other parts of the Port Phillip and Western Port catchment. Targets are set in that strategy for improvements but the targets are modest and include a target of 'poor' for one sub-catchment (Dalmore Outfalls). It is considered that such modest targets are unacceptable for watercourses that feed into Western Port Bay, which is a wetland of international importance (Ramsar Convention).

In order to assist with waterway health, the Rural Land Program is an incentive program providing assistance and funding opportunities for landholders to undertake works that will keep soil and nutrients on their farm and out of the waterways. The program has been designed to help

²³ Melbourne Water, *Healthy Waterways Strategy*, Melbourne Water, November 2013.

landholders improve on farm management practices through financial and technical assistance. Benefits include increased productivity for the property owner and improved waterway health for the broader community. The Rural Land Program is about improving the management of water sensitive areas such as waterways, drains, dams wetlands, gullies, seeps, soaks springs and low lying and seasonally wet areas and applies to priority catchments such as the Lang Lang catchment.

The Westernport Catchment Landcare Network (WPCLN) is a non-profit organisation supporting Landcare groups, landholders, government agencies and local businesses to protect and enhance the Western Port Catchment in order to achieve improved environmental and sustainable agricultural outcomes. They are a key component on several delivery components that have been addressed in this plan.

The *Integrated Water Management Plan 2015–25 (September 2015) (the IWMP)* has been prepared by Cardinia Shire Council. It seeks to deliver a framework that will guide Council towards a more sustainable integrated approach to water management in order to reduce reliance on potable water and enhance ecological health of receiving waterways (Westernport Bay).²⁴

The IWMP encompasses the anticipated growth in population and the impact of

²⁴ Cardinia Shire Council *Integrated Water Management Plan 2015-25*, September 2015.

urbanisation on Cardinia Shire's water cycle and seeks to ensure that the water cycle can support productive land uses, particularly in the context of climate change. It also outlines the impact of agricultural land use on stormwater quality due to the transport of soil and nutrients during rainfall events. Land used to hold or slow down floodwaters can offer extra benefits by providing space for native plants and animals and increasing the green open space for recreation and retaining green wedge land.²⁵ Maintaining rural land uses and improving riparian land is important in assisting reducing the input of sediment into Westernport Bay.

An integrated water management plan for the whole catchment has been widely supported throughout consultation and key agencies (PPWPMCA, MW, SEW, Southern Rural Water, Cardinia Shire Council and the City of Casey) are currently working together to improve water quality, flooding protection and management to mitigate the impact of sedimentation and pollution into the Western Port Bay. The catchments of the Cardinia Creek, Bunyip/Tarago River, and the Dalmore Outfalls would be the focus for this plan which would investigate water sensitive urban design opportunities and how to capture stormwater run-off to augment water supplies.

The Bunyip and Lang Lang rivers represent the most significant contributors of sediment to Westernport Bay due to bank and bed

²⁵ Melbourne Water, *Flood management Strategy Port Phillip and Westernport*, 2015.

erosion. Melbourne Water is the primary waterway manager. Council has an opportunity to provide support to Melbourne Water to undertake weed control, bank stabilisation and revegetation works.²⁶

It is important to protect and enhance waterways and land forming waterway corridors. The importance of this is clearly outlined in the *Healthy Waterways Strategy, Melbourne 2013–18* prepared by Melbourne Water which has a focus on supporting in managing rivers, estuaries and wetlands in the Westernport region to ensure their value to the community is protected and improved.

²⁷

Flooding

Flooding in the Cardinia Western Port Green Wedge has historically been an issue and continues to be an issue that needs to be appropriately managed.

Flooding is a natural occurrence in the Westernport region and with climate change, the risk of flood will be increased.²⁸ Floods can damage the natural environment, causing erosion, pollution and ecological losses to waterways, wetlands and natural floodplains. Environmental damage can also cause recreational and economic effects such as financial loss to the community and economic impact with damage to crops.

²⁶ Cardinia Shire Council *Integrated Water Management Plan 2015-25*, September 2015.

²⁷ Melbourne Water, *Healthy Waterways Strategy, Melbourne Water*, November 2013.

²⁸ Melbourne Water, *Flood management Strategy Port Phillip and Westernport*, 2015.

Retaining natural floodplains and ensuring new development does not increase the likelihood of flooding are important. Reducing urban development in the green wedge area is important to allow for natural water passage and to assist with mitigating the damage of flooding.

Koo Wee Rup Flood Protection District

The Koo Wee Rup Flood Protection District (KWRFPD) lies in what was originally known as the Koo Wee Rup Swamp and is one of Melbourne's largest and most unique floodplains. Flooding within this area is characterised by large expanses of slow moving water with considerable pondages, concentrated flow paths and localised areas of higher ground scattered throughout the floodplain. The district has been split into five general zones based on the average depth of flooding over that zone for a 100-year average recurrence interval (ARI) event.

Zone 1

Contains the majority of the district and is subject to flooding due to overflows from drains. 100 ARI flood depth is generally 300mm above the general surrounding ground level.

Zone 2

Liable to deep flooding as a result of concentrated overflows from a major drain. The 100 ARI flood depth is generally 700mm above the general surrounding ground level.

Zone 3

High level of protection from the Bunyip floodwaters due to the Yallock Outfall and the Bunyip Main Drain levee banks. Liable to flood from the local drainage and minor

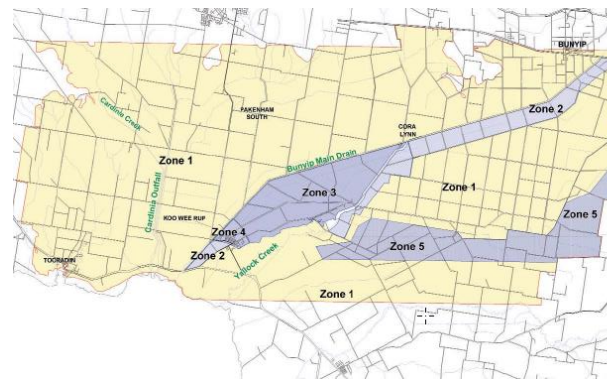
overflows of the main levee bank system. 100 ARI flood depth is generally 150mm above the general surrounding ground level.

Zone 4: The Koo Wee Rup Township

The Township of Koo Wee Rup is liable to flooding from local floodwaters and minor overflows of Bunyip Main Drain floodwaters from the main levee system.

Zone 5

This area is not affected by overflows from any of the main waterways. Parts of the area are liable to shallow overland flows from local catchments and the need to be considered in site layout. 100 ARI flood depth is generally 150mm above the general surrounding ground level.²⁹



KWRFPD Zones

Objective

Develop a coordinated approach with agencies to water management that reduces

the risks of flooding, erosion and sedimentation and groundwater depletion and improves water quality.

Strategies

- Improve water quality and catchment quality in the green wedge watercourses.
- Reduce the risk and severity of flooding in the green wedge, while recognising the challenges posed by a changing climate.
- Minimise any negative impacts from sedimentation or water pollution on the Western Port Bay ecosystem.

Actions

A22: Continue to contribute to the preparation of the *Sub Regional Integrated Water Management Plan* for the Western Port catchment in conjunction with the key authorities and agencies.

A23: Continue to apply for grants (when the opportunity arises) that assist in protecting the horticultural assets of the green wedge.

²⁹ Melbourne Water, *Guidelines for Development within the Koo Wee Rup Flood Protection District*, Version 1.

7.7 Groundwater

Background and context

Groundwater is water found below the earth's surface and, over time, water from rain and rivers moves through the ground and is stored in permeable soils and rocks.

A large area of the green wedge falls within the Koo Wee Rup Water Supply Protection Area (KWR WSPA) which is managed through the *Groundwater Management Plan – Koo Wee Rup Water Supply Protection Area, Southern Rural Water* (2010). Southern Rural Water is working towards ensuring that additional water is available for agricultural production.

This area was developed for agriculture in the 1890s by draining the existing swampland; the first groundwater bore was sunk to obtain water for irrigation in 1922. The rapid development of groundwater from the 1950s to the 1960s resulted in a significant loss of groundwater pressure and during the drought of 1967–68, groundwater levels fell below pump levels in some bores.

Generally, groundwater levels have been rising and have stabilised over the last 40 years; however, some observation bores have indicated a downward trend. Metered groundwater usage is currently well below total groundwater licence entitlements and under the *Groundwater Management Plan*, no new restrictions are placed on current licence holders' ability to access their full entitlement. However, if the corporation deems it necessary, it may restrict extraction

in the future to stabilise the sustainability of the resource.

An ongoing metering program provides information on the location and volume of groundwater use in the area. This combined with the ongoing monitoring program will inform future management decisions.

Groundwater is a significant source of water for the rural sector and numerous irrigation and stock groundwater licences have been issued in the Cardinia Western Port Green Wedge. Bore licences are issued by Southern Rural Water and are regulated under the *Water Act 1989*. The level of extraction from many sites has already exceeded recharge rate and drought has also prompted Southern Rural Water to restrict the number of new bores.³⁰

A Groundwater Dependant Ecosystem Conceptual Model is being undertaken by Melbourne Water for the Lang Lang catchment. Extractive industry has the potential to impact on groundwater both during operation as each site intercepts groundwater and after rehabilitation. It is important that the cumulative effects of these operations are considered on the groundwater resource.

Objective

Recognise the role groundwater plays in the Cardinia Western Port Green Wedge and protect and enhance its capability to support productive farming.

Strategies

- Ensure that high quality groundwater in the green wedge is recognised as a finite resource which plays a significant role in the maintenance of the economic strength of the agriculture industry.
- Support natural systems by ensuring salinity/discharge of nutrients are managed, including through the use of management plans.
- Recognise the impacts that groundwater could have on land.
- Encourage alternative water supply systems to reduce the impact on groundwater.

Actions

A24: Continue to work with Southern Rural Water and South East Water to investigate and implement alternative water sources to reduce the depletion of groundwater.

³⁰ Southern Rural Water, *Groundwater Management Plan – Koo Wee Rup Water Supply Protection Area*, 2010.

7.8 Agriculture and horticulture

Background and context

The Cardinia Western Port Green Wedge is a highly productive agricultural and horticultural area that plays a vital role in providing food for Victoria's population and food security. Its strategic importance as a food supply for the metropolitan area will increase over time as Melbourne grows and rainfall patterns change with increasing uncertainty over rainfall and water allocations to Australia's traditional food bowl, the Murray Darling Basin.

The Cardinia Western Port Green Wedge has access to recycled water, a temperate climate, a range of versatile soil types and is within close proximity of the Port of Hastings, a substantial road network, railway line, a potential future airport, markets and a local workforce.

Soil

The capability of soils in the Cardinia Western Port Green Wedge for farming was assessed by the former Department of Primary Industries in 2012 and showed that the high versatility of land in the green wedge means that the area is very well suited to growing a range of vegetables and that this capability will generally be retained despite the impacts of climate change.

Given this long-term strategic value to Melbourne and to agriculture, the area should be recognised as an area of strategic

farming importance for Melbourne and every effort should be made to protect it as such.

Council is in a position to advocate to the Victorian Government to formally recognise the significance of the area and this could be achieved through mechanisms such as a Statement of Planning Policy for the Cardinia Western Port Green Wedge reflecting the vision for the green wedge and the primacy of agriculture and horticulture in the area, along with the new metropolitan strategy and other relevant documents.

In addition, the relevant local planning provisions in the *Cardinia Planning Scheme* should be reviewed and revised to ensure the protection of soil-based activities.

Water

At present, planning of non-potable water resources is fragmented. This means that the best outcomes for the region may not be achieved because of particular stakeholder interests. The stakeholders include environmental users, local councils, water businesses (urban and rural), private water scheme developers and the users, which are mainly intensive horticulture producers.

Council is seeking funding from the Victorian and Australian governments to create a water plan to better use and deliver under-utilised recycled water. This water plan will assess the likely supply of water over the next 20 years and how this water might be used most productively to meet the present and future demand. The new Clyde Sewage Treatment Plant (2022) (site to be confirmed) provides an opportunity to

address this. It is critical that sustainable and efficient water use is available to deliver agriculture and horticulture to the region. Access to Class A recycled water is important and the opportunities this presents is essential in increasing agricultural and horticultural production. If the site for the new Clyde Sewage Treatment Plant is within close proximity to the township of Cardinia, Council will seek to have Cardinia connected.

In recent times, the region has experienced pressure from urbanisation and reduced rainfall reliability as well as the demand from the economy for more intensified farming practises and the ability for farmers to generate a higher scale of production and efficiency. In response to this, Cardinia and Casey councils propose to gain funding to conduct a feasibility study into transferring recycled water from the future Clyde and Pakenham sewerage treatment plants in an integrated and scalable approach to the re-use of Class A recycled water.

If funded, the feasibility study would establish a commercially based, integrated water management for intensified horticultural use of non-potable water within and adjacent to what is Australia's second fastest growing area of urban expansion.

The critical part of the plan will be to obtain agreement from all stakeholders on who will be responsible for each component of the development, what resources will be required and what short- medium- and long-term objectives should be established.

The activity will include the following:

- review by the stakeholder steering group of existing studies and commission any supplementary work required
- committing support to implementing particular initiatives agreed
- ensuring future water-related development is facilitated by shared understanding of all stakeholders
- including water plan matters in individual stakeholders and agencies plans to facilitate agreed future developments such as in the preservation of easements
- working with all stakeholders to decide which infrastructure development project(s) will be most beneficial to the region and conduct a feasibility study for this project.

Cardinia, Casey and Mornington Peninsula councils are collaborating with Melbourne Water, Southern Rural Water and South East Water to build on this agricultural strength. They are investigating in the feasibility of an intensive agricultural precinct, the Bunyip Food Belt, which includes agricultural areas within the green wedge. The project proposes to irrigate these areas through a gravity-fed system using Class A recycled water from the Eastern Treatment Plant. If this project proceeds, then it would have a guaranteed water supply that could withstand drought and would improve the area's competitive advantages for intensive agriculture.

Southern Rural Water is also working towards ensuring that additional water is

available for agriculture and horticulture production.

Biodiversity

Planting a shelter belt with native trees and shrubs can have a profound impact on farm productivity. Studies have shown that a properly designed shelter belt can protect pastures, crops and livestock from extreme weather events such as wind and temperature. Shelter belts deflect high winds which can reduce windblown soil erosion on pastures. Farms have been able to reduce their stock feed costs by up to 20% by sheltering stock from the extremes of winter and summer temperatures.

