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Innovation in Infrastructure



Palmers Road Corridor Western Freeway to Calder Freeway EES Landscape and Visual Impact Assessment

Volume 1: Report

Prepared by Spiire for VicRoads | 15 September 2014

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I EXECUTIVE SUMMARY

Spiire was appointed by VicRoads to undertake a landscape and visual impact assessment to inform the Environment Effects Statement (EES) for the Palmers Road Corridor, between the Western and Calder Freeways. The results of this assessment are summarised below.

- LANDSCAPE PLANNING

The proposed road project is within the Victorian planning jurisdiction and is located within both the Brimbank and Melton Local Government Areas. A portion of the proposed road development occurs in close proximity to the boundary of the Organ Pipes National Park.

The draft evaluation and overriding objective in relation to Visual and Landscape Values and as provided in the EES Scoping Requirements:
To avoid adverse effects on the landscape and recreational values of the Organ Pipes National Park and minimise visual affects on open space areas.

A review of federal, state and local legislation, planning policies and schemes was undertaken to identify planning principles and objectives applicable to the landscape and visual assessment of the proposed road development. This review resulted in the recommendation of the following specific study sub-objectives:

- Protect the visual amenity, recreational and natural landscape values of the Organ Pipes National Park.
- Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains.
- Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit Creek corridors.
- Protect the visual amenity and recreational values of the open space reserves.
- Enhance existing networks that provide cycling and walking accessibility and connectivity.

- LANDSCAPE ANALYSIS

The existing road is currently a 1 lane each way road extending from Derrimut in the south to Calder Park in the north. The road is continuous, except for one section between Tenterfield Drive in Burnside Heights and Fydler Avenue in Burnside.

There are several natural and cultural landscape elements of importance along this road corridor, including the Organ Pipes National Park, the Kororoit Creek and several grassland reserves. However, the landscape along this road is by and large dominated by the built form which interfaces with it. The vast majority of the route is lined with medium density residential developments which have largely been developed over the last 20 years and with only one remaining area yet to be developed in Burnside Heights. Aside from the areas of residential development, a pocket of commercial development exists between Riding Boundary Road and the Western Highway.

Shared paths exist in some locations along the route and also intersect with the route intermittently.

The landform of the corridor is generally quite flat with only a few vantage points. Additionally, the extensive development lining the road generally limits the views beyond the corridor itself. However, the most important view is considered the view to and from the Organ Pipes National Park, south of Jacksons Creek.

Other views of high importance are considered those listed as follows:
- Views to and from the Kororoit Creek and associated open space areas; and
- Views from the Organ Pipes National Park from the northern side of Jacksons Creek.

- LANDSCAPE CHARACTER

The corridor is assessed as having three landscape character types:

1 Basalt Plains

2 Residential

3 Commercial

Each of these landscape character types are further assessed as having the following distinct landscape character areas:

Basalt Plains: Organ Pipes, Calder Park, Calder Park Grasslands, Kororoit Creek and Ravenhall Grasslands.

Residential: Sydenham, Taylors Hill, Watervale, Burnside Heights, Burnside, Deer Park and Derrimut.

Commercial: Ravenhall.

The area with the highest scenic quality is the Organ Pipes landscape character area of the Basalt Plains landscape character type. The Kororoit Creek landscape character area, also of the Basalt Plains landscape character type, is considered of moderate scenic quality. All other landscape character areas, including all of the Residential and Commercial areas are considered to be of low scenic quality.

The Organ Pipes and Kororoit Creek landscape character areas are considered of high landscape and visual significance. The landscape character areas of the Calder Park Grasslands and Ravenhall Grasslands of the Basalt Plains landscape character types are considered of moderate landscape and visual significance. The Taylors Hill, Watervale and Burnside landscape character areas of the Residential landscape character type are considered of low-moderate landscape and visual significance.

The Calder Park, Sydenham, Burnside Heights, Deer Park, Derrimut and Ravenhall landscape character areas are all considered of relatively low landscape and visual value.

- THE PROPOSED ROAD DEVELOPMENT

The existing road is proposed to be widened and duplicated to a 3 lane each way road with a central median typically 7 metres wide, but narrowing at intersections to accommodate turning lanes. The operating speed of the road is proposed to be 80 km/hr. An off-road shared path, typically 3 metres wide, is proposed on both

sides of the road for the entire length. The proposed duplicated road is to be constructed at grade, except for the following locations:

- An underpass of the Ballarat-Melbourne Railway line;
- A bridge crossing of the Kororoit Creek;
- An overpass of the Bendigo-Melbourne Railway line; and
- A grade separated interchange with the Calder Freeway.

The proposed road development will require the acquisition of land, the removal of some natural and cultural landscape features as well as the removal of street trees along much of its length.

- LANDSCAPE AND VISUAL ASSESSMENT

The landscape and visual effects of the proposed road development were assessed against the Landscape Planning Objectives. The relative significance of each of these effects was then assessed both without mitigation measures and then with mitigation measures in place after a period of 10 years. The proposed road development was also given an overall rating.

The mitigation measures applied are summarised as follows:

- Design bridges to be simple and elegant structures.
- Minimise remnant vegetation removal and replant indigenous vegetation where possible within the road reserve to screen road infrastructure from adjoining open space areas.
- Maintain views of very high importance.
- Relocate shared paths closer to the road wherever possible to maximise tree planting opportunities outside the shared paths.
- Ensure the Kororoit Creek bridge structure is duplicated to allow more light and rain to penetrate beneath the structures.
- Relocate impacted cultural heritage features to an adjacent, appropriate and protected location.
- Re-establish removed garden beds and tree planting within open space reserves where no room exists within the road reserve.
- Plant additional trees and shrubs within open space reserves where no room exists within the road reserve.
- Provide shared path connections to existing and future shared path networks.

The proposed road development has a low negative impact upon the Organ Pipes National Park. This is largely a visual impact upon the area of park directly adjoining the proposed grade separated interchange of the Calder Freeway, as well as on the areas visible on the south side of Jacksons Creek. However, because of the meandering and deeply incised nature of the creek valley and the extensive vegetation within the park, this interchange will not impact significantly upon the majority of the park, nor on the key visitor destinations in the park, including the visitors centre, Organ Pipes, Rosette Rock and Tessellated Pavement. The impacts upon the Organ Pipes National Park can also be mitigated to some degree through

the retention of existing remnant vegetation and the use of screen planting on the interchange batters.

The impact upon the visual amenity, cultural heritage and natural landscape values of the volcanic plains is relatively low. Only minor acquisition of the Banchory Grove Nature Conservation Reserve is proposed and the impact upon the Sugar Gums and drystone wall at the Ravenhall Magazine and Storage Facility site can be mitigated somewhat through the realignment of the shared path and the incorporation of stone banding along the wall's original alignment.

The proposed road development has a moderate impact on the Kororoit Creek corridor. The proposed bridge and associated road infrastructure will impact on the valley and its visual amenity through the introduction of built infrastructure into a valley with predominantly natural, as well as some heritage value. The development will require the removal of open space reserve, steepen and constrain the natural width of the creek valley and constrict public access along the valley. It will also require the partial removal of the Drover's Hut remains and a River Red Gum and creates overshadowing of the creek line. These impacts could be mitigated somewhat by creating a light well between the two bridge structures and planting indigenous vegetation on the embankments.

The proposed road development has minimal impact on the Jacksons Creek corridor. This is due to the large distance from the Creek to the proposed interchange with the Calder Freeway and the very deeply incised nature of the creek.

The impact on the visual amenity and recreational values of the open space reserves by the proposed road development is low. Although most of the reserves lining the road corridor are impacted, only minor acquisition is proposed and the impact on visual amenity can be mitigated by the planting of additional trees and shrubs either within the road reserve or within the open space reserves.

The proposed road development has a positive impact on the existing networks that provide cycling and walking accessibility and connectivity. The provision of off-road shared paths in both directions and the connections to most of the existing shared path networks is a significant landscape benefit of the project. This network could be improved further by ensuring that connections are provided to all existing networks, as well as allowing provision for future planned networks. Further, unless measures are taken to ensure tree planting is possible along the duplicated road (as described in Section 7.4), to shade and shelter these shared paths, the amenity of these paths will be reduced.

The assessment against the planning objectives can therefore be summarised as follows:

Planning Objective	Pre-mitigation	Post Mitigation
Protect the visual amenity, recreational and natural landscape values of the Organ Pipes National Park.	*Neutral*	*Well*
Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains.	*Neutral*	*Well*
Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit Creek corridors.	*Poor*	*Poor*
Protect the visual amenity and recreational values of the open space reserves.	*Well*	*Well*
Enhance the existing networks that provide cycling and walking accessibility and connectivity.	*Well*	*Well*
Overall Rating	***Neutral***	***Well***

- LANDSCAPE CONCEPT

The landscape concept for the Palmers Road corridor is intended to enhance the amenity of the proposed road development for all users of the corridor, as well as for the local and broader communities. The following principles have been applied for the concept:

- Mitigate wherever possible the landscape and visual impacts of the road development.
- Minimise native vegetation removal and retain and protect remnant indigenous vegetation.
- Balance the provision of views from the road towards key open space areas with the need to screen the road infrastructure from these reserves.
- Design planting in accordance with road safety requirements, including safety of ongoing maintenance, maintaining safe intersection sight distances, sight lines around curves and clear zone requirements.
- Plant trees wherever possible and appropriate within the road reserve to improve the amenity of the road corridor. Where trees are not possible due to road safety requirements, plant taller shrubs or low growing plant species where appropriate.
- Generally aim to provide tall shrub or low planting within centre medians and outer separators to improve the amenity of the corridor.
- Utilise indigenous plant species of local provenance, particularly in areas adjacent to the Organ Pipes National Park, Pioneer Park, Kororoit Creek and Ravenhall East Grasslands Nature Conservation Reserve.
- To minimise weed infestation into Conservation Reserves, install measures such as crushed rock at the boundary interface with the road, specifically at Banchory Grove Nature Conservation Reserve.

2 INTRODUCTION

The Palmers Road corridor is a 16 km stretch of road located in Melbourne's western suburbs. In the south, the corridor commences at the Western Freeway in Ravenhall and follows Robinsons Road north to the Melbourne –Ballarat Railway line. Here it transitions to Westwood Drive and continues through Deer Park, Burnside, Caroline Springs and Burnside Heights. At Taylors Road it follows Calder Park Drive past Taylors Hill, Sydenham and Hillside. It then crosses the Melbourne-Bendigo Railway line before terminating at the Calder Freeway at Calder Park (*refer to Figures 1 and 2 in Volume 2*).

The purpose of this study was to undertake a landscape and visual impact assessment to inform the Environment Effects Statement (EES) for the Palmers Road Corridor, between the Western and Calder Freeways. This landscape and visual impact assessment is undertaken in six phases:

The **Landscape Planning** component reviews the federal, state and local legislation and planning objectives applicable to this project in order to ascertain the Landscape Planning Objectives of this study.

The **Landscape Analysis** component is a baseline study of the site and its visual conditions in order to fully appreciate and understand the existing landscape of the road corridor.

The **Landscape Character** phase identifies areas of distinct landscape character as well as the most significant landscape and visual resources and values in this road corridor.

The **Proposed Road Development** section describes the development and summarises the physical changes resulting from the proposed works.

The **Landscape and Visual Assessment** draws on all of the previous phases of the study to identify the impacts and benefits of the proposed road project and then assess the affects of the development against the project's Landscape Planning Objectives.

The **Landscape Concept** identifies ways to mitigate the impacts of the proposed road development through the use of alternative landscape treatments.

This volume (Volume 1) reports the results of the study and should be read in conjunction with Volume 2 – Visual Material.

3 LANDSCAPE PLANNING

A review of federal, state and local legislation, planning policies and schemes was undertaken to identify planning principles and objectives applicable to the landscape and visual assessment of the Palmers Road Corridor – Western Freeway to Calder Freeway. This review informed the determination of the study sub-objectives and assessment criteria.

The proposed road duplication is within the Victorian planning jurisdiction and is located within both the Brimbank and Melton Local Government Areas. Notably, a portion of the proposed road development occurs in close proximity to the boundary of the Organ Pipes National Park. The Park was established in recognition of the significance of its geological formations, including the exposed basalt columns known as the Organ Pipes. However, it also supports remnant basalt plains, riparian and escarpment vegetation and landscapes.

The draft evaluation and overriding objective in relation to Visual and Landscape Values and as provided in the EES Scoping Requirements for the project is:

To avoid adverse effects on the landscape and recreational values of the Organ Pipes National Park and minimise visual affects on open space areas.[1]

3.1 LEGISLATION AND POLICY FRAMEWORK

3.1.1 COMMONWEALTH LEGISLATION

The Environment Protection and Biodiversity Conservation Act 1999 is the Australian Government's key piece of environmental legislation. It is relevant only at a very high level to the extent that it provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. It states no objectives specifically applicable to this landscape and visual impact study.

3.1.2 STATE LEGISLATION & PLANNING

- Victorian Legislation

The following legislation guides and regulates development planning within Victoria and is relevant to the proposal:

Planning and Environment Act 1987 – a key piece of planning legislation that controls planning schemes, etc; and

Environment Protection Act 1970 – provides a legislative framework for the protection of the environment in Victoria.

Transport Integration Act 2010 – an act which recognises the aspirations of Victorians for an integrated and sustainable transport system.

1 *Final Scoping Requirements for Palmers Road Corridor Project - Western Freeway to Calder Freeway Environment Effects Statement*, viewed 11 June 2013, < http://www.dpcd.vic.gov.au/planning/environment-assessment/projects/palmers-road-corridor-western-freeway-to-calder-freeway>

The *Planning and Environment Act 1987* lists several objectives relating to this study:

"(1) The objectives of planning in Victoria are—
(b) to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity;
(c) to secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria;
(d) to conserve and enhance those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value;"[2]

The *Environment Protection Act 1970* states the following relevant principle:

"1B Principle of integration of economic, social and environmental considerations
(2) This requires the effective integration of economic, social and environmental considerations in decision making processes with the need to improve community well-being and the benefit of future generations."[3]

The *Transport Integration Act 2010* lists the following relevant objective and principle:

"10 Environmental sustainability
The transport system should actively contribute to environmental sustainability by—
(a) protecting, conserving and improving the natural environment;"
and
"18 Principle of the transport system user perspective
The transport system user perspective means—
(b) enhancing the useability of the transport system and the quality of experiences of the transport system."[4]

The Organ Pipes National Park is a scheduled National Park under the *National Parks Act 1975,* which provides for the protection and reservation of Crown lands in the public's interest. Given the close proximity of the Organ Pipes National Park to the development site, it is worth considering the following relevant objectives in this Act:

"(a) to make provision, in respect of national parks, state parks, marine national parks and marine sanctuaries—
(i) for the preservation and protection of the natural environment including wilderness areas and remote and natural areas in those parks;
(ii) for the protection and preservation of indigenous flora and fauna and of features of scenic or archaeological, ecological, geological, historic or other scientific interest in those parks;"[5]

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2 *Planning and Environment Act 1987* (Vic), viewed 11 June 2013, < http://www.legislation.vic.gov.au/domino/Web_notes/LDMS/PubLawToday.nsf/95c43dd4eac71a68ca256dde00056e7b/b42e83c09a150512ca25736000133ad5!OpenDocument>

3 *Environment Protection Act 1970* (Vic), viewed 11 June 2013, < http://www.legislation.vic.gov.au/domino/Web_notes/LDMS/PubLawToday.nsf/95c43dd4eac71a68ca256dde00056e7b/c7131dc25197a476ca257347000a99b1!OpenDocument

4 *Transport Integration Act 2010* (Vic), viewed 15 September 2014, < http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/LTObject_Store/ltobjst8.nsf/DDE300B846EED9C7CA257616000A3571/55E9D54729B0B095CA257CDA000B6686/$FILE/10-6aa036%20authorised.pdf>

- State Planning Policy Framework

o Clause 12 Environmental and Landscape Values

An overall objective of Clause 12 of the State Planning Policy Framework, Environmental and Landscape Values aims to *"…conserve areas with identified environmental and landscape values.*" And that "*Planning should protect sites and features of nature conservation, biodiversity, geological or landscape value*."

Clause 12.04 proposes a strategy relevant to this study:
"Protect environmentally sensitive areas with significant recreational value…as well as nominated urban conservation areas, historic buildings and precincts from development which would diminish their environmental conservation or recreation values."[6]

o Clause 15 Built Environment and Heritage

Clause 15 Built Environment and Heritage is particularly relevant to this study and lists numerous objectives worth noting:

Clause 15.01-1 Urban design:
"To create urban environments that are safe, functional and provide good quality environments with a sense of place and cultural identity."

Clause 15.01-2 Urban design principles:
"To achieve architectural and urban design outcomes that contribute positively to local urban character and enhance the public realm while minimising detrimental impact on neighbouring properties."

Also:

"Landmarks, views and vistas
Landmarks, views and vistas should be protected and enhanced or, where appropriate, created by new additions to the built environment."

"Heritage
New development should respect, but not simply copy, historic precedents and create a worthy legacy for future generations."

"Architectural quality
New development should achieve high standards in architecture and urban design."

"*Landscape architecture*
Recognition should be given to the setting in which buildings are designed and the integrating role of landscape architecture."

Refer also to Clause 15.01-4 Design for safety:
"To improve community safety and encourage neighbourhood design that makes people feel safe."

And, Clause 15.01-5 Cultural identity and neighbourhood character:

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5 *National Parks Act 1975 (*Vic), viewed 11 June 2013, < http://www.legislation.vic.gov.au/domino/Web_notes/LDMS/PubLawToday.nsf/95c43dd4eac71a68ca256dde00056e7b/892c620022bbb0d8ca257306000812e5!OpenDocument>

6 *State Planning Policy Framework (Vic)* 2010, viewed 11 June 2013, <*http://planningschemes.dpcd.vic.gov.au/aavpp/12_sppf.pdf*>

"To recognise and protect cultural identity, neighbourhood character and sense of place."[7]

- Clause 18 Transport

Clause 18 of the State Planning Policy Framework aims to *"…create a safe and sustainable transport system by integrating land-use and transport.*"

It lists the following pertinent objective:

Refer to Clause 18.02-2 Cycling:
"*To integrate planning for cycling with land use and development planning and encourage as alternative modes of travel."*[8]

- Plan Melbourne

Plan Melbourne sets out the state government's vision that will guide the city's growth to 2050 and it contains a number of relevant stated directions, listed as follows:

- Chapter 3 - A More Connected Melbourne

"3.5 Improve the efficiency of freight networks while protecting urban amenity"

- Chapter 4 - Liveable Communities and Neighbourhoods

"4.3 Create neighbourhoods that support safe communities and healthy lifestyles"
"4.5 Make our city greener"
"4.7 Respect our heritage as we build for the future"

- Chapter 5 - Environment and Water

"5.2 Protect and restore natural habitats in urban and non-urban areas"

3.1.3 LOCAL LEGISLATION & PLANNING

- Local Planning Policy Framework

- City of Brimbank

Brimbank has several clauses and stated objectives within their Municipal Strategic Statement of relevance to this study and worth noting:

21.05 – Natural Environment, the objective to note is:
"Objective 2: To retain, protect and improve the natural and landscape environs along the Maribyrnong River, Kororoit Creek, Taylors Creek, Jones Creek, Steele Creek and Stony Creek escarpments and adjoining open space areas."

21.06 –Built Environment, Section 21.06-3 Escarpments and Ridgelines, the objectives to note are:
"Objective 1: To ensure that any new development on the ridgelines or adjacent to the escarpments provides a positive interface with the waterways;" and

[7] *State Planning Policy Framework (Vic)* 2010, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/aavpp/15_sppf.pdf>*

[8] *State Planning Policy Framework (Vic)* 2010, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/aavpp/18_sppf.pdf>*

"Objective 2: To ensure the use of building materials and the siting and height of new buildings respect the preferred character of the river valley and surrounding natural environment."

21.06 –Built Environment, Section 21.06-4 Landscaping, the objective to note is:
"Objective 1: To ensure landscaping within new developments respects the natural environment and landscape character of the surrounding area."

21.10 – Transport and Infrastructure, the objectives to note are:
"Objective 1: To improve access to sustainable transport options; and

Objective 2: To develop a variety of sustainable transport options for the movement of people and goods within and through the municipality."

