Remnant Vegetation
Small patches of remnant vegetation exist along roadsides, railways and at the following locations:

- Grassy Forest north of Mulcahy Road to the east of Thewlis Road;
- Grassy Forest and Damp Heathy Woodland the south west corner of Thewlis Road and Peck Road;
- Swampy Riparian Woodland and Swampy Woodland along the Toomuc Creek (generally north of the railway line); and,
- Patches of Swamp Scrub along the Gum Scrub Creek.

Where practical and sustainable, remnant vegetation should be retained in road reserves, large lots or incorporated into the design of public open spaces.

Native Vegetation Precinct Plan
A Native Vegetation Precinct Plan is not warranted for the Cardinia Road Precinct Structure Plan due to:

- the limited amount of remnant vegetation in the study area (as determined by a Regional Indigenous Vegetation Survey, January 2004);
- the requirement to undertake Flora and Fauna Assessments and Vegetation Management Plans; and,
- the overall design of the Structure Plan which identifies EVCs within open space reserves.

Flora and Fauna Assessment
A detailed flora and fauna assessment is required to be undertaken to identify flora and fauna values and must be submitted with an application for subdivision.

Vegetation Management Plan
A vegetation management plan is required for locations of remnant vegetation.

The vegetation management plan must:

- identify areas of flora and fauna habitat to be retained, protected or removed, lopped or destroyed;
- set out measures for retention and protection of significant vegetation, both short term (i.e during construction) and long term; and,
- set out management measures for protection and enhancement of threatened species habitat.

Landscape Concept Plan
A landscape concept plan is required to be undertaken and must respond to biodiversity values by:

- identifying any proposals to enhance biodiversity in the region and enhance planting opportunities within urban areas;
- retaining mature isolated trees through their incorporation into open space, road reserves and larger lots; and,
- maximising opportunities for revegetation in urban areas, particularly on ridgelines.
3.8 Image, Character and Unique Features

3.8.1 Objectives

- To create a strong sense of place that emphasises the landscape character and topographical features of the precinct.
- To preserve view corridors to and from significant landscape features and ensure development does not detract from visual amenity.
- To recognise the strong contribution that open corridors along the Toomuc Creek and Gum Scrub Creek make as a landscape feature.
- To recognise the strong contribution that the ridgelines and valleys make to the landscape character of the region.
- To ensure a sustainable response to topography in terms of managing erosion, overland flow and water quality; addressing revegetation (on slopes in particular) and ensuring development does not detract from visual amenity.

3.8.2 Development Principles

Use, development and subdivision should respond to the image, character and unique features as depicted in Plan 17: Image, Character and Unique Features Plan.

**Ridgelines and vegetation**

- Lots should be designed so that dwellings can be built below the top of ridgelines and either vegetation is retained or the hilltops are revegetated.

**Open Space Corridors**

- Open space corridors should contribute to the preservation of drainage lines, including the existing valley and creek systems and the need to provide drainage across the floodplain.
- Open space corridors along the Toomuc Creek and Gum Scrub Creek should have a minimum width of 100 metres, with significantly wider sections though the location of adjoining open space such as hilltops and sporting reserves.
- Design of open space should respond to view corridors.

**Topographical assessment plan requirements**

A topographical assessment plan will be required that shows how:

- existing view corridors to landmarks are protected;
- opportunities for new or enhanced view corridors in open space, along roadways etc are created;
- the urban structure and road and allotment layout responds to topography and will assist in terms of managing erosion and overland flow; and,
- opportunities for revegetation are provided along ridgelines and within larger lots.
Plan 17: Landscape Character and Topographical Features Plan

LEGEND
- Structure Plan Area
- Railway Line, Proposed Station and Car Park
- Creek Corridors
- Hill Tops
- 5m Contours
- Existing Long Views
- Existing Short Views
- Major Easements
- Existing Creeks
- Drainage Lines
3.9 Heritage

3.9.1 Objectives

- To acknowledge that the Shire of Cardinia is the traditional land of indigenous clans.
- To ensure indigenous archaeological sites are identified and managed in accordance with statutory requirements.

3.9.2 Development Principles

**Aboriginal Cultural Heritage**

- Individual planning permit applications will need to comply with regulatory requirements in relation to preparation of an Aboriginal Cultural Heritage Management Plan. These areas are shown on Plan 18: Heritage as areas of Cultural Heritage Sensitivity.