Native shelter belts that are made up of indigenous native plants have other added benefits which include; attracting native wildlife, including native birds which help to control crop pests such as rabbits and crop damaging insects. Indigenous native plants are more resilient and have evolved to withstand extreme frosts and drought conditions. This has been noticeable with the recent loss of the foreign Cypress trees as a result of Cypress canker.

Agriculture and horticulture

Climate change and population growth will place long-term pressures on the world's food supplies and with the fluctuations of the Australian dollar it may become difficult and expensive to import some commodities. The strategic importance of horticulture in the green wedge can be expected to grow under these circumstances. There may also be opportunities to provide better access to nutritious, healthy food for disadvantaged

and low-income households in Cardinia Shire. Opportunities to improve access to local vegetables and produce could be investigated through councils' food security initiatives through specialist outlets, farm sales, a local produce section in supermarkets and new community markets. Public consultation highlighted a need to support farmers to improve local land management and environmental practices such as soil protection, water recycling and revegetation. Opportunities for financial incentives were suggested, as well as the need for better information and education programs.

Between 2006 and 2011 there was a 30% increase in agricultural and horticultural production which has come from the relocation of these types of businesses from the Mornington Peninsula and the City of Casey due to increased land prices, urban expansion and congestion. This highlights the importance of protecting the highly productive land in the green wedge. Intensive horticultural industries will continue to grow in the region as larger-scale businesses are squeezed out of the nearby areas due to the impact of urban sprawl and its resulting impact on rising land prices. These prices limit the ability of farmers to expand their businesses and achieve economies of scale. The sustainability of these businesses will be threatened by urban sprawl unless there is permanency

achieved through policy development and cohesive long term land use planning.³¹

The changes in traditional agricultural practices are evident and there is a clear need for flexibility in land use planning in order to adequately support these changes. Assistance for farmers in investigating alternative, economically viable agricultural methods is critical to ensuring the longevity and viability of the Green Wedge. It is likely that in the future, the vegetable and herb industries will progressively move to protected cropping systems. This will add to the capital intensity of the enterprises but will lead to further productivity gains.³² Productive agricultural land is a scarce resource in Victoria³³ and Cardinia Shire has a considerable amount of land with fertile soil which is highly suitable for agricultural and horticultural uses. This land is identified in the *Cardinia Planning Scheme* using the SUZ1 which seeks to protect and promote this finite resource. Land fragmentation is a significant threat to the sustainability of this highly productive land as it diminishes the potential for sustainable farming practices. Fragmentation of rural land can occur through subdivisions, boundary realignments or excisions. The retention of larger lots is a significant factor supporting the longevity of

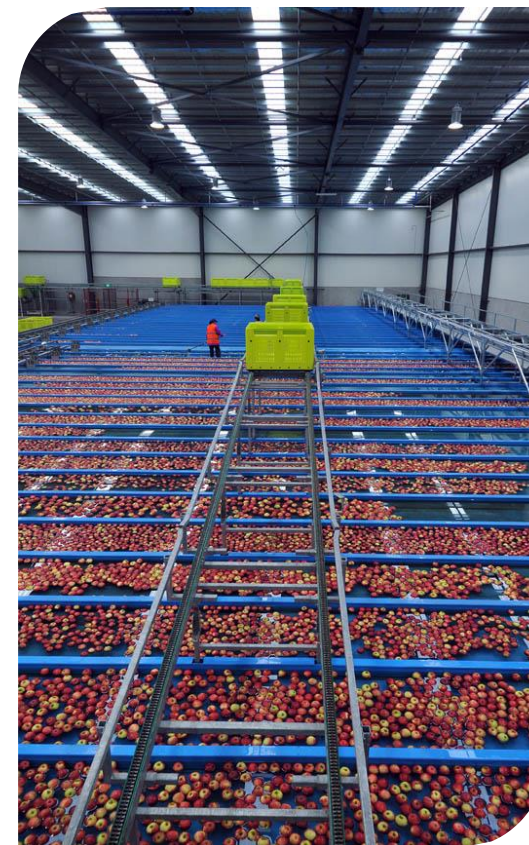
agricultural businesses and the potential for agricultural diversification and production in the future.³⁴

Food security

Agriculture and horticulture play an important role in food security. Food security has been defined by the World Food Summit (1996) as when *all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life*. Food security is built on three pillars:

1. Food availability: sufficient quantities of food available on a consistent basis.
2. Food access: having sufficient resources to obtain appropriate foods for a nutritious diet.
3. Food use: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.³⁵

The availability of food is not only about supply and trade but also about the quality and diversity of food. An element to improving availability requires sustainable productive farming systems, well-managed natural resources, and the development of policies to enhance productivity, such as this management plan.



9 Mile Fresh (2014)

Food security may be affected by changes and instability in the food supply such as natural disasters or changes in weather patterns which then affects customers.

If stock becomes limited or unavailable due to occurrences such as flooding, the price may increase making it unaffordable for some people and may increase reliance on imported rather than local produce. A plan for a food-secure Cardinia Shire must therefore include measures to increase food

³¹ McKinna, *Southern Region RDA (Cardinia) Agrifood Masterplan*, June 2013.

³² McKinna, *Southern Region RDA (Cardinia) Agrifood Masterplan*, June 2013.

³³ Sinclair, I.W., *Preserving Rural Land in Australia*, presented on behalf of EDGE Land Planning to the Joint NZPI/RAPI National Congress, Wellington New Zealand, 2002.

³⁴ Buxton, M. & Choy, D.L., *Change in Peri-urban Australia: Implications for Land Use Policies*, presented to the State of Australian Cities Conference, Adelaide Australia, 2007.

³⁵ World Health Organisation, World Food Summit., *Trade foreign policy, diplomacy and health: food security*, viewed 2 May 2016
<http://www.who.int/trade/glossary/story028/en/>

system resilience to changes in the natural environment.

In response to the issue of food security Cardinia Shire Council has developed and adopted a number of food security principles. Of relevance to this management plan is the following principle:

- Council supports the principles of a local food system and will advocate for and promote healthy and sustainable food production for primary food producers.
- Our connection to the horticultural Bunyip Food Belt is important for producing fresh food, contributing to our regions food security, and supporting the needs of our growers.

This management plan supports the above principle and seeks to implement this principle through a number of actions identified throughout this document. It has also been adopted as a guiding principle of this management plan as outlined at Section 6 (Principle 2).

Objective

Maintain and develop a thriving agricultural and horticultural industry in the green wedge with a focus on horticulture, agriculture, soil based produce, food security and new and emerging agricultural practices to service the local and export markets.

Strategies

- Assist farmers in investigating succession planning and alternative, sustainable economically viable agricultural methods; generate additional farm income through programs such as EcoTender and management in response to new and emerging farming practices to ensure the ongoing viability of agriculture.
- Secure a robust long-term planning framework that recognises the value of the Cardinia Western Port Green Wedge for intensive agriculture.
- Strengthen the long-term viability of farming in the green wedge and enhance its productivity and competitive position.
- Improve community access to nutritious, healthy and affordable local produce.

Actions

- A25:** Advocate to the Victorian and Australian governments for funding to investigate ways to better use and deliver the under-utilised recycled water resource in order to provide water security to one of Melbourne's closest and best-placed growing regions of fresh horticultural produce.
- A26:** Advocate to the Victorian Government for the inclusion of a statement of planning policy for the Cardinia Western Port Green Wedge in the State Planning Policy Framework, reflecting the vision for the green wedge and the primacy of agriculture in the area. A statement should also appear in the Metropolitan Planning

Strategy and any other key planning publications.

- A27:** Support farmers to stay on the land by facilitating information sessions and educate farmers by addressing matters such as improving farm and land management; generating additional farm income through programs such as EcoTender, discuss alternative farming methods, succession planning and other relevant topics.
- A28:** Cardinia Shire Council to have a presence at the annual Farm World agricultural event as a way to engage with farmers.
- A29:** Support Agribusiness Gippsland in providing information in relation to improving farm and land management; discuss alternative farming methods, succession planning and other relevant topics.
- A30:** Embed the food security principles adopted by Council's Senior Leadership Team through the organisations work plans.
- A31:** Advocate for the connection of the Cardinia Township to the proposed Clyde Sewage Treatment Plant.

7.9 Climate change

Background and context

The impact of climate change is already being felt and is considered in each of the themes within this management plan. It is difficult to precisely predict the potential impacts of climate change as they vary with each region. Best estimates are that by the year 2030, Australia will face the following:

- a further 1 degree Celsius of warming in temperatures
- up to 20 per cent more months of drought
- up to 25 per cent increase in the days of very high or extreme fire danger.
- an increase in storm surges and severe weather events.³⁶

These changes will have a significant impact on the agriculture, environmental biodiversity, and eco systems of the Cardinia Western Port Green Wedge.

Climate change has been identified as a significant external driver for Council (and other local government authorities across Australia) to adopt an integrated water management plan. In doing so, the aim is to create water services and systems that are more resilient and able to cope better with climate variations and anticipated future extremes.³⁷

³⁶ Cardinia Shire Council, *Aspiration Energy Transition Plan 2014-24*, October 2014.

³⁷ Cardinia Shire Council *Integrated Water Management Plan 2015-25*, September 2015.

Climate change poses risks to all societies but in some respects the Cardinia Western Port Green Wedge is particularly vulnerable because it has a low-lying coastline that is particularly susceptible to rising sea levels and storm surges and its agricultural production will also be at risk because of impacts from more extreme weather events.

The expected reduction in rainfall can be somewhat compensated by recycled water from South East Water. This independence from reduced rainfall is a competitive advantage that is limited to the Western Port region. As northern Victoria becomes hotter and drier, secure water for the Western Port region will become of fundamental importance to Victoria's food production.

Climate change is expected to increase flood risks due to more frequent intense rainstorms and rising sea levels. Although the precise impacts are unknown³⁸, it is important to start planning ahead to assist in preserving the ecological, agricultural and biodiversity important of the green wedge.

The former DPI's research described in Section 7.5 (Soils and Land Capability) examined the impacts of rising temperatures and reduced rainfall on existing and potential agricultural products in the Cardinia Western Port Green Wedge. Five varieties of vegetables and herbs were tested, as well as two types of fruit, and a pasture grass (perennial rye grass). Land

³⁸ Melbourne Water, *Flood management Strategy Port Phillip and Westernport*, 2015.

suitability for growing these commodities within the green wedge was tested for the years 2030, 2050, and 2070 with the following results (see Table 2).

Table 2. Impact of rising temperatures and reduced rainfall³⁹

Number Commodity		% Change from high to moderate suitability		
		2030	2050	2070
1.	Asparagus	0	0	-0.1
2.	Brassicas (e.g. broccoli)	-31	-32	-32
3.	Celery	+11	-9	-17
4.	Herbs	-12	-21	-33
5.	Leek	-6	-15	-68
6.	Apples	-40	-93	-94
7.	Kiwi fruit	-57	-59	-95
8.	Rye grass	+1	-92	-100

This table demonstrates that in all cases, the land suitability for growing these commodities declined from their current 'high' rating to a 'moderate' rating. Some

³⁹ DPI, *Assessment of Climate Change Impacts on Agricultural Production in the Western Port Green Wedge*, 2012.

commodities were affected more than others, particularly fruit and rye grass, although the commodity strengths in were in herbs and vegetables.

It should be emphasised that although the land suitability for all tested commodities decreased from a high rating, in no case did the rating drop below a moderate rating. This means that with appropriate management measures, all agricultural land in the green wedge is expected to remain suitable for agriculture.

The findings from this research will be useful to local farmers and rural producers to inform their decision making and succession planning, and should be the subject of an education and information program to assist the rural community.

The South East Councils Climate Change Alliance (SECCCA) is a network of eight councils around the Western Port Bay region which has been operating since 2004. Council is a member of the regional alliance and the work of this group should be supported in relation to monitoring and advising on climate change impacts on the Cardinia Western Port Green Wedge.

SECCCA's regional projects investigate coastal and human settlement planning in a time of climate change and will be essential inputs to the future planning and management of the Cardinia Western Port Green Wedge.

Assets developed in the green wedge should be done so with consideration of climate

change impacts. Areas of flood risk and sea level rise should be avoided for development. New buildings should be well designed and protected from extreme heat which will increase with climate change.

Objective

Recognise, understand and prepare for the projected impacts of climate change and rising sea levels on the Cardinia Western Port Green Wedge.

Strategies

- Carry out research and studies to further identify and assess the potential impacts of climate change on the Cardinia Western Port Green Wedge.
- Develop policies to manage and adapt to the potential impacts of climate change on the Cardinia Western Port Green Wedge.
- Promote greater understanding and awareness of the potential impacts of climate change on the Cardinia Western Port Green Wedge.

Actions

A32: Continue to support and upskill farmers in relation to climate change, its impacts and how to respond to climate change, providing information through Agribusiness Gippsland and its fortnightly newsletter.

7.10 Urban development

Background and context

Although it is a rural area, the entire Western Port Green Wedge is home to more than 20,000 people. Being on the edge of a metropolitan area of over 4 million people, significant pressure exists on the green wedge to accommodate new areas for housing through continuing expansion of Melbourne's UGB, expansion of the settlements in the area, and through continuing subdivision for rural living and hobby farms.



Nar Nar Goon 2014

Green wedges are now encouraged to contain a broader range of activities and uses than previously allowed through changes that have been made to the GWZ. This has increased the number of applications for places of worship (churches, temples etc.) and schools within the green wedge.

Whilst these uses are allowed (subject to approval and conditions) they are urban in nature and can have a detrimental impact to the rural environment, biodiversity fragment

agricultural land and affect the right to farm. The management plan provides clear guidance on where these uses should be located (subject to strategic justification) within the green wedge, close to the UGB, at the transition point from urban land to rural land, or within existing townships.

The majority of the green wedge is prone to flooding and it is one of Victoria's most productive and valuable agricultural areas and it is for these reasons that the area was identified as a green wedge. The Cardinia Western Port Green Wedge also has high biodiversity value, particularly the Western Port Coast (which is protected by the Ramsar Convention), coastal areas which are vulnerable to inundation from rising sea levels, areas with Aboriginal heritage significance, and areas at risk from salinity and acid sulphate soils. These factors further emphasise the importance of protecting the green wedge from urban development.

As Melbourne's population grows so does the importance of protecting green wedge areas. The conservation of natural landscapes and resources contributes to and influences a city's liveability in relation to environmental, economic and social factors. Maintaining Melbourne's green wedges is integral to overcoming problems associated with rapid urban growth, urban sprawl and projected population increase.⁴⁰

⁴⁰Municipal Association of Victoria, *Green Wedge Research Report*, November 2006.

