AURORA DEVELOPMENT PLAN : PART 2 (AMENDMENT)

SEPTEMBER 2016

Aurora Development Plan Part 2

The Amendment to the Development Plan was approved by the City of Whittlesea on 18 December 2007, and amended on 17 May 2016, in accordance with Clause 43.04 Schedule 23 of the Whittlesea Planning Scheme.

20/09/2016 .....

Signature of the Responsible Authority

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 DEVELOPMENT PLAN

A Development Plan (DP) is a report and enclosed map that provides a general outline of the way land is intended to be developed.

The DP designates proposed housing areas and other main land uses, the neighbourhood connector and arterial street network and the location of community facilities, for a comprehensively planned development of land.

The DP forms the framework for more detailed planning at the subdivision plan and permit application plan stages. The detail may vary or 'fine-tune' the DP provided it does not change its general intent (except to the satisfaction of the responsible authority).

Objectives for the development of the land and guidelines relating to the provision of infrastructure, facilities, services and other matters may form important parts of the DP.

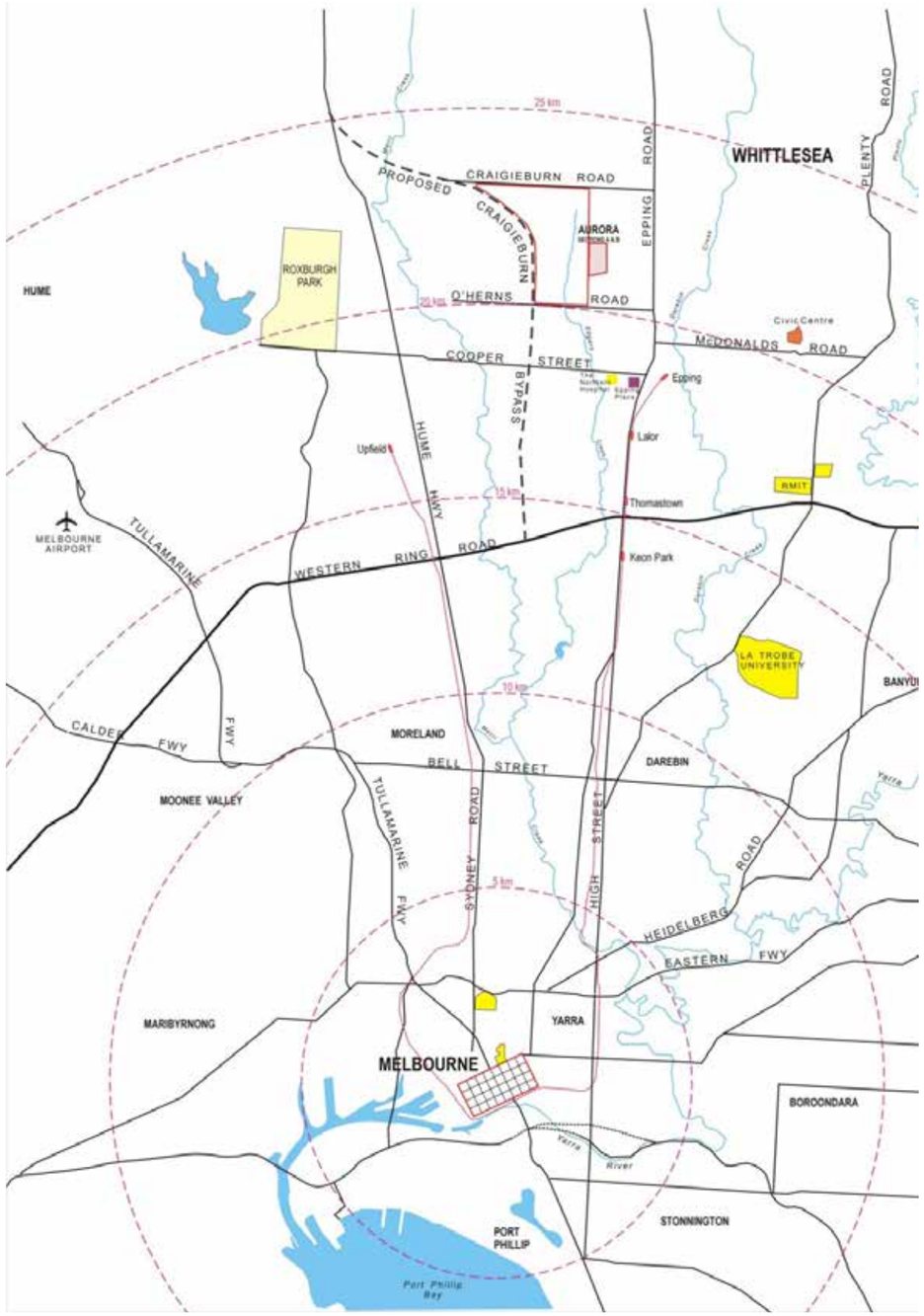
1.2 AURORA AND AURORA DEVELOPMENT PLAN

The area north of Epping in the City of Whittlesea (Whittlesea) has been known for some time as Epping North. In the past, a constraint to the development of Epping North has been the availability and capacity of infrastructure services and the cost of overcoming these servicing constraints. An associated constraint has been the fragmented land ownership, which has made it more difficult to plan for and implement the necessary coordinated approach to overcoming the identified constraints.

Whittlesea representatives have acknowledged over time that the solution would lie with a larger developer becoming involved in Epping North and thus having the capability of coordinating the planning and development of the area.

In 2001 and 2002, Places Victoria determined to put in place arrangements to become the developer of a significant (in area and focal location) portion of Epping North. These arrangements have now resulted in Places Victoria controlling a large part of the land, known as Aurora.

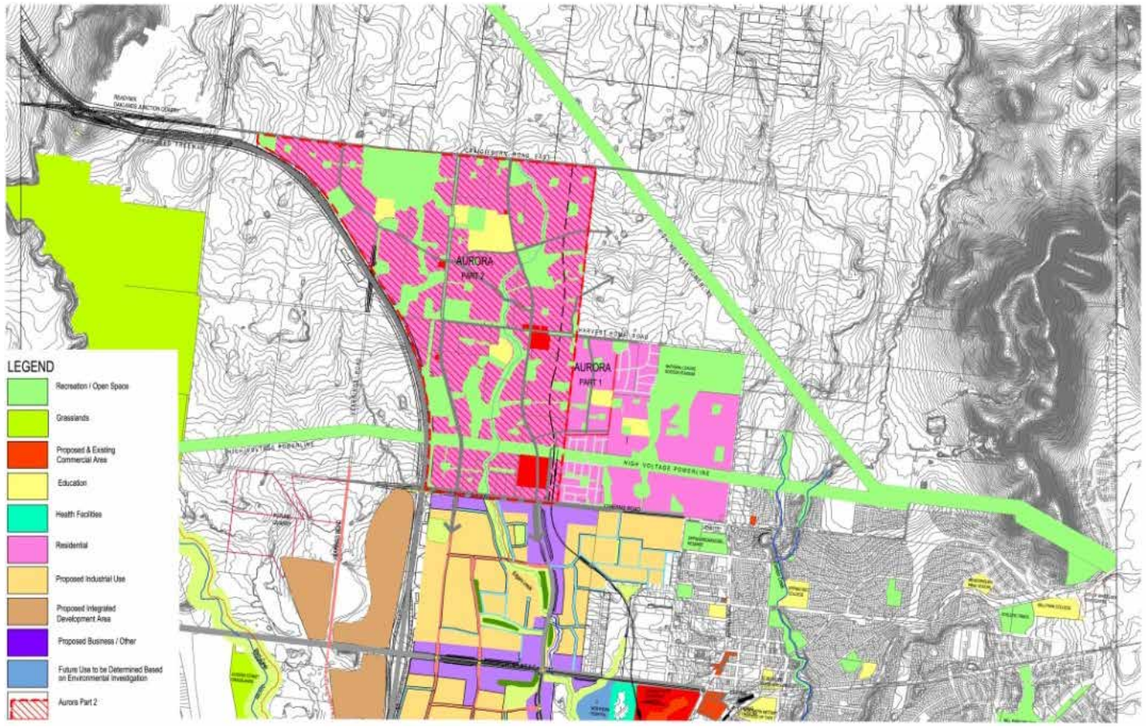
Aurora is approximately 20 kilometres north of the Melbourne central activities district and consists of about 630 hectares of land bordered by Craigieburn Road East to the north, O'Herns Road to the south and the Craigieburn Bypass to the west. The east boundary follows existing property titles and is not marked by physical features of note.



Metropolitan Context

Aurora is approximately 1.5 kilometres north west of existing urban development in Epping and 3 kilometres from Epping railway station. Aurora is bounded generally by rural properties, several of which have had development plans prepared to facilitate the residential development of the land. The land south of O'Herns Road is identified as the Cooper Street Employment Area. The Craigieburn Grasslands and Merri Creek are approximately 2 kilometres west of the Craigieburn Bypass.

The Aurora Development Plan: Part 2 (ADP2) relates to the western 593 hectares of Aurora (the subject land). The development of the eastern 37 hectares of Aurora is described in the Aurora Development Plan: Part 1 (Edition 5, September 2003) (ADP1), which was endorsed by Whittlesea on 19 September 2003.



Regional Context

1.3 PLACES VICTORIA AND AURORA

ADP2 has been prepared by Places Victoria as the intended developer of the majority of the subject land.

The functions of Places Victoria are to deliver sustainable urban development, contribute to improving housing affordability, create prosperous communities and promote excellence in design.

Places Victoria has extensive experience in urban development, ranging from comprehensively planned outer suburban estates to complex redevelopments in the established urban area. In its 28 years, Places Victoria has developed and sold over 35,000 residential lots.

Aurora aims to raise the benchmark within the property development industry by demonstrating new and innovative ways to manage our finite resources. Aurora will be a pioneer in the reuse of water and energy efficiency. Places Victoria aims through demonstration to encourage private industry to replicate its sustainable practices.

Like sustainability, Aurora will evolve over time. The goal of Aurora is to push continuously toward more sustainable land, community and built form outcomes. The initiatives that Aurora implements today will continue to evolve and change over time as new technology allows Places Victoria to improve its practices. Places Victoria is confident that Aurora will be a model development for the future, both now and through its life.

2 SITE CONTEXT AND ANALYSIS

2.1 PLANNING POLICY AND STATUTORY CONTROLS

The Aurora Development Plant Part 2 is generally in accordance with the relevant Planning Policy and Statutory Controls affecting the land. A full assessment of all relevant Planning Policy and Statutory Controls can be found in **Appendix E**.

2.2 NATURAL ENVIRONMENT

A full assessment of flora, fauna and conservation significance completed by Biosis is provided in **Appendix F**.

2.2.1 Topography, Soils and Drainage

Aurora is typical of the relatively flat volcanic plains of the north and west of Melbourne. The subject land is slightly undulating, falling generally from RL 193 metres at the northern end on Craigieburn Road East to RL 143 metres in the south east corner at O'Herns Road.

From the high point in the north, a number of subtle ridges extend generally in a north-south direction, including a number of stony rises that are important features and add to the topographic relief of the subject land and surrounds. Two particularly strong ridgelines are evident - one in the north west of the subject land, straddling the Vearings Road reservation and the other a linear complex of stony rises between Harvest Home Road and O'Herns Road west of Edgars Creek. There are a number of other stony rises and locally steep sections of land adjacent to the watercourses however, the subject land is gently sloping, with the majority grading at less than 3 per cent.

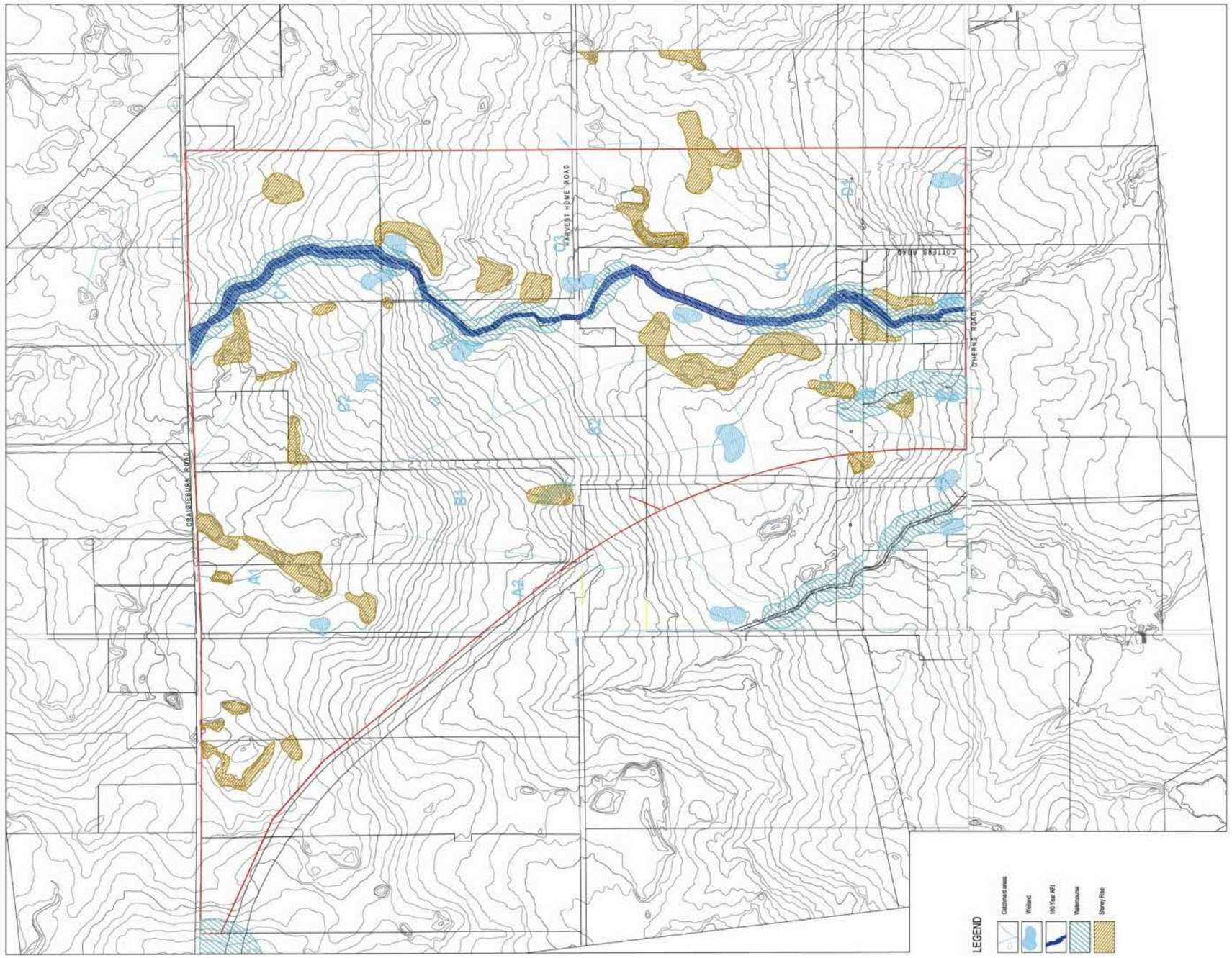
The parent geology is basalt, which produces soils that are high in clay content, fertile and often seasonally waterlogged in flat, low lying situations. Although variable across the subject land, there is a high presence of surface rock as well as indications of shallow sub-surface rock.

Aurora is located in the upper reaches of the catchment of Edgars Creek which runs north-south through the centre of the subject land. Edgars Creek is part of the larger Merri Creek Catchment. Merri Creek is approximately 2 kilometres to the west of the Craigieburn Bypass.

The form and intermittent flow rates of Edgars Creek are typical of the watercourses that run through much of the western volcanic plains. Within Aurora, Edgars Creek is an ephemeral waterway with highly intermittent flow levels resulting from the relatively low rainfall levels of the district, the location of the subject land at the top of the limited catchment of Edgars Creek and the mostly gentle slope characteristics of the subject land and surrounds. It is only slightly incised into the landform for most of its length within the subject land and therefore, only a few locations exhibit a strong creek form.

Throughout most of the year, Edgars Creek is a dry, shallow and ill-defined creek bed with occasional ephemeral pools. Several small and ill-defined tributaries of Edgars Creek are also found in the western portion of the subject land. Portions of Edgars Creek have been channelled and redirected, such as a section south of Harvest Home Road where the Creek bed has been channelled into a straight line through very flat land. There are also a number of small dams located on the subject land.

Generally, the drainage of the subject land is not highly concentrated into depressions or gullies and consists mostly of 'sheet flow' to the south.



Topography, Soils and Drainage

2.2.2 Landscape and Visual Character

The majority of Aurora has been cleared and grazed. There are a number of prominent stands and individual specimens of River Red-gums (Eucalyptus camaldulensis) and other indigenous tree species, especially in the north west of the subject land. Many of the remnant River Red-gums are hundreds of years old and contribute to the sense of place and local character. The recent years of drought however, have caused deterioration in the condition of the trees.

The stony rises are important visual elements that also contribute to a sense of place. The stony rises are considered to be the source material for many of the dry stone walls and stone buildings of the district. Apart from their visual features and importance as flora and fauna habitat, some of these stony rises contain sites of Aboriginal importance.

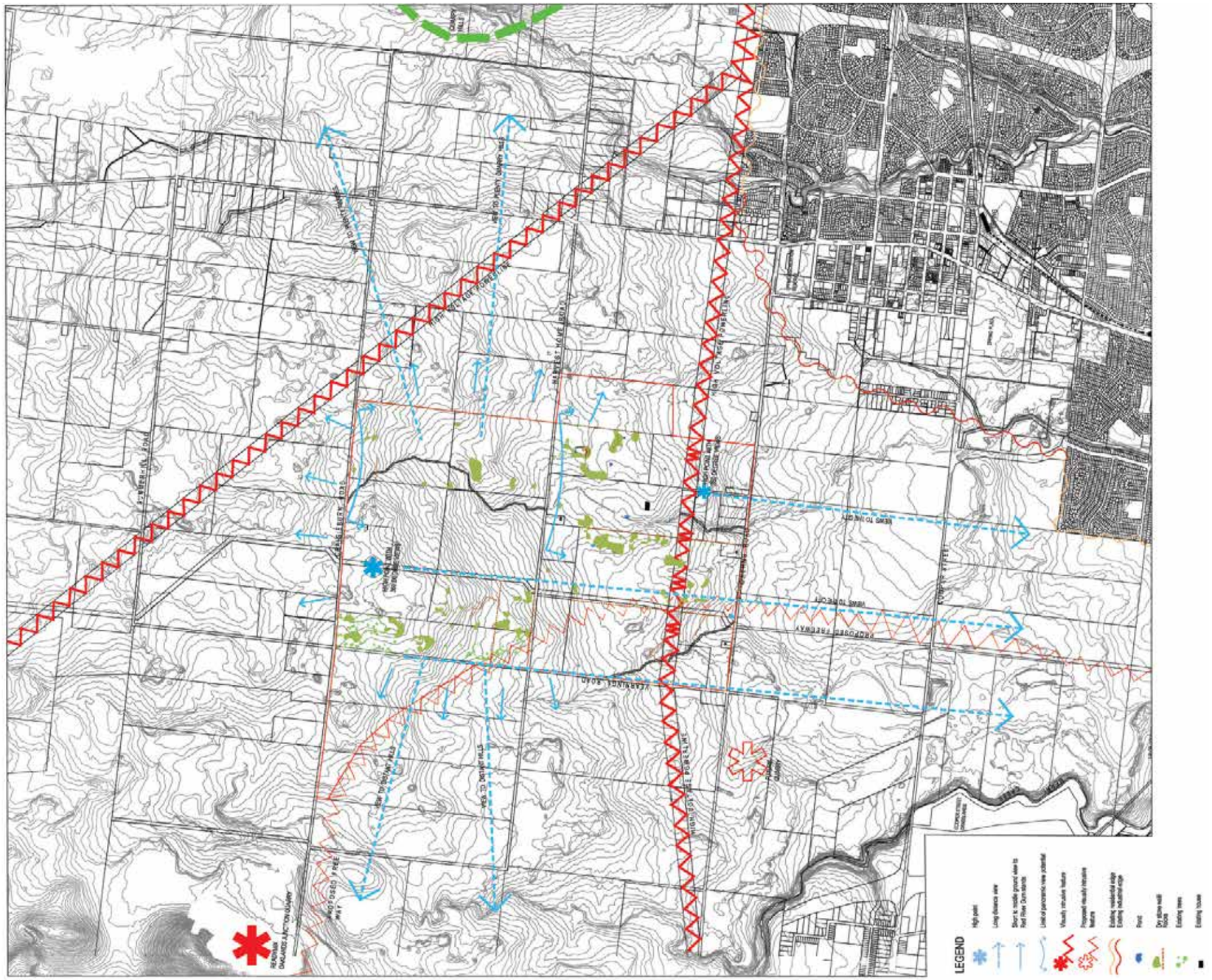
The open character of the subject land provides the following long distance views from the higher areas.

- Plenty Ranges to the north.
- Quarry Hills to the east.
- Dandenong Ranges to the south east.
- The skyline of the central activities district to the south.
- Macedon Ranges to the west.

The views to the skyline of the Melbourne central activities district are particularly attractive, with the rural foreground providing somewhat of a screen to the industrial land to the south. Many of the above long distance views will be limited once development of the subject land occurs. Conservation public open space, Edgars Creek and the street alignments will then provide important opportunities for distant views.

A number of complexes, incorporating a variety of farm buildings, dry stone walls and pockets of exotic vegetation, contribute to the historic character of the subject land and can provide strong visual elements in the landscape. Stands of pines, peppercorns and other large exotic trees create visual highlights around the existing and former farm complexes.

Powerlines extend east-west through the southern portion of the subject land. While the towers and cables are visually dominant at close range, they are less obtrusive when viewed from the north as the foreground to the distant views to the skyline of the Melbourne central activities district.



Landscape and Visual Character

2.3 CULTURAL HERITAGE

A summary of the detailed assessment undertaken by Biosis in relation to both Aboriginal and European History on the Development Plan is provided in **Appendix G**.

3 ASSESSMENT OF SERVICES AND FACILITIES NEEDS

3.1 LAND BUDGET

The land budget for Aurora is described in the table below. It is acknowledged that the outcomes associated with preparation of flora, fauna and habitat hectare assessments may reduce the assumed development potential of the land holdings not surveyed for flora and fauna values.

	Land Area (ha)
A - Division Area (All land holdings)	**592.37**
B - Encumbered Land	**114.31**
Power Easement* (includes 2.76ha retarding basins)	13.81
Gas Easement* (land within POS)	1.64
Edgars Creek* (includes 1.91ha retarding basins)	21.58
Retarding Basins	1.11
Conservation Areas	57.43
Gas Easement (remainder not in POS	5.96
Land for Arterial Road Widenings not required for ADP2 (All)	3.47
Transit Corridor	9.31
Gross Developable Area	**478.06**
C- Unencumbered Open Space	**50.31**
POS Passive/Unstructured Rec	31.17
POS Active/Structured Rec	19.14
Net Developable Area	**427.75**
D - Community Facilities	**21.05**
Educational Facilities	20.65
Library	0.40
E - Community Activity Centres	**1.60**
Gross Residential / Commercial Area	**405.10**
F - Approximate Number of Dwellings	**7292**
G - Approximate Projected Total Population	**21,889**

*Land may be developed for public open space purposes subject to the approval of the responsible authority

3.2 POPULATION

Aurora (including Section A) has an expected yield of approximately 8500 dwellings. Based on the population projections of the Department of Sustainability and Environment and the demographic trends of adjoining suburbs, the average household size is anticipated to range from 2.9 to 3.1 people per household, translating to an expected maximum population of approximately 25,000 people at Aurora.

Places Victoria anticipates that a significant proportion of the population of the subject land will be drawn from the primary catchment areas of Preston, Fawkner, Reservoir, Bundoora, South Morang, Epping, Lalor, Mill Park and Thomastown and has used the demographic trends in these areas as a partial indicator of the future demographic profile of Aurora. The sustainability features and range of dwelling types proposed in Aurora however are also expected to attract people from outside the primary catchment area. This group will represent a wider cross section of the new housing market and provide a more balanced mix of households than has been the case typically in the outer suburbs.

3.3 HOUSING

In May 2014 the State government released Plan Melbourne, which is its metropolitan planning strategy to guide Melbourne's growth to 2050. At a strategic level Plan Melbourne highlights the need to encourage greater levels of affordable housing with a focus on encouraging the integration of social and affordable housing options within major-urban developments and growth area housing developments. Plan Melbourne Initiative 2.1.4 states the following:

- *Develop More Diverse Housing in Growth Areas.*
- *To accommodate a changing population and to assist affordability, a range of housing types need to be provided in Melbourne's newest suburbs.*

The proportion of households living under some degree of housing stress continues to grow, with those households living in outer suburbs particularly subject to such stress. While dwelling prices in the outer suburbs are more affordable than those in the inner suburbs, the accessibility to services and facilities is generally restricted. The cost of transport, in particular running one or more vehicles, to meet basic needs such as work, education and obtaining food, precludes other uses for a portion of the household budget and contributes to stress. A development that provides convenient and attractive walking / cycling distances to meet basic needs will reduce the costs associated with transport and hopefully household stress.

There will be a sustained growth in demand for dwellings to meet the needs of a wide variety of family and individual living arrangements. Places Victoria recognises that the downward trend in household size does not always translate into a demand for smaller dwellings. For example, a non-custodial parent may form a one person household for the majority of the time but require additional bedrooms to accommodate children who visit regularly. Likewise, older adults are likely to prefer additional bedrooms to accommodate for example, alternative uses, visiting grandchildren or to provide for the contingency of a future live-in carer (permanent or respite).

Greater dwelling choice, including smaller dwellings, also creates the opportunity for existing family and social networks to remain intact by encouraging the families and friends of the traditional occupiers of new developments - young couples and families - to join them. This contributes to the social and cultural diversity aspects of sustainability.

3.4 SOCIAL INFRASTRUCTURE

The provision of social infrastructure within the Aurora Development Plan Part 2 area was undertaken as part of the original assessment of the Development Plan.

The detailed outcomes of this assessment are provided in **Appendix H**.

In summary, the following social infrastructure is planned for within the APD2 area:

- Three Community Activity Centres, with the provision of a fourth if required;
- Three State Government primary schools;
- One State Government secondary school;
- Two independent primary schools; and
- A walking and cycling network linking key facilities and services.

A Community Development Strategy (CDS) will also be undertaken by Places Victoria in conjunction with Council and other relevant service providers.

3.5 RETAIL AND COMMERCIAL

The projected trade areas for retail and commercial facilities within Aurora as defined in MacroPlan Dimasi's 2012 report is demonstrated in the map on the following page. Four distinct sectors have been established for the purpose of this analysis, being:

- Aurora North
- Aurora South
- Lyndarum, comprising the existing Lyndarum Town Centre and future Epping
- North East Town Centre; and
- Wollert.

The sectors for Aurora North and Aurora South have been established as the likely future trade areas for each of these centres. The Lyndarum Sector to the east contains both the existing Lyndarum Neighbourhood Centre, and the planned Epping North East Neighbourhood Centre both of which will contain a single supermarket.

The Wollert sector to the north comprises the Wollert Precinct Structure Plan area, which is currently under preparation. The Wollert precinct has been excluded from the future catchment of Aurora and it is anticipated that the Wollert MTC, and a supporting network of Local Town Centres will provide an appropriate level of retail facilities to support this future community of in excess of 33,000 people.

Similarly, the future population at Wollert has not been relied upon to support future retail facilities within Aurora. A variety of retail and commercial facilities will be required to serve the residents of Aurora as there are no existing retail facilities within the primary sector of the projected Aurora trade area. In addition to the sectors outlined above, strong competition exists on the fringes of the projected Aurora trade areas, particularly from Epping Plaza and Westfield Plenty Valley, the two existing subregional centres in the region. Other potential competing centres include Greenbrook Shopping Centre, Lalor Shopping Centre, Campbellfield Kmart Centre, Roxburgh Park Shopping Centre, Cragieburn Plaza and Cragieburn Town Centre.