**European Heritage**

- With the exception of the locally significant Pakenham Cemetery, there are no sites of European heritage significance within the Precinct Structure Plan.
3.10 Physical Services

3.10.1 Objectives

- To integrate use of all water resources including rainwater, reused water, recycled water and stormwater.
- To provide all developed lots in the Cardinia Road Precinct with:
  - a potable water service;
  - electricity;
  - a reticulated sewerage service;
  - drainage;
  - gas; and,
  - telecommunications.
- To provide recycled water to be used for purposes such as toilet flushing and garden watering on individual residential properties and the watering of public open space in order to reduce the level of consumption of potable water.
- To ensure that lots are not able to be serviced by a reticulated recycled water supply system, new dwellings and/or commercial buildings be provided with a rainwater tanks purposes such as toilet flushing and garden watering.
- To ensure that Water Sensitive Urban Design treatment measures (eg: wetlands) are provided in both the main and local drainage network.
- To ensure that the community in the Cardinia Road Precinct have access to the Broadband network.
3.10.2 Development Principles
The physical services requirements will be implemented through the planning permit process, through the requirements of service authorities put in place through a combination of regulation and planning permit referral conditions and requirements.

Water
- The reticulated potable water supply must be designed and constructed in accordance with the requirements of South East Water to provide a potable water service to the boundary of all developed lots in the Cardinia Road Precinct.
- The reticulated recycled water supply must be designed and constructed in accordance with the requirements of South East Water to provide a recycled water service to the boundary of all developed lots in Cells 1, 3, 5 & 6 in the Cardinia Road Precinct.
- If lots are not able to be serviced by a reticulated recycled water supply system, then as an alternative to reduce potable water use, new dwellings and or commercial buildings must be provided with a rainwater tank to collect roof runoff for purposes such as toilet flushing and garden watering.

Sewerage
- The reticulated sewerage system must be designed and constructed in accordance with the requirements of South East Water to provide a reticulated sewerage service to the boundary of all developed lots in the Cardinia Road Precinct.

Drainage
- Water quality objectives are set out in the Urban Stormwater – Best Practice Environmental Management Guidelines 1999. They are achieved through the main drainage network and must be designed and constructed in accordance with the requirements of relevant drainage scheme and Melbourne Water.
- The local drainage network must be designed and constructed in accordance with the requirements of the Cardinia Shire Council.
- Water Sensitive Urban Design treatment measures (eg: wetlands) should be implemented in both the main and local drainage network.

Electricity
- The electricity supply system must be designed in accordance with the requirements of SPI AusNet and be provided to the boundary of all lots in the Cardinia Road Precinct.
- All new electricity supply infrastructure must be provided by underground means (excluding substations) and all existing above ground electricity lines in the local road network must be removed and placed underground as part of development.

Gas
- The gas supply network must be designed in accordance with the requirements of Origin Energy and be provided to the boundary of all lots in the Cardinia Road Precinct.

Telecommunications
- It is required that the community in the Cardinia Road Precinct have access to the Broadband network and developers must allow flexibility for future technology such as fibre optic cabling.

Gas Transmission Pipeline Easement
- It is preferred that the Gas Transmission pipeline easement be used as a road.
- The location of the Gas Transmission pipeline easement within a long linear reserve bordered by rear fences should be avoided.
3.11 Development Staging

3.11.1 Objective
To ensure that the staging of development is integrated with existing development and infrastructure.

3.11.2 Development Principles
- Staging will be principally driven by the development program of developers within the precinct, market demand, and the economic availability of infrastructure services.
- Development should proceed from the interface with existing development.
- Development should not create circumstances in which residents will be unreasonably isolated from commercial and community facilities or public transport.
- Access to a development must be via a sealed road.
- Development should, to the maximum extent practicable, be integrated with adjoining developments, including the timely provision of connecting roads and walking / cycling paths.
- If the above staging principles are not met, the developer will be required to bring forward infrastructure (i.e. fund up front) to the extent necessary to meet the principles outlined above.
4.1 Plan Introduction

The Infrastructure Investment Plan (IIP) sets out the need and requirements for infrastructure and services to meet the needs of development the precinct.

This initial IIP is being further developed and by the Growth Areas Authority and the Cardinia Shire Council and will be updated when its development is complete.

The Structure Plan identifies a range of physical and social infrastructure required as part of the development of the Cardinia Road Precinct. This infrastructure is to be provided through a number of mechanisms including:

- subdivision construction works by developers;
- development contributions (community infrastructure levy and development infrastructure levy);
- utility service provider contributions; and,
- capital works projects by Council, state government agencies and community groups.