The UGB of the Cardinia Western Port Green Wedge is approximately 60 kilometres from central Melbourne. This is much further than comparative distances to other green wedge areas, approximately 30 kilometres to the west from central Melbourne. It is critical that the Cardinia Western Port Green Wedge be identified as a permanent edge to Melbourne and as a strategic urban break between Melbourne and Latrobe City (Gippsland's regional municipality) and the regional centres of Bairnsdale, Leongatha, Sale, Warragul, Drouin and Wonthaggi. This permanent edge assists in protecting the green wedge from further urban development of these centres where growth may be directed in the future.

Plan Melbourne reinforces the protection of green wedge areas by committing to establishing a permanent boundary for metropolitan Melbourne in order to provide a clear policy signal about long-term development options and to protect the values of non-urban land for a range of purposes. Council needs to continue to lobby the Victorian Government to ensure the implementation of this permanent boundary.

The uncertainty surrounding the permanency of planning provisions and the historical flexibility in the UGB, resulting in urban encroachment is a blocker to agricultural investment. Because of the magnitude of the investment and the long payback period, investors would need to be assured that the green wedge land use is locked in for a long period of time, urban type uses are restricted and that planning policy and controls are

protected from the discretion of the government of the day.⁴¹

It has been made clear through consultation, that the Cardinia Western Port Green Wedge should remain as a rural area and that further subdivision and development should be strictly limited. The townships located within the green wedge also provide people with a unique, rural lifestyle while supporting the agricultural and horticultural pursuits of the green wedge. Growth of these areas should only be allowed where linked to an existing settlement and consistent with a township strategy and/or policy.

Development and subdivision around the townships that exist in the Cardinia Western Port Green Wedge should be limited. A policy of 'limited growth' should be pursued at the townships of Bunyip, Garfield, Nar Nar Goon, Lang Lang, Koo Wee Rup, which could allow for some increased densities and minor infill development, where appropriate, and the designation of an Urban Growth Boundary (where not currently applied) to mark the edge of development. It is also important to ensure the application of appropriate land use zones at the edge of the townships to ensure a sensitive, low scale, rural transition to the surrounding green wedge land.

Despite lobbying in some areas, opportunities for rural living and hobby farms should also be restricted. Although there are many who seek a rural living lifestyle, this

⁴¹ McKinna, *Southern Region RDA (Cardinia) Agrifood Masterplan*, June 2013.

style of housing can have significant impacts on biodiversity and loss of agricultural land and public costs required to provide services are high.

Land fragmentation is a significant threat to the sustainability of highly productive Cardinia Western Port Green Wedge as it diminishes the potential for sustainable farming practices. Fragmentation of rural land can occur through subdivisions, boundary realignments and excisions. Not only does fragmentation of rural land decrease its farming potential, a number of other negative impacts exist, such as reducing scenic amenity, disruption of wildlife corridors, threats to water resources, and an increase in population density which can provide a precedent for further land fragmentation.⁴² Minimising the opportunity for the fragmentation of viable agricultural land is a key priority for Council. This is further emphasised by the application of the Restructure Overlay (RO) in Garfield and Bunyip. This is discussed further in Section 7.5 (soils and land capability) and Precinct 1.

Map 7 illustrates planning zones and settlements within the Cardinia Western Port Green Wedge.

⁴² Buxton, M. & Choy, D.L), *Change in Peri-urban Australia: Implications for Land Use Policies*, presented to the State of Australian Cities Conference, Adelaide Australia, 2007.

Objective

Restrict opportunities for development in the green wedge except for those that are required to complement its primary values of agriculture, horticulture, biodiversity, major infrastructure, maintain viable settlements and for tourism-related purposes.

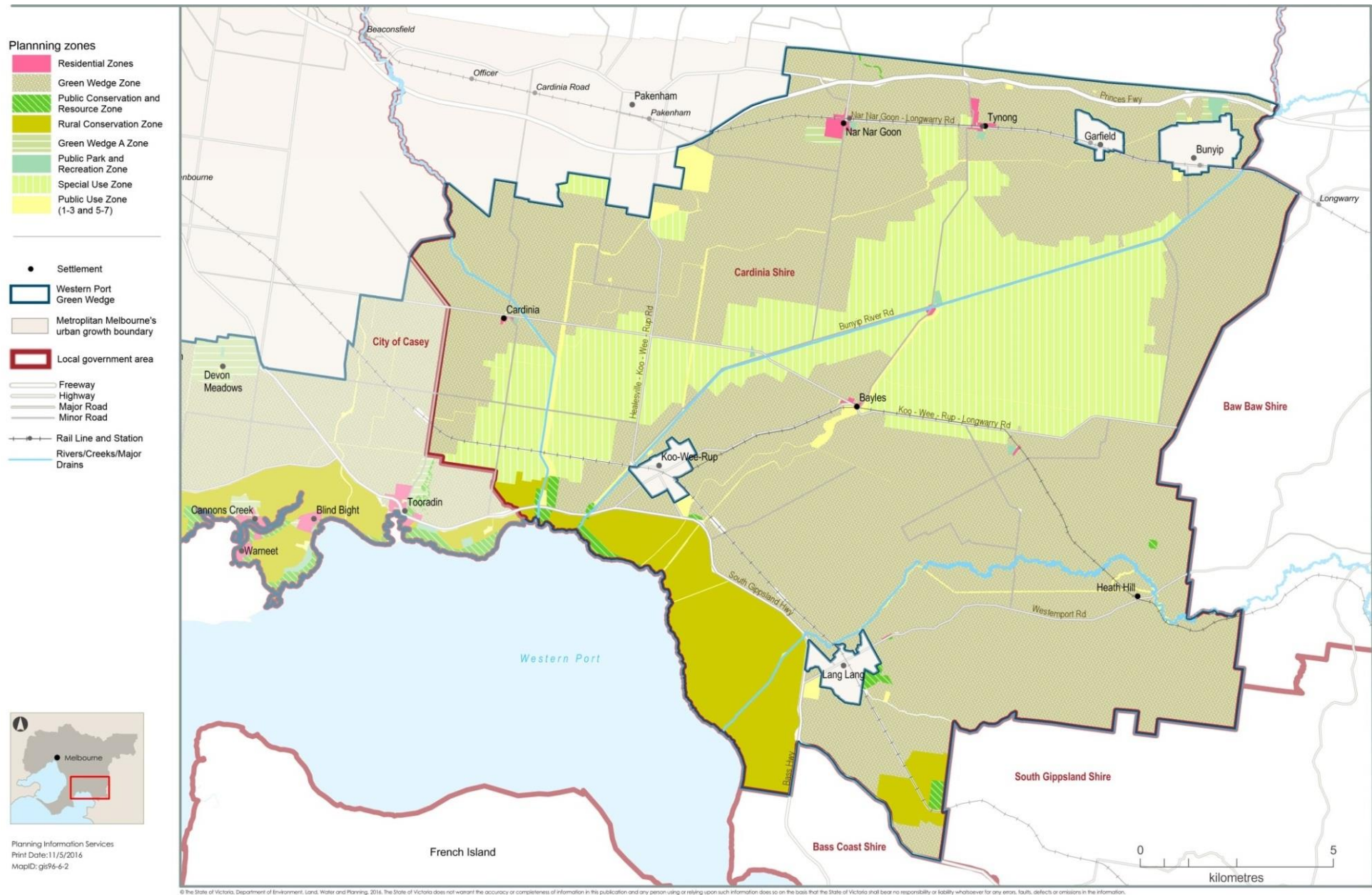
Strategies

- Protect the values and assets of the green wedge by preventing further encroachment of urban development into the Cardinia Western Port Green Wedge.
- Provide clear guidance as to where places of worship and schools can be located to ensure that their adverse impacts on the green wedge are minimised and the overall purpose of the green wedge is protected.
- Allow only limited growth for all green wedge settlements, where supported by an adopted township strategy and/or policy.
- Ensure that appropriate land use zones are applied at the edge of townships that ensure a low density/rural transition to the surrounding green wedge land.
- Minimise the opportunity for the fragmentation of agricultural land through subdivisions, boundary realignments and excisions.
- Restrict rural living and hobby farms.

Actions

- A33:** Pursue the implementation of a UGB for those townships without a boundary as part of the development of a full township strategy.
- A34:** Continue to lobby the Victorian Government to ensure the implementation of a permanent UGB as part of the submission process to any relevant strategic documents.
- A35:** Address locations for places of worship and schools in the green wedge as part of a local Green Wedge policy in the Cardinia Planning Scheme.

Figure 7. Map 7: Settlements and zones



7.11 Infrastructure and transport

Background and context

The Cardinia Western Port Green Wedge currently accommodates local and state infrastructure that serves both the local community and metropolitan Melbourne. During community consultation, it was widely recognised that there will be ongoing pressures to accommodate more infrastructure within the green wedge, including gas and water pipelines, rail and transport infrastructure, racetracks, sewerage treatment plants and the other infrastructure necessary to support the metropolitan population, as well as accommodating mining and extractive industry. Some of the existing and proposed infrastructure activities accommodated within the Cardinia Western Port Green Wedge are shown in Map 8 (Figure 8).

This level of infrastructure is seen as a legitimate, necessary and an appropriate use of green wedge land in many green wedge areas. Many of these uses are justified and significantly benefit the wider community. However, there is potential for negative impacts on the Cardinia Western Port Green Wedge vision as a permanent green and rural area.

An example was cited in the discussion paper to demonstrate this conflict:

- The Koo Wee Rup Bypass proposals and the Wonthaggi Desalination Pipeline that cross through key parts of the study area.

Future examples might include proposals for extraction of sand in the Lang Lang area, possibilities for major rail or road infrastructure associated with the development of the Port of Hastings, the possibility of a future airport in the southeast area, expansion of the Pakenham Racing Clubs' new Tynong Racecourse and the ongoing pressures for expansion of the UGB.



Powerlines 2014

As set out in the guiding principles (Section 6), proposals for local and state infrastructure should respond to the key values of the Cardinia Western Port Green Wedge and any potential impacts on the values of the green wedge should be minimised and mitigated, while taking into account the needs of the local community.

The relevant national and state legislation, the *Environment Protection and Biodiversity Conservation Act 1999* (national) and the *Environment Effects Act 1978* (Victoria), both require an environmental effects

statement (EES) for projects that may have significant effects on the environment. DELWP administers the statutory environmental impact assessment systems for major projects within Victoria that have potentially significant environmental effects.

DELWP also processes referrals to the Minister for Planning for a decision in relation to whether or not a proposal requires an EES as well as administration of the process when the Minister determines that an EES is required.

It is important that Council advocates to the Minister for Planning for an EES when it becomes aware of a potential new site and/or a planning permit application is received.

Map 8 (Figure 8) illustrates infrastructure and extractive industries in the Cardinia Western Port Green Wedge.

Objective

Support major new infrastructure which provides a net community benefit. Recognise the potential impacts that this infrastructure may have on the green wedge and identify ways in which such impacts can be minimised and mitigated.

Strategies

- Support proposals for urban infrastructure in the Cardinia Western Port Green Wedge that demonstrate that they would be of benefit to the local community.

- Investigate how new infrastructure proposals can be implemented so that they enhance and build on the assets and values of the Cardinia Western Port Green Wedge.
- Support the requirement for an EES for proposals that may have significant effects on the environment.

Actions

A36: Write to the Minister for Planning seeking support for the requirement of an EES when Council becomes aware that a future planning permit application will be made, or a planning permit application is lodged for infrastructure proposals that have the potential to significantly adversely affect the environment.

A37: Continue to advocate for the development of an airport for Melbourne's southeast region to occur and to be undertaken in a way that has minimal negative impact on the green wedge.

7.12 Extractive industry

Background and context

Important natural resources exist within the green wedge, and an existing sand extraction industry operates around Lang Lang. It is important to achieve a balance between being able to retain this resource while protecting environmental assets and local amenity.

The potential for future extractive industry in the Cardinia Western Port Green Wedge is

recognised, particularly in the north area. It is important that this industry does not impact negatively on the groundwater both during operation as each site intercepts groundwater and after rehabilitation.

The Lang Lang to Grantville region contains significant sand resources which are expected to become a major source of sand for the Melbourne supply area over the next 10–20 years as resources in the Heatherton-Dingley area are exhausted. Extractive industry interest areas are identified to the east and south west of Lang Lang.

It is likely that this land will receive increased pressure for urban development and farming in the north and farming in the south because the sand soils around Lang Lang are ideal for agriculture and horticulture. These competing needs will need to be appropriately addressed. The importance of protecting this resource is emphasised in both state and local planning policy in the *Cardinia Planning Scheme*.

The extraction of natural resources and the rehabilitation of extraction areas should be carefully planned to ensure that they are compatible with local amenity, landscape, flora and fauna and water quality.

Extractive industry is governed by the *Mineral Resources (Sustainable Development) Act 1990* and the *Mineral Resources (Sustainable Development) (Extractive Industries) Regulations 2010*, which set out requirements such as:

- *work plans*
- *site plans*

- *processing methods*
- *environmental management program rehabilitation*
- *community engagement*.

Objective

Recognise the importance of extractive industry for both the municipality and metropolitan Melbourne and ensuring that these activities are not detrimental to the environment.