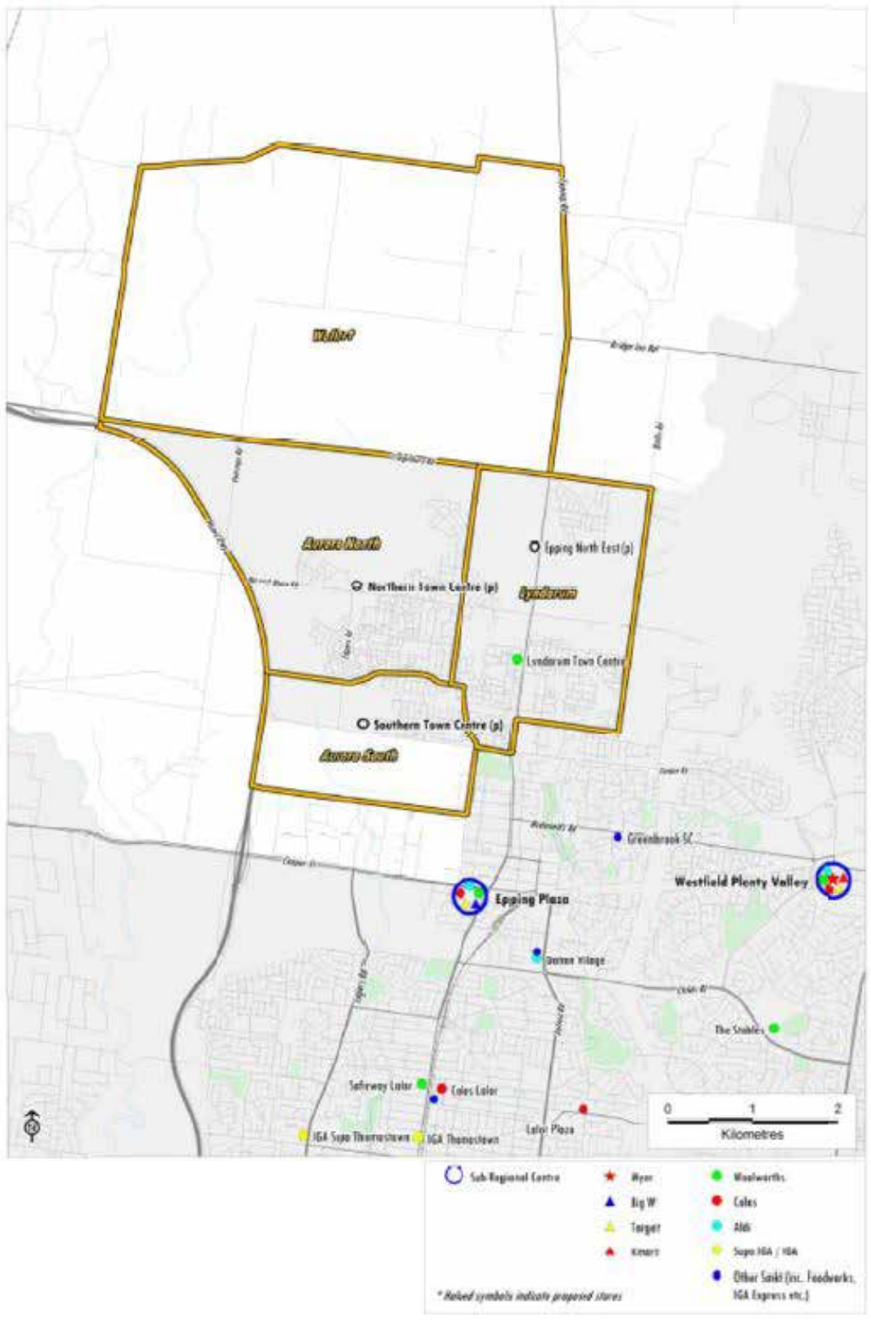
Despite the advantages of anticipated strong population growth and good road access in the Aurora location, the quality of retailing, both in terms of the physical fabric of the Town Centres as well as the type of tenants in the centres, will need to be high for the centres to thrive against retail competition located just beyond the projected primary trade sectors.

The MacroPlan Dimasi report recommends that the full development of Aurora will support the following hierarchy of retail facilities:

- A northern primary activity (town) centre of approximately 21,500 square metres of retail floorspace. This centre is likely to ultimately include two supermarkets and a discount department store, and additional retail and non-retail specialities. It was anticipated that by 2015, the population level would be sufficient to support a large neighbourhood centre of 6,500 square metres, anchored by a full-line supermarket. The second stage of development of the centre could be supported by 2021, expanding the centre to its ultimate size.
- A southern Town Centre comprising approximately 8,500 square metres of retail floorspace. This centre will accommodate a full scale supermarket, and additional retail and non-retail specialities, as well as significant commercial and potentially bulky goods retail focused around the Edgars Road and O'Herns Road intersection.
- A number of local activity (small convenience) centres to provide for the convenience based shopping needs of residents in the immediate vicinity. The MacroPlan Dimasi Report recommends that approximately 5,000 square metres of retail floorspace be allocated to such centres throughout the Lyndarum, Aurora North and Aurora South sectors.

The ADP2 also outlines areas for secondary Activity Centres in the land north of O'Herns Road, and south of the Power Transmission Line easement which runs through the south of Aurora.

These precincts create the opportunity for a mix of highway- based commercial uses to establish along O'Herns Road, and a mixed-use business park precinct to be developed to complement the southern Town Centre, and surrounding medium density residential development which has already commenced development.



3.6 TRANSPORTATION

Traffic and transportation needs have been considered as part of the original assessment of the Development Plan. Background of these needs is shown in Appendix I. Updated traffic modelling will be required for all major developments and subdivisions within the ADP2 area to reflect the extension of the Urban Growth Boundary to the satisfaction of the Responsible Authority.

In summary, the following key transportation projects are proposed in ADP2:

- Extension of the Epping Rail line from Lalor to Aurora with the future extension through to Wollert and possibly Donnybrook is planned
- Access onto the Craigieburn Bypass at O'Herns Road, along with the existing interchanges already constructed
- Extension of Edgars Road from Cooper Street through to Craigieburn Road.

3.7 ENGINEERING INFRASTRUCTURE

3.7.1 Water Supply

It is understood that all of the existing dwellings on the subject land rely either on rainwater tanks or small diameter private main extensions for water supply. A new water main in Harvest Home Road will supply reticulated water to meet the requirements of Aurora.

3.7.2 Drainage

As noted previously, Edgars Creek is an ephemeral stream that flows through Aurora from north to south. It is ill-defined in some sections and has been badly degraded. There are several natural minor tributaries, the most significant of which are the Edgars Creek Western Tributary and the Eastern Tributary. Some of the tributaries have been modified over time by the land owners to suit specific requirements however, none of these works will form part of the proposed drainage scheme.

3.7.3 Sewerage

The main constraint to the development of Epping North has been the lack of sewerage infrastructure. The metropolitan sewerage system has been extended progressively outward from the Melbourne central activities district. These extensions, which were planned and designed about 50 years ago, did not anticipate that urban growth would extend as far as it has done. As a result, the capacity of the system at the fringes of urban growth is limited. The implication of continuing to add more development to the existing sewerage infrastructure is a higher potential for sewage spills to the environment.

A sewerage infrastructure strategy has been finalised for Epping North. The design of the critical components is underway with construction anticipated to commence in 2005. The sewage and recycled water treatment facility on the south side of Craigieburn Road East, west of the Craigieburn Bypass, and associated reticulation will be of sufficient capacity to meet the requirements of Aurora.

3.7.4 Other Services

Telecommunications and electricity are available to the existing dwellings on the subject land but are of limited capacity. Provision has been made for telecommunications and electricity to be upgraded to Section A (the ADP1 area) of Aurora. Mains gas is available in O'Herns Road and Harvest Home Road. All of the above services will be of sufficient capacity to meet the requirements of Aurora.

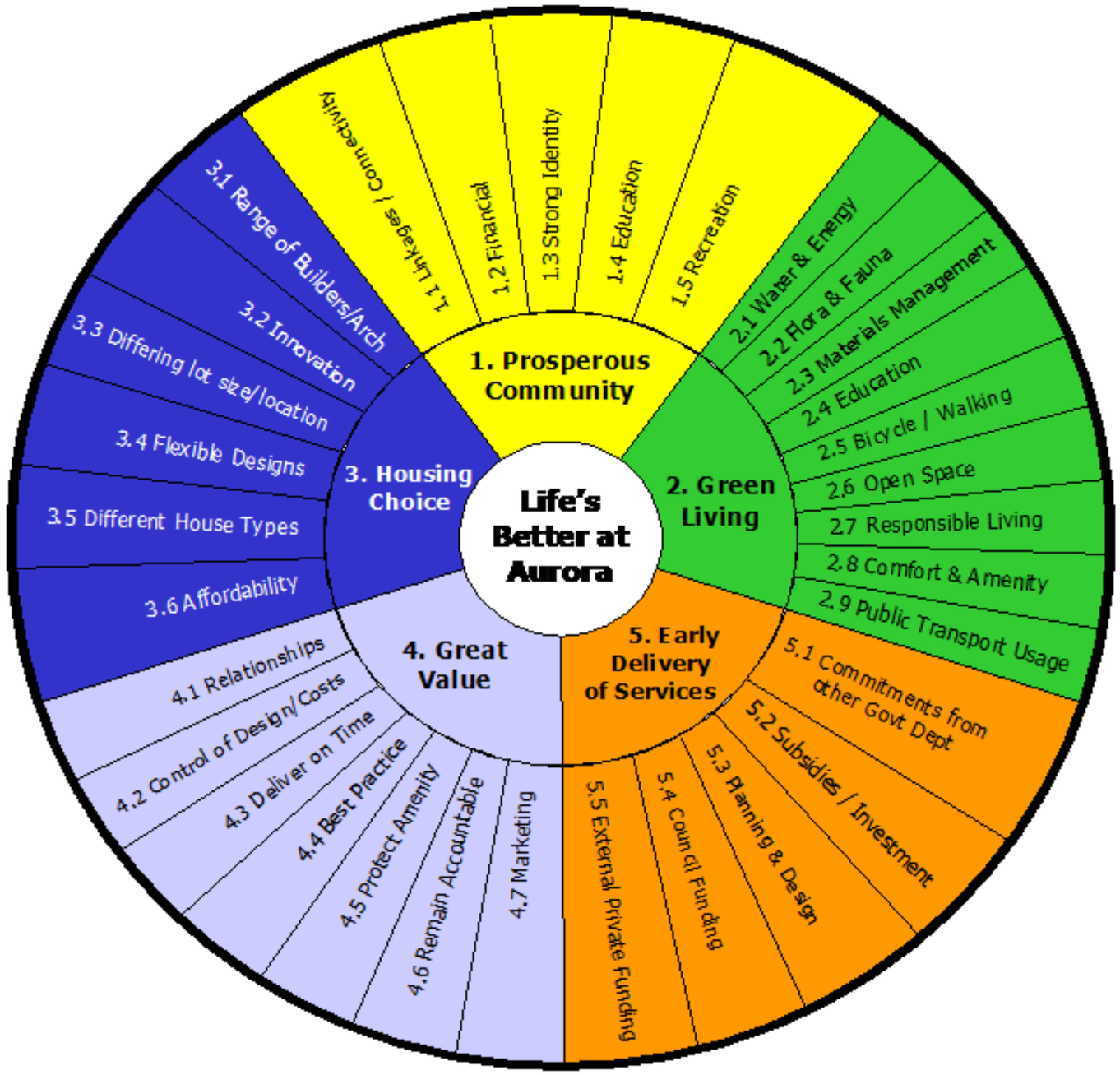
4 GUIDING PRINCIPLES

4.1 GUIDING PRINCIPLES

The Places Victoria project team are committed to the following guiding principles for Aurora:

- prosperous community;
- green living;
- housing choice;
- great value;
- early delivery of services.

The following chart summarises the meanings of the guiding principles and the actions required to deliver each principle.



5 DEVELOPMENT PLAN OBJECTIVES AND RESPONSES

5.1 SUBDIVISION DESIGN AND LANDSCAPE CHARACTER

5.1.1 Objectives

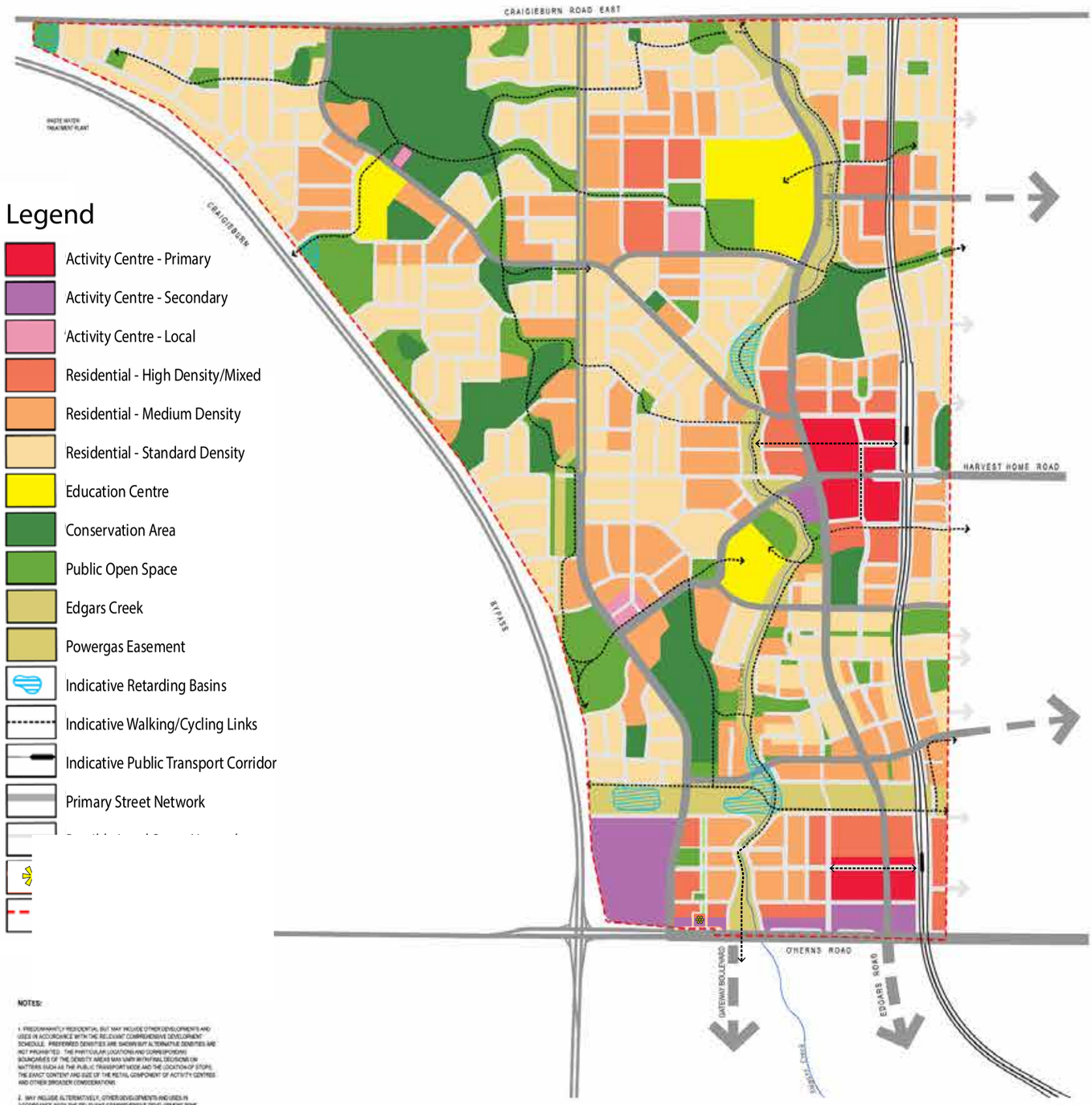
The functions of Places Victoria , as described in the Victorian Urban Development Authority Act 2003, include "t*o promote best practice in urban and community design and development, having regard to links to transport services and innovations in sustainable development.*" (Section 7(1)(d)).

The urban design of Aurora is guided by the following principles of sustainable urban development. The development:

- is dense enough to promote mixed use and is walkable enough to support a good, reliable public transport system;
- provides a range of housing options;
- provides accessibility for all ages and abilities and promotes a healthy lifestyle through design which encourages walking and social interaction and allows for participation by all in the knowledge economy;
- provides locally-based employment opportunities;
- is sensitive to the local environmental and cultural values from which it derives its sense of place;
- is solar-oriented and uses both passive and active solar design principles;
- has high quality landscape treatment of the public realm including 'streets' not roads.

5.1.2 General Urban Design Response

- The general urban design response of Aurora to the above principles is as follows. The detailed design of Aurora will provide more specific responses to those principles.
- The dwelling density at Aurora will be significantly higher than 'conventional' subdivisions in the outer areas of Melbourne. Targets of 14 lots per hectare will apply in conventional residential areas , 20 lots per hectare will apply in medium density residential areas and 27 lots per hectare in high density residential areas.
- The overall density at Aurora will be significantly higher than 'conventional' subdivisions in outer areas of Melbourne. With research showing that the population density required to support high quality public transport is in the order of 50 people per hectare, the net dwelling density in Aurora will be around 19 dwellings per hectare to facilitate opportunities for high quality and sustainable public transport.
- Aurora will comprise a number of subtly discernable districts based on natural features, open space treatment, plan form, and architectural character. Each district will have a 'core', such as a local activity centre, around which higher density development will be constructed.
- The urban form will support 'walkability' by providing higher density development closer to the primary activity centres, as well as being extremely 'permeable' to pedestrian travel.
- The proposed lot mix will range from approximately 180 to 650 square metres, with encouragement for a range of housing options. In some particular areas, such as around town centres and public open spaces, it is intended to provide alternative dwelling types, including apartment-style housing, at a denser level than that noted above. A small number of larger lots are also envisaged. This range of lot sizes and densities will reinforce the range of housing options throughout Aurora.
- High levels of accessibility will be provided throughout Aurora, with the permeability and density of the urban form promoting walking and cycling.
- Subject to detailed design and feasibility, it is intended to provide a fully connected and 'wired' Aurora, including its own community intranet.
- Employment opportunities will be available within the Cooper Street Employment Area to the south, as well as in the town centres and commercial precinct proposed for Aurora.
- The environmental and cultural values of the subject land will be protected and reinforced. The sites of greatest ecological value will be protected. Cultural heritage elements such as Aboriginal archaeological sites, dry stone walls, historic buildings and homestead vegetation will be integrated into the design as far as possible to reinforce the unique sense of place of the subject land.
- The north-south grid of streets will maximise the potential for solar access, while a commitment to a minimum six-star energy rating for dwellings will ensure active and passive solar technologies are adopted.
- The landscape throughout the public realm of Aurora will be of high quality and incorporate a range of environmentally sensitive initiatives, including a high level of native species and water sensitive urban design.



AURORA
DEVELOPMENT PLAN PART 2
Rev A : 2016

Places Victoria

Places Victoria

5.1.3 Subdivision Design

(a) Street Orientation

The overall street orientation of Aurora is based on a loosely defined north-south / east-west grid with minor deviations to accommodate a range of natural / cultural features and to facilitate traffic movement to the town centres. This approach to the street network provides:

- strong interconnectedness to allow maximum choice of routes through the neighbourhoods;
- highly integrated streets to distribute local traffic;
- neighbourhoods that are integrated with surrounding ones, creating the opportunity for strong neighbourhood social connections to occur;
- maximum solar access for the lots and dwellings;
- interesting highlights in the urban form where the street pattern deviates from the grid.

The grid proposed provides the framework for a broad range of lot sizes and types, including lots with front and rear vehicle access.

(b) Arterial and Neighbourhood Connector Streets

The arterial and neighbourhood connector street network of Aurora is a loose grid generally spaced between 600 and 900 metres.

There are three east-west arterial streets - Craigieburn Road East, Harvest Home Road and O'Herns Road. Craigieburn Road East and O'Herns Road provide connections to the regional road network to the east and west, while Harvest Home Road will terminate east of the Craigieburn Bypass. Harvest Home Road is an important secondary arterial however, as it will connect Aurora and any development to the east to the northern primary centre at its intersection with Edgars Road. West of Edgars Road, Harvest Home Road will deviate to the south west to create a direct connection to the local activity centre at the intersection with Scanlon Drive.

There are two north-south arterial streets - Edgars Road and Scanlon Drive - that connect Craigieburn Road East and O'Herns Road. At the southern end, Edgars Road deviates from the alignment proposed through the Cooper Street Employment Area to facilitate a grade-separated crossing of O'Herns Road by the future railway line. North of Harvest Home Road, Edgars Road curves to the west to avoid a stony rise and maximise the opportunity for high density, mixed uses to surround the northern town centre. Between Craigieburn Road East and Harvest Home Road, Scanlon Drive aligns with the easement associated with the transmission gas main.

There are two north-south and two east-west neighbourhood connector streets between Craigieburn Road East and Harvest Home Road. There are three east-west neighbourhood connector streets between Harvest Home Road and O'Herns Road. These streets connect the neighbourhoods, help to distribute traffic more evenly through the subject land and provide east-west access to the education centres.

In the north west of Aurora, a diagonal neighbourhood connector street extends along to the edge of the conservation area, crosses Scanlon Drive and connects to the northern primary activity centre. An east-west neighbourhood connector street in the north east provides a direct link between Aurora and the Epping North East Local Structure Plan area. An east-west neighbourhood connector street in the south east of the subject land provides a connection between the future development in the ENLSP area and the southern primary activity centre, through Section A of Aurora.

(c) Access Streets

The finer grain of access streets throughout Aurora reinforces an overall north-south / east-west grid. Deviation from this grid occurs, as noted above, primarily to facilitate the retention of a number of natural features of the subject land, including:

- existing trees in the north west;
- a number of stony rises;
- the curved alignment of Edgars Creek;
- topographic changes.

The only other deviation of access streets from the grid is around the diagonal neighbourhood connector streets that lead towards the primary activity centres.

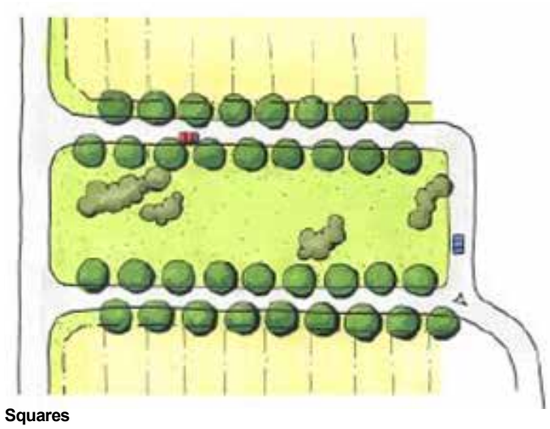
The access street network is generally comprised of 16 metres wide reserves and is designed to:

- accommodate pedestrians, cyclists and vehicles;
- provide for on-street parking;
- control vehicle speed by street length, on-street parking intensity and variation in width and alignment.

Within these broad parameters, a variety of access street treatments will be developed as part of the detailed design of each section and stage of subdivision. These treatments, which may include central medians, wider verges and swales, will create streetscape diversity in the neighbourhoods.

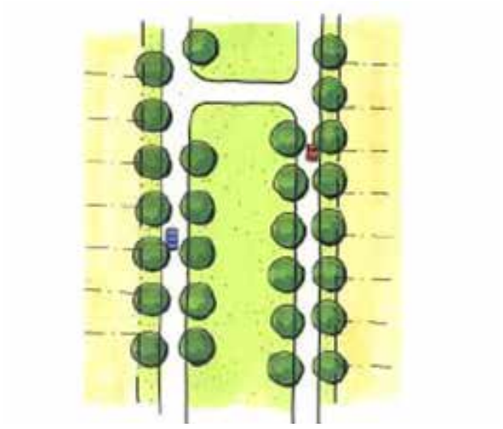
Closer to the town centres, a wider access street form is proposed within an 18 metres reserve. This street form allows for through traffic while accommodating parking on both sides of the street. The access streets also provide continuous travel links parallel to Edgars Road, particularly around the town centres.

All access streets within Aurora will provide footpaths on both sides of the street.



Squares

Small local open spaces



Generous Medians

Widened Road Reserves

(d) Access Lanes

In a number of locations it is desirable and proposed to have housing forms with garages accessed from the rear of lots and consequently access lanes. The provision of access lanes creates the opportunity for higher order streets with streetscapes that are free of garage doors and driveway crossovers. This form of streetscape has the potential also for a higher level of passive surveillance due to the increased number of dwellings fronting each length of street.

While the density and urban design benefits of access lanes are clear, they will be designed carefully to ensure safety and security. The access lanes are relatively short in length and provide no 'hiding places' that would compromise personal security. Careful attention to lighting will ensure clear views at night through the access lanes.

The creation of garage-top housing, in the form of small studio apartments, will be encouraged along the access lanes, particularly on corner lots where the dwelling can contribute to the surveillance of the lane. These housing forms will provide greater dwelling choice at Aurora.

(e) Lot Sizes

As noted earlier, dwelling density is a critical issue in relation to sustainability, particularly to achieve high quality public transport provision. Aurora will provide higher densities (180 to 300 square metres) lots and apartment-style dwellings (100-150 square meters) within the walkable catchments (800 metres) of the primary activity centres , public transport stations / interchanges and district cores.

The dwelling density will decrease generally as the distance from the primary activity centres and stations / interchanges increases. The majority of lots will be in the range of 300 to 500 square metres, however there will be opportunity for smaller lots (180 to 300 square metres) to be located close to facilities such as public open space.

While the largest (500 to 1000square metres) lots will be interspersed throughout Aurora, they will be minimised within the walkable catchments of the town centres and stations / interchanges.

A diversity of lot sizes can assist in providing choice and consequently an opportunity for a variety of dwelling and household types.

(f) Lot Orientation and Dimensions

The quality of solar access to lots is determined strongly by the lot shape and orientation (and of course by building siting and design). The orientation has already been noted as being generally north-south or east-west but the shape and proportions of the lots will also respond to solar access requirements.

The detailed design of dwellings in Section A of Aurora has concluded that a six-star energy rating is best achieved on east-west lots for detached dwellings and north-lots for terrace and semi-detached dwellings.

The broad parameters that have been adopted in the creation of lots are shown below. The figures are indicative only and will be refined as part of the detailed design of each stage of subdivision.

Car parking to all dwellings will be provided in accordance with the requirements of the Scheme. Double garages at the main street frontage will be only provided generally where the lot width is 12.5 metres or greater. Single garages at the main street frontage will be provided generally where the lot width is less than 12.5 metres.

LOT ORIENTATION / TYPE	INDICATIVE LOT WITDH (metres)	INDICATIVE LOT DEPTH (metres)
North-south lot with front access (garage at main street frontage)	10.5+	25+ on north side 28+ on south side
North-south lot with rear access (garage at rear on access lane)	6.5 - 10.5 (minimum of 9.5 on corners)	30+ on north side 32+ on south side
East-west lost with front access (garage at main street frontage)	12.5+ (minimum 10.5 with single garages and duplex houses)	25-32
East-west lot with rear access (garage at rear on access lane)	Minimum 7.5 (minimum of 9.5 on corners)	30-32

5.1.4 Landscape Character

(a) General Landscape Response

The local character of Aurora is greatly influenced by its natural and cultural landscape character elements. These elements will be incorporated into the landscape design, in order to help develop a local sense of place.

The sustainability objective of Aurora and the proposed dwelling density generates additional opportunities for the landscape character of the public realm, including the following.