21.11 – Community and Leisure Facilities, Section 21.11-3 Public Open Space and Sporting Facilities, the objectives to note are:
"Objective 1: To ensure all residents have equal access to high quality parks and playgrounds.; and

Objective 2: To ensure parks and open space areas are safe and attractive places that reflect the needs and values of the community."[9]

- City of Melton

Melton's Municipal Strategic Statement refers to relevant planning strategies in Clause 21.04 of their Local Planning Policy Framework. Of particular relevance is the 'Melton East Strategy Plan' which states the following relevant objectives:

Section 6 – Transport:
"- Minimise the need for residents to use motorised transport to gain access to employment, recreation, retail, community and other facilities and services
- Establish a high level of pedestrian safety in the study area by incorporating bicycle and pedestrian routes and crossing points in the transportation network"

Section 7 – Landscape and Urban Design:
"- Give the area a strong character and identity based on its existing physical assets such as shelter belt planting and the Creek
- Create a strong sense of place for the Melton East Growth Area by the design of the urban and landscape fabric of the development
- Maximise the visual exposure and open space amenity of Kororoit Creek and its tributaries and safeguard its wildlife habitat value
- Maximise long range views to the hills to the north west, Mount Cottrell and the city skyline from significant public spaces
- Create a physical environment that is comfortable in terms of local climatic conditions
- Incorporate Aboriginal and European historic and cultural features as an integral part of the urban design of the development
- Incorporate where possible areas of known botanical significance in the open space network"

[9] *Brimbank Planning Scheme Municipal Strategic Statement (Vic)* 2006, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/brimbank/ordinance/21_mss00_brim.pdf>*

Section 8 – Recreation and Open Space:
"- Use linear links to connect parcels of planned open space and to link the Area with existing and planned district and regional recreational facilities.
- Preserve the natural landscape features of the Kororoit Creek Corridor.
- Orientate development and locate open space and recreation facilities to maximise surveillance and direct public access."[10]

Melton also has several other relevant policies and objectives within their Municipal Strategic Statement of relevance to this study and worth noting:

- 22.02 – A Sustainable Environment Policy, the objectives to note are:
"- 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."

- 22.03 – Recreation and Open Space Networks Policy, the objectives to note are:
"-To ensure that open space is appropriately integrated with surrounding land uses, and is responsive to natural landscapes and features.
- To ensure that the maintenance of open space is considered as part of the design process in all development.
- To use linear links to connect parcels of planned open space, residential, civic and commercial areas with existing and planned district and regional recreation facilities.
- To locate open space and recreation facilities in new developments to maximise surveillance and direct public access."

22.07 – Transport and Movement Policy, the objective to note is:
"- To provide options for people to use alternative means of travel by maximising access to public transport, pedestrian and cyclist routes."[11]

- Relevant Landscape Zones

There are a number of planning zones within or adjacent to the study area. Figures 3 and 4 (Volume 2) illustrate the location of zones of particular note and relevance to this study and are listed as follows:

- Public Conservation and Resource Zone (PCRZ) – The primary purpose of this zone is to protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values. The Organ Pipes National Park, the Ravenhall Grasslands and Bullum Bullum at Burnside all exist within this zone.
- Public Park and Recreation Zone (PPRZ) – The primary purpose is to recognise areas for public recreation and open space and to protect and conserve areas of significance where appropriate. Pioneer Park in Sydenham, an active open space reserve in Burnside Heights and Bothwell Park in Derrimut exist in this zone.

[10] Gutteridge Haskins & Davey Pty Ltd 1997*, Shire of Melton: Melton East Strategy Plan – June 1997*, Melbourne

[11] *Melton Planning Scheme Local Planning Policies (Vic)* 2006, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/melton/ordinance/22_lpp00_melt.pdf*>

- Green Wedge Zone (GWZ) – The relevant purposes of this zoning are to recognise, protect and conserve green wedge land for its environmental, historic, landscape, recreational and tourism opportunities and to protect, conserve and enhance the cultural heritage significance and the character of open rural and scenic non-urban landscapes. A large area of land within close proximity of the study area, south of the Bendigo Railway Line and north of the Urban Growth Boundary exists in this zone.

- Overlays

Figures 3 and 4 (Volume 2) also indicate those overlays of particular relevance to this study and are listed below:

- Brimbank Environmental Significance Overlay – Schedule 6 (ES06) covers Sites of Known Biological Significance within the City of Brimbank. The relevant objective to be achieved is:
  "To protect and enhance the landscape character and heritage values of identified grasslands, valleys and wetlands." [12] The relevant areas are Pioneer Park East and West, Calder Park Industrial Estate Grassland and the Sydenham Rail Reserve Grassland Patches.
- Melton Environmental Significance Overlay – Schedule 1 (ES01) covers Remnant Woodlands, Open Forests and Grasslands within the City of Melton. The objective to be achieved is:
  "To protect and conserve remnant native woodlands, open forests, grasslands and associated under storey and discourage inappropriate use and development."[13] The relevant areas are the North-western Rail Reserve Grasslands and the Diggers Rest Rail Reserve.
- Melton Environmental Significance Overlay – Schedule 2 (ES02) covers Wetlands, Waterways and Riparian Strips within the City of Melton. The relevant objective to be achieved is:
  "To identify, conserve and enhance the character of significant landscapes."[14] The relevant area is the Kororoit Creek riparian strip and associated escarpments.
- Melton Heritage Overlay (HO) seeks to ensure that development does not adversely affect the significance of heritage places. The 'Dalgook' Farm Complex (now incorporated into the Morton Homestead Activity Centre) exists adjacent to the study area boundary, just north of Hume Drive at Taylors Hill.

3.1.4 OTHER NON-LEGISLATIVE MEASURES

It is worth noting that the Organ Pipes National Park is listed in the National Trust's Heritage Register under the category of 'Landscape – Cultural' as being of State

[12] *Brimbank Planning Scheme Schedule 6 to the Environmental Significance Overlay* (*Vic)* 2012, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/brimbank/ordinance/42_01s06_brim.pdf>*

[13] *Melton Planning Scheme Schedule 1 to the Environmental Significance Overlay* (*Vic)* 2006, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/melton/ordinance/42_01s01_melt.pdf >*

[14] *Melton Planning Scheme Schedule 2 to the Environmental Significance Overlay* (*Vic)* 2006, viewed 11 June 2013, < *http://planningschemes.dpcd.vic.gov.au/melton/ordinance/42_01s02_melt.pdf>*

significance. This is "*due to its conservation value and its role as an educational and recreational resource for the community at large*"[15].

The *Kororoit Creek Regional Strategy 2005-2030* (2006) is a strategy compiled in partnership with Parks Victoria, Melbourne Water and the Cities of Wyndham, Melton, Brimbank and Hobsons Bay. The strategy addresses the entire creek corridor from its headwaters to the bay and identifies a number of overriding objectives. The following objectives are relevant to this study:

- *"Objective 3 – To develop a continuous and linked open space network along the Kororoit Creek corridor from Altona Coastal Park to the proposed regional Park near Caroline Springs.*
- *Objective 4 – Conserving Cultural Heritage. Ensure places of cultural heritage are conserved and, where appropriate, are interpreted and have desirable settings.*
- *Objective 5 – Landscape Character. Identify and protect landscapes which are representative of the Kororoit Creek corridor."*

3.2 LANDSCAPE PLANNING OBJECTIVES

The overriding and primary Project Objective provided in the EES Scoping Requirements which applies to this study is:
To avoid adverse effects on the landscape and recreational values of the Organ Pipes National Park and minimise visual affects on open space areas.[16]

The assessment of the relevant legislation, planning policies and objectives has revealed that the retention and protection of the natural landscape values associated with the Victorian Volcanic Plains Bioregion is of key importance. This includes the form and vegetation of the remnant grasslands and wetlands of the plains, as well as the often deeply incised river and creek corridors and their exposed geology, escarpments and related riparian and escarpment vegetation. The Organ Pipes National Park is the most significant example of these values, displaying not only the landform and vegetation of the plains and waterways, but also containing significant geological formations.

The recreational values that these natural areas and reserves provide are also of significance, particularly the linear parklands that exist along creek lines and waterways. Likewise the provision for alternative modes of transport, such as walking and cycling, as well as connectivity to and between open space reserves, are also noted objectives.

Further recognised is the contribution that cultural heritage sites and landscapes can make to the understanding of place and therefore the protection of cultural landscape values is also of importance.

15 *Heritage Register* 2013, viewed 11 June 2013, <http://www.nationaltrust.org.au/vic/heritage-register>

16 *Final Scoping Requirements for Palmers Road Corridor Project - Western Freeway to Calder Freeway Environment Effects Statement*, viewed 11 June 2013, < http://www.dpcd.vic.gov.au/planning/environment-assessment/projects/palmers-road-corridor-western-freeway-to-calder-freeway>

The following specific study sub-objectives and assessment criteria are therefore recommended:

- Protect the visual amenity, recreational and natural landscape values of the Organ Pipes National Park.
- Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains.
- Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit Creek corridors.
- Protect the visual amenity and recreational values of the open space reserves.
- Enhance existing networks that provide cycling and walking accessibility and connectivity.

4 LANDSCAPE ANALYSIS

The purpose of this phase of the study was to undertake a baseline study of the site and its visual conditions in order to fully appreciate and understand the existing landscape of the road corridor.

4.1 EXISTING ROAD CONDITIONS

Apart from additional turning and through lanes at intersections, the existing road is currently a 1 lane each way road. The road is continuous except for one stretch between Tenterfield Drive in Burnside Heights and Fydler Avenue in Burnside. The existing road reserve is wide and appears to have been set aside to accommodate a future duplication. The road is at grade for its entire length, including at both railway crossings.

4.2 NATURAL LANDSCAPE ELEMENTS

Figures 5 and 6 (Volume 2) highlight the major natural landscape features of the Palmers Road corridor.

The corridor is located in the Victorian Volcanic Plain Bioregion. The gently undulating landform of the lava plains is only interrupted by several drainage lines carving their way through the basalt surface.

The Kororoit Creek approaches very close to the corridor just north of Ballarat Road and then crosses the alignment north of Rockbank Middle Road. In this reach the Kororoit Creek valley is broad and moderately incised at around 10 m lower than the surrounding plain. Vegetation is evident along this creekline as scattered old-growth River Red Gums (*Eucalyptus camaldulensis*), and an understorey of exotic weeds, including shrubs on the escarpments and grasses and groundcovers on the plains and fringing the creek.

Photo 1 The Kororoit Creek corridor viewed from Arbour Boulevard.

Jacksons Creek is located at the northern end of the study area and is a dramatic insertion in the landscape. The Creek is very deeply incised at around 70 m below the plains. Its embankments vary from wide and moderate slopes to narrow and precipitous escarpments. In the foreground, the visible areas adjoining the creek are generally within the Organ Pipes National Park. Extensive areas of native trees and shrubs are evident within the valley, as well as She-oak dominated woodlands on the plains.

Photo 2 The Jacksons Creek corridor viewed from within Organ Pipes National Park.

Four other shallow and poorly defined drainage lines cross the corridor; the upper reaches of Taylors Creek north of the Bendigo Railway line in Calder Park, the Sydenham Drain adjacent to Meade Way in Sydenham, a tributary of the Kororoit Creek north of Ballarat Road at Deer Park and Whiteside Drain adjacent to Drummond Circuit in Derrimut. Except for the Sydenham Drain which is dotted with planted native tree species, these drainage lines are generally dominated by a weedy and grassy understorey with no over-storey vegetation evident.

Other important natural landscape features along the corridor are the remnant native grasslands dotted along the route. In the south, the Ravenhall East Grassland Nature Conservation Reserve is bound by the Western Freeway and Robinsons Road. The landscape is dominated by the broad and flat grassy plain in the foreground against the backdrop of the freeway; scattered with only a few Red Gums.

Photo 3 Ravenhall East Grassland Nature Conservation Reserve as viewed from Robinsons Road.

In the north, the Banchory Grove Nature Conservation Reserve is located between Calder Park Drive and the Bendigo Railway Line. The grassland occurs on a gentle hillside and is dominated by an even cover of grasses with no overstorey vegetation present. The view of the hillside is framed along the ridgeline to the west and along the southern boundary with the large homes and fences of the adjoining development. To the north, the view is dominated by transmission lines and towers and the embankments of the Calder Park Motorsport Complex.

Photo 4 Banchory Grove Nature Conservation Reserve as viewed from Calder Park Drive.

Adjacent to this site and following along the Bendigo Railway Line are linear areas of remnant grasslands, such as those protected by the Environmental Significance Overlays and including the Sydenham Rail Reserve Grassland Patches in the City of Brimbank and the North-western Rail Reserve Grasslands in the City of Melton. However, from the road corridor these patches are difficult to ascertain amongst the pasture grasses and weeds which line the railway corridor.

Further south adjoining Manchester Drive, Pioneer Park East and West Grasslands exist in an open space reserve which is bound by Calder Park Drive and the Bendigo Railway Line. The fenced grasslands are surrounded by parkland of generally open lawn grass with planted trees dotted throughout.

In addition to these areas, Ecology & Heritage Partners' *Flora and Fauna Assessment and Biodiversity Offset Analysis, Palmers Road Corridor: Western Freeway to Calder Freeway* (2014) report identifies several patches of Plains Grassland and Plains Grassy Wetland within the road corridor itself. These patches are concentrated adjacent to the Ravenhall East Grassland Nature Conservation Reserve and north of Southbank Walk with patches extending all the way to the northern end of the corridor. Notably a large area of Plains Grassland exists throughout the reserve opposite Copperfield College. This grassland is regularly mown however, and therefore appears as lawn grass. A large area of Plains Grassland also exists across the car park of the Calder Park Motorsport Complex. However, as with the grasslands along the rail corridor, these areas are difficult to distinguish amongst the exotic grasses and weeds of the naturestrips and verges.

Photo 5 Pioneer Park as viewed from Calder Park Drive.

4.3 CULTURAL LANDSCAPE ELEMENTS

Figures 7 and 8 (Volume 2) highlight the major cultural landscape features of the Palmers Road corridor.

Although the *Palmers Road Corridor (Western freeway to Calder Freeway): Desktop, Standard and Complex Assessment Report – Cultural Heritage Management Plan Number 12662* (2014) identified numerous previously recorded Aboriginal Places as well as newly located Aboriginal Surface Artefacts within the road corridor, these are not visually evident.

The most visual cultural landscape elements can be found in the remnants of the 'Dalgook' Farm Complex now incorporated into the Morton Homestead Activity Centre and located just north of Hume Drive in Sydenham. Dry stone walls and shedding is evident from the road, as well as stands of mature Sugar Gums.

Bullum Bullum Aboriginal place is an 8 hectare grassland site located on the west side of Kororoit Creek north of Landy Court in Burnside. Bullum Bullum is an important site of Aboriginal heritage, as well as being rich in flora and fauna values. Although not within the road corridor itself, the grasslands are in close proximity to Westwood Drive and visible from the intersection of Torowatta Place.

The Palmers Rd Corridor (Western Freeway to Calder Freeway) – Historic Archaeology and Cultural Heritage (2013) report identified other historic archaeological sites of landscape value. The Ravenhall 2 Magazine and Storage Facility comprise features such as a railway embankment, an old entrance road, two areas of cobbling and plantings of Sugar Gums. The majority of these features are not discernible from Robinsons Road. The most evident of these features are the lines of Sugar Gums bordering the old railway siding and Riding Boundary and Robinsons Roads.

The Ravenhall 1 site exists as the drystone wall remaining along the eastern boundary of the Ravenhall 2 site, bordering Robinsons Road. Although only of local significance, this drystone wall is a rare remnant in this corridor. The walls, along with the remaining rows of planted Sugar Gums, are a distinct visual indication of the previous use and settlement pattern of this area.

The 'Drovers Hut' site is located on the northern side of Kororoit Creek and consists of bluestone foundations and a concrete floor, as well as a secondary structure consisting of cut bluestone and fieldstones. It is clearly an important site and has been relisted on the Victorian Heritage register. However, these features are currently difficult to ascertain amongst the overgrown weeds and dumped rubbish and fill.

Photo 6 Dalgook Farm Complex now incorporated into the Morton Homestead Activity Centre.

Photo 7 Bullum Bullum Aboriginal Place as viewed from Torowatta Place.

Photo 8 The drystone walls and Sugar Gums remaining along Robinsons Road.

4.4 BUILT FORM AND CONSTRUCTED LANDSCAPE ELEMENTS

Figures 9 and 10 (Volume 2) illustrate the built form interface and constructed landscape elements of the Palmers Road corridor.

Although there are several natural and cultural landscape elements of importance along this corridor, the landscape along this road is by and large dominated by the built form which interfaces with it. The vast majority of the route is lined with medium density residential developments which have largely been developed over the last 20 years and with only one remaining area yet to be developed in Burnside Heights. The way this development interfaces with the road corridor varies along its route. A small number of houses front directly onto the road, others are set back with access to the road via service roads, but the majority of residential properties have their rear or side boundaries interfacing with the road corridor. In some places this results in a road corridor lined with timber paling fences. These sections are sometimes screened with planted vegetation of trees or shrubs, but not always, resulting in areas of very poor visual amenity.

Given the recent development of the area, in many places the constructed landscape is immature. Avenues of trees, where planted, generally vary from immature (planted within the last 2 years) to semi-mature (5-10 years old) and therefore contribute varying degrees of amenity to the road corridor. There are several open space reserves along the corridor, but because the vegetation is generally immature, the trees do not yet significantly contribute to the visual amenity of the road. Some of these reserves are also very sparsely planted or treated and have a low level of amenity, such as Lachlans Field and the reserve opposite Copperfield College. The developed sections with the highest amenity can be found along Westwood Drive between Nicol Avenue and the Kororoit Creek in Burnside and Caroline Springs. Wide verges are extensively planted with low shrubs and tussocks and the service roads are lined with semi-mature trees. Similarly, the section of road corridor between Hume Drive and Southbank Walk also has a high

level of visual amenity, as it is lined with established garden beds and mature trees along the roadside and within the Morton Homestead Activity Centre.

Photo 9 Calder Park Drive as viewed from Conturst Drive.

Photo 10 Westwood Drive north of Nicol Avenue.

Aside from the areas of residential development, an area of commercial development exists on the western side of Robinsons Road until it becomes Westwood Drive. From here, commercial development dominates the landscape on both sides of the road to Landy Court, just north of the Western Highway. The commercial landscape is dominated by large buildings covered in signage, set well

back from the road with freestanding signage and extensive areas of pavement to accommodate cars, trucks and parking. Aside from lawn grass, planted understorey vegetation and trees are minimal and sporadic. The generally poor amenity of this area is exacerbated by the presence of transmission line towers in the vicinity of Waigani Avenue.

Photo 11 The commercial area north of the Melbourne-Ballarat Railway line.

Aside from this continuous area of commercial development, some smaller retail developments are dotted along the route. These smaller developments are also dominated by large built form, signage and extensive pavement areas. However, the majority have a higher standard of landscape treatment in the form of more extensive garden beds and trees.

There are also some isolated areas of undeveloped land located along the route. These are areas which generally appear as flat cleared paddocks. A large area exists at the southern end of the corridor on the west side of Robinsons Road. The portion north of the Ravenhall East Grasslands is zoned Special Use Zone Schedule 8 and is set aside to facilitate development of the prison precinct. The portion south of the grasslands is zoned Farming Zone but accommodates a Melbourne Water retarding basin. At the northern end of the corridor on the east side of Calder Park Drive between the Bendigo Railway Line and the Calder Freeway, a large portion of undeveloped land is zoned Industrial 3 Zone. This type of industrial zone is intended to allow for industries which are compatible with the surrounding community and do not affect the amenity of the adjacent land uses.

Photo 12 The undeveloped area east of Calder Park Drive, south of the Calder Freeway.

Opposite to this undeveloped area in the north and located in a parcel of land bound by Calder Freeway, the Bendigo Railway Line and Calder Park Drive is an area of very distinct landscape character. The Calder Park Motorsport Complex dominates the landscape with its high and poorly vegetated embankments and signage. Between the embankments and the road, vast areas of undulating to flat, cleared and weedy paddocks as well as transmission lines and towers contribute to the poor amenity of this area.

Photo 13 The Calder Park Motorsport Complex viewed from Calder Park Drive.

4.5 BICYCLE AND SHARED PATH NETWORKS

Figures 11 and 12 (Volume 2) illustrate the existing and proposed shared path networks that interface with the Palmers Road corridor.

On-road bicycle lanes are only provided in three locations that intersect with the corridor; along the Calder Freeway, Melton Highway and Commercial Road in Caroline Springs. Off-road shared paths also exist in the Melton Highway and Commercial Road locations.

The other major off-road shared paths which connect to the broader network exist along Hume Drive, Taylors Road, Kororoit Creek (west of the corridor), Rockbank Middle Road and the Western Freeway. An existing off-road shared path extends along the corridor itself between Commercial Road and Glenbruar Drive on the eastern side and between Tenterfield Drive and Wells Avenue on the western side.

