

Appendix A

WERRIBEE RIVER DESKTOP REPORT

WERRIBEE RIVER BIOLINK ACTION PLAN

Desktop Report



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Limitations Statement

The sole purpose of this report and the associated services performed by Kellogg Brown & Root Pty Ltd (KBR) is to provide a desktop report for the Werribee River Biolink project in accordance with the scope of services set out in the contract between KBR and Lead West ('the Client'). That scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client.

KBR derived the data in this report primarily from database information, Technical Support Group members including LeadWest, Alan Thatcher, Melbourne Water and local governments of Moorabool, Melton and Wyndham. The passage of time, manifestation of latent conditions or impacts of future events may require further exploration at the site and subsequent data analysis, and re-evaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, KBR has relied upon and presumed accurate certain information (or absence thereof) relative to the Werribee Biolink area provided by government officials and authorities, the Client and others identified herein. Except as otherwise stated in the report, KBR has not attempted to verify the accuracy or completeness of any such information.

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Summary

In response to the recommendations of the Werribee Plains Regional Environmental Sustainability Framework, LeadWest is managing a project to provide a long-term plan for the Werribee River as a regional biolink. The Werribee River Biolink Action Plan (BAP) will identify key environmental assets in a predominately modified and fragmented ecosystem and a priority works program will be developed to protect and buffer these assets and restore links along the Werribee River to improve connectivity, ecosystem processes and resilience. The project will also seek to understand the directions for future land use and development along the river corridor and discuss how strategic land use planning can support the role of the biolink.

The BAP is being developed in close consultation with a technical support group consisting of LeadWest, representatives from relevant local governments of Moorabool, Melton and Wyndham, and Melbourne Water.

This preliminary document is a desktop report providing a background summary to the project, a definition of the Werribee River biolink, a collation of current biodiversity assets and environmental programs, and an overview of local and regional planning. Information compiled in this report has been provided by:

- LeadWest (Craig Rowley) and Alan Thatcher
- Moorabool, Melton and Wyndham local governments
- Melbourne Water
- Landcare and environment groups.
- Growth Area Authority
- Department of Sustainability and Environment (DSE)

The final BAP will provide a list of prioritised actions as a culmination of all consultation activities, input from key stakeholders, outputs from workshops, data collation, definition of biolinks, investigation, ecological analysis priority works programs and planning tools.

1 Introduction

1.1 PROJECT BACKGROUND

Kellogg Brown & Root Pty Ltd (KBR) was commissioned by LeadWest to develop a biolink action plan (BAP).

The need to restore ecological connectivity is now recognised as a fundamental principle in land use planning and land management around the world (IUCN 1980; Bennet 2003). A ‘biolink’ is a term that refers to linkages between existing remnant habitats or potential linking habitats that will result in benefits to people, economies and the environment. LeadWest is embarking on a long-term plan to create a regional biolink for the Werribee River and associated environments.

The project was initiated as a result of the Werribee Plains Regional Environmental Sustainability Framework (ACF 2010), and a report on biodiversity prepared for the framework entitled Werribee Plains Biodiversity Connectivity: Resilience of natural assets and systems to climate change and fragmentation by urbanisation (ACF 2010). This latter document outlined a strategic approach to planning for biodiversity connectivity in the Werribee Plains. Recommendations are focused on connecting the landscape for both flora and fauna and ecological communities to build resilience into the future.

At a national level biodiversity conservation is focused on maintaining and re-establishing the function of ecosystems on a broader landscape level through reconnecting fragmented landscapes and aquatic systems (DSEWPC 2010). This is supported by Victorian government policy with a focus on biolinks to build ecosystem resilience in the Victorian Biodiversity strategy 2010–2015 (DSE 2010). The strategy identifies the Western Volcanic Plains as a flagship area and the need use regional-scale biolinks to re-establish connectivity within the region and with the Goldfields to the north (DSE 2010).

A biodiversity action plan was developed for the Werribee landscape by the Department of Sustainability and Environment (DSE 2003). It sets out guiding principles for biodiversity action that include goals at a landscape scale to protect, enhance and restore biodiversity values with a particular emphasis on riverine corridors especially the Werribee River.

These key documents, along with Victorian government policy, Melbourne Water and Port Phillip and Westernport Catchment Management Authority (PPWCMA) strategies and an active community drive to protect and enhance biodiversity assets along the river has led to the development of the Werribee River BAP.

There is already some form of a natural biolink present in the Werribee River catchment, where flora and fauna move through the landscape. The BAP seeks to support these natural ecosystem processes that would have been occurring at a higher level prior to degradation of the ecological communities. The BAP will aim to formalise, strengthen and coordinate human actions in aiding natural processes and protecting biodiversity assets.

The BAP is an important step in identifying existing and potential biolinks associated with the Werribee River and promoting on-ground works and strategic planning to turn the idea of a biolink into reality.

The Werribee River is the major waterway in the west of Melbourne and a focus of agriculture, urban development and conservation. Establishing a regional biolink for the Werribee River is an appropriate mechanism to assist in protecting and enhancing natural environmental values for the river and associated environments that will further deteriorate through fragmentation caused by the pressures of land use, especially urbanisation.

The Werribee River, associated ecology and landscapes provide a significant environmental feature but are highly modified. These natural assets need to be recognised, protected and enhanced in planning future development in the region to preserve and build upon existing biodiversity reserves along the Werribee River.

There is increasing recognition of the importance of regional biolinks to:

- reverse the trend for increasing fragmentation of the natural environment with the subsequent loss of biodiversity
- increase the resilience to climate change through enabling large scale and long-term ecological processes by movement of fauna and flora through connected regional corridor linkage.

Assisting in the development of the Werribee River BAP is a core stakeholder group, the Technical Support Group that consists of LeadWest, local governments (Moorabool, Melton and Wyndham) and Melbourne Water. This group meets regularly during the project to contribute to information gathering, to develop the BAP together and ensure the document is relevant and practical.

A complementary review on background information relevant to the Werribee River biolink is outlined in Appendix A.

Biolinks and existing projects

The project will complement the work already being done in the Werribee catchment including local biolinks and projects such as Pentland Hill Landcare Group Biolink, Toolern Vale corridor, Parwan Gorge Biolink, Brisbane Range biolink and the Werribee Gorge–Pinkerton Landcare Group. As well as major projects such as Melbourne Water stream frontage management works program, Port Phillip and Westernport CMA, Landcare and environment groups, and local council projects.

1.2 OBJECTIVES

The first stage of the project is this desktop report that defines the Werribee River biolink, and collates information from the Technical Support Group, stakeholders and ecological analysis on key biodiversity assets and previous and existing projects focused on and associated with the river.

The second stage of the project will be the production of a second document, the Werribee River BAP that will provide a list of prioritised actions, including recommending priority on-ground projects and consideration of tools to encourage appropriate land management practices and longer term strategic land use planning to produce a long-term vision for the Werribee River biolink.

1.2.1 Desktop report objectives

This desktop report defines the biolink and collates existing information on biodiversity assets, existing environmental programs and policy, zoning and overlays that currently exist in the respective municipal planning schemes.

The purpose of the Werribee River biolink desktop report is to:

- review biolink and connectivity projects, designs and concepts in literature to establish and develop an appropriate criteria and definition for the Werribee River biolink
- collate biodiversity asset information from Australian government and Victorian government databases and locally from the technical working group namely the three participating local governments (Moorabool, Melton and Wyndham), and from Landcare and environmental groups
- identify important core areas of the biolink such as large remnant native vegetation patches and waterways that provide habitat for flora and fauna and provision of ecosystem services
- collate strategic and statutory planning from a local and regional level to review current planning schemes
- map existing programs and projects and biodiversity assets outlined by respective local governments and other project participants
- outline method of gap analysis determining the action plan and future management incorporating on-ground works and potential actions for improved land management and strategic land use planning.

1.3 LITERATURE REVIEW

The idea of a 'biolink zone' was developed as a land use tool aimed to maintain and enhance biodiversity values and the long term resilience of ecological communities. Initially biolinks were targeted at fauna, where the key objective was to identify parts of the landscape to improve connectivity for fauna species to adapt and move through (Bennett *et al.* 1992, Brereton *et al.* 1995). These wildlife corridors help species move across the landscape rather than being restricted to small isolated patches.

The role of biolinks has more recently been expanded to benefit not just flora and fauna species, but also ecological communities. The objective of biolinks aims to improve fauna and flora movement and re-colonisation of patches as well as regeneration and restoration of ecological function of the broader community (Mansergh *et al.* 2008).

In agricultural dominated landscapes such as the Werribee catchment, the development of a biolink aims to restore habitat connectivity by improving the interaction and flow between remaining ecological communities (Mansergh *et al.* 2008).

The Werribee River biolink will incorporate an ecosystem based approach where the holistic protection and restoration of ecological communities is the core focus whilst in consideration of the habitat and connectivity requirements of specific flora and fauna. The biolink will contain a range of elements from public and private land, riparian areas, areas of remnant vegetation and multiple land uses.

The development of the Werribee River biolink aligns with the direction of Victorian government policy outlined in the biodiversity white paper (DSE 2010), where defined biolink zones are outlined as a key strategy for land use change to increase the resilience of biodiversity in adapting to future climates in Victoria.

A complementary and extensive literature review covering previous and existing projects, relevant management plans and related biolink projects has been undertaken and is attached as key background document to this project (Appendix A).

1.4 BIOLINK DEFINITION

A critical aspect of defining the biolink has been to work closely with the Technical Support Group and other key stakeholders. A shared understanding and agreement of the definition of the biolink was created from discussions within the Technical Support Group. The working definition of a biolink is an adaptive process fundamental to the scope and design of this project to better protect existing and future biolink assets. The final definition of the Werribee Biolink will be formed at the final action plan stage once the stakeholder engagement process has been undertaken and the final biolink design has been agreed upon.

The Werribee River Biolink Action Plan will identify key biodiversity assets in predominately modified and fragmented ecosystems. Recommendation of a priority works program will be advanced in order to assist the protection and buffering of these assets and facilitate restoration of links along the Werribee River to improve connectivity, ecosystem processes and resilience.

Werribee River biolink will help restore natural connections between diverse interlinked habitats where relevant, including water flows, water quality protection, stepping stones of vegetation (terrestrial, riparian and floodplain) and drought refuge areas.

The biolink will contain a range of elements from public and private land, riparian areas, areas of remnant vegetation and multiple land uses. Figure 1.1 shows the diversity of biolink elements which vary in size, shape and what ecological function they perform. Incorporating multiple elements into the biolink design will improve connectivity and function at a local and regional scale.

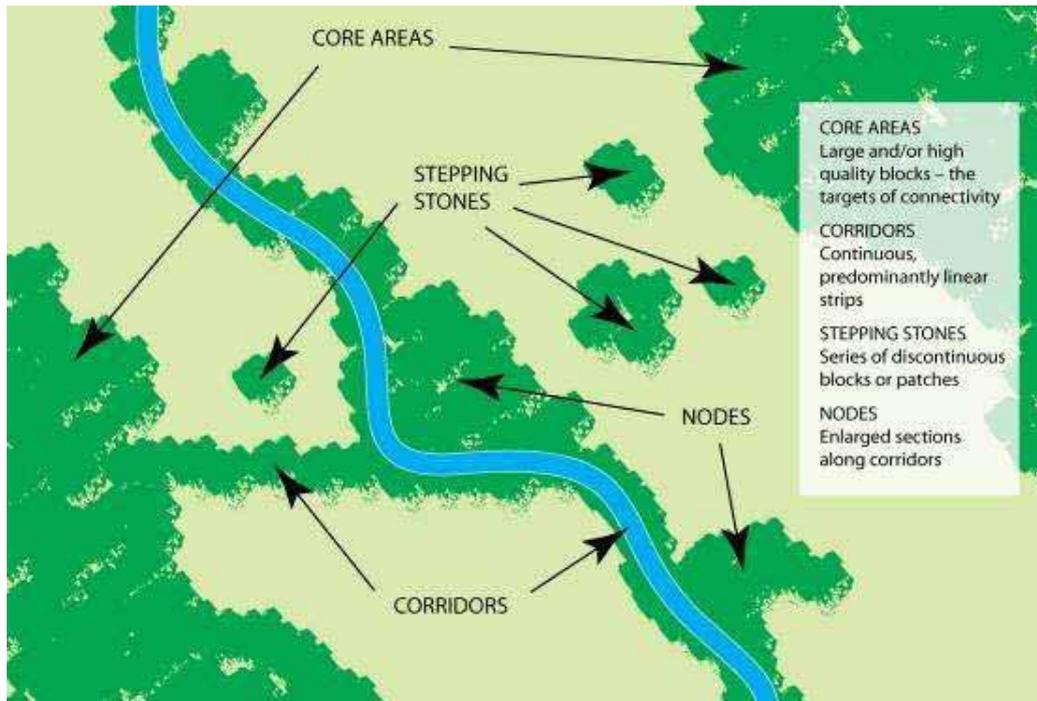


Figure 1.1
DIFFERENT BIOLINK ELEMENTS (Source: Cardinia Environment Coalition 2008)

The role of the Werribee Biolink is to potentially protect and enhance biodiversity assets.

The biolink provides the following functions:

- maintaining core species habitat
- gene flow
- drought refuge
- protecting water quality
- wildlife habitat and movement
- preventing isolation of endangered flora and fauna communities
- buffer zone for development.

These functions result in reversing the trend to fragmentation and increasing the resilience to climate change.

2 Methods

2.1 DEVELOPMENT OF BIOLINK ACTION PLAN

2.2 DATA COLLATION

A database review was conducted to establish the presence of threatened species and vegetation communities listed under the EPBC Act (1999) and the FFG Act (1988) for the Werribee River catchment. The aim of the review was to determine biodiversity assets in the catchment map them and develop the Werribee Biolink extent. The databases included the following information:

- DSE Ecological Vegetation Class (EVC) mapping and benchmarks
- Department of Sustainability, Environment, Water, Populations, Communities (DSEWPC), EPBC Act online protected matters database search (DSEWPC 2010)
- DSE Victorian Biodiversity Atlas (VBA) on-line database search (DSE 2011)
- DSE Biological Significant Sites (Biosites) Maps and Reports (DSE 2008).

This data was included in maps provided to participating local governments which were then required to map biodiversity assets relevant to the Werribee River within their respective municipal boundaries and relevant to the Werribee River. Criteria were set out to guide in the identification and description of the biodiversity assets and threats to those assets. The participating local governments, Melbourne Water, and Landcare groups also provided information on previous projects and current and planned biodiversity works programs.

KBR collated this data into overall maps illustrating:

- Current biolink and remnant vegetation communities on private land
- major infrastructure current and planned, and growth area boundaries
- catchment wide biodiversity assets
- biodiversity works programs to date and planned works
- index of stream condition, barriers and threats to the Werribee River and tributaries, and Melbourne Water works programs
- planning zones, overlays.

2.3 BIOLINK MAP

These elements were then combined and the extent of a draft biolink was mapped using data collected by KBR and information provided stakeholders. The initial draft biolink is a starting point where the core assets are mapped. Identifying assets on private land and key gaps in the landscape away from public assets requires consultation with stakeholders.

Through discussion with the Technical Support Group and further gap analysis the final biolink map will be created by bringing together biodiversity database information, biodiversity asset data from the participating local governments, previous, existing and future projects and planning information.

2.4 STAKEHOLDER ENGAGEMENT

The main aspects of stakeholder engagement in the development of the Werribee River biolink are outlined below.

2.4.1 Technical support group

The Technical Support Group consists of LeadWest, participating local governments (Moorabool, Melton and Wyndham) and Melbourne Water. The role of the Technical Support Group is to participate in meetings and workshops in the process of defining the scope of a biolink, the extent of the biolink and discussing draft documents. The Technical Support Group will also assist in data gathering on biodiversity works, future projects, biodiversity assets, planning and finally in prioritising actions.

2.4.2 Site visit

The site visit was an opportunity for LeadWest and KBR to gain an appreciation of the Werribee catchment landscape, meet with officers of participating local governments and landcare and environment groups. Information about past projects and future plans as well as discussions with landcare, environment, and 'friends of' groups proved valuable to gain an insight on the ground of works achieved and the issues faced in achieving these outcomes.

2.4.3 Workshops

There are to be two stakeholder workshops, one at the desktop report stage, the other once the action plan has been drafted. This is where relevant community groups and interested parties are invited to attend and contribute to discussion and aid in the development of the BAP.

2.5 GAP ANALYSIS

Once the biodiversity assets and biodiversity works have been selected and mapped, a GIS based and ecological analysis will be used to identify potential corridors, buffers and areas to form part of the priority action plan. These areas in private land will be discussed with the Technical Working Group and stakeholders prior to inclusion in the biolink.

2.6 ACTION PLAN

The Werribee River Biolink Action Plan is a separate report that follows on from the desktop report. It will identify key environmental assets and threats to those assets in a predominantly modified and fragmented landscape. Recommendation of a priority management program will then be developed to assist protect, enhance and restore these assets along the Werribee River to increase connectivity, ecological function and long term resilience.

To achieve these goals the Werribee River biolink project will be approached over four phases:

- Identify biodiversity assets
- Identify the role of the Werribee River corridor in potentially protecting and enhancing those assets
- Identify threats to environmental assets
- Identify management priorities and recommend a priority works program.

The development of the action plan is the final document that will outline management options to work towards achieving the vision of the Werribee Biolink. Each management option will be prioritised based on:

- establishing the importance of the biodiversity asset being targeted and the purpose of works for the biolink
- identifying threats and challenges to management of the assets
- ensuring the relevance of the asset to fit within the overall Werribee Biolink framework (e.g. core area, node, corridors, stepping stones)
- establish the capacity and likelihood of agencies, local governments, landcare and environment groups or public and private land managers to undertake works on the identified assets
- recommending projects for on-ground works to address the priority assets.

The action plan will also explore suitable planning mechanisms for strategic land use planning for the BAP.

3 Existing conditions

3.1 CONDITION OF BIODIVERSITY IN THE WERRIBEE CATCHMENT

3.1.1 Catchment

The overall ecological condition of the Werribee catchment has been highly modified and degraded. The vast majority of the landscape has been altered from its original condition. Clearance of natural vegetation for agricultural purposes and more recently for urban development has led to fragmentation and a decline in the quality of remnant vegetation. Landscapes have been cleared to leave little trace of original ecological communities.

Fauna persist in remnant habitat patches vulnerable to disturbance such as the pressures of urbanisation. The rare endangered and threatened species rely on a fragmented network of remnant riparian, grassland, woodland and forest vegetation.

Waterways and escarpments are often heavily weed infested. Melbourne Water has primary responsibility under the *Water Act* (1989) to manage bed and bank while it is a combination of Melbourne Water, local government authority and private landholders that manage riparian areas. Escarpments which are steep rocky and hard sites are often privately owned and outside their area of responsibility. On the remaining private land Department of Primary Industries (DPI) has ongoing programs to control declared weed species such as serrated tussock, but have few programs to combat regionally controlled weeds on private land. The responsibility is undertaken by private landholders and local government authorities through rebate schemes.

3.1.2 Key fauna

The habitat requirements of all fauna species and communities need to be considered in the Werribee River BAP. The Werribee River biolink aims to protect and enhance fauna habitat on a local and broader landscape scale to maintain and restore populations by reducing fragmentation and making ecological communities more resilient.

Fragmentation and a decline in the quality of habitat have greatly impacted fauna in particular species with specialist requirements. These species have very specific habitat requirements and are more sensitive to change for example a population of threatened bird species, diamond firetail (*Stagonopleura guttata*), will decline following clearance of remnant grassy woodland habitat. Diamond firetail populations are not sustainable in open farmland or in urban areas.

The potential for the Werribee River biolink is to assist in improving habitat and long term resilience for both common and specialist species. The biolink may provide habitat for species with large home ranges, or populations of species that have become isolated and fragmented. ‘Flagship’ species may be used to highlight the need for connectivity across the landscape. A flagship species is an iconic, well known species that will raise awareness and encourage community support.

3.1.3 Characteristic ecosystem types

The Werribee River catchment provides a variety of habitat types that give rise to many fauna species. However changes in catchment condition through, development and subsequent fragmentation has led to species decline.

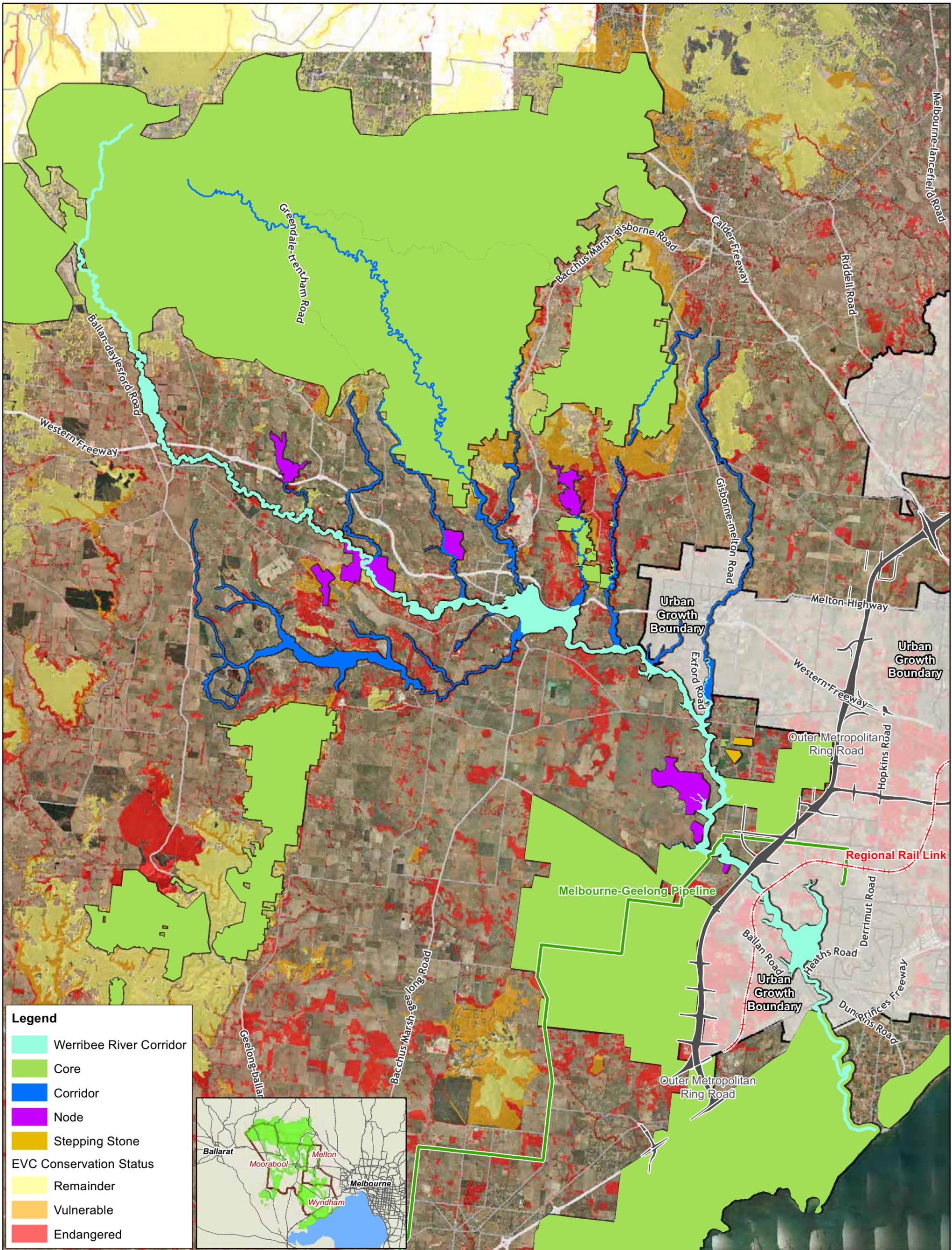
The upper Werribee catchment upstream of Ballan has a higher rainfall than the plain and diverse topography. The northern area of the catchment contains significant remnant vegetation in the Brisbane Ranges and Lerderberg State Park. These vegetation communities are relatively intact and contiguous across the higher elevation ranges with a mix of herb-rich foothill, shrubby dry, and box-ironbark forest types.

Much of the mid and lower Werribee River catchment is in a rain shadow and as such has a low average rainfall 550 mm/a (BOM 2011). The narrow riparian river channel is at times deeply incised, well defined and forms a prominent feature in the landscape. Wetlands are found associated with the river channel, isolated in the plains and where the Werribee River flows into the bay.

Areas beyond the riparian zone form the majority of the catchment consisting of flat to undulating plains, predominantly grassland and grassy woodlands, with some areas of Mallee woodland. The area of the plains has less intact native vegetation where original grassy woodlands and grasslands have been replaced with agriculture.

Biodiversity assets, most of which occur on public land, have been mapped in Figure 3.1 and described in section 3.2.1.

These biodiversity assets were then overlaid with the distribution of remnant vegetation or EVC (DSE 2001) and shown in Figure 3.2. This map demonstrates that biodiversity assets which are on public land are protected and form an important part of the Werribee Biolink as core areas, and nodes. The remaining remnant vegetation and biodiversity assets that occur on private land outside protected public assets will form an essential part of the final biolink. These biodiversity assets on private land include sections of remnant and degraded riparian vegetation along the Werribee River corridor and creek corridors.

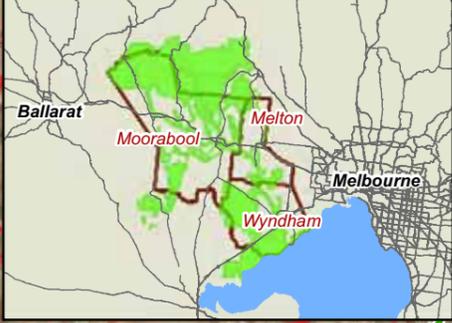


Legend

- Werribee River Corridor
- Core
- Corridor
- Node
- Stepping Stone

EVC Conservation Status

- Remainder
- Vulnerable
- Endangered



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<p>TITLE</p> <p>Leadwest</p> <p>Werribee River Biolink Action Plan</p> <p>Key Biodiversity Assets with EVC and Infrastructure Projects</p>	
<p>Figure 3.2</p> <p>MAP No. MEN107-G-MAP-014-A</p>	<p>PROJECT No. MEN107</p> <p>REVISION A</p>

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Riparian zones

The instream and generally narrow riparian zone forms the core element to the proposed Werribee River biolink.

The Werribee River riparian zone has been degraded due to an altered flow, poor water quality from urban and agricultural run-off, a history of grazing and vegetation clearance, weed infestation. Index of stream condition assessments show the upper and middle reach of the Werribee river catchment in a moderate condition, with the lower reach in a poor condition (PPWCMA 2007).

Isolated patches of remnant mature gums predominantly red gum (*E. camaldulensis*) and blue box (*E. baueriana*) and native understorey remain. Key risks to river health include instream barriers to fish migration, water diversions, poor quality streamside zone, uncontrolled stock access and urban encroachment.

Melbourne Water has primary responsibility of the bed and banks of declared waterways under the *Water Act* (1989) that are over a catchment size of 60 ha are now the responsibility of Melbourne Water, with riparian areas managed by a combination of Melbourne Water, local government authority and private landholders.

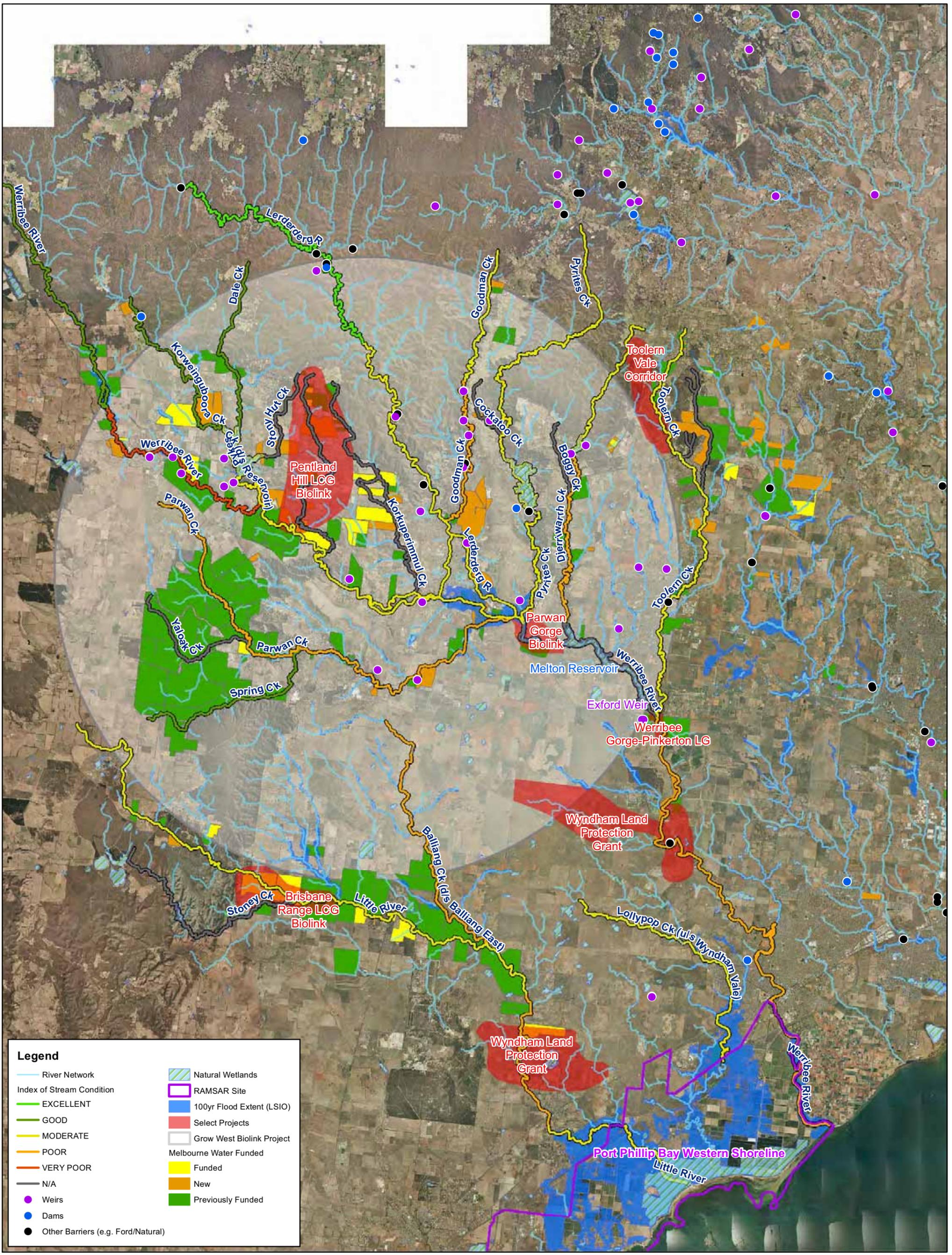
Melbourne Water has well developed systems and programs and the external funding base to invest in on ground works and drive rehabilitation.