- The ability to reuse and recycle water on the subject land will provide the potential through irrigation for greater species diversity and a verdant appearance during dry periods.
- Passive solar heating / cooling requires access for sunlight into rooms in winter and shade in summer. Effective capture of solar energy for conversion to electricity requires uninterrupted access to the sun throughout the day. This requires appropriate built form as well as the use of suitable street trees, which will influence the landscape character of the streets.
- Some locally indigenous tree species, such as River Red-gums, are not appropriate for use as street trees due to their scale, form and tendency to drop limbs. Other species have not had a proven track record in streetscapes or have not been grown commercially in the numbers required for a development the size of Aurora. It may be necessary therefore to use non-indigenous native trees and exotic trees in appropriate settings.
- Recycled or renewable materials and resources will be used in the landscape construction and represent sustainable materials with low embodied energy, low toxicity and the lowest discernible energy costs associated with transportation

(b) Arterial Streets

The intent of the landscape approach to arterial streets is to provide legible, clear pathways through and around Aurora for motorists, cyclists and pedestrians.

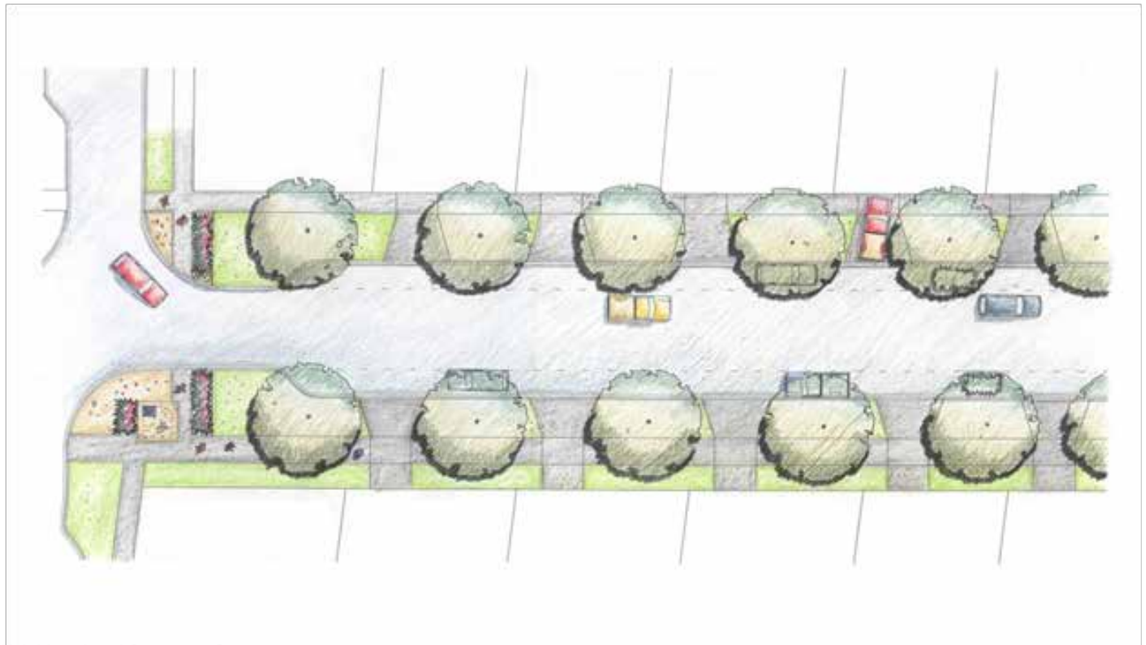
Central medians and wide verges provide the opportunity for strong avenue planting of native trees and Water Sensitive Urban Design (WSUD) treatments, where practicable. Deciduous trees may be used in the northern and southern town centres to provide greater solar access during winter. Indigenous shrubs, groundcovers and grass species may be used as accent plantings. In the town centres, a more urban form of streetscape will include hard-paved or gravel areas and the provision of street furniture and public art.

(c) Neighbourhood Connector Streets

The intent of the landscape approach to neighbourhood connector streets is to reinforce the hierarchy of street types at Aurora while providing flexibility in the design to respond to particular circumstances, such as wider footpaths near educational facilities.

There is the opportunity for strong avenue planting of native trees and the use of deciduous trees in the town centres. Indigenous shrubs, groundcovers and grass species may be used as accent plantings at key points. WSUD treatments may also require space for swales and drainage courses.

Arterial Street



Neighbourhood Connector Street

(d) Access Streets

The majority of streets within Aurora will be access streets. The intent within these streetscapes is to provide a comfortable, domestic-scale landscape treatment where landscape and urban design cues will be used to alert motorists to slow down.

A relatively high density of street trees will be used in access streets with a variety of species to create a sense of neighbourhood identity and control the microclimate. The species will be predominantly non-indigenous native trees with the potential to use deciduous trees on east-west streets. Shrubs, groundcovers and grass species may be used as accent plantings and street furniture may be incorporated at key points.

As with the arterial and neighbourhood connector streets, WSUD treatments may also require space for swales and drainage courses.

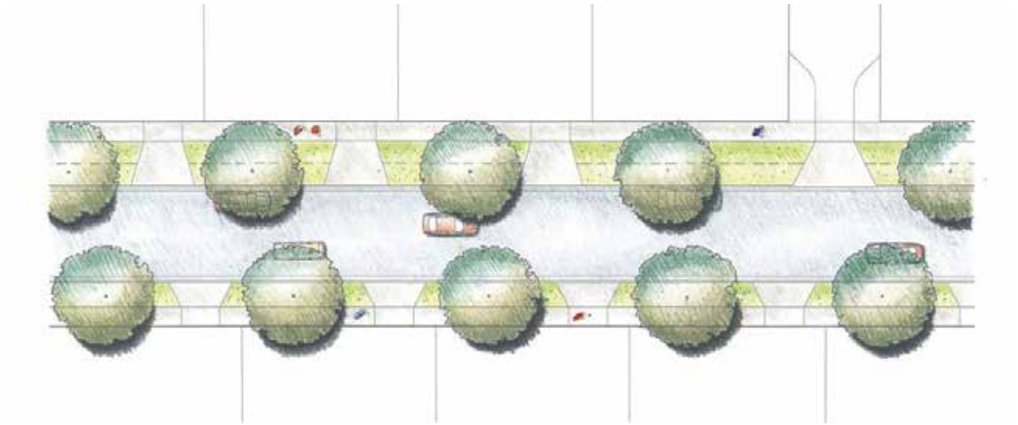
(e) Access Lanes

The intent of the landscape approach to access lanes is to provide clear and safe access for pedestrians, cyclists and motorists.

The access lanes will be paved predominantly but where space is available, small trees with robust ground covers or tufting plants around the base will be introduced to provide shade and visual softening.

(f) Street Trees

The selection of particular trees for each stage of subdivision will be refined and reviewed over time. An indicative list of species is provided in **Appendix J**.



Access Street

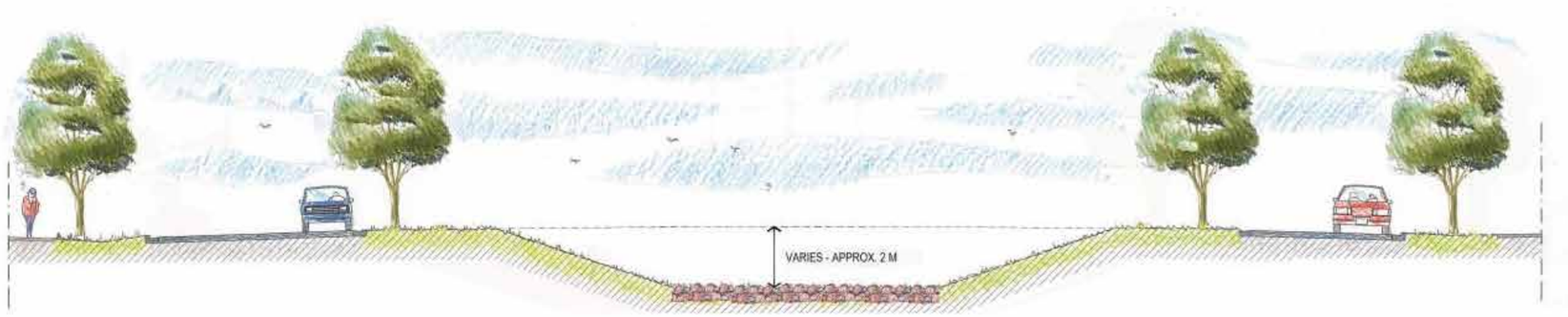
Access Lane

(a) Public Transport Corridor

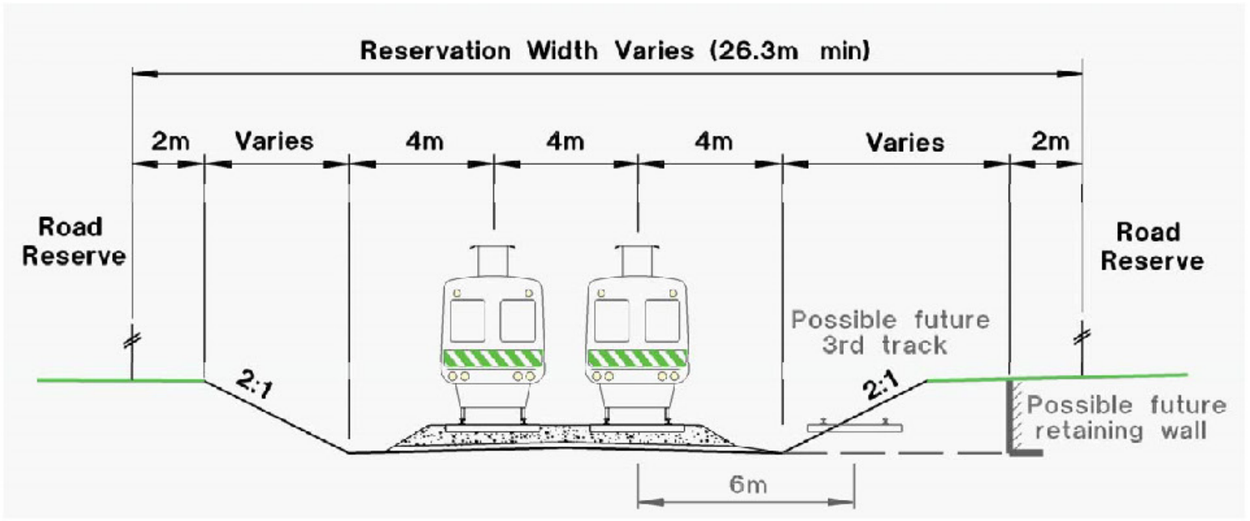
The intent of the landscape approach to the public transport corridor is to provide an attractive appearance until the railway line is constructed. Signs in the corridor will explain the future use of the land and that the landscape treatment is an interim solution.

The public transport corridor is 26 metres wide and abutted on both sides by streets for most of its length. An avenue of trees will be planted on each side of the streets with a grass 'median' in the centre.

The railway line is expected to be constructed approximately 2 metres below the abutting street levels. The landscape approach outlined above anticipates the retention of the avenues of trees, which may be quite mature when the railway line is constructed. The precise arrangement is subject to the agreement of the relevant Department of Infrastructure, in consultation with Council.



Public Transport Corridor



Typical Heavy Rail Cross Section

(Reproduced from 'Reservation of Land for the Epping North Transport Corridor", Department of Infrastructure, February 2007)

5.2 HOUSING

5.2.1 Objectives

The objectives of housing at Aurora are to:

- provide a greater level of housing diversity in order to facilitate a wider range of dwelling types, styles, forms and costs appropriate to the needs of the community and to maximise opportunities for entry into home ownership;
- provide a dwelling density to support more sustainable public transport and mixed use, walkable neighbourhoods;
- ensure that affordable housing, including rental housing, is integrated into Aurora and is well-located to public transport and other services;
- encourage architecture that reflects the overall sustainability objectives of Aurora while being flexible enough to evolve over time to incorporate future advances in technology;
- promote the delivery of well-designed, energy efficient housing that has low maintenance requirements and is cost efficient through its lifecycle;
- ensure that dwellings are flexible enough to adapt to the changing lifestyle preferences of the community;
- explore a range of tenure options with different housing providers, including the Office of Housing and community housing providers;
- ensure that dwelling siting and design is compatible with any Aurora design controls and guidelines.

5.2.2 Built Form

The proposed more traditional, 'inner urban' level of density means that the urban character of Aurora will be quite different from other developments in Whittlesea and on the fringe generally.

Another obvious difference in the urban character of Aurora will emerge from the philosophy that the overall 'look' must reinforce the commitment of Places Victoria to sustainability. This will result in all built form expressing a contemporary aesthetic, eschewing reproduction or period design to reinforce the difference of Aurora from other, less sustainable development periods.

An important component of the urban character will be the creation of 'sense of place' and individual identity throughout Aurora. A single builder will not 'build-out' Aurora so the built form will be diverse and will ensure that neighbourhood identity can develop as the suburb matures and evolves. Within this variety, it is the intention of Places Victoria to ensure high quality in the built form. A number of processes (refer Section 7 below) will be put in place to ensure a quality outcome.

5.2.3 Housing Tenure and Affordability

(a) Policy definitions and Applicability

Places Victoria defines affordable housing as "*well located housing that meets the needs of low income households (earning up to $60,000) in terms of cost, size, quality, security of tenure, safety and access to employment, services and facilities, and is available for purchase or rental without causing the household income stress.*"

City of Whittlesea Council adopted its Social and Affordable Housing Policy & Strategy 2012-2016 (SAHPS 2012) IN 2012. In it, affordable housing is defined as housing that is "appropriate for the needs of a range of low and moderate income households; and priced so that households are able to meet other essential basic living costs." Affordability of housing is an outcome of both the cost of housing (mortgage or rental payments) and the income of the household. Other costs associated with utilities, transport and adaptation are also important factors in determining affordability and which are set out in more detail in SAHPS 2012. Development proposals should make reference to SAHPS 2012 for further policy/guidance on benchmarking measures.

In addition to the above, reference should also be made to the following key documents as providing a framework for adaptable and accessible housing:

- City of Whittlesea's Disability Action Plan (2013-2016)
- City of Whittlesea Environmental Sustainability Strategy (2012-2022)
- Australian Network for Universal Housing Design and Rights and Inclusion.

(b) Places Victoria's Objectives

Places Victoria is charged under legislation to promote best practice in urban and community design and development, and its primary purpose is to demonstrate socially and environmentally sustainable urban development in its development of new communities across Victoria.

The functions of Places Victoria, as described in the Urban Renewal Authority Victoria 2003 include:

- to promote best practice in urban and community design and development in relation to the urban renewal projects, having regard to links to transport services and innovations in sustainable development (Section 7(1)(d))
- to promote housing affordability and housing diversity in relation to the urban renewal projects (Section 7(1)(f))

The Places Victoria Sustainability Charter – Creating Thriving Communities (2006) outlines the role of Places Victoria in demonstrating initiatives that will contribute to improvements in housing affordability and facilitating the delivery of housing that caters for the broadest range of households. Relevant objectives include the following:

- Demonstrating innovation in subdivision design and dwelling product development.
- Facilitating dwellings for purchase at low entry levels.
- Increasing the supply of affordable rental housing through innovative partnerships with the not-for-profit social housing sector and the Office of Housing.

Places Victoria intends to achieve the above objectives through the following contributions to improving housing affordability:

- Encouraging environmental and adaptable design to reduce the cost of dwelling construction and ongoing operating and maintenance costs.
- Partnering with government to achieve mixed income communities.
- Seeking partnerships with financiers to develop Shared Equity Home Loan products that increase access to home ownership.

(c) Community Development Plan/Strategy

The Aurora Community Development Plan or Strategy (CDP/S) to be prepared in conjunction with the City of Whittlesea and other service organisations, will include a housing diversity plan that will include the following range of actions for Aurora:

- preparation of an analysis of housing needs;
- provision of a diversity of lot sizes to encourage a range of housing options in response to the housing needs analysis;
- ensuring a proportion of dwelling and land packages are available and affordable for the target income groups identified in City of Whittlesea's SAHPS (2012);
- development of sustainable models for supply and management of affordable rental housing through partnership with at least one accredited non-for-profit housing provider.

The CDP/S will be produced prior to any further development occurring within any Primary or Local Activity Centre area.

5.3 ENVIRONMENTAL CONSERVATION

5.3.1 Objectives

The objectives of environmental conservation at Aurora are to:

- comply with relevant State and Commonwealth government biodiversity legislation and policy;
- avoid or minimise adverse impacts on flora and fauna.

5.3.2 Compliance with Biodiversity Legislation and Policy Context

(a) Environment Protection and Biodiversity Conservation (EPBC) Act 1999

The Commonwealth EPBC Act applies to actions of significant impact on matters of national environmental significance on all land tenures, as well as actions on or impacting on the environment of Commonwealth land. Under the EPBC Act, actions (unless exempt) require approval from the Commonwealth Minister for Environment and Heritage if they have, may have or are likely to have a significant impact on a matter of national environmental significance, including species and ecological communities listed under the EPBC Act.

The following species listed under the EPBC Act have been found on the subject land:

- Matted Flax-lily, which is listed as 'endangered';
- Golden Sun Moth, which is listed as 'critically endangered';
- Growling Grass Frog, which is listed as 'vulnerable'.

Several other listed species have been recorded within 5 kilometres of the subject land.

Aurora will be referred at the appropriate time to the Commonwealth Minister for Environment and Heritage for a determination as to whether approval is required under the EPBC Act.

(b) Flora and Fauna Guarantee Act 1988

Under the Victorian Flora and Fauna Guarantee Act 1988 (FFG Act), a permit is required from the Department of Sustainability and Environment (DSE) in some circumstances to 'take' listed flora species, species that are members of listed communities or protected flora.

Plains Grassland and Plains Grassy Woodland are listed communities and occur on the subject land. Stony Knoll Shrubland (Grassland) may be considered a listed community under the broad definition of Plains Grassland. Many of the species recorded on Aurora are protected flora and one listed flora species - Tough Scurf-pea - was recorded. Two listed fauna species - Growling Grass Frog and Golden Sun Moth - were recorded on Aurora.

All the necessary approvals will be sought from the DSE in accordance with the FFG Act.

(c) Native Vegetation Management Framework in Victoria

Biodiversity policy has been adopted by the State government. Victoria's Native Vegetation Management: A Framework for Action (the Framework) provides a strategic framework for the protection, enhancement and revegetation of native vegetation across Victoria and is incorporated into the Scheme. The Framework is based on the principle that there should be a net gain in the extent and quality of native vegetation throughout Victoria so that there is "*a reversal, across the whole landscape, of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain.*" There is a three-step approach to ensure net gain as follows:

- avoid adverse impacts, particularly through vegetation removal;
- if impacts cannot be avoided, they should be minimised through planning, project design and management;

for unavoidable vegetation loss, develop appropriate offset options.

Under the Framework net gain losses and offsets are assessed in terms of:

- 'habitat hectares', which is a measurement of habitat quality and quantity;
- tree protection and / or replacement for the removal of large and medium trees;
- revegetation for land and water protection.

Offsets can be achieved by improvements in the quality or extent of native vegetation in a selected 'offset area'. The conservation significance of vegetation to be removed is taken into account when offsets are determined. Much of the native vegetation within Aurora meets the definition of high to very high conservation value under the Framework.

Biosis Research Pty Ltd has completed a net gain (habitat hectare) assessment of Aurora, including Section A (January 2007). The study identified approximately 33.2hectares of native vegetation, comprising Stony Knoll Shrubland/Grassland, Plains Grassland and Plains Grassy Woodland.

Three hundred and eleven 'medium' to 'high' indigenous canopy trees have been identified within the study area. Approximately 308 'small' trees are also present. ADP2 alone contains 141 'medium' to 'very large' indigenous canopy trees and 231 'small' trees. At least 80% of all trees within ADP2 will be retained.

Development of Aurora will necessitate the removal of up to 7.8 hectares of native vegetation, which translates to 2.0 habitat hectares. A gain of 3.3 habitat hectares would be required to full offset this loss, when the conservation significance of the vegetation is considered. The proposed management of 25.5hectares of retained vegetation within the identified offset areas is predicted to yield a gain of 5.0 habitat hectares over a ten year management period. Woodland reserves within ADP2 and on nearby Places Victoria land will satisfy the tree protection and recruitment requirements for unavoidable removal of indigenous tress.

An offset management plan is under preparation. This plan aims to:

- Protect retained native vegetation and habitats and indigenous flora and fauna species during development of Aurora and into the future;
- Permanently protect populations of threatened flora and fauna species;
- Through vegetation protection, conservation management and improvement in vegetation quality, achieve a vegetation 'gain' in accordance with the principles of the Native Vegetation Framework (NRE 2002).

Key principles of the plan include:

- The offset areas will be suitably protected to ensure their permanent protection by means of on-title agreement, zoning and/or overlay provision including tree protection measures where necessary;
- Perimeter fencing will be established and maintained;
- Grazing will be prevented unless necessary for ecological purposes;
- Weed levels will be managed so that cover does not increase beyond current levels, and high threat weeds will be managed beyond legal duty of care;
- Fallen timber, logs and organic litter will be retained;
- Rabbits and foxes will be controlled.

(d) Draft Port Phillip and Westernport Native Vegetation Plan

The Draft Port Phillip and Westernport Native Vegetation Plan (the draft NVP) has been prepared to facilitate a strategic and coordinated approach to maintaining the quantity and quality of native vegetation in the Port Phillip and Westernport region. The draft NVP describes the biodiversity values of the region and provides guidance to local government on how clearing applications should be assessed based on regional priorities.

Native vegetation on the subject land is included with Vegetation Management Units (VMU) which are a 'very high priority' for retention. The draft VMU proposes that applications for clearing in any VMU be refused except for projects of state significance as determined at Ministerial level.

(e) Whittlesea Planning Scheme

As outlined in Section 2.1.6 above, the Scheme includes Aurora in VPO2. A planning permit is required generally to remove, destroy or lop native vegetation in VPO2. A planning permit is also required generally to remove, destroy or lop native vegetation under Clause 52.17 of the Scheme. In the circumstances specified in Clause 66 of the Scheme, the Department of Environment, Land, Water and Planning (DELWP, formerly DSE) is a referral authority for such planning permit applications.

5.3.3 Environmental Management Plan

An environmental management plan (EMP) will be prepared for each subdivision section of Aurora in response to a subdivision permit condition. Each EMP will include the following items as applicable.

- Fencing and control of access by residents
- Protection of trees, and management of tree recruitment areas
- Control of biomass
- Weed management
- Protection of reserves during construction works
- Threatened flora management
- Threatened fauna management
- Planning, monitoring and reporting on works.

5.3.4 Habitat Links

At the local landscape level, the primary habitat link within Aurora is Edgars Creek. Edgars Creek will be developed as a major linear public open space 'spine' through Aurora. Road crossings will be designed to allow the movement of fauna, particularly the Growling Grass Frog, along the creek corridor. Landscaping works within the open space will be designed to complement the habitat and corridor values of the creek.

Where feasible, road reserves, parkland and the power easement will provide 'stepping stone' plantings of indigenous trees and shrubs.

5.3.5 Minimising Impacts on Flora and Fauna

Aurora has been designed to protect the sites of greatest ecological significance in conservation areas. These areas will also be managed to provide net gain offsets for any unavoidable losses of native vegetation. The range of uses for each space will be determined according to its ecological values and sensitivity to disturbances.

The change from low intensity farming uses to high density urban uses will result however, in a number of potential impacts on biodiversity during and after the construction phases. Many of the potential impacts can be mitigated.

The following table summarises the potential impacts, the mitigation measures likely to be adopted at Aurora and the probable impacts on conservation significance after the mitigation measures have been implemented.

Concept Plan Edgars Creek

SITE	POTENTIAL IMPACT	MITIGATION MEASURES	PROBABLE IMPACTS AFTER MITIGATION
High quality stony rises	Continued degradation prior to construction.	Develop and implement interim management plan.	Low to moderate
	Accidental damage during construction phase.	Temporary protective fencing around stony rises. Implementation of 'ecological deposit' or fines to contractors for damage.	Low
	Active damage following construction from human activity.	Retain as 'no-go' areas, restricting or preventing access by the general public.	Low
	Continued general degradation (for example, weed invasion).	Implementation of management plan. 'Friends' groups.	Low to moderate
Larger, less intact stony rises	Continued degradation prior to construction.	Develop and implement interim management plan.	Low to moderate
	Accidental damage during construction phase.	Temporary protective fencing around stony rises. Implementation of 'ecological deposit' or fines to contractors for damage.	Low
	Active damage following construction from human activity.	Controlled public access.	Low to moderate
	Continued general degradation (for example, weed invasion).	Implementation of management plan. 'Friends' groups.	Low to moderate
Stands of mature River Red-gums	Continued degradation prior to construction, especially water-stress and over-browsing by possums.	Investigate, develop and implement management plan.	Low to moderate
	Accidental damage during construction phase.	Temporary protective fencing around stands. Implementation of 'ecological deposit' or fines to contractors for damage.	Low
	Active damage following construction from human activity.	Controlled public access.	Low
	Continued general degradation (for example, weed invasion and pest fauna)	Develop and implement management plan (revegetation, regeneration). 'Friends' groups.	Moderate

SITE	POTENTIAL IMPACT	MITIGATION MEASURES	PROBABLE IMPACTS AFTER MITIGATION
Small, isolated or degraded stony rises	Loss during development design.	If practicable, retain within public open space - conservation. Impacts and mitigation measures then as for high quality and larger stony rises. If not practicable to retain, investigate and develop plans for targeted flora and fauna salvage.	Low Moderate
Golden Sun Moth habitat	Loss of habitat during development design. Disturbance during breeding (mid November to end January). Change to habitat (for example, weeds, chemicals and hydrology).	Adjust public open space - conservation to encompass habitat around known populations. Further investigate potential habitat. Avoid construction in the vicinity at this time. Develop effective management plans including regular monitoring.	Low to moderate Low Low to moderate if successful. High if unsuccessful
Isolated live and dead trees	Loss during development design. Disruption of breeding of hollow-dependent fauna.	If practicable, retain within public open space - conservation Avoid removal of hollow-bearing trees during spring / early summer.	Low to moderate Low to moderate
Dry stone walls	Loss during development design. Accidental damage during construction phase. Removal of stones or damage to the walls following construction.	If practicable, retain within public open space - conservation If not practicable to retain, move stones to selected stony rises to enhance habitat values. Temporary protective fencing around walls. Implementation of 'ecological deposit' or fines to contractors for damage. Public education. Possible other techniques developed in conjunction with heritage experts.	Low Low to moderate Very low Low to moderate

SITE	POTENTIAL IMPACT	MITIGATION MEASURES	PROBABLE IMPACTS AFTER MITIGATION
Edgars Creek	Creation of barriers to fauna movement.	Minimise number of road crossings. Consideration of the design of each crossing to optimise the passage of fauna along Edgars Creek. Develop bridges that facilitate fauna movements.	Moderate
	Disturbance during construction works	Promote best work practices. Develop and implement sediment control plan. Temporary protective fencing around Edgars Creek. Implementation of 'ecological deposit' or fines to contractors for damage.	Low to moderate
	Active damage following construction from human activity.	Controlled public access.	Low to moderate
	Continued general degradation (for example, weed invasion and pest fauna).	Develop and implement management plan (weed control, revegetation). Wetland creation.	Low to moderate
	Runoff of polluted water from urban development into creek.	Develop drainage management plan.	Low to moderate
Edgars Creek tributaries	Loss during development design.	If practicable, retain within public open space - conservation. Impacts and mitigation measures then as for Edgars Creek.	Low
		If not practicable to retain, enhance the ecological value of Edgars Creek within Aurora as compensation. Encourage improvements beyond Aurora.	Moderate
Farm dam	Loss of population (likely breeding) of nationally significant Growling Grass Frog.	If practicable, retain farm dam within public open space - conservation. Create a series of wetlands designed to provide habitat for the species along Edgars Creek in close proximity to dam. Must be established at least two years prior to removal of dam to allow establishment of wetland vegetation.	Low to moderate Low to moderate
Mostly exotic grasslands used for agricultural purposes	Loss of locally common and artificial habitat used by open country species and species requiring large areas of habitat. Inevitable loss of some indigenous fauna species from subject land.	Enhance retained habitats elsewhere in Aurora as compensation.	Low to moderate

5.4 CULTURAL HERITAGE CONSERVATION

5.4.1 Objectives

The objectives of cultural heritage conservation at Aurora are to:

- comply with relevant State and Commonwealth government cultural heritage legislation and policy;
- avoid and minimise adverse impacts on Aboriginal and post contact places of cultural heritage significance.