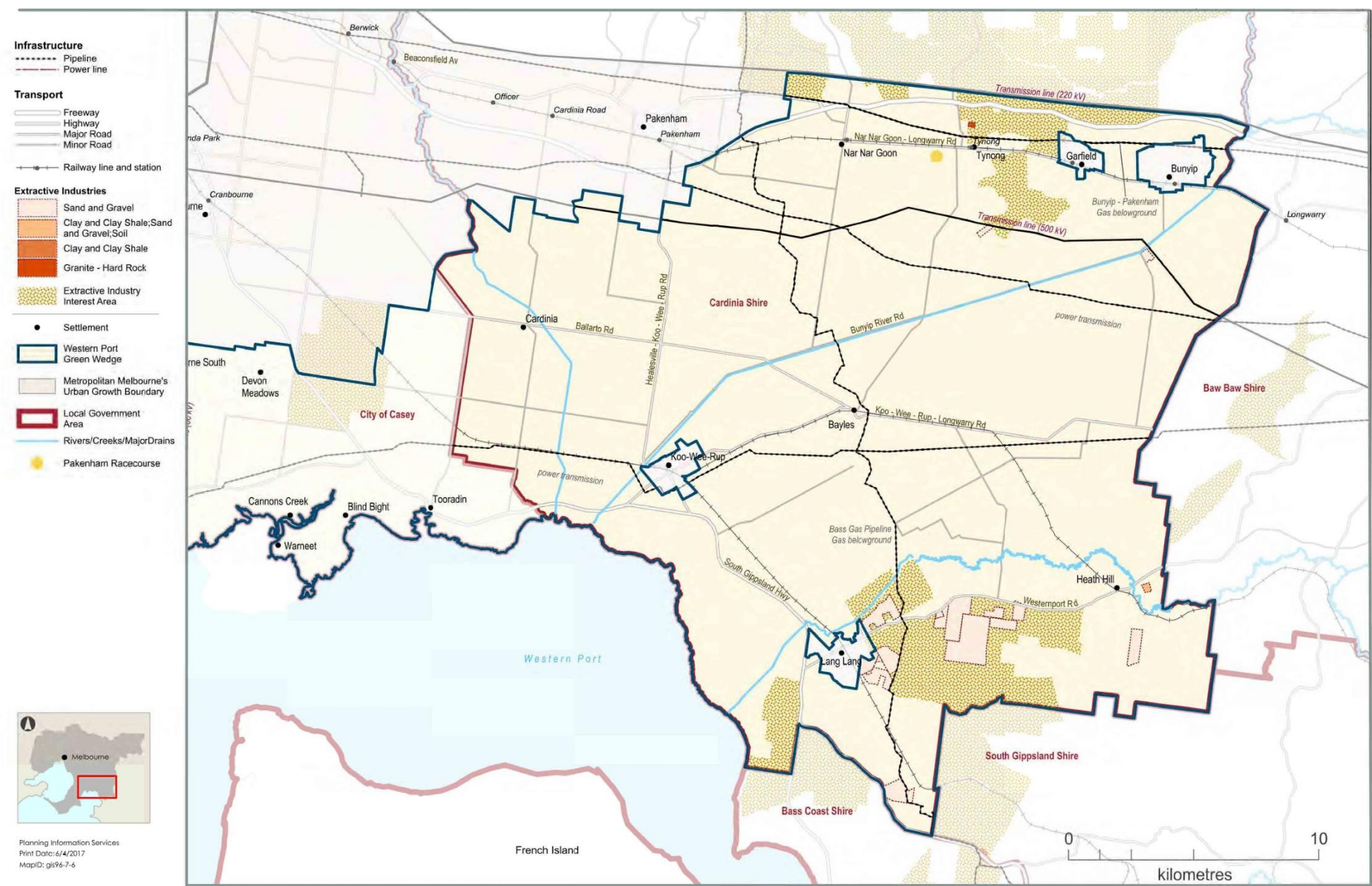
Strategies

- Support potential future extractive industry, particularly in the north area of the green wedge.
- Protect existing and future extractive industry from residential encroachment by ensuring that buffer areas are enforced and protected.
- Protect the sand resources in the Lang Lang area in order to provide for the extraction of these resources and the rehabilitation of sites in a manner that protects the significant environmental, social and economic values of the area.

Actions

A38: Write to the Minister for Planning seeking support for the requirement of an EES when Council becomes aware that a future planning permit application will be made, or a planning permit application is lodged for extractive industry proposals that have the potential to significantly adversely affect the environment.

Figure 8. Map 8: Infrastructure and extractive industries





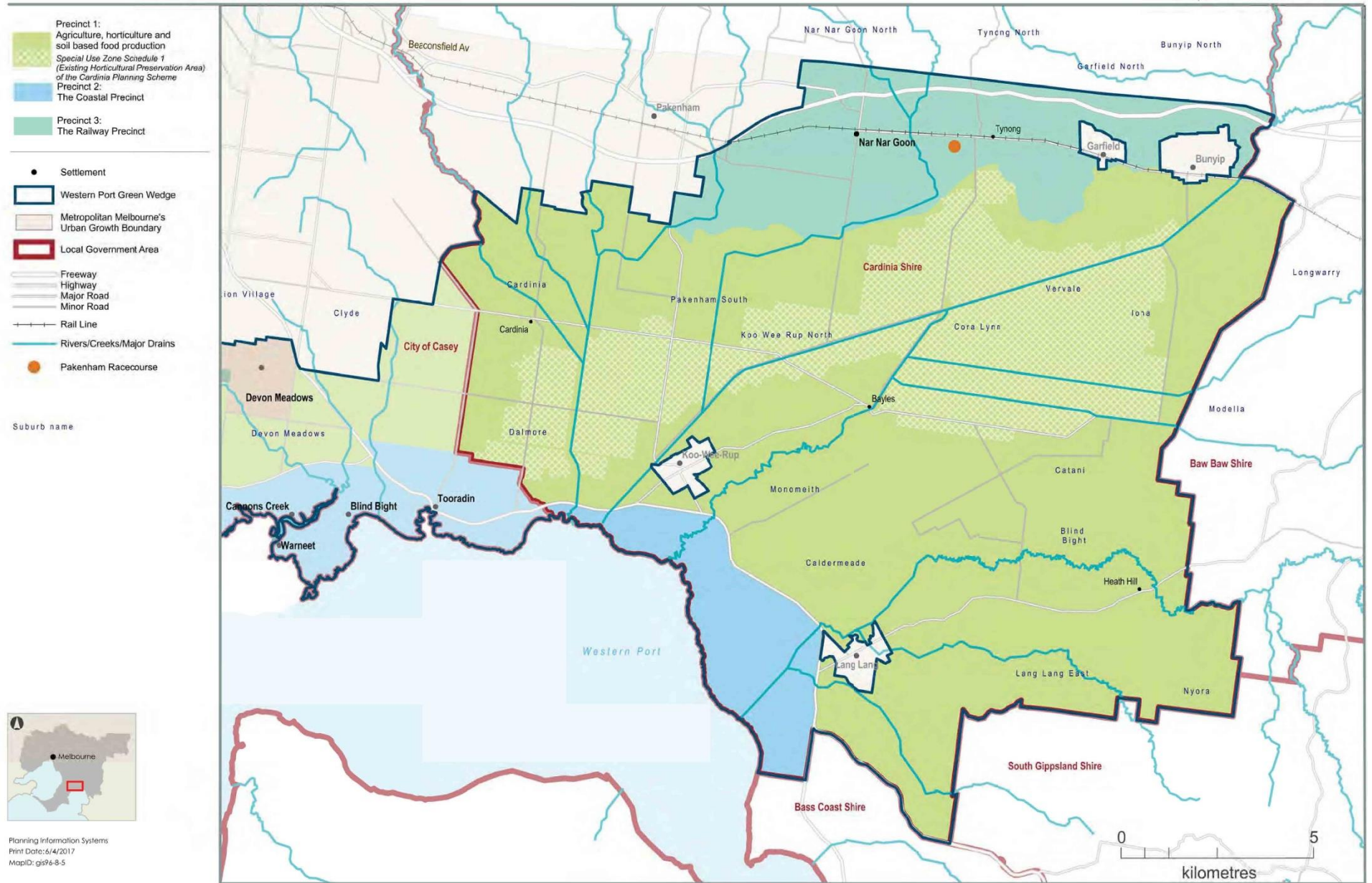
8 Precinct-based strategic directions

The large land area and variety of land uses within the Cardinia Western Port Green Wedge means there is benefit in identifying precincts that allow for a more specific strategic direction to be provided for future land use and management.

The following sections provide a precinct-specific vision, future directions and preferred land use and actions for each precinct. It should also be noted that the directions that are outlined in Section 7 (theme-based strategic directions) also apply to these precincts.

Map 9 (Figure 9) identifies the precincts.

Figure 9. Map 9: Cardinia Western Port Green Wedge precincts



8.1 Precinct 1: Agriculture, horticulture and soil based food production

Land area

Precinct 1 identifies land that is suitable for agriculture, horticulture and soil based food production due to its highly versatile, fertile soils and the application of the SUZ1.

The precinct as a whole has a strong focus on the beef and dairy industry, supports an existing poultry sector and a range of other rural uses. In addition to the above, the rich soils throughout the SUZ1 are particularly valued for asparagus and other horticultural produce. It has ready access to water supply, the potential to utilise recycled water and is within close proximity to the Melbourne market.

Within the precinct are a number of rural settlements that support the existing agricultural and horticultural industries. Precinct 1 also provides a location for important infrastructure such as treatment plants and a potential future airport. Located to the south of the precinct to the East of Lang Lang is important extractive industry.

SUZ1 Area

Land within the SUZ1 within the precinct will be prioritised for soil based agricultural and horticultural use and opportunities for new, innovative or more intensive soil based agriculture and horticulture will be supported to ensure that the rich agricultural potential of the SUZ1 land within the precinct is realised.

Urban uses such as schools and places of worship will be discouraged from locating anywhere within the SUZ1 to ensure that this highly valuable soil is preserved for soil based agriculture and horticulture and the right to farm for existing and future farmers is protected.

Dairy farming occurs within the SUZ1 area due to the high quality soil and the ability to grow fodder all year round.

The areas within and around Koo Wee Rup and Dalmore are key producers of the majority of Victoria's asparagus and broccolini. This precinct has recently obtained the ability to access Class A recycled water, is in close proximity to the Melbourne market, Port of Hastings, the transport network and urban services. It has high biodiversity values, with high value habitats for the southern brown bandicoot and growling grass frog. The success of this precinct relies heavily on a healthy eco system and it is important that agricultural activities are undertaken with consideration and implement mitigation techniques in order to reduce the negative impact on the biodiversity values of the precinct.

Dalmore is under threat from rising water in the Melbourne Water drains/creeks (these include Deep Creek, Cardinia Creek, Lower Gum Scrub Creek and Toomuc Creek). Under certain conditions there is the possibility of the levy banks collapsing. Therefore, it is of critical importance that Council continues to advocate to Melbourne Water to improve the stability of these banks.

Balance of the precinct

Beef and dairy farming occurs throughout the entire precinct, with a larger proportion occurring to the south, outside of the SUZ1 soils. The sandy soils around Lang Lang are ideal for carrot, celery and lettuce production; however, Class A recycled water needs to be secured before this type of produce can be grown and consideration also needs to be given to the existing and significant extractive industry in operation to the east of Lang Lang.

Ongoing discussions are occurring between Council and Melbourne water in relation to the location of a new Class A recycled water treatment plant in the Clyde/Cardinia area. The intent is for this treatment plant to have the ability to supply Class A recycled water to agricultural producers and together with the existing Pakenham Treatment Plant it has the ability to increase the agricultural viability of the land in and around Officer South, Rythdale and Cardinia. It is anticipated this land will increase in agricultural value, being able to produce more crops, therefore becoming more appealing to the local larger family farming businesses that are making numerous land purchases to further expand their operations within the precinct.

To the east of Lang Lang are significant land resources which are expected to become a major source of sand for the Melbourne supply area over the next 10 – 20 years. It is likely that this land will receive pressure for intensive agriculture and horticulture due to the sand soils. It is important that these

competing needs are appropriately addressed.

Urban uses such as schools and places of worship will be discouraged from this area, with the preferred location being within townships and along the UGB subject to strategic justification. The preferred location protects the intent of the precinct, safeguarding the agricultural and horticultural production which is important not only for the municipality but for Victoria.

Within this precinct the Restructure Overlay (RO) exists, most notably around Bunyip and Garfield in order to restructure inappropriate old subdivisions on what is viable and important agricultural land. The retention and creation of larger lots is a significant factor supporting sustainable agricultural businesses, diversification and ongoing agricultural production.

Vision

Precinct 1 will be the hub of, agriculture, horticulture and soil-based food production within the Cardinia Western Port Green Wedge, taking advantage of its highly versatile soils, vegetable production (in particular asparagus), dairy and beef farming, other agricultural pursuits, potential access to Class A recycled water and the important role this precinct plays in food security. Land within the SUZ1 part of the precinct will be prioritised for soil-based agricultural and horticultural use and soil based food production with a focus on the consolidation of lots to support the economic viability of the agricultural and horticultural industry.

Opportunities for new, innovative or more intensive agriculture and horticulture and soil-based food production will be supported to ensure that the rich agricultural potential of the precinct is realised.

It will integrate biodiversity and agricultural outcomes by recognising ecosystem services which can improve agricultural efficiency.

Opportunities for linking the community with the local agricultural and horticultural industry will be identified and promoted to help establish food-based tourism within the precinct.

Future directions/preferred land uses

- Soil-based agriculture to be the primary activity within the Special Use Zone – Schedule 1
- Discourage the use of non-soil based agriculture (e.g. poultry farms, animal husbandry, horse riding schools etc.) being located on soils within the Special Use Zone – Schedule 1.
- Encourage non-soil based agricultural uses (e.g. animal husbandry, beef and dairy farming etc.) to the land surrounding the Special Use Zone – Schedule 1.
- Discourage non-rural uses such as primary, secondary schools and places of worship from locating within the precinct (particularly in the SUZ1) and locate these types of uses within the existing townships and within the green wedge land that adjoins the UGB, subject to strategic justification.