Subdivision construction works

As part of subdivision construction works, new development in the Cardinia Road Precinct is required to meet the cost of delivering the following infrastructure:

- Local Arterial Roads (undivided), collector roads and local streets.
- Landscaping of local arterial roads (undivided), collector roads and local streets.
- Intersection works and traffic management measures along local arterial roads (undivided), collector roads and local streets.
- Uncontrolled intersection works providing access from an arterial road (primary and local) to a collector road or local street.
- Council approved fencing and landscaping (where required) along arterial roads.
- Local pedestrian and bicycle paths along local arterial roads (undivided), collector roads and local streets and within local parks.
- Basic improvements to local parks / open space including levelling, grassing, tree planting and local paths.
- Local drainage systems.
- Infrastructure as required by utility services providers including water, sewerage, drainage, electricity, gas, and telecommunications.

Development Contributions Plan

A development contributions plan has been prepared for the Cardinia Road Precinct in conjunction with this Structure Plan. The Development Contributions Plan is an incorporated document of the Cardinia Planning Scheme.

The key infrastructure and services items to be included in the development contributions plan are outlined in this section. These items are either fully funded or partly funded by the Cardinia Road Precinct DCP.

Community Infrastructure Levy (CIL)

The Development Contributions Plan requires that new development in the Cardinia Road Precinct meets the cost of delivering the following community infrastructure items funded through the Community Infrastructure Levy (CIL):

- Improvements to district sports grounds (pavilions, floodlighting, etc).
- Community centre (Community Meeting Place).
- Library facilities.
Development Infrastructure Levy (DIL)
The Development Contributions Plan requires that new development in the Cardinia Road Precinct meets the cost (in whole or part) of delivering the following development infrastructure funded through the Development Infrastructure Levy (DIL):

- Land acquisition and construction costs for road widening along Cardinia Road (declared Main Road).
- Land acquisition and construction costs for upgrading the Local Arterial Road network from an ‘Undivided’ to a ‘Divided’ road design.
- Controlled intersection works along Princes Highway (Arterial Roads), Cardinia Road (Main Road) and Henry Road east (adjacent to an Activity Centre).
- Land acquisition and construction costs for a grade separated crossing of Cardinia Road and the railway line.
- Land required for a railway station.
- Bus stop facilities (regional and local bus network).
- Land for District Parkland and District Sports Reserves.
- Development of District Parkland and District Sports Reserves.

- Higher order pedestrian and cycle trail network (including pedestrian bridges over the creek network and pedestrian underpasses of railway line).
- A pedestrian and road bridge adjacent to the railway line bridge (grade separated crossing).
- Land acquisition and construction costs for community centres providing children’s services.
- Land acquisition for library facilities.
- Construction of community centres (Maternal Child Health / Kindergarten & Youth)
- Construction of roundabouts within the local arterial road network.
- Local park improvements including playground equipment.

4.2 Infrastructure & Services
Table 11 sets out the initial list of infrastructure and services required within the precinct to support its development, including details of:

- Infrastructure Group
- Infrastructure Category
- Project Title
- Project Description
- Co-ordinating Agency. (The agency responsible for the coordination and approval of the project. Other agencies and / or developers may have an involvement in the project)
- Timing
- Indicative Capital Cost ($2008)\(^{21}\)

\(^{21}\) $2007 for items costed as part of the Cardinia Road Precinct Development Contributions Plan (September 2008)
4.3 Project Co-ordination
The following projects have been grouped, as it has been identified that if delivered together or in a co-ordinated way, the projects will deliver significant benefits to the community beyond the benefits of each project being delivered individually.

Project group 1: Road widening of Cardinia Road, grade separation of railway line, local road adjacent to bridge and construction of new railway station. (In order to provide minimal disruption to the rail service and prevent a point of congestion at the railway line crossing. Cardinia Council believes that the grade separation of Cardinia Road should be construction at the time of the Railway Station construction.)

Project group 2: New railway station and bus interchange at station.

Project group 3: Community Facilities, Primary Schools and District Sport Reserves.

Project group 4: Trail network with rehabilitation and conservation works within creek corridor.

Project group 5: Bus stops on PPTN, street lighting and trail network along Princes Highway.

Project group 6: Community facilities (Youth), District Sport Reserve and Secondary College.

4.4 Delivery and Monitoring
This initial IIP is being further developed by Cardinia Shire and the Growth Areas Authority. The final IIP will be incorporated into the Cardinia Planning Scheme once complete.