Numerous other smaller networks interface with the corridor in the residential developments:

- Windsor Boulevard – connecting to schools and open space reserves within the estate;
- Foleys Road - connecting to Derrimut Grasslands;
- Hatchlands Drive – connecting to an open space reserve;
- Kelly Avenue – connecting into the residential development;
- Wood Grove/Carinya Boulevard: connecting open space reserves, Kororoit Creek and the Bullum Bullum Aboriginal Place;
- Arbour Boulevard: connecting north into the estate and along Kororoit Creek to the active open space reserve south of Tenterfield Drive; and
- Arroyo Place: connecting along the Kororoit Creek and to the open space reserves around Lake Caroline.

Both Melton and Brimbank have completed cycling and walking strategies for their local government areas. Both municipalities have identified the need to provide an off-road shared path along the corridor itself, extending from Robinsons Road along Westwood Drive and completing the Calder Park Drive link to the Calder Freeway.

Brimbank has also identified gaps in their off-road shared path network. On Ballarat Road (Western Highway) and along the Bendigo Railway Line south of Calder Park Drive, both to connect with the broader network. Melton has identified gaps in their network at Rockbank Middle Road (east of Westwood Drive) to connect with the Kororoit Creek and east and west along Community Hub to connect active open space reserves as well as primary and secondary schools on either side of the Palmers Road corridor.

Both Brimbank and Melton also note the need to extend the shared path network along Kororoit Creek east of Westwood Drive. This strategy is further supported in the *Kororoit Regional Strategy 2005-2030* (2006).

North of the Calder Freeway, Parks Victoria have proposed additional regional and walking trails within the Organ Pipes National Park as detailed in their *Organ Pipes National Park Management Plan* (1998). The Plan identifies several additional walking tracks including one to connect with Loemans Road on the north side of

Jacksons Creek, as well as loop track alternatives which extend the current route past Rosette Rock. Although, these proposed walking routes are not planned for the immediate future, Parks Victoria is currently working with the City of Brimbank to determine a route from the Kings Road overpass of the Calder Freeway to the Park boundary. This will enable a safe off-road connection between the Park and the broader network. Within the Park this route would be located generally along an existing maintenance track which is located between the road reserve boundary and Jacksons Creek.

Photo 14 The shared path located between the Kororoit Creek corridor and Arbour Boulevard.

4.6 VIEWS AND VIEW SHED

Figures 13 and 14 (Volume 2) illustrates the view shed of the road corridor as well as the key views to and from the study area.

The landform of the corridor is generally quite flat with only a few vantage points. Further, the extensive development lining the road by and large limits the views beyond the corridor itself. The view shed expands significantly in the very northern end of the corridor, where the corridor intersects with the Calder Freeway and where there are large areas of undeveloped land with minimal over storey vegetation. Long distance views towards Melbourne Airport and beyond to the ranges north of Melbourne can be had in this location. Other than this area, a wider view shed exists in only two other locations where the absence of development does not restrict the view; at the crossing of Kororoit Creek and in the area west of the corridor, south of the Ballarat-Melbourne Railway Line.

Views to and from the road corridor have been determined through site investigations. The importance of the views is determined by the study's planning objectives. Therefore views to or from the Organ Pipes National Park, the major creek lines, remnant grassland reserves and open space areas are all considered important. The relative importance of these views is then informed by the following criteria:

- Views from publicly accessible areas are more important than views from private or restricted access areas.
- Views observed by a large number of people at any one time are more important than those seen by individuals or small groups.
- Views observed for a longer period of time, such as several hours or more, are more important than those seen fleetingly or only over a very short period, such as less than 30 minutes.
- Views observed whilst participating in tourism and recreational activities, where the primary purpose of being there is to partake in the views, are more important than views observed whilst undertaking other activities where the views from that location are secondary to the purpose of being there.
- Views observed of areas of high visual amenity are more important than those observed of areas of low visual amenity.

The most important view is therefore considered:

- Views to and from the Organ Pipes National Park south of Jacksons Creek.

Views of high importance are considered those listed as follows:

- Views to and from the Kororoit Creek and associated open space areas; and
- Views from the Organ Pipes National Park from the northern side of Jacksons Creek.

Views of moderate importance are considered those listed as follows:

- Views to Banchory Grove and Ravenhall East Grasslands Nature Conservation Reserve;
- Views to and from Pioneer Park;
- Views to and from the 'Dalgook' Farm Complex (Morton Homestead Activity Centre);
- Views to the Bullum Bullum Aboriginal Place;
- Views across the basalt plains to Melbourne Airport and beyond to the ranges north of Melbourne; and
- Views from the larger recreation reserves along the corridor such as Lachlans Field at the corner of Melton Highway and Calder Park Drive, the reserve opposite Copperfield College in Sydneham, Taylors Hill Youth and Community Centre reserve, the playground on Lucas Crescent in Taylors Hill; the reserve between Westwood Drive and Arbour Boulevard, the reserves surrounding the intersections of Westwood Drive, Carinya Boulevard and Roycroft Avenue and Bothwell Park in Derrimut.

Views of low importance are considered those listed as follows:

- Views from the smaller or incidental open space reserves along the corridor, such as the linear drainage reserve in the vicinity of Meade Way in Sydenham, the reserve at the corner of Hume and Calder Park Drives in Taylors Hill and Bon Thomas Reserve in Deer Park.

It is worth noting, that due to the steep topography, meandering alignment of Jacksons Creek and extensive cover of revegetation on the plains within the Organ Pipes National Park, there are no clear views of the road corridor from the existing walking tracks within the Park. There are also no views of the road corridor from the Organ Pipes, Rosette Rock or the Tessellated Pavement. However, the entire Park is a public reserve and there are views towards the road corridor from the plains above the creek valley on the south side of the Creek adjacent to the road reserve, as well as from the distant valley slopes on the north side of the Creek. These views also currently incorporate views of the existing Calder Freeway and the high embankments of the Calder Park Motorsport Complex.

Photo 15 View of the Organ Pipes National Park from the northern end of the Palmers Road corridor.

Photo 16 View of the 'Dalgook' Farm Complex from Calder Park Drive.

Photo 17 View from Loemans Road looking south towards Calder Park Drive.

Photo 18 View south east from the walking track below the Organ Pipes National Park visitors centre.

5 LANDSCAPE CHARACTER

A landscape character type is an area of land with common visual characteristics and requires an assessment of landform, water form, vegetation and land use or built form pattern. Each landscape character type also contains areas of distinct landscape character and each of these areas has been assessed in terms of scenic quality.

5.1 LANDSCAPE CHARACTER TYPES

The corridor is assessed as having three landscape character types:

1 Basalt Plains

2 Residential

3 Commercial

Each of these landscape character types are further assessed as having the following distinct landscape character areas, the location and extent of which are illustrated in Figures 15 & 16 (Volume 2):

Basalt Plains:

- Organ Pipes
- Calder Park
- Calder Park Grasslands
- Kororoit Creek
- Ravenhall Grasslands

Residential:

- Sydenham
- Taylors Hill
- Watervale
- Burnside Heights
- Burnside
- Deer Park
- Derrimut

Commercial:

- Ravenhall

The landscape character types are described in this section. A more detailed description of the corresponding landscape character areas are described in Appendix 2.

5.1.1 BASALT PLAINS

The Basalt Plains landscape character type is defined by a general lack of development and the presence of broad expansive views across the natural features typical of the Western Basalt Plains. This includes views of the flat to gently undulating landform, the incised creeklines or shallow drainage lines, as well as some grassland, riparian and woodland vegetation. Structures and evidence of human alteration are generally not a dominant feature of this character type.

Photo 19 Typical view of the Basalt Plains landscape character type.

5.1.2 RESIDENTIAL

In direct contrast with the Basalt Plains landscape character type, the Residential landscape character type is defined by a predominance of medium density residential development. This includes the built form and constructed landscape elements typical of residential development including houses, rear and side fences or front yards and gardens, street lights, footpaths, grassed nature strips and street trees. The landform is gently undulating to flat, water forms are non-existent and vegetation is present in the form of planted trees and garden beds within the road and open space reserves or within private gardens.

Photo 20 Typical view of the Residential landscape character type.

5.1.3 COMMERCIAL

The Commercial landscape character type is dominated by the built form of large commercial and business development generally set back from the road. Large areas of pavement and car parking are prevalent. Vegetation is generally confined to lawn grass with sporadic plantings of planted understorey or shrub species. Signage dominates this landscape character type, both freestanding and located on the buildings. The landform is flat to gently undulating and water forms are non-existent. The transmission lines and towers also contribute to the visual dominance of the built form in this landscape character type.

Photo 21 Typical view of the Commercial landscape character type.

5.2 SCENIC QUALITY ASSESSMENT

The publication *Landscape Character Types of Victoria* (1984) provides descriptive criteria or 'frames of reference' for Victorian landscapes, providing a means to assess relative scenic quality.

The assumptions are that scenic quality increases with:

- greater degrees of uniqueness in rock outcropping, water, vegetation and other natural features;
- greater degrees of naturalness and lesser degrees of human alteration;
- greater degrees of relative topographic relief and ruggedness; and
- greater degrees of vegetative diversity and landscape variety.

The Scenic Quality Classification provided for the Western Plains Landscape Character Type is tabled below:

Description	High Scenic Quality	Moderate Scenic Quality	Low Scenic Quality
Landforms	- Features as volcanic cones, volcanic craters, craggy peaks and sharply serrated ridges rising starkly from the plains. - Isolated peaks or ranges with distinctive form or colour contrast that become focal points. - Distintive gorges with near vertical walls and/or unusual configuration and colour. - Major rock outcroppings.	- Rounded hills, ridges and smaller volcanic cones which are not visually dominant but are surrounded by similar landforms. - Moderately deep gorges with moderately sloped walls. - Minor rock outcroppings.	- Large expanses of indistinctly dissected landforms that provide little illusion of spatial definition or landmarks with which to orient.
Vegetation	- Strongly defined patterns resulting from Eucalypt forest, scattered conifers, riparian vegetation, barren rock or 'stony rises' and/or naturally appearing openings. - Distinctive stands of vegetation which may create unusual forms, colours or textures in comparison to surrounding vegetation.	- Predominantly open forest with some natural openings and/or riparian vegetation in patterns that offer some visual diversity. - Vegetative stands that exhibit the range of size, form, colour, texture and spacing found commonly in the surrounding landscape.	- Extensive areas of similar vegetation, such as grassland, with very limited variation in colour and texture.
Waterforms	- Lakes, rivers, streams, swamps and reservoirs of a permanent or almost permanent nature.	- Intermittent streams, lakes, rivers, swamps & reservoirs.	- Waterforms absent.

Table 1: Western Plains Scenic Quality Classification – Frame of Reference (p 68)[17].

[17] Leonard, M & Hammond , R 1984, *Landscape Character Types of Victoria*, Forests Commission, Victoria

The scenic quality of the landscape character areas found along the corridor can therefore be classified as follows:

Character Type	Character Area	Landform	Vegetation	Waterform	Classification
BASALT PLAINS	**Organ Pipes**	High	High	High	**High**
	Calder Park	Low*	Low	Low	**Low**
	Calder Park Grasslands	Moderate	Low	Low	**Low**
	Kororoit Creek	Moderate	Low	High	**Moderate**
	Ravenhall Grasslands	Low	Low	Moderate	**Low**
RESIDENTIAL	**Sydenham**	Low	Low	Low	**Low**
	Taylors Hill	Low	Low	Low	**Low**
	Watervale	Low	Low	Low	**Low**
	Burnside Heights	Low	Low	Low	**Low**
	Burnside	Low	Low	Low	**Low**
	Deer Park	Low	Low	Low	**Low**
	Derrimut	Low	Low	Low	**Low**
COMMERCIAL	**Ravenhall**	Low	Low	Low	**Low**

Table 2: Scenic Quality classification of the landscape character areas.

*Note: Although the constructed embankments of the Calder Park Motorsport Complex provide some distinctive landforms in this landscape, they are not naturally occurring nor are they consistent with the landforms typical of the basalt plains and therefore are considered of low scenic quality.

The area with the highest scenic quality is the Organ Pipes landscape character of the Basalt Plains landscape character type. The Kororoit Creek landscape character area also of the Basalt Plains landscape character type is considered of moderate scenic quality. All other landscape character areas, including all of the Residential and Commercial areas are considered to be of low scenic quality.

It should be noted however, that the use of these 'frames of reference' have their limitations in this study area where the landscape is substantially altered from its natural state through extensive development. Further, the scenic quality assessment only identifies the visual values of a predominantly natural landscape. It is also important to identify the landscape values of the natural landscape as well as the visual and landscape values of the constructed landscape.

5.3 LANDSCAPE VALUE

The determination of the visual and landscape values of the study area, beyond just scenic quality, and their relative significance is important as it identifies the values which may be impacted by the proposed road development.

Visual and landscape value is defined as the contribution made by the landscape to the immediate and wider community through the provision of the following visual and physical attributes:

- accessibility and connectivity, through the provision of publicly accessible parks and walking, cycling or shared paths;
- provision of facilities for public use, such as passive and active recreation resources, seating, shelters, barbeque areas, drinking fountains, etc;
- contribution to a 'sense of place' through the provision of views of landscapes representative of the landscape character types; and
- contribution to improved urban amenity through the provision of trees and planting or 'wild' spaces.

The identification of landscape value was informed by the study of the site's existing conditions. The landscape character areas which contained a higher number of positive landscape attributes across a larger area were assessed as being relatively more significant than those containing fewer attributes across smaller areas. The relative landscape and visual significance of the landscape character areas is summarised in Table 3.

It needs to be noted that this assessment is based on the landscape and visual values as they exist today and with the assumption that the proposed road bridge over the Kororoit Creek and associated road infrastructure by the City of Melton is not currently underway.

Table 3: Landscape and visual values of the landscape character areas and their relative significance.

Character Area	Landscape and Visual Values	Landscape & Visual Significance
BASALT PLAINS: ***Organ Pipes***	The Organ Pipes National Park is publicly accessible, contains walking tracks and provides resources for passive recreation. The basalt plains landforms, vegetation and waterforms make a significant contribution to the sense of place and the Park contributes to improved urban amenity through revegetation and wild spaces.	**High**
BASALT PLAINS: ***Calder Park***	The Calder Park Motorsport Complex contributes recreation resources; however these are not publicly accessible. The flat carpark area in the eastern corner is somewhat visually typical of the basalt plains and therefore contributes some sense of place.	**Low**
BASALT PLAINS: ***Calder Park Grasslands***	The Banchory Grove Nature Conservation Reserve, the Calder Park Industrial Estate Grasslands and the current undeveloped area contribute to the sense of place and provide some contribution to urban amenity through the 'wild' spaces of the grassland areas.	**Moderate**
BASALT PLAINS: ***Kororoit Creek***	There is a good degree of accessibility and connectivity through this character area. The existence of remnant Red Gums, the waterform and landform throughout this character area results in a significant contribution to a 'sense of place'. This character area provides users with extensive 'wild' spaces.	**High**
BASALT PLAINS: ***Ravenhall Grasslands***	The landform and vegetation of the grassland and undeveloped areas provide a significant contribution to the 'sense of place' associated with the Western Basalt Plains. The grasslands and mature Sugar Gums contribute to an improved urban amenity.	**Moderate**
RESIDENTIAL: ***Sydenham***	The shared paths along Calder Park Drive and Melton Highway, as well as the linear drainage reserves in the vicinity of Meade Way and Southbank Walk provide connectivity. Pioneer Park, Lachlans Field and the drainage reserves and the reserve opposite Copperfield College provide facilities for passive recreation. The grasslands at Pioneer Park contribute to a sense of place as well as contributing to improved urban amenity through the provision of 'wild' spaces. The established planting along some sections of the road reserve also contribute to an improved urban amenity.	**Low**
RESIDENTIAL: ***Taylors Hill***	The shared paths along Calder Park and Hume Drives provide connectivity. Morton Homestead Activity Centre provides opportunity for passive recreation and the homestead building and associated structures contribute to a sense of place. The established trees along Calder Park Drive and within the Activity Centre contribute to improved urban amenity.	**Low-Moderate**
RESIDENTIAL: ***Watervale***	The shared paths along Calder Park Drive and Taylors Road provide connectivity. Taylors Hill Youth and Community Reserve and the playground reserve on Lucas Terrace provide opportunity for passive and active recreation and facilities for public use. The semi-mature She-oaks lining Calder Park Drive contribute to improved urban amenity.	**Low-Moderate**
RESIDENTIAL: ***Burnside Heights***	The shared paths along Westwood Drive and Commercial Road provide connectivity. The reserve on Arbour Boulevard provides opportunity for passive recreation.	**Low**
RESIDENTIAL: ***Burnside***	The shared paths intersecting with Westwood Drive at Rockbank Middle Road, Carinya Boulevard and Kelly Avenue as well as in the vicinity of Burnside Shopping Centre provide some connectivity. Bullum Bullum and	**Low-Moderate**

Character Area	Landscape and Visual Values	Landscape & Visual Significance
	the reserves at the intersection of Westwood Drive, Carinya and Roycroft Avenues provide facilities for passive recreation. The grasslands at Bullum Bullum contribute to a sense of place as well as contributing to urban amenity through the provision of 'wild' space. The extensive garden bed planting along Westwood Drive and the semi-mature Plane Trees lining the service roads also contribute to the urban amenity of this area.	
RESIDENTIAL: ***Deer Park***	Bon Thomas reserve provides facilities for active and passive recreation.	**Low**
RESIDENTIAL: ***Derrimut***	The shared paths intersecting with Robinsons Road at Hatchlands Drive, Foleys Road, Windsor Boulevard and the Western Highway provide some connectivity. Bothwell Park provides facilities for passive recreation.	**Low**
*COMMERCIAL : **Ravenhall***	The shared path intersecting with Robinsons Road at Orbis Drive provides minimal connectivity.	**Low**

The Organ Pipes and Kororoit Creek landscape character areas are therefore considered of high landscape and visual significance.

The landscape character areas of the Calder Park Grasslands and Ravenhall Grasslands of the Basalt Plains landscape character types are considered of moderate landscape and visual significance. However, the development of the undeveloped areas within these landscape character areas in the future could potentially adversely affect the rating of this significance. The Taylors Hill, Watervale and Burnside landscape character areas of the Residential landscape character type are also considered of low-moderate landscape and visual significance. This is largely due to the existence of mature and established street trees and roadside planting, in addition to the provision of quality open space reserves within these areas.

The Calder Park, Sydenham, Burnside Heights, Deer Park, Derrimut and Ravenhall landscape character areas are all considered of relatively low landscape and visual value. This is largely due to the fact that the landscape and visual values they do have are limited in extent, size or of a lesser quality than those values found within the other landscape character areas.

6 THE PROPOSED ROAD DEVELOPMENT

The existing road is proposed to be widened and duplicated to a 3 lane each way road with a central median typically 7 metres wide, but narrowing at intersections to accommodate turning lanes. The operating speed of the road is proposed to be 80 km/hr. An off-road shared path, typically 3 metres wide, is proposed on both sides of the road for the entire length. The proposed duplicated road is to be at grade except for the following locations:

- An underpass of the Ballarat-Melbourne Railway line;
- A bridge crossing of the Kororoit Creek;
- An overpass of the Bendigo-Melbourne Railway line; and
- A grade separated interchange with the Calder Freeway.

- WESTERN FREEWAY TO THE MELBOURNE-BALLARAT RAILWAY LINE

From the Western Freeway (Chainage 1880) the road infrastructure is contained within the title boundary until Chainage 3100. Here, the proposed right of way (ROW) boundary widens towards the west to accommodate the north bound lanes and west bound turning lanes into Riding Boundary Road. This will necessitate the removal of several Sugar Gums as well as the drystone wall in this location. A few remaining mature Eucalypts on the east side of the existing road will also require removal.

Photo 22 The Sugar Gums and drystone wall to be removed at the corner of Robinsons and Riding Boundary Roads.

In the south, the proposed shared paths connect to the existing paths which head east and west along the northern side of the Western Freeway. Connections are also proposed to the off-road shared paths on the south side of Windsor Boulevard and the north side of Foleys Road.

North of Foleys Road, the proposed road development will require the removal of immature street trees on both sides of the existing road; along the service road on the east side and fronting the new commercial development on the west side. A connection is proposed to the existing shared path on the south side of Hatchlands Drive.

- MELBOURNE-BALLARAT RAILWAY LINE TO KORONROIT CREEK

From Chainage 4140 the vertical road alignment begins to descend below the existing grade in order to pass beneath a new bridge supporting the Ballarat Railway line approximately 7.5 metres below ground level. The road then lifts back up to existing grade at Chainage 4680. Vertical retaining walls facing Robinsons Road are proposed to support the underpass. A new service lane provides access to those properties currently with direct access to Robinsons Road just north of the railway line and the Quinn Street intersection with Robinsons Road is removed.