Riparian areas and associated wetlands provide core habitat for a rich diversity of fauna that require aquatic habitat or depend on the remnant riparian woodland for habitat. Some of the many threatened species found in riparian areas are the growling grass frog (*Litoria raniformis*), Macquarie perch (*Macquaria australasica*) and a large number coastal and wetland birds.

Wetlands

The key wetland in the catchment is located at the Western Treatment Plant (WTP) covering an area of 10,850 ha on the western side of the Werribee confluence with the bay. The WTP is managed by Melbourne Water area as significant water bird other significant species habitat. The site provides habitat and protection for international migratory bird species and is part of a recognised Ramsar site within Port Phillip, a Wetland of International Importance declared under the Ramsar Convention.

Numerous smaller wetlands, permanent and seasonal, natural and artificial occur across the catchment in association with waterways, others in poorly drained areas or isolated depressions. Wetlands have predominately been degraded through disturbance or drainage, changing water regimes, urban development, and nutrient level increase, with the few remaining important habitat refuge areas. These have been shown in biodiversity mapping (Figure 3.3).



Legend

- River Network
- Index of Stream Condition
 - EXCELLENT
 - GOOD
 - MODERATE
 - POOR
 - VERY POOR
 - N/A
- Weirs
- Dams
- Other Barriers (e.g. Ford/Natural)
- Natural Wetlands
- RAMSAR Site
- 100yr Flood Extent (LSIO)
- Select Projects
- Grow West Biolink Project
- Melbourne Water Funded
- Funded
- New
- Previously Funded



N

0 3 6 12 km

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SOURCE: DSE, Melbourne Water, Melton Shire, Moorabool Shire & Wyndham City

FILE LOCATION	COORDINATE SYSTEM	DATE
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Prepared: EM, Checked: JS

TITLE

Leadwest

Werribee River Biolink Action Plan

Waterway Condition and Select Projects

Figure 3.3

PROJECT No. MEN107

MAP No. MEN107-G-MAP-010-A

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3.2 ENVIRONMENTAL ASSETS AND EXISTING PROJECTS

Biodiversity assets across the Werribee River catchment have been mapped with input from government agencies, the three municipal councils and local landcare and environment groups (Figure 3.1).

3.2.1 Existing biodiversity assets

Biodiversity assets within the Werribee River catchment have been listed in functional groups dependent on how the asset relates to the Werribee River biolink.

The following assets are to be included in the Werribee River biolink, each asset is labelled to refer to a point on Figure 3.1.

Werribee River Corridor (asset 1)

The Werribee River is a significant waterway sourced predominantly from Wombat and Lerderderg State Parks in the north that travels through the centre of the Werribee volcanic plains basalt grassland and grassy woodlands, to the estuarine coastal environment near Werribee South. The Werribee River is valued by the local and broader community for its biodiversity and recreation values and has long been a focus of restoration efforts. Large sections of the river retain significant remnant vegetation and native fauna.

The key asset of the Werribee River biolink includes the entire area of the Werribee River within the 1:100 year flood level. The Werribee River varies provides significant natural aquatic and riparian connectivity through the landscape from the hills down to the coastal zone and forms the backbone and key asset of the biolink. The condition of the Werribee River has been assessed by Melbourne Water and the PPWCMA and shown in Figure 3.3.

A number of previous and existing Melbourne Water and PPWCMA projects have been completed or are planned along the Werribee River.

Melbourne Water works are shown in Figure 3.3, and notable works planned include Eynesbury Estate Werribee River frontage (~ 10 km in length) to be fenced and rehabilitated using the stream frontage management program.

Riparian vegetation along the Werribee River is discontinuous and is both public and privately owned. The quality of riparian vegetation is mixed with some high quality remnants and areas of degraded vegetation dominated by exotic vegetation and pest fauna.

In addition a number of reserves occur within the key river corridor some of which are listed.

Fraser Werribee River Municipal Reserve (asset 2)

Linear reserves located along the Werribee River in Ballan that are valued for recreation and environmental assets. The reserve is managed by Moorabool Shire Council.

Peppertree Park (asset 3)

Additional linear reserves located along the Werribee River which have economic (tourism), social (recreation) and environmental values. The park is managed by Moorabool Shire Council.

3.2.2 Core areas

These core areas are large areas of public land that is currently protected. These areas form the core base which the corridors aim connect together.

Wombat State Forest (asset 4)

The 70,000 ha forest is managed by DSE mainly a catchment resource for water, biodiversity, recreation and logging. The Wombat State Forest forms the upper catchment of the Werribee River and a key source of inflow. The forest is predominantly regrowth from logging during the gold rush era but retains core habitat values for threatened flora and fauna.

Long Forest Nature Conservation Reserve (asset 5)

Protects Box-Ironbark forest and incorporates Pyrites Creek which flows through Long Forest and into the Werribee River. Long Forest reserve contains a number of species normally found north of the divide such as bull Mallee scrub.

Lerderderg State Park (asset 6)

The Lerderderg State Park is managed by Parks Victoria. It contains a diverse topography and vegetation following a rainfall gradient which declines from north to south. The park has a number of endangered flora and fauna and forms a core habitat area for a range of ecological communities.

Brisbane Ranges National Park (asset 7)

Managed by Parks Victoria the national park has high tourism, recreation and environmental values. The park is connected to the Little River, the Western Grassland Reserve and You Yangs.

Grassland Reserve—Eynesbury North (asset 8)

The State government's future grassland reserve is approximately 15,000 ha. The section of the reserve between Ballan Road and the Werribee River/Wild dog Gully has its own flora and fauna values as well as an important link between the Werribee River the larger portion of the Grassland south of Ballan Road.

The smaller eastern grassland reserve in Melton Shire adjoins the Werribee River and has unique floristic and fauna values.

The two proposed grassland reserves are connected by the Werribee River. This does not necessarily mean fauna will be able to travel from one reserve to the other via the river. The change from grassland to riparian vegetation, the river itself and steep terrain of the escarpment are not conducive to movement by all grassland fauna.

Special note: land between Eynesbury woodland and western DSE grassland and the Werribee River should be considered in the Biolink also to prevent fragmentation of the sites from the river and this land from inappropriate or non-compatible land use. By including the land between Eynesbury woodland and the river will then provide an ideal connection to the eastern grassland reserve in Melton Shire.

Werribee River Regional Park and the Port Phillip (western shoreline) and Bellarine Peninsula Ramsar Wetland (asset 9)

This Regional Park is managed by Parks Victoria for recreation and conservation. It adjoins the Werribee River and the extensive Ramsar wetland site on the Western Treatment Plant.

3.2.3 Corridors

These smaller corridors are a mixture namely private and some public land. They are natural aquatic and riparian corridors in the landscape and have capacity to be restored and provide connectivity with vegetated upper catchments through the plains and finally into the Werribee River.

Myrning Creek (asset 10)

The Myrning Creek is a mixture of public and private land and flow from the upper catchment into the Werribee River. The creek is predominantly used for broad acre cropping and has some remnant environmental values.

Lerderderg River (asset 11)

Valued as a high quality environmental asset in the upper reaches, the Lerderderg is important as a recreation and tourism asset. The Lerderderg River flows into the Werribee River at Darley (north of Bacchus Marsh) from the Lerderderg State Park.

Korkuperrimul Creek (asset 12)

The creek is managed by both public and private landholders and has predominantly economic values (broad acre farming), as well as social (recreation) and environmental. The creek forms a natural corridor from the Lerderderg State Park flowing south into the Werribee River.

Djerriwarrh Creek (asset 13)

The Djerriwarrh Creek (south of the Western Freeway) forms the boundary between the Shires of Melton and Moorabool. It is a deep gorge with some remnant vegetation along the creek edge. Djerriwarrh Creek forms a connection between Long Forest in Moorabool and the Werribee River. Riparian vegetation is unlikely to be altered due to gradient of the gully. The creek is managed by both public and private managers and land is predominantly used for broadacre cropping.

The Werribee River blue box (*E. baueriana* subsp. *thalassina*), which is classified as endangered under the *Flora and Fauna Guarantee Act* (1988) occurs along the creek.

Arnolds Creek (asset 14)

Sections of Arnolds Creek, south of Brooklyn Road (particularly its eastern branch) retain remnant vegetation on its banks. The section between Brooklyn Road and Black Dog Drive has a remnant over storey of yellow box (*E. melliodora*) and red gum (*E. camaldulensis*). The ground storey vegetation has notable remnant quality as well.

The section downstream of Brooklyn Road has remnant vegetation of varying quality with sections holding the Victorian rare or threatened species slender tick-foil (*Desmodium varians*).

Toolern Regional Park (Toolern Creek south of Bridge Road; asset 15)

One hundred hectares of land along Toolern Creek is currently being developed by Parks Victoria and Melbourne Water (Capital Work Program) into a regional park in Melton Shire Council. This section of Toolern Creek has remnant river red gums along the creek, a stand of grey box (*E. microcarpa*) woodland, and is important habitat for fauna such as platypus.

Parwan Creek (asset 16)

The creek is predominantly private land with economic significance in broad acre farming, some recreation and environmental values. It flows into the Werribee River from Brisbane Ranges State Park.

3.2.4 Nodes

Werribee Gorge State Park (asset 17)

The park is characterised by a steep gorge through which the Werribee River runs. The geographical landforms are nationally significant, and the park has diverse ecological communities from riparian vegetation to stringy bark forest, to box-ironbark woodland and a range of threatened flora and fauna.

Pykes Creek Reservoir (asset 18)

Managed by Southern Rural Water the reservoir has been created at the confluence of Pykes Creek and the Werribee River. The reservoir has tourism, recreation and environmental values.

Merrimu Reservoir (asset 19)

Managed by Southern Rural Water the reservoir is formed where Pyrites Creek flows into the Werribee River. The reservoir has environmental and recreational values.

Bald Hill (asset 20)

The reserve located in Darley is managed by Moorabool Shire and has local recreational significance. Restoration of the site is long term project of a degraded council reserve that abuts the Korkuperrimul Creek.

Hopetoun Park Flora Reserve (asset 21)

The flora reserve is set within the Hopetoun Park development above the Werribee River. The park is valued for aesthetic and social values as well and environment attributes.

Eynesbury Grey Box Woodland (asset 22)

Eynesbury's grey box woodland is one of Victoria's largest remaining historic bushlands. It is home to unique flora and fauna, including the endangered migratory swift parrot (*Lathamus discolor*), the diamond firetail (*Stagonopleura guttata*) and

the native barking owl (*Ninox connivens*). Supports native vegetation that provides substantial native wildlife refuge that likely migrate along the narrow Werribee River corridor.

The grey box woodland covers 288 ha and is bordered by 64 ha of native grassland reserve, is also home to the threatened tree species, buloke (*Allocasuarina luehmannii*), the brown tree creeper (*Climacteris picumnus*; a bird of state significance), as well as hundreds of kangaroos, emus, blue wrens (*Malurus cyaneus*) and sparkled warblers (*Chthonicola sagittatus*).

Eynesbury grassland (asset 23)

This large grassland adjoins the Werribee River and one of its minor tributaries. The quality and management regime of this grassland is unknown by Council and an on-ground assessment is recommended. If this grassland site has environmental values, it should be included in the biolink as it appears to be the largest native grassland area directly adjoining the Werribee River. It is also important to protect this site from any future development.

Eynesbury Estate—Wild Dog Gully (asset 24)

Wild Dog Gully is steep and rocky. It provides suitable habitat for a range of native wildlife, including one of the last sightings of eastern barred bandicoot (*Perameles gunni*) in the region (to be confirmed). Including this gully in the biolink will also provide a greater frontage and connection to the planned State government's Western Grassland Reserve.

Exford Weir (Melton Reservoir) (asset 25)

The deep gorge of the reservoir is a striking landform with steep, rocky escarpments around the majority of the reservoir. The occurrence of flat land around the reservoir is very limited. The only occurrence of white cypress-pine (*Callitris glaucophylla*) in the Shire of Melton can be found here. Other vegetation of note is remnant stands of Moona (*Melaleuca lanceolata*) and blue box.

There are some patches of indigenous vegetation on the escarpments. The quantity and quality of the vegetation on the eastern bank will be increased as part of the development of the Toolern Precinct Structure Plan.

There are a stand of river red gums at the confluence of Arnolds Creek.

Volcanic Gorge (asset 26)

The Werribee River volcanic gorge forms the main wildlife corridor linking Toolern Creek and Long Forest north of Exford, to the critically endangered grey box grassy (Exford–Strathulloh Woodlands) and the grey box grassy (Pinkerton–Mulla Mulla–Eynesbury) woodlands in the south. Koalas have been known to travel from the river to Pinkerton forest and Mulla Mulla grey box grassy woodlands.

Vegetation includes blue box, river red gums, and native grasses.

Moloney's Water Reserve (asset 27)

Moloney's Water Reserve is one of the few sites abutting the Werribee River which is owned and managed by Melton Shire. It contains degraded remnant vegetation.

Cobbledicks Ford Reserve (asset 28)

This 22 ha reserve is Crown land managed by Wyndham City for its conservation and heritage values. The reserve provides valuable wildlife refuge in its numerous EVCs. The reserve is the only known location of recent (i.e. past 20 years) natural regeneration of the state significant Werribee blue box. The reserve also has valuable cultural heritage values as does the whole river corridor.

Davis Creek confluence with Werribee River (asset 29)

The creek is a tributary of the Werribee River, flanked by remnant river red gums. The riparian habitat is an important platypus area and a protected natural area within an urban environment as well as providing valuable open space for the local community. The land will be encompassed within the future Werribee township regional park.

Wollahra Rise Reserve (asset 30)

Wollahra is a 12 ha Council reserve. Knowledge of flora and fauna values is limited; however, the Reserve adjoins the Werribee River and is partly within the 1:100 year flood line and will in the future be surrounded by residential development. This reserve will be incorporated into the proposed Werribee township regional park. On-ground inspection of the reserve for its environmental condition is required.

Grahams Wetland Reserve (asset 31)

This 22 ha reserve is managed for conservation and is located at the mouth of the Werribee River. The vegetation is predominantly salt marsh with some freshwater influence from run-off from market gardens. The reserve provides habitat for aquatic fauna and waterbirds.

Proposed Werribee Township Regional Park (asset 32)

This land is predominantly market gardens/farming and because of current land use, the environmental values are mostly limited to the riparian area of the Werribee River. This area includes the 35 ha President's Park which is mostly for recreational purposes. Significant opportunities exist for revegetating this area which is all within the 1:100 year flood line.

Special note: a narrow (100 m wide) overland flood from Werribee River drainage reserve connects Presidents Park to Lollypop Creek. This drainage reserve is (and must be kept) mown grass with tree plantations from Council's Greenfleet subscription along its raised outer edges. Whilst this drainage reserve provides limited biodiversity values and connections, it should be recognised as a link between two of Wyndham's major waterways—particularly given the Werribee River bottlenecks from Presidents Park, Shaws Road downstream to the Maltby Bypass (Princes Freeway). Lollypop Creek has its own biodiversity values however this area is the subject of PSPs.

3.2.5 Stepping stones

A large number of stepping stones are present in the catchment, many of which are on private land. Stepping stones are usually small patches of vegetation or habitat varying in size and quality that are used by fauna as to feed or stop over and to travel between core areas and corridors. Listed are two examples of many that may be added to the biolink. These two patches of remnant vegetation are locally known to be used by woodland birds and form a habitat 'triangle' with Eynesbury woodland nearby.

Bush's Paddock (Mulla Mulla Grasslands; asset 33)

This is a 45 ha native grassland site located in the Shire of Melton on the western slope of Mt. Cottrell. It has a large and diverse population of wildflower and supports significant remnants of kangaroo grass (*Themeda triandra*) grassland and grey-box grassy woodland.

Pinkerton Forest (asset 35)

The woodland forms a component of Western Water's Surbiton Park complex. The grassy grey box woodland is 50 ha in size.

3.3 PRIVATE LAND ASSETS

There is a significant amount of remnant vegetation biodiversity assets that remains unprotected outside government owned and managed reserves. Areas between publically owned, managed and already protected parks and reserves are predominantly private land use as agriculture or urban areas (Figure 3.2).

Much of this terrestrial vegetation is endangered grassy woodland, or grassland. These endangered patches of vegetation vary in quality and may be important components to protect biodiversity in a fragmented landscape.

Patches of native vegetation on private land form buffer areas around the central biolink and around core assets (parks and reserves). These buffers reduce the impact of surrounding land uses and increase the quality of the asset. Patches of private land also provide additional nodes and stepping stones in an otherwise bare landscape that enable the movement of fauna between core areas and along corridors.

Protection of areas of remnant vegetation and fauna habitat on private land will be encouraged by the biolink project. The protection of biodiversity assets on private land to complement the assets listed is the key driver to the Werribee River Biolink Action Plan.

How this private land is managed in the future is crucial to the sustainability and long-term resilience of the environmental values of the Werribee River catchment.

It is important to improve the land use practises of private landowners to better incorporate biodiversity values at an individual property scale and how this fits in on a broader regional scale. Private land that is comes under the biolink will be a focus of resources where landholders will be encouraged to voluntarily undertake works and enhance biodiversity assets.

Much of the Werribee River riparian zone is private land. The priority private land areas along the Werribee River and its tributary creek corridors have been captured in the biodiversity asset map.

Riparian vegetation is mixed with some high quality remnants and areas of degraded vegetation dominated by exotic vegetation and pest fauna.

Further biodiversity assets on private land away from riparian areas will be added into the final biolink pending further gap analysis and stakeholder consultation in the workshops.

3.4 EXISTING PROJECTS

The contribution of the Technical Support Group has formed the basis of identifying the existing complementary projects and programs in the Werribee River catchment.

A large number of biodiversity focused projects have already been completed, are underway or planned. Projects range from small locally focused projects on private landholder properties, to large scale restoration projects such as the Parwan Hills Landcare group biolink along Myrniong and Korkuperrimul creeks.

Many of the key projects that have been completed in the catchment have been mapped to show where existing biodiversity protection and enhancement have occurred (Figure 3.3). Projects and assets that have been identified have been listed in each local government with a guide as to the funding source (Table 3.1).

Further information on previous and current projects may be added to following further stakeholder engagement. The following projects with a biodiversity and environment focus occur in the Werribee River catchment.

Native Vegetation Framework Offsite Receptor Sites (Trust for Nature/BushBroker)

When a landowner has been granted permission from the relevant authority(ies) to remove native vegetation they are typically required to 'offset' the removal to result in a 'net gain' of native vegetation. This offset is achieved through receptor sites.

The proposed Werribee Plains Grassland Reserves in Wyndham and Melton are examples of receptor sites.

Offsets are also required by DSE for EPBC listed fauna species under the State government's Prescriptions for the species. The prescriptions are approved by the Federal government.

Vision for Werribee Plains (DSE)

The Vision for Werribee Plains Program is not an ongoing source of funding and will be finished this financial year (2011/2012).

Grants provided in the Werribee Plains region include:

- improvements to the health of waterways
- protection and improvement of natural landscapes
- development of biodiversity action plans.

Landcare/environmental community groups

Landcare and 'friends of' are local volunteer movements/groups. The groups often work in partnership with the community, government and business to protect and repair the environment. Programs have are focused towards improving biodiversity and waterway health.

Landcare is a local volunteer movement. It is a joint effort between the community, government and business to protect and repair the environment. Landcare and environment groups often work in conjunction with other funding agencies such as

Melbourne Water or Western Water also have an extensive local works program that has been included in mapping where provided.

Grow West Biolink Project (Moorabool)

Landscape scale revegetation project that aims to connect the Werribee Gorge State Park to Brisbane Ranges National Park via White Elephant Reserve. The Project encompasses a mix of public and private land.

Pentland Hills Biolink Project (Moorabool)

The biolink project is predominantly aimed at private landholders. The landscape scale project aims to revegetate the riparian corridor of the Myrniong Creek to the Werribee River and potentially east/west connection of the Myrniong Creek to Korkuperrimul Creek and Lerderderg State Park.

Werribee River Shared Trail Strategy

A key project being developed as a collaboration of Wyndham City, Melton Shire Council and Parks Victoria is the Werribee River Shared Trail Strategy. The alignment and strategy are yet to be finalised, but once it is it will be included in the Werribee River BAP.

Toolern Regional Park Development

Toolern Creek is a tributary that enters the Werribee River near Melton. Parks Victoria and Melbourne Water (capital grants program) are creating a 100 ha Regional Park on the Toolern Creek. This involves the protection of remnant vegetation and integrating it with an extensive revegetation program using indigenous plants.

Environmental Enhancement Program (Melton Shire Council)

The program provides rural landowners with a monetary incentive (an upfront rate rebate) to undertake works that will improve the environment. The program rewards successful implementation of works that address land degradation.

The program was introduced in response to community concern regarding the increase in land degradation within Melton Shire Council caused by noxious weeds, pest animals and soil erosion driven by factors, including rapid land use change, land speculation, encroaching urbanisation and an increase in absentee landowners.

The target participants are rural properties greater than 2 ha. Almost 1300 properties are currently involved in the scheme.

The program requires forms detailing proposed works be submitted to Melton Shire Council at specified times of the year. Works are inspected and if successfully implemented the rebate is retained. Otherwise a supplementary rates notice is issued for the amount of the rebate.

Land Protection Grant Scheme (Wyndham City Council)

The scheme provides eligible rural Wyndham landowners with financial assistance to undertake (via contractor services) works that aim to achieve sustainable land management and biodiversity protection and enhancement.

The scheme was introduced in 2010 and replaced Council's Land Management Rate Rebate Scheme that operated between 2000 and 2010. The Scheme funds weed and pest control, conservation burns, fencing for conservation protection, and revegetation (non-landscaping). The scheme requires landowners and appointed contractors to sign separate agreements with Council paying 75 per cent of costs of the agreed works on a property and landowners 25 per cent.

Wyndham City Community Grants

Wyndham City provides grants to Wyndham's community for projects that benefit the community. Wyndham's environment groups have applied for funding in the past for sustainable garden displays, community noticeboards and on ground environmental restoration works.

Table 3.1 Werribee River projects and funding sources

Moorabool Shire Council	Caring for country	Stream frontage	Corridors of green	Offset receptors	Vision for Werribee Plains	Landcare/environment community groups	Grow West Biolink Project	Moorabool Council projects
Pentland Hills Biolink	Unsure/eligible	Yes	Yes	Eligible	Unsure/eligible	Yes	Yes	No
Bald Hill (managed by Moorabool)	No	No	No	No	Unsure/eligible	No	No	Yes
Myrniong Creek	Unsure/eligible	Yes	Yes	Eligible	Unsure/eligible	Yes	Yes	No
Korkuperrimul Creek	Unsure/eligible	Yes	Yes	Eligible	Unsure/eligible	Yes	Yes	No
Lerderderg River	No	Yes	Yes	Eligible	No	No	No	No
Long Forest Flora Reserve	No	No	No	Eligible	No	No	No	Yes
Merrimu Reservoir	No	Yes	No	No	No	No	No	No
Pykes Creek Reservoir	No	Yes	No	No	No	No	No	No
Werribee Gorge State Park	No	Yes	Yes	Eligible	No	No	No	No
Fraser Werribee River Municipal Reserve	No	Yes	Yes	Eligible	No	Eligible	No	Yes
Hopetoun Park Flora Reserve	No	Yes	No	Eligible	No	No	No	Yes
Peppertree Park	No	Yes	Yes	Eligible	No	Eligible	No	Yes
Melton Shire Council	Caring for country	Stream frontage	Corridors of green	Offset receptors	Vision for Werribee Plains	Landcare/environment community groups	Toolern Park	Environmental enhancement program
Djerriwarh Creek (Melton and Moorabool)	No	Yes	No	Eligible	Unsure/eligible	Unsure	No	Yes
Arnold Creek	No	No	Yes	Eligible	Unsure/eligible	Unsure	No	Yes
Melton Reservoir	Yes	Yes	No	No	Unsure/eligible	No	No	Yes
Toolern Park	No	No	No	Eligible	Unsure/eligible	Yes	Yes	No
Volcanic Gorge	No	No	Yes	Eligible	Yes	Yes	No	Yes
Bushes Paddock	No	No	No	Eligible	Unsure/eligible	Yes	No	No
Pinkerton Forest	No	No	No	Eligible	Unsure/eligible	Yes	No	No

Table 3.1 Continued

Melton Shire Council	Caring for country	Stream frontage	Corridors of green	Offset receptors	Vision for Werribee Plains	Landcare/environment community groups	Grow West Biolink Project	Moorabool Council projects
Moloney's Reserve	No	No	Yes	Eligible	Unsure/eligible	No	No	No
Eynesbury Estate, Grey Box Woodland and Grassland	No	No	Eligible	Eligible	Unsure/eligible	Unsure	No	No
Eynesbury Estate, Grassland	No	No	Eligible	Eligible	Unsure/eligible	No	No	No
Wyndham City Council	Caring for country	Stream frontage	Corridors of green	Offset receptors	Vision for Werribee Plains	Landcare/environment community groups	Land Protection Grant	Wyndham Community Grants
Eynesbury Estate, Wild Dog Gully	Eligible	Eligible	Eligible	Eligible	Unsure/eligible	No	Eligible	No
Western Grassland Reserve, Eynesbury north	Eligible	No	No	Yes (following acquisition)	Unsure/eligible	No	No	No
Cobbledicks Ford Reserve	No	No	Yes	Eligible	Unsure/eligible	Yes	No	Eligible
Cobbledicks, Private grassland	No	Unsure/eligible	Eligible	Eligible	Unsure/eligible	No	No	No
Davis Creek confluence with Werribee River	No	Eligible	Eligible	Eligible	Unsure/eligible	Yes	No	Eligible
Wollahra Rise Reserve	No	Eligible	Eligible	Eligible	Unsure/eligible	No	No	Eligible
Proposed Werribee Township Regional Park	No	Eligible	Eligible	Eligible	Unsure/eligible	Not yet	No	Not available as yet
Werribee River Regional Park and the Port Phillip (western shoreline) and Bellarine Peninsula Ramsar Wetland	No	Eligible	Eligible	Eligible	Unsure/eligible	Unsure	No	No
Grahams Wetland Reserve	No	Yes	Yes	Eligible	Unsure/eligible	No	No	Eligible

3.5 BIODIVERSITY WORKS PROGRAM

A small number of key long term projects are already in place in the Werribee catchment. These ongoing works programs provide significant funding directly to private landholders, or to other groups such as landcare or local councils who then facilitate works.

Current works programs that have been planned and are to be undertaken have been mapped to show likely future works (Figure 3.3).

3.5.1 Melbourne Water

Melbourne Water has four channels of funding to improve waterways:

- Stream Frontage Management Program for private landholders
- Corridors of Green for public land managers
- Community Grants for community groups working on public land
- Melbourne Water Capital program delivered by either the Major Capital Alliance or Minor Capital Thiess.

Stream Frontage Management Program

Melbourne Water stream frontage reserve program is the key management body maintaining and restoring biodiversity values confined to the Werribee River channel and immediate riparian areas. Melbourne Water provides funding for weed control, fencing and revegetation works with indigenous plants. It has a range of programs supporting local governments and Landcare groups and landholders directly. This funding also includes subsidies for off stream stock watering if fencing cuts off landholder's access to stock water. Previous and planned works are shown in Figure 3.3 and include the Eynesbury Estate Werribee River frontage.

Corridors of Green Grants

Melbourne Water provides grants to local councils and public land managers to implement on ground projects that improve the condition of rivers and creeks. It has a focus on revegetation.

Capital Works Program

Capital Works projects are planned in Melbourne Water and are fully funded through the business. Landholders (public or private) are asked to sign consent forms for Melbourne Water to carry out works on property. There are several Capital Works projects along the Werribee River and its tributaries such as Toolern Regional Park.

Community Grants

Melbourne Water has grants available for community groups such as landcare that work on public lands to undertake biodiversity and environmental projects.

Caring for Country Grants (Port Phillip and Western Port Catchment Management Authority; (PPWCMA)

The PPWCMA provides grants for:

- the protection, enhancement or establishment of native vegetation
- improving soil condition and resilience
- managing the threat posed by pest animals and plants.

3.6 THREATS

Biodiversity assets remaining in the Werribee catchment are often degraded, fragmented and isolated and have been listed in Table 3.2 with key threats. These assets face a range of threatening processes that may cause further degradation. Biodiversity assets on private and public land face many of the same threats.

Pest plants and animals are a common threat to biodiversity assets across the landscape. Weeds invade modified and degraded environments in the catchment such as boxthorn, galenia and serrated tussock in private and public land that displace native vegetation species and communities and threaten habitat quality. Pest animals, namely rabbits, foxes and feral cats, and the impact of overgrazing from stock further exacerbate biodiversity impacts.