The Growth Areas Authority is developing a consistent process to manage the implementation and co-ordination of key projects in IIPs throughout the growth areas. This process will include an approach to manage the monitoring of growth area IIPs.
<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
<th>Project Description</th>
<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>Primary Arterial Road</td>
<td>Cardinia Road Upgrading</td>
<td>Upgrading of Cardinia Road between the Princes Highway and the Pakenham Bypass to a 4 or 6 lane divided road including a grade separated crossing of the Gippsland Railway Line and signalised intersections at the intersections with the Princes Highway, Shearwater Drive and the Henry Road extension.</td>
<td>Vic Roads</td>
<td>Medium</td>
<td>$46.7m</td>
</tr>
<tr>
<td>Roads</td>
<td>Primary Arterial Road</td>
<td>Cardinia Road Interchange</td>
<td>Upgrading of the Cardinia Road Interchange with the Pakenham Bypass including duplication of the Cardinia Road bridge over the Pakenham Bypass and signalised intersections at the intersection of the Pakenham Bypass ramps with Cardinia Road.</td>
<td>Vic Roads</td>
<td>Medium</td>
<td>Being developed</td>
</tr>
<tr>
<td>Roads</td>
<td>Primary Arterial Road</td>
<td>Princes Highway Street lighting</td>
<td>Upgrading street lighting along the Princes Highway to an urban standard between Gum Scrub Creek and Lakeside Boulevard</td>
<td>Vic Roads / Council</td>
<td>Medium</td>
<td>$1.1 million</td>
</tr>
<tr>
<td>Roads</td>
<td>Primary Arterial Road</td>
<td>Pakenham Bypass Noise Attenuation</td>
<td>Construction of noise attenuation measures within freeway reservation to reduce noise impacts on nearby residents</td>
<td>Vic Roads</td>
<td>In stages as development proceeds</td>
<td>Being developed</td>
</tr>
<tr>
<td>Roads</td>
<td>Local Arterial Road</td>
<td>Henry Road Extension</td>
<td>Construction of the extension of Henry Road between the Toomuc Creek and Cardinia Road to a 4 lane divided road standard including a signalised intersection at the main street for the southern neighbourhood activity centre and a bridge over Toomuc Creek.</td>
<td>Council</td>
<td>Short</td>
<td>$11.8 million</td>
</tr>
<tr>
<td></td>
<td>Local Arterial Road</td>
<td>Henry Road Extension</td>
<td>Construction of the extension of Henry Road between Cardinia Road and the Gum Scrub Creek to a 4 lane divided road standard including a bridge over Gum Scrub Creek.</td>
<td>Council</td>
<td>Short</td>
<td>$5.6 million</td>
</tr>
</tbody>
</table>
### Infrastructure and Service Projects (Continued)

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
<th>Project Description</th>
<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Arterial Road</td>
<td>Lakeside Drive Extension</td>
<td>Construction of Lakeside Drive between the Princes Highway and Mulcahy Road to a four lane divided road standard.</td>
<td>Council</td>
<td>Short</td>
<td>$2.2 million</td>
<td></td>
</tr>
<tr>
<td>Local Arterial Road</td>
<td>Thewlis Road</td>
<td>Construction of Thewlis Road between the Princes Highway and Mulcahy Road to a four lane divided road standard including a signalised intersection at the intersection with the Princes Highway.</td>
<td>Council</td>
<td>Short</td>
<td>$2.9 million</td>
<td></td>
</tr>
<tr>
<td>Local Arterial Road</td>
<td>Mulcahy Road Extension</td>
<td>Construction of the extension of Mulcahy Road between Thewlis Road and the Gum Scrub Creek to a 4 lane divided road standard including a bridge over Gum Scrub Creek.</td>
<td>Council</td>
<td>Short to Long</td>
<td>$6.6 million</td>
<td></td>
</tr>
<tr>
<td>Local Arterial Road</td>
<td>Officer Town Centre Connection Road</td>
<td>Construction of a bridge over the Gum Scrub Creek parallel to the north side of the Gippsland Railway line for a connecting road between the Cardinia Road Precinct and Officer Town Centre.</td>
<td>Council</td>
<td>Long</td>
<td>$0.9 million</td>
<td></td>
</tr>
<tr>
<td>Public Transport</td>
<td>Cardinia Road Railway Station</td>
<td>Construction of the Cardinia Road Railway Station and associated car parking and bus interchange facilities.</td>
<td>Department of Transport</td>
<td>Short to Medium</td>
<td>$25.0-$35.0 million</td>
<td></td>
</tr>
<tr>
<td>Public Transport</td>
<td>Bus stop facilities</td>
<td>Provision of bus stops along bus routes including bus shelters, paths and lighting.</td>
<td>Council</td>
<td>In stages as development proceeds</td>
<td>$0.4 million</td>
<td></td>
</tr>
<tr>
<td>Public Transport</td>
<td>Bus route expansion</td>
<td>Expand bus service coverage (bus route extensions and new routes) to provide a bus service to all residents within the Cardinia Road Precinct.</td>
<td>Department of Transport</td>
<td>In stages as development proceeds</td>
<td>Being developed</td>
<td></td>
</tr>
</tbody>
</table>
Table 11: Infrastructure and Service Projects (Continued)