5.4.2 Compliance with Cultural Heritage Legislation and Policy

(a) Aboriginal Heritage Act 2006

The Aboriginal Heritage Act 2006 provides for all Aboriginal cultural property (excluding human remains interned after 1834) relating to the past Aboriginal in Victoria. This includes individual artefacts, scatters of stone artefacts, rock art sites, ancient camp sites, human burials, scarred trees, ruins and archaeological deposits associated with Aboriginal missions or reserves. It can also include places with historical association with Aboriginal people or groups. The Aboriginal Heritage Act also establishes administrative procedures for archaeological assessments and the mandatory reporting of the discovery of Aboriginal sites and approval processes for disturbance or damage to Aboriginal places or objects through either cultural Heritage Permits, or Cultural Heritage Management Plans Aboriginal Affairs Victoria (AAV) part of the DPCD administers the Aboriginal Heritage Act.

The Aboriginal Heritage Act also provides for the establishment of Registered Aboriginal Parties (RAPs) who have the role of advising on matters of Aboriginal cultural heritage. The Wurundjeri Land Tribe and Compensation Cultural Heritage Council Incorporated has applied to be registered as the Aboriginal Party for the Melbourne Are, including Aurora. RAPs may also assess Cultural Heritage Management Plans and either approve or reject them. Provisions are also made for an appeals process.

Where part or all of any Aboriginal archaeological site is not to be retained, the necessary approvals to disturb the site will be sought from the Registered Aboriginal Party or in the absence of a RAP, from Aboriginal Affairs Victoria, before any action is taken.

(b) Heritage Act 1995

The Victorian Heritage Act 1995 details the statutory requirements for protecting heritage items including historic buildings and gardens, historic places and objects and historical archaeological sites and historic shipwrecks. A number of historical sites including farm ruins, artefact scatters and dry stone walls at Aurora are listed on the Victorian Heritage Inventory, established under the Heritage Act. Under the Heritage Act, consent is required for particular works or activities, including excavation, associated with an historical archaeological site, Heritage Victoria, part of DELWP, administers the Heritage Act.

All the necessary approvals will be sought from Heritage Victoria in accordance with the Heritage Act.

5.4.3 Minimising impacts on places of cultural heritage significance

(a) Aboriginal Sites

The Aboriginal archaeological survey demonstrated that the most significant sites (refer to **Appendix G, Section 1**) are located on the stony rises near watercourses. Very few artefacts were located outside these areas. The management objectives for Aboriginal sites are to conserve and retain as much as practicable of the evidence of Aboriginal occupation of Aurora and to conserve sites that demonstrate this presence. These sites will be retained in public open space with primarily environmental conservation or passive recreation use.

Places Victoria will develop and implement an archaeological management plan for the protection, conservation, interpretation and ongoing management of Aboriginal archaeological sites on the subject land.

Where erosion may be an issue, the Aboriginal sites will be revegetated with indigenous species. If artefacts are exposed, topsoiling will occur. This will be best achieved by using relocated turf from areas of native grasslands that may otherwise be destroyed. Construction of paths through the Aboriginal sites will be avoided or only constructed by building up on top of the natural surface - as opposed to excavating into the surface. Introduced materials such as scoria, crushed bluestone or granitic sand will be used to raise the paths above the natural surface.

Interpretation of the cultural history of the area will be carried out. This will be managed carefully so as not to identify the locations of Aboriginal artefacts, in order to prevent possible unauthorised removal or disturbance.

Both site restoration and interpretation programs will be completed in close consultation with Aboriginal communities.

As noted earlier, where part or all of any Aboriginal archaeological site is not to be retained, a consent to disturb the site will be sought from the Wurundjeri before any action is taken. A representative of the Wurundjeri and a qualified archaeologist will be present during the disturbance of these sites.

Portions of the subject land that are to be developed will be subject to an archaeological salvage, monitoring and recording program to recover any further Aboriginal archaeological material. This will take the form of sub-surface testing or a burn-off, if necessary, in areas of high archaeological sensitivity that have poor ground surface visibility or where sites may be covered by alluvium. If additional Aboriginal archaeological sites are identified as a result of these processes, they will be recorded and management recommendations will be formulated.

(b) European Farm Complexes

The management objective for European historical sites is to conserve and retain as much as practicable of the evidence of early European settlement in Epping. These sites will be retained and incorporated into public open space, where practicable. Management of some of these sites in conjunction with other uses, such as CAC, may be appropriate.

Management plans will be prepared by Places Victoria for the European farm complexes on the portion of the subject land owned by Places Victoria , based on their level of significance and suitability for conservation. Management objectives for the following complexes on Places Victoria land are proposed in the Cultural Heritage Survey of Aurora, Epping, Victoria prepared by Biosis Research Pty Ltd.

- Pike's homestead.
- Lynch Park farm.
- Old Myee-Aherns farm.
- Lehman's farm.
- Ziebell's dairy.

(c) Dry Stone Walls

A number of dry stone walls have been identified at Aurora. Despite the varying condition and intactness of the walls, they contribute to the historic and visual character of the subject land. As the detailed design for each portion of Aurora occurs, a comprehensive concept plan for the incorporation of appropriate dry stone walls into the development will be prepared as part of the landscape design. This concept plan will be formalised in a stone wall management plan.

The general approach to the integration of the dry stone walls in the development of Aurora can be summarised as follows.

- The retention and reconstruction of dry stone walls in their current location. These walls will be fully grouted on concrete footings and will be finished with deep, raked joints to maintain their visual quality.
- Dry stone walls that cannot be retained in their current location will be salvaged. The rocks from these walls may be returned to the lower quality stony rises or used in the construction of new stone walls.
- Where dry stone walls occur in large conservation public open spaces, the walls will be retained in their current construction style. Access to these spaces will be controlled and will not endanger therefore the longevity of the walls.

(d) Evidence of Quarrying

Small quarry holes are a feature of most of the stony rises in Aurora. They are most common on the larger stony rises closest to the sites of former bluestone buildings. As the sources of building stone for the homesteads and barns of the earliest farms in the 1850s and 1860s, they assist in interpreting the land use history of the subject land and the character of the buildings and the people who lived in them. Quarry holes in areas retained as undeveloped public open space will be left undisturbed, apart from the removal of any accumulated rubbish. This material will be removed under monitoring and supervision by a suitably qualified historical archaeologist.

5.5 OPEN SPACE AND RECREATION

5.5.1 Objectives

The objective of the provision of open space and recreation at Aurora is to create an open space system that:

- provides a diversity of recreation opportunity within the context of Epping North;
- protects sites of greatest ecological and cultural value;
- provides a wide range of public open spaces, ranging from local to neighbourhood to district;
- complies with Scheme requirements..

The public open space strategy for Aurora responds directly to the forecast needs of the expected population. Provision, in terms of quality, quantum, variety and distribution will be in accordance with Scheme requirements, An open space system is proposed that protects and enhances natural and cultural features within a series of highly accessible open spaces that provide a diverse range of recreation opportunities for both passive / unstructured and active / structured recreation.

5.5.2 Public Open Space - Active/Structured Recreation

The open space network within Aurora comprises active open space, passive open space and conservation areas, which preserve sites of cultural and ecological significance. These spaces are linked by the local and regional walking and cycling network.

Recreation facilities established on active open spaces are strongly influenced by the principles of co-location and shared use, walking and cycling access, safety, attractive design and maximising opportunities for the community to enhance health through sport and activity.

Active open spaces (total of approximately 19 hectares unencumbered) are used primarily for organised sporting activities and include playing fields and hard surface courts, which may incorporate pavilions. The ovals are located generally in pairs for ease of match scheduling and to maximise the use of pavilions and car parking. Active open spaces are located to provide an equitable distribution of facilities used at a district level as a minimum. Wherever possible, the peripheral areas of these spaces will be developed as passive / unstructured public open space to provide for less formal recreation needs.

The ASR report identifies a range of active / structured recreation facilities required at Aurora. The following table outlines the recommendations of the ASR report and the provision of these facilities proposed at Aurora. The costs and obligations for the delivery of the facilities are specified in the agreement in accordance with Section 173 of the Planning and Environment Act 1987 signed by the relevant parties before the subject land was rezoned.

FACILITY	ASR REPORT	PROVISION AT AURORA	COMMENT
Active / structured open space			
Cricket / football ovals	5	5	One oval is intended to be provided on the primary / secondary school site in the north of Aurora, in partnership with DET. One junior shared oval is provided predominantly on a DET primary school in the centre of the subject land between Harvest Home Road and O'Herns Road. Three ovals are provided on land to be transferred to Whittlesea. Two of these ovals are in the south west portion of Aurora adjacent to the Craigieburn Bypass. The other oval lies between the DET primary / secondary school and the independent primary school. Facilities co-located with DET schools will be subject to a joint use agreement to ensure community access.
Miscellaneous sporting fields	1.25	0	As only two miscellaneous sporting fields (for example, for baseball and softball) are proposed in the entire ENSP area, the ASR report recommends that these fields are best located together in the main recreational precinct near the intersection of Harvest Home Road and Epping Road.
Sporting pavilions	6	6	One sporting pavilion is proposed to be provided at each of the south west football / cricket facility and the south east tennis facility. Two pavilions are associated with the oval and the tennis court facility between the DET primary / secondary school and the independent primary school. One pavilion is provided at each of the north west soccer facility and the Scanlon Derive soccer facility.
Tennis courts	8	8	The tennis courts will be provided in one group of four courts within active public open space adjacent to Section A of AUrora. An additional four courts facility is provided in the active public open space between the DET primary / secondary school and the independent Primary School.
Soccer pitches	5	4	One two-pitch facility is on the west side of Scanlon Drive. The other two-pitch facility is in the north west portion of the subject land, adjacent to the Craigieburn Bypass.
Bocce rinks	2	4	Two two-rink bocce facilities will be incorporated in public open spaces within Aurora. Exact locations will be agreed with Whittlesea officers at a more detailed planning stage.
Lawn bowls facility	1	0	The ASR report nominates the Epping RSL club on Harvest Home Road as the preferred location for the lawn bowls facility.

FACILITY	ASR REPORT	PROVISION AT AURORA	COMMENT
Indoor recreation facilities			
Fitness / aquatic centre	0.4	0	The regional aquatic centre identified in the ASR report will be provided at the main recreational precinct near the intersection of Harvest Home Road and Epping Road. A site for commercial fitness / learn-to-swim centre has been identified adjacent to the northern primary activity centre with delivery subject to local demand for an indoor fitness facility and will operate independently from the regional aquatic centre.
Basketball / netball courts	5	3	The basketball / netball courts will be provided in conjunction with the DET schools. Facilities co-located with DET schools will be subject to a joint use agreement to ensure community access.

5.5.3 Public Open Space - Passive/ Unstructured Recreation

A number of passive / unstructured recreation spaces (total of approximately 31 hectares unencumbered) are proposed at Aurora. This is the dominant type of public open space and can accommodate a variety of spontaneous individual or group activities such as children's play, walking, picnics, barbecues and bird watching.

Passive / unstructured public open space will be distributed throughout Aurora in a hierarchy of sizes, combined with a variety of facilities and recreation opportunities. The hierarchy and distribution is as follows.

- ***Local parks*** (500 to 2000 square metres) are distributed throughout Aurora and will be used as a focus for medium to higher density dwellings. These parks will service the residents within approximately 200 metres and are likely be used for short duration recreation activities. The local parks will be designed to accommodate seating, play areas suitable for small children and informal gathering spaces.
- ***Neighbourhood parks*** (2000 to 5000 square metres) are the most dominant type of passive / unstructured recreation public open space at Aurora. These parks will be within approximately 400 to 500 metres of the majority of dwellings. The neighbourhood parks will facilitate a broader range of recreation opportunities for a wider range of potential users. The typical range of facilities to be provided in these parks is:
  - seating;
  - barbecue facilities;
  - pergolas / shelters;
  - play equipment for children up to the ages of 8 to 10;
  - paved areas suitable for basketball / netball rings and / or rebound walls;
  - informal ball play areas with a minimum dimension of 50 metres;
  - sub-spaces of various sizes that control and separate the play areas from the areas for more contemplative recreation.
- ***District parks*** (1 to 5 hectares) are primarily along Edgars Creek. In some locations, these parks overlap or combine with active / structured public open space. The passive / unstructured component of the district parks will service the residents within 800 to 1000 metres. These parks will provide a higher level of facilities, accommodating use by larger groups. The typical range of facilities to be provided in the district parks is:
  - multiple seating areas;
  - multiple barbecue facilities;
  - pergolas / shelters, some suitable for use by larger groups;
  - larger playground areas for children up to the ages of 10 to 12;
  - paved areas suitable for basketball / netball rings and / or rebound walls;
  - informal ball play areas with a minimum dimension of between 60 and 80 metres;
  - sub-spaces of various sizes that control and separate the play areas from the areas for more contemplative recreation;
  - car parking at the edge or perimeter of the park.

District parks will be the location for specific use facilities such as tennis courts and bocce rinks and will include water features, habitat wetlands and the like.

5.5.4 Conservation Areas

There are five main conservation public open spaces (total of approximately 48 hectares) at Aurora. The primary purpose of these spaces is to protect and enhance areas of greatest ecological and / or cultural value. Although the conservation areas are included in CDZ4, it is expected that they will be rezoned in the future to a zone reflecting their conservation significance and the public authority that will own/manage the land to a public asset. Public access, once in public ownership, to some conservation areas will be restricted to protect significant habitat or other features. These spaces will be designed to allow access at the perimeter, in selected portions or on contained paths, which combined with an interpretative program, provide recreational benefit.

The conservation areas are located on and around naturally-occurring features. Fortunately, these features and thus the spaces are well distributed generally throughout Aurora.

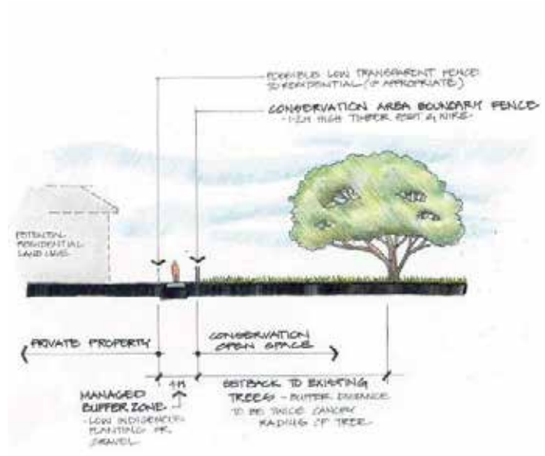
The landscape, ecological and cultural heritage assessments of Aurora identified the key sites of landscape, visual, environmental and cultural significance, which often coincided. The following sites are of the greatest value and will be protected within –conservation areas.

- The large stand of River Red-gums in the north west of Aurora - which will be incorporated into a space that will be used to preserve and enhance the trees with limited public access. Subject to more detailed assessment and design, access trails will be provided around the perimeter and through this space with an interpretative program.
- A significant complex of stony rises in the north east of the subject land, adjacent to Edgars Creek and between Craigieburn Road East and Harvest Home Road.
- A small stony rise including remnant vegetation east of the Craigieburn Bypass and north of Harvest Home Road.
- A large north-south complex of stony rises west of Edgars Creek between Harvest Home Road and O'Herns Road. This space may be crossed by an elevated timber boardwalk and gravel path.
- A small stony rise east of Edgars Road and south of the northern town centre.

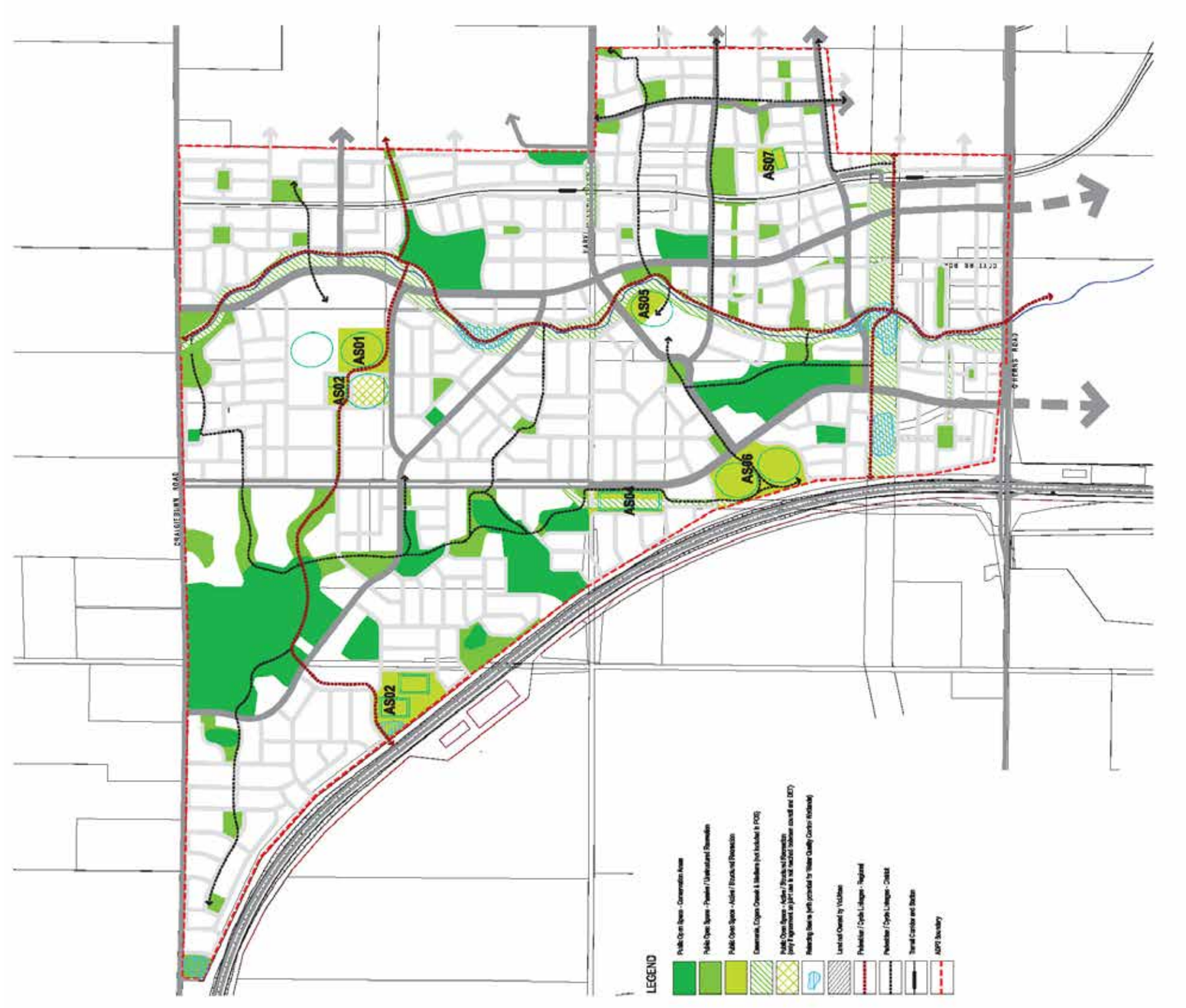
It is noted that the easterly extent of the north-west conservation area is pending a detailed flora and fauna assessment.

As a matter of principle all conservation areas will have a road frontage, however, where Council agrees otherwise a 4 metre paper road frontage is required, which includes a 1.5 to 2.5 metre path and landscaping.

An example of this interface treatment is illustrated below.



Interface to Conservation Area



Open Space Plan

5.5.5 Public Open Space Links

Aurora contains the following main public open space links, which are in accordance generally with the ENSP.

- Edgars Creek, which will be developed as a major linear public open space 'spine' through Aurora, connecting Craigieburn Road East in the north with O'Herns Road and potentially the Cooper Street Employment Area in the south.
- A north-south link from the River Red-gum conservation public open space in the north to the western end of the powerlines transmission easement and O'Herns Road in the south. This link comprises a series of parks and wide vegetated paths.
- An east-west link across the northern portion of the subject land, connecting the Craigieburn Bypass, River Red-gum conservation area, Edgars Creek and the east boundary of Aurora. This link comprises a series of parks and wide vegetated paths, including paths along the edges of the north west soccer fields and DET primary school, the northern local activity centre and tennis courts and the DET primary/secondary school
- An east-west link along the edge of the powerlines transmission easement in the south of Aurora.

5.5.6 Public Open Space Design and Planting

The detailed design of public open space will be resolved as the exact size and levels are determined through the subdivision and engineering design process. The landscape design intention for Aurora will create public open spaces that:

- feature predominantly native (including indigenous) species, particularly in the upper canopy;
- use exotic trees to reflect the cultural heritage of a particular space, create visual highlights or fulfil specific solar access requirements;
- include materials that reflect the cultural heritage of the subject land, including stone walls and large timbers;
- provide an environmental conservation and cultural heritage interpretive program, where appropriate;
- incorporate WSUD treatments for stormwater quality improvement.
- embrace the use of low embodied energy, low toxicity, recycled or renewable materials and resources for their construction.

The selection of particular trees for public open spaces will be refined and reviewed over time. An indicative list of species (excluding the conservation areas) is opposite.

INDICATIVE PLANT SPECIES	EVERGREEN (E) / DECIDUOUS (D)	TYPICAL HEIGHT AT MATURITY (metres)
Weeping Myall (Acacia pendula)	E	5 - 10
Black She-Oak (Allocasuarina littoralis)	E	6 - 10
Rose She-Oak (Allocasuarina torulosa)	E	10 - 15
Bottlebrush (Callistemon 'Harkness')	E	3 - 6
Bottlebrush (Callistemon salignus)	E	4 - 6
Lemon-scented Gum (Corymbia citriodora)	E	15+
Spotted Gum (Corymbia maculata)	E	15 +
Yellow-top Mallee Ash (Eucalyptus luehmanniana)	E	5 - 6
Whipstick Mallee Ash (Eucalyptus multicaulis)	E	6 - 10
Brittle Gum (Eucalyptus mannifera ssp praecox)	E	10 - 15
Narrow-leaved Sally (Eucalyptus moorei)	E	3 - 6
Snow Gum (Eucalyptus pauciflora)	E	10 - 15
Red Box (Eucalyptus polyanthemos)	E	10 - 15
Red Ironbark (Eucalyptus sideroxylon)	E	15 +
Pin Cushion Hakea (Hakea laurina)	E	4 - 6
Lilly Pilly (Syzygium paniculatum)	E	10 - 15

5.6 COMMUNITY PLANNING

5.6.1 Objectives and Community Development Strategy

The Places Victoria Sustainability Charter promotes sustainability through five core objectives. In accordance with these core objectives, Places Victoria projects are required to achieve:

- community well-being;
- housing affordability;
- environmental performance;
- urban design excellence;
- commercial success

In relation to the above, the Aurora CDS will detail the initiatives to achieve community well-being and housing affordability. The CDS will be prepared in conjunction with Whittlesea and other service organisations and include:

- the community vision;
- the community infrastructure package;
- a housing diversity plan, including affordable and acceptable housing;
- age-specific responses, such as residential aged care and childcare;
- the identification of community infrastructure project partners and funding responsibilities;
- other agreed community building initiatives.

It is the intention to prepare by 2027 a CDS that will be endorsed jointly by the Places Victoria and Whittlesea and reviewed every five years.

5.6.2 Education

Two DET primary schools and one DET primary/secondary school are proposed on the subject land. One primary school is in the north west of Aurora and the other in the centre near the intersection of Harvest Home Road and Edgars Road. The primary/secondary school is in the north of the subject land west of Edgars Creek.

Forward planning has commenced for the central primary school and subject to the confirmation of population growth, potential school enrolment and funding from DET, it is anticipated that the school will commence operation by 2009.

Places Victoria will continue discussions with the DET and independent school providers to ensure that the proposed schools commence operation as early as possible in the development of Aurora. Detailed discussions regarding co-location and shared use of formal agreements to ensure that access and partner responsibilities are clearly articulated.

5.6.3 Community Activity Centres

Three CAC are planned for Aurora – one in each primary activity centre and on adjoining the DET primary/secondary school. In addition, 0.4 hectares of land is available for a fourth CAC adjoining the DET primary school in the north west. The location of the CAC is based on maximising the potential local population within a walkable catchment and co-location with compatible uses including education and recreation facilities.

The size of the CAC will be determined by the range of Municipal and community functions required in each location. It is likely however, that the CAC in the town centres will have a higher order level of services than the CAC adjoining the education facilities. The full complement of community activities and services that will operate from the CAC will ultimately be determined by local need. Experience from previous Places Victoria projects aligns with the recommendations of the ASR report, suggesting that the range of uses for the Aurora CAC will include the following:

- Maternal and child health.
- Preschool.
- Main hall.
- Kitchen and food service centre
- Meeting rooms.
- Neighbourhood house space.
- Fine arts space.
- Performance arts space.

Places Victoria aims to attract and facilitate the broadest possible range of community / government and other agencies into the CAC to complement the local facilities recommended by the ASR report. The facilitation and delivery of the CAC will be achieved through a community development manager working with organisations involved in sectors such as health, education and training in the in the northern corridor. The intention of this approach is to maximise the shared use and co-location of facilities and improve access to the range of services for the local community.

The CAC in the northern town centre will be the first to be provided with the other CAC provided in sequence with the rate of residential development. This CAC is proposed to have an early childhood focus, providing the fundamental local services required for the new community. It is anticipated to open at the end of 2013.

Places Victoria and Whittlesea have a commitment to the early provision of community facilities at Aurora. To achieve this, Places Victoria will facilitate direct provision of the agreed community infrastructure package and will seek a commitment from Whittlesea to ensure the establishment and viability of the community services and programs that will operate from the CAC.

5.6.4 Other Community / Commercial Facilities

The planning of Aurora activity centres and district cores will include, where appropriate, the provision of sufficient land for purchase by community / commercial facility operators for a range of uses that may be required.

5.6.5 Public Art

Places Victoria is committed to incorporating public art into its parks and public spaces and views this as a key component of 'place making'. Up to 0.5per cent of the total construction cost will be allocated to integrated public art at Aurora.

A significant artwork is proposed for the entrance to the northern primary activity centre with others to be installed in important locations. Smaller, 'local' artworks will be incorporated into public spaces such as local parks, nature strips and footpaths. The type, location and ongoing maintenance of the artworks will be negotiated with Whittlesea.

5.6.6 Fibre to the Home Technology

Optic fibre cable is the highest capacity and best-performing telecommunications link available. Whittlesea recognises the advantages that this technology can provide and has a local planning policy that requires the provision of additional conduits for optic fibre cables in new subdivisions and development.

Places Victoria has strongly supported this initiative, working with Whittlesea to incorporate its requirements for additional conduits in Aurora and taking the process to the next level by facilitating the establishment of a service provider for the subject land to provide a suite of services including internet protocol (IP) telephony, high speed internet connection and a range of 'video-on-demand' and 'payTV' services.

5.6.7 Community Intranet

Places Victoria will engage an intranet provider to establish a service for the residents of Aurora. The community intranet will be funded initially by Places Victoria with resident subscription fees sustaining the service in the long term.

5.7 RETAIL AND COMMERCIAL

The following section has been updated as part of a targeted revision to the original Development Plan. Where inconsistencies arise between this section and the previously adopted Development Plan, the following principles and spatial plans attributed to each Town Centre will take precedence.

5.7.1 General Elements – Town Centres

(a) Strategic function

Each of the two main Town Centres will serve the Aurora Estate by:

- Providing the principle focus for retail and commercial uses and activities;
- Being the primary location for community facilities;
- Having a higher density of residential development within easy walking distance of facilities and services;
- Having a high degree of walking, cycling and local public transport accessibility and will provide direct links into the wider strategic public transport system; and
- Playing a key role in providing a unique character and identity for Aurora and act as the social and economic heart of the community.