Biodiversity assets on private land faces addition threats from land uses such as overgrazing, cropping, urban development and major infrastructure projects that can cause detrimental impacts on remnant vegetation.

Clearance of native riparian vegetation and the alteration of flow conditions through weirs, reservoirs and diversion have caused a long term decline in the natural flow patterns, flooding regime, water quality and general aquatic health of the Werribee River.

Other threats include inappropriate recreation use such as 4WD use off designated tracks, contamination from surrounding land, and a lack of financial or human resources to manage biodiversity assets, or successfully complete project outcomes.

These threats on private and public land are a key issue that need to be addressed in the development of priority management actions for the Werribee River Biolink.

Table 3.2 Some of the threats to key public assets in the Werribee catchment

Moorabool Shire Council	Weed invasion	Pests	Uncontrolled grazing/land management	Water quality	Lack of resources	Reduced flow	Urban growth	Public use/pressure
Bald Hill (managed by Moorabool)	Yes	Yes	No	No	Yes	No	No	No
Brisbane Ranges National Park	Yes	Yes	No	No	Yes	No	No	Yes
Djerriwarrh Creek (Melton and Moorabool)	Yes	Yes	Yes	Yes, grazing	No	No	Yes	No
Fraser Werribee River Municipal Reserve	Yes	Yes	No	No	No	No	Yes	Yes
Hopetoun Park Flora Reserve	Yes	Yes	No	No	No	No	Yes	Yes
Korkuperrimul Creek	Yes	Yes	Yes	Yes, caused by erosion	No	No	Yes	No
Lerderderg River	Yes	Yes	Yes	Yes, poor land management practises and urban run-off	Yes	No	Yes	Yes, runs through urban areas in the southern reach
Lerderderg State Park	Yes	Yes	No		Yes	No	Yes	Yes, inappropriate recreational activities such as off track 4WD
Long Forest Flora Reserve	Yes	Yes	No	Yes, poor land management practises	Yes	No	Yes	Yes
Merrimu Reservoir	Yes	Yes	Yes	Yes, grazing	Yes	Yes, varying water flows	Yes	Yes
Myrniong Creek	Yes	Yes	Yes, land management practises	Yes, grazing and erosion	Yes	No	No	Withdrawal of funding
Peppertree Park	Yes	Yes	Yes, erosion	No	No	No	Yes	Yes, inappropriate activities such as trail bikes

Table 3.2 Continued

	Weed invasion	Pests	Uncontrolled grazing/land management	Water quality	Lack of resources	Reduced flow	Urban growth	Public use/pressure
Moorabool Shire Council								
Pykes Creek Reservoir	Yes	Yes	Yes, land management practises	Yes	Yes	Yes		
Werribee Gorge State Park	Yes	Yes	No	Yes, erosion	Yes	Yes	No	Yes as a popular recreation site, also bushfire risk
Wombat State Forest	Yes	Yes	No	No	Yes	No	No	Yes as a popular recreation site, also bushfire risk
Melton Shire Council	Weed invasion	Pests	Uncontrolled grazing	Water quality	Changing land use	Reduced flow	Urban growth	Public use/pressure
Melton Reservoir	Yes	Yes	Yes	Yes, grazing	Yes (public land use)	Yes	No	No Yes
Toolern Regional Park	Yes	Yes	No	Yes, urban pollutants	No	No	Yes	Yes
Volcanic Gorge	Yes	Yes	Yes	Yes, grazing	No	No	No	Yes, inappropriate recreational activities such as off track 4WD
Bushes Paddock	Yes	Yes	No	No	No	No	No	No
Pinkerton Forest	Yes	Yes	No	No	No	No	No	No
Moloney's Reserve	Yes	Yes	No	No	No	No	No	Yes
Eynesbury Estate, Grey Box Woodland and Grassland	Yes	Yes	No	No	No	No	Yes	Yes

Table 3.2 Continued

Wyndham City Council	Weed invasion	Pests	Uncontrolled grazing	Water quality	Changing land use	Reduced flow	Urban Growth	Public use/pressure
Eynesbury Estate, Grey Box Woodland and Grassland	Yes	Rabbits, foxes, cats	No	No	No	No	No	Yes, resident recreation, dogs, motorbikes
Eynesbury Estate, Grassland	Yes	Rabbits, foxes, cats	Unsure	No	Unlikely	No	No	No
Eynesbury Estate, Wild Dog Gully	Yes	Rabbits, foxes, cats	Unsure	Unsure, barren areas and erosion	No	Unsure	No	Yes, shooters, trappers, 4WD, fishing, motorbikes
Western Grassland Reserve, Eynesbury north	Yes	Rabbits, foxes, cats	Unsure	No	No	No	No	No
Cobbedicks Ford Reserve	Yes	Rabbits, foxes, cats	No	Some, due to public access/use	No	No	No	Yes, shooters, trappers, 4WD, fishing, motorbikes, rave parties, camping, rubbish dumping, etc.
Cobbedicks, Private grassland	Yes	Rabbits, foxes, cats	Unsure	No	Likely	No	Quarry growth	No
Davis Creek confluence with Werribee River	Yes	Rabbits, foxes, cats	No	Yes, urban and run-off and development works	Yes	Reduced AND increased flows	Yes	Yes, recreation, boats, fishing, dogs
Wollahra Rise Reserve	Yes	Rabbits, foxes, cats	Unsure	Unsure	Yes	No	Yes	Not yet as there is currently no public access (nor access for Council)
Proposed Werribee Township Regional Park	Yes	Rabbits, foxes, cats	Yes/No	Yes, farm run-off	Yes/No	No	Yes	Will be once it becomes a public Park, recreation, fishing, motorbikes, dogs, etc.
Werribee River Regional Park and the Port Phillip (western shoreline) and Bellarine Peninsula Ramsar Wetland	Yes	Rabbits, foxes, cats	No	Unsure	No	No	No	Ask Parks Vic and Melbourne Water
Grahams Wetland Reserve	Yes	Rabbits, foxes, cats	No	Strongly yes, urban and farm (market garden) run-off	No	No	Yes/No	Yes, dogs, fishing, litter, motorbikes

4 Planning context

4.1 INTRODUCTION

The purpose of establishing the planning context for the project during the desktop phase is twofold:

- identifying future land use and development issues and opportunities and constraints for establishing a regional biolink
- analysing the current approach of planning schemes to protecting and enhancing biodiversity values and potential planning issues for the future.

The following sections summarise key regional planning issues, and provides a comparative analysis of the three relevant municipal planning schemes. Further detail in regards to the existing planning context is included in Appendix B. Relevant regional policy is also included in the literature review provided in Appendix A.

In completing this review, appropriate consideration and discussion of available planning tools for implementing the Biolink Action Plan can be considered and discussed with the local planning authorities during the next phase of the project.

This planning review includes a desktop assessment of zones and overlays within the current biolink from information collated from Wyndham City Council, Moorabool and Melton Shires and the Victorian Planning Scheme (Figures 4.1 and 4.2).

4.2 REGIONAL PLANNING

4.2.1 Melbourne's Strategic Impact Assessment

The Strategic Impact Assessment Report (DSE 2009) for the *Environment Protection and Biodiversity Conservation Act 1999* outlines how the impacts will be managed of the urban growth boundary expansion, the Regional Rail Link project and the Outer Metropolitan Ring/E6 Transport Corridor.

Matters of national environmental significance include threatened flora, fauna and ecological communities—most relevant to the project is the Natural Temperate Grassland of the Victorian Volcanic Plain (often commensurate with Plains Grassland EVC).

Two distinct grassland reserves (totalling 15,000 ha) west of Melbourne are being established by DSE. The grassland reserves are part of a suite of measures being implemented by the Victorian government in accordance with the Melbourne Strategic Impact Assessment to compensate for future biodiversity impacts of the associated projects.

Grasslands

Grasslands are naturally treeless and dominated by native grass or herb species (SEWPC 2011) such as kangaroo grass (*Themeda triandra*), wallaby grasses (*Austrodanthonia* spp.) spear grasses (*Austrostipa* spp.) or tussock grass (*Poa* spp.). Diverse grasslands were once widespread in the Werribee catchment, with a variety of herbs, including wildflowers interspersed amongst native grass tussocks. Native grasslands have undergone a significant decline in extent and quality and face continued threats through land use change and weed invasion. As such this vegetation community has been classified as endangered under the *Victorian Government Flora and Fauna Guarantee Act* (FFG 1998) as western (basalt) plains grassland community and listed as critically endangered natural temperate grassland of the Victorian volcanic plain (SEWPC 2011).

Remnant grasslands in the catchment provide habitat to a unique fauna community and support a number of nationally threatened species such as golden sun moth (*Synemon plana*) and striped legless lizard (*Delmar impar*).

Open grassy woodlands

These vegetation communities are normally only found north of the Great Dividing Range and lie within a rain shadow. Small remnant, now isolated, pockets of the open woodland vegetation community occur in the mid and lower Werribee River catchment. These woodlands are defined plains grassy woodland considered endangered in Victoria (DSE 2001) or as grassy eucalypt woodland of the volcanic plain, a nationally threatened vegetation community (SEWPC 2011). This grassy woodland community is usually dominated by grey box (*E. microcarpa*) or buloke (*Allocasuarina luehmannii*) such as Eynesbury woodland south of Melton.

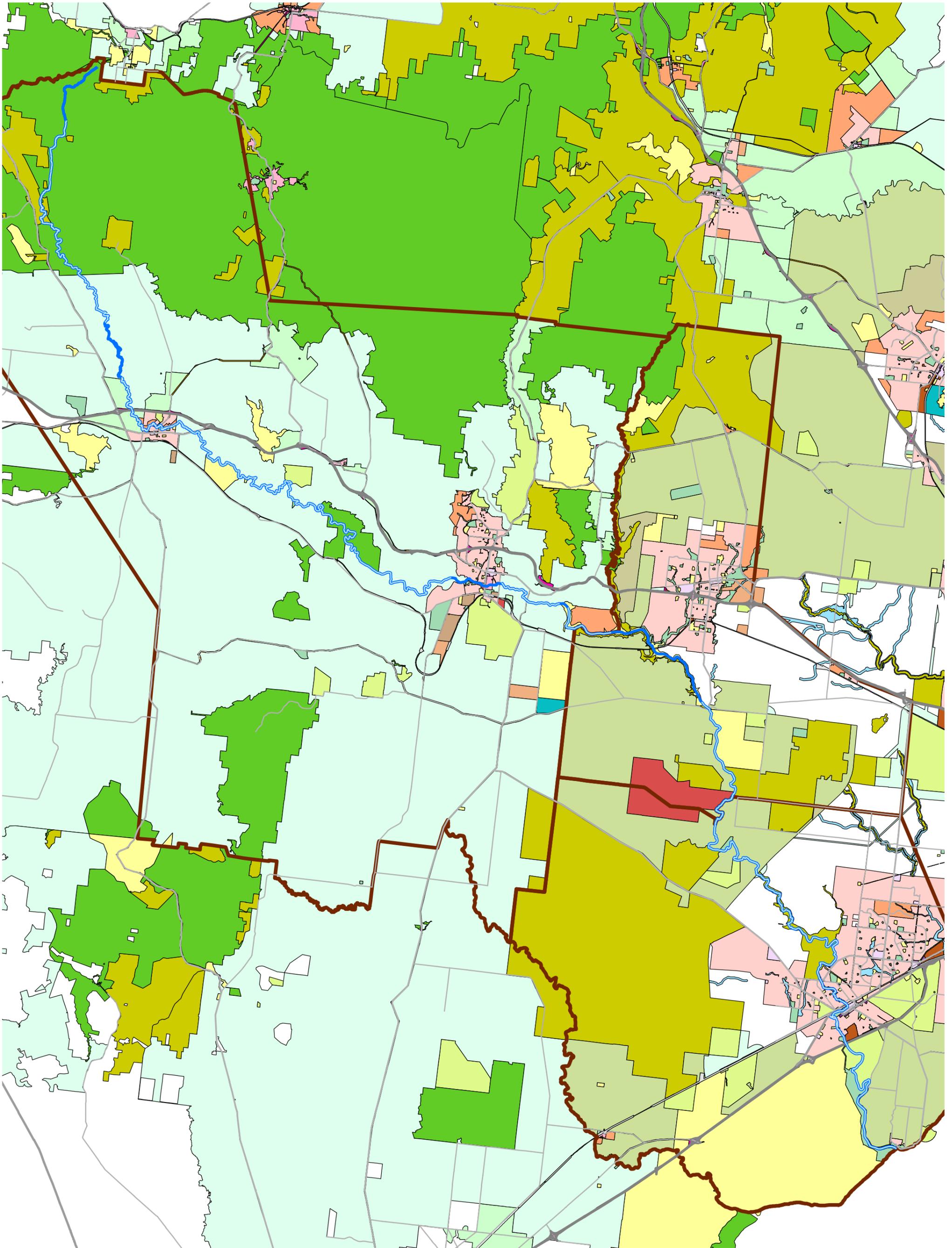
In low rainfall areas some sections of Mallee woodland are found dominated by bull Mallee (*E. behriana*) and many other tree and shrub species, some usually associated only with semi-arid areas. The last remaining patch is Long Forest near Baccus Marsh currently managed by Parks Victoria.

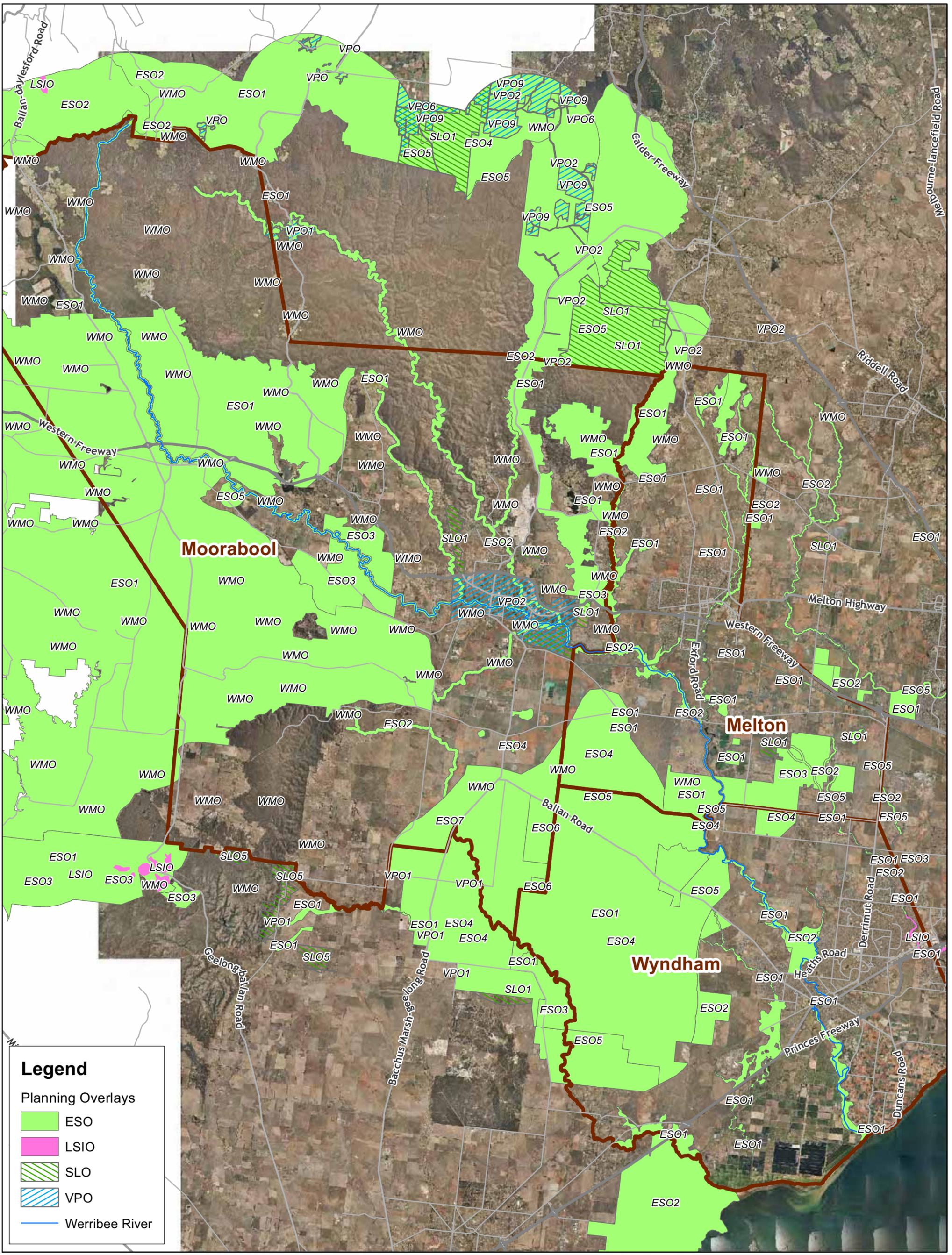
Remnant grassy woodlands in the Werribee catchment contain key habitat components such as old hollow bearing trees, logs and a diverse vegetation structure that support a number of fauna species, including threatened woodland birds, including the swift parrot (*Lathamus discolor*) and grey-crowned babbler (*Pomatostomus temporalis*).

Escarpment shrubland

Escarpments are a refuge for plants and animals. They have the potential to be high value sites for remnant flora and fauna habitat as a transition zone linking the plains vegetation to the river. Escarpment shrubland is often unmanaged as terrain is difficult and they have limited uses for agriculture or development. Escarpment shrublands are

commonly infested with perennial weeds such as boxthorn. In some locations rare and threatened indigenous flora species are found protected by the terrain and poor suitability for other land uses.





Legend

Planning Overlays

- ESO
- LSIO
- SLO
- VPO
- Werribee River



1:200,000 @A3		SOURCE: DSE, Melbourne Water, Melton Shire, Moorabool Shire & Wyndham City	
FILE LOCATION	COORDINATE SYSTEM	DATE	
O:\G&I\GIS\MEN107_Werribee_Biolink\Data_Control\Maps\MXD\Issued	GDA 94 ZONE 55	16/11/2011	

Kellogg, Brown & Root Pty Ltd

KBR

Kellogg, Brown & Root Pty Ltd ABN 91 007 660 317
Level 3 441 St Kilda Road Melbourne Vic 3004

Prepared: EM, Checked: JS

TITLE Leadwest Werribee River Biolink Action Plan Planning Overlays Map	
Figure 4.2	PROJECT No. MEN107
MAP No. MEN107-G-MAP-012-A	REVISION A

O:\G&I\GIS\MEN107_Werribee_Biolink\Data_Control\Maps\MXD\Issued\MEN107-G-MAP-012-A.mxd

4.2.2 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. The UGB and its location with regard to the Werribee River BAP study area is shown in Figure 3.2.

The UGB was expanded in 2010 and is currently under review as part of the Logical Inclusions process. The 2006 Growth Area Framework Plans explain how land brought into Melbourne's UGB will be used. These plans are also being reviewed to deal with the land brought into the UGB in 2010.

The UGB clearly distinguishes land that is designated urban, to be used for housing, industry and commerce, from non-urban land. Non-urban land is to be used for activities such as conservation, agriculture, resource development and suitable community infrastructure like airports; water supply and sewage treatment facilities that require large areas of open land (GAA 2011).

4.2.3 Growth corridor plans

On July 29 2010, the Legislative Council of the Victorian Parliament passed amendment VC68 to expand Melbourne's urban growth boundary. This means that 43,600 ha will be brought into Melbourne for development.

The Growth Areas Authority (GAA) has released growth corridor plans (GCPs) for this area. This determines long term patterns of urban growth and identify where development should occur, including activity and town centres, residential, employment, and mixed use employment. It also identifies transport networks.

The GAA has released GCPs for Cardinia Creek that has provides a conservation corridor on the creek in the urban structure plans (GAA 2011). There may be scope for the creation of conservation corridors along the Werribee River and other reserves that align with the vision of the Werribee Biolink.

4.2.4 Precinct structure plans

The GAA is the statutory authority responsible for overseeing the preparation of all PSPs in Melbourne's growth areas and advising the Minister for Planning on their approval. PSPs lay out roads, shopping centres, schools, parks, housing, employment, and the connections to transport and seek to integrate complex issues like biodiversity, cultural heritage, infrastructure provision and council charges.

The following PSPs (which are yet to be completed) interface with the Werribee River:

- PSP 1092, Westbrook
- PSP 1091, Riverdale
- PSP 1088, Oakbank
- PSP 40E, Ballan Road (Wyndham Vale).

4.2.5 Werribee River Shared Trail Strategy

The Werribee River Shared Trail Strategy is a joint initiative between Melton, Wyndham City and Parks Victoria. The study area is from the Melton Freeway (Toolern Creek) in the north and continues downstream, incorporating the Werribee River from Exford Weir to Presidents Park and the Riverbend Historical Park in Wyndham Vale.

A desktop review of flora and fauna values associated with the Shared Trail Strategy has been completed (Ecology Partners 2011). The study area encompasses 500 m either side for the Werribee River and Toolern Creek. The basis of the review is analysis of Victorian Government and Australian Government databases (as per Section 2.2); no field work has been completed to date.

The alignment and strategy is yet to be finalised, but will included in subsequent versions of the BAP once it has.

4.2.6 Future land use and development issues/opportunities and constraints

This section will be completed following Technical Support Group meetings, workshop discussions and completion of planning context submission from councils and reported in the Werribee River Action Plan Biolink.

4.3 LOCAL PLANNING

4.3.1 Comparative analysis

A detailed review of the three planning schemes relevant to the Werribee River BAP is provided in Appendix B. Table 4.1 provides a comparative analysis of the current schemes policy and controls with regards to the Werribee River, waterways and biodiversity protection and enhancement.

Table 4.1 Comparative analysis of the council planning schemes

	Wyndham City	Melton Shire	Moorabool Shire	Comments
Municipal Strategic Statement (MSS)	CI21.02, 21.03, 21.04-2, 21.05-1, 21.05-6, 21.05-7, 21.05-11	CI21.01-11, 21.02, 21.04, 21.04-4, 21.04-7, 21.04-8	CI21.02	Wyndham and Melton have policies on waterways, including the Werribee River whereas Moorabool does not. Moorabool does not have a comprehensive Environment component in its MSS compared to the other two councils. Melton has a Physical Framework Plan that indicates key land use units and a preferred direction for these areas (see Appendix B). Wyndham has a Waterways Corridor policy to protect environmental values along waterways
Local Planning Policy Framework (LPPF)	CI22.07, 22.08, 22.09,	CL22.02, 22.03, 22.09	CI21.02	Moorabool Shire does not have any local policies related to the Werribee River, waterways or biodiversity. Wyndham and Melton share policies relating to the Eynesbury Station which contains significant environmental values including a community of Plains Grassy Woodland. These policies aim to protect environmental values along the Werribee River
Zones	RCZ, GWZ, PUZ1, PCRZ, SUZ4	RCZ, GWZ, PUZ1, FZ	RCZ, GWZ, PUZ1, FZ, PCRZ	Zones policy and control is consistent across the three municipalities
Overlays	ESO1, ESO2, ESO3, ESO4, ESO5	ESO1, ESO2, ESO3, ESO4, ESO5, SLO1	ESO1, ESO2, ESO3, ESO4, ESO5, ESO6, ESO7, SLO1, WMO	Moorabool has comprehensive overlay and schedule information for environmental values. Wyndham makes reference to its Waterways Strategy to protect environmental values along the Werribee River

* This excludes Road Zones, Industrial Zones, Business Zones, Residential Zones.

4.3.2 Effectiveness of current planning controls

The variability between the council's schemes means that currently the planning schemes do not provide consistent regional approach to the protection of the Werribee River and its biodiversity values.

All schemes, via the Victorian Planning Provisions, do require development to consider Clause 52.17, Native Vegetation and application of Victoria's Native Vegetation Framework (DNRE 2002). This includes the requirement to demonstrate application of the 'three step approach' of avoid–minimise–offset. Decisions to remove native vegetation are also made in the context of impacts on habitat for threatened flora, fauna and impacts on ecological communities.

The planning context framework will be further discussed in the stakeholder workshop and Technical Support Group meetings with the view of developing appropriate tools to influence decisions to enhance the biodiversity assets of the Werribee River biolink.

5 Gap analysis

5.1 APPROACH

A comprehensive gap analysis will be undertaken using biodiversity assets mapping based on information from Moorabool, Melton and Wyndham local government, DSE, Melbourne Water and a range of other sources.

Following the collation of existing biodiversity assets, current projects and proposed works in the catchment, a broad scale analysis of gaps will be applied to the mapping.

Identifying gaps present in the proposed biolink in Figure 3.2 will provide the capacity to determine the best opportunities for works and other management action in the future.

The aim of the gap analysis is to ensure the key biodiversity assets identified by stakeholders are potentially enhanced by being included in the Werribee River biolink.

The intent is to target these areas identified in the gap analysis and develop with existing land managers a priority works program and also identify areas where landholders can be encouraged with advice and incentives to restore environmental values within the biolink.

Consideration will also be given to the role of strategic planning for future land use and development for the biolink across the three municipalities.

6 Priority actions

6.1 APPROACH TO SETTING PRIORITIES

The approach to establishing priority actions, as outlined earlier in the report, will be:

- establishing the importance of the biodiversity asset being targeted and the purpose of works for the biolink, and at national, Victorian and local level (example; revegetation to improve connectivity between endangered patches of grey box woodland)
- identifying threats and challenges to management of the assets
- ensuring the relevance of the asset to fit within the overall Werribee Biolink framework (e.g. core area, node, corridors, stepping stones)
- establish the capacity and likelihood of agencies, councils, landcare and environment groups or public and private land managers to undertake works on the identified assets
- recommend projects for on-ground works to address the priority assets.

The action plan will also explore suitable planning mechanisms for longer term strategic land use planning for the implementation of the BAP.

A collation of information on biodiversity assets and threats will be incorporated into a matrix table to determine the priority of each management action (Table 6.1).

Table 6.1 shows how the threat matrix is likely to be structured to determine what threats are impacting on the asset to help determine priority actions.

Table 6.1 Threat matrix and likely structure to determine the impact of threats on the asset

Asset	Threat	Function (core area, node, etc.)	Likelihood	Consequence
Eynesbury Woodland/Grassland	Pest animals	Node	High	High

6.2 PRIORITY ACTIONS

Table 6.2 is an example of what will be included in the final Werribee Biolink Action Plan. This table will be accompanied by a map and outline priority actions listed to both achieve local project aims to maintain or enhance environmental assets as well as contribute to objectives within the overarching Werribee biolink.

Table 6.2 sets out an example where priority actions will be listed to achieve site aims to maintain or improve environmental assets to contribute to overall objectives for the Werribee biolink.

Table 6.2 Priority Actions example

Action no.	Priority	Asset location/ description	Biolink function and aim	Action	Performance criteria	Time frame
1	High	Cobbledick Road ford Werribee river crossing	Protect and enhance the reserve as a key 'core' area for the biolink	Revegetate with native riparian vegetation	Native vegetation cover 80 per cent	2011–15

7 Conclusion

The Werribee River biolink has been based on a range data sourced by KBR, namely from local government, DSE and Melbourne Water.

The biolink definition and final biolink map are a 'work in progress' where draft maps have been submitted to the Technical Support Group initially and again at the stakeholder workshop. The final biolink map will be a collation of the input, discussions and agreement from key stakeholders.

Once the desktop report has been finalised the final action plan document will be developed following stakeholder consultation to create a long-term plan for a regional biolink for the Werribee River.

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Appendix A

BACKGROUND INFORMATION REVIEW



Werribee River Biolink Action Plan

Existing Information Review

Alan Thatcher
Project Manager
Werribee River Biolink Action Plan

8/09/11

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1. WERRIBEE PLAINS REGIONAL SUSTAINABILITY FRAMEWORK

1.1. Australia Conservation Foundation

1.1.1. Werribee Plains: Biodiversity connectivity: Resilience of natural assets and systems to climate change and fragmentation by urbanization

Greening Australia was commissioned by the Australian Conservation Foundation to undertake a study to develop a strategic approach to planning for biodiversity connectivity in the Werribee Plains as a major component of the development of the Werribee Plains Regional Environmental Sustainability Framework.

In this study the scientific basis for promoting a connected landscape was discussed. The results from a variety of papers and studies indicate it is important for many reasons including but not limited to the maintenance of genetic diversity, individual migration, disaster refuge and patch resources. The importance of the capacity for both flora and fauna to migrate has been highlighted with the continuing impact of climate change and need for movement to respond to changes in environmental conditions.

In an overview of the role of connectivity in Australian conservation the authors contend that:

The existing system of nature reserves in Australia is inadequate for the long-term conservation and restoration of native biological diversity because it fails to accommodate, among other elements, large scale and long-term ecological processes and change, including the physical and biotic transport in the landscape.

The overview identifies seven major categories of ecological processes that describe the significance of landscape connectivity to the future survival and health of ecological communities and protection of threatened flora and fauna species:

- Critical species interactions – This describes how the interaction of animal species can have a major effect on ecological processes that determine the abundance, and other population dynamics of fauna species. It has been shown, for example, that the disappearance of key interactive species can radically change ecosystems.
- Long distance biological movement – Large areas incorporating an interconnected network of patches has been found to be essential for many species.
- Disturbance at local and regional scales – Disturbances such as fire that can have catastrophic impacts on individual areas. It is important for a network of protected areas to remain connected at the appropriate spatial and temporal scales to protect the availability of habitat for native species.
- Global climate change – Because of the changes being brought about by climate change it is important that species can disperse geographically to a landscape that provides appropriate ecological conditions.
- Hydroecology – Interruptions of hydrogeological processes can impede essential landscape scale movement of species.
- Coastal zone fluxes – A wide range of human activities can interfere with ecological processes along coasts and can be catastrophic for natural communities.
- Spatially-dependent evolutionary processes - It is described that evolutionary processes require the movement of organisms over large areas and that not only is this important for genetic variability but for range expansion, the latter which is often a precursor to evolutionary differentiation and speciation.