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
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<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trails</td>
<td>Trails</td>
<td>Princes Highway Trail</td>
<td>Construction of a 2.5m wide path along both sides of the Princes Highway between Lakeside Boulevard and Gum Scrub Creek</td>
<td>Council</td>
<td>Short to medium</td>
<td>$1.5 million</td>
</tr>
<tr>
<td>Trails</td>
<td>Trails</td>
<td>Toomuc Creek Trail</td>
<td>Construction of a 2.5m wide path along the Toomuc Creek including a rail underpass and two pedestrian bridges over the creek</td>
<td>Council</td>
<td>Medium</td>
<td>$2.2 million</td>
</tr>
<tr>
<td>Trails</td>
<td>Trails</td>
<td>Gum Scrub Creek Trail</td>
<td>Construction of a 2.5m wide path along the Gum Scrub Creek including a rail underpass.</td>
<td>Council</td>
<td>Medium</td>
<td>$2.2 million</td>
</tr>
<tr>
<td>Trails</td>
<td>Trails</td>
<td>Pakenham Bypass Trail</td>
<td>Construction of a 2.5m wide path along the Pakenham Bypass between Gum Scrub Creek and Toomuc Creek.</td>
<td>Council / Vic Roads</td>
<td>Medium</td>
<td>$1.5 million</td>
</tr>
<tr>
<td>Trails</td>
<td>Trails</td>
<td>Rail crossing east of Cardinia Road</td>
<td>Construction of a rail underpass east of Cardinia Road to improve pedestrian access.</td>
<td>Council</td>
<td>Medium</td>
<td>$1.4 million</td>
</tr>
</tbody>
</table>

**Open Space**

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
<th>Project Description</th>
<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Open Space</td>
<td>Cardinia Creek Parklands</td>
<td>Acquisition and development of regional parklands along the Cardinia Creek for passive and environmental purposes to service the Casey Cardinia Growth Area.</td>
<td>Parks Victoria</td>
<td>Short to Long</td>
<td>Being developed</td>
<td></td>
</tr>
<tr>
<td>District Park</td>
<td>Lakeside Reserve</td>
<td>Construction of an 8ha lake and adjoining passive recreation areas.</td>
<td>Council</td>
<td>Short</td>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>District Park</td>
<td>Hilltop Park</td>
<td>Acquisition and development of a district park on the north side of the Princes Highway adjoining Gum Scrub Creek.</td>
<td>Council</td>
<td>Short/ Medium</td>
<td>$8.4 million</td>
<td></td>
</tr>
<tr>
<td>Infrastructure Group</td>
<td>Infrastructure Category</td>
<td>Project Title</td>
<td>Project Description</td>
<td>Co-ordinating Agency</td>
<td>Timing</td>
<td>Indicative Cost ($2008)</td>
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</tr>
<tr>
<td>District Sports Reserve</td>
<td>Gum Scrub Creek / Princes Highway Reserve</td>
<td>Acquisition and development of a district sports reserve including two ovals, a regional playground, associated pavilion, carparking and infrastructure.</td>
<td>Council</td>
<td>Short</td>
<td>$7.3 million</td>
<td></td>
</tr>
<tr>
<td>District Sports Reserve</td>
<td>Gum Scrub Creek / Henry Road Extension Reserve</td>
<td>Acquisition and development of a district sports reserve including a playing field and lawn bowls greens, associated pavilions, carparking and infrastructure.</td>
<td>Council</td>
<td>Medium</td>
<td>$7.6 million</td>
<td></td>
</tr>
<tr>
<td>District Sports Reserve</td>
<td>Henry Road Extension (East of Cardinia Road)</td>
<td>Acquisition and development of a district sports reserve including two ovals, associated pavilion, carparking and infrastructure.</td>
<td>Council</td>
<td>Medium</td>
<td>$7.3 million</td>
<td></td>
</tr>
<tr>
<td>Neighbourhood Sports Reserve</td>
<td>Shearwater Drive</td>
<td>Construction of an oval and associated pavilion, car parking and infrastructure.</td>
<td>Council</td>
<td>Short</td>
<td>$1.8 million</td>
<td></td>
</tr>
<tr>
<td>Local Parks</td>
<td>Improvements to local parks</td>
<td>Provision of playground equipment in local parks in the Cardinia Road Precinct.</td>
<td>Council</td>
<td>Ongoing</td>
<td>$1.5 million</td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>Early Childhood Centre</td>
<td>Thewlis Road (Worthington Estate)</td>
<td>Acquisition of land for and construction of an Early Childhood Centre and community meeting space.</td>
<td>Council</td>
<td>Medium</td>
<td>$2.9 million</td>
</tr>
<tr>
<td></td>
<td>Early Childhood Centre</td>
<td>Cardinia Road (Arena Estate)</td>
<td>Acquisition of land for and construction of an Early Childhood Centre and community meeting space.</td>
<td>Council</td>
<td>Long</td>
<td>$2.2 million</td>
</tr>
</tbody>
</table>
### Table 11: Infrastructure and Service Projects (Continued)