(b) Development framework

The development framework is the basic movement and development structure of each Town Centre. In order to ensure consistency of outcomes each Town Centre will:

- Provide a grid-based perimeter block from within the primary frontages of buildings arranged to positively address public streets and spaces.
- Feature a permeable and easily understood network of streets with a clear hierarchy of function which approximately balances movement and public space across each centre.
- Use a 'main street' model of development which concentrates the greatest activity generating uses (such as specialty retail, cafés and restaurants and commercial office) along highly accessible streets which prioritise pedestrian movements.
- 'Anchor' main streets by positioning the main entrances for key activity generating uses (such as supermarkets/discount department stores, community facilities and public transport terminals) in clear and obvious locations in relation to public streets.
- Have at least one area of pedestrian-oriented public realm designed to be a focal point or 'town square' associated with the most active part of each main street.
- Wrap large footprint anchor uses with smaller scale retail and commercial units to ensure ground floor activation for all streets within the Town Centre.
- Ensure that adequate parking areas are located to suit the proposed uses, having regard to the strategic context of the site, and key land use and design considerations
- Encourage multi-deck, shared parking arrangements.

(c) Land use and activities

The Town Centres are intended to perform a variety of functions within a compact, walkable area. As such, each Town Centre will:

- Integrate land uses horizontally and vertically where it is possible to do so – for instance by transitioning uses mid-block or delivering residential housing above retail and commercial uses.
- Ensure that the built form is sufficiently flexibility to be able to accommodate future changes in demand for commercial and employment generating uses.
- Locate large format commercial and retail uses such as bulky goods retail on the arterial street network.
- Concentrate the greatest density of residential development within 1.2km (approx. 15min walking distance) of the future stations along the Epping North Public Transport Corridor.
- Locate café / restaurant uses within close proximity of Transport Terminals and Community Facilities.

(d) Movement and accessibility

Each Town Centre will:

- Prioritise movement in the following order: Walking – Cycling – Public Transport – Private Car.
- Have a logical and coherent network of connected routes which allow for local movement to be spread throughout each Centre.
- Ensure there are direct, obvious and logical connections into the wider Aurora cycling and walking network, particularly the Edgars Creek Regional Park.
- Locate parking toward the centre of perimeter blocks to be 'sleeved' by street facing buildings or by landscaping where this is not possible.
- The design of main streets must have regard for Section 5.8.4 and 5.8.5 of this document.

(e) Character

The character of each Town Centre has significance for the identity of the wider *Aurora Development Plan* area – each Town Centre will share the following principles to ensure consistency of approach:

- Ensure that buildings enclose public spaces and that buildings and the public realm are designed cohesively to promote a shared visual and aesthetic connection.
- Locate buildings toward the edge of development blocks and with minimal setbacks from public streets and spaces to provide enclosure and activation.
- Have a high quality of architectural treatment which contributes towards a sense of place and unique identity within each Centre.
- Take a coherent and holistic approach to the design of public streets and spaces and demonstrate consideration of the role of climate, location of activity and flows of movement.
- Ensure that main streets are predominately fronted by a fine-grain of speciality retail units, oriented to ensure that principal façades face directly onto the public street.
- Advertising materials will be restricted to no more than 50% of shop windows where they interface with public street and squares.
- Each ground floor retail unit will have a visually permeable principal elevation which has a strong relationship between interior and exterior space.
- The principal elevation of main street oriented retail units will be the location of the main building access.
- Where side or rear walls of larger-scale buildings such as supermarkets interface with public streets or spaces they must be designed with a high quality of finishing treatment.
- Using landscaping and pedestrian canopies is encouraged as a method of shielding blank walls.
- Buildings should be a minimum of two storeys across each Town Centre. Proposals for buildings of less than two storeys in Town Centres will be subject to Council discretion. Proposals to reduce the height below two storeys on site marked as 'key gateway locations' will not be supported by Council.

5.8 NORTHERN TOWN CENTRE

A copy of the proposed Northern Town Centre land use layout plan has been included on the following page. The key components are outlined in the text below.

(a) Key components

The total amount of retail planned for the Northern Town Centre amounts to approximately 21,500 square metres, comprised of:

- A Potential Discount Department Store of approximately 7,000 square metres.
- Two Full Line Supermarkets of approximately 3,500 square metres for each store.
- A Mix of Speciality Retail of up to 7,500 square metres. This could include a smaller Supermarket of 1,500 square metres.

(b) Land Use and Activities

- A library is to be located at the junction of the two main streets. At this location, it will act as an anchor for activity at the heart of the Town Centre. The preferred form of delivery for the library would be a part of a multi-storey, mixed use development which may provide office or residential space within its upper floors. An alternative form of delivery would be in a more conventional stand-alone form as part of a 0.4Ha site.
- Mixed Use buildings containing upper storey residential opportunities are strongly encouraged within the core Town Centre area, with particular focus around the potential future train station. One full line supermarket will be located to the south of Harvest Home Road with the potential for an additional smaller Supermarket adjacent or within the block located immediately to the east.
- The Northern Town Centre has the potential to accommodate a Discount Department Store. If this is delivered it should be located to the west of the north-south main street.
- A second full-line supermarket should be located to the east of the north-south main street in proximity to the potential future train station.
- Any application for a Discount Department Store in the Aurora Northern Town Centre must be accompanied by an economic assessment that assesses the impact on a similar facility in Wollert Major Town Centre. The economic assessment must also offer measures to address any issues it identifies.

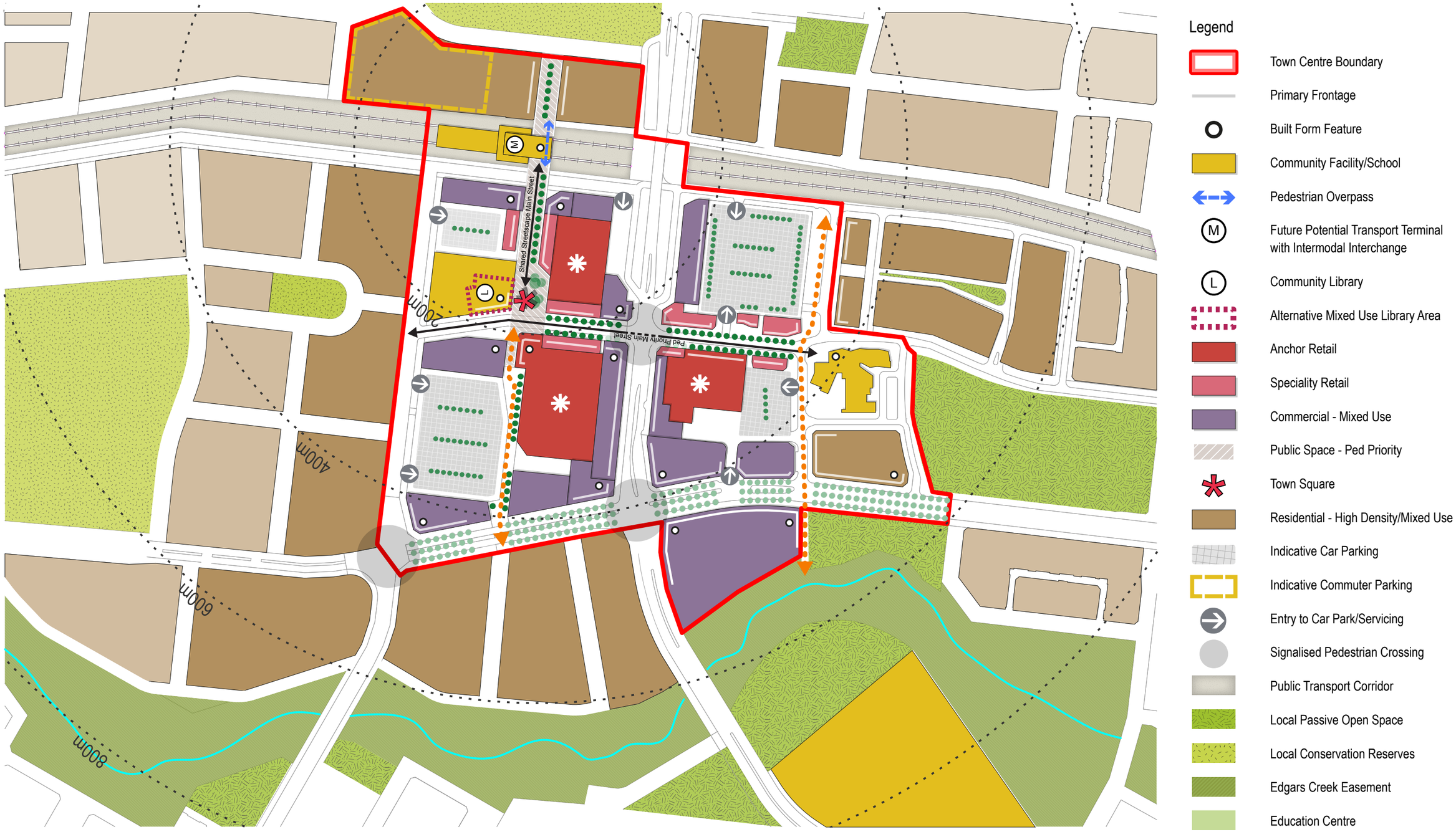
(c) Movement and accessibility

- Main streets are to be located to create viewlines between key civic and public transport nodes such as the potential future train station, library and community centre. The public realm and architectural treatments at this location should reflect the relative importance of this location.
- The Town Centre's focal point should be connected to Edgars Creek via a direct and obvious linear open space linkage through the western part of the Town Centre.
- *Parking areas are to be edged by development where possible, or landscaping where this is not possible.*

(d) Character

Building heights in excess of three storeys will be appropriate:

- In key gateway locations;
- On key arterial routes;
- On main streets;
- On the eastern edge of the Town Centre, at the interface with the rail reserve.



Northern Town Centre - Land Use / Layout Plan

5.9 SOUTHERN TOWN CENTRE

A copy of the proposed Southern Town Centre land use layout plan has been included on the following page. The key components are outlined in the text below.

(a) Key Components

The total amount of retail planned for the Southern Town Centre amounts to approximately 8,500 square metres, comprised of:

- One Full Line Supermarket of approximately 3,500 square metres
- Speciality Retail of approximately 3,000 square metres
- Large Format Retail of approximately 2,000 square metres

(b) Land Use and Activities

- Mixed-use buildings containing ground floor speciality retail units and upper floor residential uses are to be located along the northern side of the main street.
- One full line Supermarket is to be located to the west of Edgars Road. The open space indicated adjacent is identified for the exclusive use of the community centre.
- O'Herns Road and the section of Edgars Road located to the south of the main street should be predominately fronted by commercial development as per the Aurora South Precinct Plan.
- A mixed use building is located to the east of the public transport corridor which could accommodate ground floor retail, café or restaurant uses.

(c) Movement and Accessibility

- The Southern Town Centre's main street will be oriented east-west to provide a direct connection between the potential future train station and supermarket which anchors retail to the west of Edgars Road. This street has the advantage of continuing westwards to tie into the alignment of Gottloh Street.
- A pedestrian crossing will be located on the main street in order to facilitate the crossing of Edgars Road. The street design will change at this point in order to alert drivers to the higher priority given to pedestrians and cyclists. This could involve alterations in landscaping and surface treatments.

The main area of car parking for the Transport Terminal may ultimately be situated within the electricity easement.

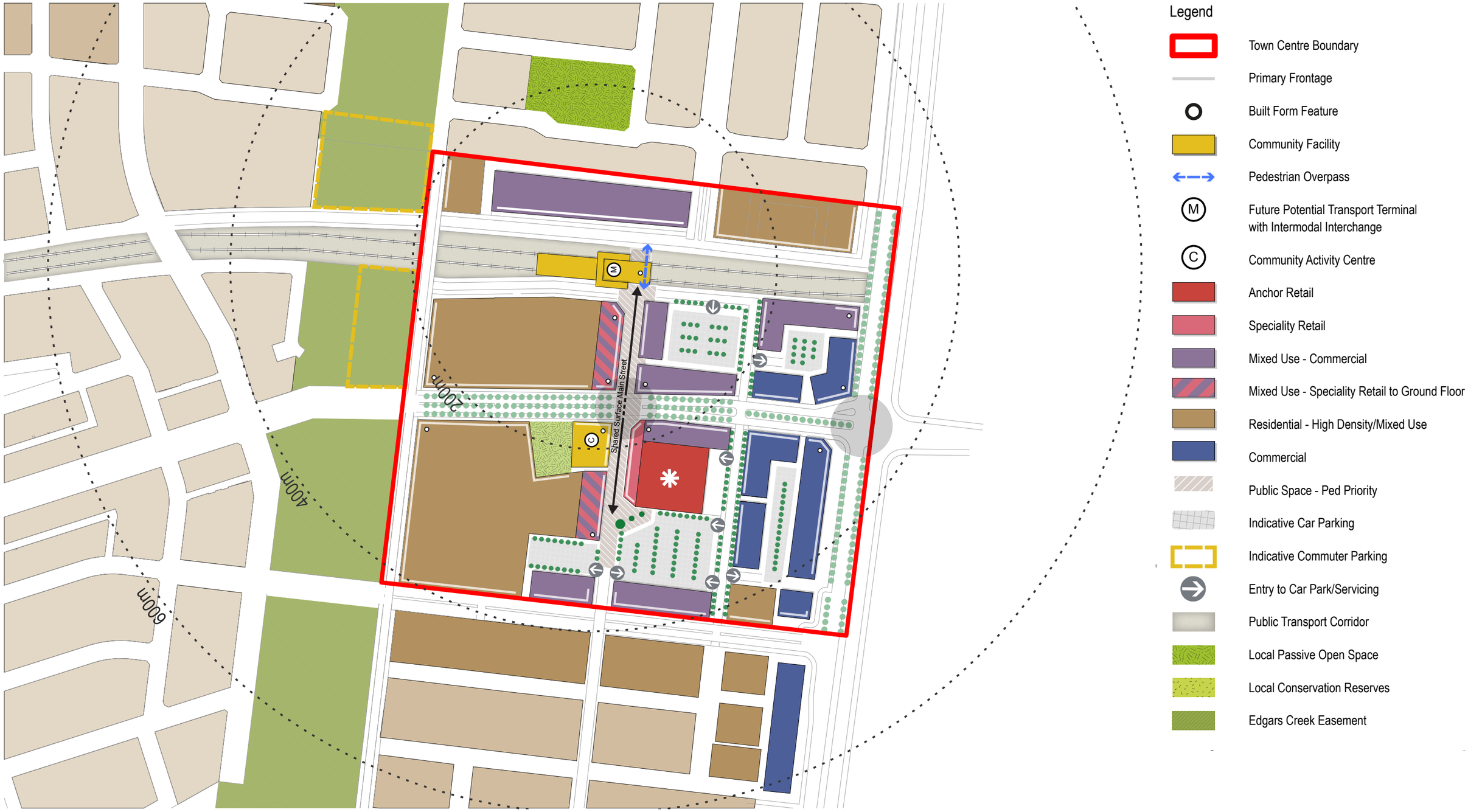
(d) Character

Public spaces are to be located toward the southern side of the main street and within close proximity of:

- Anchor Retail Units
- The potential future train station
- The Community Centre

Building heights in excess of three storeys will be appropriate:

- In key gateway locations;
- On key arterial routes
- On main streets
- On the eastern edge of the Town Centre, at the interface with the rail reserve.



Southern Town Centre - Land Use / Layout Plan

5.10 SECONDARY ACTIVITY CENTRES

Two areas of Secondary Activity Centre have been identified, both of which have a significant interface with O'Herns Road:

Secondary Activity Centre A: A discrete area of land extending to approximately 10 hectares and bounded by the Craigieburn Bypass, O'Herns Road, Koukoura Drive and the electrical easement. This secondary activity centre benefits from its exposure to the Craigieburn Bypass and it will act as the primary 'gateway' for the Aurora Estate for motorists travelling from the wider metropolitan area.

Secondary Activity Centre B: A section of land extending from Edgars Creek towards the eastern boundary of ADP2. This area primarily orientates towards O'Herns Road and will be relatively integrated with the Southern Primary Activity Centre and adjacent residential areas.

In addition to the above, one Secondary Activity Centre has been identified in the Northern Town Centre.

(a) Aurora South Precinct

Two of Aurora's Secondary Activity Centres and around one third of its primary activity centre provision are located between O'Herns Road and the Electrical Easement; known as the Aurora South Precinct. These primary and secondary activity centre areas are concentrated within sizable clusters towards the eastern and western extents of the Aurora South Precinct. In the eastern part of this precinct, the planned future transport terminal will be the primary focus for movement and activity.

DPO23 of the Whittlesea Planning Scheme requires that a Precinct Plan is prepared for the Aurora South Precinct. This plan must be prepared in advance of further development proposals coming forward for the area to ensure it is developed in an integrated and cohesive manner. To ensure that each activity centre is accessible across the southern precinct by public transport and modes of active travel, east-west linkages must be shown as direct, obvious and focussed in particular on the street terminating at the proposed transport terminal.

(b) Secondary Activity Centre A

The uses here will be influenced by the proximity to the interchange with the Craigieburn Bypass. This large, discrete land area is held within a single landownership – as such the site is suitable for larger format or major retail operators selling comparison and bulky goods and capable of servicing a much wider catchment. Such uses might include a Homemaker Centre as well as Hardware and Trade Supplies.

Given the gateway location of this site, buildings must be oriented to provide activation of key adjoining roads.

Full and direct vehicle access to the secondary activity centre will not be permitted from O'Herns Road or Koukoura Drive.

Development in the area west of Koukoura Drive will be encouraged for a range of Business/Employment uses whilst not prohibiting bulky goods or other large floor plate developments.

(c) Secondary Activity Centre B

The land uses in this area will be influenced by the proximity to the Southern Town Centre. The proximity to the southern primary activity centre, including the transport terminal, provides the opportunity for users of this centre to also use the secondary activity centre in the same trip.

A mix of offices, restricted retail premises and indoor recreation facilities are suitable uses which will help to integrate this area with the Southern Town Centre and relate to the uses identified for the Cooper Street Employment Area along the southern side of O'Herns Road. This approach will reinforce the 'gateway' role of O'Herns Road uses.

Vehicle access to the secondary activity centre will be provided generally by service roads adjacent to O'Herns Road and the north south streets of Scanlon Drive, Cotters Road and Edgars Road.

The desired built form for the secondary activity is for multi storey, office-style development that creates a continuous wall to the street edge. This is of particular importance for gateway sites adjacent to north-south streets such as Cotters Road which provide a point of access into the estate for pedestrians from O'Herns Road. Large areas of ground level car parking are encouraged to the rear of buildings in order to maximise the activation of the streetscape.

Given the proximity to existing and proposed residential areas, the design of commercial development at this location must respond sensitively to adjacent land uses paying particular regard to visual and acoustic impacts.

(d) Secondary Activity Centre: Northern Town Centre

A single 'super lot' has been identified in the Northern Town Centre for a Secondary Activity Centre. The purpose of this centre is to provide for flexibility to accommodate peripheral commercial uses in this town centre.

5.11 LOCAL ACTIVITY CENTRES

Local Activity Centres are intended to ensure that all residents have access to everyday convenience retailing, particularly those further from the primary activity centres. Local activity centres are located generally on main streets or adjacent to other community uses such as schools and public open space. These centres should not be large in scale and will not accommodate a major anchor tenant such as a full line supermarket.

Local Activity Centres should pursue mixed-use development outcomes to ensure that retail, food and drink or other compatible uses are delivered within the context of higher density residential development.

In the absence of market demand for commercial uses in the short term, the potential for interim ground floor community or residential uses should be investigated to ensure the Local Activity Centre is occupied and provides some level street activation at the time of delivery. Building design should allow for the future conversion to commercial use when the need arises, for instance by providing sufficient internal floor to ceiling heights to accommodate a range of ultimate uses. The design of Local Activity Centres should have a high level of consideration for adjacent land uses, ensuring that they are positioned to maximise pedestrian and on-street activity within the local area. The streetscape should accommodate gathering with a high level of amenity including shelter and seating.

5.12 TRANSPORTATION SYSTEM

5.12.1 Objectives

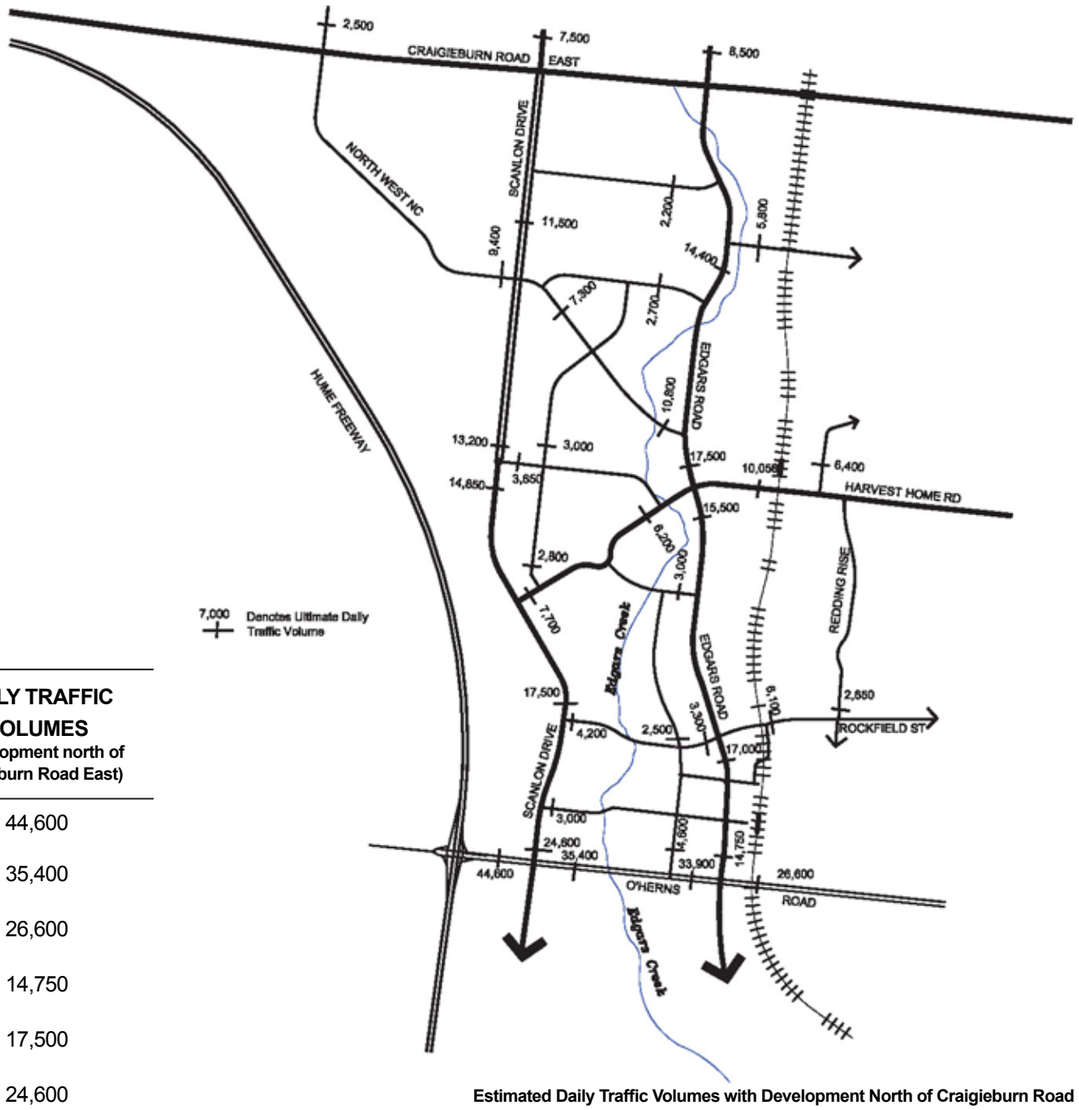
The transportation objectives for Aurora are as follows.

- Early delivery of transport services and infrastructure.
- Extend the public transport corridor from Lalor station to provide a public transport linkage between Aurora and the Melbourne central activities district, passing close to Epping Plaza and the Northern Hospital.
- Provide a street-based transport interchange in the eastern part of the southern town centre.
- Construct a highly inter-connected street network with strong accessibility to the northern and southern town centres and public transport stations / interchanges, including many direct neighbourhood connector streets that can be used efficiently as bus routes.
- Develop a broad mix of land uses that locates dwellings, retail, educational, employment and community facilities close together for a high proportion of future residents of Aurora, enabling many people to choose to walk or ride between these activities.
- Concentrate housing within walking distance of the public transport stations / interchanges and the non-residential activities that are accessed conveniently by non-motorised transport.
- Limit larger, land extensive educational and recreational facilities within the walkable catchments of the public transport stations / interchanges to maximise residential / retail / commercial use and thus the potential support for public transport.
- Incorporate pedestrian-friendly traffic management.
- Create safe and comfortable recreational use of streets for all potential users.
- Spread traffic to a range of streets to provide drivers with a multiple choice of routes for the same trip and to create an environment where it is appropriate for cyclists and vehicular traffic to share the street carriageway.
- Encourage multi-purpose trips.
- Promote the health and environmental benefits of non-motorised transport.

5.12.2 Future Vehicle Traffic Volumes

The diagram opposite shows the estimated daily traffic volumes with development north of Craigieburn Road East. The table below sets out the estimated daily traffic volumes (with development north of Craigieburn Road East) for key streets in the Aurora network. Other streets within Aurora are not listed because the daily traffic volume is estimated to be less than 3000 vehicle movements. These estimates are based on each dwelling generating ten vehicle movements per day.

STREET	LOCATION	DAILY TRAFFIC VOLUMES (Development north of Craigiburn Road East)
O'Herns Road	At Craigieburn Bypass ramps	44,600
O'Herns Road	Scanlon Drive to Edgars Road	35,400
O'Herns Road	East of Edgars Road	26,600
Edgars Road	North of O'Herns Road	14,750
Edgars Road	North of Harvest Home Road	17,500
Scanlon Drive	North of O'Herns Road	24,600
Scanlon Drive	South of Harvest Home Road	17,500
Harvest Home Road	West of Edgars Road	6,200
Harvest Home Road	East of Edgars Road	10,050



Estimated Daily Traffic Volumes with Development North of Craigieburn Road East

5.12.3 Public Transport

(a) Rail

The Department of Infrastructure (DOI) has prepared a preliminary concept plan and longitudinal section of the grades for the extension of heavy rail from Lalor railway station to Aurora and possibly to Donnybrook and beyond. Places Victoria has worked and will continue to liaise with the DOI in relation to the general alignment of the public transport corridor, station locations, car parking provisions, street crossing locations and grades to accommodate the drainage requirements of Aurora.

The preliminary concept plan and longitudinal section create the following outcomes in general.

- The rail level close to the existing surface level at O'Herns Road, which will allow the railway line to pass over O'Herns Road and create an appropriate interface with the southern primary activity centre.
- The rail level slightly below the existing surface level at the stations, which are to the north of O'Herns Road and Harvest Home Road. This will allow reasonably convenient pedestrian access across the railway line.
- The rail level slightly below the existing surface level through the remainder of Aurora. This will allow the best acoustic outcomes as the major noise source is at the rail track.
- Harvest Home Road and Craigieburn Road East passing over the railway line.
- Two additional places - just north of the northern station and midway between Harvest Home Road and Craigieburn Road East - where a street will pass over the railway line.
- Car parking of approximately500 spaces in the powerlines transmission easement for the southern station.
- Car parking of approximately 200 spaces in wide street reservations on either side of the railway line.

All crossings including road, pedestrian and cycle paths of the proposed public transport corridor will be designed to accommodate grade separation unless otherwise agreed by the Minister for Public Transport.

Any underground structures which affect proposed public transport will be designed to the satisfaction of the Department of Infrastructure.

(b) Bus

A potential bus network plan for Aurora has been developed in consultation with the DOI, Whittlesea and bus service operators and is shown opposite.