2. NATIONAL GOVERNMENT

2.1. Australia's Biodiversity Conservation Strategy 2010 - 15

Priorities for action

Priority for action 2:

2.2 Maintaining and re-establishing ecosystem functions

Building structural and functional connectivity at multiple scales will be an important consideration in many landscapes and seascapes to create opportunities for species to move and find resources as the climate changes and to facilitate the protection of migratory species. Connectivity is also likely to play an important role in retaining genetic diversity. Our knowledge can be enhanced by identifying the scales at which connections are most needed and by understanding what mix of protective climate change refugia, areas connected by continuous habitat corridors, stepping-stone links and complementary land uses will be required in each system.

Outcomes

Outcomes include:

- 2.2.1 An increase in the connectivity of fragmented landscapes and seascapes.

Targets

- Target 5: By 2015, 1,000 km² of fragmented landscapes and aquatic systems are being restored to improve ecological connectivity.
- Target 6: By 2015, four collaborative continental-scale linkages are established and managed to improve ecological connectivity.

2.2. Australia's Biodiversity and Climate Change (2009)

At the national level, the Australian Government in its report on "Australia's Biodiversity and Climate Change released in 2009 have recognised that:

- *Approaches to building resilience include managing appropriate connectivity of fragmented ecosystems, enhancing the National Reserve System, protecting key refugia, implementing more effective control of invasive species, and developing appropriate fire and other disturbance management regimes.*(Executive summary)
- *With increasing pressure on species to migrate in response to a changing climate, and for ecosystems to disassemble and reassemble, there needs to be a greater focus on achieving appropriate types of landscape and seascape connectivity to 'give space for nature to self-adapt'. A key strategy is to integrate all types of protected areas into a single national system, and to facilitate better integration of off-reserve conservation with protected areas.*

Connectivity is one of ten ecological principles relevant to environmental change identified in the report. The principle is that:

Connectivity among resources and habitat required by species determines the longer-term patterns of species distributions and abundance and ultimately, longer-term landscape –scale biodiversity.

The report describes connectivity as:

.....the ability of species, ecological resources and processes to move through landscapes – not only in the terrestrial domain, but also aquatic systems and between the two. Connectivity,

and in particular the value of corridors, has been much debated. Some debates about connectivity stem from the term being too broadly conceived, rendering it difficult to use in practice, and from different interpretations of terms Lindenmayer and Fischer (2007) suggested that some controversy might be avoided by making a careful distinction between:

- *Habitat connectivity or the connectedness of habitat patches for a given taxon*
- *Landscape connectivity or the physical connectedness of patches of a particular land cover type as perceived by humans*
- *Ecological connectivity or connectedness of ecological processes at multiple spatial scales.*

It was further noted that:

- Habitat connectivity for a given species can be different from a human perspective of landscape connectivity;
- Connectivity is always relative to the individual species that move or exchange genetic material;
- A single habitat that appears to have high connectivity to one species may be highly fragmented to another.

In relation to building connectivity the report says that in general regions should have:

- A diversity of levels of connectivity;
- Provision for different rates of movement; and
- Provision for development of new combinations of species.

3. VICTORIA

3.1. State Government

3.1.1. Melbourne Water

Port Phillip and Westernport Regional River Health Strategy 2007

Werribee catchment

- Approximate area of 2700 km²
- The catchment includes all rivers and creeks to the west of the Maribyrnong River through to Little River, such as the Werribee and Lerderderg rivers and Kororoit and Skeleton Creek.
- Around 25% of the catchment retains natural vegetation, 67% is agricultural and 5 % urban.
- Many of the major rivers and creeks flow through coastal wetlands listed under the Ramsar convention, including Melbourne Water's Western Treatment Plant, Point Cook Marine Sanctuary, Avalon Airport and the Spit Wildlife Reserve.
- A feature of the catchment is the presence of several remnant grasslands that are of state or national significance for their flora values, such as Derrimut Grasslands, William Anglis and the Altona North Grass reserves.
- The Werribee River is an important clan estate boundary forming a natural boundary between the Woiwurrung and Boonwurrung language groups. The high density of archaeological material, including fish traps, artefacts and burial sites, along their banks and escarpments demonstrate that both Kororoit Creek and the Werribee River had large campsites.

Five year program objective

- Strategies will be put in place to reduce flow stress on the rivers and creeks, while protecting water supply values.
- The Werribee River will remain a major focus for passive recreation, fishing and boating as the network of parks and linear trails expands to cater for predicted population growth.

Lerderderg and Werribee Rivers – 5 year river health program / 10 yr target conditions (includes Lerderderg River & Goodmans Creek)

- Regional importance – very high
- Management objective – **maintain** ecologically healthy rivers and enhance social values
- Current condition good – target 'good'
 - Aims to increase 'vegetation' from 'moderate' to 'good'
 - Maintain water quality, aquatic life, habitat and stability and flow.
- Key risks are, changes to natural flows, barriers to fish migration, and in the lower section, **poor quality streamside zone.**
- River Health Program actions:
 - Appropriate environmental flows
 - Activities to manage water quality
 - Stream front management involving 2 km of revegetation
- Overall river health program aims to collect additional river health information, maintain social and heritage values and protect 31 km of ecologically healthy river.

Upper Werribee River

- Regional importance - very high
- Management objective – improve condition and enhance social values
- Current condition – moderate and target 'good'
 - Aims to increase habitat and stability, and vegetation from 'moderate' to 'good'
 - Maintain water quality (good), aquatic life (moderate) and flow (excellent)

- Key risks to river health include barriers to fish migration, **poor quality streamside zone**, and stock access.
- River Health Program actions:
 - Priority actions will be implemented from the Werribee Catchment Nutrient Management Plan
 - Stream frontage management, including weed control
 - Additional river health data will be collected

Middle Werribee River

- Regional importance – very high
- Management objective – improve condition
- Current condition – moderate and target 'good'
 - Aims to increase water quality and aquatic life from good to excellent, and habitat & stability and vegetation from moderate to good.
 - Maintain good flow.
- This section of the river includes:
 - Pykes Reservoir
 - Melton Reservoir
 - The Werribee Gorge that has notable geological, landscape and biodiversity values
 - The Werribee Gorge State Park
- Key risks include changes to the natural flow regime, fish barriers and presence of weeds. And erosion of bed and banks in the tributaries.
- River Health Program actions:
 - Erosion control
 - Revegetation and weed control over 40 km
 - Removal of willows and other introduced trees and shrubs
 - Environmental flows that will help maintain a healthy river

Lower Werribee River

- Regional Importance – very high
- Management objective- improve condition to sustain downstream values and enhance social values
- Current condition – poor and target 'moderate'
 - Aims to improve vegetation from poor to good, habitat & stability from moderate to good.
 - Maintain water quality and aquatic life
- This section of the river:
 - Runs through Werribee and the Western Treatment Plant
 - Is a significant area for passive recreation
 - Fishing and boating are popular in the estuarine sections
 - Through the Western treatment Plant, the Werribee River is associated with important migratory wading bird habitat
 - Is home for a range of fish species, platypus and lined with high value river red gums
 - Supplies an intensive vegetable growing area at Werribee South
- Key risks include changes to the natural flow, loss of streamside vegetation and weeds. The expanding urban area associated with Werribee is also a potential source for future water quality issues.
- River Health Program actions;
 - A new regional and recreational park is to be created along the lower reaches of Werribee River and approximately 20 km of revegetation and weed control activities are planned for this section.
 - Investigations of the Werribee River to determine how much flow is required to meet environmental needs
 - Providing environmental flows
 - Planning guidelines to minimise the impact of Port urban development

Appendix 5 – Targets

Very useful identification of 'output' targets on pages 84 – 88 of the Strategy.

Stream Frontage Management Program

Corridors of Green

Community Grants Program

3.1.2. Department of Sustainability and Environment

Victoria's Biodiversity Strategy 2010 – 2015 (Consultation Draft)

Victoria's Biodiversity Strategy 2010 – 2015 (Consultation Draft) was released by the Department of Sustainability and Environment in 2010.

Three broad natural resource management strategies across the Victorian landscape/seascape identified were:

- Flagships
- Biolinks
- Resilience

Biolinks are broad geographic areas identified in the LBWP for targeted action to:

- increase ecological function and connectivity,
- Improve the potential of plants and animals to disperse,
- recolonise, evolve and adapt naturally.

The development of biolinks is intended to build ecosystem resilience and sustain the productivity of landscapes. **The intention of the former Victorian Government was to instigate to instigate a system of regional-scale biolinks that link flagship areas.** Within this broader concept, it was proposed that spatial mapping of the specific needs of biodiversity would be undertaken to ensure a consistent and transparent technical basis for planning actions and to inform decisions on land use change and address progressive changes in land management (see Section 3.7 NaturePrint). Victoria's agenda for biolinks was seen as consistent with the draft of Australia's Biodiversity Conservation Strategy, and supporting implementation of landscape-scale sectoral partnerships like Habitat 141.

NaturePrint

NaturePrint is being developed to provide:

- a framework to integrate current biodiversity datasets and define parameters for the collation of new biodiversity data;
- more effective mechanisms to access spatial biodiversity data and allow the public to understand the range of biodiversity values, threatening processes and the importance of ecosystem function;
- operational level information that can be applied within the broad (natural) asset areas outlined in the Land and Biodiversity White Paper.

In particular, NaturePrint will be designed to give systematic consideration to:

- the range of biodiversity assets;
- their relative conservation status;
- their life history attributes (including reproductive characteristics and tolerances of disturbances);
- the functional context of locations where assets occur (including ecological processes, threats and opportunities); and
- related long-term risk and feasibility scenarios (including climate change)

Securing our Future (2009)

The Victorian Government in the release of *Securing our Future – A white paper for land and biodiversity at the time of climate change* in 2009 identified connectivity as a major component of its Goal to safeguard Victoria's land, water and biodiversity and one of three strategic directions to achieve this Goal.

A major element of the Government's framework for action is to focus attention on landscapes that provide the people of Victoria with important ecosystem services. The *Western Volcanic Plains* is one of 13 flagship areas, and includes the area encompassed by the Werribee Plains RSF.

Biodiversity Action Planning: Landscape Plan for the Werribee Zone (draft 2003)

(Source: DSE Biodiversity Action Planning – Landscape Plan for the Werribee Zone.pdf from web – current status not established)

Guiding principles for biodiversity action

- Goals at the landscape scale
- Landscape-scale mechanisms, includes:
 - *protection mechanisms - conservation reserves, forest planning, local government planning, covenants, Land for Wildlife and incentives including fencing for stock and pest animal exclusion;*
 - *enhancement mechanisms – Flora and Fauna Guarantee Action Statements, Threatened Species Recovery Plans, Threat Abatement Plans, public land management planning, Regional Catchment Strategies, research on market instruments and agricultural systems and incentives;*
 - *restoration mechanisms - native vegetation planning, regional action plans, community education and Landcare activities and incentives.*

The institutional arrangements that deliver these mechanisms include:

- *public land - Parks and Reserves, State Forest, Crown Land;*
- *Local Government;*
- *private landholders; and*
- *Catchment Management Authorities.*
- Identifying viable remnants for protection – documentary sources, including:
 - *assessments covering public and private land such studies of Sites of Zoological Significance and Botanical Significance;*
 - *Catchment Management Authority plans for public land water frontage and other streamside areas;*
 - *Consultant's reports on particular sites, commissioned by landholders/managers;*
 - *DSE Forest Management Plans;*
 - *Environmental impact assessments for proposed developments;*
 - *Local Government bushland reserve management plans;*
 - *Management plans for parks and other conservation reserves;*
 - *Other Local Government conservation strategies;*
 - *Other studies, e.g. rail corridors and rail trail reserves;*
 - *Ramsar Management Plans;*
 - *Reports of field naturalists clubs and other environmental groups;*

- *Salinity Management Plans;*
- *VicRoads roadside management plans; and*
- *Victorian Assessment Council (formerly Environment Conservation Council, Land Conservation Council) investigations;*
- *Wetland Operational Plans.*
- Identifying viable remnants for protection – field assessment techniques
- Where to focus restoration efforts
- Guidelines for revegetation

Werribee Landscape Zone

- Comprehensive description of the biodiversity values of the Werribee Landscape Zone
- A summary of priority biodiversity actions recommend that the focus for management should be to:
 - *develop a Conservation Management Network for the Werribee Plains to protect and manage woodland, grassland and wetland conservation values;*
 - *develop conservation agreements to protect areas supporting threatened EVCs and threatened species on public land;*
 - *implement Recovery Plans and Action Statements for threatened species and communities on public and private land;*
 - *protect and enhance areas supporting endangered EVCs and threatened species on public and private land;*
 - *protect and enhance lakes and swamps on public and private land for wetland bird conservation;*
 - *protect and enhance large areas of native vegetation on private land through incentives, purchase, covenants or land management agreements; and*
 - ***protect, enhance and restore riverine corridors especially the Werribee and Little River.***

3.1.3. Parks Victoria

Strategic Directions Statement for the Werribee River Regional Park (2009)

Source www.parkweb.vic.gov.au/urbanparks/documents/SDS_Werribee.pdf

Lerderderg State Park and Werribee Gorge State Park Management Plan (1999)

This 1999 plan was evaluated in 2009 and will continue to be implemented for a further five years.
Source www.parkweb.vic.gov.au/resources07/07_0251.pdf (accessed 5.07.11)

3.2. Regional organisations

3.2.1. Port Phillip and Westernport CMA

Living Links – Corridors of Connectivity

Salinity in the Port Phillip and Western Port Region 2010

(Source: PPWCMA website > publications)

Salinity Management Zone 11 – Wyndham/Melton Growth Corridor

- Appears to be a very good systematic spatial approach to resource management.

- Information that needs to be considered in terms of any proposed management actions.

Port Phillip and Westernport Regional Catchment Strategy - Current RCS 2004-2009

Water

Regional goal for water resources

Sustainable water use and healthy waterways, wetland estuaries, coast, bays and seas, embracing the global principles of sustainability and encompassing:

- Managing the pressures on the water environment that are inevitable with a large and growing population in the region and an estimated 100 million visits to its waterways annually;
- Passing waterways onto future generations in a better condition than they have been received;
- The management of threatening processes including unsustainable land-use, urban expansion, loss of riparian vegetation, loss of habitat and pest invasion;
- Protection of Indigenous and other cultural heritage values and provision of water-based assets in a condition fit for recreation and other social and cultural activities;
- Sustainable water use for residential, commercial, industrial, agricultural, aqua cultural and environmental purposes; and
- Management of fresh and marine water systems to protect their fauna and flora and the integrity of ecosystems.

Objectives

- WO1 Efficient use of water resources with minimal new impacts.
- WO2 Protect and improve the environmental health and social and economic values of waterways and wetlands.
- WO3 Protect and enhance the environmental health and social and economic values of estuarine, coastal and marine systems.
- WO4 Improve water quality in waterways, aquifers, wetlands, estuaries, bays and seas.
- WO5 Ensure the management of water resources minimises risks to natural ecosystems, public land, private assets and public safety.

Key risks to surface waters, rivers and streams

- WR1 – Degradation of the streamside zone.
 - Vegetation clearing
 - Stock access
 - Weed invasion
 - Absence of Crown frontage
- WR2 – Land use change
 - In particular urbanisation
- WR 3 - Hydrological stress
 - Diversion of flows to provide water supplies
 - Werribee River is reduced to 77% of its natural flow
 - A threat to environmental values.
- WR4 – Pollutants that reduce water quality
 - Stormwater and other diffuse sources
- WR5 – Barriers
 - In-stream barriers and impeding movement of fish
- WR6 – Erosion of bed and banks
 - Land use change resulting in vegetation clearance
- WR7 - Stock access

Biodiversity

- The RCS has as one of its 5 objectives (BO4) to ‘*improve the connectivity and long-term security of indigenous habitats and species*’.
- The Strategy recognises that ‘*increases the security of habitats and ensuring they are connected is an important way of managing some threats and improving the long-term viability of natural biodiversity*’.
- The targets for connectivity are not quantitative but rather express the aspirational goal of increasing the connection between the region’s fragments of native vegetation and the great importance of improving connectivity on highly modified landscapes including farmland and urban areas.
- The key risks to biodiversity are identified as:
 - Loss and degradation of native vegetation through clearing and urban development;
 - Pest plants and animals;
 - Land and water management issues; and
 - Salinity.
- The draft Native Vegetation Plan identified the following hierarchy of actions:
 - Protection of remnant vegetation;
 - Management of existing remnants
 - Enhancement of degraded remnants;
 - Enhancement of connectivity and integrity through recreation of habitat;
 - Revegetation for the mitigation of land degradation;
 - Re-creation of isolated areas of habitat; and
 - Revegetation works of a lower order than those outlines above.
- Actions relevant to connectivity are:
 - Finalise and implement the Native Vegetation Management Plan including programs to increase connectivity;
 - Education and training for local government and other organisations;
 - Further mapping of the extent of native vegetation and an appropriate scale for works programs by local government and community groups;
 - Increasing the area and quality of heavily depleted vegetation types on public land and under covenant programs;
 - Developing and implementing mechanisms to offset native vegetation clearance and net gain in habitat hectares; and
 - Develop an inventory of urban biodiversity and undertake , research, community education and involvement campaigns to promote and pilot urban practices that contribute to the health of natural ecosystems

Port Phillip and Westernport Regional Catchment Strategy - New RCS directions

Port Phillip and Westernport Native Vegetation Management Plan

The *Port Phillip and Westernport Native Vegetation Plan* (2006) identifies the importance of corridors and that local government, public land managers and private landowners need to work together and take a long-term, strategic approach to developing and protecting corridors. Importantly the plan recognises that buffering and linking vegetation fragments is best done with local knowledge and access to spatial and land-use planning information at a relevant scale.

Strategic Direction 4 – Increase the quantity of native vegetation

- Investment decisions for restoration and revegetation programs should be influenced by the potential for increasing the connectivity between patches.
- The PPWP region is highly developed and there are limited opportunities to create new corridors. However, opportunities may be maximised in many areas if local governments, public land managers and private landowners work together and take a long-term, strategic approach to developing and protecting corridors. Many local governments have already prepared plans that include provisions for corridor and buffer areas while the Cardinia Environment Coalition of landholder groups has a highly developed Biolinks program in action across the northern part of the Western Port catchment.

- The Plan recognises that **identifying the opportunities to buffer and link vegetation fragments is best done with local knowledge and access to spatial and land-use planning information at a relevant scale.**

Werribee Catchment Action Program (1999)

(Source: hard copy)

The Werribee Catchment Action Program (CAP) was developed by the Werribee Catchment Implementation Committee and the Port Phillip Catchment and Land Protection Board (the precursor of the Port Phillip and Westernport CMA).

The purpose of the CAP was to promote partnerships in the catchment and to guide development of annual works programs by agencies, local government councils, community groups and other stakeholders by identifying priorities for local action including on-ground works.

Werribee River Catchment Nutrient Management Plan (2002)

(Source: hard copy)

The Werribee River Catchment Nutrient Management Plan was developed to determine the activities and locations within the catchment which are generating nutrients as well as pin pointing some of the specific threats which these nutrients pose to waterway health.

Grow West

(Source: www.growwest.com.au/overview.aspx)

The vision for this program is to rejuvenate 10,000 hectares of land in the Upper Werribee Catchment by transforming the landscape through the implementation of sustainable land management practices such as revegetation, farm forestry and remnant enhancement and protection works. The project area encompasses the Brisbane Ranges National Park south of the Werribee River and Wombat State Forest, Lerderderg State Park and Pyete State Forest north of the river.

Biolinks between Brisbane Ranges and Wombat State Forest (2009)

A Report on the Value and Viability of Potential Biolinks between Brisbane Ranges and Wombat State Forest, undertaken by the Port Phillip and Westernport CMA, was released in October 2009.

Werribee Catchment Landcare Stimulus Project

The project by the PPWCMA is aimed at revitalising degraded landscapes on private land in the Werribee river catchment for agriculture and natural resources management especially in relation to issues associated with water quality, weed control and biodiversity.

3.2.2. Werribee Open Range Zoo

Werribee River Wildlife Corridor Management Plan 2010 – 2015

The Werribee Open Range Zoo's vision for the Werribee River Wildlife Corridor, within the Zoo boundaries, is to:

....sustain and improve habitat for local fauna along the Werribee River and its floodplain within the Werribee Open Range Zoo.

The specific objectives of this management plan are to:

- *Retain and enhance the diversity and/or abundance of indigenous fauna, particularly threatened and priority species*

- *Maintain and enhance native vegetation cover and floral diversity through protection, revegetation and weed control*
- *Prevent further degradation of soil and water quality*
- *Resolve potential conflicts between biodiversity and other management priorities appropriately*
- *Maintain appropriate hydrological conditions*
- *Preserve cultural heritage*
- *Increase staff conservation awareness and skills*
- *Engage zoo visitors, stakeholders and broader community in the Werribee River Wildlife Corridor restoration program.*

3.3. Local government

3.3.1. Wyndham City

Werribee River Shared Trail Strategy (current)

See 3.3.2 below.

Wyndham Municipal Planning Scheme

The Wyndham City Planning Scheme Municipal Strategic Statement (MSS) contains the policy context that describes the Council's current vision for the municipality for decisions on future land use and development. A summary of current policy content on waterway corridors is provided in Appendix 2.

3.3.2. Melton Shire

Werribee River Shared Trail Strategy (current)

The Shire of Melton has commissioned the preparation of a Werribee River Shared Trail Strategy to explore the development of appropriate links along the Werribee River between the growth areas of Melton and Werribee, especially as further urban development and transport infrastructure is planned in the study area.

This project is being managed by Melton Shire and Wyndham City Councils in conjunction with Parks Victoria and the Department of Sustainability and Environment.

The study area is from the Melton Freeway (Toolern Creek) in the north and continues downstream, incorporating the Werribee River from Exford Weir to Presidents Park and the Riverbend Historical Park in Wyndham Vale. Both sides of the waterway are included. The Trail was identified in Parks Victoria's metropolitan open space strategy, Linking People & Spaces (LPS) in 2002. It was recognised in LPS that access to regional open space was poor in both Melton and Wyndham Councils. Linking People & Spaces is currently under policy review by Parks Victoria to determine further open space initiatives in Melbourne's growth areas.

Melton and Wyndham Councils intend to utilise the Strategy as a strategic document to guide decisions surrounding future land-use planning. It will assist in the preparation of Precinct Structure Plans for Wyndham's growth areas. The Strategy is expected to provide planning guidance on the future of public open space along the river, as well as investigating the necessity

of land acquisitions to ensure contiguous reserves. For the purposes of this project the River will be broken up into sections, referred to as 'reaches'.

For Melton Shire one of the key outcomes of the plan is for the identification of priorities for actual works, which can be commenced immediately on funding becoming available. It is expected that the Plan will provide indicative costs associated with future on-ground works. Wyndham City Council will use the Strategy to undertake further design development to determine future trail alignments and park boundaries adjacent to this new open space corridor.

The inception meeting for this project was held on 6th December 2010.

Melton Planning Scheme

The Melton Planning Scheme Municipal Strategic Statement (MSS) contains the policy context that describes the Council's current vision for the municipality for decisions on future land use and development. A summary of current policy content on waterway corridors is provided in Appendix 3.

3.3.3. Moorabool Shire

Myrniong – Korkuperrimul Creeks Biolink, and Werribee River Gorge (Grow West and Pentland Hills Landcare Group)

	
<p>A bulldozer rips rabbit burrows on steep country adjacent to the Werribee River Gorge.</p>	<p>Steep gullies like this one on the Korkuperrimul creek will have reduced erosion and support native vegetation when fenced off and habitat for rabbits is removed.</p>

Just west of Bacchus Marsh is an ambitious project to link the Lerderderg Forest north of the Western Highway, with the Brisbane Ranges (south of the highway). Until recently most work has been done south of the highway – through projects in the Rowsley valley, and the W. James Whyte Island Reserve.

More recently landowners north of the highway have swung into action through the co-ordinating work of the Pentland Hills Landcare Group to commence fencing out the Myrniong and Korkuperrimul Creeks to reduce erosion, improve river health and create a biolinks. Both creeks run into the Werribee river. In the current stage of work, around 12km of creeks will be fenced and livestock watered from off-stream troughs.

A related project is the decision by one landowner with 12km of waterways along the Werribee river to undertake a major rabbit control and revegetation project will add to the biolink. Removal of habitat for rabbits is an essential part of regenerating degraded land.

The biolinks will not be completed in this stage but important progress will be made toward realising a long term dream.

M00rabool Planning Scheme

The Melton Planning Scheme Municipal Strategic Statement (MSS) contains the policy context that describes the Council's current vision for the municipality for decisions on future land use and development. A summary of current policy content on waterway corridors is provided in Appendix 4.

3.4. Non government organisations

3.4.1. Victorian National Parks Association

Wyndham Growth Area (2009)

(Source: National Parks Association document re Wyndham Growth Area.pdf on web)

The VNPA in information provided to member organisations as a guide to submissions in response to the Strategic Impact Assessment Report for the Wyndham Growth Area (published in July 2009), identified the importance of habitat links and that (inter alia):

Generally

- *This region has already been subject to significant urban growth threatening biodiversity values. Local groups and local government have watched Melbourne's last grasslands disappearing under bitumen. **Many local groups have been working hard to delineate the habitat links and areas containing important natural values to be preserved.** More intensive development, without areas for habitat and linking is not acceptable. If intensive development is allowed without preserving and managing for natural values we will lose important landscape networks that are irreplaceable.*

More specifically

- *For the area from Eynesbury to the Grassland Reserve including the block west of Cobbleticks Road that a link should be established between Eynesbury to the Northern Grassland Reserve and that this link should be further strengthened by a link along the Werribee River to the Southern Grassland Reserve.*

3.4.2. Greening Australia

Habitat 141

(Source: www.greeningaustralia.org.au/visionary-projects/habitat-141)

Habitat 141 which is a landscape scale conservation project aimed at building resilience in a time of climate change and re-establishing essential ecological processes such as species migration at the regional scale.

3.4.3. Cardinia Environment Coalition

(Source / link: [Biolink Project](#))

The Cardinia Environment Coalition undertook the Biolinks Project to:

...achieve broad-scale environmental restoration throughout the Central Western Port Catchment Region of Victoria. Its central aim is to create "biolinks" between patches of natural habitat to:

- Protect and enhance native biodiversity,
- Support fundamental natural ecological processes, and
- Provide multiple other environmental, economic and social benefits.

The target audiences for this work are:

- General readers
 - **What are biolinks and why are they important?**(bolding added)
 - *What is the state of my local environment and what can I do about it?*
- Local community and environment groups:
 - *What are the assets, threats and opportunities within our surrounding landscape?*
 - *What are the most important issues for us to focus on in our area?*
 - *How can we develop a Local Area Plan?*
 - **How will our group activities fit into a wider strategic plan for environmental restoration?** (Bolding added)
- Government agencies
 - *How can biolinks help achieve regional environmental objectives?*
 - *How can agencies achieve environmental restoration on private land?*
 - **In what ways can the Biolinks Project complement agency projects and activities?** (bolding added)
- Funding agencies and sponsors:
 - **What results could we help to achieve by sponsoring the Biolinks Project?**(bolding added)

Conceptually this project provides a series of sound principles for biolinks projects and these are detailed in Appendix 1.

3.4.4. Community groups

Little River Biolink

The Brisbane Ranges Landcare Group with Grow West is co-ordinating a group of six landholders to fence off and revegetate both sides of the Little River between the Brisbane Ranges and the Geelong-Bacchus Marsh road – a total of 12 kilometres.

Woody weed removal and revegetate along Volcanic Gorge on Werribee River

Pinkerton Landcare and Environment Group is undertaking Stage 4 of a project to remove/replace weeds along 3km of the gorge (south of Greigs Road) and where possible management practices will be used to encourage natural regrowth.

Woody weed removal and revegetate along Werribee River Gorge

A two-stage project by the Parwan Landcare Group to remove/replace weeds along 4.5km of the gorge (upstream of Melton Reservoir) and .where possible management practices have been used to encourage natural regrowth.

3.5. Research organisations

3.5.1. Melbourne University School of Land and Environment

Dookie Biolinks Program

(Source: www.dookie.unimelb.edu.au/research/biolinks.html)

The Dookie Biolinks Program is a community initiative developed by a local representative committee to protect and connect existing vegetation, creek lines and wetlands throughout the Dookie Region.

The objectives of the program are:

- To improve biodiversity in the Dookie region by protecting and connecting existing habitat through the landscape.
- To improve quality and quantity of habitat specific to the requirements of threatened species in the district.
- Focusing on Wetlands, Woodlands and Grassy Plains environments.
- Engaging and informing the Dookie community on ecological protection and enhancement

3.5.2. RMIT

Reimagining the Australia Suburb: Biodiversity Planning in the Urban Fringe

4. NEW SOUTH WALES

4.1. The Great Eastern Ranges Initiative

(Source: www.greasterranges.org.au)

The Great Eastern Initiative aims to maintain and improve long-term connectivity conservation of mountain ecosystems running the length of eastern Australia. The 1,200 km New South Wales section of the Great Eastern Ranges is the current area of focus.

5. WESTERN AUSTRALIA

5.1. Gondwana Link

(Source: www.gondwanalink.org)

This project is aimed at restoring ecological connectivity across south-western Australia, from the woodlands of the drier interior to the tall wet forests in the far south-west corner; protecting and re-planting bushland over more than 1,000 kilometres in an area that is considered one of the world's environmental "Hot Spots". It is possibly the oldest Australian example of landscape scale projects

Appendix 1 – Cardinia environment coalition: biolinks project

This is a series of quotes useful to understanding principles for a biolinks project. The bolding is inserted to emphasize key aspects for the Werribee River Biolink Action Plan.