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
<th>Project Description</th>
<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Childhood Centre</td>
<td>East of Cardinia Road (Delfin)</td>
<td>Acquisition of land for and construction of an Early Childhood Centre and community meeting space.</td>
<td>Council</td>
<td>Short /Medium</td>
<td>$3.1 million</td>
<td></td>
</tr>
<tr>
<td>Early Childhood Centre</td>
<td>West of Cardinia Road (Vic Urban)</td>
<td>Acquisition of land for and construction of an Early Childhood Centre and community meeting space.</td>
<td>Council</td>
<td>Medium</td>
<td>$2.9 million</td>
<td></td>
</tr>
<tr>
<td>Youth Centre</td>
<td>East of Cardinia Road (Delfin)</td>
<td>Construction of a youth centre in conjunction with secondary college and district sports reserve.</td>
<td>Council</td>
<td>Long</td>
<td>$2.1 million</td>
<td></td>
</tr>
<tr>
<td>Community Centre</td>
<td>East of Cardinia Road (Delfin)</td>
<td>Acquisition of land for and construction of a community centre to provide a community meeting space and services provision</td>
<td>Council</td>
<td>Medium</td>
<td>$4.4 million</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>Officer Library</td>
<td>Acquisition of land for and construction of a library in the Officer Town Centre to service the Officer area.</td>
<td>Council</td>
<td>Long</td>
<td>$7.7 million</td>
<td></td>
</tr>
<tr>
<td>Indoor Sports Facility</td>
<td>Cardinia Life Upgrade</td>
<td>Upgrading of Cardinia Life to an 8 court stadium.</td>
<td>Council</td>
<td>Short</td>
<td>$5.0 million</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Thewlis Road Primary School (Worthington Estate)</td>
<td>Acquisition of land for and construction of a primary school.</td>
<td>Department of Education and Early Childhood Development</td>
<td>Medium</td>
<td>$11.5 million</td>
<td></td>
</tr>
<tr>
<td>Infrastructure Group</td>
<td>Infrastructure Category</td>
<td>Project Title</td>
<td>Project Description</td>
<td>Co-ordinating Agency</td>
<td>Timing</td>
<td>Indicative Cost ($2008)</td>
</tr>
<tr>
<td>----------------------</td>
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<td>----------------------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>Education</td>
<td>East of Cardinia Road</td>
<td>Acquisition of land for and construction of a primary school.</td>
<td>Department of Education and Early Childhood Development</td>
<td>Medium</td>
<td>$11.5 million</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>West of Cardinia Road (Vic Urban)</td>
<td>Acquisition of land for and construction of a primary school.</td>
<td>Department of Education and Early Childhood Development</td>
<td>Medium</td>
<td>$11.5 million</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>East of Cardinia Road</td>
<td>Acquisition of land for and construction of a secondary college.</td>
<td>Department of Education and Early Childhood Development</td>
<td>Medium / Long</td>
<td>Being developed</td>
<td></td>
</tr>
</tbody>
</table>

**Utility Infrastructure**

<table>
<thead>
<tr>
<th>Water Supply</th>
<th>Princes Highway Distribution Main</th>
<th>Extension of an existing 300mm diameter distribution main along the Princes Highway to serve development in the precinct</th>
<th>South East Water</th>
<th>Short</th>
<th>Being developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Supply</td>
<td>Upgrading of recycled water capacity of Pakenham Sewerage Treatment Plant</td>
<td>Upgrading of the Pakenham Sewerage Treatment Plant to supply Class A recycled water and construction of a distribution main to service development in the precinct.</td>
<td>South East Water</td>
<td>Short</td>
<td>Being developed</td>
</tr>
</tbody>
</table>
Table 11: Infrastructure and Service Projects (Continued)