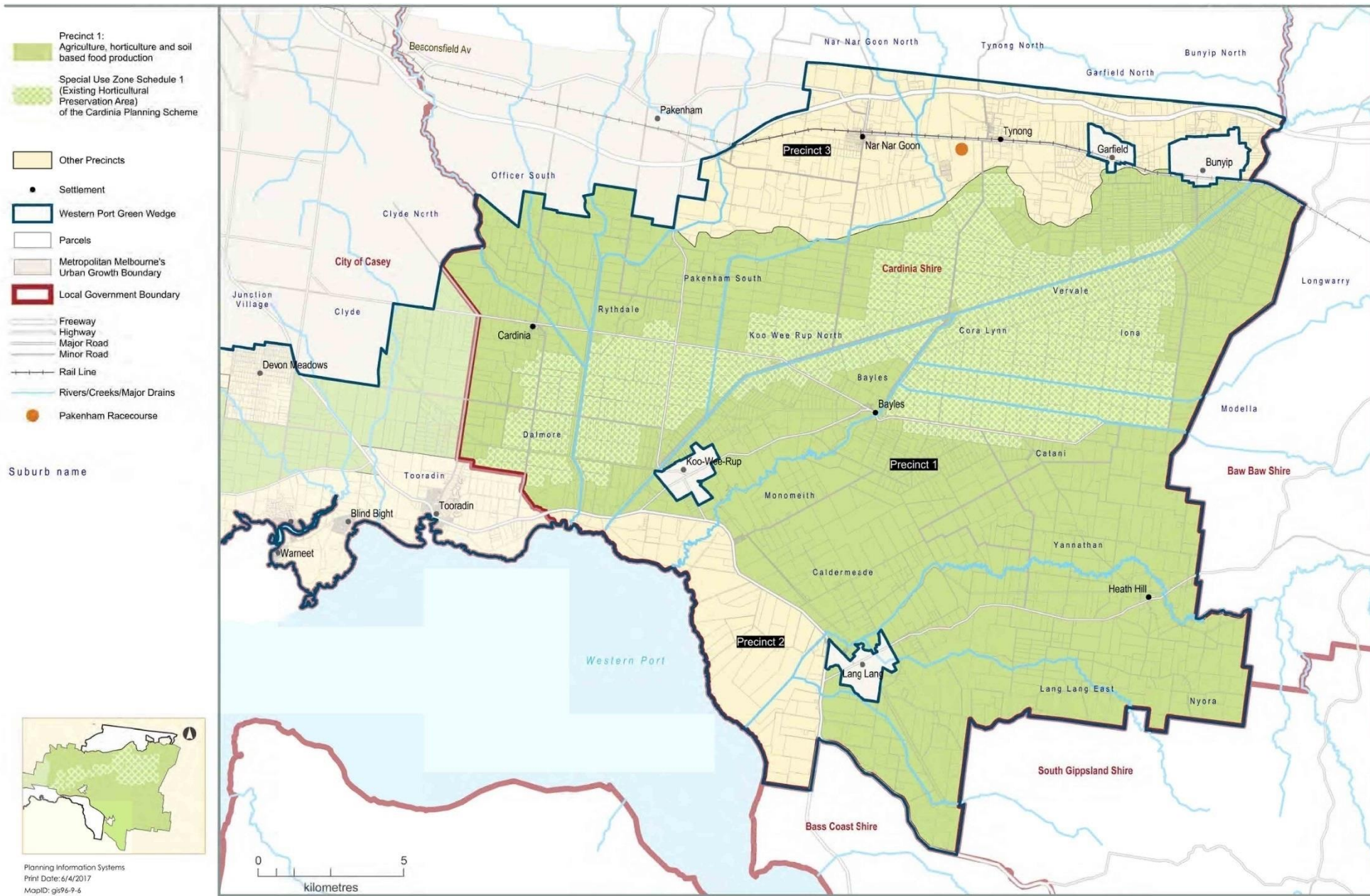
- Support and protect the existing vegetable industry, in particular the asparagus growing region.
- Support rural industry to allow farmers to value add to their produce.
- Encourage lot consolidation through the entire precinct to increase the economic viability of agricultural land.
- Support subsidiary visitor related activity, including farm gate sales of crops and goods produced in situ, cellar door sales and ancillary farm stay accommodation.
- Support potential future extractive industry in the area nominated as an extractive industry interest area within Precinct 1.
- Ensure that there is a balance between the extraction of natural resources and the intent of the precinct and that any investigation and operation is carefully planned to ensure that it is compatible with local amenity, landscape, flora and fauna.

Actions

- A39:** Encourage lot consolidation over time in order to increase the economic agricultural viability of land by addressing matters with farmers such as improving farm and land management, discussing alternative farming methods and the production outcomes of consolidated land.
- A40:** Continue to provide support to Landcare to develop farm efficiency programs which will improve farm productivity. This will include the use of bio-link corridors which will promote ecosystem services to farm properties.

- A41:** Address the future directions/
preferred land uses within Precinct 1
as part of a local green wedge policy in
the *Cardinia Planning Scheme*.
- A42:** Advocate to Melbourne Water to
undertake structural improvements to
the levy banks to reduce the threat of
inundation.

Figure 10. Map 10: Precinct 1



8.2 Precinct 2: Coastal

Land area

The Cardinia Western Port Green Wedge Coastal Precinct is comprised of coastal land and hinterland with high environmental, ecological and conservation values with the shoreline and surrounding waters designated as part of the Western Port Ramsar Site.

The Ramsar site consists of shallow intertidal mudflats, seagrass and fringing saltmarsh and mangrove habitats which support a large number of migratory shorebirds and other waterbirds, fish and marine invertebrates.

This precinct is zoned Rural Conservation Zone – Schedule 1 (RCZ1) which emphasises the importance of the natural environment of this area. The foreshore is zoned Public Conservation and Resource Zone (PCRZ) which identifies the *land for protection and conservation of the natural environment and natural processes for their historic, scientific, landscape habitat or cultural values and provides facilities which assist in public education and interpretation of the natural environment with minimal degradation.*

The shore line is also affected by the Environmental Significance Overlay – Schedule 2 (ESO2) which provides additional protection and Victorian Government mapping identifies this area as having potential Aboriginal Cultural heritage sensitivity.

The coastline north of the Lang Lang River mouth is a low cliff varying from 0.2 to 2.0 metres high. The Lang Lang Cliffs are rapidly eroding at a rate of approximately 80 centimetres per year which has implications for sea grasses, loss of habitat with high levels of salt marsh washing into the sea and the loss of private property. The Western Port Seagrass Partnership has been working to plant mangroves in order to stabilise the erosion of the cliffs and reduce the adverse impact on the sea grasses. However, higher level strategic work needs to be undertaken in order to develop a strategic management plan to help mitigate the cliff erosion and the adverse impacts resulting from this.

An extractive interest area is located to the south of precinct adjacent to the border of Precinct 1. Any future investigation or operation of this area needs to be undertaken in a manner that ensures that it does not negatively impact on the vision for the precinct.

Urban uses such as schools and places of worship are strongly discouraged from locating anywhere within this precinct as it is important to ensure that the unique biodiversity values of the area are protected and enhanced. This is particularly important given that this precinct does not border with the UGB and has less strategic justification to locate these types of urban uses.

Vision

The Cardinia Western Port Green Wedge Coastal Precinct's coastal land and hinterland will be maintained and enhanced.

The ecological values and environmental sensitivity of this land will be recognised, including the internationally significant Ramsar wetlands that play a vital role for migratory birds.

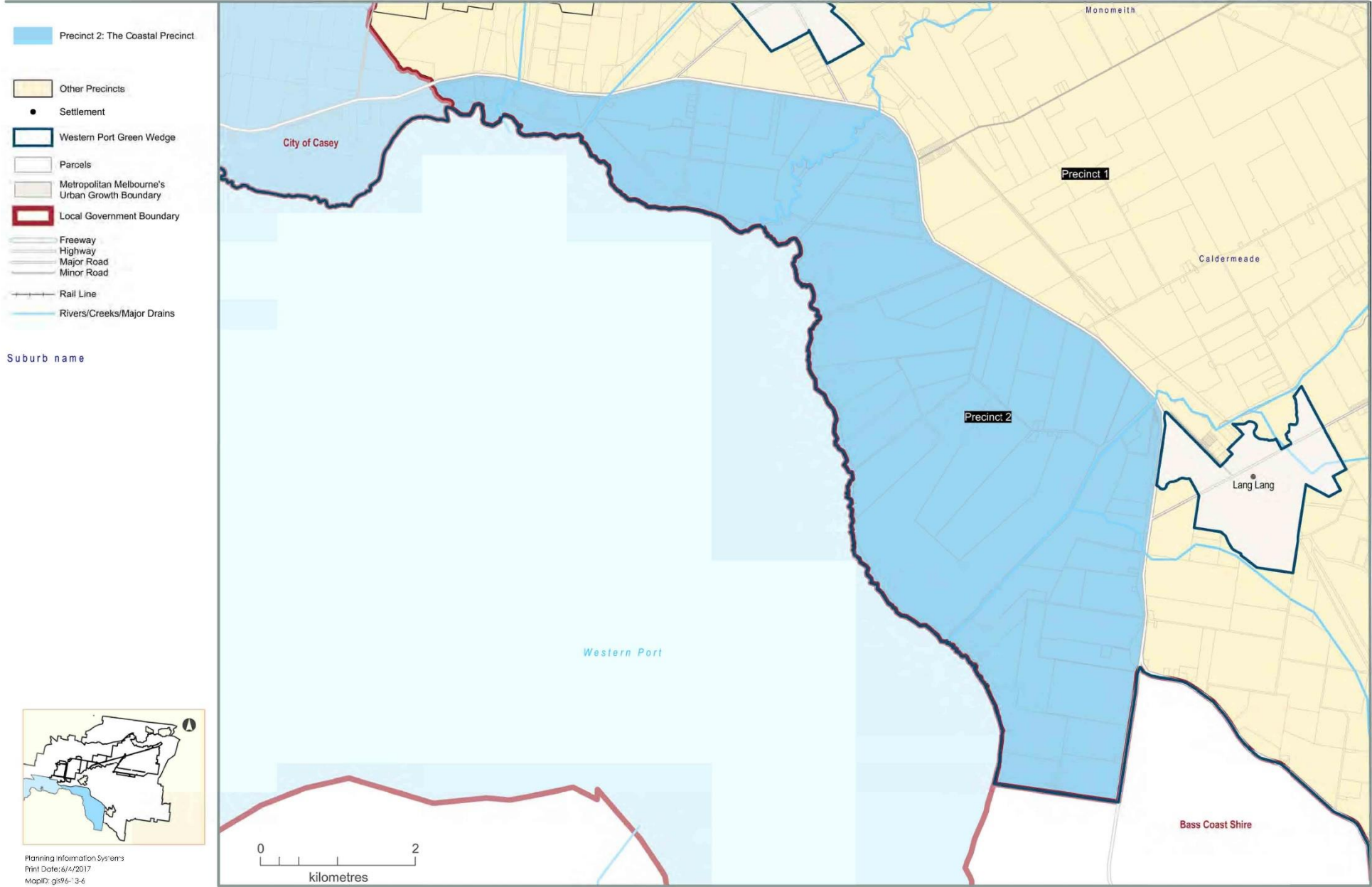
Future directions/preferred land uses

- Enhance and encourage agriculture on land situated outside environmentally sensitive coastal areas and outside of land containing coastal acid sulphate soils.
- Protect and enhance biodiversity.
- Discourage non-rural uses such as primary, secondary schools and places of worship from locating anywhere within Precinct 2.
- Support the investigation and operation potential future extractive industry in the area nominated as an extractive industry interest area within Precinct 2.
- Ensure that there is a balance between the extraction of natural resources and the intent of the precinct and that any investigation and operation is carefully planned to ensure that it is compatible with local amenity, landscape, flora and fauna.

Actions

- A43:** Address the future directions/preferred land uses within Precinct 2 as part of a local green wedge policy in the *Cardinia Planning Scheme*.
- A44:** Advocate to the Victorian Government for the Victorian Government to undertake the preparation of a strategic plan to assist in the management of the erosion of the Lang Lang Cliffs.

Figure 11. Map 11: Precinct 2



8.3 Precinct 3: Railway

Land area

The Cardinia Western Port Green Wedge Railway Precinct is located in the foothills to the Dandenong Ranges. It has more vegetation coverage than the adjoining Precinct 1 with high biodiversity values and a number of diverse habitat corridors. This is identified through the application of the Environmental Significance Overlay – Schedules 1 and 3 (ES01) (ES03) to land around Tynong, Garfield and Bunyip.

ES01 identifies that areas within this precinct contain landscape and environmental values which contribute to landscape quality, water quality, and habitat of botanical and zoological significance (notably the southern brown bandicoot). The vegetation supports the ecological processes and biodiversity of this area by forming core habitat areas within a complex network of biolink wildlife corridors.

ES03 identifies areas that are considered to be of botanical and zoological significance. These sites contain rare, endangered or uncommon species of plants and animals and are critical for the protection of habitat for native plants and animals. The topography within Precinct 3 is undulating with a variation in soil quality and a mix of agricultural uses, with some fruit production. 6 rural settlements exist within this precinct, with 4 of these located along the Gippsland railway line, an important transport asset. The railway line and the townships have

fragmented the precinct to some extent, impacting on the rural land, but these townships play an important support role to both this precinct and Precinct 1.



Garfield (2014)

An extractive interest area is located to the north of the precinct and around Tynong. Any future investigation or operation of this area needs to be undertaken in a manner that ensures that it does not negatively impact on the vision for the precinct.

Urban uses such as schools and places of worship will be discouraged from locating within the precinct, with the preferred location being within the existing townships and along the UGB, subject to strategic justification. The preferred locations protect the intent of the precinct, safeguarding agricultural, horticultural and rural pursuits which are important not only for the municipality but also for Victoria.

Vision

The railway precinct will provide a sensitive transition from urban townships to green wedge land, assist in protecting land that is of agricultural, landscape, environmental and biodiversity significance and will continue to support the Pakenham Racing Club's Tynong Racecourse. This precinct will seek to ensure that UGBs are defensible in the long term and that there is a clear edge to metropolitan growth.

Any intensification of the development pattern of the townships that exist within the precinct, or expansion of their boundaries must be strategically justified and be proven to not detrimentally impact the surrounding Precinct 1 or the environmentally sensitive environment of the Cardinia Western Port Green Wedge.