Summary & Overview

-the Biolinks Project involves planning first at the landscape scale, then at the local scale. This ensures that solutions are developed at the small scale remain consistent with the bigger picture. This Action Plan is a landscape plan that provides the context within which seven Local Biolinks Plans will be developed in the near future. The local area process is intended to a **collaborative effort** of local community members, environment groups, government agencies/departments (at all three levels) and other stakeholders to identify locations for biolinks and plan for their implementation. (p5)

Chapter 1: Introduction

- The Cardinia Environment Coalition uses the term 'biolinks' to refer to **linkages that improve ecological connectivity between patches of natural habitat**. (p8)
- Such movements are vital for maintaining the health of species, communities and ecological processes that are fundamental to natural environments, as well as human wellbeing. (p8)
- **One of the most important aspects of ecological connectivity is that it enhances the ability of natural systems to deal with change and therefore persist over time**. (p9)
- The **community development model** will also be important in the planning and implementation of the Biolinks Project (p13)
- **The need to restore ecological connectivity is now recognised as a fundamental principle in land-use planning and land management around the world**. (p14)

Chapter 2: Designing Biolinks

- **Core areas** are the targets of connectivity. They are generally large or high quality patches of habitat that currently act as storehouses of biodiversity. **Populations live and breed within core areas, but when the time comes to disperse, ecological connectivity with the surrounding land becomes crucial**. (p23)
- There is no fixed minimum size of core areas. (p23)

Biolink elements

- **Continuous corridors** are the most effective way to achieve connectivity between core areas. Also known as "wildlife" or "habitat" corridors, these are more-or-less linear strips of natural habitat that allow animals and plants (over successive generations) to move directly between patches, without having to face the challenges of crossing other land uses. (p24)
- Although not as effective for as broad a range of species as continuous corridors, **stepping stones** (series of habitat patches) may be useful compromise when complete linkages cannot be established. (p24)
- **Nodes** are bulges or enlarged sections along corridors or at intersections between corridors. **Much like "biodiversity bus stops"**. (p25)

Target Areas of High Importance

- **Not all natural areas offer equal value for biodiversity protection and provision of ecosystem processes, so it is important to target areas of high importance for inclusion in the biolinks**.(p29)
- **Areas can be considered to have high importance due to:**

- *High conservation status (due to the presence of threatened EVCs, plants or animals)*
 - *High quality/condition*
 - *High productivity (e.g. areas with fertile soils and abundant water)*
 - *Presence of wetlands and waterways.*
- ***A simple way to assess the importance of different habitats is to consider the Ecological Vegetation Classes or EVC and its Bioregional Conservation Status...***(p29)

Chapter 4: The Landscape

- ***Native vegetation is a key component of biolinks, and is therefore the most obvious asset to begin looking at. Aerial photography provides a good start to visually assessing vegetation coverage and looking for potential biolinks. However a far greater level of detail about the types of vegetation can be gained by examining the Ecological Vegetation Classes (EVCs).*** (p43)
- ***Waterways are one of the major targets for biolinks...***(p45)
- ***A key focus of the Biolinks Project is to include as many Landcare, Trust for Nature and Land for Wildlife properties as possible, due to their potential to facilitate the important task of enhancing ecological connectivity through private land.*** (p48)
- ***Certain land uses are more conducive to the creation of biolinks than others. The types of land use permitted in different parts of the landscape are designated by Municipal Planning Schemes using Zones and Overlays.*** (p51)

Appendix 2 – Wyndham City Planning Scheme

Municipal Strategic Statement

21.02 Profile of Wyndham

The MSS refers to a number of waterways, including the Werribee River, as major environmental feature. Waterways are described as encompassing “rivers, tributaries, and permanent watercourses, floodplains, ephemeral wetlands and riparian land” and that the waterway corridor refers to:

.....the aquatic and riparian land containing the core environmental values of the waterway area such as floodplain function, in-stream habitat, riparian vegetation, flora and fauna species and habitats, ephemeral and permanent wetlands, grassy swamps adjoining the waterway, native grasslands adjoining the riparian corridor, the natural valley form and escarpments and includes the natural valley form, escarpments, associated wetlands and floodplain areas up to the 1:100 ARI floodline.(21.20-2)

Waterway corridors are further described as providing:

...biodiversity links between estuarine environments and their headwaters in Wyndham and beyond. Their significant features include habitat for rare and endangered species and vegetation communities, escarpments and other geologic formations, floodplains and associated riparian zones and wetlands, and cultural heritage sites. The waterway corridors support community and economic assets such as open space and recreational lands, linked trail systems, tourism destinations, educational opportunities and irrigation water for the Werribee South Intensive Agricultural Area. (21.02-9)

Key issues (21.03)- Environment

Future growth will have an impact on the natural environment, and suitable measures will be required to protect environmental features and assets, in particular Wyndham’s waterways, grasslands and coastline. Effective control of pest plant infestations will require concerted action and co-operation at regional level.

Specific issues for waterways include:

- Impacts of rural land management practices including stock access to streams.*
- Opportunities for urban growth and potential for urban development within the municipality and the risk that this will degrade waterways and their environmental, landscape, cultural heritage, recreational and economic values if planning and development of these areas is not carefully managed.*
- Proximity of existing urban development that provides recreational access and creates community ownership but impedes ecological processes and has in the past created adverse effects on other values.*
- Impacts of increased quantity and decreased quality of stormwater.*
- Inappropriate management of land in reserves by private and public land managers, including where land required for environmental protection is compromised by its use for open space and recreational needs.*
- Need to promote waterways as significant features of the municipality and provide interpretive information about them while building on the contribution that the community already makes in environmental protection and enhancement.*
- Better identification, recognition and protection of ecological, landscape and cultural heritage features and assets is needed in existing settlements, areas of future growth and rural lands. Changing public priorities and public management responsibilities require proactive measures to improve land management in water catchments, protect biodiversity, regenerate*

degraded habitats, protect landscapes and view sheds, protect significant sites of cultural heritage and reduce the adverse effects of development.

21.04-2 Land Use Planning Objectives

The Strategic Framework Plan (Map 2) envisages a continuous open space connection along the Werribee River within the existing and future residential areas. This vision has been extended to the Melton Township with the Shared Trail Project.

21.05-1 Managing Urban Growth

Council strategies include:

- *Provide for urban development that does not adversely affect the water quality, flows, environmental values, landscape features and cultural heritage sites of rivers and watercourses, their waterway corridors and adjoining land.*
- *Maximise environmental, landscape, cultural heritage, social, recreational and economic values at the interface between development and waterway corridors and ensure development protects these values.*
- *Discourage urban development within waterway corridors where that development would compromise the values associated with the waterway.*

21.05-6 Leisure and Recreation Opportunity

Council's actions include provision of *“passive recreation such as pedestrian and bicycle access along or within waterway corridors providing it does not compromise the environmental values of the corridor”*.

21.05-7 Protection of Environmental Assets

Council strategies include:

- *Protect waterway values including aquatic and riparian land, floodplains, associated vegetation communities, wetlands and swamps, natural waterway valley forms and escarpments.*
- *Establish a framework for protection of waterways, their view sheds and the landscape based on:*
 - *Waterway corridors to be used primarily for environmental protection and management, comprising waterway core values – aquatic and riparian land, floodplains, associated vegetation communities, wetlands and swamps, and geologic or topographic features such as natural waterway valley forms and escarpments – and an environmental protection buffer as determined by Environmental Assessment*
 - *Significant vistas and views within, to and from the waterway corridor.*
- *Ensure appropriate levels, types and intensity of development in waterway corridors **and on adjoining land***
- *Ensure planning decisions are informed with regard to the range of natural functions, values and opportunities of the waterways.*

Council actions include:

- *Protect sites, areas and corridors of current and potential future environmental significance through the Environmental Significance Overlay. Provide direction for assessment of proposals in waterways corridors and their*

- *Provide direction for assessment of proposals in waterways corridors and their environs through the application of the ESO and DPO.*
- *Assess and consider the potential impacts of land use and development on water, land and air quality, floodplain functions, native flora and fauna and biodiversity links, when approving development plans and subdivision and development permits.*
- *Protect major watercourses, waterway corridors, wetlands and remnant grasslands from inappropriate development through development plans and planning permit conditions.*
- *Implement the following strategies to protect and enhance creek environments: Werribee River Policy and Management Manual: Maltby By-Pass to Boundary Road, Draft Werribee Basin Water Quality Strategy and Skeleton Creek Waterways and Environs Strategy.*
- *Undertake a study of sites of biological significance along waterways, particularly in areas designated for urban growth, to establish baseline information for developers and Council.*
- *Locate new open space adjoining or within waterway corridors subject to their appropriate location in terms of the environmental values that are to be protected at the site and within the waterway corridor.*

21.05-11 Waterway corridors

Strategies to achieve the objectives include:

- *Establish an appropriate buffer to protect the core environmental values of a waterway corridor from negative impacts of development based on an Environmental Assessment.*
- *Ensure development does not cause loss or damage to waterway values identified in the flora and fauna and archaeological surveys and that there be no impact on the potential for regeneration of those values.*
- *Encourage passive open space located along or within waterways corridors subject to their appropriate location in terms of the environmental values that are to be protected at the site and within the waterway corridor.*

Specific actions to be implemented:

- *Ensure Development Plans and the design of proposals for rezoning, subdivision and development along Werribee River, Skeleton Creek, Lollypop Creek and Little River achieve a number of supporting objectives:*
 - o *Ensure riparian vegetation is protected and enhanced.*
 - o *Ensure developers contribute to cultural protection and management of the Waterways Corridors.*
 - o *Identify, protect and where required manage sites of biological (flora and fauna) and cultural heritage significance, within waterway corridors and on adjoining land.*
 - o *Encourage the integrated, ongoing protection and management of the waterways as cohesive systems through transfer of private land covered by the overlay to public ownership through rezoning, development plans and/or subdivision of land in developing urban or rural residential areas.*
 - o *Incorporate best practice urban stormwater management in the design of site layouts and drainage systems*
 - o *Incorporate development and construction site management plans to control impacts on waterways and sites of biological and cultural significance.*

Appendix 3 – Melton Planning Scheme

Municipal Strategic Statement

21.01-11 Environment and Landscape Character

Water Courses: include the Werribee River, Melton Reservoir, Kororoit Creek and tributaries, Toolern Creek and tributaries and the Djerriwarrh Creek. The natural drainage and environmental fabric of the rural landscape is dependent on the conservation of these systems. The rivers and streams also provide the opportunity to realise a significant recreation network throughout the Shire.

Significant natural sites: Melton has a number of significant natural sites which include remnant strands of native vegetation, native grasslands, woodlands, wetlands, geological features and flood plain areas. Identified sites include the Pyrete Ranges Forest, Ryans Lane Woodland, Diggers Rest Dry Lake and the Diggers Rest Rail Reserve Grassland in the Shire's north; and North Western Rail Reserve Grasslands, the Robinsons Rd and Mt Cottrell Wetlands, and the Exford and Mt Cottrell Woodlands in the south.

21.02 Key Issues in the Shire

Key issues include:

- *Areas of Historical, Environmental and Cultural Significance and Sensitivity*

Eight land units have been identified for the Shire and specific objectives and strategies have been developed for each land unit (Clause 21.04).

21.04 Planning Strategies and Implementation for the Shire

The Council has prepared a municipal wide Physical Framework Plan that indicates key land use units and a preferred direction for these areas. The Plan identifies eight main land use units: -

- *Melton Township*
- *Melton East Growth Area*
- *The Villages*
- *The Toolern Vale Hills*
- *The Mt. Kororoit Plains and Foothills*
- *The Rockbank Plains*
- *Mt. Cottrell and Mt. Atkinson Plains*
- *The Exford Farming Area*

Each land use unit has a distinctive land use pattern due to its unique combination of opportunities, constraints, lot sizes, physical characteristics, historical and cultural associations and planning controls.

The Physical Framework Plan sets out the strategic direction for each of the key land use units. It is not, however, a zoning map and should not be read as such. Instead, the plan highlights key planning issues for distinct regions of the Shire, and makes a link between these directions and their statutory implementation.

The Mt Cottrell and Mt Atkinson Plains Land Unit (21.04-7)

This area contains the headwaters of Skelton Creek and Werribee River, which are both part of a regionally significant open space and environmental system.

Strategies include: *Ensure that any future development or use of land does not detrimentally impact on the Skeleton Creek and Werribee River.*

Planning Scheme Implementation proposes the protection of *the Werribee River and Skeleton Creek from inappropriate development through the Environmental Significance Overlay and the Significant Landscape Overlay.*

The Exford Farming Area (21.04-8)

Opportunities and constraints:

- *Particularly high landscape qualities exist along the banks of the Exford Reservoir and the Werribee River.*

Strategies

- *Preserve and enhance the Exford Reservoir and the Werribee River as regional environment and open space assets for the benefit of current and future generations*
- *Discourage rural residential development from occurring, particularly around the banks of the Werribee River and the Exford Reservoir.*
- *Encourage open space links to be established along the foreshore of the Exford Reservoir and the Werribee River.*
- *Protect areas of significant vegetation (such as the Exford Woodlands, the banks of the Werribee River and the Exford Reservoir) through overlay controls.*

Planning Scheme Implementation

- *The Werribee River will be protected from inappropriate development through the Environmental Significance Overlay and the Significant Landscape Overlay.*

Melton Township

The Shire of Melton Physical Framework Plan indicates potential residential pressures on the Werribee River.

Appendix 4 – Moorabool Planning Scheme

Municipal Strategic Statement

21.02 Natural Environment

Biodiversity

- *Human activity particularly the impacts of population growth, urban growth, and agricultural activity have contributed to the decline in biodiversity, quality and quantity of native vegetation and waterway condition.*
- *Pest and environmental weed control are important issues within the Shire as is the revegetation of native flora along waterways.*

Objective – Water and Catchment Management (21.02-3)

Strategies

- *Ensure the retention, protection, and revegetation of the riparian area along watercourses.*

Objective – Biodiversity

- *Support the implementation of the appropriate Regional Catchment Management Strategy.*

Appendix B

EXISTING PLANNING CONTEXT

Appendix B

Existing planning context

B1 INTRODUCTION

An analysis of the existing policy support for protection of the environmental assets of Werribee River and its environs in Wyndham, Melton and Moorabool Council areas has been conducted. This has included review of the respective LPPF (Local Planning Policy Framework) and the Municipal Strategic Statements (MSS) which underpins their visions for each municipality. A brief review of the State Planning Policy Framework is also provided.

This background is important as it demonstrates how biodiversity and the Werribee River are issues already being pursued by the municipalities. The analysis also highlights the difference in policy approach between the councils.

A review of current planning controls (zones and overlays) and permitting requirements as they apply to the Werribee River BAP study area has also been conducted. Zones and overlay mapping is provided in association with the main report.

This planning review includes a desktop assessment of zones and overlays within the current biolink from information collated from Wyndham City Council, Moorabool and Melton Shires and the Victorian Planning Scheme. This report will need to be updated if changes to the biolink footprint occur in the future.

B2 STATE PLANNING POLICY FRAMEWORK

Clause 11, Settlement

Planning is to anticipate and respond to the needs of existing and future communities through provision of zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure.

Planning is to recognise the need for, and as far as practicable contribute towards (amongst other things):

- Prevention of pollution to land, water and air
- Protection of environmentally sensitive areas and natural resources
- Land use and transport integration.

Planning is to prevent environmental problems created by siting incompatible land uses close together.

Clause 11.04-7, Open Space Network in Metropolitan Melbourne

Ensure major open space corridors are protected and enhanced.

Develop open space networks in growth areas, where existing open space is limited and demand is growing, and in the surrounding region of Metropolitan Melbourne, including:

- Werribee River Regional Park
- Werribee Township Regional Park
- Kororoit Creek Regional Park
- Toolern Creek Regional Park.

Clause 12, Environment and Landscape Values

Planning should help to protect the health of ecological systems and the biodiversity they support (including ecosystems, habitats, species and genetic diversity) and conserve areas with identified environmental and landscape values.

Strategies to achieve this include:

- assist re-establishment of links between isolated habitat remnants
- consider the need to protect waterways and soil from degradation that may result from the loss of native vegetation and the use of voluntary conservation agreements
- apply the three step process (avoid–minimise–offset) as set out by Victoria’s Native Vegetation Management—A Framework for Action
- encourage revegetation of cleared land abutting coastal reserves
- maintain the natural drainage patterns, water quality and biodiversity within and adjacent to coastal estuaries, wetlands and waterways
- ensure natural key features are protected and enhanced.

Clause 13, Environmental Risks

Planning should identify and manage the potential for the environment, and environmental changes, to impact upon the economic, environmental or social well-being of society.

Clause 14, Natural Resource Management

Planning is to assist in the conservation and wise use of natural resources, including energy, water, land, stone and minerals to support both environmental quality and sustainable development.

Strategies to achieve this include:

- retaining natural drainage corridors with vegetated buffer zones at least 30 m wide along each side of a waterway to maintain the natural drainage function, stream habitat and wildlife corridors and landscape values, to minimise erosion of stream banks and verges and to reduce polluted surface run-off from adjacent land uses.

B3 WYNDHAM CITY PLANNING SCHEME

B3.1 Municipal Strategic Statement

Clause 21.02, Profile of Wyndham

The MSS refers to a number of waterways, including the Werribee River, as major environmental feature. Waterways are described as encompassing ‘rivers, tributaries, and permanent watercourses, floodplains, ephemeral wetlands and riparian land’ and that the waterway corridor refers to:

- ...the aquatic and riparian land containing the core environmental values of the waterway area such as floodplain function, in-stream habitat, riparian vegetation, flora and fauna species and habitats, ephemeral and permanent wetlands, grassy swamps adjoining the waterway, native grasslands adjoining the riparian corridor, the natural valley form and escarpments and includes the natural valley form, escarpments, associated wetlands and floodplain areas up to the 1:100 ARI floodline (Clause 21.02-2).

Waterway corridors are further described as providing:

- ...biodiversity links between estuarine environments and their headwaters in Wyndham and beyond. Their significant features include habitat for rare and endangered species and vegetation communities, escarpments and other geologic formations, floodplains and associated riparian zones and wetlands,

and cultural heritage sites. The waterway corridors support community and economic assets such as open space and recreational lands, linked trail systems, tourism destinations, educational opportunities and irrigation water for the Werribee South Intensive Agricultural Area (Clause 21.02-9).

Clause 21.03, Environment

Key issues

Future growth will have an impact on the natural environment, and suitable measures will be required to protect environmental features and assets, in particular Wyndham's waterways, grasslands and coastline. Effective control of pest plant infestations will require concerted action and co-operation at regional level.

Specific issues for waterways include:

- impacts of rural land management practices, including stock access to streams
- opportunities for urban growth and potential for urban development within the municipality and the risk that this will degrade waterways and their environmental, landscape, cultural heritage, recreational and economic values if planning and development of these areas is not carefully managed
- proximity of existing urban development that provides recreational access and creates community ownership but impedes ecological processes and has in the past created adverse effects on other values
- impacts of increased quantity and decreased quality of stormwater
- inappropriate management of land in reserves by private and public land managers, including where land required for environmental protection is compromised by its use for open space and recreational needs
- need to promote waterways as significant features of the municipality and provide interpretive information about them while building on the contribution that the community already makes in environmental protection and enhancement
- better identification, recognition and protection of ecological, landscape and cultural heritage features and assets is needed in existing settlements, areas of future growth and rural lands. Changing public priorities and public management responsibilities require proactive measures to improve land management in water catchments, protect biodiversity, regenerate degraded habitats, protect landscapes and viewsheds, protect significant sites of cultural heritage and reduce the adverse effects of development.

Clause 21.04-2, Land Use Planning Objectives

The Strategic Framework Plan (Map 2) envisages a continuous open space connection along the Werribee River within the existing and future residential areas. This vision has been extended to the Melton Township with the Shared Trail Project.

Clause 21.05-1, Managing Urban Growth

Council strategies include:

- provide for urban development that does not adversely affect the water quality, flows, environmental values, landscape features and cultural heritage sites of rivers and watercourses, their waterway corridors and adjoining land
- maximise environmental, landscape, cultural heritage, social, recreational and economic values at the interface between development and waterway corridors and ensure development protects these values
- discourage urban development within waterway corridors where that development would compromise the values associated with the waterway.

Clause 21.05-6, Leisure and Recreation Opportunity

Council's actions include provision of 'passive recreation such as pedestrian and bicycle access along or within waterway corridors providing it does not compromise the environmental values of the corridor'.

Clause 21.05-7, Protection of Environmental Assets

Council strategies include:

- protect waterway values, including aquatic and riparian land, floodplains, associated vegetation communities, wetlands and swamps, natural waterway valley forms and escarpments.

Establish a framework for protection of waterways, their view sheds and the landscape based on:

- waterway corridors to be used primarily for environmental protection and management, comprising waterway core values—aquatic and riparian land, floodplains, associated vegetation communities, wetlands and swamps, and geologic or topographic features such as natural waterway valley forms and escarpments—and an environmental protection buffer as determined by Environmental Assessment
- significant vistas and views within, to and from the waterway corridor
- ensure appropriate levels, types and intensity of development in waterway corridors and on adjoining land
- ensure planning decisions are informed with regard to the range of natural functions, values and opportunities of the waterways.

Council actions include:

- protect sites, areas and corridors of current and potential future environmental significance through the Environmental Significance Overlay. Provide direction for assessment of proposals in waterways corridors and their
- provide direction for assessment of proposals in waterways corridors and their environs through the application of the ESO and DPO
- assess and consider the potential impacts of land use and development on water, land and air quality, floodplain functions, native flora and fauna and biodiversity links, when approving development plans and subdivision and development permits
- protect major watercourses, waterway corridors, wetlands and remnant grasslands from inappropriate development through development plans and planning permit conditions
- implement the following strategies to protect and enhance creek environments: Werribee River Policy and Management Manual: Maltby By-Pass to Boundary Road, Draft Werribee Basin Water Quality Strategy and Skeleton Creek Waterways and Environs Strategy
- undertake a study of sites of biological significance along waterways, particularly in areas designated for urban growth, to establish baseline information for developers and Council
- locate new open space adjoining or within waterway corridors subject to their appropriate location in terms of the environmental values that are to be protected at the site and within the waterway corridor.

Clause 21.05-11, Waterway Corridors

Strategies to achieve the objectives include:

- establish an appropriate buffer to protect the core environmental values of a waterway corridor from negative impacts of development based on an environmental assessment
- ensure development does not cause loss or damage to waterway values identified in the flora and fauna and archaeological surveys and that there be no impact on the potential for regeneration of those values
- encourage passive open space located along or within waterways corridors subject to their appropriate location in terms of the environmental values that are to be protected at the site and within the waterway corridor.

Specific actions to be implemented:

- ensure development plans and the design of proposals for rezoning, subdivision and development along Werribee River, Skeleton Creek, Lollypop Creek and Little River achieve a number of supporting objectives
 - ensure riparian vegetation is protected and enhanced
 - ensure developers contribute to cultural protection and management of the waterways corridors
 - identify, protect and where required manage sites of biological (flora and fauna) and cultural heritage significance, within waterway corridors and on adjoining land
 - encourage the integrated, ongoing protection and management of the waterways as cohesive systems through transfer of private land covered by the overlay to public ownership through rezoning, development plans and/or subdivision of land in developing urban or rural residential areas
 - incorporate best practice urban stormwater management in the design of site layouts and drainage systems
 - incorporate development and construction site management plans to control impacts on waterways and sites of biological and cultural significance.

B3.2 Local Policy

Clause 22.07, Open Space Policy

This policy applies to the provision of recreational open space in Wyndham.

Policy Basis

The recreation needs of the community vary significantly. Open space in Wyndham ranges from major ovals and sports fields to small walkways in residential areas and linear parks along the Werribee River and Skeleton Creek. As the population grows so the demand for specific types of recreation activity will increase. The specification and application of minimum standards for open space areas will assist with long term provision of opportunities and facilities. Increased access to a range of recreation opportunities is supported in the Municipal Strategic Statement direction on 'Leisure and Recreation Opportunity'.

Policy Objective

To provide a range of public open space opportunities which optimise the community's need for recreation, as identified, and which is affordable in the short and longer term.

Policy

It is policy that:

- A diversity of open space and recreational opportunity be pursued
- Open space reserves be useable, attractive, and capable of cost-effective maintenance
- Linear linkages be developed to improve pedestrian and bicycle access
- Environmental issues such as heritage and local culture be taken into account in the location and development of open space
- Open space be accessible to the community
- Open space provision be based on the objectives of Clause 56.

Clause 22.08, Werribee South Green Wedge Policy

The Werribee South Green Wedge is made up of eight precincts, as illustrated in Figure B1.

Each precinct has distinct characteristics. The Werribee South Green Wedge Policy and Management Plan defines the eight precincts as:

- Intensive Agriculture Precinct
- RAAF and Dryland Farming Precinct
- Tourism and Recreation Precinct
- Parks, Coast, Waterways & Wetlands Precinct
- Werribee South Township Precinct
- Marina Precinct
- Western Treatment Plant Precinct
- Rural Residential Precinct.

The sustainable management of the Werribee South Green Wedge requires an understanding and consideration of the interconnections and interdependencies that exist between the precincts and between the Green Wedge and the more developed areas of Wyndham.

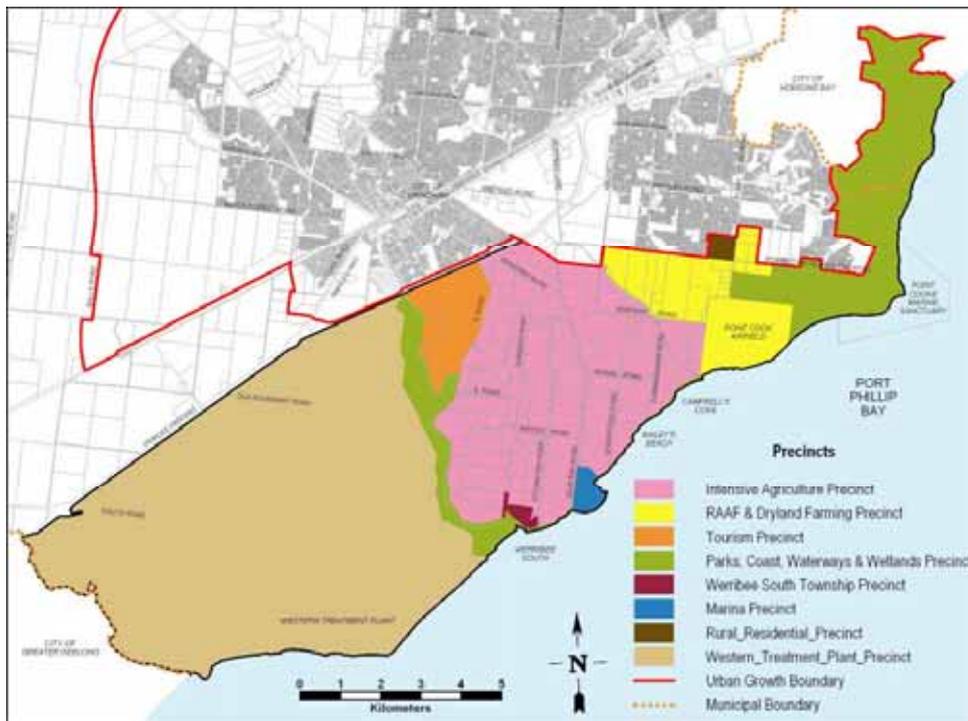


Figure B1
THE WERRIBEE SOUTH GREEN WEDGE AND ITS PRECINCTS

Policy Basis

Council recognises the importance of the Werribee South Green Wedge and the value and potential of the precincts within it. Council's vision is for the Werribee South Green Wedge to be environmentally, socially and economically sustainable, and an area where opportunities for agricultural innovation and diversification, biodiversity conservation and investment in tourism, recreation and the community are realised.

The basis for considering development in the Werribee South Green Wedge will be to maintain and promote:

- The value and potential of each precinct
- Sustainability within and between precincts
- Minimal land use conflicts within and between precincts
- Managed access
- Appropriate service provision
- The right to farm in the Intensive Agriculture Precinct.

Policy Objectives

- To maintain and enhance the unique qualities and characteristics of the individual precincts within the Werribee South Green Wedge:

Intensive Agriculture Precinct: to protect agricultural land from incompatible land uses and promote the continuation of agricultural activity and its viability within the local economy.

RAAF & Dryland Farming Precinct: to ensure that an adequate buffer is maintained between residential development, agricultural activities and the airport environs.

Tourism and Recreation: to encourage the appropriate development of the Werribee Park Tourism Precinct and growth in tourism and recreational opportunities elsewhere in the Green Wedge, whilst ensuring that off-site impacts are minimised.

Parks, Coast, Waterways & Wetlands Precinct: to protect and enhance the values of the Parks, Coast, Waterways and Wetlands Precinct, while providing strategic public access and managing interfaces with surrounding precincts and land uses.

Werribee South Township Precinct: to protect the township from inappropriate development and overdevelopment, while ensuring that the township can function as an economically and socially viable community, and that any future development of the township does not detrimentally impact upon surrounding agricultural activities.

Marina Precinct: to ensure development of the marina site is socially and environmentally responsive to the surrounding agricultural environs.

Rural Residential Precinct: to ensure that rural residential development incorporates measures to minimise the effect of aircraft noise and creates a transition to the Green Wedge Zone.

Western Treatment Plant Precinct: to manage the interfaces between the Western Treatment Plant Precinct and adjoining precincts

Policy

It is policy that:

- Land use be appropriate to the precinct in which it is located
- Intensive Agriculture Precinct.

Council recognises the importance of the Werribee South Intensive Agriculture Precinct and supports the retention of the precinct as an agricultural area, as opposed to a rural residential community. The precincts surrounding the Intensive Agriculture Precinct are not permitted to expand into the Intensive Agriculture Precinct without a strategic review of the effects on each precinct and the need to amend the Werribee South Green Wedge Policy and Management Plan.