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
<th>Infrastructure Category</th>
<th>Project Title</th>
<th>Project Description</th>
<th>Co-ordinating Agency</th>
<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewerage</td>
<td></td>
<td>Toomuc Creek Branch Sewer</td>
<td>Construction of the Toomuc Creek Branch Sewer to service development in the Cardinia Road Drain Catchment.</td>
<td>South East Water</td>
<td>Short</td>
<td>Complete.</td>
</tr>
<tr>
<td>Sewerage</td>
<td></td>
<td>Cardinia Road Branch Sewer and Mary Street Pumping Station</td>
<td>Construction of the Cardinia Road Branch Sewer and Mary Street Pumping Station and associated rising mains to service development in the Cardinia Road Drain Catchment.</td>
<td>South East Water</td>
<td>Short</td>
<td>Being developed.</td>
</tr>
<tr>
<td>Sewerage</td>
<td></td>
<td>Gum Scrub Creek Branch Sewer and Officer South Road Pumping Station</td>
<td>Construction of the Gum Scrub Creek Branch Sewer and Officer South Road Pumping Station and associated rising mains to service development in the Gum Scrub Creek Catchment.</td>
<td>South East Water</td>
<td>Short</td>
<td>Being developed.</td>
</tr>
<tr>
<td>Drainage</td>
<td></td>
<td>Pakenham West Drainage Scheme</td>
<td>Construction of outfall drainage works including a pipe network, channels, water retardation and water quality facilities.</td>
<td>Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>Being developed</td>
</tr>
<tr>
<td>Drainage</td>
<td></td>
<td>Cardinia Road Drainage Scheme</td>
<td>Construction of outfall drainage works including a pipe network, channels, water retardation and water quality facilities.</td>
<td>Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>Being developed</td>
</tr>
<tr>
<td>Drainage</td>
<td></td>
<td>Officer Drainage Scheme</td>
<td>Construction of outfall drainage works including a pipe network, channels, water retardation and water quality facilities.</td>
<td>Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>Being developed</td>
</tr>
</tbody>
</table>
### Table 11: Infrastructure and Service Projects (Continued)