Future directions/preferred land uses

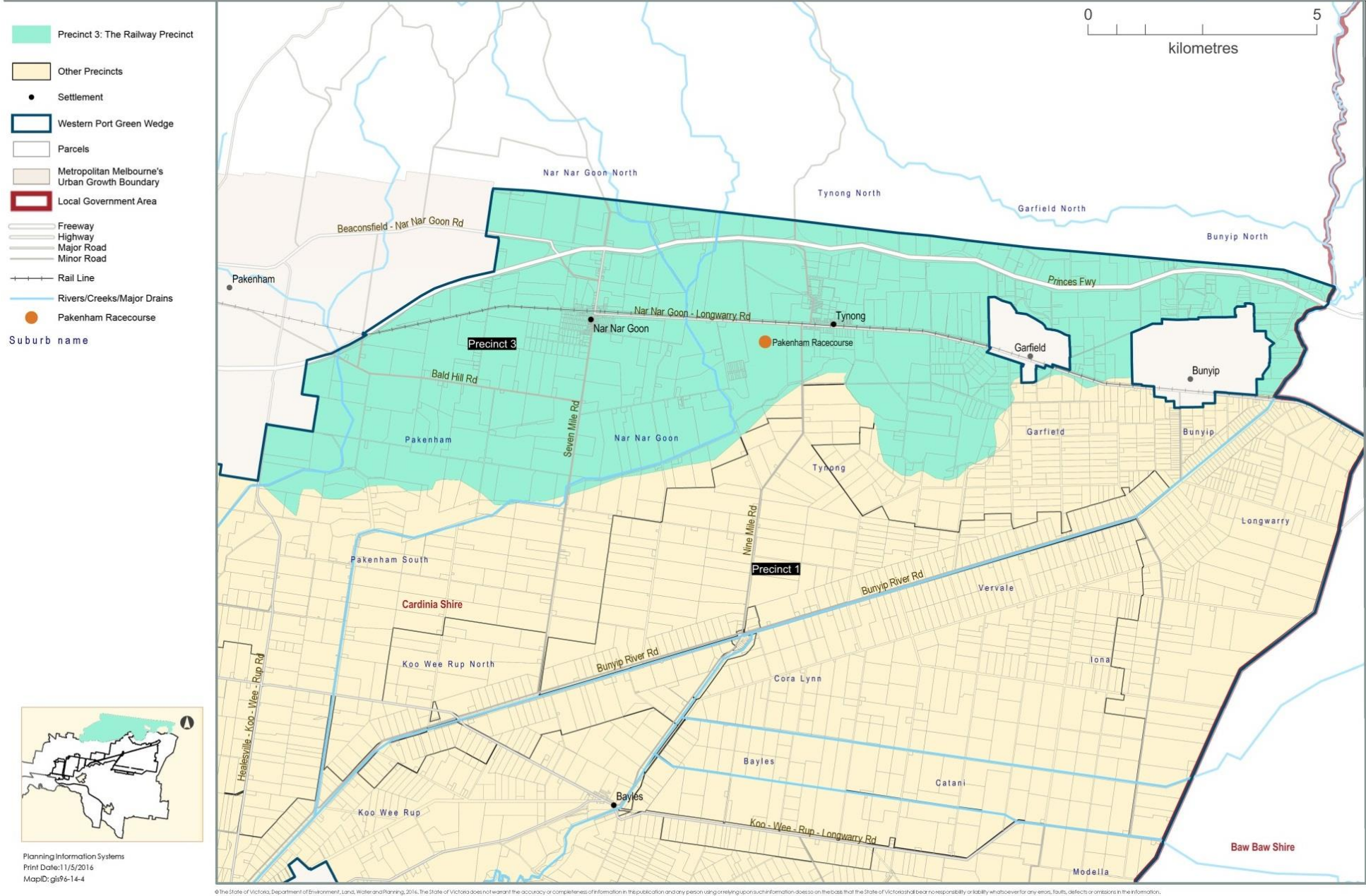
- Discourage non-rural uses such as primary, secondary schools and places of worship within the precinct and locate these types of uses within the existing townships and within the green wedge land that adjoins the UGB, subject to strategic justification.
- Encourage non-soil based agricultural uses.
- Retain the rural character of the precinct.
- Retain and protect the existing character and the unique identities of the railway towns.

- Allow only limited growth for all green wedge settlements, where supported by an adopted township strategy and/or policy.
- Any expansion of townships will be carefully considered for reasons related to the protection of built character and subdivision patterns, landscape character, servicing constraints, existing agricultural and intensive animal husbandry activities, flood risk, and environmental values.
- Protect the values and assets of the green wedge by preventing further encroachment of urban development into the Cardinia Western Port Green Wedge.
- Ensure that appropriate land use zones are applied at the edge of townships that ensure a low density/rural transition to the surrounding green wedge land.
- Encourage and support the use of the precinct for agriculture and biodiversity, to ensure that land use is compatible with the adjacent Precinct 1 and surrounding land.
- Support potential future extractive industry in the area nominated as an extractive industry interest area within Precinct 3.
- Ensure that there is a balance between the extraction of natural resources and the intent of the precinct and that any investigation and operation is carefully planned to ensure that it is compatible with local amenity, landscape, flora and fauna and water quality.

Actions

- A45:** Prepare a township strategy for Nar Nar Goon.
- A46:** Prepare a residential development strategy for Tynong.
- A47:** Undertake a review of the *Bunyip Township Strategy (2009)*.
- A48:** Undertake a review of the *Garfield Township Strategy (2002)*.
- A49:** Undertake a review of the *Koo Wee Rup Township Strategy (2015)*.
- A50:** Undertake a review of the *Lang Lang Township Strategy (2009)*.
- A51:** Monitor the take-up of land for horse training and related activities.
- A52:** Address the future directions and preferred land uses in Precinct 3 in the green wedge as part of a local green wedge policy in the *Cardinia Planning Scheme*.
- A53:** Continue to provide support to Landcare to develop farm efficiency programs which will improve farm productivity. This will include the use of bio-link corridors which will promote ecosystem services to farm properties.

Figure 12. Map 12: Precinct 3





9 Implementation

9.1 Purpose

Implementation of the *Cardinia Western Port Green Wedge Management Plan* into the *Cardinia Planning Scheme* is critical to ensuring its success. This success is dependent on collaboration between local, state and federal governments, agencies, organisations and the community.

The *Cardinia Western Port Green Wedge Management Plan* will:

- be a Council-adopted document used to assist in implementing the actions over a 20-year timeframe
- provide a clear framework to inform the community, major stakeholders and government agencies of projects that are to take place in the Cardinia Western Port Green Wedge
- provide clear direction on the priority projects and resource allocation which has been developed following extensive consultation with the community, government agencies, major stakeholders and senior management within Council
- be reviewed every five years
- be used to inform the *Cardinia Western Port Green Wedge Management Plan Action Plan* which is discussed in section 10.

9.2 Guiding principles

The following guiding principles lay the foundation for this implementation plan:

- it has been informed by the *Cardinia Western Port Green Wedge Management Plan*
- it provides a strategic link to:
 - the management plan
 - Council work plans and budget allocations
 - Council seeking external funding direction
 - Council's advocacy role
- it is an accountability tool to ensure that the actions identified in the management plan are not just shelved and forgotten.

9.3 Actions in the implementation plan

Fifty-three actions are listed in the management plan which are summarised in Table 3 and identify the following:

- the allocated timeframe
- the responsible agent (Council or the Victorian Government department/agency where Council will play an advocacy role)
- the type of resource required (financial and/or officer time)
- how the delivery/outcome of the task will be measured.

Timeframe

The timeframe for each action has been allocated in the following five categories:

1. Ongoing
2. Short term (0–5 years)
3. Medium term (5–10 years)
4. Ultimate (20+ years, likely to be beyond the life of the management plan, which includes advocacy).

An action may have been placed in the short term category for the following reasons:

- it already has allocated budget for the action to be undertaken
- other actions are dependent on the findings of this action
- it may not need significant funding
- it can be accommodated in current work plans and/or is already being undertaken within current work plans
- it is considered to be a ‘quick win’ project, whereby the work to undertake the task is minimal compared to the results/outcome of the findings.

Responsible agency

Each action identifies the responsible agent that has a role in implementing the action. In cases where a Victorian Government department/agency has been identified, Council will play an advocacy role in the action identified.

Resources

The resources required to enable the delivery of each action is identified within the Implementation Plan. Resources include both financial as well as ‘officer time’.

The management plan identifies a number of actions/projects the delivery of which is Council’s responsibility.

Such projects place additional strain on the existing Council budget. Therefore, Council needs to explore a range of other sources to assist in funding these projects. A range of mechanisms will need to be explored which include (but are not limited to):

- Victorian Government funding sources
- Australian Government funding sources.

Victorian Government departments and agencies will need to play a key role in implementing the identified actions beyond the control of Council. Council will however play an advocacy role to develop long-term partnerships for the delivery of these projects.

It is acknowledged that any Victorian or Australian government funding would need to be considered as part of future budget processes and against other state/nation-wide priorities.

Measure

‘Measures’ have been identified for each action to ensure they can be tracked and monitored, and more importantly to identify if an action has been delivered within the identified timeframe.

9.4 Monitoring and evaluation

Successful implementation is underpinned by effective monitoring, review and evaluation processes.

Council is responsible for the monitoring and evaluation of the actions identified within this implementation plan.

Targeted communications are proposed to ensure government departments, agencies, key stakeholders and the community as a whole will remain well-informed and engaged in the process.

Examples of targeted communications include (but are not limited to):

- major projects/tasks and milestones published via *Connect* (the Shire’s community publication) or via a media release
- Council’s website will be updated (when considered necessary) to advise the community of the achievements and milestones for projects/tasks.

An open and transparent monitoring and evaluation process that allows the community, stakeholders and government agencies access to information about the progress of the management plan and increases Council’s credibility and accountability.

The management plan (including the implementation plan) will be reviewed every five years. It is expected that the documents will be reviewed in the year 2021.

9.5 Implementation plan

Table 3. Cardinia Western Port Green Wedge Implementation Plan

Action number	Action description	Timeframe	Responsible agency	Measure
Indigenous and post-contact heritage				
1.	Explore the opportunity to establish a local gathering and healing place in the green wedge*. <i>*Action also appears in the Cardinia Shire Council Reconciliation Action Plan 2015–19 as Sub-action 8.1</i>	Short	Council (Strategic Planning and Community Strengthening)	Identify and document needs as identified through conversations with local communities and groups.
2.	Generate publicity and promotion of relevant activities and aspirations of the reconciliation action plan using a mix of traditional and online communication tools*. <i>*Action also appears in the Cardinia Shire Council Reconciliation Action Plan 2015–19 as Sub-action 10.1</i>	Ongoing Measure 5 (December 2017)	Council (Communications)	1. Increased number of media releases issued 2. Increased number of articles in newspapers 3. Increased number and reach of Facebook posts 4. Increased content on the website 5. Consideration given to Traditional Owner's being acknowledged on all Council staff email signatures.
3.	Undertake site visits and a review of the bridges identified in the <i>Cardinia Shire (North) Heritage Study</i> , Graeme Butler and associates (1996).	Short	Council (Strategic Planning)	All bridges identified and mapped to inform the future planning scheme amendment.
4.	Conduct a cultural landscape assessment of the Cardinia Western Port Green Wedge to determine the cultural landscape significance of the former Dalmore and Koo Wee Rup Swamp environs and the Western Port coastline. The assessment should include consideration of Indigenous history, sites of Aboriginal heritage value, the drainage of the swamp, former railway lines and bridges and the Soldier Settlement period. <i>*Repeat of Action 6</i>	Medium	Council (Strategic Planning)	Landscape assessment adopted by Council.
5.	Undertake a planning scheme amendment to map the bridges identified in the Schedule to the Heritage Overlay in the <i>Cardinia Planning Scheme</i> , include any new bridges identified or other sites of cultural significance.	Short	Council and DELWP (approval) (Strategic Planning)	Dependant on the completion of Action 3. Approval of the planning scheme amendment by the Minister for Planning.

Action number	Action description	Timeframe	Responsible agency	Measure
Landscape				
6.	Conduct a cultural landscape assessment of the Cardinia Western Port Green Wedge to consider the cultural landscape significance of the former Dalmore and Koo Wee Rup Swamp environs and the Western Port coastline. The assessment should include consideration of indigenous history, the drainage of the swamp, former railway lines and bridges and the Soldier Settlement period. <i>*Repeat of Action 4</i>	Medium	Council (Strategic Planning)	Landscape assessment adopted by Council.
7.	Investigate the application of the appropriate planning overlays on the relevant sites as a result of the landscape assessment and undertake a Planning Scheme Amendment to implement the appropriate overlays	Medium	Council and DELWP (approval) (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
Environmental significance				
8.	Develop a biodiversity conservation strategy to provide direction and a framework to guide future initiatives and works that promote biodiversity on public and private land.	Short	Council (Environment)	Biodiversity Conservation Strategy adopted by Council.
9.	Develop and seek funding for a pest animal strategy to coordinate pest control programs on public and private land.	Medium	Council (Environment)	Pest Animal Strategy adopted by Council.
10.	Develop a bio-link plan that directs minimum standards for corridors and their locations across the landscape.	Medium	Council (Environment)	Bio-link plan developed.
Tourism and recreational land uses				
11.	Address visitation in the green wedge as part of a local Green Wedge Policy in the <i>Cardinia Planning Scheme</i>	Short	Council and DELWP (approval) (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.

Action number	Action description	Timeframe	Responsible agency	Measure
12.	Advocate for the construction of a shared trail from Beaconsfield to Nar Nar Goon along the Gippsland Railway Line rail reserve (also known as the Bairnsdale Line) through to Bunyip and connecting to Baw Baw Shire.	Ultimate	Council (advocacy) and VicTrack	Construction of shared path.
13.	Advocate for the construction of a shared trail from Dalmore through to Lang Lang along the former South Gippsland Railway Line rail reserve	Ultimate	Council (advocacy) and Vic Roads	Construction of shared path.
14.	Advocate for the construction of a shared path along Koo Wee Rup Road.	Ultimate	Council (advocacy) and Vic Roads	Construction of shared path.
15.	Undertake an interpretation and way finding strategy for the shared trails within the green wedge to help tell the stories of the Cardinia Western Port Green Wedge to inform and navigate people through their surroundings. <i>*Dependant on actions 12, 13 and 14</i>	Ultimate	Council (Strategic planning and Communications)	Construction and implementation of way finding infrastructure.
16.	Ensure that pedestrian and bicycle connectivity is achieved and with minimal impact on the environmental values of the green wedge as part of review of the 2003 <i>Cardinia Pedestrian and Bicycle Strategy</i> (2007) by engaging with all stages of the project.	Short	Council (Strategic Planning)	The final document is consistent with the vision of the management plan.
17.	Prepare a fact sheet on the history of the Cardinia Western Port Green Wedge to emphasise the importance of its engineering feats, the importance of its agricultural pursuits as well as the environmental values of the landscape and the broader region.	Short	Council (Strategic Planning and Communications)	Fact sheet published and content available via Council's website.
18.	Promote business opportunities of the Bunyip Food Trail to local agribusiness via industry associations.	Ongoing	Council (Economic Development)	Establishment of the Bunyip Food Trail. Council is a member of a number of industry associations, such as the Australian Asparagus Council. Council will continue to promote the Bunyip Food Trail through the meetings held by the associations.