It is policy that:

- Agriculture takes precedence over non-agricultural land uses
- Agricultural practices should be permitted, where off-site detrimental impacts are managed to secure the sustainability of both surrounding agricultural and non-agricultural land uses

- Agricultural production should not be detrimentally impacted upon or unreasonably constrained
- Opportunities for new agricultural and rural land uses should be preserved and promoted
- Agriculture may include a range of primary production activities that utilise one or all of the key resources (water, soil and transport infrastructure) in the area
- Consolidation of allotments is encouraged
- Re-alignment of lot boundaries is encouraged if it supports farm viability
- New Intensive Animal Husbandry and Broiler Farm operations are discouraged in precincts east of the Werribee River, unless it can be demonstrated that adequate buffers can be achieved in accordance with the relevant code of practice and statutory requirements, while existing operations are permitted to remain and expand, subject to meeting statutory requirements
- Agricultural land uses and activities should be separated from residential, commercial, and industrial development and facilities, with buffering where necessary
- New tourism operations be agriculture-related or have a significant agricultural component
- Rural stores should be used to house agricultural produce from the precinct or agricultural businesses associated with those in the precinct
- New stores should meet the conditions associated with a Transport Terminal, or depot, where the transportation of goods is to take place from the store
- Transport terminals should be used to load and transport agricultural produce from the precinct, or agricultural produce from businesses associated with those in the precinct
- New depots or loading facilities designed to accommodate heavy articulated vehicles should be located on Duncans Road, Diggers Road, and the section of Aviation Road east of Duncans Road
- Where proposed transport terminals are located outside of the areas designated above, applicants are required to demonstrate the capability of the road network, incorporation of adequate turning circles, appropriate on-site truck parking and truck queuing provision. Meeting these requirements may involve upgrading the road network at the applicant's cost.

RAAF and Dryland Farming Precinct

It is policy that:

- The primary role of the Precinct as a buffer between urban development and the intensive agricultural precinct must be considered in decision-making
- Buffer activities that provide economic and recreational opportunities for adjoining urban or agricultural activities should be considered, provided that they do not compromise the buffer role of the Precinct
- Small 'lot by lot' developments and incursions which compromise the area's long term strategic role as the Green Wedge buffer, and Council's ability to secure a large, permanent buffer treatment, are discouraged
- The economic, historical and cultural values associated with the Point Cook airfield should be protected and promoted.

Tourism and Recreation Precinct

It is policy that:

- Growth of tourism and recreational development be encouraged in the defined tourism precinct and elsewhere in the Werribee South Green Wedge, whilst ensuring that offsite impacts are minimal and can be managed to secure the sustainability of all precincts
- Networking of recreational and tourism nodes and population centres is encouraged where this does not detrimentally impact upon agricultural production or compromise the buffer between residential and non-urban land uses

- Farm-based tourism activities which value-add to existing agricultural activities in the intensive agricultural precinct are supported where there is no detrimental impact on existing agricultural uses
- New tourism operations should not detrimentally impact on agricultural activity or compromise the right to farm
- Siting of tourism operations is to minimise the potential for conflict with farming activities (including spraying, harvesting, lighting, operation of noisy machinery and transportation functions)
- Further development of tourism sites and facilities must be accompanied by appropriate levels of infrastructure, with the capacity of existing infrastructure considered in decision making
- The K Road interface between agricultural and tourism land uses be managed in a manner that helps to secure the sustainability of both groups of activities.

Parks, Coast, Waterways and Wetlands Precinct

It is policy that:

- Development of educational and recreational facilities within the precinct is supported, where there is demonstrated sensitivity to environmental constraints
- Increased bicycle and pedestrian access through the precinct is supported, where there is demonstrated sensitivity to environmental constraints and social context
- New development adjacent to the Parks, Coast, Waterways & Wetlands Precinct should respond to the environmental and social context.

Werribee South Township Precinct

It is policy that:

- The township should be protected from inappropriate development and overdevelopment
- Future development of the township does not detrimentally impact upon surrounding agricultural activities
- To ensure that the township can function as an economically and socially viable community.

Marina Precinct

It is policy that:

- The planned development of the Marina Precinct is supported.

Rural Residential Precinct

It is policy that:

- The 'Green Wedge A' zoned land be recognised as a distinct 'rural residential' precinct within the Werribee South Green Wedge, in which subdivision and the design and siting of dwellings minimise the effects of aircraft noise and create a transition to the Green Wedge Zone.

Western Treatment Plant Precinct

It is policy that:

- Melbourne Water continue to consult Council regarding future changes to land use at the Western Treatment Plant.

Clause 22.09, Eynesbury Station Policy

This policy supports the Municipal Strategic Statement direction on Rural Land Protection, Protection of Environmental Assets, Investment in Tourism, Leisure and Recreational Opportunity, Diversity of Housing Opportunity and Enhancement of Image and Appearance.

Policy Basis

Eynesbury Station is the single largest landholding in the area, comprising a total site area of 7420 ha. It lies partly within the municipalities of Melton and Wyndham. It is a broadacre rural holding used for cropping and grazing, but with a high proportion of rock cover which influences the extent of these activities. A complex of highly significant heritage buildings is centred on the Eynesbury Station homestead and is included on the Victorian Heritage Register and the Register of the National Estate. Immediately north of the homestead is the 'Eynesbury Woodland', with an area of 268 ha. This is a community of Plains Grassy Woodland dominated by Grey Box, which is one of the most intact remnants of this community in the State. It is of national conservation significance and has been included in the Register of the National Estate. The property also has a long, 7.5 km frontage to the Werribee River, which is the principal water supply for the Werribee South market garden precinct. On the opposite side of the river is Surbiton Park Treatment Plant, which treats wastewater from Melton.

Policy Objectives

- To enable the continued use of Eynesbury Station for productive agriculture.
- To ensure the integrated environmental management of Eynesbury Station as a whole.
- To facilitate the productive reuse of water from Surbiton Park Treatment Plant.
- To maintain and improve the water quality of Werribee River.
- To protect and enhance the environmental and heritage assets of Eynesbury Station.

Policy

It is policy to:

- Support the development of an innovative residential and recreational community at Eynesbury Station based on principles of environmental, social and economic sustainability
- Provide opportunities for the reuse of water from Surbiton Park Treatment Plant primarily in connection with the agricultural and recreational components of Eynesbury Station
- Provide opportunities for the diversification and intensification of agriculture
- Incorporate best practice in all aspects of design, agricultural practice and environmental management, which includes control of pest plants and animals, stormwater management and the management of key environmental assets
- Implement the vision and philosophy identified in the Eynesbury Station Incorporated Plan, September 2001.

Policy Reference

- Eynesbury Station Incorporated Plan, September 2001.

Zones (refer to Figure 4.1)

Table B1 Zones and relevant decisions guidelines within the Wyndham City

Zone	Purpose	Decision Guidelines	Comment
35.04, Green Wedge Zone	<p>To recognise, protect and conserve green wedge land for its agricultural, environmental, historic, landscape, recreational and tourism opportunities, and mineral and stone resources</p> <p>To protect and enhance the biodiversity of the area</p>	<p>Environmental issues</p> <p>The impact of the use or development on the flora and fauna on the site and its surrounds</p> <p>The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p>	
35.06, Rural conservation zone	<p>To protect and enhance the natural environment and natural processes for their historic, archaeological and scientific interest, landscape, faunal habitat and cultural values</p> <p>To protect and enhance the biodiversity of the area</p>	<p>Environmental issues</p> <p>An assessment of the likely environmental impact on the biodiversity and in particular the flora and fauna of the area</p> <p>The protection and enhancement of the natural environment of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p> <p>How the development relates to the sustainable land management and the need to prepare an integrated land management plan which addresses the protection and enhancement of native vegetation and waterways, stabilisation of soil and pest plant and animal control</p>	
36.01, Public use zone	<p>To recognise public land use for public utility and community services and facilities</p> <p>To provide for associated uses that is consistent with the intent of the public land reservation or purpose</p>	<p>None relevant</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>

Table B1 Continued

Zone	Purpose	Decision Guidelines	Comment
36.03, Public Conservation and Resource Zone	To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes To provide for appropriate resource based use	The comments of any public land manager or other relevant land manager having responsibility for the care or management of the land or adjacent land. Whether the development is appropriately located and designed, including in accordance with any relevant use, design or siting guidelines	There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically
37.01, Special Use Zone	To recognise or provide for the use and development of land for specific purposes as identified in a schedule in this zone	Any guidelines in the schedule to this zone	There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically

Overlays (refer Figure 4.1)

Table B2 Overlays and relevant decisions guidelines within the Wyndham City

Overlay	Purpose	Decision Guidelines	Comment
42.01, Environmental Significance Overlay 1	<p>To ensure that development is compatible with identified environmental values</p> <p>To identify areas where the development of land may be affected by environmental constraints</p>	<p>The statement of environmental significance and the environmental objective contained in a schedule to this overlay</p> <p>Any other matters specified in a schedule to this overlay</p> <p>The extent to which the proposed development meets and encourages the aims and objectives of the Environmental Significance Overlay and whether alternatives are available that would better achieve these outcomes</p> <p>The current and proposed future use of land adjacent to the waterways corridors and the effects on existing and proposed infrastructure</p> <p>The Wyndham Waterways Strategy Plan and any relevant waterway management or waterway master plan</p> <p>Whether proposed developments will adversely affect adjoining or surrounding neighbours by means of hindering the landscape value of the waterways or overshadowing recreational space abutting a waterways corridor</p>	<p>The major waterways in Wyndham were identified in the Wyndham Waterways Strategy Plan as being, from east to west, Skeleton Creek, including the Dry Creek tributary, Werribee River, including the Davis Creek tributary, Lollypop Creek and Little River</p> <p>These are major ecosystems that include permanent and intermittent watercourses and their banks, riparian lands and wetlands associated with the floodplain, escarpments and other geological or topographical features, and connected creeks and tributaries</p> <p>The 'waterways' within Wyndham support a multitude of habitats and species, some of which are threatened or endangered. The waterways provide:</p> <ul style="list-style-type: none"> • a break in the subtle, undulating landscape of the Western Plains; obvious visual benefits; an environment for flora and fauna to thrive in; linear open space reserves and other public lands which are a major contributor to the open space system; irrigation water (from the Werribee River) which is used extensively in Werribee South; places of abundant food sources and likely camping locations for Aboriginal communities; and places that supported the settlement of post-contact farmers • graziers; part of Wyndham's image and identity

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
42.01, Environmental Significance Overlay 2	A description of the effect of the proposed development in relation to other areas of native vegetation or native fauna habitat, including any proposed reserves, strategic reserves, conservation reserves, streams and waterways	Measures to maintain contiguous areas of native vegetation or native fauna habitat. Measures to encourage ecological restoration, regeneration and revegetation with indigenous species	<p>The 'waterways corridor' refers to the aquatic and riparian land containing the core environmental values of the waterway area such as floodplain function, in-stream habitat, riparian vegetation, flora and fauna species and habitats, ephemeral and permanent wetlands, grassy swamps adjoining the waterway, native grasslands adjoining the riparian corridor, the natural valley form and escarpments and includes the natural valley form, escarpments, associated wetlands and floodplain areas up to the 1:100 ARI flood line</p> <p>'Environmental buffers' beyond the waterway corridor refers to an area providing protection between identified environmental values (including flora and fauna values, habitat values and cultural values) and the development site</p> <p>Impacts of changing land use and development and poor land management practices affect waterway environments and their beneficial values. With increased awareness, the waterways within Wyndham will become a self-sufficient attraction for many generations to come</p> <p>The areas covered by this overlay include some existing conservation reserves, areas of significant remnant native vegetation and a number of areas that provide habitat for threatened flora and fauna</p>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
42.01, Environmental Significance Overlay 3	<p>To protect the Truganina Cemetery grassland</p> <p>To protect significant landscape and habitat areas of threatened species</p> <p>To ensure that development does not impact on the environmental significance of the land</p> <p>To ensure that any use, development or management of land within and adjacent to areas of biological significance are compatible with their long-term maintenance and conservation and will not have detrimental impacts on biodiversity values</p> <p>To prevent environmental degradation of sites of conservation significance</p> <p>To enable areas of conservation significance and habitat values to be identified</p>		<p>The areas include, but are not limited to:</p> <ul style="list-style-type: none"> • important grasslands • grassy eucalypt woodlands • waterways and riparian areas • other important habitat for threatened flora and fauna <p>It is important that these areas are retained and managed to ensure that their biodiversity values and any habitat links are protected and enhanced</p> <p>Truganina Cemetery was created in 1866 and is currently an operational cemetery as well as being the interment site of the early settlers of the Truganina district. The cemetery supports a small remnant area of plains grassland comprising nationally significant and endangered vegetation and vulnerable fauna, including:</p> <ul style="list-style-type: none"> • Button Wrinklewort (<i>Rutidosis leptorrhynchoides</i>)—listed as critically endangered under the EPBC Act • Spiny Rice-flower (<i>Pimelea spinescens</i> subsp. <i>spinescens</i>)—listed as critically endangered under the EPBC Act • Double-jointed Speargrass (<i>Austrostipa beniculata</i>) • Kangaroo Grass (<i>Themeda triandra</i>) • Striped Legless Lizard (<i>Delmar impar</i>)—listed as vulnerable under the EPBC Act and <i>Flora and Fauna Guarantee Act</i>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
	<p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity of the Truganina Cemetery grasslands in the long term</p> <p>To maintain and enhance the environmental significance of the Truganina Cemetery grasslands through protection from:</p> <ul style="list-style-type: none"> • inappropriate activities and development • disturbance and removal of rock • indiscriminate weed control • habitat fragmentation and isolation • impacts of pest and weed species • disturbance and destruction of habitat of threatened species <p>To ensure that development does not impact on significant habitats</p> <p>To ensure that the siting and design of any buildings and works, including the location of sites of interment, protects the areas of environmental significance on the land</p> <p>To encourage ecological restoration, regeneration and revegetation with indigenous species within the site and in adjoining areas</p> <p>To manage buffers around areas of environmental significance on the Truganina Cemetery land</p>		

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
42.01, Environmental Significance Overlay 4	<p>To provide for the long term preservation of the flora and fauna of environmentally significant areas. Management practices for the land aim to achieve:</p> <ul style="list-style-type: none"> • linking and enlarging of remnant parcels of significant flora and fauna habitats • effective and targeted weed control • programs to control or eliminate introduced predatory and pest animal species, in particular foxes, rabbits and hares • rehabilitation of degraded areas through fencing, replanting and ongoing management • collection of seed and other plant propagules for rehabilitation projects on and off site 	<p>The conservation significance of any vegetation to be removed and its habitat value for native fauna</p> <p>The effect of any proposed building or works on the environmental values of the land and the integrity of the future reserve</p> <p>The reason for removing any vegetation and the practicality of any alternative options</p> <p>The importance of the natural environment, including any important landscape, or conservation characteristics of the area and the suitability of the proposed development</p> <p>The control of noxious and environmental weeds and pest animals, including the need to minimise the spread of weeds and soil pathogens</p>	<p>These areas have been identified for protection through the creation of grassland reserves. The establishment of the reserves will create large consolidated areas of permanently protected native grassland outside the Urban Growth Boundary in Melbourne’s west. These areas are to be managed to improve their quality and offset losses from clearing associated with urban development and transport infrastructure associated with changes to the Urban Growth Boundary and the implementation of the Delivering Melbourne’s Newest Sustainable Communities Program. The Western Grassland Reserves will contain the largest consolidated area of Natural Temperate Grassland remaining on the Victorian Volcanic Plain, and support several</p>
	<p>To facilitate the establishment of a reservation for at least 15,000 ha of grassland (nature conservation reserve or National Park) outside the Urban Growth Boundary in Melbourne’s west</p>		
	<p>To provide interim management of the western grassland reserves before they are acquired, achieved by assisting landholders to manage threats and strengthening regulation to prevent degradation</p>		
	<p>To introduce a management regime to ensure that the grassland areas are not degraded in the period prior to acquisition of the land for the grassland reserves</p>		

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
	<p>To manage the areas as a conservation reserve or National Park for a range of particular vegetation and species requirements</p> <p>To protect and enhance significant landscape and habitat areas of threatened species</p> <p>To ensure that any development does not impact on the environmental significance of the land or the ability of the land to be managed as a contiguous conservation reserve or National Park in the future</p> <p>To ensure that any use, development or management of land within and adjacent to areas of environmental significance are compatible with their long-term maintenance, conservation and management (e.g. ecological burning) and will not have detrimental impacts on biodiversity values</p> <p>To prevent degradation of sites of environmental significance</p> <p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity in areas of environmental significance in the long term</p> <p>To maintain and enhance the integrity of sites of environmental significance</p> <p>To maintain and enhance habitat connectivity for National and State listed threatened species</p>	<p>The impact on the integrity of the site from the proposed development, disturbance and removal of rock, indiscriminate weed control, habitat fragmentation and isolation and disturbance and destruction of habitat of threatened species</p> <p>The proposed management practices for the land, including:</p> <ul style="list-style-type: none"> ● the linking and enlarging of areas of significant flora and fauna habitats ● effective and targeted weed control ● programs to control or eliminate introduced predatory and pest animal species, in particular foxes, rabbits and hares ● rehabilitation of degraded areas through fencing, revegetation with appropriate native species and ongoing management ● collection of seed and other plant propagules for rehabilitation projects on and off site ● the results of any flora and fauna survey and assessment of the land ● delivering Melbourne’s Newest Sustainable Communities: Strategic Impact ● assessment Report for <i>Environment Protection and Biodiversity Conservation Act 1999</i> 	<p>nationally threatened plant and animal species and provide potential habitat for a range of other nationally threatened species. They also include a range of other habitat types, including wetlands, riparian habitats and scattered open grassy woodlands. Parts of these reserves will be made available as offsets for clearing of grasslands within the Urban Growth Boundary. Conservation reserves account for only 2 per cent of the current extent of natural temperate grassland and the addition of this proposed 15,000 ha reserve will increase the level of reservation of natural temperate grassland to 20 per cent. Approximately 19 per cent of the native grasslands within the proposed reserves are High quality (habitat score greater than 0.6) and a further 80 per cent are Medium quality (habitat score between 0.31–0.6). The grassland reserves will secure at least 5290 habitat–hectares of existing grasslands. The proposed grassland reserves support several nationally threatened species: Golden SunMoth (critically endangered), Striped Legless lizard (vulnerable), Spiny Rice-flower (critically endangered), Large-headed Fireweed (vulnerable), Clover Glycine (vulnerable). They also contain Werribee Blue Box which is likely to be listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> in the near future. They include the most likely suitable habitat on the Volcanic Plains for Plains Wanderer (vulnerable) and potential habitat for a range of other specialist grassland species such as Button Wrinklewort (endangered) and the Grassland Earless-dragon (endangered)</p>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
	<p>To encourage ecological restoration, regeneration and revegetation of areas of degraded habitat and areas which currently have no habitat value due to historical or current land management practices</p> <p>To manage buffer areas to reduce the impact of land uses adjoining the Western Grassland Reserves and to ensure appropriate management of the reserve does not adversely impact on surrounding land uses</p> <p>To provide for the long term preservation of the flora and fauna of environmentally significant areas</p>	<ul style="list-style-type: none"> any growth area framework plans, biodiversity conservation strategies, subregional species strategies, native vegetation precinct plan, conservation management plan, precinct structure plan or other management plan approved for the area by the Minister for Planning or Minister for Environment and Climate Change any relevant park management plan or interim management plan <p>Any action statement prepared under the <i>Flora and Fauna Guarantee Act 1988</i> and any significant impact guidelines or prescriptions prepared under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Cth) for species or habitat listed under either of these Acts that occur or are likely to occur on the land</p>	<p>The reserves take in a range of other habitats, including Buloke Grassy Woodlands, and a variety of wetland types, including Plains Grassy Wetland of the Victorian Volcanic Plain. These wetlands provide habitat for existing populations of Growling Grass frog (vulnerable) and several migratory bird species. The proposed grassland reserves have been designed to maximise the area of habitat available to resident plant and animal species, in particular threatened species, and to enable management activities critical to the long term survival of species and vegetation to be undertaken. As a result, not all areas within the reserves support high quality native vegetation and some areas are degraded</p> <p>Management works will be targeted to these areas</p>
42.01, Environmental Significance Overlay 5	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain</p> <p>To enhance the environmental and landscape values of the area</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands</p> <p>To avoid the destruction of habitat for native fauna resulting from the modification of land form and disturbance of surface soils and rocks</p>	<p>The conservation significance of any vegetation to be removed and its habitat value for native fauna</p> <p>Measures to protect and enhance native vegetation and native fauna habitat of the Victorian Volcanic Plain, including the retention of land form, surface soils and rocks</p> <p>Measures to maintain contiguous areas of native vegetation or native fauna habitat</p> <p>Any relevant strategic grasslands management plan, particularly the potential impact of management activities, such as burning, on any proposed new use or development</p> <p>The impact of any use, development or management of land on the grasslands, including the potential impacts of nutrient and water run-off, increased weed and pest invasion or recreational impacts</p>	<p>The areas included within this overlay form part of the Victorian Volcanic Plain Bioregion. The native vegetation of the Victorian Volcanic Plain bioregion is one of the most depleted in the state. Only 4.5 per cent of the state still has a cover of native vegetation, and less than 1.2 per cent is in formal reserves</p> <p>The Werribee Plains hinterland consists of undulating volcanic plains, a scoria cone and steep gorges formed by the Little and Werribee Rivers. Many elements of the flora reflect the low rainfall of this area, which formerly supported extensive areas of Plains Grassland</p>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
	<p>To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified</p>	<p>Measures to encourage ecological restoration, regeneration and revegetation with indigenous species</p> <p>The results of any flora and fauna survey and assessment of the land</p> <p>Any Native Vegetation Precinct Plan, Conservation Management Plan, Precinct Structure Plan or other management plan approved for the area by the Minister for Planning or Minister for Environment and Climate Change</p> <p>Any action statement, significant impact guidelines or prescriptions for listed species or habitat of listed species occurring or likely to occur on the land</p>	<p>Although the native vegetation has been extensively cleared and altered for agricultural, urban and industrial use, there are some large areas of predominantly native vegetation as well as some high quality wetlands, which are important for many threatened fauna species. There are a number of communities and species in this area that do not occur elsewhere in the bioregion. Important species in this area include, for flora, the Button Wrinklewort, Large-fruit Fireweed, Small Golden Moths, Small Milkwort, Small Scurfpea, Spiny Rice-flower, and the only remaining wild population of Sunshine Diuris; and for fauna, the Grassland Earless Dragon, Orange-bellied Parrot, Plains-wanderer, Redchested Button-quail, Striped Legless Lizard and Swift Parrot</p> <p>The landscape consists of undulating volcanic plains with red duplex soils. The Werribee and Little Rivers have incised steep and sometimes spectacular gorges into the basalt plain. The scoria cone of Mount Anakie is a significant landscape feature. A band of Tertiary sediments is located along the western edge of this area. It has a unique and relatively early history of European settlement due partly to the ease of access of the open grassland plains. Because of this the landscape has been radically altered. The dry plains of the Werribee plains hinterland formerly supported extensive areas of Plains Grassland. These grasslands integrated with Riverina Plains Grassy Woodland (dominated by Grey Box, Buloke and Drooping Sheoak) to the west and south of Melton, and Plains Grassy Woodland in and around the You Yangs and east of the Brisbane Ranges. Riparian areas supported Floodplain Riparian Woodland and Creekline Grassy Woodland with Escarpment Shrubland on</p>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
			<p>steeper escarpments. A variety of wetland communities formerly occurred throughout, including Plains Grassy Wetland, Plains Sedgy Wetland, Canegrass Wetland, Lignum Wetland and Aquatic Herbfield. Scoria Cone Woodland was associated with Mount Anakie and other volcanoes. Areas of coastal salt marsh were found along the shores of Port Phillip. Many elements of the flora reflect the low rainfall, including White Cypress-pine and Fragrant Saltbush found along the steep escarpments of the Werribee River, and Woolly Buttons at Little River. The native vegetation has been extensively cleared and altered for agriculture and (increasingly) for urban and industrial use. However, there are large areas of predominantly native vegetation, including woodlands, wetlands and grasslands. The major issue for biodiversity conservation in the Werribee plains hinterland is loss of native vegetation and habitat through clearing for urban development, cropping and infrastructure. The compounding effects of such clearing are the loss of floristic and habitat diversity and increasing fragmentation of habitats and isolation of remnants. Similarly, changes to management of remnant vegetation and increased urbanisation contribute to the proliferation of weeds and feral animals. Degradation of drainage lines and riparian vegetation through erosion, pollution and uncontrolled grazing, depletion of wetlands and changes to the hydrology of wetlands and streams are also serious threats to biodiversity in the region. However, a range of conservation assets are present and significant opportunities do exist to establish relatively large areas and networks of areas that are managed sympathetically for conservation</p>

Table B2 Continued

Overlay	Purpose	Decision Guidelines	Comment
43.01 Heritage Overlay 42, 64, 65, 93, 104	<p>To conserve and enhance heritage places of natural or cultural significance</p> <p>To conserve and enhance those elements which contribute to the significance of heritage places</p> <p>To ensure that development does not adversely affect the significance of heritage places</p> <p>To conserve specifically identified heritage places by allowing a use that would otherwise be prohibited if this will demonstrably assist with the conservation of the significance of the heritage place</p>	<p>The significance of the heritage place and whether the proposal will adversely affect the natural or cultural significance of the place</p> <p>Any applicable statement of significance, heritage study and any applicable conservation policy</p> <p>Whether the proposed works will adversely affect the significance, character or appearance of the heritage place</p> <p>Whether the lopping or development will adversely affect the health, appearance or significance of the tree</p>	<p>Such networks could include a range of vegetation types and land tenures and relatively large and intact areas of open grassland, grassy woodland and wetland communities. There are no controls which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>

B4 MELTON PLANNING SCHEME

B4.1 Municipal Strategic Statement

Clause 21.01-11, Environment and Landscape Character

Water Courses: include the Werribee River, Melton Reservoir, Kororoit Creek and tributaries, Toolern Creek and tributaries and the Djerriwarrh Creek. The natural drainage and environmental fabric of the rural landscape is dependent on the conservation of these systems. The rivers and streams also provide the opportunity to realise a significant recreation network throughout the Shire.

Significant natural sites: Melton has a number of significant natural sites which include remnant strands of native vegetation, native grasslands, woodlands, wetlands, geological features and flood plain areas. Identified sites include the Pyrete Ranges Forest, Ryans Lane Woodland, Diggers Rest Dry Lake and the Diggers Rest Rail Reserve Grassland in the Shire's north; and North Western Rail Reserve Grasslands, the Robinsons Road and Mt Cottrell Wetlands, and the Exford and Mt Cottrell Woodlands in the south.

Clause 21.02, Key Issues in the Shire

Key issues include:

- areas of historical, environmental and cultural significance and sensitivity.

Eight land units have been identified for the Shire and specific objectives and strategies have been developed for each land unit (Clause 21.04).

Clause 21.04, Planning Strategies and Implementation for the Shire

The Council has prepared a municipal wide Physical Framework Plan that indicates key land use units and a preferred direction for these areas. The plan identifies eight main land use units:

- Melton Township
- Melton East Growth Area
- The Villages
- The Toolern Vale Hills
- The Mt. Kororoit Plains and Foothills
- The Rockbank Plains
- Mt. Cottrell and Mt Atkinson Plains
- The Exford Farming Area.

Each land use unit has a distinctive land use pattern due to its unique combination of opportunities, constraints, lot sizes, physical characteristics, historical and cultural associations and planning controls.

The Physical Framework Plan sets out the strategic direction for each of the key land use units (refer to Figure B2). It is not, however, a zoning map and should not be read as such. Instead, the plan highlights key planning issues for distinct regions of the Shire, and makes a link between these directions and their statutory implementation.

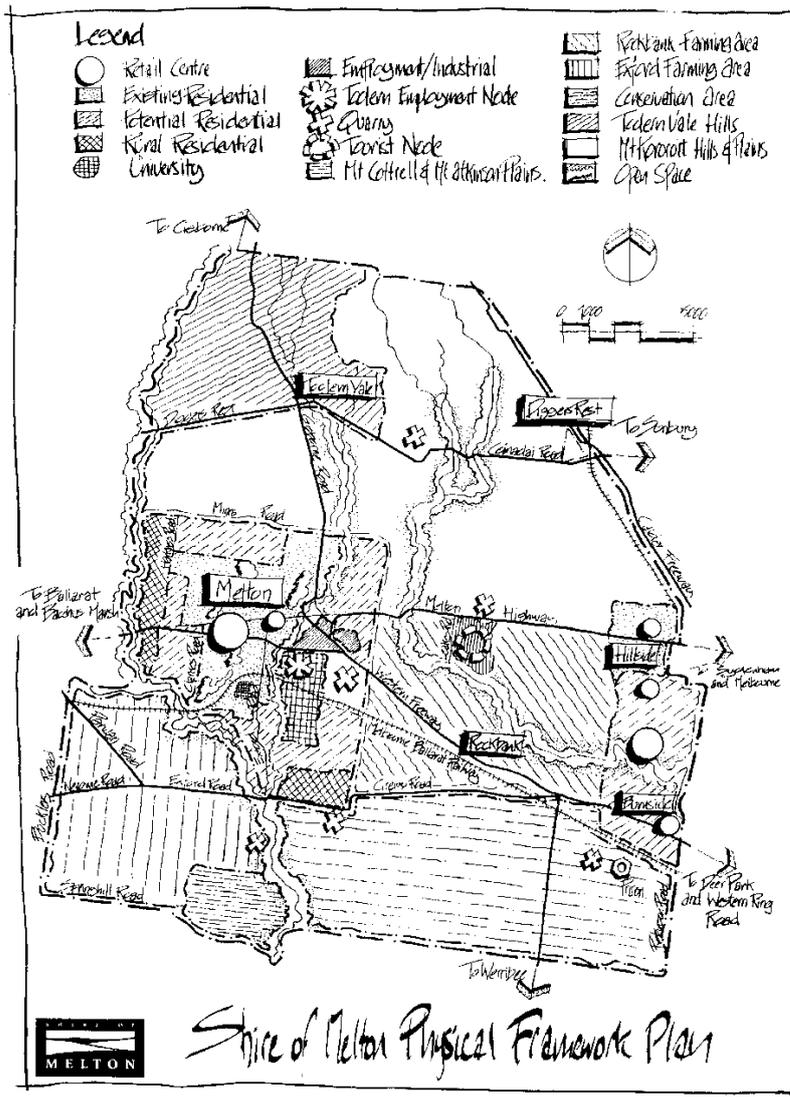


Figure B2
SHIRE OF MELTON PHYSICAL FRAMEWORK PLAN
 (Source: Melton Planning Scheme)

The Toolern Vale Hills (Clause 21.04-4)

The Toolern Vale Hills are located in the north west of the Shire. Much of the unit is relatively densely wooded, but some areas, particularly around the edges are open plains. The unit contains a number of areas of environmental, botanical and geomorphological significance. The rugged, hilly terrain of the Toolern Vale Hills is in stark contrast to the more low lying areas of the Shire to the south. The area is used primarily for agriculture and very low density residential purposes, although it is recognised that neither the soil nor the terrain is particularly conducive to most forms of broad-hectare farming.