<table>
<thead>
<tr>
<th>Infrastructure Group</th>
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<th>Timing</th>
<th>Indicative Cost ($2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity</td>
<td></td>
<td>Landscaping and rehabilitation works</td>
<td>Gum Scrub Creek Landscaping and rehabilitation of the Gum Scrub Creek corridor.</td>
<td>Council / Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>$4.4 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landscaping and rehabilitation works</td>
<td>Toomuc Creek Corridor Landscaping and rehabilitation of the Toomuc Creek corridor.</td>
<td>Council / Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>$1.3 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landscaping and rehabilitation works</td>
<td>Quirks Creek Corridor and Retarding Basin Landscaping and rehabilitation of the Quirks Creek corridor and retarding basin.</td>
<td>Council / Melbourne Water</td>
<td>In stages as development proceeds</td>
<td>$6.0 million</td>
</tr>
</tbody>
</table>
### 5.1 Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Centres</td>
<td>Provide the focus for services, employment and social interaction in cities and towns. They are where people shop, work, meet, relax and often live. Usually well-served by public transport, they range in size and intensity of use from local neighbourhood strip shopping centres to traditional universities and major regional malls.</td>
</tr>
<tr>
<td>Affordable Housing</td>
<td>Well-located housing, appropriate to the needs of a given household, where the cost (whether mortgage repayment or rent) is no more than 30 per cent of that household’s income. Exceeding the mark places one under ‘housing stress’, particularly in the lower 40 per cent of the income distribution scale.</td>
</tr>
<tr>
<td>Broadband Services</td>
<td>Communications that send several different channels of digital information down a wire at the same time, or use a wider range of frequencies to transmit a single data stream. Broadband is often referred to as ‘high bandwidth’ and is applied to technologies such as cable Internet, where it allows constant connection.</td>
</tr>
<tr>
<td>Catchment</td>
<td>An area of land where run-off from rainfall goes into one river system.</td>
</tr>
<tr>
<td>Ecological Vegetation Classes (EVC)</td>
<td>The components of a vegetation classification system. They are groupings of vegetation communities based on floristic, structural and ecological features.</td>
</tr>
<tr>
<td>Fauna</td>
<td>A general term for animals (including birds, reptiles, marsupials, and fish).</td>
</tr>
<tr>
<td>Flora</td>
<td>A general term for plants of a particular area or time.</td>
</tr>
<tr>
<td>Fringe</td>
<td>Areas of the city that border on non-urban areas or the ‘edge’ (loosely defined) of the built-up urban area.</td>
</tr>
<tr>
<td>Growth Areas</td>
<td>Areas on the fringe of metropolitan Melbourne around major regional transport corridors that are designated for large-scale change, over many years, from rural to urban use. The new communities of the future will be located in growth areas, with housing, shopping, employment, parks and other features of urban life.</td>
</tr>
<tr>
<td>Growth Areas Authority</td>
<td>The Growth Areas Authority (GAA) is an independent statutory body established by the Victorian Government to guide sustainable development in Melbourne’s five outer urban growth areas.</td>
</tr>
<tr>
<td>Heritage</td>
<td>Aesthetic, historic, scientific or social value for past, present or future generations.</td>
</tr>
<tr>
<td>High Density Residential Development</td>
<td>25+ dwellings per hectare. (Net Residential Developable Area)</td>
</tr>
<tr>
<td>Higher Density Housing</td>
<td>Housing units on a given area of land that are more numerous than the average in the surrounding locality.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Incompatible Land Uses</td>
<td>Land uses that have negative effects on adjacent land uses.</td>
</tr>
<tr>
<td>Linear Open Space Network</td>
<td>Corridors of open space, mainly along river valleys, the coast, disused railways lines and aqueducts, that link together forming a network.</td>
</tr>
<tr>
<td>Low Density Residential Development</td>
<td>5 dwellings per hectare (Net Residential Developable Area).</td>
</tr>
<tr>
<td>Major Activities Centre (MAC)</td>
<td>Similar characteristics to Principal Activity Centres but serves a smaller catchment area Supplements the network of Principal Activity Centres Provides additional scope to accommodate ongoing investment and change in retail, office, service and residential markets.</td>
</tr>
<tr>
<td>Medium Density Residential Development</td>
<td>Average 20 dwellings per hectare (Net Residential Developable Area). Generally more than one dwelling on an ordinary house block, or any form of attached housing such as townhouses or apartments.</td>
</tr>
<tr>
<td>Municipal Strategic Statement (MSS)</td>
<td>Part of the Local Planning Policy Framework, these contain the strategic planning land-use and development objectives of the relevant planning authority, the strategies for achieving these objectives, and the relationship to controls over the use and development of land in the planning scheme.</td>
</tr>
<tr>
<td>Neighbourhood Activity Centre (NAC)</td>
<td>Generally, a limited mix of uses meeting local convenience needs Generally less than 10,000 square metres of retail floor space Accessibility to a viable user population by walking/cycling Accessibility by local bus services and public transport links to one or more Principal or Major Activity Centre Important community focal point, ideally close to schools, libraries, child care, health services, police stations and other facilities that benefit from good public transport.</td>
</tr>
<tr>
<td>Net Residential Developable Land</td>
<td>Total area less encumbered open space (creeks; drainage easements / stormwater management; EVC areas; Aboriginal Cultural Heritage; and Growling Grass Frog Habitat Corridor); district open space (district parkland / sports reserves; and neighbourhood sports reserves); major easements (gas pipeline); local arterial roads (divided and undivided); community facilities (railway station land; State Primary / Post Primary Schools and regional / local community facilities); commercial land (Neighbourhood Activity Centres (core retail and peripheral commercial) and Neighbourhood Convenience Centres) as well as 8% for local public open space.</td>
</tr>
<tr>
<td>Potable Water</td>
<td>Water suitable for humans to drink.</td>
</tr>
</tbody>
</table>

iv DSE Glossary of Planning Terms
5.2 Supporting Information
The following documents may assist in understanding the background to the vision, objectives and other requirements of this precinct structure plan.


Cardinia Shire Council, June 2007, Landscape Development Guidelines.


Centre for Population and Urban Research, August 2004, Socio-economic Characteristics of Casey and Cardinia Residents and the Implications for Melbourne 2030.


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Ecology Partners, June 2006, Strategic Advice on the Growling Grass Frog Litoria raniformis, Officer Structure Plan, Officer, Victoria, Report for Cardinia Shire Council.


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Id.Profile, Cardinia Shire Community Profile, 2001 and 1996 census information for Growth Area Subregion.

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Land Design Partnership, July 2004, Landscape Assessment, Casey-Cardinia Urban Growth Area, Summary Report for Shire of Cardinia, City of Casey and DSE.


Melbourne Water, March 2006, Officer & Cardinia Road Precinct Drainage Scheme Maps.


Parsons Brinckerhoff (PB), February 2004, Monitor Well Locations (topography, surface water sampling locations, groundwater elevation, depth of groundwater), Maps.


SGS, July 2004, Casey - Cardinia Strategic Review.


Sinclair Knight Mertz (SKM), September 2003, Cardinia Shire Salinity Project, Extent and Severity of Salinity in the Cardinia Shire Council.

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Sinclair Knight Mertz (SKM), April 2005, Cardinia Shire 2004/05 NHT Salinity Project, Guidelines for building on a saline environment, Background Report.


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Urban Enterprise Pty Ltd, July 2007, Cardinia Road Precinct Development Contributions Plan.