The principles behind this network include the following:

- all activity centres, including town centres, schools, community activity centres and active public open spaces, within Aurora and the ENSP area linked with bus routes;
- bus routes within Aurora having a strong connection to the public transport corridor and stations / interchanges;
- bus routes having the majority of dwellings within about five minutes walking time of a bus route

The cross sections of the streets that are potential bus routes will be designed to the minimum standards agreed with the DOI and Whittlesea.

The first stage of the bus network plan is already in place with Bus Route 575 operating between Section A of Aurora and Thomastown railway station, via the Northern Hospital, Epping Plaza and Epping railway station.

Potential Bus Routes

5.12.4 Arterial Street Design

There are five arterial streets within or adjacent to Aurora - - Craigieburn Road East, Harvest Home Road, O'Herns Road, Edgars Road and Scanlon Drive. Each of these streets have differing requirements for streetscape, traffic volume and composition, interface with abutting land uses, vehicle speed environment and access and vehicle parking. A specific design approach has been used for each of the arterial streets in consideration of these requirements, rather than applying a generic cross section design.

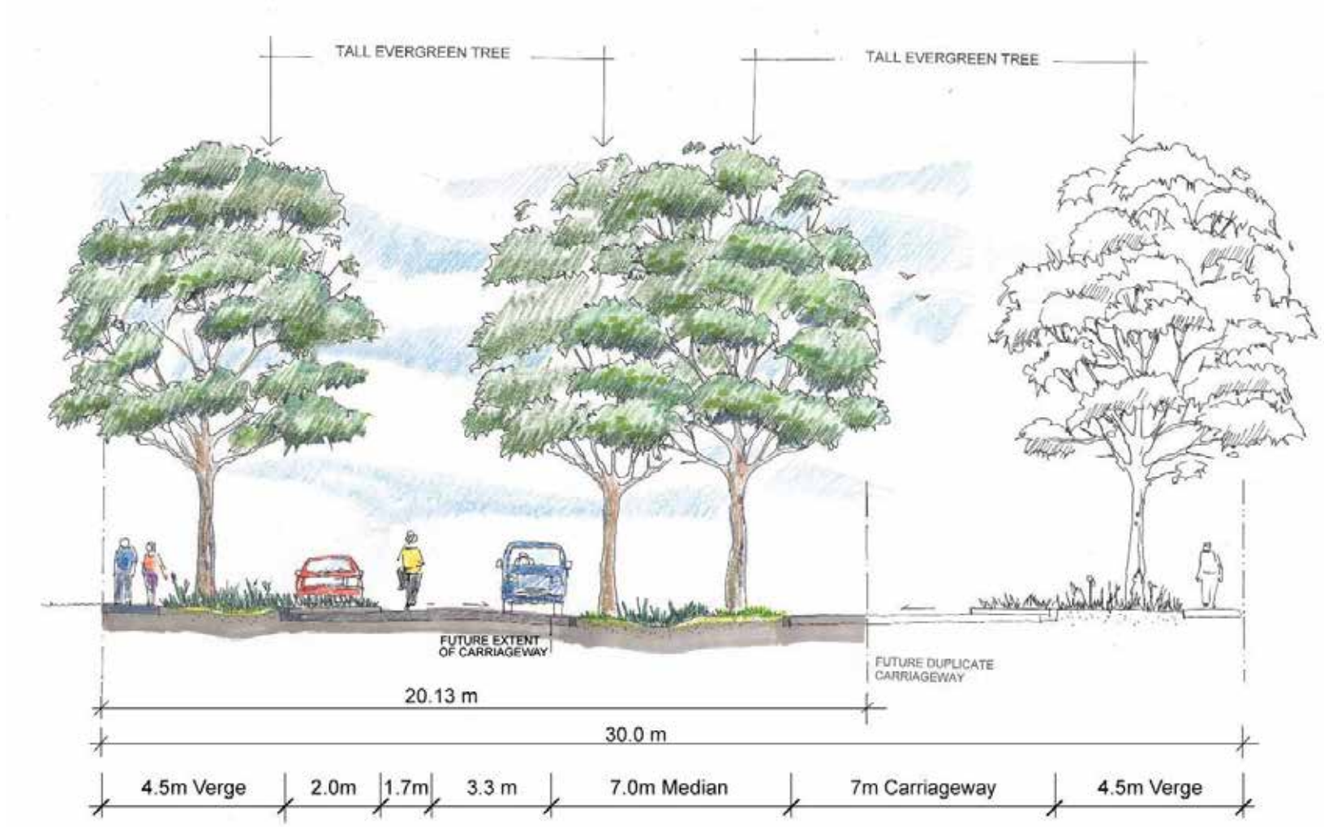
The arterial street network at Aurora has been designed to provide sufficient land for any widening required to accommodate the traffic volume generated by development north of Craigieburn Road East. Developers within Aurora will only construct streets to accommodate the traffic generated by development in the ADP2 area.

(a) Craigieburn Road East

Craigieburn Road East is a primary arterial main road and will be managed by VicRoads. Any widening required will be on the north side of the reservation. Aurora will provide an appropriate level of access management using service roads (12 metres wide reservation) or internal streets to provide access to the properties abutting Craigieburn Road East. Intersections will be kept to a reasonable minimum.

(b) Harvest Home Road

Harvest Home Road is an important internal east-west route in Epping North. The forecast traffic volume for Harvest Home Road from Scanlon Drive to Epping Road is between 5,000 and 10,000 vehicles per day, depending on location. The appropriate street type includes a clear travel lane in each direction, a wide central median, on-street parking and cycling lanes adjacent to the parking lanes. A transition will be necessary from the cross section of Harvest Home Road abutting Section A of Aurora.



Harvest Home Road

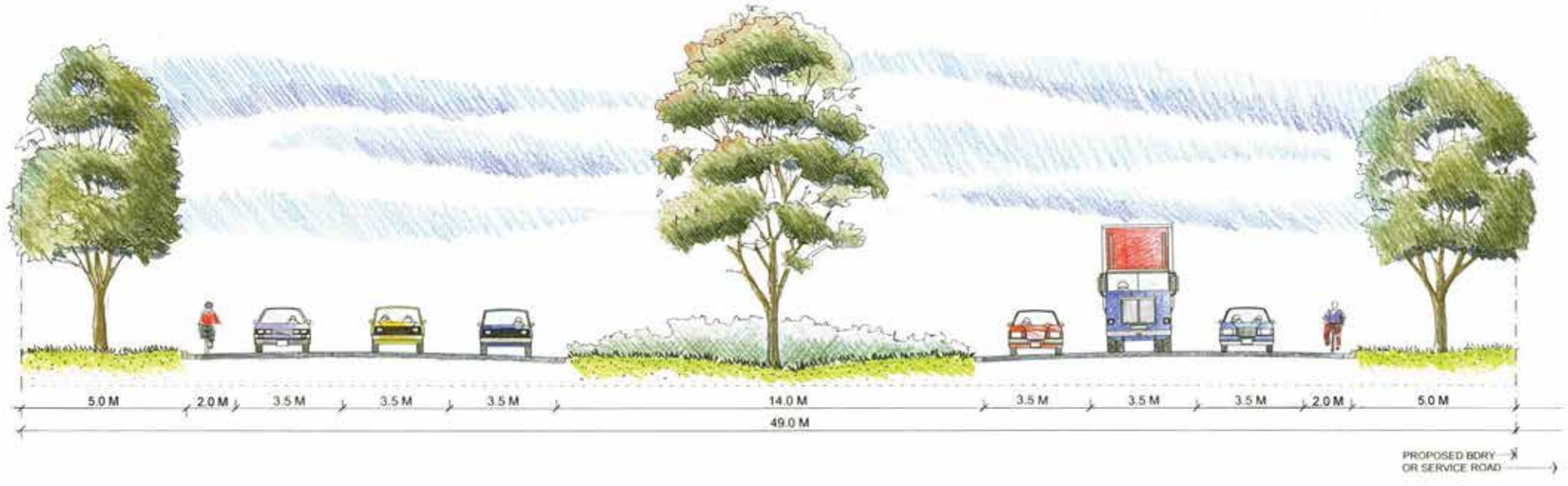
(c) O'Herns Road

O'Herns Road is the major east-west arterial street and provides an important connection to the Craigieburn Bypass. Traffic volumes are expected ultimately to reach levels in excess of 40,000 vehicles per day at the interchange and more than 25,000 vehicles per day east of Edgars Road.

As land uses, traffic volumes and the desirable speed environment change along O'Herns Road, it will need to be modified so that will not be a divisive element in the community. It must still accommodate the expected traffic volume at an appropriate level of service. The various cross sections of O'Herns Road are described below.

- ***Craigieburn Bypass to Scanlon Drive***

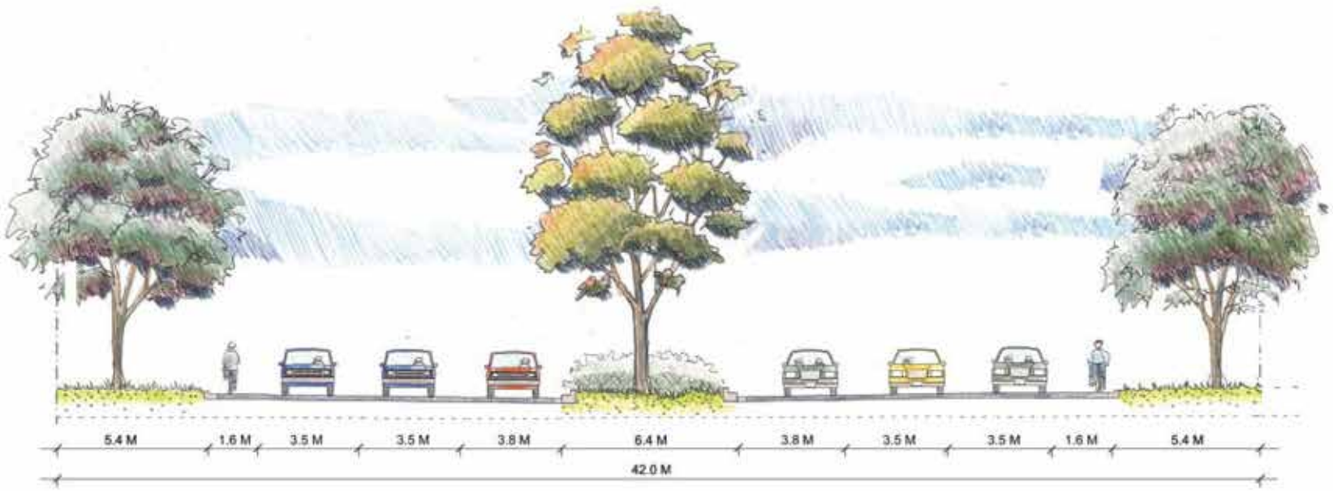
A six-lane cross section is proposed for the segment of O'Herns Road between the Craigieburn Bypass and Scanlon Drive. The median will vary in width between the interchange (to be designed by VicRoads) and the Scanlon Drive intersection (14 metres less turning lanes).



O'Herns Road - Craigieburn Bypass to Scanlon Drive

- ***Scanlon Drive to east boundary of Aurora***

O'Herns Road from Scanlon Drive to the east boundary of Aurora is within the walkable catchment of the southern primary activity centre and public transport station / interchange. A significant part of the Cooper Street Employment Area is also within the walkable catchment of these facilities provided that the crossing of O'Herns Road is encouraged by a pedestrian compatible environment. A 60 kilometres per hour speed limit between Scanlon Drive and approximately 600 metres east of Edgars Road is required therefore to provide such an environment. The section at right shows a mid-block design for O'Herns Road within the walkable catchment of the southern primary activity centre The section makes for provision for the continuation of six lanes through this segment of O'Herns Road however, it will be constructed with four lanes and a median 14 metres wide.



O'Herns Road - Scanlon Drive to east boundary of Aurora

(d) Edgars Road

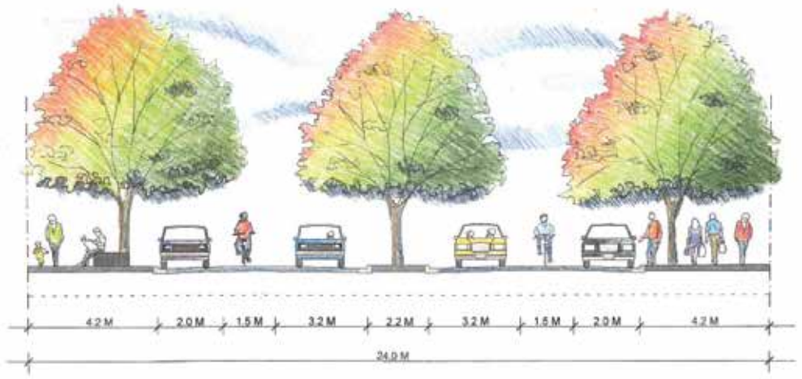
Edgars Road is the major north-south arterial through Aurora, although it will be supported strongly by Scanlon Drive and other parallel routes, particularly near the southern primary activity centre. The traffic modelling indicates an ultimate daily flow of about 17,000 vehicle movements within the Aurora Town Centre and the southern primary activity centre. This is a deliberate design outcome so that a two-lane main street can be used within the town centres, enabled through the supporting, virtually parallel routes that also provide connections to O'Herns Road.

- ***Through Southern Primary Activity Centre and Aurora Town Centre***

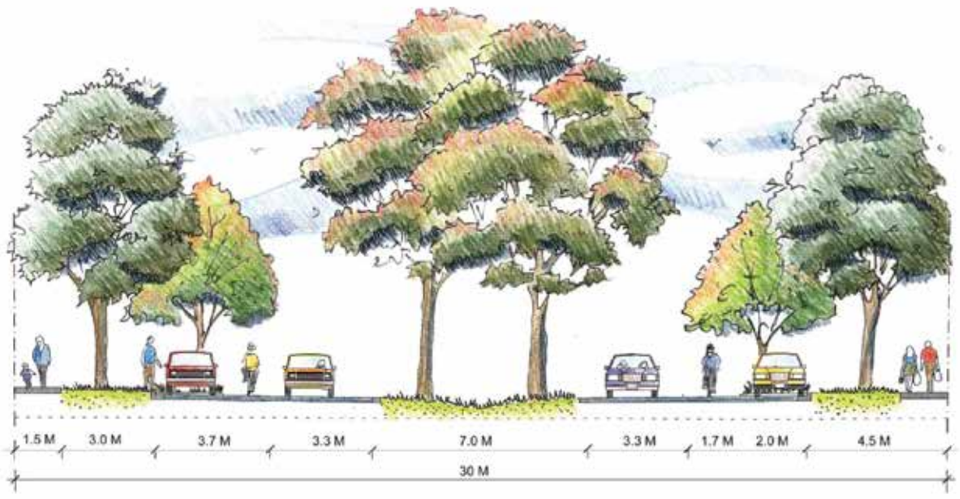
The main street sections of Edgars Road will have a median 2.2 metres wide, manoeuvre lanes adjacent to the parking lanes and a reservation width of 24 metres. This form of street design is proposed so that pedestrians can cross virtually anywhere and so that ambient traffic speeds are kept low through disruptions to the flow. The travel lane width has been kept narrow deliberately to discourage high vehicle speeds. One objective is to enable people on the footpath to see what is on offer in the shop windows on the other side of the street.

- ***Outside Southern and Northern Primary Activity Centres***

Outside the southern and northern town centres, a two-lane divided cross section is proposed for Edgars Road, with a central median 7 metres wide and a lane configuration to suit a 60 kilometres per hour environment. A travel lane 3.3 metres wide marked adjacent to the median will allow a wide kerbside lane that can accommodate a parking lane (if required) and cycle lane.



Edgars Road - Through Southern Primary Activity Centre and Aurora Town Centre



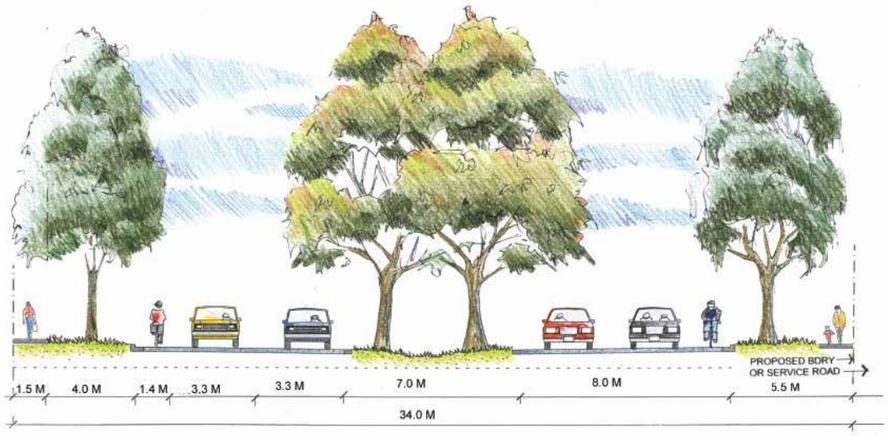
Edgars Road - Outside Southern and Northern Primary Activity Centres

(e) Scanlon Drive

The current development potential of the land north of Craigieburn Road East, which is outside the urban growth boundary, does not necessitate Scanlon Drive being a four-lane arterial street north of the neighbourhood connector street type 2 that connects Scanlon Drive to the southern primary activity centre south of the power easement. It has been agreed with Whittlesea however, that Aurora will make provision for a four-lane divided cross section for Scanlon Drive between O'Herns Road and Craigieburn Road East.

Unlike Edgars Road, Scanlon Drive is not within the walkable catchment of the primary activity centres or the public transport stations / interchanges and consequently it is likely that larger lot sizes will be introduced generally abutting Scanlon Drive. Service roads will provide appropriate vehicle access, if required. Two 8 metre wide carriageways will allow for 3.3 metre wide travel lanes and 1.4 metre wide cycle lanes.

North of Harvest Home Road, Scanlon Drive mostly aligns with the gas easement. This easement is approximately 35 metres wide. Allowance for two lanes on either side of the easement will be made and consequently the typical mid-block design as is shown in the section (at right) however, with a wider median to accommodate the easement. Actual dimensions will be negotiated at the appropriate time.



Scanlon Drive - North of O'Herns Road

5.12.5 Other Street Design

(a) Principles of street design

Important ingredients in neighbourhood design and character are streetscape, street design and street diversity with legibility. Street design must evolve from the integration of elements including traffic function, future traffic volumes, access to abutting land uses, legibility and permeability, context and attractive setting, car parking provision, vegetation, context and attractive setting, car parking provision, vegetation, visibility and safety.

The combination and weight given to these elements will vary in different situations (for example, in a 'main street' compared with an arterial street or in a street abutting a park compared with a rear access lane). Street design will occur in more detailed subdivision planning permit application stages including the consideration and balancing of the multitude of design elements as appropriate to the particular street context.

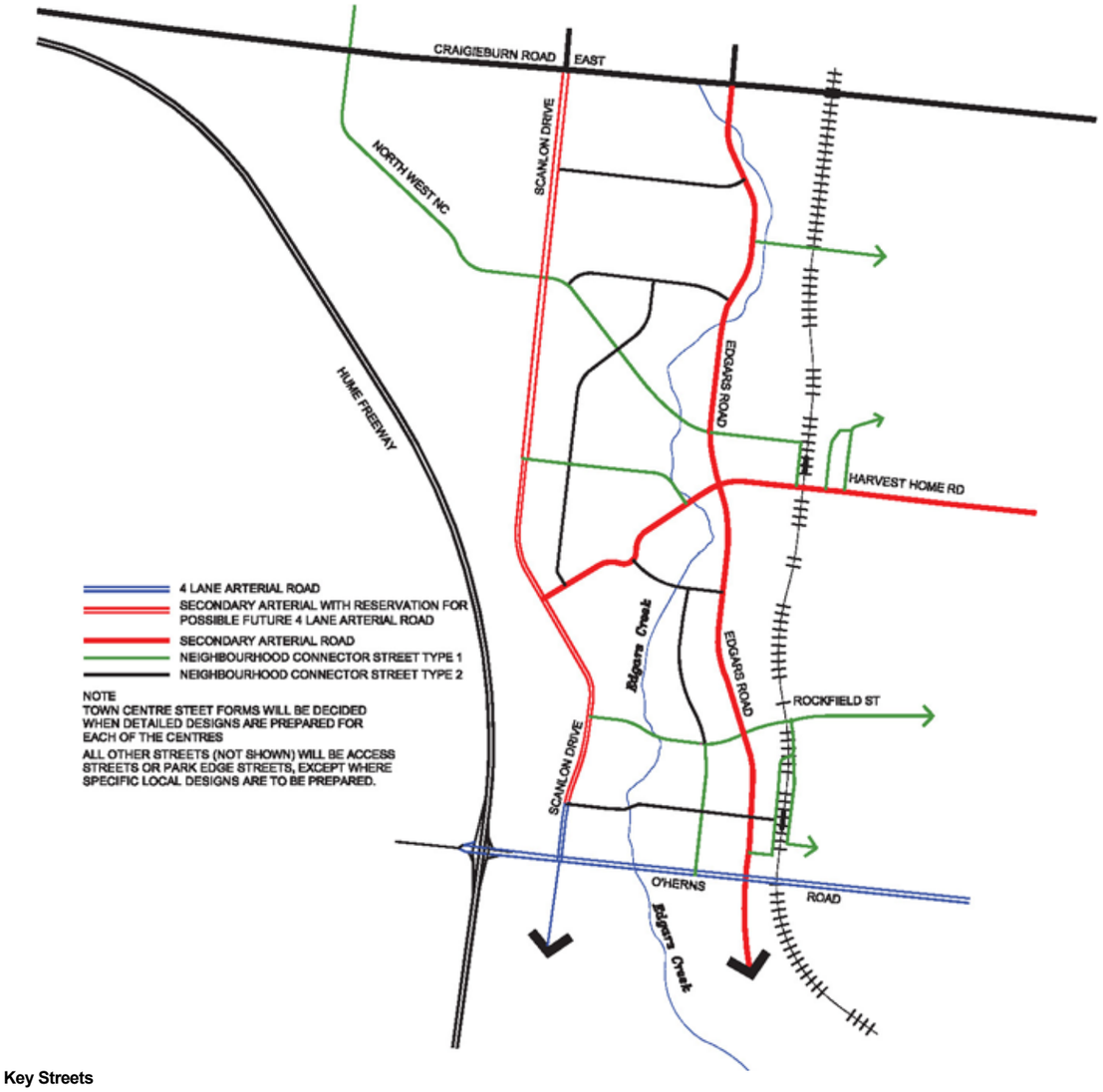
Generally, however, the network of streets at Aurora will distribute traffic so that volumes on most sections of streets will be under 2,000 vehicle movements per day. The street network design is based upon a clear objective to maintain high levels of traffic-related safety and amenity for all street users, not just vehicle drivers, so that non-motorised travel and the use of the street for social purposes are encouraged.

As a general guide, a street carriageway width of 7.3 metres can accommodate adequately up to 3,000 vehicles per day in conjunction with moderate on-street parking demands. A cross section with two lanes clear for travel is preferred when volumes are greater than around 2,000 vehicles per day. Where parking may be more intensive, a wider street cross section is proposed so that parking and travel is made easier and streetscape opportunities are enhanced.

Where streets are predicted to carry more than 3,000 vehicles per day, on-street cycle lanes are proposed including appropriate treatments at intersections. No carriageway widening for on-street cycle lanes is proposed in streets having less than 3,000 vehicles per day. This approach is in accordance with AustRoads Guide to Traffic Management Practice Part 14.

The diagram over provides 'in principle' street types for the key streets in Aurora. As noted above however, these 'in principle' street types may be added to, as Aurora develops, in order to best meet particular development context requirements and urban design intentions.

In respect of WSUD, Places Victoria will continue to investigate and refine WSUD measures and design solutions. In consultation with and the agreement of Whittlesea, WSUD solutions in streets (and beyond) may be varied by Places Victoria over time from those noted in typical street cross sections and descriptions following.



Key Streets

(b) Rear Access Lanes

The typical 'rear access lane' will be 6.4 metres wide although there will be occasional local variations. This allows for garages with 4.8 metres wide doors and an internal depth of 6 metres to be constructed on the property boundary with the lane.

(c) Park Edge Streets

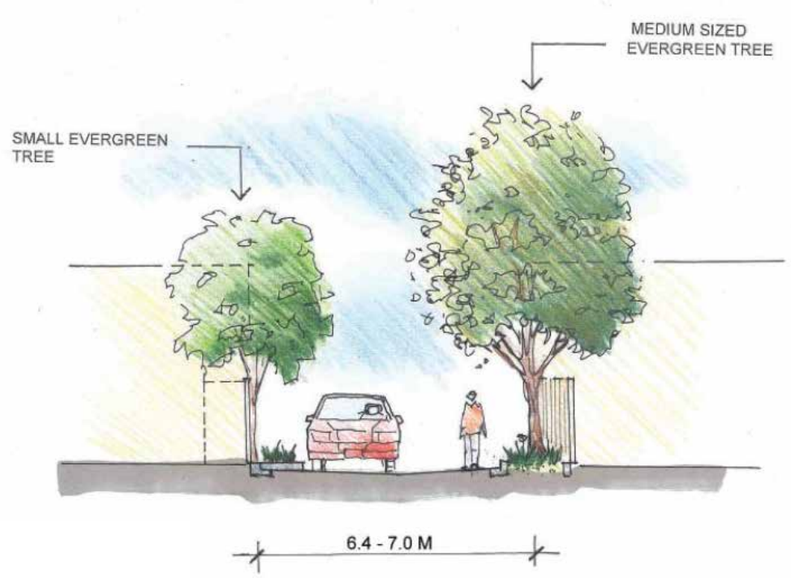
The 'park edge street' will carry generally less than 1,000 vehicle movements per day, have a 5.5 metres wide carriageway between kerbs in a reservation 11 metres wide and have housing on only one side of the carriageway. The verge abutting lots will be typically 4.5 metres wide while the verge abutting the public open space will be typically 1 metre wide. The verge widths may vary depending on WSUD requirements. There will be a minimum of 1 metre clear behind the kerb face to any trees and poles for emergency vehicle access.

Parked cars will generate a traffic management benefit, with passing vehicles potentially needing to pause for on-coming vehicles and also to move laterally when cars are parked on opposite sides of the street. Parking can occur on either side of the street without the need for controlling signs.

Depending on the size and purposes of the abutting public open space, the cross section may need to vary to accommodate parking on both sides of the street.

(d) Service Roads and Wide Median Streets

Service roads and wide median streets are designed generally for each carriageway to operate one-way. A 10 metres wide reservation is appropriate for a service road. The wide median street reservation width will be a function of the width of the median. WSUD requirements may lead to variations in verge dimensions.



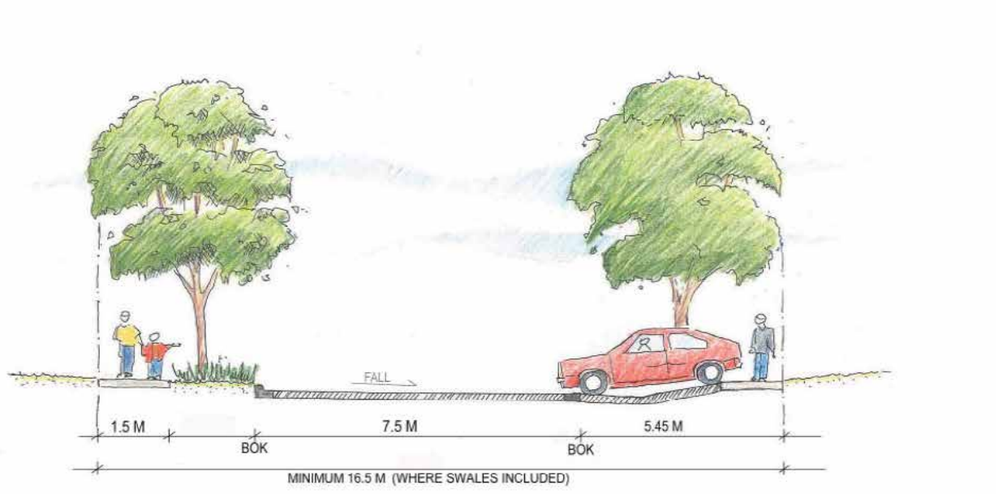
Rear Acess Lane

Park Edge Street

(e) Access Street Type 1

An ‘access street type 1’ will have a 7.3 metres wide carriageway between kerbs in a reservation generally 16.5 metres width, dependant upon requirements for bioretention swales, streetscape designs and reticulated services needs. This allows for parallel parking on both sides of the street plus clear passage for a single lane of traffic in one direction at a time or for opposing traffic to pass a single parked car. This minimum 16.5m reserve width will be subject to ongoing review and may change. WSUD requirements may lead to variations in verge dimensions. This street type is the most common throughout Aurora, providing a good balance between the needs of kerbside parking and moving traffic.