Opportunities and constraints include:

- the shallow soil profile of the area, in combination with poor land management and development practices can lead to serious erosion
- native vegetation is often threatened by residential or agricultural development
- the area is close to major areas of Crown land, including the Wombat State Forest.

Strategies include:

- discourage future rural residential subdivisions and small lot excisions from occurring throughout the Toolern Vale Hills
- discourage urban uses from occurring in the land unit
- protect sites of environmental significance and sensitivity from inappropriate development
- discourage the removal of native vegetation and the planting of exotic species.

Planning scheme implementation methods to this policy include:

- introduce the Wildfire Management Overlay and Environmental Significance Overlay to cover areas of identified fire hazard and areas of environmental significance or sensitivity.

The Mt Cottrell and Mt Atkinson Plains Land Unit (Clause 21.04-7)

This area contains the headwaters of Skelton Creek and Werribee River, which are both part of a regionally significant open space and environmental system.

Strategies include:

- ensure that any future development or use of land does not detrimentally impact on the Skeleton Creek and Werribee River.

Planning scheme implementation methods to this policy include:

- the protection of the Werribee River and Skeleton Creek from inappropriate development through the Environmental Significance Overlay and the Significant Landscape Overlay.

The Exford Farming Area (Clause 21.04-8)

Opportunities and constraints include:

- particularly high landscape qualities exist along the banks of the Exford Reservoir and the Werribee River.

Strategies include:

- preserve and enhance the Exford Reservoir and the Werribee River as regional environment and open space assets for the benefit of current and future generations
- discourage rural residential development from occurring, particularly around the banks of the Werribee River and the Exford Reservoir
- encourage open space links to be established along the foreshore of the Exford Reservoir and the Werribee River
- protect areas of significant vegetation (such as the Exford Woodlands, the banks of the Werribee River and the Exford Reservoir) through overlay controls.

Planning scheme implementation methods to this policy include:

- the Werribee River will be protected from inappropriate development through the Environmental Significance Overlay and the Significant Landscape Overlay.

B4.2 Melton Township

The Shire of Melton Physical Framework Plan indicates potential residential pressures on the Werribee River.

B4.3 Local Policy

Clause 22.02, A Sustainable Environment Policy

This policy applies to all land within the municipality.

MSS Context

Protect and conserve the environmental resources and assets of the Shire for the benefit of current and future communities.

Policy Basis

A high quality natural environment is a fundamental pre-requisite for a high standard of living. In this regard, Melton Shire Council has been a national leader in the development of environmental rating systems that reward land owners who maintain high environmental standards. The preservation and improvement of environmental features is a key goal, and all development applications will need to address these factors before any planning approval is given.

Policy Objectives

- To retain and integrate natural systems and features into development.
- To preserve and protect existing vegetation, wetlands, creeks and grasslands and encourage their incorporation into development designs.
- To encourage the creation of linear open spaces along creeks and drainage lines.
- To encourage the use of overland flow paths and retarding basins to control storm water run-off and to improve water quality.

Policy

It is local policy to:

- identify areas of botanical, zoological and geomorphological significance and ultimately protect them through overlay controls in the planning scheme
- discourage use and development that would detrimentally impact upon these significant areas
- encourage developers to retain areas of extant vegetation, wetlands, creeks and grasslands and encourage the incorporation of these features in their design
- require all applications for use and development in the rural areas to include an Environmental Management Plan in accordance with the adopted Environmental Management Plan Guidelines (1996)
- require that creek frontages be provided for public open space purposes in urban areas when abutting land is developed.

Clause 22.0, Recreation and Open Space Networks Policy

This policy applies to all land within the municipality.

MSS Context

Provide recreation and open space networks that cater for a variety of lifecycle needs.

Policy Basis

The location and provision of open space contributes to the liveability of an urban area. Many residents move to Melton in order to experience the unique combination of suburban and rural lifestyles. The preservation of rural landscapes and the maintenance of a rural buffer go some way towards achieving this blend. Council will provide linkages between urban and rural areas along watercourses such as the Djerriwarrh, Toolern and Kororoit creeks. The community expects a high standard of passive and active

recreational opportunities in urban areas. Public parks such as Hannah Watts and Navan Park exemplify Council's commitment in this area. Council will continue to require useable parcels of land from developers in order to provide for the future recreational and leisure needs of our community.

Policy Objectives

- To ensure that open space is appropriately integrated with surrounding land uses, and is responsive to natural landscapes and features.

Policy

It is local policy to:

- pursue the creation of a major public open space link along the Toolern Creek between the northern edge of the Melton township and the Werribee River and along the Djerriwarrh Creek between the Diggers Rest-Coimadai Road and Werribee River by requiring creek frontages as part of open space contributions from developers.

Clause 22.09, Eynesbury Station Policy

This policy supports the Municipal Strategic Statement direction on Rural Land Protection, Protection of Environmental Assets, Investment in Tourism, Leisure and Recreational Opportunity, Diversity of Housing Opportunity and Enhancement of Image and Appearance.

Policy Basis

Eynesbury Station is the single largest landholding in the area, comprising a total site area of 7420 ha. It lies partly within the municipalities of Melton and Wyndham. It is a broadacre rural holding used for cropping and grazing, but with a high proportion of rock cover which influences the extent of these activities.

A complex of highly significant heritage buildings is centred on the Eynesbury Station homestead and is included on the Victorian Heritage Register and the Register of the National Estate. Immediately north of the homestead is the 'Eynesbury Woodland', with an area of 268 ha. This is a community of Plains Grassy Woodland dominated by Grey Box, which is one of the most intact remnants of this community in the State. It is of national conservation significance and has been included in the Register of the National Estate. The property also has a long, 7.5 km frontage to the Werribee River, which is the principal water supply for the Werribee South market garden precinct. On the opposite side of the river is Surbiton Park Treatment Plant, which treats wastewater from Melton.

The policy supports the State Planning Policy Framework objectives relating to Protection of Catchments, Waterways and Groundwater, Conservation and Native Flora and Fauna, Heritage and Agriculture.

Objectives

- To ensure the integrated environmental management of Eynesbury Station as a whole.
- To maintain and improve the water quality of Werribee River.
- To protect and enhance the environmental and heritage assets of Eynesbury Station.

Policy

It is policy to:

- support the development of an innovative residential and recreational community at Eynesbury Station based on principles of environmental, social and economic sustainability
- incorporate best practice in all aspects of design, agricultural practice and environmental management, which includes control of pest plants and animals, stormwater management and the management of key environmental assets
- implement the vision and philosophy identified in the Eynesbury Station Incorporated Plan, September 2001.

Clause 22.09-4, Policy Reference

Eynesbury Station Incorporated Plan, September 2001.

B4.4 Zones

The northern half of the Werribee River in the Shire of Melton is subject to the zones illustrated in Figure B.3.

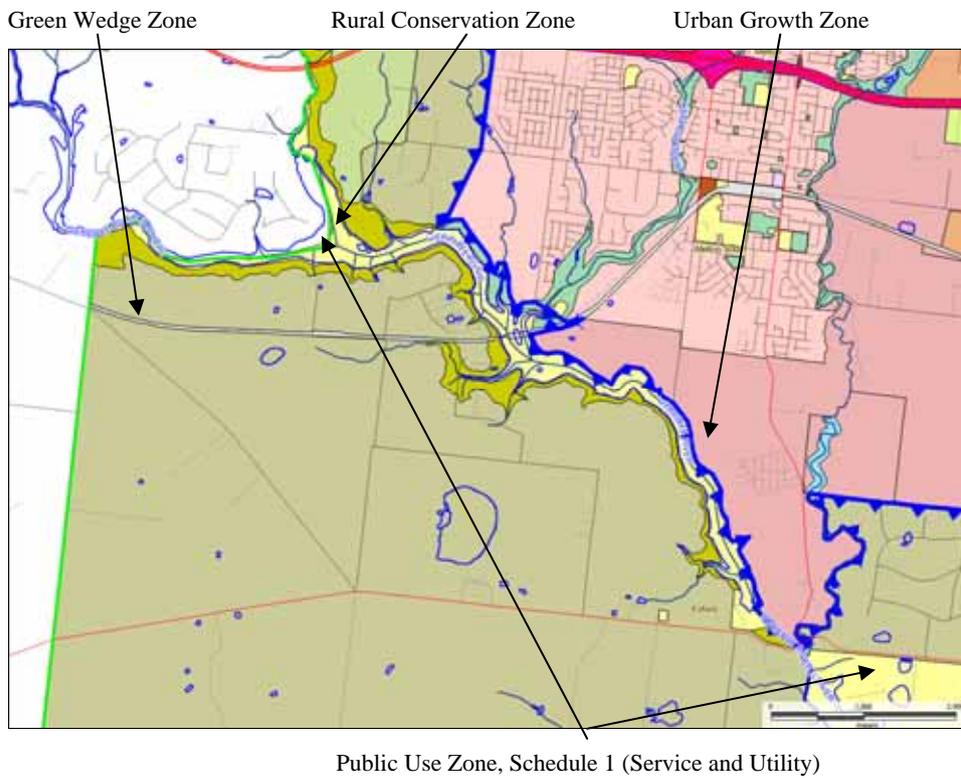


Figure B3
ZONES IN THE NORTHERN HALF OF THE SHIRE OF MELTON

The southern half of the Werribee River in the Shire of Melton is subject to the zones illustrated in Figure B4.

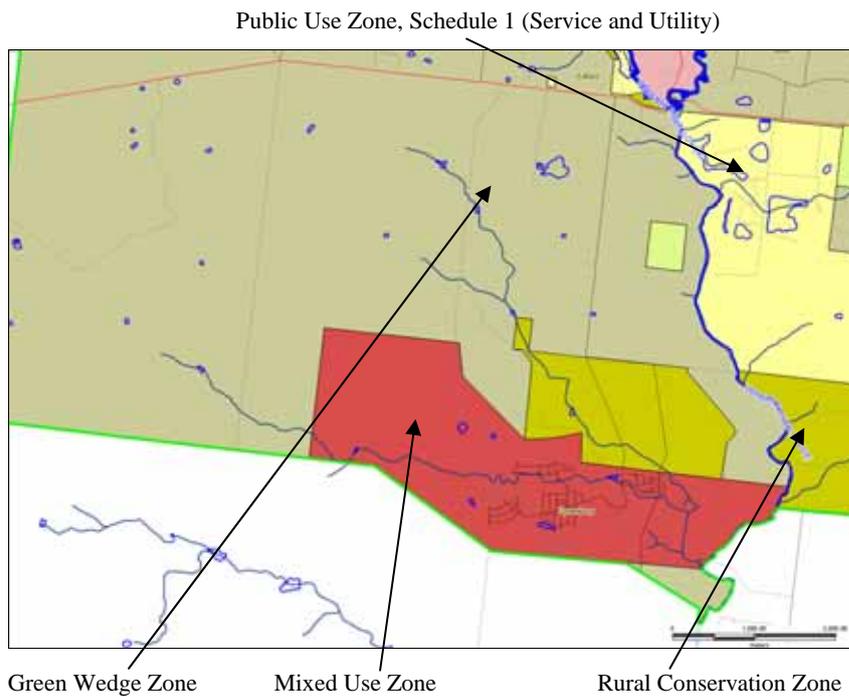


Figure B4
ZONES IN THE SOUTHERN HALF OF THE SHIRE OF MELTON

Table B4 summarises the purpose of these zones and relevant decision guidelines.

Table B4 Zones and relevant decisions guidelines within the Melton Shire

Zone	Purpose	Decision guidelines	Comment
35.04, Green Wedge Zone	<p>To recognise, protect and conserve green wedge land for its agricultural, environmental, historic, landscape, recreational and tourism opportunities, and mineral and stone resources</p> <p>To protect and enhance the biodiversity of the area</p>	<p>Environmental issues</p> <p>The impact of the use or development on the flora and fauna on the site and its surrounds</p> <p>The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
35.06, Rural conservation zone	<p>To protect and enhance the natural environment and natural processes for their historic, archaeological and scientific interest, landscape, faunal habitat and cultural values</p> <p>To protect and enhance the biodiversity of the area</p>	<p>Environmental issues</p> <p>An assessment of the likely environmental impact on the biodiversity and in particular the flora and fauna of the area</p> <p>The protection and enhancement of the natural environment of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p> <p>How the development relates to the sustainable land management and the need to prepare an integrated land management plan which addresses the protection and enhancement of native vegetation and waterways, stabilisation of soil and pest plant and animal control</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
35.07, Farming Zone	<p>To provide for the use of land for agriculture</p> <p>To encourage the retention of productive agricultural land</p> <p>To ensure that non-agricultural uses, particularly dwellings, do not adversely affect the use of land for agriculture</p>	<p>Any Regional Catchment Strategy and associated plan applying to the land</p> <p>The capability of the land to accommodate the proposed use or development, including the disposal of effluent</p> <p>How the use or development relates to sustainable land management</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>

Table B4 Zones and relevant decisions guidelines within the Melton Shire

Zone	Purpose	Decision guidelines	Comment
	<p>To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision</p> <p>To protect and enhance natural resources and the biodiversity of the area</p>	<p>Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses</p> <p>The impact of the proposal on the natural physical features and resources of the area, in particular on soil and water quality</p> <p>The impact of the use or development on the flora and fauna on the site and its surrounds</p> <p>The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p> <p>The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation</p>	
36.01 Public use zone	<p>To recognise public land use for public utility and community services and facilities</p> <p>To provide for associated uses that is consistent with the intent of the public land reservation or purpose</p>	None relevant	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p> <p>There are two areas of land which are identified as being subject to PUZ1—Service and Utility. These are:</p> <ul style="list-style-type: none"> • Melton Reservoir which captures and releases water for use by the Werribee Market Gardens in Werribee • Western Water’s Waste Water Treatment Plant (Surbiton Park) in Mount Cottrell

B4.5 Overlays

A number of overlays exist over the Werribee River and land abutting the river. A summary of the relevant overlays, significance/objectives and decision guidelines is provided in Table B5.

Table B5 Overlays and significance in the Melton Shire

Overlay	Purpose/objectives	Significance
Environmental significance overlay	To identify areas where the development of land may be affected by environmental constraints To ensure that development is compatible with identified environmental values	
ESO, Schedule 1, Remnant Woodlands, Open Forests and Grasslands	To protect and conserve remnant native woodlands, open forests, grasslands and associated under storey and discourage inappropriate use and development	The following woodlands, forests and grasslands contribute to the environmental diversity of the Shire and are to be preserved and protected: <ul style="list-style-type: none"> • Mt Cottrell Woodland, Eyesbury Estate, Telephone Road Woodland, Exford Weir Road Woodland, Exford Woodland, Harkness Road Woodland, Long Forest Mallee, Pyrete Ranges, Ryans Lane, Black Hills and assorted Road Reserves, North-western Rail Reserve Grasslands, Sydenham North Grasslands, Diggers Rest Rail Reserve, Former Department of Defence Property, Western Highway, Rockbank
ESO, Schedule 2, Wetlands, Waterways and Riparian Strips (The ESO2 applies to the entire length of the Werribee river in the Shire of Melton)	To protect and conserve wetlands and to discourage inappropriate use and development The role and function of wetlands will be taken into account in respect to any proposed use or development on or adjacent to a wetland area To protect and conserve the riparian habitat and associated escarpment and to discourage inappropriate development To identify, conserve and enhance the character of significant landscapes	The following wetlands, waterways and riparian strips are environmentally significant: <ul style="list-style-type: none"> • Melton Reservoir Wetlands, Deans Marsh Wetlands and Paynes Road South Wetlands • Kororoit Creek, Skeleton Creek, Dry Creek, Djerriwarrh Creek, Toolern Creek, Riparian Strips and associated escarpments • Werribee River
ESO, Schedule 3, Western Grassland Reserves	To protect and enhance significant landscape and habitat areas of threatened species To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity in areas of environmental significance in the long term To maintain and enhance habitat connectivity for National and State listed threatened species To encourage ecological restoration, regeneration and revegetation of areas of degraded habitat and areas which currently have no habitat value due to historical or current land management practices To provide for the long term preservation of the flora and fauna of environmentally significant areas	The Western Grassland Reserves will contain the largest consolidated area of Natural Temperate Grassland remaining on the Victorian Volcanic Plain, and support several nationally threatened plant and animal species and provide potential habitat for a range of other nationally threatened species. They also include a range of other habitat types, including wetlands, riparian habitats and scattered open grassy woodlands. Parts of these reserves will be made available as offsets for clearing of grasslands within the Urban Growth Boundary

Table B5 Continued

Overlay	Purpose/objectives	Significance
ESO, Schedule 4, Grassland within the Werribee Plains hinterland	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands</p> <p>To avoid the destruction of habitat for native fauna resulting from the modification of land form and disturbance of surface soils and rocks</p>	<p>The Werribee Plains hinterland consists of undulating volcanic plains, a scoria cone and steep gorges formed by the Little and Werribee Rivers. Many elements of the flora reflect the low rainfall of this area, which formerly supported extensive areas of Plains Grassland. Although the native vegetation has been extensively cleared and altered for agricultural, urban and industrial use, there are some large areas of predominantly native vegetation as well as some high quality wetlands, which are important for many threatened fauna species</p>
ESO Schedule 5, Rural conservation area	<p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity</p> <p>To encourage ecological restoration, regeneration and revegetation with indigenous species within the site</p> <p>To maintain and enhance habitat connectivity for listed threatened species</p> <p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat</p> <p>To maintain and enhance the integrity of sites of environmental significance</p> <p>To provide for the long term preservation of the flora and fauna and associated habitat of environmentally significant areas.</p>	<p>The areas covered by this overlay include some existing conservation reserves, areas of significant remnant native vegetation and a number of areas that provide habitat for threatened flora and fauna</p> <p>The areas include but are not limited to:</p> <ul style="list-style-type: none"> • important grasslands • grassy eucalypt woodlands • waterways and riparian areas • other important habitat for threatened flora and fauna. <p>It is important that these areas are retained and managed to ensure that their biodiversity values and any habitat links are protected and enhanced</p>
42.03 Significant Landscape Overlay	<p>To identify significant landscapes</p> <p>To conserve and enhance the character of significant landscapes</p> <p>To protect and conserve volcanic hills and cones from inappropriate development and to help to conserve the existing visual amenity and rural landscapes</p>	<p>The statement of the nature and key elements of the landscape and the landscape character objective contained in a schedule to this overlay</p> <p>The conservation and enhancement of the landscape values of the area</p> <p>The impact of the proposed buildings and works on the landscape due to height, bulk, colour, general appearance or the need to remove vegetation</p> <p>The extent to which the buildings and works are designed to enhance or promote the landscape character objectives of the area</p> <p>The impact of buildings and works on significant views</p> <p>Any other matters specified in a schedule to this overlay</p>

Table B5 Continued

Overlay	Purpose/objectives	Significance
		<p>In addition to the matters listed at Clause 42.03-3, Council will have regard to the following, where appropriate:</p> <ul style="list-style-type: none"> • ‘Melton Design and Siting guidelines for Rural zones’, Shire of Melton 1996 • ‘Sites of Geological and Geomorphological Significance in the Western Region of Melbourne’, Rosengren 1987

B5 MOORABOOL PLANNING SCHEME**Municipal Strategic Statement**

Clause 21.02, Natural Environment

Key issues and influences

Water and Catchment Management:

- large areas of Moorabool Shire are in Special Water Supply Catchments providing potable water for local and regional populations.

Biodiversity:

- human activity particularly the impacts of population growth, urban growth, and agricultural activity have contributed to the decline in biodiversity, quality and quantity of native vegetation and waterway condition
- pest and environmental weed control are important issues within the Shire as is the revegetation of native flora along waterways.

Strategies linked to these issues are:

- ensure the retention, protection, and revegetation of the riparian area along watercourses
- support the implementation of the appropriate Regional Catchment Management Strategy.

Implementation of these strategies is via:

- specific application of zones and overlays to achieve the strategic objectives, including relevant overlays (VPO or ESO) to reflect biodiversity mapping of the Shire when completed.

Local Policy

There are no local policies related to the Werribee River, waterways or biodiversity.

Overlays

Table B6 shows overlays and significance in the Moorabool Shire.