Action number	Action description	Timeframe	Responsible agency	Measure
Soils and land capability				
19.	Undertake soil type mapping of the land within and adjacent to the SUZ1.	Medium	Council (Strategic Planning)	Report completed and approved.
20.	Based on the findings of the soil mapping, review the extent of the SUZ1 and the schedules to the Green Wedge Zones. Undertake a planning scheme amendment to adjust the boundaries of the SUZ1 and amend the Schedules to the Green Wedge Zones. <i>*Dependant on Action 19</i>	Medium	Council and DELWP (approval) (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
21.	Continue to work with the WPCMA and DEDJTR to develop a sustainable planning and management framework for food production, agriculture and other uses on green wedge soils.	Ongoing	Council (Economic Development)	Collection of data from the Census every four years will quantify growth in agriculture.
Water				
22.	Continue to contribute to the preparation of the sub-regional integrated water management plan for the Western Port catchment in conjunction with the key authorities and agencies.	Short	DELWP, DEPI, Cardinia Shire Council, the City of Casey, Melbourne Water, South East Water, Southern Rural Water, CMA and Biosphere	Sub-regional integrated water management plan adopted by Council.
23.	Maintain and protect the horticultural assets of the green wedge by minimising the impact of flooding.	Ongoing	Council (Infrastructure Services)	Continue to apply for grants (when the opportunity arises) that assist in protecting the horticultural assets of the green wedge.
Groundwater				
24.	Continue to work with Southern Rural Water and South East Water to investigate and implement alternative water sources to reduce the depletion of groundwater.	Ongoing	Council (Economic Development)	Obtain data from water agencies that measure the volume of recycled water delivered to agricultural uses which will help Council to continue to advocate for alternative water sources.

Action number	Action description	Timeframe	Responsible agency	Measure
Agriculture				
25.	Advocate to the Victorian and Australian governments for funding to investigate ways to better use and deliver the underutilised recycled water resource in order to provide water security to one of Melbourne's' closest and best-placed growing regions of fresh horticultural produce.	Short to medium	Council (Economic Development)	Apply for water grants as they become available.
26.	Advocate to the Victorian Government for the inclusion of a statement of planning policy for the Cardinia Western Port Green Wedge in the State Planning Policy Framework, reflecting the vision for the green wedge and the primacy of agriculture in the area. A statement should also appear in the Metropolitan Planning Strategy and any other key planning publications.	Short	Council (advocacy) and DELWP (approval) (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning. Relevant Victorian Government policy to include a statement reflecting the vision for the green wedge and the primacy of agriculture in the area.
27.	Support farmers to stay on the land by facilitating information sessions, and educate farmers by addressing matters such as improving farm and land management; generating additional farm income through programs such as EcoTender; discussing alternative farming methods, succession planning and other relevant topics. <i>*Combine measure with Action 37</i>	Short	Council (Economic Development)	A minimum of three sessions over the timeframe. Additional sessions to be informed by community take up.
28.	Cardinia Shire Council to have a presence at the annual Farm World agricultural event as a way to engage with farmers.	Ongoing	Council (Economic Development)	Council presence at the annual Farm World agricultural event (March annually) whether it is an information booth, flyers or something similar.
29.	Support Agribusiness Gippsland in providing information in relation to improving farm and land management; discuss alternative farming methods, succession planning and other relevant topics.	Ongoing	Council (Economic Development)	Council to continue to provide funding. Accounted for in Council's budget.
30.	Embed the food security principles adopted by Council's Senior Leadership Team through the organisation's work plans.	Ongoing	Council	Food security principles within relevant work plans and appearing in relevant Council plans, policies and documents.
31.	Advocate for the connection of the Cardinia Township to the proposed Clyde Sewage Treatment Plant.	Medium	Council (Infrastructure Services)	Connection of the Cardinia Township to the proposed Clyde Sewage Treatment Plan if the site selected is within close proximity to the town.

Action number	Action description	Timeframe	Responsible agency	Measure
Climate change				
32.	Continue to support and upskill farmers in relation to climate change, its impacts and how to respond to climate change by providing information through Agribusiness Gippsland and its fortnightly newsletter.	Ongoing	Council (Economic Development)	Articles published in the Agribusiness Gippsland newsletter as required.
Urban development				
33.	Pursue the implementation of a UGB for those townships without a boundary as part of the development of a full township strategy.	Medium	Council (Strategic Planning)	Identify the need for a UGB within the relevant township strategies and prepare an appropriate action within the document.
34.	Continue to lobby the Victorian Government to ensure the implementation of a permanent UGB as part of the submission process to any relevant strategic documents.	Ongoing	Council (advocacy) and DELWP (approval) (Strategic Planning)	Submissions made to relevant strategic plans and policies prepared and released by the Victorian Government. Implementation of a permanent UGB.
35.	Address appropriate locations for places of worship and schools to locate in the green wedge as part of a local Green Wedge policy in the Cardinia Planning Scheme.	Short	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
Transport and infrastructure				
36.	Write to the Minister for Planning seeking support for the requirement of an EES when Council becomes aware that a future planning permit application will be made, or a planning permit application is lodged for infrastructure proposals that have the potential to significantly adversely affect the environment.	Ongoing	Council (Strategic Planning)	Applications required by the Minister for Planning to provide an EES.
37.	Continue to advocate for the development of an airport for Melbourne's southeast region to occur and to be undertaken in a way that has minimal negative impact on the green wedge.	Medium	Council (Strategic Planning and Economic Development)	Advocating through responses to Victorian Government policy when released.

Action number	Action description	Timeframe	Responsible agency	Measure
Extractive industry				
38.	Write to the Minister for Planning seeking support for the requirement of an EES when Council becomes aware that a future planning permit application will be made, or a planning permit application is lodged for extractive industry proposals that have the potential to significantly adversely affect the environment.	Ongoing	Council (Strategic Planning)	Applications required by the Minister for Planning to provide an EES.
Precinct 1: Soil-based agriculture and food production				
39.	Encourage lot consolidation over time in order to increase the economic agricultural viability of land by addressing matters with farmers such as improving farm and land management, discussing alternative farming methods and the production outcomes of consolidated land. <i>*Combine measure with Action 27</i>	Short	Council (Strategic Planning and Economic Development)	A minimum of three information sessions over the timeframe. Additional sessions to be informed by community take up.
40.	Continue to provide support to Landcare to develop farm efficiency programs which will improve farm productivity. This will include the use of bio-link corridors which will promote ecosystem services to farm properties.	Short	Council (Environment)	Ongoing support provided based on availability of operational budget.
41.	Address the future directions/preferred land uses within Precinct 1 as part of a local green wedge policy in the <i>Cardinia Planning Scheme</i> .	Short	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
42.	Advocate to Melbourne Water to undertake structural improvements to the levy banks to reduce the threat of inundation.	Short	Council (Infrastructure Services)	The structure of the levy banks improved to a standard that reduces the threat of inundation.

Action number	Action description	Timeframe	Responsible agency	Measure
Precinct 2: Coastal				
43.	Address the future directions/preferred land uses in Precinct 2 as part of a local green wedge policy in the <i>Cardinia Planning Scheme</i> .	Short	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
44.	Advocate to the Victorian Government for the Victorian to undertake the preparation of a strategic plan to assist in the management of the erosion of the Lang Lang Cliffs.	Short	Council (Environment)	Finalised strategic plan prepared by the Victorian Government to assist with the management of the erosion of the Lang Lang Cliffs.
Precinct 3: Railway				
45.	Prepare a township strategy for Nar Nar Goon.	Medium	Council (Strategic planning)	Approval of the planning scheme amendment by the Minister for Planning.
46.	Prepare a residential development strategy for Tynong.	Medium	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
47.	Undertake a review of the <i>Bunyip Township Strategy (2009)</i> .	Medium	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
48.	Undertake a review of the <i>Garfield Township Strategy (2002)</i> .	Medium	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
49.	Undertake a review of the <i>Koo Wee Rup Township Strategy (2015)</i> .	Medium	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
50.	Undertake a review of the <i>Lang Lang Township Strategy (2009)</i> .	Medium	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
51.	Monitor the take-up of land for horse training and related activities.	Ongoing	Council (Strategic Planning)	Monitor and measure capacity within the racecourse to cater for horse racing by reviewing the permits issued by Statutory

Action number	Action description	Timeframe	Responsible agency	Measure
			and Statutory Planning)	Planning.
52.	Address the future directions/preferred land uses within Precinct 3 in the <i>Cardinia Planning Scheme</i> .	Short	Council (Strategic Planning)	Approval of the planning scheme amendment by the Minister for Planning.
53.	Continue to provide support to Landcare to develop farm efficiency programs which will improve farm productivity. This will include the use of bio-link corridors which will promote ecosystem services to farm properties. <i>*repeat of Action 40</i>	Short	Council (Environment)	Ongoing support provided based on availability of operational budget.



10 The Cardinia Western Port Green Wedge Management Plan – Action Plan

The implementation plan will inform the management plan.

The management plan will be ***an internal working document*** prepared for each financial year.

The action plan will be closely monitored and will assist in the preparation of Council submissions as well as Council's capital works program.

11 Abbreviations and glossary

Abbreviations

BIM	Biodiversity Interactive Map	LPPF	Local Planning Policy Framework
CASS	Coastal Acid Sulfate Soils	MPA	Metropolitan Planning Authority
CHMP	Cultural Heritage Management Plan	MSS	Municipal Strategic Statement
DEDJTR	Department of Economic Development, Jobs, Transport and Resources	OAAV	Office of Aboriginal Affairs Victoria
DEPI	Department of Environment and Primary Industries	PBN	Principal Bicycle Network
DELWP	Department of Environment, Land, Water and Planning	PC PAN	Post Closure Pollution Abatement Notice
DPCD	Department of Planning and Community Development	PCRZ	Public Conservation and Resource Zone
DTPLI	Department of Transport Planning and Local Infrastructure	PPF	Planning Policy Framework
EES	Environmental Effects Statement	RCZ	Rural Conservation Zone
ESO	Environmental Significance Overlay	SEGW	South East Green Wedge
EVC	Ecological Vegetation Classes	SPPF	State Planning Policy Framework
EPA	Environment Protection Authority	SUZ1	Special Use Zone – Schedule 1 (Horticultural preservation)
ETP	Eastern Treatment Plant	UGB	Urban Growth Boundary
GWMP	Green Wedge Management Plan	VITM	Victorian Integrated Transport Model
GWZ	Green Wedge Zone	VPO	Vegetation Protection Overlay
HO	Heritage Overlay	VPP	Victorian Planning Provisions
IN2Z	Industrial 2 Zone	WSUD	Water Sensitive Urban Design
		WSPA	Water Supply Protection Area

Glossary

Agribusiness

Agribusiness is the business of agricultural production, including agrichemicals, breeding, crop production, farming, distribution, farm machinery, processing, and seed supply, plus marketing and retail sales.

(Source:

<https://en.wikipedia.org/wiki/Agribusiness>

Agriculture

Land used to:

- a) propagate, cultivate or harvest plants, including cereals, flowers, fruits, seeds, trees, turf and vegetables
- b) keep, breed, board or train animals, including livestock and birds
- c) propagate, cultivate, rear or harvest living resources of the sea or inland waters.

(Source: Clause 74 – Land Use Terms, Cardinia Planning Scheme)

Agricultural production

Any form of primary production of renewable commodities. It does not include stone extraction, mineral extraction or timber production from native forest.

(Source: Clause 72 – Definitions, Cardinia Planning Scheme).

Biodiversity

Biodiversity is the variety of all life forms, the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part

(Source: <http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity>).

Botanical

Areas that have high diversity of plant species or concentrations of endangered plants species.

Cash crop

A crop that is produced to sell for a profit, rather than for use by the grower for purposes such as livestock feed or consumption.

Climate change

A long-term change in the earth's climate linked to an increase in the level of atmospheric carbon dioxide.

Coastal acid sulphate soils

Soils that contain metal sulphides. If disturbed, oxidation can occur which produces potentially harmful sulphuric acid.

Cultural heritage

The legacy of a group or society inherited from past generations which are maintained for the benefit of the present and future generations; either tangible or intangible.

Ecosystem services

Ecosystem services are grouped into four broad categories: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

Eco tourism

Travel to natural areas to assist with conservation efforts with the aim of educating and raising awareness and understanding of the environment.

Environmental effects statement

In Victoria, assessment of the potential environmental impacts or effects of a proposed development may be required under the *Environment Effects Act 1978*. The process under the Act is not an approval process, rather it enables statutory decision-makers to determine whether a project with potentially significant environmental effects should proceed.

(Source:

<http://www.dtp.vic.gov.au/planning/environment-al-assessment/what-is-the-ees-process-in-victoria>).

Fish kills

Fish kills can result from low concentrations of oxygen in the water which can occur from algae blooms, droughts and high temperatures. Fish kills can also occur from pollution from agricultural runoff.

Food-based tourism

A form of product-based tourism which involves the pursuit of unique and memorable eating and drinking experiences.

Food security

The ability to have reliable access to safe, nutritious and affordable food to meet the dietary needs to live a healthy life.

Green wedge

The non-urban areas of metropolitan Melbourne that lie outside the Urban Growth Boundary, as described in a metropolitan fringe local government planning scheme. The green wedge areas were originally set aside in the 1970s to conserve rural activities and significant natural features from Melbourne's outward growth.

(Source:

<http://www.dtpli.vic.gov.au/planning/plans-and-policies/green-wedges>).

Geology

The study of solid earth and the rocks of which it is composed.

Geomorphology

An earth science of the evolution and configuration of landforms.

Groundwater

All subsurface water, generally occupying the pores and crevices of rock and soil.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

High quality productive agricultural land

Land which is used for animal husbandry or crop raising, and is capable of continuing to sustain agricultural production and:

- a) is of prime, or very good, agricultural quality, having regard to soil type, growing season, and availability of infrastructure, and is of sufficient extent to support agricultural activities on an economically viable scale; or

- b) has been identified through a regional, sub-regional, or local study as being of particularly good quality and strategic significance for agriculture in the regional or local context.

(Source: Clause 72 – Definitions, Cardinia Planning Scheme).

Hobby farm

A small farm that is maintained without expectation of being a primary source of income.

Horticulture

Land used to propagate, cultivate, or harvest flowers, fruit, vegetables, vines, or the like.

(Source: Clause 72 – Definitions, Cardinia Planning Scheme).

Integrated water management

A strategy that coordinates all facets of the water cycle – water supply, sewage management, water treatment and storm water management.

Intensive agriculture

Agriculture where a large amount of labour and capital are used in relation to the land area. Often, lots of inputs such as machinery, fertiliser and chemicals are used.

Land capability

The ability for land to sustain a range of land uses in the long term without degradation to soil, land, air and water resources.

Land versatility

The capacity of the land to sustain multiple agricultural uses. This can refer to land which is considered biophysically suitable for

agriculture production. Land designated as high value, or biophysically suitable, has the benefit of requiring fewer inputs such as water and nutrients.

Local Planning Policy Framework

A section of municipalities' planning scheme which contains the Municipal Strategic Statement (MSS) and the Local Planning Policies used to implement the objectives and strategies of the MSS. This section of the planning scheme is unique for each municipality.

(Source: Clause 20 – Operation of the Local Planning Policy Framework, Cardinia Planning Scheme).