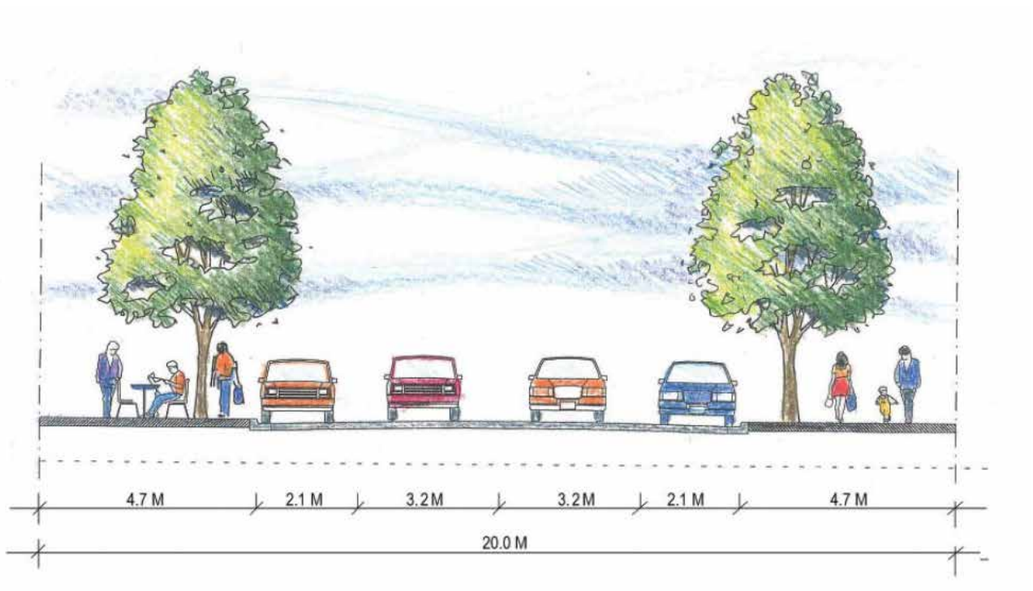
This street type is appropriate typically in areas of traffic volume up to 2000 to 3000 vehicles per day and the moderate kerbside parking demands usually associated with the densities proposed at Aurora. There is no situation however, in the ADP2 area where this street type is proposed when the traffic volume will exceed 1500 vehicles per day.



Access Street Type 1

(f) Secondary Town Centre Streets

A ‘secondary town centre street’ will have a 10.6 metres wide carriageway between kerbs in a reservation 20 metres wide and is proposed in the southern and northern primary activity centres where parking needs are expected to be quite high and where commercial vehicle access is anticipated for loading and service. WSUD requirements may lead to variations in verge dimensions.



Access Street Type 2

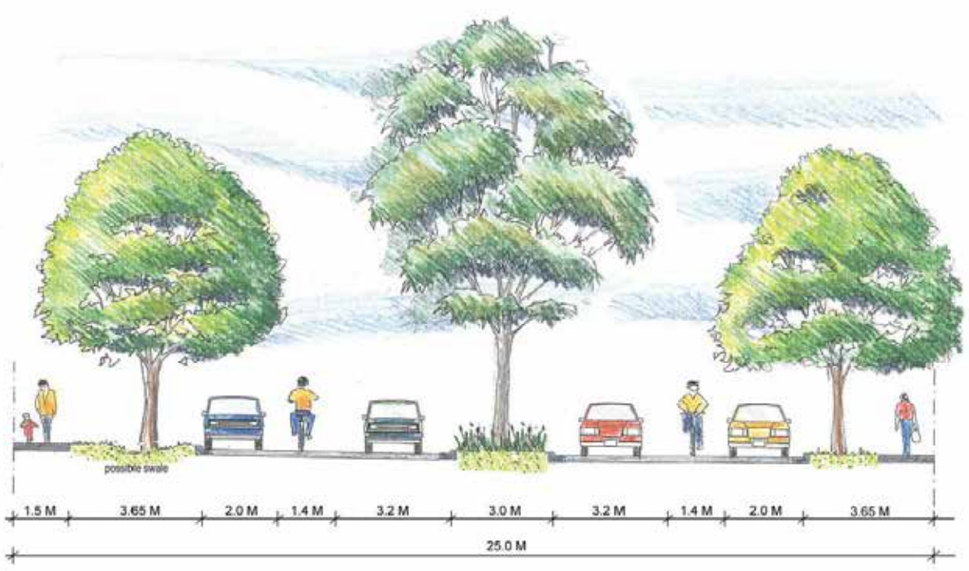
(g) Neighbourhood Connector Street Type 1

The 'neighbourhood connector street type 1' will be used where relatively high traffic volumes warrant the use of two clear travel lanes and where AustRoads Guide to Traffic Engineering Practice suggests that on-street cycle lanes are necessary. A reservation width of 25 metres will allow for two divided 6.6 metres wide carriageways with a 3.2 metres wide travel lane, parallel parking and an on-street cycle lane. WSUD requirements and specific design intentions may lead to variations in reservation width.

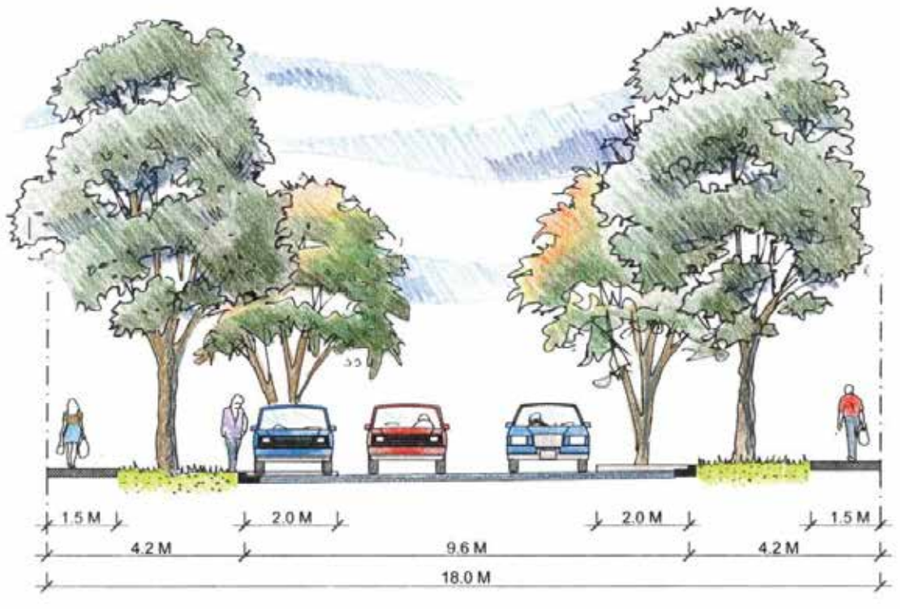
(h) Neighbourhood Connector Street Type 2

The 'neighbourhood connector street type 2' is the lower order neighbourhood connector street. It will provide a higher level of service than the 'access street type 1' to assist those travelling longer distances but not using arterial streets. A reservation width of 18 meters will allow for generous verges, travel lanes and parallel parking on both sides of the street between trees set into the parking lane. The parking lane will be marked at 2.1 meters from the kerb face, leaving 5.4m of clear trafficable pavement. This reasonably tight configuration is aimed at keeping vehicle speeds appropriately low.

This street type is suitable where traffic volumes of up to 3000 vehicles per day are anticipated, with or without direct vehicle access to lots. WSUD requirements may lead to variations in reservation width.



Neighbourhood Connector Street Type 1



Neighbourhood Connector Street Type 2

5.12.6 Arterial Street Intersection Management

(a) Design Principles

When Epping North, including Aurora, is close to fully built out, it is envisaged that there will be traffic signal-controlled intersections at suitable spacing along all of the arterial streets within or adjacent to Aurora. Roundabouts will be avoided generally within the walkable catchment of the town centres and public transport stations / interchanges of Aurora.

In the vicinity of the primary activity centres it is important that signal control is used at a number of intersections to maximise pedestrian safety and amenity and to afford the highest levels of accessibility. Bus movements to and from the public transport interchange will be assisted also by the proposed traffic signal strategy.

The diagram at right shows the general strategy for the management of the arterial street intersections.

Arterial Street Intersection Management

(b) Craigieburn Road East

Traffic modelling (with no development north of Craigieburn Road East) by TTM indicates a two-way daily traffic volume of 7000 vehicle movements on Craigieburn Road East near Scanlon Drive and Edgars Road. The modelling also indicates that for right turns onto Craigieburn Road East, the intersection with Edgars Road has the highest vehicle movement - approximately 70 movements per hour. Gap analysis indicates a practical absorption capacity in excess of 300 vehicles per hour to turn through 700 vehicles per hour with a critical acceptance gap of 6 seconds. A Type C intersection is proposed therefore at the three intersections of Aurora streets with Craigieburn Road East.

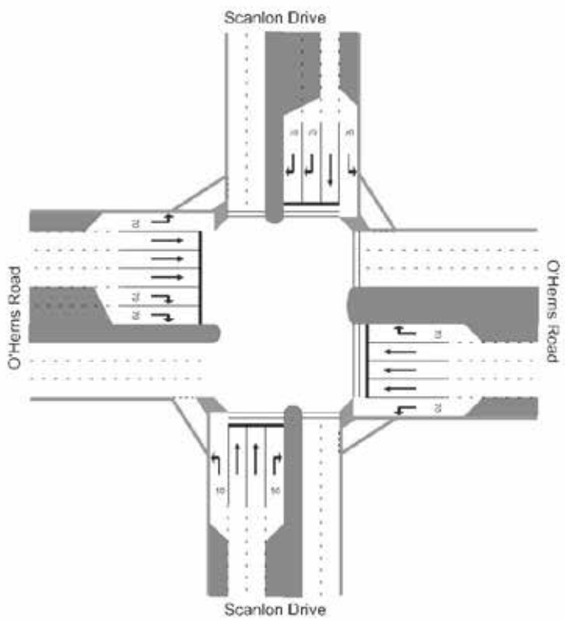
(c) O'Herns Road

- ***At the Craigieburn Bypass***

The intersection of O'Herns Road and the Craigieburn Bypass is likely to require signal control, which will be designed by VicRoads.

- ***At Scanlon Drive***

A large signal-controlled intersection is the most appropriate treatment for the intersection of O'Herns Road and Scanlon Drive. An indicative design for the intersection is shown in the diagram below.

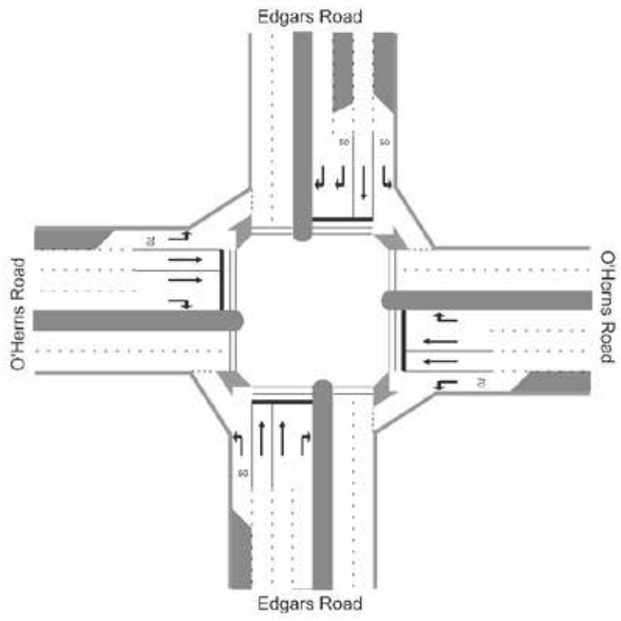


Intersection - O'Herns Road / Scanlon Drive

The performance (with development north of Craigieburn Road East) of this intersection was assessed using SIDRA for the morning and afternoon peak hours. It was concluded that the peak degree of saturation would be 0.900 in the morning peak hour, indicating satisfactory operation of the intersection.

- ***At Edgars Road***

The indicative design concept for the intersection of O'Herns Road and Edgars Road is similar geometrically to that proposed for the O'Herns Road-Scanlon Drive intersection, as shown in the diagram below.



Intersection - O'Herns Road / Edgars Road

The performance (with development north of Craigieburn Road East) of this intersection was assessed using SIDRA for the morning and afternoon peak hours and it was concluded that the peak degree of saturation would be 0.899 in the morning peak hour, which indicates satisfactory operation of the intersection.

- ***Other intersections***

Other intersections along O'Herns Road are proposed to be controlled by a give-way sign either with or without median openings.

Depending on the development of the Cooper Street Employment Area, a signal-controlled cross junction may be required at the intersection of O'Herns Road and Cotters Road.

(d) Edgars Road

Signal-controlled intersections on Edgars Road are likely to be required to the north of the northern and southern town centres and at Harvest Home Road. These intersections have not been designed as they are internal to Aurora.

5.12.7 Other Street Intersection Management

(a) Design Principles

The design of intersections in Aurora is based generally upon the following three fundamental objectives:

- safe entry and exit to / from the major street from / to the minor street;
- the capacity to accommodate expected vehicles - in this case the design vehicle is an 11 metres long rigid truck throughout the subject land and a 17 metres long semi-trailer in the streets surrounding the town centres, along the main access streets and on potential bus routes;
- the intersection treatment is used as a traffic management device to achieve an appropriate traffic speed environment where practicable.

Kerb radii are kept to a minimum in consideration of these objectives and to shorten walk distances for pedestrians crossing street intersections.

(b) Standard Designs

The majority of intersections in Aurora will be T-intersections between streets with 7.3 metres wide carriageways, mostly intersecting at an angle close to 90 degrees. Kerb radii at these intersections should not exceed 6 metres.

On Edgars Road, Scanlon Drive, Harvest Home Road and the 'neighbourhood connector street type1' that are potential bus routes, a 17 metres long semi-trailer is accommodated so that easy bus access is obtained and building materials on the more heavily trafficked routes can be delivered by semi-trailers without the need to mount kerbs.

A general design objective is to avoid signage. It is assumed generally that parking can / will occur in all places except within 10 metres of intersecting kerb alignments and across driveways and intersections. This assumption establishes the kerb return radius at each intersection.

(c) Traffic Speed Control

Traffic speed control is proposed through a combination of slow points, which may be either at or between intersections and the general design and use of each street type.

Parked cars will add to traffic management by providing a relatively tight street cross section that must be negotiated carefully and slowly. Having adequate but not excessive carriageway widths will add further to the level of control over traffic speeds where necessary.

Typically the aim of the proposed street network is to have a 'leg length' of no greater than 200 metres. Leg length is the distance between points where traffic will need to slow to approximately 15 kilometres per hour to negotiate a particular section of street.

Clause 56.03-4 of the Scheme sets out spacings or separations for speed control 'devices'. Strict adherence to the Scheme would result in new residential developments being inundated with speed control devices that cannot all be located at intersections and therefore will reduce accessibility and streetscape values.

In response to Clause 56.03-4 and the design principles for traffic speed control, a suite of intersection treatments has been developed for Aurora that will operate effectively as slowing points.

5.12.8 Non-Motorised Transport

(a) Footpaths in Streets

Streets in Aurora are proposed to have 1.5 metres wide footpaths along sides fronted by residential development, where practicable. In the primary and local activity centres, near education centres and other areas where pedestrian activity levels will be higher, footpaths will be wider generally.

(b) Off-Street Paths

A network of shared paths through open space and abutting major streets will link community facilities and provide for walking and cycling at Aurora. These paths will be typically 2.5 metres wide.

Off-Street Path Network

5.13 ENGINEERING INFRASTRUCTURE

5.13.1 Objectives

The engineering objectives of Aurora are to:

- provide high quality, low maintenance infrastructure to the community;
- develop infrastructure that is sustainable economically;
- provide infrastructure that minimises the impact on the environment using techniques such as:
    - lower embodied energy products and materials;
    - employing construction techniques that reduce earthworks;
    - reducing the volume of waste material;
    - recycling and reusing materials derived from Aurora;
    - using off-site recycled materials;
    - using WSUD to improve stormwater quality;
    - using local sewage treatment and recycled water reticulation to reduce demand on potable supplies.

5.13.2 General Engineering Infrastructure Response

In accordance with State government policy, Places Victoria has adopted a sustainable development approach to the planning of Aurora. As a result, the remote location of services becomes less of a constraint and will result in innovative but sustainable approaches being adopted to service the new community. The innovative and sustainable approach of Places Victoria to the provision of the necessary infrastructure can only be achieved with a significant development of the scale of Aurora.

The conversion of rural to urban uses results in a significant change to the landscape, adds to the consumption of potable water, generates surface water flows and increases the discharge of wastewater. A sustainable approach to development mitigates these changes through appropriate management of water resources.

A number of alternative integrated water management systems have been investigated and assessed for their application to Aurora. Estate-wide approaches to wastewater management and demand management have the ability to reduce potable water demand, maintain water quality standards and be more economical in the long term.

The sustainable practices being investigated in detail at Aurora include water conservation and demand management measures at the household level, harvesting of rainwater, WSUD, wastewater recycling, higher density housing to support public transport, energy efficient dwelling design incorporating solar energy for hot water and electrical energy and the encouragement of reduction in private vehicle use through efficient urban design.

The implementation of the water management initiatives will require the consent and cooperation of a number of government agencies. These agencies have been engaged closely and are participating in the development of innovative and more sustainable servicing options for the subject land.

Places Victoria has initiated a significant research program to address all of the issues associated with adopting a sustainable development approach at Aurora. The investigations in relation to the water cycle have identified that the impact on the environment can be reduced significantly if a number of initiatives are introduced. The initiatives being investigated include the following:

- use of low flow water fittings in showers and basins;
- use of water efficient appliances (five-star rated washing machines and dishwashers);
- use of rainwater tanks to capture roof water for hot water, bathroom and laundry use, subject to satisfactory field testing and the approval of relevant authorities, in the early stages of Aurora;
- treating sewage locally to tertiary standard and reticulating the recycled water back to lots for toilet flushing and private and public open space irrigation;
- providing the community with a local intranet and real time metering of water and energy use to support conservation habits.

The combined effect of these measures is to reduce potable water consumption by approximately 50 to 70 per cent when compared with conventional servicing arrangements.

Other measures within the public realm include WSUD, the capture and treatment of stormwater and the retention of large areas of open space.

These approaches to introducing integrated water management have been discussed and tested with Yarra Valley Water (YVW) and Melbourne Water Corporation (MWC) and have been incorporated into an Aurora Estate Agreement to provide a sewage and recycled water treatment facility and the reticulation of the recycled water throughout Aurora.

In addition, Places Victoria, in concert with YVW and MWC, has appointed and is being advised by an independent expert panel to review the technical aspects of the water management systems proposed at Aurora. The panel has praised and supported the initiatives. As a result, the development of Aurora can be commenced immediately and serviced by the innovative and sustainable servicing arrangements described above.

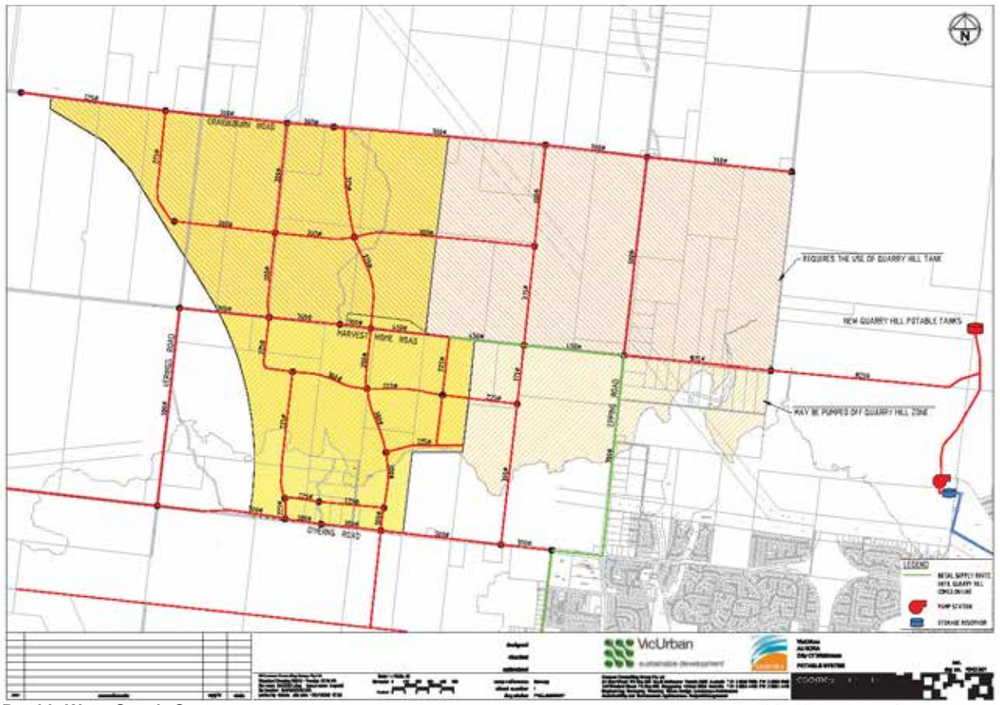
5.13.3 Water Supply

The agency responsible for the provision of water at Aurora is YVW. Water supply is provided from supply reservoirs on Quarry Hill, 5 kilometres to the east of Aurora. The water supply catchments of MWC are located immediately to the north east of Aurora and there is sufficient capacity within these networks to meet the expected demand.

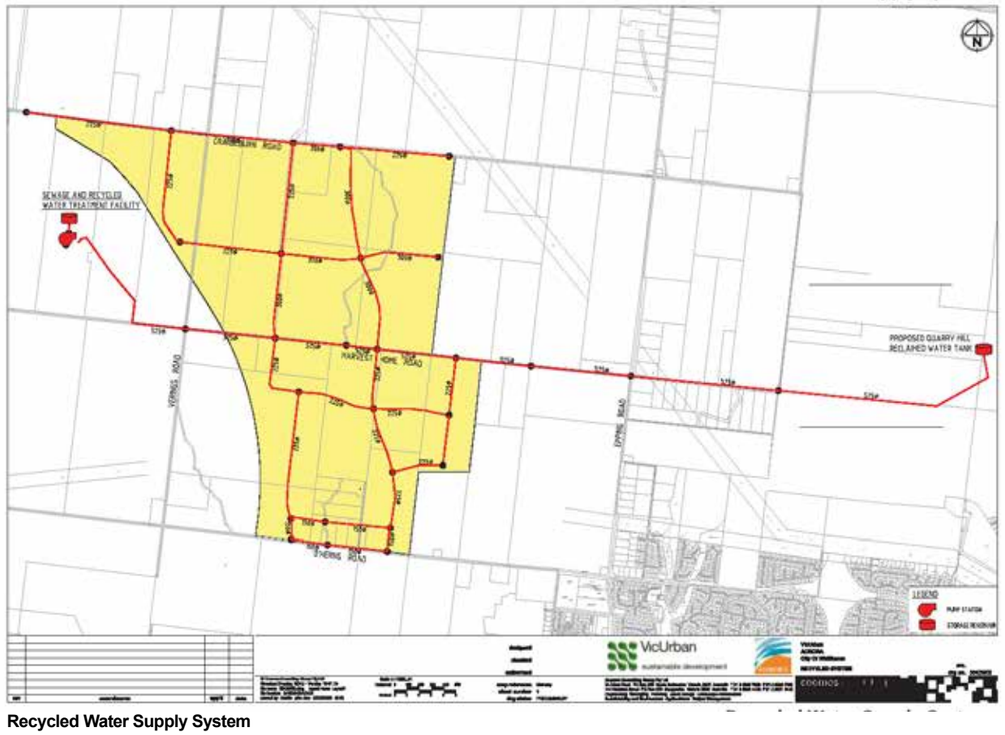
The recently completed strategy for the water supply of Melbourne identifies that alternative sources are available to augment existing supplies, sufficient to meet expected demand until 2050. The strategy does promote the use of alternative water sources however, for uses other than drinking and advocates innovative approaches to managing water use within residential developments. Aurora will incorporate a reclaimed water supply system as well as a potable water supply system.

Water will be supplied to Aurora via a water main extension along Harvest Home Road, which is to be constructed as part of Section A of Aurora. Additional external water mains have also been constructed along O'Herns Road and Epping Road, with future mains to be instructed in Craigieburn Road East as required.

Until such time as the new Quarry Hill high level tanks are installed, a water supply booster pump will be required which will be capable of servicing up to the 162 metres contour level. A YVW water supply pump station has been upgraded and used for this purpose.



Potable Water Supply System



Recycled Water Supply System

5.13.4 Drainage

The agency responsible for drainage facilities at Aurora is MWC, which has an approved drainage strategy for Edgars Creek. The Edgars Creek Drainage Strategy will form the basic framework for stormwater management at Aurora. In addition, WSUD principles will be incorporated as part of the development to manage and treat stormwater in a sustainable and innovative way.

Edgars Creek is an ephemeral stream that flows through Aurora. It is ill-defined in some sections and has been badly degraded. Water quality improvement will be completed throughout Aurora as part of the approach to WSUD.

WSUD provides an alternative to the traditional conveyance approach to water, stormwater and wastewater management. WSUD focuses on the integration of urban planning and development with the management, protection and conservation of the water cycle. The design philosophy recognises that it is impracticable to replicate the natural system however, it is possible to mitigate changes to the existing water balance.

The interrelationship between site, precinct and regional stormwater management measures is at left.

SITE ELEMENTS	PRECINCT ELEMENTS	REGIONAL ELEMENTS
• Lot density and layout	• Street layout and streetscape	• Public open space
• On-site retention (infiltration)	• Precinct retention (infiltration)	• Multiple use corridors
• Porous pavement	• Porous pavement	• Retarding basins
• Sand filter	• Sand filter	• Constructed wetlands and ponds
• Buffer strip	• Buffer strip	• Stormwater reuse
• Vegetated swales	• Vegetated swales	
• Bioretention system	• Bioretention system	
• Rain garden	• Urban forest	
• On-site detention	• Retarding basins	
• Rainwater tank for stormwater reuse	• Constructed wetlands and ponds	
	• Stormwater reuse	

Interrelationship between site, precinct and regional stormwater management measures

N.B. The drainage strategy is currently in the process of being updated. Matters relating to Integrated Water Management are to be resolved at the detailed design phase. The overall land budgets will not be altered as a result of any revised outcomes.

A hierarchy of water sources has been developed for Aurora to avoid the possibility of having competing supply sources for the same end use. Based on this water hierarchy, stormwater has the potential to provide:

- supply to a rainwater tank for hot water use within the dwelling;
- irrigation at the streetscape level as a by-product of stormwater treatment with, for example, the use of bioretention systems;
- environmental flows to Edgars Creek.

Places Victoria pioneered WSUD at Lynbrook in the City of Casey. Many of the key components used at Lynbrook will be enhanced and modified to suit the site specific conditions of Aurora. The exact treatments and standards to be used at Aurora are being determined in consultation with Whittlesea, YVW and MWC.