Table B6 Overlays and significance in the Moorabool Shire

Overlay	Purpose	Decision Guidelines	Comment
35.06, Rural conservation zone	<p>To protect the habitat significance of vegetation</p> <p>To provide for appropriate development of land within 100 metres of either side of a waterway</p> <p>To prevent pollution and increased turbidity of water in natural waterways</p> <p>To prevent increased surface run-off or concentration of surface water run-off leading to erosion or siltation of waterways</p> <p>To conserve existing flora and fauna habitats close to waterways and to encourage generation and regeneration of habitats</p> <p>The Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of waterways, which carry water within these catchments, is essential to the health of all communities that rely on water for domestic and stock supply</p>	<p>The effect any proposed development may have on the quality and quantity of water within a waterway, and on flora and fauna habitats located close to those waterways</p> <p>The methods proposed for the disposal of stormwater and treatment and disposal of all sewage and sullage where reticulated sewerage is not available</p> <p>The requirements and provisions of the State Environment Protection Policy (Waters of Victoria)</p> <p>The requirements and provisions of the 'Septic Tanks Code of Practice'</p> <p>The impact of the proposed use and development on soils, and the need to prevent soil erosion</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
35.07, Farming Zone	<p>To provide for the use of land for agriculture</p> <p>To encourage the retention of productive agricultural land</p> <p>To ensure that non-agricultural uses, particularly dwellings, do not adversely affect the use of land for agriculture</p> <p>To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision</p> <p>To protect and enhance natural resources and the biodiversity of the area</p>	<p>The impact of the proposal on the natural physical features and resources of the area, in particular on soil and water quality</p> <p>The impact of the use or development on the flora and fauna on the site and its surrounds</p> <p>The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land, including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</p> <p>The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
36.01, Public Use Zone 1	<p>To recognise public land use for public utility and community services and facilities</p> <p>To provide for associated uses that is consistent with the intent of the public land reservation or purpose</p>	<p>The comments of any Minister or public land manager having responsibility for the care or management of the land or adjacent land</p> <p>Whether the development is appropriately located and designed, including in accordance with any relevant use, design or siting guidelines</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
36.03, Public Conservation and Resource Zone	<p>To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values</p> <p>To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes</p> <p>To provide for appropriate resource based use</p>	<p>The location of existing native or other vegetation and any proposed landscaping works or areas of vegetation to be added or removed</p> <p>The identification of sites of flora or fauna significance (including, in particular, any potentially threatened species or significant habitat) or other places of cultural, heritage or scientific value</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
42.01, Environmental Significance Overlay	<p>To identify areas where the development of land may be affected by environmental constraints</p> <p>To ensure that development is compatible with identified environmental values</p>	<p>The statement of environmental significance and the environmental objective contained in a schedule to this overlay</p> <p>Any other matters specified in a schedule to this overlay</p>	<p>There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically</p>
42.01, Environmental Significance Overlay 1	<p>To identify areas where the development of land may be affected by environmental constraints</p> <p>To ensure that development is compatible with identified environmental values</p> <p>The Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of water catchments is essential to the health of all communities that rely on water for domestic and stock supply</p>	<p>The slope, soil type and other environmental factors</p> <p>The need to maintain water quality at a local and regional level</p> <p>The possible effect of the development on the quality and quantity of water in local watercourses, including the impact on nutrient levels</p> <p>The preservation of and impact on soils and the need to prevent erosion</p> <p>The need to prevent or reduce the concentration or diversion of stormwater</p>	<p>The Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of water catchments is essential to the health of all communities that rely on water for domestic and stock supply</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
42.01, Environmental Significance Overlay 2	<p>To protect the habitat significance of vegetation.</p> <p>To provide for appropriate development of land within 100 m of either side of a waterway</p> <p>To prevent pollution and increased turbidity of water in natural waterways</p> <p>To prevent increased surface run-off or concentration of surface water run-off leading to erosion or siltation of waterways</p> <p>To conserve existing flora and fauna habitats close to waterways and to encourage generation and regeneration of habitats</p>	<p>Effect of the proposed development and, where applicable, the method of waste disposal on the quality and quantity of water within the proclaimed catchment</p> <p>Whether a report from a qualified geotechnical engineer has been provided which demonstrates that the land is capable of absorbing sewage and sullage effluent generated on the lot and that the waste water treatment system has been designed to prevent wastewater entering any waterway, dam or wetland</p> <p>The effect any proposed development may have on the quality and quantity of water within a waterway, and on flora and fauna habitats located close to those waterways</p> <p>The methods proposed for the disposal of stormwater and treatment and disposal of all sewage and sullage where reticulated sewerage is not available</p> <p>The requirements and provisions of the State Environment Protection Policy (Waters of Victoria)</p> <p>The requirements and provisions of the 'Septic Tanks Code of Practice'</p> <p>The impact of the proposed use and development on soils, and the need to prevent soil erosion</p>	<p>The Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of waterways, which carry water within these catchments, is essential to the health of all communities that rely on water for domestic and stock supply</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
42.01, Environmental Significance Overlay 3	<p>To protect the environmental and scientific significance of the vegetation</p> <p>To protect the habitat significance of the vegetation</p> <p>To protect the areas high landscape values and scenic views</p> <p>To protect significant threatened species of flora and fauna from adverse management practices that may result in their extinction</p> <p>To conserve native vegetation communities in their natural condition, and maintain genetic diversity</p> <p>To provide protection and enhance the long-term survival prospects for significant vegetation communities and species</p> <p>To improve the water quality of the waterways and increase and protect their significance</p> <p>To minimise the erosion risk due to shallow soils and rocky outcrops</p> <p>To provide for the retention, restoration and revegetation of local native species</p> <p>To protect the natural, aesthetic and scientific values of geological features. To minimise impacts from visitors on sensitive geological features</p>	<p>The extent of vegetation to be removed</p> <p>The reason for removing the vegetation</p> <p>Whether the removal of the native vegetation will detrimentally impact on the sustainability of Bull Mallee and other threatened flora and fauna</p> <p>The cumulative effect of incremental removal of native vegetation</p> <p>Whether the removal of native vegetation will detrimentally affect the scenic value of the locality</p> <p>Whether the removal of native vegetation will detrimentally affect the habitat value of the locality</p> <p>Any replanting or regenerative measures to be undertaken</p>	<p>The Long Forest</p> <p>The Long Forest area is of high natural, scientific and scenic value and comprises important forest, grassland and riparian ecosystems, which represent valuable habitat for native flora and fauna. While much of the area is protected within the scattered blocks of the Long Forest Flora Reserve, valuable habitat remains on private land between and surrounding the Reserve, and on other public land, including roadsides, streamside reserves and on land managed for water supply. This area supports a unique vegetation community of national significance known colloquially as the Melton Mallee. Its significance is recognised by the fact that it is included in the National Estate Register and is listed as Threatened under Schedule 2 of the <i>Flora and Fauna Guarantee Act</i>. The vegetation essentially occupies the slopes and valleys of the Coimadai and Djerriwarrh Creeks and the ridge between them along which runs Long Forest Road. This tongue of vegetation is entirely different from the surrounding community, and is more characteristic of dry north-western Victorian environments. It is thought to be thousands of years old and is of great scientific and scenic interest</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
42.01, Environmental Significance Overlay 4	<p>To protect the environmental and scientific significance of the wetland vegetation</p> <p>To protect the habitat significance of the wetland vegetation</p> <p>To protect the areas high landscape values</p> <p>To protect significant threatened species of flora and fauna from adverse management practices that may result in their extinction</p> <p>To conserve native vegetation communities in there natural condition, and maintain genetic diversity.</p>	<p>The extent of vegetation to be removed</p> <p>The reason for removing the vegetation</p> <p>Whether the removal of the native vegetation will detrimentally impact on the sustainability of the wetland</p> <p>The cumulative effect of incremental removal of native vegetation</p> <p>Whether the removal of native vegetation will detrimentally affect the habitat value of the locality</p>	<p>Werribee Gorge</p> <p>The dominant features of the Werribee Gorge State Park are the Werribee River and Werribee Gorge itself, which is classified as being of national significance for its extensive outcrops of Permian sediments and exposed sub-glacial topography. It is included in the National Estate Register. The almost 200 metre deep gorge is one of the deepest in Victoria and is unique because of its long cliff-walled sectors. These sectors reveal the geological history of much of central and western Victoria</p> <p>The vegetation of the Park itself is considered to be of State significance, primarily because of the presence of nine rare or threatened species and 20 of regional significance. It is predominantly Stringybark-Box forest with abundant Red Stringybark, Red Box and associated Yellow Gum. Though there have been few recent investigations into the fauna of the Park, it is known that the Powerful Owl and Brush-tailed Phascogale are considered to be threatened in Victoria, and are both listed under the <i>Flora and Fauna Guarantee Act</i></p> <p>It is also a breeding locality for Peregrine Falcons</p> <p>A number of important wetlands exist within Moorabool Shire. These wetlands are significant in terms of wildlife habitat and due to the existence of important species of flora. Often the wetlands are home to rare species of flora and fauna. The wetlands are important and unique landforms within the region. The wetlands are often surrounded by agricultural land and offer refuge for many types of animals. The vegetation within the wetlands is in some cases the only remaining remnant vegetation in the area</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
	<p>To provide protection and enhance the long-term survival prospects for significant vegetation communities and species</p> <p>To improve the water quality of the wetlands</p> <p>To provide for the retention, restoration and revegetation of local native species</p> <p>To minimise impacts from agricultural activities on the wetlands</p>	<p>Whether the removal of vegetation will result in instances of land degradation, including salinity and soil erosion</p> <p>Any replanting or regenerative measures to be undertaken</p>	
42.01, Environmental Significance Overlay 5	<p>The town of Ballan produces a considerable quantity of sewage which requires effective treatment before it can be released into the environment without negative impact. This overlay seeks to provide for the ongoing operation of the sewage treatment plant</p> <p>To prevent the development of habitable buildings within proximity to the Ballan sewage treatment plant where the occupants may be adversely affected by the plant. To ensure the development within 700 m of the plant takes place in a manner which minimises the adverse effects of the plant</p>	<p>The potential effect on future residents of odours emanating from the existing and future sewage treatment plant operation</p> <p>Whether the accommodation may be sited in a manner which will reduce the likelihood of future residents being adversely effected by odour</p>	<p>The town of Ballan produces a considerable quantity of sewage which requires effective treatment before it can be released into the environment without negative impact. This overlay seeks to provide for the ongoing operation of the sewage treatment plant</p>
42.01, Environmental Significance Overlay 6	<p>To facilitate the establishment of a reservation for at least 15,000 ha of grassland (nature conservation reserve or National Park) outside the Urban Growth Boundary in Melbourne's west</p> <p>To provide interim management of the western grassland reserves before they are acquired, achieved by assisting landholders to manage threats and strengthening regulation to prevent degradation</p> <p>To introduce a management regime to ensure that the grassland areas are not degraded in the period prior to acquisition of the land for the grassland reserves</p>	<p>The conservation significance of any vegetation to be removed and its habitat value for native fauna.</p> <p>The effect of any proposed building or works on the environmental values of the land and the integrity of the future reserve</p> <p>The reason for removing any vegetation and the practicality of any alternative options</p> <p>The importance of the natural environment, including any important landscape or conservation characteristics of the area and the suitability of the proposed development</p>	<p>These areas have been identified for protection through the creation of grassland reserves. The establishment of the reserves will create large consolidated areas of permanently protected native grassland outside the Urban Growth Boundary in Melbourne's west. These areas are to be managed to improve their quality and offset losses from clearing associated with urban development and transport infrastructure associated with changes to the Urban Growth Boundary and the implementation of the Building Melbourne's Newest Sustainable Communities Program. The Western Grassland Reserves will contain the largest consolidated area of Natural Temperate Grassland remaining on the</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
	<p>To manage the areas as a conservation reserve or National Park for a range of particular vegetation and species requirements</p> <p>To protect and enhance significant landscape and habitat areas of threatened species</p> <p>To ensure that any development does not impact on the environmental significance of the land or the ability of the land to be managed as a contiguous conservation reserve or National Park in the future</p> <p>To ensure that any use, development or management of land within and adjacent to areas of environmental significance are compatible with their long-term maintenance, conservation and management (e.g. ecological burning) and will not have detrimental impacts on biodiversity values</p> <p>To prevent degradation of sites of environmental significance</p> <p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity in areas of environmental significance in the long term</p> <p>To maintain and enhance the integrity of sites of environmental significance</p> <p>To maintain and enhance habitat connectivity for National and State listed threatened species</p> <p>To encourage ecological restoration, regeneration and revegetation of areas of degraded habitat and areas which currently have no habitat value due to historical or current land management practices</p> <p>To manage buffer areas to reduce the impact of land uses adjoining the Western Grassland Reserves and to ensure appropriate management of the reserve does not adversely impact on surrounding land uses</p>	<p>The control of noxious and environmental weeds and pest animals, including the need to minimise the spread of weeds and soil pathogens</p> <p>The impact on the integrity of the site from the proposed development, disturbance and removal of rock, indiscriminate weed control, habitat fragmentation and isolation and disturbance and destruction of habitat of threatened species</p> <p>The proposed management practices for the land, including:</p> <ul style="list-style-type: none"> • the linking and enlarging of areas of significant flora and fauna habitats • effective and targeted weed control • programs to control or eliminate introduced predatory and pest animal species, in particular foxes, rabbits and hares. • rehabilitation of degraded areas through fencing, revegetation with appropriate native species and ongoing management • collection of seed and other plant propagules for rehabilitation projects on and off site • the results of any flora and fauna survey and assessment of the land • delivering Melbourne’s Newest Sustainable Communities: Strategic Impact Assessment Report for <i>Environment Protection and Biodiversity Conservation Act 1999</i> 	<p>Victorian Volcanic Plain, and support several nationally threatened plant and animal species and provide potential habitat for a range of other nationally threatened species. They also include a range of other habitat types, including wetlands, riparian habitats and scattered open grassy woodlands. Parts of these reserves will be made available as offsets for clearing of grasslands within the Urban Growth Boundary. Conservation reserves account for only 2 per cent of the current extent of natural temperate grassland and the addition of this proposed 15,000 ha reserve will increase the level of reservation of natural temperate grassland to 20 per cent. Approximately 19 per cent of the native grasslands within the proposed reserves are high quality (habitat score greater than 0.6) and a further 80 per cent are Medium quality (habitat score between 0.31–0.6). The grassland reserves will secure at least 5290 habitat–hectares of existing grasslands. The proposed grassland reserves support several nationally threatened species: Golden Sun Moth (critically endangered), Striped Legless lizard (vulnerable), Spiny Rice-flower (critically endangered), Large-headed Fireweed (vulnerable), Clover Glycine (vulnerable). They also contain Werribee Blue Box which is likely to be listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> in the near future. They include the most likely suitable habitat on the Volcanic Plains for Plains Wanderer (vulnerable) and potential habitat for a range of other specialist grassland species such as Button Wrinklewort (endangered) and the Grassland Earless-dragon (endangered). The reserves take in a range of other habitats, including Buloke Grassy Woodlands, and a variety of wetland types, including Plains Grassy</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
	To provide for the long term preservation of the flora and fauna of environmentally significant areas	<ul style="list-style-type: none"> any growth area framework plans, biodiversity conservation strategies, subregional species strategies, native vegetation precinct plan, conservation management plan, precinct structure plan or other management plan approved for the area by the Minister for Planning or Minister for Environment and Climate Change any relevant park management plan or interim management plan any action statement prepared under the <i>Flora and Fauna Guarantee Act 1988</i> and any significant impact guidelines or prescriptions prepared under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Cth) for species or habitat listed under either of these Acts that occur or are likely to occur on the land 	Wetland of the Victorian Volcanic Plain. These wetlands provide habitat for existing populations of Growling Grass frog (vulnerable) and several migratory bird species. The proposed grassland reserves have been designed to maximise the area of habitat available to resident plant and animal species, in particular threatened species, and to enable management activities critical to the long term survival of species and vegetation to be undertaken. As a result, not all areas within the reserves support high quality native vegetation and some areas are degraded. Management works will be targeted to these areas
42.01, Environmental Significance Overlay 7	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain</p> <p>To enhance the environmental and landscape values of the area</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands</p> <p>To avoid the destruction of habitat for native fauna resulting from the modification of land form and disturbance of surface soils and rocks</p>	<p>The conservation significance of any vegetation to be removed and its habitat value for native fauna</p> <p>Measures to protect and enhance native vegetation and native fauna habitat of the Victorian Volcanic Plain, including the retention of land form, surface soils and rocks</p> <p>Measures to maintain contiguous areas of native vegetation or native fauna habitat</p> <p>Any relevant strategic grasslands management plan, particularly the potential impact of management activities, such as burning, on any proposed new use or development</p> <p>The impact of any use, development or management of land on the grasslands, including the potential impacts of nutrient and water run-off, increased weed and pest invasion or recreational impacts</p>	<p>The areas included within this overlay form part of the Victorian Volcanic Plain Bioregion. The native vegetation of the Victorian Volcanic Plain bioregion is one of the most depleted in the State. Only 4.5 per cent of the State still has a cover of native vegetation, and less than 1.2 per cent is in formal reserves</p> <p>The Werribee Plains hinterland consists of undulating volcanic plains, a scoria cone and steep gorges formed by the Little and Werribee Rivers. Many elements of the flora reflect the low rainfall of this area, which formerly supported extensive areas of Plains Grassland. Although the native vegetation has been extensively cleared and altered for agricultural, urban and industrial use, there are some large areas of predominantly native vegetation as well as some high quality wetlands, which are important for many threatened fauna species</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
s	To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified	<p>Measures to encourage ecological restoration, regeneration and revegetation with indigenous species</p> <p>The need to adopt a precautionary approach in the absence of scientific certainty</p> <p>The reason for removing any vegetation and the practicality of any alternative options</p> <p>The impact on the integrity of the site from the proposed development, disturbance and removal of rock, indiscriminate weed control, habitat fragmentation and isolation and disturbance and destruction of habitat of threatened species</p> <p>The proposed management practices for the land, including:</p> <ul style="list-style-type: none"> • the linking and enlarging of areas of significant flora and fauna habitats. Effective and targeted weed control. Programs to control or eliminate introduced predatory and pest animal species, in particular foxes, rabbits and hares, Rehabilitation of degraded areas through fencing, revegetation with appropriate native species and ongoing management. Collection of seed and other plant propagules for rehabilitation projects on and off site • the results of any flora and fauna survey and assessment of the land • any native vegetation precinct plan, conservation management plan, precinct structure plan or other management plan approved for the area by the Minister for Planning or Minister for Environment and Climate Change 	<p>There are a number of communities and species in this area that do not occur elsewhere in the bioregion. Important species in this area include, for flora, the Button Wrinklewort, Large-fruit Fireweed, Small Golden Moths, Small Milkwort, Small Scurfpea, Spiny Rice-flower, and the only remaining wild population of Sunshine Diuris; and, for fauna, the Grassland Earless Dragon, Orange-bellied Parrot, Plains-wanderer, Redchested Button-quail, Striped Legless Lizard and Swift Parrot. The landscape consists of undulating volcanic plains with red duplex soils. The Werribee and Little Rivers have incised steep and sometimes spectacular gorges into the basalt plain. The scoria cone of Mount Anakie is a significant landscape feature. A band of Tertiary sediments are located along the western edge of this area. It has a unique and relatively early history of European settlement due partly to the ease of access of the open grassland plains. Because of this the landscape has been radically altered. The dry plains of the Werribee plains hinterland formerly supported extensive areas of Plains Grassland. These grasslands integrated with Riverina Plains Grassy Woodland (dominated by Grey Box, Buloke and Drooping Sheoak) to the west and south of Melton, and Plains Grassy Woodland in and around the You Yangs and east of the Brisbane Ranges. Riparian areas supported Floodplain Riparian Woodland and Creekline Grassy Woodland with Escarpment Shrubland on steeper escarpments. A variety of wetland communities formerly occurred throughout, including Plains Grassy Wetland, Plains Sedgy Wetland, Canegrass Wetland, Lignum Wetland and Aquatic Herbfield. Scoria Cone Woodland was associated with Mount Anakie and other volcanoes</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
		<ul style="list-style-type: none"> any action statement, significant impact guidelines or prescriptions for listed species or habitat of listed species occurring or likely to occur on the land 	<p>Areas of coastal salt marsh were found along the shores of Port Phillip. Many elements of the flora reflect the low rainfall, including White Cypress-pine and Fragrant Saltbush found along the steep escarpments of the Werribee River, and Woolly Buttons at Little River. The native vegetation has been extensively cleared and altered for agriculture and (increasingly) for urban and industrial use. However, there are large areas of predominantly native vegetation, including woodlands, wetlands and grasslands. The major issue for biodiversity conservation in the Werribee plains hinterland is loss of native vegetation and habitat through clearing for urban development, cropping and infrastructure. The compounding effects of such clearing are the loss of floristic and habitat diversity and increasing fragmentation of habitats and isolation of remnants. Similarly, changes to management of remnant vegetation and increased urbanisation contribute to the proliferation of weeds and feral animals. Degradation of drainage lines and riparian vegetation through erosion, pollution and uncontrolled grazing, depletion of wetlands and changes to the hydrology of wetlands and streams are also serious threats to biodiversity in the region. However, a range of conservation assets are present and significant opportunities do exist to establish relatively large areas and networks of areas that are managed sympathetically for conservation. Such networks could include a range of vegetation types and land tenures and relatively large and intact areas of open grassland, grassy woodland and wetland communities</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
42.02, Vegetation Protection Overlay 1	<p>To protect areas of significant vegetation</p> <p>To ensure that development minimises loss of vegetation</p> <p>To preserve existing trees and other vegetation</p> <p>To recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance</p> <p>To maintain and enhance habitat and habitat corridors for indigenous fauna</p> <p>To encourage the regeneration of native vegetation</p>	<p>The statement of the nature and significance of the vegetation to be protected and the vegetation protection objective contained in a schedule to this overlay</p> <p>The effect of the proposed use, building, works or subdivision on the nature and type of vegetation to be protected</p> <p>The role of native vegetation in conserving flora and fauna</p> <p>The need to retain native or other vegetation if it is rare, supports rare species of flora or fauna or forms part of a wildlife corridor</p> <p>The need to retain vegetation which prevents or limits adverse effects on ground water recharge</p> <p>The need to retain vegetation:</p> <ul style="list-style-type: none"> • Within 30 m of a waterway or wetland • In areas where the removal, destruction or lopping of vegetation could adversely affect the integrity or long term preservation of an identified site of scientific, nature conservation or cultural significance • Which is of heritage or cultural significance • Any relevant permit to remove, destroy or lop vegetation in accordance with a land management plan or works program • Whether the application includes a land management plan or works program • Whether provision is made or is to be made to establish and maintain vegetation elsewhere on the land 	<p>The township of Blackwood provides one of the most scenic localities within the Moorabool Shire, largely as a result of the native vegetation present in the township, and which complements surrounding State Forest areas. The trees provide scenic qualities to the town, and should be retained to maintain the townscape ambience and scenic attributes for which Blackwood is renowned</p>

Table B6 Continued

Overlay	Purpose	Decision guidelines	Comment
		<ul style="list-style-type: none"> Any other matters specified in a schedule to this overlay The extent of vegetation to be removed. The purpose of removing the vegetation Whether the removal of vegetation will detrimentally impact on the scenic nature of Blackwood <p>Any replanting or regenerative measures</p>	
42.03, Significant Landscape Overlay	To identify significant landscapes To conserve and enhance the character of significant landscapes	The statement of the nature and key elements of the landscape and the landscape character objective contained in a schedule to this overlay The conservation and enhancement of the landscape values of the area	There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically
42.03, Significant Landscape Overlay 1	Scenic hilltops and ridge line area The hilltops and ridge lines encircling the township of Bacchus Marsh provide significant scenic views and are a significant contributor to the valued rural town ambience	Before the responsible authority considers an application to construct a building or to construct or carry out works, it must consider, the impact of a proposal on visual amenity, both from adjoining properties, and from the township of Bacchus Marsh	There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically
44.06, Wildfire Management Overlay	To identify areas where the intensity of wildfire is significant and likely to pose a threat to life and property To ensure that development which is likely to increase the number of people in the overlay area Satisfies the specified fire protection objectives. Does not significantly increase the threat to life and surrounding property from wildfire To detail the minimum fire protection outcomes that will assist to protect life and property from the threat of wildfire	None relevant	There are no controls in the zone which specifically recognise the environmental importance of waterways generally or the Werribee River specifically

Appendix B

STRATEGIC PLANNING DISCUSSION PAPER



Strategic planning ‘whiteboard review’ session – notes

Held 25 February at Melton Shire

Present

Alan Thatcher (convenor)	Project Manager, Werribee River BAP
Justin Horne	Moorabool Shire
Damien Drew	Moorabool Shire
Matthew Milbourne	Melton Shire
Sam Freeman-Moir	Wyndham City

VISION

1. The aspiration vision of this project (subject to further discussion) is the creation of a regional biolink to:
 - Increase protection and enhancement of fragmented ecosystems by achieving local and regional scale connectivity of ‘core areas’ / ‘nodes’ of biological assets; and
 - Increase resilience of species (both flora and fauna) to climate change through enhancing the capacity to migrate between core areas and nodes..
2. The implications of this vision are that land use and development that supports biological connectivity should be an aim along the entire length of the Werribee River.
3. This connectivity, depending on the nature of the flora and fauna, can be both in the form of vegetation communities that are either ‘stepping stones’ or ‘continuous corridors’. For example the movement of avifauna could be supported by ‘stepping stones’ whereas movement of reptiles (such as lizards and snakes) would require continuous vegetation communities to support movement between core areas.
4. The achievement of a continuous indigenous vegetation corridor is the ultimate aim where this can potentially still be achieved (e.g. more likely in rural areas). Where there is established urban land use stepping stones may be the best available option.
5. Continuous biological biodiversity may not be possible along the length of the river but it and will be part of other forms of regional connectivity as for example from the Brisbane Ranges to Lerderderg Gorge in the case of the grassland reserves from south to north of the river. The alternative is for the river to be a barrier.
6. The expression of the vision would be best met in the respective MSSs of the planning schemes of Wyndham, Melton and Moorabool by the use of a map with explanation. An example of this approach is in the Melton Planning Scheme for the Physical Framework Plan that identifies eight land use units and provides a snapshot and the objectives, opportunities and constraints, and strategies for each unit.

EXISTING SITUATION

7. The existing situation is summarised in Appendix B to the Werribee River Biolink Action Plan - Desktop Report (2011).

POTENTIAL STRATEGIC PLANNING APPROACHES

8. Four potential approaches were identified and discussed:

Make part of regular planning scheme review

9. This was not favoured because there is no certainty that the biolink would be picked up as part of what is an overall review for the MSS.

Discrete amendment

10. This would involve the formal planning scheme amendment process. It would involve an inclusion of the vision (in some form) in the MSS and consideration and strategic justification of any proposed changes to zoning, overlays and any other planning measures. For example, the completed Werribee River Biolink Action Plan could become a reference document to the scheme.
11. Such a planning scheme amendment would need to be introduced across the three municipalities as one coordinated amendment process. There is precedent for such an approach.
12. The two major planning tools for spatially defining land use are zoning for land use control and overlays for development controls. In the Wyndham municipality there is considerable portion of the Urban Growth Area and zoning here is being driven by the development of the Precinct Structure Plans. Melton has major areas of Urban Growth Zone on the Melton township side of the river and Green Wedge Zone on the western side. Moorabool has a preponderance of Farming Zone along the river.
13. It was thought that zoning was not the way to go as the zoning as the non urban zoning in Melton and Moorabool is not incompatible with the capacity to establish biolink values (being mainly an open landscape). In relation to the urban areas zoning will have a residential focus and the ability to influence this is likely to be through helping to inform the Precinct Structure Planning process that will establish the planning controls.
14. There is already application of environmental significance overlays for the waterways also all three municipalities that address environmental objectives in line with the protection of biolink values along the Werribee River and appears to include much of what we have identified as core and nodes areas. The relevant ESOs for the Werribee River are summarised in Appendix 1. The issue for the future is the extent to which the ESOs for the waterways might be widened to include the terrestrial areas abutting rivers and creeks. This is in turn a major issue that the Werribee River Biolink Action Plan is attempting to inform.
15. The other major strategic planning factor is the *Growth Area Biodiversity Conservation Strategy* (see Appendix 2) and the *Sub-regional Species Strategy for the Growling Grass Frog* which includes the delineation of an area along the Werribee River that is identified as "strategically important habitat area (for protection) of the Growling Grass frog.

Link to the Shared Trail process with two amendments dealt with at the same time.

16. The Shared Trail project and biolink project are complementary but spatially they are not compatible with the biolink project covering the entire length of the Werribee River.

Non Statutory mechanisms

17. The Merri Creek Management Strategy has adopted a 'non statutory' zone called the 'Encouragement Zone'. (cannot find in their latest strategy document)
18. This would be a zone (non statutory) where attention could be paid to:
 - Providing evidence to potential funders of the importance of the this area to enhancing the biolink;
 - Providing support to landcare and environment groups working with landowners and detailing the incentives available to undertake biodiversity works; and
 - Working with state and local government on the further development of programs to support the implementation of the Biolink Action Plan for the Werribee River.

DIRECTIONS WITH STRATEGIC PLANNING

19. Based on the initial discussion and following review of the current planning schemes, it is my view that:
 - Overlays are the appropriate planning tool to use for controlling development along the Werribee River biolink;
 - Any proposed amendment for waterways and the role of biolinks should build on the existing ESOs;
 - Any proposed amendment for biolinks should apply to all waterways currently identified in the Waterway Corridor ESOs for each municipality and be informed by the Werribee River Biolinks Action Plan.;
 - Consideration should be given to a non statutory 'Encouragement or Biolink Action Zone.
20. The above points are not exhaustive and are put out to encourage further thinking on the role of the planning schemes in working towards achieving the vision for the biolink.
21. In Wyndham and Melton I envisage that a major role of the WR-BAP will be to inform the Growth Corridor Plans for the growth areas, which in turn will inform the design of precincts during the precinct structure planning

Alan Thatcher
Project Manager, Werribee River Biolinks Action Plan
LeadWest
24.02.12

Appendix 1 – Summary of the Environmental Significance Overlays for the three municipalities that relate to the Werribee River.

There is already a number of Environmental Significance Overlays (ESO) that have relevance to controlling the nature of future development in the biolink area. They are necessarily applied separately within each of the three municipal planning schemes and are described below.

Wyndham

ESO1 – Waterway corridors. This ESO encompasses the major waterways in Wyndham identified in the Wyndham Waterways Strategy Plan as being, from east to west, Skeleton Creek including the Dry Creek tributary, Werribee River including the Davis Creek tributary, Lollypop Creek and Little River. The ‘Statement of environmental significance’ recognises the range of benefits that these waterways provide to the community. The ‘waterway corridor’ refers to the aquatic and riparian land containing the core environmental values of the waterway area such as floodplain function, in-stream habitat, riparian vegetation, flora and fauna species and habitats, ephemeral and permanent wetlands, grassy swamps adjoining the waterway, native grasslands adjoining the riparian corridor, the natural valley form and escarpments and includes the natural valley form, escarpments, associated wetlands and floodplain areas up to the 1:100 ARI floodline. “Environmental buffers” beyond the waterway corridor refers to an area providing protection between identified environmental values (including flora and fauna values, habitat values and cultural values) and the development site. The final paragraph in the ‘statement’ is that:

Impacts of changing land use and development and poor land management practices affect waterway environments and their beneficial values. With increased awareness, the waterways within Wyndham will become a self-sufficient attraction for many generations to come.

There is a comprehensive range of environmental objectives to be achieved.

ESO2 – Rural Conservation Area. The areas covered by this overlay include some existing conservation reserves, areas of significant remnant native vegetation and a number of areas that provide habitat for threatened flora and fauna. The areas include but are not limited to: important grasslands: grassy eucalypt woodlands; waterways and riparian areas: other important habitat for threatened flora and fauna. The final paragraph of the Statement of Environmental Significance states that:

It is important that these areas are retained and managed to ensure that their biodiversity values and any habitat links are protected and enhanced.

ESO5 – Grasslands within the Werribee Plains hinterland. The Statement of Environmental Significance says that “The areas included within this overlay form part of the Victorian Volcanic Plain Bioregion. The native vegetation of the Victorian Volcanic Plain bioregion is one of the most depleted in the State. Only 4.5 per cent of the State still has a cover of native vegetation, and less than 1.2 per cent is in formal reserves.”

Melton

ESO1 – Remnant woodlands, open forests and grasslands. The following woodlands, forests and grasslands contribute to the environmental diversity of the Shire and are to be preserved and protected: Mt Cottrell Woodland, Eynesbury Estate, Telephone Road Woodland, Exford Weir Road Woodland, Exford Woodland, Harkness Road Woodland, Long Forest Mallee, Pyrete Ranges, Ryans Lane, Black Hills and assorted Road Reserves, North - western Rail Reserve Grasslands, Sydenham North Grasslands, Diggers Rest Rail Reserve, Former Department of Defence Property, Western Highway, Rockbank. The environmental objective is to:

To protect and conserve remnant native woodlands, open forests, grasslands and associated under storey and discourage inappropriate use and development.

ESO2 – Wetlands, waterways and riparian Strips. The following wetlands, waterways and riparian strips are environmentally significant: Melton Reservoir Wetlands, Deans Marsh Wetlands and Paynes Road South Wetlands; f Kororoit Creek, Skeleton Creek, Dry Creek, Djerriwarrh

Creek, Toolern Creek, Riparian Strips and associated escarpments; Werribee River; Former Department of Defence Property, Western Highway, Rockbank. The environmental objectives cover the wetlands, waterways and riparian strips and state that the:

*The role and function of wetlands will be taken into account in respect to any proposed use or development **on or adjacent to** a wetland area and*

*To protect and conserve the riparian habitat and **associated escarpment** and to discourage inappropriate development*

ESO5 – Rural conservation area. This is the same as for the Wyndham Planning Scheme.

Moorabool

ESO2 – Waterway protection. The Statement of environment significance says that the Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of waterways, which carry water within these catchments, is essential to the health of all communities that rely on water for domestic and stock supply. The environmental objectives include to:

- *To provide for appropriate development of land within 100 metres of either side of a waterway.*
- *To conserve existing flora and fauna habitats close to waterways and to encourage generation and regeneration of habitats.*

ESO8 – River Red Gums in the Bacchus Marsh Valley. The statement of environmental significance says that River Red Gums, *Eucalyptus camaldulensis*, represent the oldest living natural heritage of Bacchus Marsh, and are a striking feature of the Bacchus Marsh Valley. The hollow bearing nature of the River Red Gum provides ideal fauna habitat and food for many species of native birds, mammals, insects and spiders. The environmental objective is to provide for the long term preservation and regeneration of the River Red Gum population within the Bacchus Marsh Valley, therefore enhancing biodiversity and landscape quality.

ESO3 – Long Forest and Werribee River Gorge. The statement of environmental significance for the Long Forest area recognises that

*While much of the area is protected within the scattered blocks of the Long Forest Flora Reserve, **valuable habitat remains on private land between and surrounding the Reserve, and on other public land including roadsides, streamside reserves and on land managed for water supply***

The dominant features of the Werribee Gorge State Park are the Werribee River and Werribee Gorge.

*The vegetation of the Park itself is considered to be of State significance, primarily because of the presence of nine rare or threatened species and 20 of regional significance. It is predominantly Stringybark-Box forest with abundant Red Stringybark, Red Box and associated Yellow Gum. **Though there have been few recent investigations into the fauna of the Park, it is known that the Powerful Owl and Brush-tailed Phascogale are considered to be threatened in Victoria, and are both listed under the Flora and Fauna Guarantee Act. It is also a breeding locality for Peregrine Falcons.***

ESO1 – Proclaimed water catchment area. The environmental objectives of this overlay are to protect the quality and quantity of water produced within proclaimed water catchments, and to provide for appropriate development of land within proclaimed water catchments.

Appendix 2: Growth Area biodiversity conservation strategy

Source

Notes from DSE 'fact sheet' entitled: *A new approach to biodiversity in Melbourne's growth areas* (DSE, November 2011).

Notes

The Victorian Government is introducing a new approach to conserve biodiversity in Melbourne's growth areas.

This new biodiversity approach is consistent with and builds on the work of the Melbourne Strategic Assessment (MSA). For more details, see DSE fact sheet '*A new approach to biodiversity in Melbourne's growth areas: Melbourne strategic assessment*' at: www.dse.vic.gov.au/urbangrowthareas

The government, through the Department of Sustainability and Environment will deliver the new approach through two initiatives:

- an overarching **Biodiversity Conservation Strategy** (BCS) for the growth areas
- the **time-stamping** project.

The BCS is supported by three Sub-regional Species Strategies (SRSSs), prepared for the Golden Sun Moth, Growling Grass Frog and Southern Brown Bandicoot.

The BCS has informed the preparation of the draft Growth Corridor Plans for the growth areas, developed by the Growth Areas Authority.

Appendix 3: Sub-regional Species Strategy for the Growling Grass Frog

Source

Sub-regional Species Strategy for the Growling Grass Frog (DSE, 2011)

Notes

- This Sub-regional Species Strategy (Strategy) for the Growling Grass Frog has been prepared in response to obligations arising from the Melbourne Strategic Assessment conducted under Part 10 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC).
- The Strategy has been informed by a detailed technical report and associated recommendations for Growling Grass Frog conservation (Ecology and Heritage Partners 2011a). The implementation of this Strategy will be drawn from this report.
- In accordance with this commitment, the purposes of this Strategy are to:
 - Inform the draft Biodiversity Conservation Strategy and draft Growth Corridor Plans for the growth areas, which will inform the design of precincts during the precinct structure planning stage and the preparation and implementation of Conservation Management Plans.
 - Identify important populations of Growling Grass Frog, areas of habitat to be protected as required by the prescription, and habitat corridors to provide **connectivity between populations**.
- Figure 1a: West Growth Area – Growling Grass Frog provides a spatial identification of strategically important habitat area for protection.