North to Western Highway, numerous service lanes are proposed to provide access to the commercial properties lining this section of Westwood Drive and the shared path continues on both sides of the road. The shared paths cross to the north side of the Western Highway and provision is made for a future shared path connection towards the west.

From Burnside Shopping Centre through to Fydler Avenue the duplication of the road towards the west will necessitate the removal of established garden bed planting in the wide verges. Although some of the existing service roads along the western side of this section will remain unaltered, others will be reconstructed. The provision of a 3 metre wide shared path will require the removal of the semi-mature Plane Trees which exist in the naturestrips. On the east side of this section of the road, new service lanes are proposed for those properties currently accessing Westwood Drive directly. These works will require the removal of some semi-advanced trees existing in these locations. Shared path connections are proposed to connect with the paths on Kelly Avenue, Carinya Boulevard, Wood Grove and Rockbank Middle Road.

Photo 23 View of the established vegetation and trees on the western side of Westwood Drive between the Burnside Shopping Centre and Fydler Avenue which will need to be removed.

- KORORoIT CREEK TO TAYLORS ROAD

A road bridge is proposed to cross the Kororoit Creek. The proposed bridge is generally no higher than the surrounding plains with a bridge deck around 34 metres wide and 70 metres long. The valley is approximately 200 metres wide in this location, therefore fill embankments will extend into and narrow the natural width of the valley. Shared path connections are proposed to the path which parallels Sullivan Terrace on the south side of the creek and to the path on Arbour Boulevard on the north side of the creek. Although no shared path connections are indicated by the road concept to the path on Arroyo Place or along the creek under the bridge, these are not precluded.

Further north, in the vicinity of Commercial Road, the widening of the road and the addition of turning lanes will require the removal of immature street trees planted on the south west side of the intersection with Westwood Drive. The recently planted trees on the west side of Westwood Drive and extending north to Taylors Road will also require removal. The off-road shared paths are retained along this stretch of Westwood Drive with additional paths provided to complete the connection along the road corridor. Connections are also provided to the off-road shared paths heading east and west along Taylors Road.

Photo 24 View of the location of the Kororoit Creek bridge crossing.

- TAYLORS ROAD TO MELTON HIGHWAY

North of Taylors Road to the Melton Highway, on the western side of Calder Park Drive, all existing street trees will need to be removed to allow for the widening of the road and the application of a 6.8 metre wide clear zone measured from the edge of the northbound traffic lanes. This includes the existing semi-mature She-oaks extending from Taylors Road to Hume Drive and the mature established Eucalypts between Hume Drive and Southbank Walk.

On the eastern side of Calder Park Drive, the duplication of the road, the provision of an off-road shared path and the application of a 6.8 metre wide clear zone measured from the edge of the southbound traffic lanes will necessitate the removal of all existing roadside vegetation. This includes the semi-mature She-oaks between Taylors Road and Hume Drive, the trees and shrubs adjoining the property boundaries between Hume Drive and Carlton Court and the established screen shrubs between Carlton Court and Melton Highway. Additionally, the roundabouts at Taylors Road, George Street and Hume Drive are to be replaced with signalised intersections resulting in the removal of established garden bed vegetation, including trees, within these roundabouts.

Shared path connections are provided to the existing paths heading east and west along Hume Drive and all paths existing at Melton Highway and there is provision for future off-road shared paths proposed along Community Hub.

Photo 25 Connections will be provided to the existing off-road shared paths running adjacent to the Melton Highway.

- MELTON HIGHWAY TO MELBOURNE-BENDIGO RAILWAY LINE

North of Erskine Way to chainage 14200, the construction of the shared path on the east side of Calder Park Drive will require the removal of mature vegetation existing along Albert Road. A few established trees will also require removal at the southern intersection with Glenbruar Drive to enable the widening of Calder Park Drive towards the west. Further north to the northern intersection with Glenbruar Drive, the widened road and provision of a shared path on the west side of Calder Park Drive will require the removal of approximately half of the existing established trees and shrubs adjoining the residential properties in this section. On the east side of the road, the proposed road widening and provision of a shared path will impact the south east corner of Pioneer Park and require the removal or relocation of the post and cable fence as well as the removal of two trees in this location.

North of the intersection with Manchester and Glenbruar Drives, the vertical road alignment begins to lift in grade in order to pass above the Bendigo-Melbourne Railway line. Retaining walls are proposed to support the overpass offset from the existing property boundaries by 2.8 metres on the west side and 3.3 metres on the east side of Calder Park Drive. The construction of the retaining walls will necessitate the removal of the established vegetation currently existing on the west side of the road reserve. The overpass will also require the purchase of additional land within the Banchory Grove Nature Conservation Reserve to enable the widening of the road, the construction of the retaining wall and the provision of a maintenance access track at the base of the wall.

Photo 26 View of the location where the retaining walls for the Melbourne-Bendigo Railway line overpass will commence.

- MELBOURNE-BENDIGO RAILWAY LINE TO CALDER FREEWAY

Calder Park Drive will pass over the railway line on a bridge structure approximately 140 metres long and 12 metres above the existing ground surface. On the north side of the railway line, 3:1 batters support the overpass back down to the natural surface level. These batters extend along the road from chainage 15120 for around 420 m and taper out at chainage 15540. In this section, the proposed road reserve is as wide as 140 metres at its greatest. At chainage 15680 an intersection is provided to enable access into the Calder Park car park.

At chainage 15700, Calder Park Drive deviates from its existing alignment to continue north east to intersect with the Calder Freeway. At chainage 15880 the vertical road alignment begins to rise in order to achieve a grade separated interchange with the freeway. On the south side of the freeway, at the intersection with the southbound exit and northbound entry ramps (chainage 16120), the road is approximately 7.5 metres above the existing surface level. This height increases to around 9 metres at its highest point directly above the Freeway. On the northern side of the Freeway, Calder Park Drive remains quite elevated at 8 metres above the existing surface level at the roundabout intersection with the southbound exit and entry ramps and the Organ Pipes Road connection. An off-road shared path connection is proposed to link with the Organ Pipes National Park entry via pedestrian crossings of the northbound entry and exit ramps, connecting to a path on the west side of the bridge structure and then to an at grade crossing of the Organ Pipes Road connection. The construction of the interchange, including the exit and entry ramps, will require the removal of established vegetation within the existing Freeway reserve.

Photo 27 The location of the Melbourne-Bendigo Railway line overpass.

Photo 28 View of the location of the Calder Park Drive grade separated interchange with the Calder Freeway and the roadside vegetation which will need to be removed.

7 LANDSCAPE AND VISUAL ASSESSMENT

The purpose of this phase of the study was to assess the landscape and visual effects of the proposed road development on the study area and against the Landscape Planning Objectives. The relative significance of each of these effects was then assessed both without mitigation measures and then with mitigation measures in place after a period of 10 years.

Based on this information, the proposed road development was assessed against how well it met each of the Landscape Planning Objectives and was also given an overall rating.

7.1 LANDSCAPE AND VISUAL EFFECTS AND DETERMINATION OF SIGNIFICANCE

Landscape effects are defined as the effects the proposed road development has on the site's landscape character. Visual effects are defined as the effects the road alignment has on existing views. The effects may be negative (an impact) or positive (a benefit).

The significance of the effect is determined by two principal criteria: the size or magnitude of the effect in combination with the sensitivity of the location or the receptor to the identified effect.

The magnitude of a landscape effect is determined by the extent or size of change to the site's existing landscape character. The sensitivity of an area is a measure of how sensitive the existing landscape is to change. For example the Basalt Plains Landscape Character Type consists of a predominantly natural landscape containing features which are highly valued and in true to type condition and will be more sensitive to change than the landscapes of the Commercial or Residential Landscape Character Types which contain newer and more uniform built form elements of lower value.

An effect occurring across a large area in a landscape highly sensitive to change will be more significant than an effect occurring in an isolated area to a landscape of low sensitivity.

The magnitude of a visual effect is determined by a consideration of the extent of area over which the change would be visible, the proportion of the existing view occupied by the effect, the duration of the view (whether permanent or temporary), the distance to the viewpoint and the degree of contrast between the existing view and the proposed view. The sensitivity of a receptor is a measure of the importance or quality of the view and how sensitive the existing view is to change. For example visitors to the Organ Pipes National Park enjoying the view of Jacksons Creek and the basalt plains from the proposed walking track will be more sensitive to a change in view than motorists commuting along Robinsons Road every day to their place of work in the commercial precinct.

An effect which is dominant, permanent, highly visible, in close proximity, with a high degree of contrast between the existing view and the proposed view and occurring where the view is highly sensitive to change will be more significant than a visual effect which is minor, temporary, barely visible, at a great distance, with

minimal contrast between the existing and proposed view and where the view is not sensitive to change.

In this study each effect was assessed and then given a rating of relative significance chosen from the following:

High
Moderate-High
Moderate
Low-Moderate
Low
Negligible-Low
Negligible

7.2 MITIGATION MEASURES

Mitigation measures are defined as the methods adopted to reduce the impact or enhance the benefit a road development has on the landscape.

Generally mitigation measures can be more effective in reducing the significance of visual impacts and less effective in reducing the significance of landscape impacts. This is because it is typically easier to screen views than to replace the landscape values disturbed or removed by the implementation of a new or duplicated road or bridge.

VicRoads provide a list of standard mitigation measures for planning studies, which are listed below:

1. Bridge/culverts to be located and designed to complement and accommodate wildlife links, revegetation and creek systems;
2. Creek realignments to be minimised where possible and stabilised through revegetation with appropriate riparian species;
3. Locate and design watercourse crossings to minimise loss of riparian vegetation and to accommodate erosion control methods;
4. Unstable batters should be planted and mulched to reduce the risk of erosion;
5. Plant between the freeway alignment and the right of way (ROW) boundary to screen adjacent access roads;
6. Encourage indigenous planting to the ROW freeway boundary to strengthen the extent of the landscape character where relevant;
7. Use a combination of landform and planting to screen the freeway from adjacent residencies;
8. Use local materials where possible to identify “town gateways” within interchange ROW boundaries, in the design of rest areas or to identify other significant landscape elements;
9. Where noise attenuation is required noise mounds should be the first option, followed by noise walls; and

10. Location and design of rest areas should coincide with significant cultural and landscape features, for example panoramic viewing points, historic sites and places of apparent change in landscape character.

In addition to these standard mitigation measures, it is recommended that the following measures be considered:

- All roadside walls or retaining structures should utilise materials, pattern, colour and texture which are sympathetic to the setting and congruous with their surrounds.
- Bridge structures should:

  Provide correct geometric relationships in the overall structural arrangement and display visual integration of the deck, beams, piers, railings, barriers, lighting, associated furniture and abutments;

  Display visual integration of the structure with the road and landform;

  Ensure lines that delineate elements of the structure are smooth and unbroken in both the horizontal and vertical planes;

  Surface treatments are in harmony with the structural shape and scale such that visual clutter is avoided;

  Provide maximum open, light spaces beneath the structure; and

  For motorists, passengers, pedestrians and cyclists travelling over the bridge, provide views out beyond the sides of the bridge.

In considering the significance of the effects after mitigation, it is assumed that the abovementioned standard mitigation measures have been adopted if relevant. The particular mitigation measures identified in the following report are specific to the impact or benefit identified and to this study.

7.3 LANDSCAPE AND VISUAL EFFECTS OF THE ROAD DEVELOPMENT IN RELATION TO THE PLANNING OBJECTIVES

The landscape and visual effects of the proposed widening and duplication of Robinsons Road, Westwood Drive and Calder Park Drive are outlined in Table 4. The relative significance of these effects is also identified both before and after implementation of mitigation measures.

Cross sections have been prepared at key locations to highlight the difference between existing conditions, proposed conditions without mitigation and proposed conditions with mitigation 10 years after implementation (*refer Figures 17-22*).

Photomontages of key views have also been prepared to illustrate the difference between existing views, proposed views without mitigation and proposed views with mitigation 10 years after implementation. Two views have been modelled. One is taken from the proposed walking track within Organ Pipes National Park looking towards the grade separated interchange of the Calder Freeway (*refer Figure 23*). The other is taken from the existing shared path adjacent to Sullivan Terrace looking towards the proposed bridge crossing of Kororoit Creek (*refer Figure 24*).

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Protect the visual amenity, recreational and natural landscape values of the Organ Pipes National Park.	**Visual Impact** - Introduction of a fully directional grade separated interchange with the Calder Freeway at the boundary of the National Park up to 9 m above the existing natural surface and removal of existing roadside vegetation within the Calder Freeway road reservation, resulting in a change to the landform, scenic quality and visual character of the Organ Pipes landscape character area and a change to views from within the Park, including future path locations.	Low-Moderate	Design the bridge to be a simple and elegant structure which makes a positive visual contribution to the environment. Minimise vegetation removal and replant indigenous vegetation where possible on the ramp embankments and between the interchange and ROW to screen the interchange from adjacent areas within the Park.	Low
	Landscape Impact - Introduction of a fully directional grade separated interchange with the Calder Freeway at the boundary of the National Park up to 9 m above the existing natural surface and removal of existing roadside vegetation within the Calder Freeway road reservation, resulting in a change to the recreational and natural landscape values of the Park.	Low	Minimise vegetation removal and replant indigenous vegetation where possible on the ramp embankments and between the interchange and ROW to screen the interchange from adjacent areas within the Park.	Low
	Visual Benefit - Provision of an overpass and grade separated interchange with the Calder Freeway at the boundary of the National Park enabling improved views of the Organ Pipes National Park, Jackson Creek, the basalt plains and beyond to the Melbourne Airport and the ranges north east of Melbourne.	Low-Moderate	Provide views out beyond the sides of the bridge and interchange, where it does not conflict with the need to screen the interchange from Organ Pipes National Park.	Low-Moderate

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains.	**Landscape Impact** – Removal of drystone wall and Sugar Gums on the west side of Robinsons Road between Ch 3100 and Riding Boundary Road resulting in a change to the cultural heritage values of the volcanic plains.	Low-Moderate	Relocate the northbound shared path to 3 m from the edge of running lane in order to retain as many trees as possible and reconstruct drystone walling as a paving band along original alignment where possible (*refer Figure 17*).	Low
	Landscape Impact – Widening of the road and provision of a shared path and left turn lane into Community Hub adjacent to the reserve opposite Copperfield College requiring the removal of a small portion of Plains Grassland, resulting in a reduction of the natural landscape values of the reserve.	Negligible	None possible.	Negligible
	Landscape Impact – Widening of the road and provision of a maintenance access track adjacent to the Banchory Grove Nature Conservation Reserve between Ch 14820 and 15000 resulting in a widening of the ROW into the conservation reserve and a change to the natural landscape values of the volcanic plains.	Low-Moderate	Within the road reserve fill gaps with crushed rock to Banchory Grove Nature Conservation Reserve boundary to prevent weeds infesting the grassland.	Low
	Visual Benefit - Provision of an overpass of the Melbourne-Bendigo Railway line at the boundary of the Banchory Grove Nature Conservation Reserve enabling improved views of the grasslands of the reserve, the Jacksons Creek valley in the distance and beyond to the Melbourne Airport, the Melbourne city skyline and the ranges north east of Melbourne.	Moderate	Provide views out beyond the sides of the bridge.	Moderate

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit Creek corridors.	**Landscape Impact** – Construction of a 34 m wide, 70 m long bridge and associated road infrastructure across the Kororoit Creek valley, resulting in an impact on recreational and natural landscape values through the introduction of vehicular traffic, removal of open space reserve and vegetation, a modification of the natural landform of the creek corridor and overshadowing of the creek creating poor growing conditions for vegetation beneath the bridge.	Moderate	Consider duplicating the bridge structure to allow more light and rain to penetrate beneath the structures. Design the bridges to be simple and elegant structures which make a positive visual contribution to the landscape. Replant indigenous vegetation where possible within the road reserve and on the fill embankments.	Moderate
	Landscape Impact – Removal of the Drover's Huts remains in order to construct the bridge, resulting in an impact to the cultural heritage values of the creek corridor.	Low-Moderate	Mitigation measures will be determined by Heritage Victoria. Possible measures include the relocation of the remains, their removal or being buried under the future road reservation.	Low
	Visual Impact – Construction of a 34 m wide, 70 m long bridge and associated road infrastructure across the Kororoit Creek valley, resulting in an impact to the visual amenity of the creek corridor.	Moderate	Replant indigenous vegetation where possible within the road reserve and on the fill embankments to screen the bridge and embankments from the creek corridor.	Moderate
	Visual Impact - Introduction of a fully directional grade separated interchange with the Calder Freeway up to 9 m above the existing natural surface and removal of existing roadside vegetation within the Calder Freeway road reservation, resulting in a change to the landform, scenic quality and visual amenity of the Jackson Creek corridor.	Low	Design the bridge to be a simple and elegant structure. Minimise vegetation removal and replant indigenous vegetation where possible on the ramp embankments and between the interchange and ROW to screen the interchange from areas within the creek corridor.	Negligible-Low

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Protect the visual amenity and recreational values of the open space reserves.	**Landscape Impact** – Widening of the road reserve by 4 m into the existing open space reserve south of Roycroft Avenue in Burnside resulting in a reduction of the recreational values of the reserve.	Low	Minimise width of naturestrip between shared path and left turn lane and rectify any landscape surfaces, features or garden beds disturbed by the works.	Negligible-low
	Visual Impact - Widening and duplication of the road into the widened verge adjacent to the existing open space reserve north and south of Roycroft Avenue, necessitating the removal of lawn areas, established garden bed vegetation, feature walls and a few trees, resulting in a loss of visual amenity of the open space reserve.	Low-Moderate	Re-establish garden beds and tree planting within the reserve directly adjacent to the shared path.	Low
	Visual Impact – Widening of the road reserve by up to 9 m into the existing open space reserve west of Arbour Boulevard in Burnside Heights necessitating the removal of established garden bed vegetation resulting in a loss of visual amenity of the open space reserve.	Negligible-Low	Re-establish garden beds and tree planting between the shared path and road reserve boundary.	Negligible
	Visual Impact – Duplication of the road and provision of a shared path on the east side of Calder Park Drive adjacent to the Morton Homestead Activity Centre necessitating the removal of established garden bed vegetation resulting in a loss of visual amenity of the open space reserve.	Negligible-Low	Plant additional shrubs within the recreation reserve adjacent to the shared path.	Negligible

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Protect the visual amenity and recreational values of the open space reserves (cont.)	**Visual Impact** – Widening of the road and provision of a left turn lane into the Taylors Hill Youth and Community Centre Reserve necessitating the removal of semi-mature She-oaks along Calder Park Drive resulting in a loss of visual amenity of the open space reserve.	Low	Plant additional trees within the recreation reserve adjacent to the shared path.	Negligible-Low
	Landscape Impact – Widening of the road and provision of a shared path and left turn lane into Community Hub adjacent to the reserve opposite Copperfield College requiring the removal of a small portion of the reserve, resulting in a reduction of the recreational values of the reserve.	Negligible-Low	Rectify any landscape surfaces, features or garden beds disturbed by the works.	Negligible
	Landscape Impact – Widening of the road and provision of a shared path adjacent to Lachlans Field requiring the removal of a small portion of the reserve, resulting in a reduction of the recreational values of the reserve.	Negligible-Low	Minimise width of naturestrip between shared path and edge of running lane. Rectify any landscape surfaces, features or garden beds disturbed by the works.	Negligible
	Landscape Impact – Widening of the road and provision of a shared path adjacent to Pioneer Park requiring the removal of a small portion of the reserve as well as the removal of the post and cable fence and two trees in this location, resulting in a reduction of the recreational values of the reserve.	Negligible-Low	Rectify and re-establish any landscape surfaces, features or garden beds disturbed by the works.	Negligible

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Enhance the existing networks that provide cycling and walking accessibility and connectivity.	**Landscape Benefit** - Provision of north and south bound off-road shared paths along Robinsons Road between Western Freeway and the Melbourne-Ballarat Railway Line, as well as connections to the existing off-road shared paths at the Western Freeway, Windsor Boulevard, Foleys Road and Hatchlands Drive, enhancing the existing networks that provide cycling and walking accessibility and connectivity.	Moderate-High	N.A.	Moderate-High
	Landscape Benefit - Provision of north and south bound off-road shared paths along Robinsons Road and Westwood Drive between the Melbourne-Ballarat Railway Line and Kororoit Creek, as well as provision for a future path towards the west on the north side of Western Highway, enhancing the existing networks that provide cycling and walking accessibility and connectivity.	Moderate-High	N.A.	Moderate-High
	Landscape Benefit - Provision of north and south bound off-road shared paths along Westwood Drive between Kororoit Creek and Taylors Road, as well as connections to the existing shared paths just north of Sullivan Terrace, east on to Arbour Boulevard, west along Commercial Road and east and west along Taylors Road, enhancing the existing networks that provide cycling and walking accessibility and connectivity.	Moderate	N.A.	Moderate

Table 4: Landscape and Visual Effects

EVALUATION CRITERIA (PLANNING OBJECTIVE)	BENEFIT OR IMPACT (PRE MITIGATION)	SIGNIFICANCE OF BENEFIT / IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	SIGNIFICANCE OF BENEFIT / IMPACT (10 YEARS POST MITIGATION)
Enhance the existing networks that provide cycling and walking accessibility and connectivity (cont.)	**Landscape Impact** – No connection from the proposed off-road shared path along Westwood Drive to the existing path on Arroyo Place, resulting in a detriment to the existing networks that provide cycling and walking accessibility and connectivity.	Low	Provide a shared path connection between the proposed off-road shared path along Westwood Drive to the existing path on Arroyo Place.	Negligible
	Landscape Benefit – Provision of north and south bound off-road shared paths along Calder Park Drive between Taylors Road and Melton Highway, as well as connections to the existing shared paths along Hume Drive and Melton Highway (except for the west bound path on the south side), enhancing the existing networks that provide cycling and walking accessibility and connectivity.	Moderate-High	N.A.	Moderate-High
	Landscape Benefit – Provision of north and south bound off-road shared paths along Calder Park Drive between Melton Highway and the Melbourne-Bendigo Railway line, enhancing the existing networks that provide cycling and walking accessibility and connectivity.	Moderate-High	N.A.	Moderate-High
	Landscape Benefit – Provision of north and south bound off-road shared paths along Calder Park Drive between the Melbourne-Bendigo Railway line and Calder Freeway, including a connection to the Organ Pipes National Park entry, enhancing the existing networks that provide cycling and walking accessibility and connectivity.	High	N.A.	High

7.4 OTHER LANDSCAPE AND VISUAL IMPACTS OF THE PROPOSED ROAD DEVELOPMENT

Although not directly related to the Planning Objectives of this study, it is worth highlighting that the widening and duplication of the road, the provision of a 3 metre wide shared path in both directions and the application of a 6.8 m clear zone due to an 80 km/hr speed limit will necessitate the removal of the majority of street trees currently lining the road corridor. Further, if this clear zone width is applied to new tree planting, this will prevent replacement tree planting and result in a 16 kilometre road corridor of very poor landscape and visual amenity. No tree planting will be possible either within the centre median or within naturestrips or outer separators less than 7.8 metres wide.