Victorian Planning Authority

An independent statutory body with a broad facilitative role to help create greater certainty, faster decisions and better coordination for all parties involved in planning and development of strategically important areas throughout Melbourne's inner and outer suburbs as well as regional centres. The VPA will assist the implementation of the initiatives articulated in the long-term planning blueprint for Melbourne, *Plan Melbourne 2017-2050*.

(Source: <http://www.vpa.vic.gov.au/about/>)

Native vegetation

Plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses (Source: Clause 72 – Definitions, Cardinia Planning Scheme).

Non soil-based agriculture

Agricultural activities that do not involve the ground soil, such as food production using greenhouses or hydroponics.

Overlays

Land covered by an overlay has been identified as having a unique feature or requiring special attention in the planning process. Overlays which form part of planning schemes include the Heritage Overlay, Land Subject to Inundation Overlay, and the Environmental Significance Overlay. Not all land is required to have an overlay applied.

(Source: User Guide, Cardinia Planning Scheme).

Potable water

Water that is suitable for drinking.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Plan Melbourne

A strategic planning document released in 2014 which outlines a vision for Melbourne's growth to the year 2050.

Planning scheme

A statutory document which sets out objectives, policies and provisions for the use, development and protection of land in the area to which it applies.

(Source: User Guide, Cardinia Planning Scheme).

Planning scheme amendment

An amendment to the planning scheme involves changing the contents of the scheme, such as rezoning land or editing the written component of the document. This process requires approval from the Minister

for Planning at a Victorian Government level
(Source: User Guide, Cardinia Planning Scheme).

Post-contact heritage

Non-Indigenous heritage.

Ramsar Convention

An intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Ramsar wetlands

Wetlands listed as internationally significant under the Convention on Wetlands held in Ramsar, Iran in 1971.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Recycled water

Water derived from sewerage systems or industry processes that is treated to a standard appropriate for its intended use.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Riparian land

The area that is the interface between land and a river or a stream.

Salinity

The total amount of water-soluble salts present in soil or a stream.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016)).

Sea level rise

Sea level rise is occurring as a result of global warming and is caused by two processes: thermal expansion (ocean water expanding as it heats up) and additional water flows into the oceans from ice that melts on land.

Shelter belt

A row of trees planted to protect an area from the wind.

(Source: www.collinsdictionary.com)

State Planning Policy Framework

The purpose of the State Planning Policy Framework is to inform planning authorities and responsible authorities of the aspects of state planning which may need to be taken into account when planning and administering their area. The State Planning Policy Framework is dynamic and is built upon as the government develops and refines policy.

(Source: Clause 10 – Operation of the State Planning Policy Framework, Cardinia Planning Scheme).

Soil-based agriculture

Agricultural activities that utilise and rely on the natural ground soil, such as asparagus and leek production.

Sustainability

Meeting the needs of the present population without compromising the future population's ability to meet their needs.

Sustainable agriculture

The use of farming practices and systems which maintain or enhance:

- a) the economic viability of agricultural production
- b) the natural resource base
- c) other ecosystems which are influenced by agricultural activities.

(Source: Clause 72 – Definitions, Cardinia Planning Scheme).

Sustainable land management

Practices and technologies that aim to integrate the management of land, water, biodiversity, and other environmental resources to meet human needs while ensuring the long-term sustainability of ecosystem services and livelihoods.

Threatened species

Any species considered to be threatened with extinction throughout all or a significant portion of its range. These species include species listed on the *Environment Protection and Biodiversity Conservation Act 1999* (cth), *Flora and Fauna Guarantee Act 1988* (vic) and the threatened species advisory lists maintained by the Department of Environment Land Water and Planning.

Urban Growth Boundary

The Urban Growth Boundary (UGB) indicates the long-term limits of urban development and where non-urban values and land uses should prevail in metropolitan Melbourne.

Victorian Planning Provisions (VPP)

The VPP is a document containing a comprehensive set of planning provisions for Victoria. It is not a planning scheme and does not apply to any land. It is a statewide reference used as required to construct a planning scheme. It is a statutory device to ensure that consistent provisions for various matters are maintained across Victoria and that the construction and layout of planning schemes is always the same.

(Source: *Using Victoria's Planning System*, DELWP (2015)).

Visitor

A person who is visiting someone, somewhere, for leisure, recreational and / or social purposes. The visitor is generally partaking in a local experience.

Waterways

Rivers and streams, their associated estuaries and floodplains (including floodplain wetlands) and non-riverine wetlands.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Waterway health

Waterway condition (or waterway health) is an umbrella term for the overall state of key features and processes that underpin functioning waterway ecosystems (such as species and communities, habitat, connectivity, water quality, riparian vegetation, physical form, and ecosystem processes such as nutrient cycling and carbon storage).

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Water licence

Authorises the use of water on land for irrigation.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Water security

Is the capacity of a population to access adequate quantities of acceptable quality water to sustain life, socio-economic development and human wellbeing.

(Source: *Water for Victoria Discussion Paper*, DELWP (2016))

Water sensitive urban design

A land planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve recreational appeal.

Zones

Zones are applied to land to outline the types of use and development permitted on the land.

(Source: User Guide, Cardinia Planning Scheme).

Zoological

Areas that have high diversity of animal species or concentrations of endangered animal species.

12 Appendices

Appendix A: Supporting documents

The following documents have assisted in the preparing the *Cardinia Western Port Green Wedge Management Plan*. Any review of these documents or new policies should be consistent with the vision of the *Cardinia Western Port Green Wedge Management Plan*.

A Land Capability Study of the Cardinia Shire, McMillan, MJ et al for Department of Natural Resource and Environment (1997).

Assessment of Climate Change Impacts on Agricultural Production in the Western Port Green Wedge, Department of Primary Industries (2012).

Biodiversity Conservation Strategy for Melbourne's Growth Corridors, Department of Environment and Primary Industries (2013).

Biolinks Project Action Plan: Linking Habitats across the Western Port, Cardinia Environment Coalition (2008).

Bunyip Food Belt: Land Capability and Environment and Cultural Heritage Assessment, RM Consulting Group and Parsons Brinkerhoff (2010).

Bunyip Food Belt Project: Pre-Feasibility Phase – Ancillary Impacts Analysis, Access Economics Pty Ltd (2010).

Bunyip Township Strategy, Cardinia Shire Council (2009).

Casey Cardinia Links to our Past, <http://caseycardinialinkstooourpast.blogspot.com.au/search/label/Floods> (retrieved May 2016)

Cardinia Shire Council Reconciliation Action Plan, Cardinia Shire Council (2015–19).

Cardinia Local Heritage Study Review, Vol 2, Context (2012).

Cardinia Shire (Emerald and Cranbourne Districts) Heritage Study, Graeme Butler and Associates (1998).

Cardinia Shire (North) Heritage Study, Graeme Butler and Associates (1996).

Cardinia Shire Tourism Strategy, Cardinia Shire Council (2013).

Casey and Cardinia Regional Agricultural Audit and Action Framework, Casey Shire Council and Cardinia Shire Council (2004).

Catchment Condition Report, Victorian Catchment Management Council (2007).

Coastal Spaces Recommendations Report, Department of Sustainability and Environment (2006).

Equestrian Strategy, Cardinia Shire Council (2015).

Flood Management Strategy Port Phillip and Westernport Region, Melbourne Water (2015).

Garfield Township Strategy, Cardinia Shire Council (2002).

Green Wedge Research Report, Municipal Association of Victoria, (November 2006).

Guidelines for Development in the Koo Wee Rup Flood Protection District, Melbourne Water (2003).

Healthy Eating – Food Security Investment Plan 2005–09, Vic Health (2005).

Healthy Waterways Strategy 2013–18, Melbourne Water (2013).

Integrated Water Management Plan, Cardinia Shire Council (2015).

Koo Wee Rup Township Strategy, Cardinia Shire Council (2013).

Koo Wee Rup Water Supply Protection Area Groundwater Management Plan, Southern Rural Water (2010).

Landscape Assessment Guidelines for Cultural Heritage Significance, Heritage Victoria (2009).

Lang Lang Township Strategy, Cardinia Shire Council (2009).

Landscape Plan for the Prom Plain Landscape Zone in the Gippsland Plain Bioregion, Department of Sustainability and Environment (2003).

Leongatha Rail Line Strategic Rail Corridor Plan, CPG for VicTrack (2009).

Linking Shire Flora Surveys, Cardinia Shire Council (2007).

Management Plan for Lang Lang Clay Banks Stabilisation, Cardinia Shire Council (2010).

Melbourne Supply Area – Extractive Industry Interest Areas Review, Department of Primary Industries (2003).

National Ports Strategy, Infrastructure Australia (2010).

Native Vegetation Plan, Port Phillip and Westernport Catchment Management Authority (2006).

Port of Hastings Land Use and Transport Strategy, Port of Hastings Corporation (2009).

Port Phillip and Western Port Regional Catchment Strategy 2005–09, Port Phillip and Westernport Catchment Management Authority (2004).

Review of the 2003 Cardinia Pedestrian and Bicycle Strategy, Stratcorp Consulting (2007).

Regional Sand Extraction Strategy Lang Lang to Granville, Adopted by the Working

Group established by the former Westernport Regional Planning and Co-ordination Committee, endorsed by the Minister for Agriculture and Resources, endorsed by the Minister for Planning and Local Government, Department of Infrastructure (2006).

Salinity Project 2004–05: Planning Decision Support Framework for Salinity, Sinclair Knight Merz (2005).

Southern Brown Bandicoot Strategic Management Plan for the Former Koo Wee Rup Swamp Area, Ecology Australia (2008).

Stormwater Strategy 2013–18, Melbourne Water (2013).

Sub-regional Species Strategy for the Southern Brown Bandicoot, Department of Environment and Primary Industries (2014).

Sub-regional Species Strategy for the Growling Grass Frog, Department of Environment and Primary Industries (2013).

Sustainable Development and Greenhouse Reduction Strategy, Cardinia Shire Council (2009).

The Melbourne South East Growth Corridor Plan, Growth Area Authority (2011).

The Western Port Sediment Study, Wallbrink, PJ et al for CSIRO (2003).

Victorian Coastal Acid Sulphate Soils Strategy, Department of Sustainability and Environment (2009).

Victorian Coastal Strategy, Victorian Coastal Council (2014).

Western Port Biosphere Reserve Biodiversity Plan, Western Port Biosphere (2016).

Western Port Coastal Hazard Assessment, South East Councils Climate Change Alliance (2015).

Appendix B: Contact details

Throughout the document a number of agencies and groups are referenced that have differing roles in the management of the green wedge. A list of these agencies and groups and their contact details have been compiled below.

Biosphere Foundation

Since 2003, the non-profit Mornington Peninsula and Western Port Biosphere Reserve Foundation has worked with the community and UNESCO to create a sustainable future for Western Port – environmentally, socially and economically.
Phone – 03 5979 2167
Email – admin@biosphere.org.au
Website – www.biosphere.org.au

Cardinia Environment Coalition (CEC)

The CEC is an umbrella organisation that links people with environmental interests in the Cardinia Shire.
Phone – 03 5941 8446
Website – www.cecinc.net.au

Heritage Council of Victoria

The Heritage Council of Victoria recognises, protects and celebrates Victoria's cultural heritage.
Phone – 03 9938 6894
Email – heritage.council@delwp.vic.gov.au
Website – www.heritagecouncil.vic.gov.au

Melbourne Water

Melbourne Water supplies drinking and recycled water and manages Melbourne's water supply catchments, sewage treatment and rivers, creeks and major drainage systems.
Phone – 131 772
Website – www.melbournewater.com.au

Port of Hastings Development Corporation

The Port of Hastings Development Authority is working with the Government to assist it in implementing its Ports policy.
Phone – 1300 149 478
Email – enquiries@portofhastings.com
Website – www.portofhastings.com

Port Phillip and Westernport Catchment Management Authority (PPWCMA)

Established in 2002 as the peak natural resource management body in the Port Philip and Western Port region to develop and oversee that implementation of the Regional Catchment Strategy.
Phone – 03 8781 7900
Email – enquiries@ppwcma.vic.gov.au
Website – www.ppwcma.vic.gov.au

Ramsar Convention

The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Email – ramsar@ramsar.org
Website – www.ramsar.org

South East Councils Climate Change Alliance (SECCCA)

The SECCCA is a collaboration of eight councils in Victoria's southeast making a regional response to climate change.
Phone – 03 9762 7042
Email – enquiries@seccca.org.au
Website – www.seccca.org.au

South East Water

South East Water's role is to bring water to you and adapt it to meet your needs. That means providing a reliable supply of quality water for home and business.
Phone – 131 694
Email – propinfo@sew.com.au
Website – www.southeastwater.com.au

Southern Rural Water

Southern Rural Water is the manager of rural water for southern Victoria. We aim to manage rural water sustainably for the benefit of our communities.
Phone – 03 5139 3100
Email – srw@srw.com.au
Website – www.srw.com.au

The Westernport Catchment Landcare Network (WPCLN)

The WPCLN is a community based not for profit organisation that aims to preserve protect and enhance the Western Port Catchment by working with Landcare groups, individual landholders, government agencies and local businesses to achieve improved environmental and sustainable agricultural outcomes.
Phone – 03 5941 8446
Email – Kathleen@wpcln.org.au
Website – www.wpcln.org.au

Victorian Catchment Management Council (VCMC)

The VCMC is the State Government's key advisory body on catchment management.

Phone – 03 9637 9892

Email – tracey.koper@delwp.vic.gov.au

Website – www.vcmc.vic.gov.au

Victorian Environmental Assessment Council

The role of the Victorian Environmental Assessment Council is to conduct investigations that are requested by the Victorian Government relating to the protection and ecologically sustainable management of the environment and natural resources of public land.

Phone – 03 9637 9902

Email – veac@delwp.vic.gov.au

Website – www.veac.vic.gov.au

Western Port Seagrass Partnership

The Western Port Seagrass Partnership is a not for profit independent and legally constituted organisation that actively promotes the protection and restoration of the ecosystems of Western Port and its iconic seagrass communities.

Phone – Secretary, Doug Newton

0437 982 029

Chairman, Ian Stevenson

0409 520 182

E-mail - info@seagrass.com.au

Website - <http://www.seagrass.com.au>



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Web: cardinia.vic.gov.au

National Relay Service (NRS)
TTY: 133 677 (ask for 1300 787 624)
Speak and Listen (speech-to-speech relay):
1300 555 727 (ask for 1300 787 624)

Translator Interpretation Service
131 450 (ask for 1300 787 624)