From the Western Freeway to Riding Boundary Road there are opportunities for tree planting if the shared paths are relocated closer to the edge of the outer running lanes. North to the Ballarat Railway line there are opportunities for tree planting in the outer medians as they are wider than 7.8 metres. Between the Ballarat Railway Line and Western Highway there are very limited opportunities for tree planting, given the outer separators only exceed 7.8 metres width in one location. From the Western Highway to Kororoit Creek, opportunities for tree planting only exist in limited locations where the naturestrips between service roads and residential properties exceed 2 metres width.

In the area adjacent to the Kororoit Creek bridge crossing there are extensive areas for tree planting on the batters supporting the bridge structures. However north of the creek to Southbank Walk there is no opportunity for tree planting. From Southbank Walk to the Bendigo Railway line there are greater, but still relatively limited opportunities for tree planting. North of the Bendigo Railway line to the Calder Freeway there are far greater opportunities for tree planting given the wider road reservation boundary provided along this section of the road corridor.

The overall level of impact along the length of the road corridor is therefore considered quite significant.

This impact could be mitigated through the following measures:

- The centre median would need to be no less than 13.6 metres wide to allow tree planting between the north and south bound lanes, resulting in a road cross section too wide for the existing road reserve. Therefore reduce the centre median to the minimum safe width to enable more space on the outer edges of the road for tree planting.
- Wherever possible, reduce the distance between the shared path and the edge of running lane to 3 metres. In some locations this will then allow tree planting around 1 metre outside the shared path (*refer Figure 17 for an example of this*).
- Allow non-conformance with the clear zone requirements to enable an improved landscape and visual outcome along this road corridor.
- Consider the use of protective barriers to enable tree planting in some locations.

Any opportunities for tree planting or the use of barriers will however require further investigation between relevant authorities to resolve safety, cost and ongoing maintenance implications and responsibilities.

Photo 29 Street trees along Calder Park Drive that will need to be removed and cannot be replaced under the current clear zone requirements.

7.5 ASSESSMENT AGAINST PLANNING OBJECTIVES

The road development was assessed against its ability to meet the Landscape Planning Objectives both with and without mitigation measures. A measure of the relative number and significance of landscape and visual impacts as well as a consideration of the benefits created, determines how well the proposal meets the Landscape Planning Objectives.

The rating scale used was provided by VicRoads and is defined as follows:

Very Well	*High level of compliance, major positive impacts or negligible negative impacts.*
Well	*Good policy compliance, mostly positive impacts or minor negative impacts.*
Neutral	*Some policy compliance, equal positive and negative impacts.*
Poor	*Policy non-compliance, mostly negative impacts or minor positive impacts.*
Very Poor	*Major policy non-compliance, major negative impacts or negligible positive impacts.*

- *Protect the visual amenity, recreational and natural landscape values of the organ pipes national park*

The proposed road development has a low negative impact upon the Organ Pipes National Park. This is largely a visual impact upon the area of park directly adjoining the proposed grade separated interchange of the Calder Freeway, as well as on the areas visible on the south side of Jacksons Creek. However, because of the meandering and deeply incised nature of the creek valley and the extensive vegetation within the park, this interchange will not impact significantly upon the majority of the park, nor on the key visitor destinations in the park, including the visitors centre, Organ Pipes, Rosette Rock and Tessellated Pavement. The impacts upon the Organ Pipes National Park can also be mitigated to some degree through the retention of existing remnant vegetation and the use of screen planting on the interchange batters.

- *Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains*

The impact upon the visual amenity, cultural heritage and natural landscape values of the volcanic plains is relatively low. Only minor acquisition of the Banchory Grove Nature Conservation Reserve is proposed and the impact upon the Sugar Gums and drystone wall at the Ravenhall Magazine and Storage Facility site can be mitigated somewhat through the realignment of the shared path and the incorporation of stone banding along the wall's original alignment.

- *Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit creek corridors*

The proposed road development has a moderate impact on the Kororoit Creek corridor. The proposed bridge and associated road infrastructure will impact on the valley and its visual amenity through the introduction of built infrastructure into a valley with predominantly natural, as well as some heritage value. The development will require the removal of open space reserve, steepen and constrain the natural width of the creek valley and constrict public access along the valley. It will also require the partial removal of the Drover's Hut remains and a River Red Gum, and creates overshadowing of the creek line. These impacts could be mitigated somewhat by creating a light well between the two bridge structures and planting indigenous vegetation on the embankments.

The proposed road development has minimal impact on the Jacksons Creek corridor. This is due to the large distance from the Creek to the proposed interchange with the Calder Freeway and the very deeply incised nature of the creek.

- *Protect the visual amenity and recreational values of the open space reserves*

The impact on the visual amenity and recreational values of the open space reserves by the proposed road development is low. Although most of the reserves lining the road corridor are impacted, only minor acquisition is proposed and the impact on visual amenity can be mitigated by the planting of additional trees and shrubs either within the road reserve or within the open space reserves.

Enhance the existing networks that provide cycling and walking accessibility and connectivity

The proposed road development has a positive impact on the existing networks that provide cycling and walking accessibility and connectivity. The provision of off-road shared paths in both directions and the connections to most of the existing shared path networks is a significant landscape benefit of the project. This network could be improved further by ensuring that connections are provided to all existing networks, as well as allowing provision for future planned networks. Further, unless measures are taken to ensure tree planting is possible along the duplicated road (as described in Section 7.4), to shade and shelter these shared paths, the amenity of these paths will be reduced.

The results of this assessment are therefore summarised by the ratings provided in Table 5 below:

Table 5: Assessment against Landscape Planning Objectives

Planning Objective	**Pre-mitigation**	**Post Mitigation**
Protect the visual amenity, recreational and natural landscape values of the Organ Pipes National Park.	*Neutral*	*Well*
Protect the visual amenity, cultural heritage and natural landscape values of the volcanic plains.	*Neutral*	*Well*
Protect the visual amenity, recreational, cultural heritage and natural landscape values of the Jacksons and Kororoit Creek corridors.	*Poor*	*Poor*
Protect the visual amenity and recreational values of the open space reserves.	*Well*	*Well*
Enhance the existing networks that provide cycling and walking accessibility and connectivity.	*Well*	*Well*
Overall Rating	***Neutral***	***Well***

8 LANDSCAPE CONCEPT

The landscape concept for the Palmers Road corridor is intended to enhance the amenity of the proposed road development for all users of the corridor, as well as for the local and broader communities. The following principles have been applied for the concept:

- Mitigate wherever possible the landscape and visual impacts of the road development.
- Minimise native vegetation removal and retain and protect remnant indigenous vegetation wherever possible.
- Balance the provision of views from the road towards Jacksons Creek, Organ Pipes National Park, Pioneer Park, the Morton Homestead Activity Centre, Kororoit Creek, Banchory Grove Nature Conservation Reserve and Ravenhall East Grasslands Nature Conservation Reserve with the need to screen the road infrastructure from these key open space areas.
- Design planting in accordance with road safety requirements, including safety of ongoing maintenance, maintaining safe intersection sight distances, sight lines around curves and clear zone requirements.
- Plant trees wherever possible and appropriate within the road reserve to improve the amenity of the road corridor. Any opportunities for tree planting will require further investigation during detailed design between the relevant authorities to resolve safety, cost and ongoing maintenance implications. Currently a 6.8 metre clear zone is required from the outer edge of the main 80 km/hr carriageways and a minimum 1 metre is required from the 60 km/hr service lanes. Where trees are not possible due to road safety requirements, plant taller shrubs or low growing plant species.
- Generally aim to provide tall shrub or low planting within centre medians and outer separators to improve the amenity of the corridor. The detailed design of planting or alternative surface treatments such as grass or paving will need to consider OH&S requirements with regard to maintaining these treatments in close proximity to the edge of running lanes, as well as the need to enable safe intersection sight distances in conjunction with the need to maintain or screen views.
- Utilise indigenous plant species of local provenance, particularly in areas adjacent to the Organ Pipes National Park, Pioneer Park, Kororoit Creek and Ravenhall East Grasslands Nature Conservation Reserve.
- To minimise weed infestation into Conservation Reserves, install measures such as crushed rock at the boundary interface with the road, specifically at Banchory Grove Nature Conservation Reserve.

The landscape concept has been illustrated as a series of typical cross sections for nine sections of the road corridor and detailed plans for the Calder Freeway Interchange and the Kororoit Creek bridge crossing (*refer to Figures 25-29*).

During detailed design the choice of indigenous plant species for the low and tall plant mixes indicated on the detail plans should be guided by the following:

- Organ Pipes National Park: Appropriate species from the native vegetation community existing on the Jacksons Creek escarpment, from EVC 132_ 61: Heavier-soils Plains Grassland and appropriate species from Appendix 1 Significant Flora contained in the *Organ Pipes National Park Management Plan* (1998).
- Kororoit Creek: Appropriate species from EVC 68: Creekline Grassy Woodland and Appendix D Revegetation Templates from the *Kororoit Creek Regional Strategy 2005-2030* (2006).

Elsewhere along the route, the majority of areas should utilise indigenous plant species from EVC 132_ 61: Heavier-soils Plains Grassland, except for the areas adjoining Ravenhall East Grassland, where appropriate indigenous plant species from EVC 125: Plains Grassy Wetland should be used depending on site and drainage conditions.

The *Landscape Guidelines for the Shire of Melton* (2010) also contains suggested planting lists for indigenous, native and exotic plant species suitable for the Melton area. Plant species from these lists should be used where the use of plant species from the EVCs is neither required nor appropriate. All of the EVCs and plant lists referred to above are included in Appendix 3 of this report.

- WESTERN FREEWAY TO BALLARAT RAILWAY LINE

From the Western Freeway to Riding Boundary Road, tree planting is possible outside the shared path on both sides of the road, if the shared path is relocated to 3 m off the outside edge of the running lane (*refer to cross section 1, Figure 27*). Tree planting is also possible in the outer medians north of Riding Boundary Road as both medians are wider than 7.8 metres.

The removed dry stone walls south of Riding Boundary Road should be utilised in low rock bands within the road reserve, in proximity to their existing location. Adjacent to Ravenhall East Grassland Nature Conservation Reserve, planting other than trees, should be kept low to enable views across the grassland. In other locations where rear or side boundaries exist, trees and taller shrub planting should be used to screen both the road from the residents and the boundary fences from the road users. Where service roads are proposed, a combination of tree planting and lower shrub planting is recommended to improve the outlook of the adjoining properties without enclosing them with tall vegetation. This approach also enables views to be maintained towards the commercial properties north of Riding Boundary Road.

- BALLARAT RAILWAY LINE UNDERPASS

At the underpass of the Ballarat Railway Line there is opportunity to improve the amenity of the residential properties north of the railway, currently fronting on to Robinsons Road. The provision of a service road to these properties enables the planting of trees and shrubs between the service road and the underpass and the planting of smaller trees within the naturestrips beneath the powerlines (*refer to cross section 2, Figure 27*).

The retaining walls of the railway underpass should utilise an architectural finish appropriate to the corridor and location.

- BALLARAT RAILWAY LINE TO WESTERN HIGHWAY

Throughout this section of Westwood Drive, there are limited opportunities for tree planting, as the outer medians only exceed 7.8 metres width in one location. Otherwise there are some wider verges adjacent to intersections where limited tree planting will be possible, subject to safe intersection sight distance requirements. Aside from tree planting it is recommended that a combination of tall and low shrub planting is used to improve the amenity of the road corridor, but without fully obscuring views to the commercial properties along this stretch (*refer to cross section 3, Figure 27*).

- WESTERN HIGHWAY TO KORORoit CREEK

Along this section of Westwood Drive, there are very limited opportunities for tree planting as the outer medians do not exceed 7.8 metres width. The only location where tree planting is possible is where the naturestrips between service roads and residential frontages exceed 2 metres width. Other than tree planting, a combination of taller and lower shrub planting is recommended to improve the outlook of the adjoining properties without consistently enclosing them with tall vegetation (*refer to cross section 1, Figure 28*).

- KORORoit CREEK

At the Kororoit Creek crossing tall planting consisting of trees and shrubs is proposed wherever possible to screen the bridge crossing from the adjoining open space areas, as well as the nearby residential properties (*refer Figure 26*). Shared paths are proposed under the bridge to allow for future shared path connections along the Kororoit Creek corridor. Connections from these paths to the proposed paths along Westwood Drive and the existing path networks are also proposed. Low planting is indicated adjacent to these paths so as not to enclose the shared paths with tall dense vegetation in the vicinity of the underside of the bridge.

- KORORoit CREEK TO HUME DRIVE

Throughout this section of Westwood and Calder Park Drives there is no opportunity for tree planting within the road reserve due to current clear zone requirements. Although the Planting Plans completed by Michael Smith & Associates[18] for Melton City Council, show tree planting along Westwood Drive between Kororoit Creek and Taylors Road in its interim configuration, this tree planting is not possible when the road is ultimately duplicated.

Predominantly low planting is proposed along the naturestrip between the shared path and the edge of running lane so as not to enclose the shared paths between tall vegetation and rear property fences *(refer to cross section 2, Figure 28)*.

[18] Michael Smith & Associates 2012, *Westwood Drive Road and Bridge Planting Design, Burnside Heights: Stages 1 & 2,* 1:200, Michael Smith & Associates, plans L1-L7 and L1-L4

- HUME DRIVE TO SOUTHBANK WALK

Similarly, in this section of Calder Park Drive there is no opportunity for tree planting within the road reserve. The only locations for tree planting are outside the road reserve in the naturestrip along City View Close and within the Morton Homestead Activity Centre. Low planting is proposed along the naturestrip between the shared path and the edge of running lane so as not to enclose the shared paths between tall vegetation and rear property fences *(refer to cross section 3, Figure 28)*.

- SOUTHBANK WALK TO BENDIGO RAILWAY LINE

Along this stretch of Calder Park Drive there are greater opportunities for tree planting outside the shared path. In several locations the distance between the shared path and the right of way boundary exceeds 2 metres width, allowing sufficient space for tree planting *(refer to cross section 1, Figure 29)*. Elsewhere, low planting or grass is proposed along the naturestrip between the shared path and the edge of running lane so as not to enclose the shared paths.

- BENDIGO RAILWAY LINE

At the Bendigo Railway line sufficient width is proposed to allow for tree planting between the residential property boundaries and the outside edge of the maintenance access track at the base of the retaining walls. Tall shrubs are also proposed in these locations to help provide a visual screen between the residential properties and the overpass. Along the interface with the Banchory Grove Nature Conservation Reserve crushed rock is proposed in order to avoid the ongoing maintenance issues resulting from “weedy” infestations into the reserve *(refer to cross section 2, Figure 29)*.

The retaining walls of the railway overpass should utilise an architectural finish appropriate to the corridor and location and consider the visibility of these walls from the adjoining residential properties.

- BENDIGO RAILWAY LINE TO CALDER FREEWAY

Along Calder Park Drive, between the Bendigo Railway line and the Calder Freeway, ample room is available for tree and shrub planting on the wide batters supporting the overpass. It is proposed that taller shrubs are planted on the western batters to screen the road from the Calder Park Motorsport Complex, but lower shrubs be planted on the eastern batters to maximise existing views towards the CBD skyline, Melbourne Airport, Organ Pipes National Park and the Jacksons Creek valley *(refer to cross section 3, Figure 29)*. This strategy may need to be reconsidered at the time of the road development however, if the area zoned Industrial 3 is built out.

- CALDER FREEWAY INTERCHANGE

At the Calder Freeway Interchange, the primary objectives of the landscape concept are to retain existing native vegetation wherever possible and to screen the freeway interchange from the adjacent Organ Pipes National Park. Trees and taller shrubs are proposed on the interchange batters with low shrubs and groundcovers restricted to areas where sight distance and clear zone requirements need to be met (*refer to Figure 25*). During detailed design, the objective to screen the infrastructure of the interchange will need to be balanced with the opportunity to provide views of Jacksons Creek and Organ Pipes National Park from the overpass.

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Appendix 1

VicRoads Landscape and Visual Impact Task Brief

THE ASSIGNMENT

LANDSCAPE AND VISUAL IMPACT TASK BRIEF – PALMERS ROAD CORRIDOR ESS

1. PURPOSE OF THIS ASSIGNMENT

The purpose of this Assignment is to undertake a landscape and visual impact assessment for the Palmers Road Corridor, Western Freeway to Calder Freeway (Robinsons Road, Westwood Drive and Calder Park Drive), with a view to identifying the most significant landscape and visual resources and values that could be potentially impacted by the proposed project, to inform an Environment Effects Statement (EES).

The Provider shall note that the visual catchment for this investigation may extend beyond the study area, most notably the Organ Pipes National Park.

2. BACKGROUND

2.1 Project details

The objective of the Palmers Road Corridor project is to create a major north-south arterial road in the west of Melbourne (25 km long), linking Dunnings Road (Laverton), the Western Freeway and Calder Freeway. It involves the augmentation and linking of some existing local roads to create one major arterial road with six lanes, catering mainly for cars and trucks.

On 30 June 2009, VicRoads submitted a referral for the project to the Department of Planning and Community Development (DPCD) in accordance with the *Environment Effects Act 1978*. The project was referred to in three stages. Stage 1 (Dunnings Road to Western Freeway/Deer Park Bypass) of the upgrade has undergone a Planning Scheme Amendment process which has been approved and is currently planned for construction. For the northern sections: Stage 2 (Western Freeway to Western Highway) and Stage 3 (Western Highway to Calder Freeway), the Minister for Planning decided that an Environment Effects Statement (EES) was required. This section of the corridor traverses approximately 16km and encompasses:

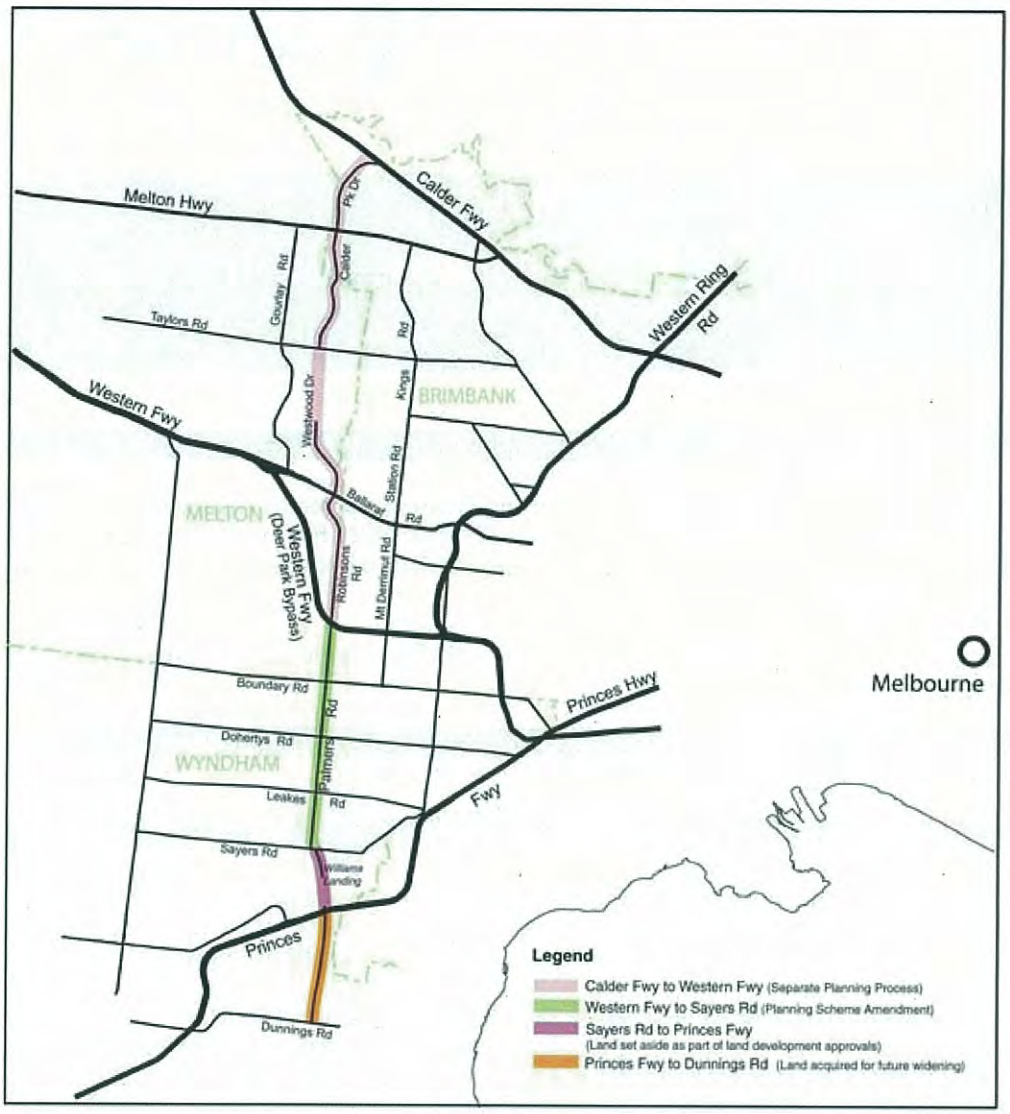
- Robinsons Road
- Westwood Drive
- Calder Park Drive

Stages 2 and 3 (Palmers Road Corridor (study area)) are relevant to this brief. Currently the road comprises a single carriageway with one lane in each direction except for the crossing of Kororoit Creek at Westwood Drive. This section extends approximately 650m, and all applicable permits for this link have been obtained with construction of a bridge scheduled for completion by mid-2014.

2.2 Planning study area description

The Palmers Road Corridor (see Figure 1) was identified and set aside in the 1997 Melton East Strategy Plan (MESP) which set out the land use and transport network through the Caroline Springs-Hillside-Sydenham area. The plan included the designing of subdivisions and locating of activity centres away from the Palmers Road Corridor to enable its development ultimately as a six-lane dual carriageway arterial. The MESP and growth area plans have dictated a land use pattern around a primary six-lane dual carriageway arterial. The 25km route traverses municipalities of the City of Wyndham, City of Brimbank and the Shire of Melton.

Figure 1: Palmers Road Corridor



For the study area (identified in pink), the land adjoining the corridor is largely 'built out' for a most of its length, with a minimum 40 metre corridor set aside for a future road widening. As stated above, the only section of road that has not yet been constructed (single lane-each way) is the crossing of Kororoit Creek at Westwood Drive, for which planning approval has been granted and construction has commenced.

Activity centres and community facilities have been located away from this corridor to prevent use by short trip local traffic, and the residential areas are largely designed with no direct access from the arterial. Where existing direct access occurs, the corridor is of sufficient width to facilitate the implementation of a limited access arterial via restricted direct access.

The functional design showing the footprint of the Palmers Road Corridor will be provided to the Contractor on award. The concept design identifies an interchange at Calder Freeway and Calder Park Drive with twin bridges, a rail overpass at the Calder Park Drive and Bendigo rail line intersection and an underpass at Westwood Drive and the Ballarat rail line intersection. The ultimate design will also include twin three lane bridges at Kororoit Creek.

Note: At the Calder Freeway the design shows Calder Park Drive continuing across the Calder Park property with an full interchange located approximately 500m north-west of the current intersection.

2.3 Summary of previous consultation

Stakeholder consultation meetings with the following organisations have recently been undertaken:

- Brimbank City Council
- Melton Shire Council
- Growth Areas Authority
- Department of Transport
- DPCD (Environment Assessment Unit)

In addition, as part of the *Palmers Road Corridor Project Social Impact Assessment* (Maunsell Australia, 2009) 22 face-to-face interviews were conducted. Seventeen face-to-face interviews were conducted with various stakeholders including local councils, government departments, business and community organisations. Seven face to face interviews (and a further five telephone interviews) were conducted with landowners and businesses along Westwood Drive. In addition to this, three community representative focus groups were held.

2.4 Other information

VicRoads Technical Consulting undertook a landscape and urban design evaluation for Stage 1 of the Palmers Road Corridor in 2011 as follows:

- VicRoads, Palmers Road Corridor Sayers Road Western Freeway, Truganina Desktop Landscape Assessment December 2011

The report discusses the integration between the upgraded corridor and the surrounding land uses, identifies three different landscape types along the corridor, and presents a number of concept designs for railway grade separations and the Calder Park Driver freeway interchange. A number of recommendations are identified to facilitate integration of the upgrade into the surrounding land uses.

Following is a brief snapshot of the key environmental approvals for the Palmers Road Corridor project.

Environment Effects Act 1978 (Vic.)
DPCD will shortly prepare Scoping Requirements to confirm the scope of any specialist investigations and the overall content of the Environment Effects Statement (EES). An EES (and PSA) will then be drafted and exhibited for public comment. If necessary, an independent panel will be appointed to consider the documentation and any submissions received and recommend to the Minister for Planning as to whether the project should be approved. The Minister will then prepare a Ministerial Assessment Report. Following the Ministerial Assessment Report, the Planning Authority will decide whether or not to adopt the Planning Scheme Amendment.

Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)
On 22 May 2009 the (then) Department of the Environment, Water, Heritage and the Arts (DEWHA) determined that the proposed upgrade of the Palmers Road corridor (Stages 1-3) was a 'controlled action' and required approval by the Commonwealth Minister for the Environment, Water, Heritage and the Arts prior to the commencement of construction. In addition, DEWHA determined that a decision would be made based on 'preliminary documentation' as stated in correspondence to VicRoads dated 29 May 2009. This preliminary documentation is due to be exhibited independently of any Victorian environmental assessment process.

3. ASSIGNMENT

3.1 Method

The objective of this agreement, by which its performance will be assessed, is that a visual impact assessment should be undertaken should be undertaken of the Palmers Road Corridor.

The report will be required to:

- Characterise the existing landscape character
- Identify and assess potential affect from key vantage points (in particular; Organ Pipes National Park)
- Identify measures to minimise and mitigate visual amenity effects.
- Identify residual effects on the visual amenity of sensitive receptors

For general guidance the Provider is referred to the following text:
Guidelines for Landscape and Visual Impact Assessment (2002), Second Edition, Sue Wilson, The Landscape Institute and the Institute of Environmental Management and Assessment. Published by Spon Press, an imprint of Taylor and Francis Group, Chapman & Hall, 11 New Fetter Lane, London EC4P 4EE, UK. ISBN 0 415 23185 X

3.2 Detailed Task Descriptions

Task 1 Site visit

The Provider shall undertake a site visit to inform itself of the landscape effects and issues and effects on the vista and view sheds that may arise as a result of the Palmers Road Corridor, in particular the Calder Freeway Interchange and the Organ Pipes National Park, the Rail overpass and the general alignment.

Task 2 Prepare Draft Landscape Analysis Plans

Prepare draft landscape analysis plans to be used as a basis for developing Task 4 – the Landscape and Visual Assessment. These plans shall consider and identify:

Cultural and Natural Values

- landscape value of indigenous and exotic vegetation cover;
- geology;
- hydrology and flooding patterns;
- tourist features;
- historical and cultural features;
- opportunities for active and passive recreation;
- possible links to open space networks in the area;
- opportunities to highlight existing features;
- opportunities to create wildlife corridors;
- where services impose restraints to landscape development;
- potential soil and erosion problems;
- areas likely to require noise attenuation; and
- the general alignment.

Views and Slope Analysis

- views and view sheds for the study area;
- the relative importance or significance of the views and view sheds;
- the general alignment.

Task 3 Prepare Landscape Character Plan

Using the results of the analysis carried out in Task 2, prepare a Landscape Character Plan showing:

- landscape character types;
- scenic quality assessment with clear explanation of the criteria used to assess the landscape;
- the general alignment, and
- pertinent components of the draft Landscape Analysis.

Submit the Landscape Character Plan to the Superintendent for approval before proceeding with Task 5.

Task 4 Prepare Landscape and Visual Impact Assessment Report

Identify the impacts of the corridor on the landscape and evaluate the landscape and visual impacts in terms of their significance or acceptability given the inherent landscape values identified.

In conducting the assessment, consider the following principles:

- describe clearly the methodology and the specific techniques that have been used, so that the procedure is replicable and the results can be understood by a lay person;

- use clearly defined and agreed terminology, particularly when defining the sensitivity of landscape and visual resources and the magnitude and significance of predicted impacts;
- be as impartial as possible by distinguishing clearly between objective fact and subjective judgement and by stating the basis upon which judgements are made;
- draw upon the advice and opinions of others, for example, in relation to special interests or values such as archaeology, ecology and the built environment;
- organise and structure the assessment to focus upon the key issues of relevance to decision making;
- openly acknowledge any deficiencies or limitations of data, techniques or resources that may have constrained the assessment;
- apply the 'worst case situation' and the 'precautionary principle' where appropriate, for instances in relation to seasonal or unknown effects

Assess the overall landscape capacity to accommodate the alignment based on the Environment Effects Statement (EES) objectives and assessment criteria with and without mitigation. The assessment of the alignment shall include, but not be limited to, the following:

- impact on natural and cultural values;
- impact on future land uses;
- bridge forms and associated structures;
- effects on significant tourist, historic areas and local features;
- visual intrusion on properties;
- effect on geomorphology;
- impact on landscape character and scenic quality;
- effect on existing vegetation;
- adequacy of the proposed road reservation from a landscape and visual impact perspective; and
- possible modification of the proposed alignment to better meet landscape planning objectives.

Present the results in a Landscape and Visual Assessment Report which shall include relevant plans, cross sections, sketches, photos and photomontages to assist in conveying the impacts of the corridor on the landscape, with and without mitigation measures, as well as any other relevant features/issues (Refer Appendix E for assumed minimum standard montage). Only mitigation measures above and beyond VicRoads' standard landscape mitigation measures (Appendix D) should be identified.

The structure and format of the report are further detailed in Section 4.

Task 5 Prepare a Landscape Planning Concept Report

Based on the findings of Tasks 3, 4 and 5 and the other relevant specialist consultant studies, prepare a Landscape Planning Concept Plan for VicRoads. This Plan shall focus on areas of high landscape and visual impact and shall address the following

- control of views through planting and landform;
- protection of areas of environmental and cultural significance and reinforcement of such areas where appropriate;
- integration of noise attenuation measures into the landscape, based on the location and dimension of noise barriers recommended by the consultant conducting the Noise Modelling;
- planting themes, including reinforcement of plants of local origin and seed collection where appropriate;
- links with existing and potential open space networks;
- treatment of retaining walls, embankments and batters;
- right of way boundary location;
- special erosion control measures;
- consideration of the road alignment and bridge structures within the landscape (Refer Appendix E);
- consideration of interchanges creating new entrances to townships and appropriate thematic landscape treatments;
- water courses; and
- habitat and flora and fauna corridor linkages.

The Landscape Planning Concept shall be prepared in the form of a continuous alignment suitable for public display with a minimum of three (3) cross sections and three (3) photomontages. The Plan should aim to improve the amenity of the area for landholders, residents, visitors and motorists and shall include alignment plans, cross sections, perspectives, photomontages and photographs at key locations sufficient to illustrate the visual and environmental issues/impacts.

Present the results in a Landscape Planning Concept Report that shall include the findings of Tasks 3, 4 and 5. The report shall respond to mitigation measures established in Task 5 and shall include consideration of the effects of mitigation measures at a time 7 (seven) years after opening the project. Colour photographs shall be included in the report to aid in conveying the landscape character and any relevant features/issues/impacts.

The structure and format of the report are further detailed in Section 4.

Task 6 Attendance at meetings

The Provider shall suitably prepare for and then attend all meetings outlined below.

Meeting	Location	Duration	Date
Inception Meeting	Camberwell Office	1 hour approx	Within 2 weeks of award
Draft report feedback Meeting (Task 4 – Landscape and Visual Impact Assessment Report)	Camberwell Office	1 hour approx	TBC
Draft report feedback Meeting (Task 5 – Landscape Planning Concept Report)	Camberwell Office	1 hour approx	TBC
VicRoads to discuss final reports prior to finalisation.	TBC	2 hours	TBC
Presentation to TRG (as per Schedule 1 Item 6)	Spring St, City	2 hours	TBC

NB. This clause is not intended to refer to or include any meetings the Provider may have with other stakeholders during the course of undertaking the assignment.

Where the Superintendent directs the Provider to attend additional contract meetings, payment for additional contract meetings shall be in accordance with the rates submitted in Schedule 2, Rates for Variation.

Task 9 Attendance at Panel Hearing

Where the Superintendent directs the Provider to attend a Planning Panel under the Planning and Environment Act, preparation for and attendance at the hearing shall include the following:

- The Provider team must include an experienced witness, with a suitable level of experience who could present findings at a Panel Hearing. VicRoads must agree to the person proposed to take on this role and that person must be actively involved in the study and preparation of the report;
- Prepare a written submission (expert witness statement) and presentation on the Landscape aspects of the project. The expert witness statement will also take account of all matters arising from any earlier Directions Hearing(s);
- Submit the expert witness statement and presentation for review by VicRoads and its legal adviser and revise as agreed;
- Attend one day of the Panel Hearing as requested by VicRoads;
- Provide a written and oral submission to the Panel on the project's Landscape issues and impacts, the performance against Landscape objectives and on the submissions received during and after the exhibition period;
- Be prepared to respond objectively to cross-examination during the Panel Hearing and to provide succinct answers to any questions from the Panel members; and
- Review the submissions on Landscape matters that are made during the Panel Hearing itself, and provide advice to VicRoads and its legal adviser on how a suitable response may be presented in VicRoads' closing statement.

Payment for attendance at a Panel Hearing will be made under Provisional Sum Item 12 in Schedule 1.

3.3 Photomontages

As part of the Lump Sum, the number of photomontages for this contract will be agreed and directed to be prepared by the Superintendant. Payment will be made under Item 10 of Schedule 1.

Where the Provider is directed to include additional photomontages by the Superintendent as part of the Landscape and

Visual Impact Assessment Report or the Landscape Planning Concept Report, payment shall be made at the rate under Item 10 of Schedule 1.

3.4 Assessment of alignment

Assessment
The Provider shall provide an assessment of the extent to which the alignment meets the project objective. The Provider shall use the assessment criteria and provide verifiable data to support this assessment. The assessment shall be in the form of an answer to the question "How well does the proposal meet the project objective?" To ensure consistency, the following scale should be used:

Rating	Defined Values
Very Well	Best practice, strong level of compliance, major positive impact
Well	Improved practice, good policy compliance, positive impact
Moderately Well	Partial policy compliance, no distinct positive or negative impact
Poor	Policy non-compliance and negative impact
Very Poor	Major policy non-compliance and major negative impact

Consideration of proposed mitigations
Where the Provider has recommended measures to mitigate the impacts on the alignment, the Provider shall provide two assessments:

- with the proposed mitigation
- without the proposed mitigation

Only mitigation measures above and beyond VicRoads' standard landscape mitigation measures should be considered.

3.5 Information to be Provided by VicRoads to the Provider

VicRoads will provide the following information to the Provider:

- A list of the project objectives for use in the Provider's assessment of the alignment;
- Aerial photos, on contract award;
- Concept alignment plan;
- Vertical alignment plans and typical cross section details including assumed bridge forms;
- Topographical survey information, on contract award;
- 3D line strings of the alignment;
- Other existing reports; and
- Information from Flora and Fauna, Cultural Heritage, Land Use/Regional Economy, Noise Modelling and Social Impact as it becomes available during the contract period of this assignment.

The concept design and vertical alignment plans shall be provided by the Superintendent when they become available. It is expected that these plans shall be available by early-May 2013.

3.6 Access to Properties

It is envisaged that access to properties is not required as the alignment is generally on public land.

4. DELIVERABLES

4.1 Reports

Accessibility
The Provider shall ensure that the final report submitted to the Superintendent conforms to VicRoads *Accessibility Requirements for Contracted Works.* A copy of these requirements is provided in Appendix C.

Timing and Format

TASK	DUE TIMEFRAMES	COMMENT
Task 2: Landscape Analysis Plan		
Draft Landscape Analysis Plans	Within four (4) weeks after award of assignment	
Task 3: Landscape Character Plan		
Final Output – Landscape Character Plan	Within six (6) weeks after award of assignment.	Including 1 week for VicRoads Review
Task 4: Landscape and Visual Impact Assessment Report		
Provider to submit draft Landscape and Visual Assessment Report	Within nine (9) weeks after award of assignment	An electronic copy of the complete draft report is to be provided to VicRoads in Microsoft Word (doc) format, along with electronic copies of all maps, drawings and photos. If the draft report is incomplete or inappropriately structured, VicRoads may request the draft report to be revised before reviewing it.
VicRoads to review draft report	Within eleven (11) weeks after award of assignment	The Provider may be asked to consider making changes to the report based on the reviewer's comments before the report is finalised. Where the Provider has concerns about any of the review comments, these are to be discussed with VicRoads Superintendent's Representative prior to finalisation of the report.
Provider to submit final report	Within twelve (12) weeks after award of assignment	One unbound and three bound copies of the final report (including colour figures, plans and maps) will be provided to VicRoads. An electronic copy of the final report will also be provided to VicRoads in both unsecured and secured Adobe Portable Document File (PDF) format and MS Word format, along with a digital copy of all figures in the format agreed with VicRoads.
VicRoads acceptance of final report		The final report will only be accepted after all changes requested by VicRoads and agreed by the Provider, have been completed.
Task 5: Landscape Planning Concept Report		
Provider to submit draft report	Within three (3) weeks after the notification of the preferred alignment	An electronic copy of the complete draft report is to be provided to VicRoads in Microsoft Word (doc) format, along with electronic copies of all maps, drawings and photos. If the draft report is incomplete or inappropriately structured, VicRoads may request the draft report to be revised before reviewing it.
VicRoads to complete review of draft report	Within five (5) weeks after the notification of the preferred alignment	The Provider may be asked to consider making changes to the report based on the reviewer's comments before the report is finalised. Where the Provider has concerns about any of the review comments, these are to be discussed with VicRoads Superintendent's Representative prior to finalisation of the report.
Provider to submit final report	Within six (6) weeks after the notification of the preferred alignment	One unbound and three bound copies of the final report (including colour figures, plans and maps) will be provided to VicRoads. An electronic copy of the final report will also be provided to VicRoads in both unsecured and secured Adobe Portable Document File (PDF) format and MS Word format, along with a digital copy of all figures in the format agreed with VicRoads
VicRoads acceptance of final report		The final report will only be accepted after all changes requested by VicRoads and agreed by the Provider, have been completed.

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Appendix 2

Description of Landscape Character Areas

APPENDIX 2 Description of Landscape Character Areas

14 August 2014
Prepared by Spiire for VicRoads
Spiire, R:\13\138140\Palmers Rd_EES_LVIA_V4_Appendix 2.doc,

LANDSCAPE CHARACTER AREAS

BASALT PLAINS

- Organ Pipes

The Organ Pipes landscape character area exists north of the Calder Freeway generally in the area of Organ Pipes National Park. This area is typical of this landscape character type with extensive evidence of the landforms, vegetation and water forms typical of the Western Basalt Plains.

- Calder Park

The Calder Park landscape character area exists in the area defined by the Calder Park Motorsport Complex. Of all the areas within this type, this area contains the most evidence of human alteration in the form of the high embankments which enclose the racing track and the presence of the transmission towers and lines. However, there is also a large area in the corner of the site between Calder Park Drive and the Calder Freeway which appears generally unaltered and visually typical of the basalt plains landform and vegetation.

- Calder Park Grasslands

The Calder Park Grassland landscape character area includes the Banchory Grove Nature Conservation Reserve, the Calder Park Industrial Estate Grassland and the adjoining undeveloped area south of Calder Park Drive and north of the Bendigo-Melbourne Railway. This area is typical of this type, displaying the landform, vegetation, and a drainage line characteristic of the basalt plains. There is also no development and the only evidence of human intervention is the transmission lines and towers which run through this area.

- Kororoit Creek

The Kororoit Creek landscape character area includes the section of creek corridor which interfaces with the Palmers Road corridor and includes the creek itself and the open space reserves which flank both sides of the creek. This area is also typical of this type, displaying the incised creek line and some vegetation characteristic of the basalt plains. Although residential development generally borders this area, there is otherwise only minor evidence of human alteration in the form of small drainage structures or open space infrastructure.

- Ravenhall Grasslands

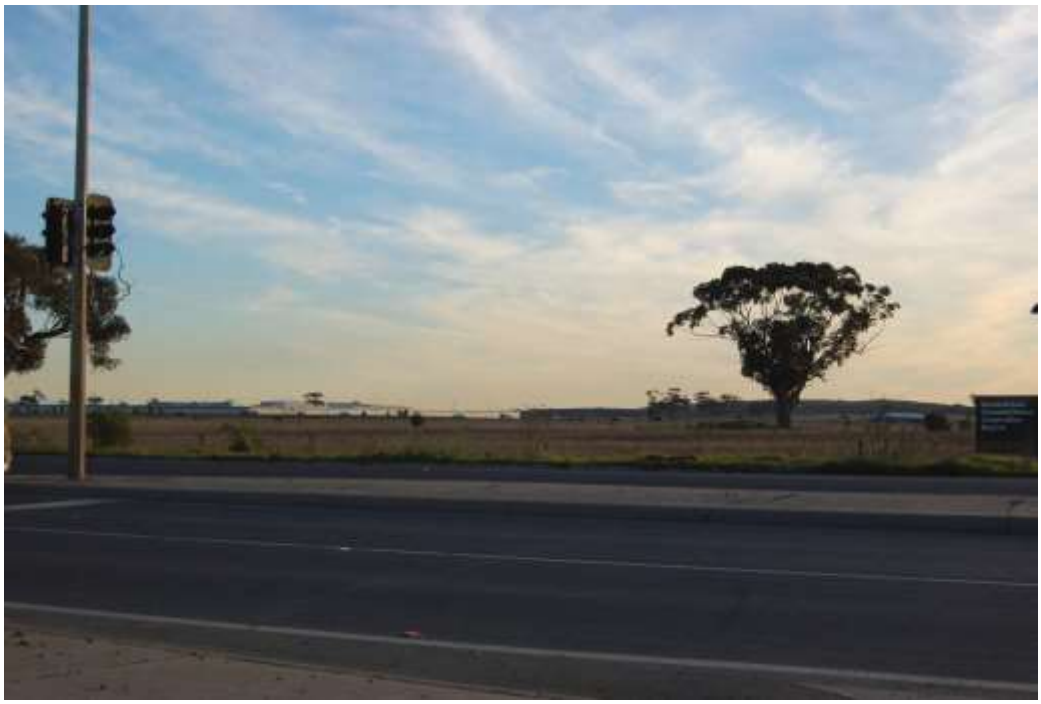
The Ravenhall Grasslands landscape character area is bound by Robinsons Road in the east, the Western Freeway in the south and west and Riding Boundary Road in the north. This includes the Ravenhall East Grassland Conservation Reserve and the undeveloped areas north and south of this reserve. Again this area is fairly typical of this type; particularly in it's predominantly grassland vegetation, flat landform and expansive views. Development and infrastructure borders this area, however there is minimal evidence of human alteration within the area itself as viewed from Robinsons Road.

Typical view of the Organ Pipes landscape character area.

View of the Calder Park landscape character area.

Typical view of the Calder Park Grasslands landscape character area.

Typical view of the Kororoit Creek landscape character area.



Typical view of the Ravenhall Grasslands landscape character area.

RESIDENTIAL

- Sydenham

The Sydenham landscape character area stretches from the Bendigo-Melbourne Railway Line in the north to Southbank Walk and Carlton Court in the south. This character area is defined by older residential development, the majority of which interfaces the road corridor with rear boundary timber paling fences. Street tree planting is minimal and sporadic. Otherwise vegetation along the road is either lawn grass or large screen shrub planting. The open space reserves Pioneer Park, Lachlan's Field and the reserve opposite Copperfield College also exist in this character area; however they are relatively small and contain sporadic and immature vegetation.

- Taylors Hill

The Taylors Hill landscape character area is a small section of the corridor adjoining the southern end of the Sydenham landscape character area and extending to Hume Drive. This character area is distinguished from the adjoining residential areas by its semi-mature and densely planted street trees, as well as the mature Sugar Gums and open space within the 'Dalgook' Farm Complex. Front gardens and their vegetation also contribute to the character of this area as around half the properties in this area face the road corridor.

- Watervale

The Watervale landscape character area extends from Hume Drive in the north to Taylors Road in the south. This character area is defined by a predominance of rear and side boundary timber paling fences with expressed posts and a consistent avenue of semi-mature She-oaks which line this section of the road corridor.

- Burnside Heights

The Burnside Heights landscape character area extends from Taylors Road in the north to Kororoit Creek in the south. This landscape character area is distinguished by its newer residential development and associated built form, as well as its immature street tree planting which is sporadic and inconsistent. The majority of this section of the corridor also interfaces with rear or side boundary timber paling fences.

- Burnside

The Burnside landscape character area includes the corridor of residential development between Kororoit Creek in the north and Burnside Shopping Centre in the south. The development here is slightly older than the adjoining character areas. The majority of development within this character area also fronts on to the road corridor. Semi-mature vegetation in front gardens, extensive understorey planting in garden beds within the road corridor and the existence of semi-mature Plane Trees creating a reasonably consistent avenue, distinguishes this area from other residential character areas.

- Deer Park

The Deer Park landscape character area is a small pocket of older residential development existing on the east side of Robinsons Road just north of the Ballarat-Melbourne Railway line. All of the residential properties here front directly on to the road corridor with the houses located quite close to the edge of the road. There is mature vegetation existing within the front gardens, however there are no street trees present and the streetscape is dominated by overhead powerlines which are notably absent from all of the other residential character areas.

- Derrimut

The Derrimut landscape character area is a long stretch of newer residential development located on the east side of Robinsons Road between Ballarat-Melbourne Railway line and the Western Freeway. The residential development is set well back from the existing road and mostly fronts onto service roads which parallel Robinsons Road. Immature vegetation exists in front gardens and as street trees along the service roads with some mature trees dotted along the road side and at Windsor Boulevard. The overall impression however is of a weedy unkempt road reserve awaiting development.

Typical view of the Sydenham landscape character area.

Typical view of the Taylors Hill landscape character area.

Typical view of the Watervale landscape character area.

Typical view of the Burnside Heights landscape character area.

Typical view of the Burnside landscape character area.

Typical view of the Deer Park landscape character area.

Typical view of the Derrimut landscape character area.

COMMERCIAL

- Ravenhall

The Ravenhall landscape character area is the only area of this landscape type and it exists between the Burnside Shopping Centre in the north and Riding Boundary Road in the south. Between Burnside Shopping Centre and Robinsons Road it exists on both sides of the road. But south along Robinsons Road it exists only on the west side of the road.

Typical view of the Ravenhall Commercial landscape character area

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Appendix 3

Relevant EVCs and Plant Lists

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 132_61: *Heavier-soils* Plains Grassland

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

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	5%	LH
Medium Herb	12	20%	MH
Small or Prostrate Herb	4	5%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	13	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	5%	MNG
Bryophytes/Lichens and Soil Crust*	na	20%	BL

* Note: treat as one life form in this EVC

LF Code	Species typical of at least part of EVC range	Common Name
SS	*Pimelea humilis*	Common Rice-flower
LH	*Rumex dumosus*	Wiry Dock
MH	*Calocephalus citreus*	Lemon Beauty-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Leptorhynchos squamatus*	Scaly Buttons
MH	*Eryngium ovinum*	Blue Devil
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
LTG	*Dichelachne crinita*	Long-hair Plume-grass
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Elymus scaber* var. *scaber*	Common Wheat-grass
MTG	*Schoenus apogon*	Common Bog-sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
MNG	*Thelymitra pauciflora* s.l.	Slender Sun-orchid
MNG	*Microtis unifolia*	Common Onion-orchid
SC	*Convolvulus erubescens*	Pink Bindweed

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

Organic Litter:
10% cover

EVC 132_61: *Heavier-soils* Plains Grassland - Victorian Volcanic Plain bioregion

Weediness:

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

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Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 125: Plains Grassy Wetland

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

Life Forms:

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

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

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

Organic Litter:
20% cover

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

Victoria The Place To Be

Weediness:

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

Published by the Victorian Government Department of Sustainability and Environment May 2004

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 68: Creekline Grassy Woodland

Description:
Eucalypt-dominated woodland to 15 m tall with occasional scattered shrub layer over a mostly grassy/sedgy to herbaceous ground-layer. Occurs on low-gradient ephemeral to intermittent drainage lines, typically on fertile colluvial/alluvial soils, on a wide range of suitably fertile geological substrates. These minor drainage lines can include a range of graminoid and herbaceous species tolerant of waterlogged soils, and are presumed to have sometimes resembled a linear wetland or system of interconnected small ponds.

Large trees:

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

Tree Canopy Cover:

%cover	Character Species	Common Name
15%	*Eucalyptus camaldulensis*	River Red-gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	2	10%	T
Medium Shrub	5	10%	MS
Small Shrub	1	1%	SS
Large Herb	2	5%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	2	10%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	10	25%	MTG
Medium to Tiny Non-tufted Graminoid	3	10%	MNG
Scrambler or Climber	3	10%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia melanoxylon*	Blackwood
T	*Acacia retinodes*	Wirilda
MS	*Hymenanthera dentata s.l.*	Tree Violet
SS	*Rubus parvifolius*	Small-leaf Bramble
SS	*Enchylaena tomentosa var. tomentosa*	Ruby Saltbush
MH	*Oxalis perennans*	Grassland Wood-sorrel
SH	*Azolla filiculoides*	Pacific Azolla
SH	*Lemna disperma*	Common Duckweed
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
LTG	*Poa labillardierei*	Common Tussock-garss
LNG	*Phragmites australis*	Common Reed
MTG	*Austrodanthonia racemosa var. racemosa*	Stiped Wallaby-grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MNG	*Microlaena stipoides var. stipoides*	Weeping Grass
SC	*Glycine clandestina*	Twining Glycine

EVC 68: Creekline Grassy Woodland - Victorian Volcanic Plain bioregion

Recruitment:
Continuous

Organic Litter:
40 % cover

Logs:
20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	*Salix fragilis*	Crack Willow	high	high
MS	*Lycium ferocissimum*	African Box-thorn	high	high
MS	*Genista monspessulana*	Montpellier Broom	high	high
MS	*Rosa rubiginosa*	Sweet Briar	high	high
MS	*Rubus sp. aff. armeniacus*	Blackberry	high	high
LH	*Plantago lanceolata*	Ribwort	high	low
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Hirschfeldia incana*	Buchan Weed	high	high
LH	*Verbena bonariensis s.l.*	Purple-top Verbena	high	high
LH	*Rumex crispus*	Curled Dock	high	high
LH	*Rumex conglomeratus*	Clustered Dock	high	high
LH	*Conium maculatum*	Hemlock	high	high
LH	*Helminthotheca echioides*	Ox-tongue	high	low
LH	*Aster subulatus*	Aster-weed	high	low
LH	*Sonchus asper s.l.*	Rough Sow-thistle	high	low
LH	*Solanum nigrum sensu Willis (1972)*	Black Nightshade	high	high
MH	*Brassica fruticulosa*	Twiggy Turnip	high	high
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Foeniculum vulgare*	Fennel	high	high
SH	*Modiola caroliniana*	Red-flower Mallow	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LTG	*Piptatherum miliaceum*	Rice Millet	high	high
MTG	*Ehrharta erecta var. erecta*	Panic Veldt-grass	high	high
MTG	*Paspalum dilatatum*	Paspalum	high	high
MTG	*Bromus catharticus*	Prairie Grass	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Bromus diandrus*	Great Brome	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Agrostis capillaris s.l.*	Brown-top Bent	high	high
MNG	*Dactylis glomerata*	Cocksfoot	high	high
MNG	*Paspalum distichum*	Water Couch	high	high
SC	*Tradescantia fluminensis*	Wandering Jew	high	high

Published by the Victorian Government Department of Sustainability and Environment May 2004

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 653: Aquatic Herbland

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

Life Forms:

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

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

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

Organic Litter:
10% cover

Weediness:

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

Victoria The Place To Be

EVC 653: Aquatic Herbland - Victorian Volcanic Plain bioregion

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SHIRE OF MELTON

LANDSCAPE GUIDELINES

for the Shire of Melton

2010

suggested planting

recommended species

The following tree species are a recommended guide for the Melton area, however given the large range of species and cultivars available through nurseries, Council will assess applicant's proposals on individual merit. Care should be taken when selecting plants for the development. The skills of a professional horticulturalist, landscape designer or landscape architect can prove invaluable when designing the landscape. The successful growth of trees depends on many factors including quality of the stock, planting preparation and technique at installation and, importantly, ongoing maintenance.

Preference is given to planting indigenous species of local provenance. Native and indigenous plants not only provide better habitat for local fauna, they are often more suited to Melton's climate and geology. The focus on native and local species does not preclude exotic species, but the use of such plants must take into account their relationship to existing stands of remnant vegetation, creeks and waterways. Some exotic species are listed for greater horticultural variety. Local nurseries are an excellent source of advice on species selection and plant availability in this area, as is Council's "Sustainable Gardening in Melton Shire" booklet.

Large Indigenous Trees for public open spaces

		Height	Evergreen (e) or Deciduous (d)	Growth Rate f=Fast m=Moderate s=Slow
Acacia mearnsii	Black Wattle	<20	e	f
Acacia melanoxylon	Blackwood	<20	e	f
Eucalyptus albens	White Box	<25	e	f
Eucalyptus baueriana	Blue Box	<20	e	m
Eucalyptus camaldulensis	River Red Gum	<30	e	m
Eucalyptus leucoxylon ssp.connata	Yellow Gum	<12	e	m
Eucalyptus melliodora	Yellow Box	<20	e	m
Eucalyptus microcarpa	Grey Box	<25	e	m
Eucalyptus obliqua	Messmate	<30	e	m
Eucalyptus ovata	Swamp Gum	<25	e	m
Eucalyptus polyanthemos	Red Box	<20	e	s
Eucalyptus viminalis	Manna Gum	<30	e	f

Small to Medium Indigenous Trees for streets and parks

Acacia implexa	Lightwood	<10	e	f
Acacia retinodes	Wirilda	< 8	e	m
Acacia pycnantha	Golden Wattle	<10	e	f
Allocasuarina leuhmannii	Buloke	<10	e	f
Allocasuarina verticillata	Drooping Sheoke	5 - 10	e	m
Eucalyptus behriana	Bull Mallee	<10	e	m

suggested planting

Large Exotic & Native trees for streets and public open spaces		Height	Evergreen (e) or Deciduous (d)	Growth Rate f=Fast m=Moderate s=Slow
Acmena smithii	Lilly Pilly	<15	e	m
Angophora costata	Smooth-barked Apple	<20	e	m
Banksia integrifolia	Coastal Banksia	<15	e	s
Brachychiton populenus	Kurrajong	<10	d	s
Celtis australis	Hackberry	<18	d	m
Corymbia citriodora	Lemon-scented Gum	<20	e	f
Corymbia eximia	Yellow Bloodwood	<12	e	m
Corymbia ficifolia	Red Flowering Gum	<15	e	m
Corymbia maculata	Spotted Gum	<20	e	m
Eucalyptus sideroxylon	Red Ironbark	<20	e	m
Eucalyptus leucoxylon 'Rosea'	Pink-flowering Yellow Gum	<20	e	m
Eucalyptus mannifera ssp. maculosa	Red Spotted Gum	<20	e	m
Fraxinus griffithii	Evergreen Ash	<12	semi d	m
Fraxinus oxycarpa 'Raywood'	Claret Ash	<25	d	m
Gleditsia triacanthos 'Limegold'	Gold Honey Locust	<15	d	m
Gleditsia triacanthos 'Shademaster'	Green Honey Locust	<20	d	f
Lophostemon confertus	Brush Box	<15	e	m
Melia azaderach 'Elite'	White Cedar	<10	d	m
Pistachia chinensis	Chinese Pistachio	<10	d	m
Quercus palustris	Pin Oak	<20	d	m
Robinia pseudoacacia 'Bessoniana'	Compact Robinia	<12	d	f
Robinia pseudoacacia 'Umbraculifera'	Black Locust	<10	d	f
Tristaniopsis laurina	Kanooka	<10	e	m
Ulmus parvifolia 'Todd'	Chinese Elm (variety)	<12	semi d	m
Zelkova serrata	Japanese Zelkova	<20	d	m

Gleditsia triacanthos 'Shademaster'

suggested planting

Small to Medium Exotic & Native trees

		Height	Evergreen (e) or Deciduous (d)	Growth Rate f=Fast m=Moderate s=Slow
Acer buergerianum	Trident Maple	<10	d	m
Agonis flexuosa	Willow Myrtle	<10	e	m
Callistemon 'Kings Park Special'	Hybrid Bottlebrush	< 8	e	m
Callistemon salignus	Bottlebrush	< 7	e	m
Corymbia ficifolia dwarf cultivars	'Wildfire', 'Wild Sunset', etc.	< 7	e	m
Eucalyptus leucoxylon 'Eukie Dwarf'	Eukie Dwarf Yellow Gum	< 9	e	m
Eucalyptus mannifera 'Little Spotty'	Dwarf Red Spotted Gum	< 9	e	m
Eucalyptus caesia 'Silver princess'	Gungurru	< 8	e	m
Eucalyptus scoparia	Wallangarra White Gum	<15	e	f
Geijera parvifolia	Wilga	< 9	e	s
Hymenosporum flavum	Native Frangipani	< 9	e	m
Koelreuteria paniculata	Golden Rain Tree	< 9	d	m
Lagerstroemia indica	Crepe Myrtle	< 9	d	m
Olea europaea	Olive Tree	< 12	e	f
Pyrus betulaefolia 'Southworth' Dancer	Dancer Pear	<10	d	f
Pyrus calleryana 'Aristocrat'	Aristocrat Pear	<12	d	f
Pyrus calleryana 'Bradford'	Bradford Pear	<12	d	f
Pyrus calleryana 'Capital'	Capital Pear	<12	d	f
Pyrus calleryana 'Chanticleer'	Chantlicleer Pear	<12	d	f
Zelkova serrata 'Green Vase'	Green Vase Zelkova	<15	d	m

Callistemon species

suggested planting

Suggested Indigenous Shrubs

Acacia acinacea	Gold Dust Wattle
Acacia paradoxa	Hedge Wattle
Acacia verniciflua	Varnish Wattle
Atriplex cinera	Coastal Saltbush
Atriplex paludosa ssp. paludosa	Marsh Saltbush
Atriplex suberecta	Lagoon Saltbush
Banksia marginata	Silver Banksia
Bursaria spinosa var. spinosa	Sweet Bursaria
Callistemon sieberi	River Bottlebrush
Cassinia arcuata	Chinese Scrub
Cassinia longifolia	Shiny Cassinia
Correa alba	White Correa
Correa glabra	Rock Correa
Dodonaea viscose ssp. cuneata	Wedge-leaf Hop Bush
Eutaxia diffusa	Eutaxia
Eremophila deserti	Turkey Bush
Goodenia ovata	Hop Goodenia
Gynatrix pulchella	Hemp Bush
Hymenanthera sp.	Spiny Tree Violet
Indigofera australis	Austral Indigo
Lavetera plebeia var. plebeia	Australian Hollyhock
Maireana brevifolia	Small-leaf Bluebush
Maireana decalvans	Black Cottonbush
Melicytus dentata	Tree Violet
Muehlenbeckia florulenta	Tangled Lignum
Myoporum insulare	Boobialla
Myoporum viscosum	Sticky Boobialla
Pimelea glauca	Smooth Rice-flower
Pimelea curviflora var. sericea	Curved Rice-flower
Prostanthera nivea	Mint Bush
Rapanea howittiana	Muttonwood
Rhagodia candolleana ssp. candolleana	Seaberry Saltbush
Rhagodia parabolica	Fragrant Saltbush
Rubus parvifolius	Native Raspberry
Sambucus gaudichaudiana	Native Elderberry
Templetonia stenophylla	Leafy Templetonia
Senna artemisiodes	Desert Cassia
Solanum laciniatum	Large Kangaroo Apple
Viminaria juncea	Golden Spray

Suggested Indigenous Grasses

Amphibromus neesii	Swamp Wallaby Grass
Austrostipa beigeniculata	Tall Spear-grass
Austrostipa elegantissima	Feather Spear-grass
Austrostipa gibbosa	Spear-grass
Austrostipa mollis	Soft Spear-grass
Austrostipa scabra ssp. falcata	Slender Spear-grass
Austrostipa semibarbata	Fibrous Spear-grass
Austrostipa setacea	Corkscrew Grass
Austrodanthonia caespitosa	Common Wallaby Grass
Austrodanthoinia duttoniana	Brown Black Wallaby Grass
Austrodanthonia linkii	Wallaby Grass
Bothriochloa macra	Red-leg Grass
Chloris truncata	Windmill Grass
Deyeuxia quadriseta	Reed Bent Grass
Dichanthium sericeum	Silky Blue Grass
Microlaena stipoides	Weeping Grass
Panicum decompositum	Umbrella Grass
Pentapogon quadrifidus	Five-awned Spear Grass
Poa poiformis var. poiformis	Coastal Tussock Grass
Poa sieberiana var. sieberiana	Tussock Grass
Themeda triandra	Kangaroo Grass

Pimelea species

suggested planting

Suggested Indigenous Climbers

Clematis microphylla	Small leaved Clematis

Suggested Native or Exotic Climbers

Hardenbergia comptoniana	Lilac Vine
Hardenbergia violacea	Purple Coral Pea
Pandorea jasminoides	Bower Vine
Pandorea pandorana	Wonga Wonga vine
Trachelospermum jasminoides	Star Jasmine

Suggested Aquatic Plants

Alisma plantago-aquatica	Water Plantain
Ranunculus inundatus	River Buttercup
Carex fasciularis	Tassel Sedge
Carex tereticaulis	Common Sedge
Crassula helmsii	Swamp Stonecrop
Cyperus gunnii	Flecked Flat Sedge
Gahnia filum	Chaffy Saw-edge
Isolepis inundata	Swamp Club Rush
Isolepis nodosa	Knobby Club Rush
Juncus subsecundus	Finger Rush
Marsilea drummondii	Common Nardoo
Marsilea mutica	Nardoo
Mimulus repens	Creeping Monkey-flower
Myriophyllum crispatum	Water Milfoil
Nymphoides crenata	Wavy Marshwart
Persicaria decipiens	Slender Knotweed
Potamogetan crispus	Pond Weed
Potamogetan tricarinatus	Floating Pondweed
Ranunculus inundatus	River Buttercup
Triglochin procera	Water Ribbon

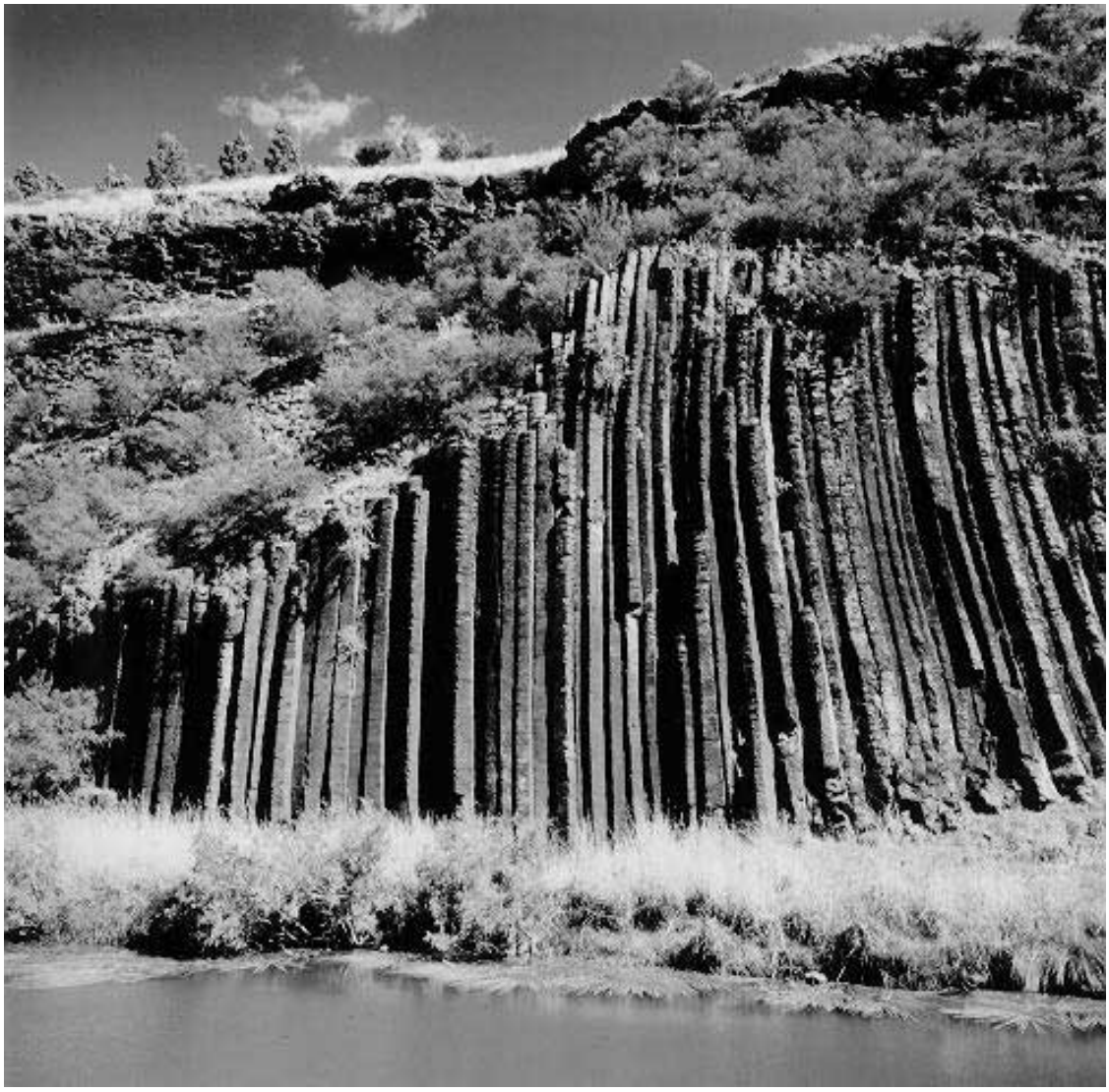
Aquatic Plants for revegetation

Bolboschoenus caldwellii	Sea Club Rush
Bolboschoenus medianus	*M*arsh Club Rush
Eleocharis actua	Common Spike Rush
Eleocharis sphacelate	Tall Spike Rush
Phragmites australis	Common Reed
Scheonoplectus validus	River Club Rush

Organ Pipes National Park

February 1998

Management Plan



Parks VICTORIA

APPENDIX 1 SIGNIFICANT FLORA

SCIENTIFIC NAME	COMMON NAME	STATUS
Allocasuarina luehmannii	Buloke	+d
Banksia marginata	Silver Banksia	*
Bulbine glauca	Bulbine Lily	*
Callitris glaucophylla	White Cypress-pine	d
Calytrix tetragona	Fringe Myrtle	*
Comesperma polygaloides	Small Milkwort	+v
Correa glabra	Rock Correa	
Enneapogon nigricans	Nigger-heads	*
Eremophila deserti	Turkey-bush	d
Glycine tabacina	Variable Glycine	*
Helipterum anthemoides	Chamomile Sunray	*
Nicotiana suaveolens	Austral Tobacco	*
Psoralea tenax	Tough Psoralea	+e
Ptilotus macrocephalus	Feather-heads	*
Rhagodia parabolica	Fragrant Saltbush	r*
Rutidosis leptorrhynchoides	Button Wrinklewort	+eE
Senecio macrocarpus	Large-fruit Groundsel	+eV
Senna artemisoides	Desert Cassia	*
Stipa setacea	Corkscrew Spear-grass	r
Tripogon loliiformis	Rye Beetle-grass	r
Viminaria juncea	Golden Spray	*

Source: NRE database 1997b
Conservation status:
e endangered in Victoria
d depleted in Victoria
r rare in Victoria
v vulnerable in Victoria
E endangered in Australia
V vulnerable in Australia
+ listed under the Flora and Fauna Guarantee Act
* Regional conservation status (DCE 1990c)

APPENDIX D **Revegetation Templates/EVC Lists**

The revegetation templates aim to guide revegetation undertaken along the Kororoit Creek both within the urban and rural reaches. They have been developed for the riparian zone of the Kororoit Creek only and do not attempt to cover some of the vegetation communities found on the upper escarpments of the creek. As such, three templates have been developed that attempt to incorporate those EVCs located within the riparian zone. They do not reflect the eight separate EVCs that have been recorded for the study area.

They provide an outline for revegetation designed to ensure that the physical condition of the creek is sustained and improved. This is achievable through re-establishment of a robust riparian vegetation corridor that will be resilient to current degradation pressures. Many urban waterways have been physically and hydraulically modified. Often they are engineered structures modelled for flood management in the absence of woody vegetation. In these modified urban settings, revegetation styles require some modification and are often limited to use of ground-storey vegetation or a combination of ground-storey and tree canopy planting which have the least flow resistance.

In other areas particularly those used for public open space and in greenfield developments, revegetation is developed so that there is more focus on the landscape presentation. This revegetation often has large areas of ground-storey around wetland or water features and utilises a full range of vegetation types.

Central to the planning of riparian zone rehabilitation is the use of natural templates (or models) derived from representative remnant vegetation communities. The revegetation templates use some selected plant groups from the local EVCs across the wetted perimeter of the stream channel and the riparian verge area to out-compete undesirable plants and weeds that cause problems to flooding or long term maintenance.

Successful revegetation of the Kororoit Creek that is sustainable with low maintenance species requires an awareness of the appropriate species and their preferred locations within the riparian zone. Some ecological advice as to the correct planting regimes and placement may still need to be sought prior to the revegetation works.

Revegetation of sites that already support native vegetation should be undertaken with caution. Advice should be sought from the environmental unit of the local Council so that the revegetation complements and enhances the existing remnant vegetation.

Revegetation at sites where non-indigenous vegetation exists should also be undertaken after consultation with the environmental unit of the local Council. Revegetation at these sites should aim to revegetate with indigenous species and restrict the spread of the existing non-indigenous vegetation.

It should be noted that certain sites along the Kororoit Creek have an historical or cultural significance. These sites may support vegetation that is not indigenous to the creek environs, however will warrant retention based on cultural significance.

The selection of species for revegetation should aim to maximise opportunities to provide environmental, economic and social benefits. Local native (indigenous) species, grown from local seeds or plant material are generally the preferred choice for revegetation. They provide the greatest range of long-term benefits because they:

- are best suited to the local conditions and can still fulfil all of the functional roles required of non-indigenous trees and shrubs;
- maximise biodiversity in the local area;
- provide the best habitat for local wildlife;
- benefit the health of existing remnants;
- are well suited to regenerating without assistance;
- benefit rural land productivity;
- will maintain the natural character of the local landscape.

Where indigenous species are not available, do not meet the project needs, or if the environment at the site has been so modified that local native species cannot survive, for example, highly salt affected sites, other native species may be appropriate. A strategic approach to revegetation that results in multiple benefits and the creation of a healthy and productive environment into the future is recommended.

Revegetation Techniques: a guide for establishing native vegetation in Victoria by Greening Australia is a great guide and is available on their website www.greeningaustralia.org.au

Coastal Saltmarsh

Botanical name	Common name	% No of plants	Planting zone	Dominance
Shrubs				
Atriplex paludosa ssp. paludosa (W)	Marsh Saltbush			O
Avicennia marina ssp. australasica (W)	White Mangrove			D
Halosarcia pergranulata ssp. pregranulata (D)	Black-seed Glasswort			D
Halosarcia halocnemoides ssp. halocnemoides (D)	Grey Glasswort			D
Sclerostegia arbuscula (W)	Shrubby Glasswort		1	D
Grasses, Rushes, Sedges & Dicot Herbsl				
Apium prostratum ssp. prostratum s.l. (W)	Sea Celery		2	O
Atriplex cinerea+	Coast saltbush		3	(D)
Disphyma crassifolium subsp. clavellatum (W/D)	Rounded Noon-flower		2	C
Distichlis distichophylla (W/D)	Australian Salt-grass		2	D
Frankenia pauciflora var. gunnii (W/D)	Southern Sea-heath		2	C
Gahnia filum (W/D)	Chaffy Saw sedge		3	D
Hemichroa pentandra (W/D)	Trailing Hemichroa			C
Juncus kraussii ssp. australiensis (W)	Sea Rush			D
Lawrencia spicata (W/D)	Salt Lawrencia			O
Limonium australe (W)	Yellow Sea-lavender			O
Lobelia irrigua (W/D)	Salt Pratia			C
Mimulus repens (W/D)	Creeping Monkey-flower		2	C
Poa poiformis var. poiformis^	Coast Tussock-grass			D
Puccinellia stricta var. stricta / var. perlaxa (W/D)	Australian Saltmarsh-grass			C
Samolus repens (W/D)	Creeping Brookweed		2	O
Sarcocornia blackiana (W)	Thick-head Glasswort			O
Sarcocornia quinqueflora ssp. quinqueflora (W/D)	Beaded Glasswort		1	D
Selliera radicans (W/D)	Shiny Swamp-mat		2	C
Sporobolus virginicus (D)	Salt Couch			O
Suaeda australis (W/D)	Austral Seablite		1	C
Triglochin stratum s.l. (W/D)	Streaked Arrowgrass		2	O
Wilsonia humilis (D)	Silky Wilsonia			O
Wilsonia rotundifolia (W/D)	Round-leaf Wilsonia			O

Planting Zone

1– MOST FREQUENTLY INUNDATED
2 – NEXT MOST LANDWARD ZONE
3 – MOST LANDWARD ZONE

\+ On shell banks, low dunes and berms only
^ Fringing (i.e. landward) of upper (wet and dry) saltmarsh

Note: Planting zones need special categories

Modified Creekline Tussock Grassland 654

Botanical name	Common name	%	Planting zone	% zone coverage
Trees				
Eucalyptus camaldulensis	River Red Gum		1,2&3	C
Small Trees/Large Medium Shrubs				
Acacia melanoxylon	Blackwood		2&3	O
Muehlenbeckia florulenta	Tangled Lignum		1&2	O
Grasses, Rushes, Sedges & Dicot Herbs				
Acaena novae-zelandiae	Bidgee-widgee		2&3	O
Austrodanthonia caespitosa	Common Wallaby-grass		2&3	C
Bolboschoenus caldwellii	Sea Club-rush		1	C
Calocephalus lacteus	Milky Beauty-heads	25%	1,2 & 3	O
Carex appressa	Tall-sedge		1&2	C
Carex bichenoviana	Plains Sedge		1,2&3	C
Carex tereticaulis	Rush Sedge		1,2&3	C
Elymus scaber	Common Wheat-grass		2&3	C
Eryngium vesiculosum	Prickfoot	0%	1,2 & 3	O
Hemarthria uncinata	Mat Grass	0%	1,2 & 3	C
Juncus amabilis	Hollow Rush		1,2&3	O
Juncus flavidus	Yellow Rush		1,2&3	O
Lobelia pratioides	Poison Lobelia	10%	1,2 & 3	C
Lomandra longifolia ssp. longifolia	Spiny-headed Mat-rush		2&3	C
Persicaria prostrata	Creeping Knotweed		1,2&3	C
Poa labillardierei var. *labillardierei*	Common Tussock-grass	60%	1,2 & 3	C
Schoenoplectus tabernaemontani	River Club-sedge		1	C
		100%		

Planting Zone
1 – BED
2 – LOWER BANK
3 – VERGE

Modified Floodplain Riparian Woodland

Botanical name	Common name	%	Planting zone	% zone coverage
Trees				
Eucalyptus camaldulensis	River Red Gum	30%	2,3 & 4	D
Small Trees/large – medium Shrubs				
Acacia dealbata	Silver Wattle			O
Acacia mearnsii	Late Black Wattle	10%	2,3 & 4	O
Acacia melanoxylon	Blackwood	20%	2,3 & 4	O
Acacia retinodes var. *retinodes*	Wirilda		2 & 3	O
Acacia verticillata ssp. *verticillata*	Prickly Moses		2	O
Bursaria spinosa ssp. *spinosa*	Sweet Bursaria	15%	3 & 4	C
Callistemon sieberi	River Bottlebrush	5%	2 & 4	O
Coprosma quadrifida	Prickly Current-bush		2	O
Goodenia ovata	Hop Goodenia		2 & 3	O
Gynatrix pulchella	Hemp Bush		2,3 & 4	O
Melicytus dentata	Tree Violet	10%	2, 3 & 4	C
Leptospermum lanigerum	Woolly Tea Tree	10%	2	O
Muehlenbeckia florulenta	Tangled Lignum		2	O
Ozothamnus ferrugineus	Tree Everlasting		2 & 3	O
Rubus parvifolius	Small-leaf Bramble		2, 3 & 4	O
		100%		
Grasses, Rushes, Sedges & Dicot Herbs				
Acaena novae-zelandiae	Bidgee-widgee		2, 3 & 4	O
Carex bichenoviana	Plains Sedge		2, 3 & 4	O
Carex tereticaulis	Rush Sedge		2, 3 & 4	O
Juncus flavidus	Yellow Rush		2 & 3	O
Lobelia anceps	Angled Lobelia	5%	2	O
Lomandra longifolia ssp. *longifolia*	Spiny-headed Mat-rush	20%	2, 3, & 4	C
Mentha australis	River Mint		2, 3, & 4	O
Microlaena stipoides var. *stipoides*	Weeping Grass		2, 3, & 4	C
Poa labillardierei var. *labillardierei*	Common Tussock-grass	80%	2, 3 & 4	D
Selleria radicans	Shiny Swamp-mat	5%	4	O
		100%		

Botanical name	Common name	%	Planting zone	% zone coverage
Semi Aquatic and Aquatic Plants				
Alisma plantago-aquatica	Water Plantain	5%	1	O
Apium prostratum ssp. *prostratum* var. *prostratum*	Sea Celery		1	O
Bolboschoenus caldwellii	Salt Club-sedge		1	C
Bolboschoenus medianus	Marsh Club sedge	20%	1	C
Calystegia sepium	Large Bindweed		1	O
Carex appressa	Tall Sedge	60%	1 & 2	D
Crassula helmsii	Swamp Crassula		1	C
Eleocharis acuta	Common Spike-sedge		1	C
Eleocharis sphacelata	Tall Spike-sedge		1	C
Hydrocotyle sibthorpioides	Shining Pennywort		1	C
Juncus pauciflorus	Loose-flower Rush	10%	1	C
Juncus sarophorus	Broom Rush	20%	1	C
Lycopus australis	Australian Gipsywort		1	O
Myriophyllum crispatum	Upright Water-milfoil		1	C
Persicaria decipiens	Slender Knotweed	15%	1	C
Phragmites australis	Common Reed		1	O
Rumex bidens	Mud Dock		1	C
Schoenoplectus tabernaemontani	River Club-sedge	10%	1	C
		100%		

Planting Zone
1 – BED
2 – LOWER BANK
3 – UPPER BANK
4 – VERGE

Dominance
O = OCCASIONAL
D = DOMINANT
C = COMMON
N = NOT SUITABLE FOR REVEGETATION

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