Possible WSUD techniques will include:

(a) Streetscape Bioswale

Bioswales are bioretention systems that are located with the base of the swale. They provide treatment of stormwater through fine filtration, extended detention and some biological uptake as well as providing a conveyance function along the swale.

Runoff is filtered through a sine media layer as it percolates downward. It is then collected via perforated pipes and discharged to the downstream drainage system.

The bioswales forms part of the streetscape and landscape of the development. Road reservations incorporating swales will be determined at the planning permit stage. The surface of the bioswale will be predominantly grass. Front draining houses connect to a 'bubble pit' within the swale. The one-way cross-fall road enters the bioswale via kerbside inlets.

(b) Nodal Streetscape Raingarden

Streetscape raingardens operate with the same treatment processes as bioretention swales except that they do not have a conveyance function. Instead they act as an ephemeral basin. High flows are diverted away from the basin and into an overflow structure (e.g. side entry pit).

These nodal streetscape treatments have some flexibility in terms of their size, shape and location to fit with the streetscape. The vegetation will predominantly be plants. Front draining houses connect their stormwater drain to the kerb and channel. These flows and the road pavement enter the rain garden via kerbside inlets.

(c) Rainwater for Hot Water

Rainwater can be harvested to supplement existing mains potable supply. The system captures rainwater falling on roofs of individual houses; it is then stored in an above ground tank and pumped to either a gas hot water storage system or a continuous flow gas hot water system.

(d) Large Raingardens or Bioretention systems

Large raingardens and bioretention systems treat stormwater by passing it through prescribed filtration media and vegetation. They also provide flow retardation and are particularly efficient in removing excess nutrients. Pre-treatment measures upstream will also be required to reduce the maintenance frequency requirements of the bioretention basin.

(e) Linear (Creek) Raingardens

Raingardens can also be located within public open space, provided the design does not compromise the function and amenity of the open space. Raingardens are considered to be drainage infrastructure and therefore the area impacted by the raingarden will be considered as encumbered open space. A creek corridor provides a potential opportunity to incorporate linear raingardens parallel to the waterway. The function and operation is essentially the same as the nodal raingardens except that the landscape response is generally different as the nodal system is integrated into an urban landscape whereas the linear system is integrated into a more natural environment. Topography and open space reservation is a significant consideration with this option as a sufficient grade is necessary to enable the bioretention system to drain to the existing waterway.

(f) Wetlands

Constructed wetlands systems are shallow, extensively vegetated water bodies that use enhanced sedimentation, fine filtration and pollutant uptake processes to remove pollutants from stormwater. Water levels rise and fall during rainfall events and outlets are configured to slowly release flows, typically over three days, back to the water levels of dry weather.

Any use of a treatment identified above will require Council approval.

5.13.5 Sewerage

Epping North, including Aurora, is located at the upstream end of the major trunk sewer infrastructure servicing the northern suburbs of Melbourne. YVW advises that the Edgars Creek Branch Sewer and Merri Creek Branch Sewer are at capacity during peak flows. Consequently, the increased flows that will be generated by the development of Epping North cannot be accommodated by the existing infrastructure.

YVW and MWC will be extending the North Western Trunk Sewer and Merri Creek Main Sewer to relieve the existing sewer system regardless of the development of Epping North. This sewerage service was planned to be available to Epping North in approximately 2011.

A Sewage and Recycled Water Treatment Facility (SRWTF) has been constructed to treat the sewage generated from Aurora to Class A standard (Environment Protection Authority – Guidelines for Environmental Management: Use of Reclaimed Water) for reticulation throughout Aurora. The sewage treatment plant component of the SRWTF will also service land outside Aurora on an interim basis until the North West Trunk Sewer and associated works are complete. The sewage treatment plant will be commissioned once the supply infrastructure is in place, which was expected to occur in early 2007.

The recycled water will be managed by YVW in accordance with the Environment Protection Authority approvals for the SRWTF. The sewage treatment plan component of the SRWTF will produce at least Class B recycled water, which will be stored in the winter storage dams and also used for irrigation on the SRWTF site. The water treatment plant component of the SRWTF will draw from the storage dams and treat the water to Class A standard. This treated water will then be reticulated to households within Aurora for toilet flushing and garden watering and will also be used for public open space irrigation. All infrastructure required to support a recycled water system, including treatment, storage and reticulations, will be installed to appropriate standards. All advice and information indicates that recycled water system will be appropriate for Aurora and will be significant step in demonstrating sustainable development principles.

The SRWTF is also likely to cater initially for the development of land in Epping North East. The SRWTF will service this land until the Merri Creek Main Sewer extension should be complete in approximately 2011.

Investigations have indicated that in some years the volume of recycled water generated from sewage flows will be less than the demand for recycled water for example, during dry years. In other years for example, wet years, a surplus of recycled water will be generated. In dry years, the potable water supply system will be used to supplement the recycled water supply.

In wet years, the surplus recycled water will be used in one or more of the following ways:

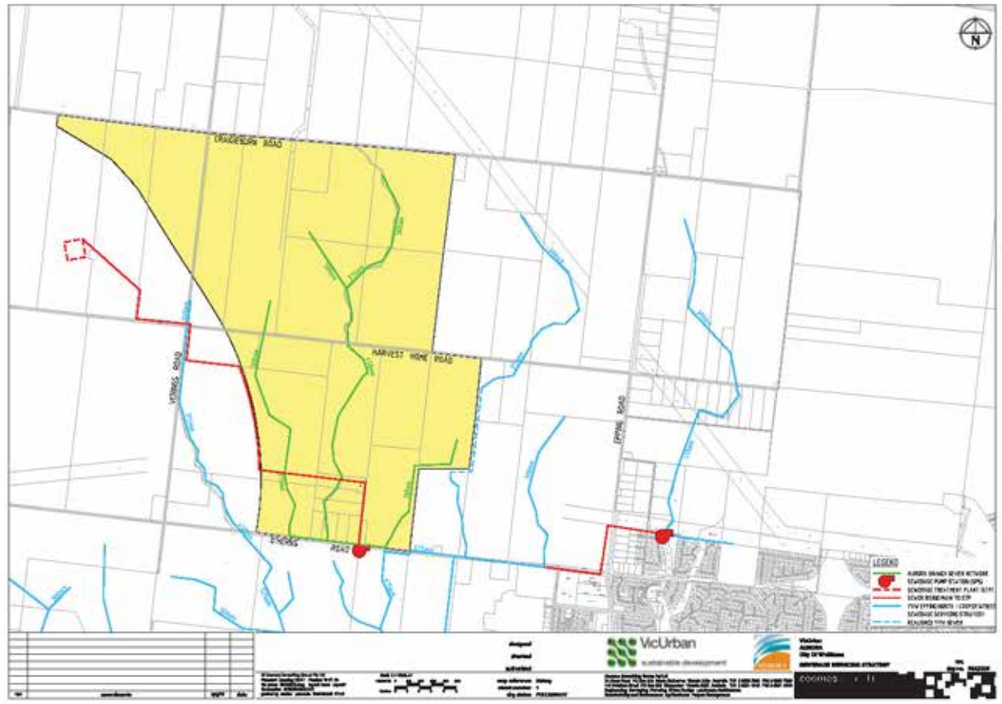
- irrigation on the SRWTF site;
- discharge (subject to approvals from the relevant authorities) to Edgars Creek and Merri Creek;
- discharge (subject to approvals from the relevant authorities) to the Merri Creek sewer system.

YVW has advised that the SRWTF will also be capable of providing recycled Class A water to other nearby development areas using 'sewer mining' from outfall sewers. As a result, the amount of excess water will be reduced and a more deliberate strategy of managing the demand for recycled water and reducing unproductive discharge can be introduced. The application of recycled water will be managed therefore by providing water to:

- Aurora for residential use;
- other development for residential use;
- irrigate Aurora public open spaces;
- irrigate other public open spaces;
- Edgars Creek for environmental flows;
- Merri Creek for environmental flows;
- other productive uses, such as industry.

The sewage from the expected residential development on land in Epping North East will be used as the source of sewage for the 'sewer mining' process and excess sewage will be diverted into the Merri Creek Main Sewer after 2011. The volume of effluent treated by the SRWTF will continue to increase with the occupation of lots at Aurora and other developments however, until the full capacity of the SRWTF is reached.

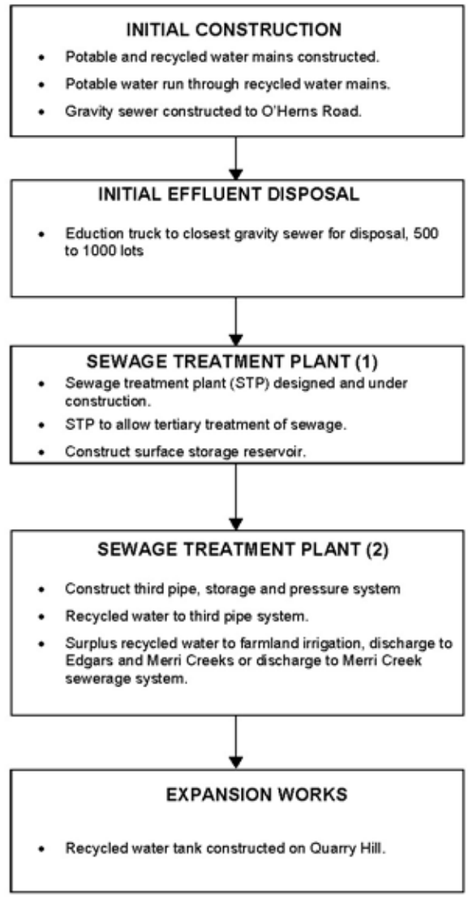
The sewerage strategy for Aurora and Epping North is shown opposite. It is consistent generally with the YVW strategy except that Aurora is isolated from the rest of the system. A normal gravity sewer system will be constructed within Aurora with all flows being concentrated at the junction of Edgars Creek and O'Herns Road. From this location, the sewage will be pumped via a rising main to the sewage treatment plant on land west of the Craigieburn Bypass between Harvest Home Road and Craigieburn Road East.



Sewerage Servicing Strategy

The flow chart below sets out the sequence and phasing of the sewerage infrastructure works from the initial construction and effluent disposal method through to construction of the full sewage treatment plant.

Sequencing and Phasing of Sewerage Infrastructure at Aurora



5.13.6 Other Services

All lots at Aurora will have available electricity, gas, telephone and fibre technology for telecommunications.

5.14 LINKAGES AND COMPATIBILITY WITH ADJOINING PROPERTIES

5.14.1 Objectives

The objectives for the treatment of Aurora in relation to adjoining properties are to:

- ensure compatibility and logical linkages between different land ownerships and developments;
- provide strong vehicle, walking and cycling connections;
- accommodate the integration of services and drainage.

5.14.2 Aurora Development Plan: Part 1

As noted earlier, the ADP1 is similar to ADP2 but deals with Section A of Aurora to the east of the subject land.

Harvest Home Road and the southern east-west neighbourhood connector street east of Edgars Road on the subject land provide direct links between the northern and southern primary activity centres and Section A of Aurora. These streets also connect Section A to the various facilities on the subject land including educational facilities, public open space and CAC. A series of access streets provide lower order connections. Two off-street walking and cycling paths extend through to Crimson Crescent and Gammage Boulevard in Section A of Aurora.

5.14.3 Other Adjoining Properties

Craigieburn Road East forms the north boundary of the subject land. Edgars Road, Scanlon Drive and Eaststone Avenue in the north west of Aurora, provide opportunities for future connections from Aurora to the properties north of Craigieburn Road East. One off-street walking and cycling path along Edgars Creek also extends through Aurora to Craigieburn Road East.

Several east-west neighbourhood connector streets, in addition to the three east-west arterial streets, provide connections between Aurora and the properties to the east (excluding Section A of Aurora). Two off-street shared paths, including one along the power easement, also extend through Aurora to the east (excluding Section A). The rear boundaries of lots and public open space on the subject land will abut generally the east boundary.

The south boundary of Aurora is formed by O'Herns Road. Edgars Road and Scanlon Drive provide opportunities for future connections from Aurora to the properties south of O'Herns Road. Several access streets and one off-street shared path along Edgars Creek extend through Aurora to O'Herns Road. Lots at Aurora will front generally O'Herns Road with vehicle access as described in Section 5.7.2.

The Craigieburn Bypass forms the west boundary of Aurora. The rear boundaries of predominantly larger lots on Aurora will abut this boundary as will streets and public open space in a number of locations. An interface treatment to satisfy the acoustic attenuation requirements of DD02 and to create a visual appearance appropriate to the desires of Places Victoria and Whittlesea will be designed.

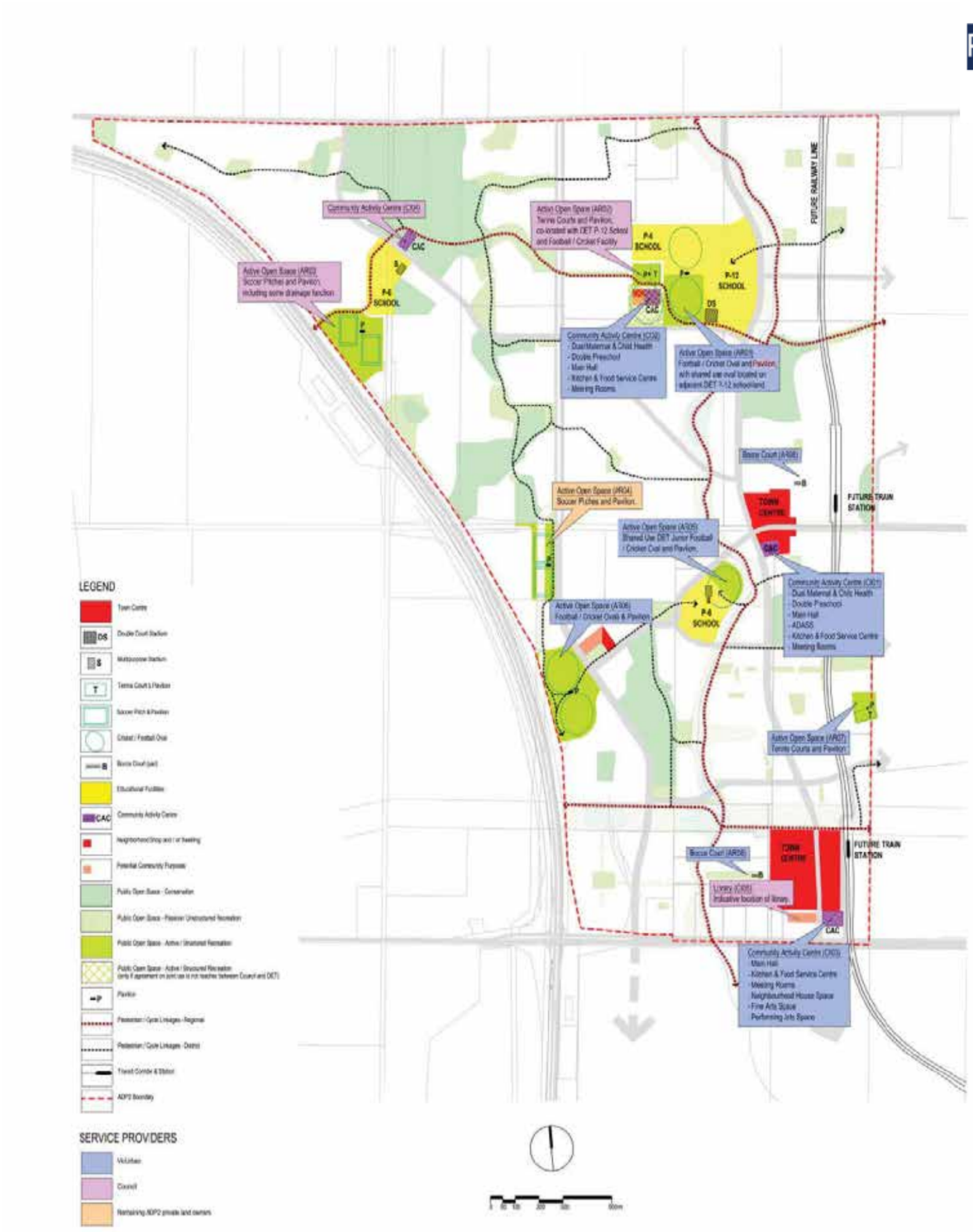
6 DEVELOPMENT CONTRIBUTIONS

6.1 DEVELOPMENT CONTRIBUTION REQUIREMENTS

A comprehensive infrastructure needs assessment has been undertaken for the ADP2 area. This analysis indentified the need for a broad range of infrastructure items to be funded on an equitable basis by all development at Aurora.

Given the nature and scale of Aurora, infrastructure obligations withi then ADP2 area are set out in the form of an agreement in accordance with Section 173 of the Planning and Environment Act 1987. This agreement specifies the particular projects, costs and obligations for delivery and was signed by the relevant parties before the subject land was rezoned.

The diagram at right identifies key community and recreation development contribution plans.



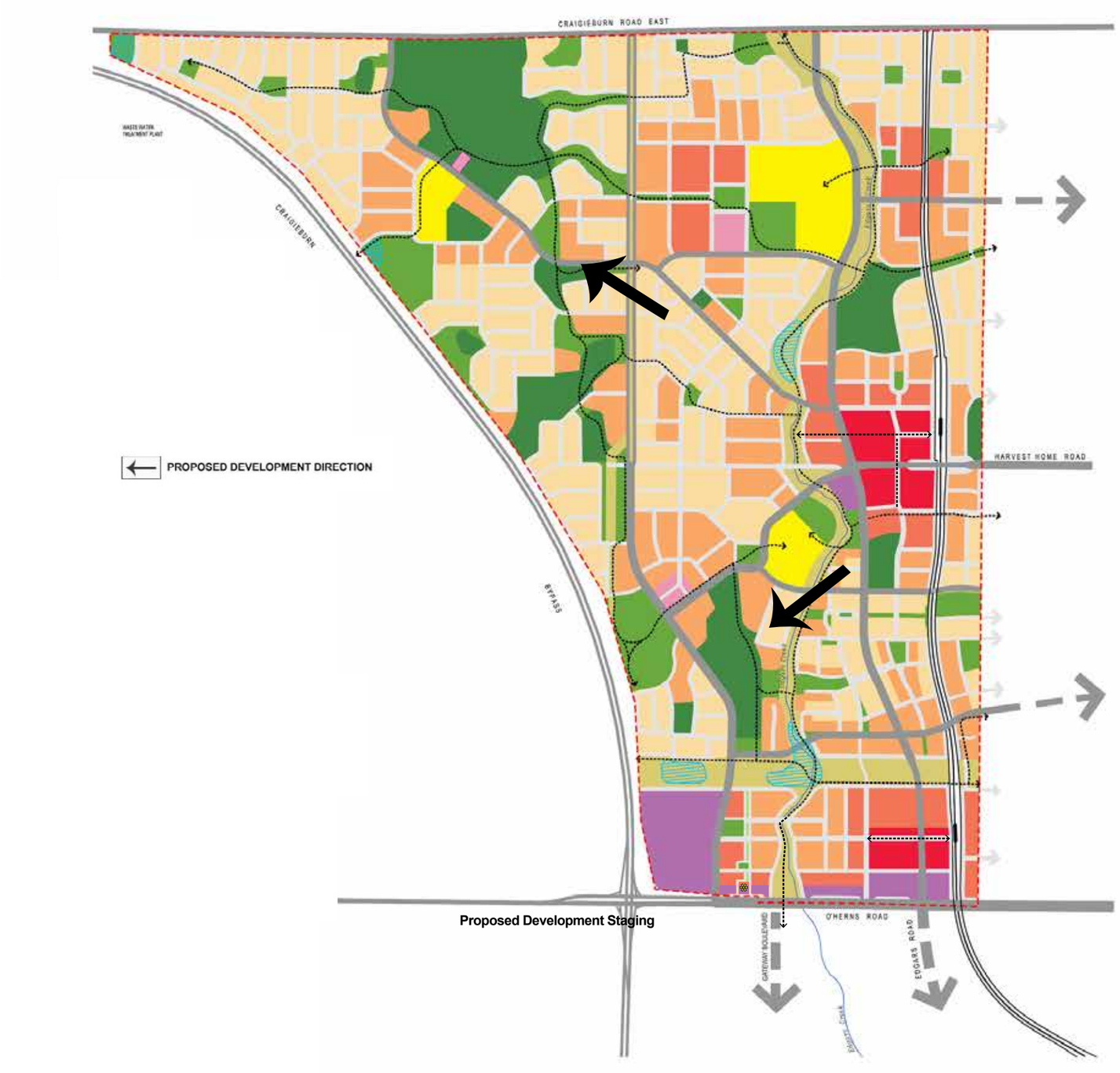
Community Infrastructure

7 IMPLEMENTATION

7.1 PROPOSED DEVELOPMENT STAGING

Aurora has commenced at the northern end of Section A (the ADP1 area), entering from Harvest Home Road. A second development front D) will be established to the west of Harvest Home Road.

The two development fronts are expected to progress to the south and north, providing sufficient population to support the establishment of the northern primary activity centre. Additional development fronts may also be established over the life of Aurora for example, on Craigieburn Road East. In time, it is anticipated that infill development around the southern primary activity centre will occur at a higher dwelling density, particularly around the core of the centre.



Proposed Development Staging

7.2 CLAUSES 54 AND 55 AND BUILDING REGULATIONS

In the review of design outcomes sought by Places Victoria for Aurora, various standards in Clauses 54 and 55 of the Scheme and in Part 4 of the Building (Interim) Regulations 2005, have been reviewed. The review has resulted in some particular alternative design parameters to tailor outcomes specifically for Aurora.

In accordance with the Scheme and Building Regulations, the varied approaches will be implemented via conditions on planning permits for subdivision and as restrictions on plans of subdivision certified under the Subdivision Act 1988.

These varied approaches will promote a preferred neighbourhood character and are anticipated to include:

- reduced minimum front and side street setbacks of dwellings;
- increased maximum building height of dwellings;
- increased maximum site coverage of dwellings;
- increased maximum length and height of new boundary walls;
- increased minimum setback of north-facing, ground floor, habitable room windows from the north boundary of lots; and
- reduced minimum amount of private open space for a single dwelling on a lot to equate with the minimum amount of private open space for two or more dwellings on a lot.

7.3 DEVELOPMENT APPROVALS PROCESS

Planning permit applications will be submitted to Whittlesea for subdivision and all other development and uses requiring a permit under CDZ4 and the relevant overlays, including VP02. Generally, subdivision and development will need to be in accordance with the approved ADP2, as required by DPO23.

Following an extensive design process (refer Sections 7.4 and 7.5), Places Victoria will also submit applications for the construction of one dwelling on each lot less than 300 square metres and any applications for the construction of two or more dwellings on a lot will be submitted to Whittlesea.

7.4 DESIGN CONTROLS

Places Victoria has prepared and will distribute design controls that will affect all lots in each stage of subdivision of Aurora. The design controls provide detail on the approach to and implementation of building siting and design, fencing, energy efficiency, building materials and landscape design, among other things. Compliance with the design controls will be required as a condition of the contract of sale for each lot. The design controls will not require any consent or control input from Whittlesea.

7.5 DWELLING DELIVERY METHODS

Places Victoria has worked intensively with architects and builders to develop an integrated dwelling and land product delivery model. The integrated housing approach used in Section A of Aurora will continue in the ADP2 area and involves the following steps.

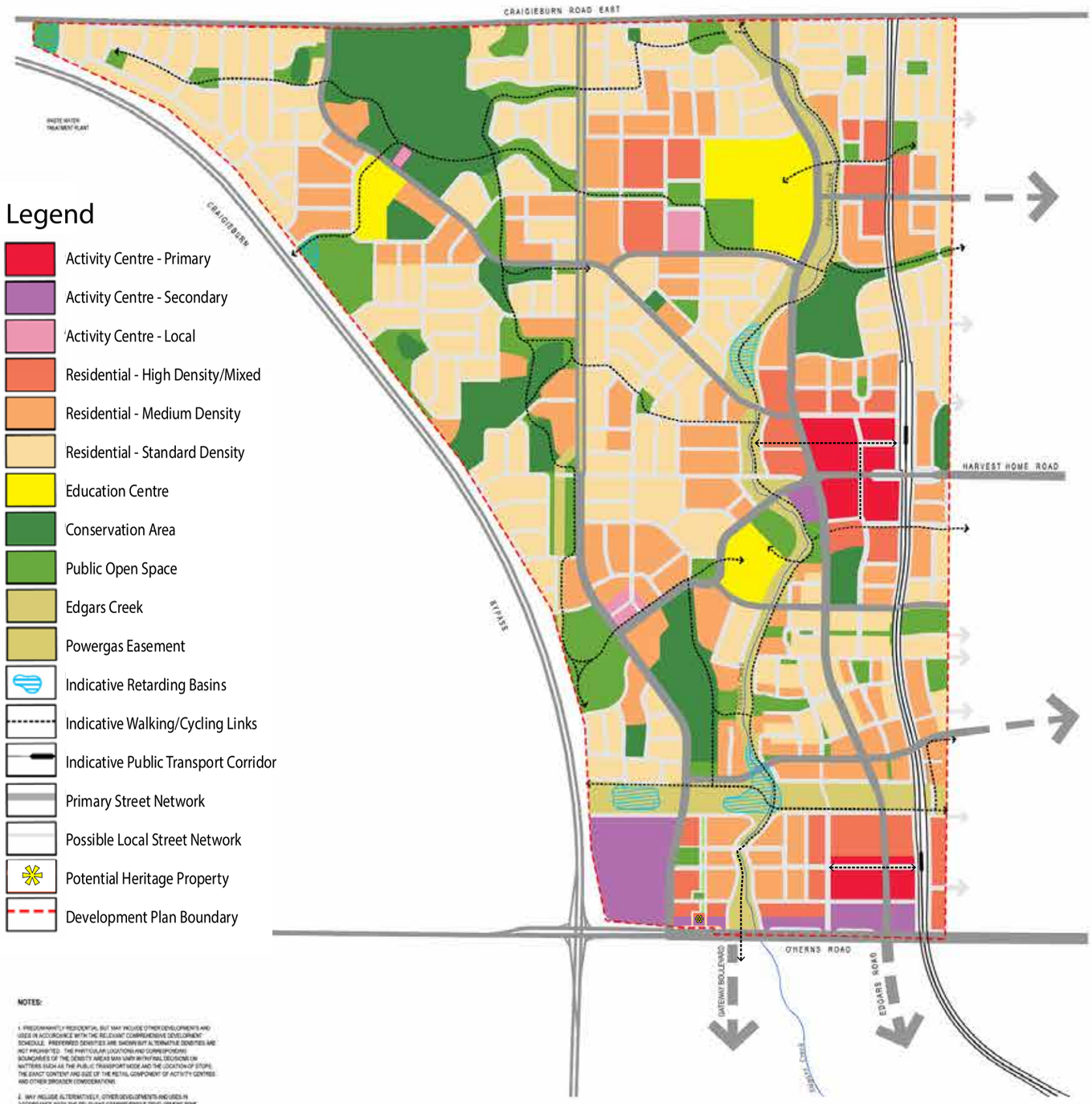
- Places Victoria allocates lots to builders.
- Places Victoria works with builders to prepare plans in response to the Scheme, the subdivision permits, the varied approaches to design and siting noted above and the deign controls.
- Potential purchasers are able to choose a dwelling from a builder in a display village however, the chosen dwelling will only be able to be constructed on a lot able to achieve the six-star energy rating and all other requirements.

While complex to administer, the integrated housing approach is widely accepted as best practice for producing sustainable design outcomes. Places Victoria will continue to progress the evolution of sustainable development and incorporate new sustainability features into the design controls.

Considering the timeframe associated with constructing a development the size of Aurora, Places Victoria may also consider other methods of dwelling delivery, including the direct sale of lots to the general public and the sale of packaged land precincts to other developers.

These alternative delivery methods will respond to the design controls, including the integrated design principles and the incorporation of sustainability features. A greater degree of control of and certainty in the built form outcome is facilitated and maintained therefore at Aurora.

APPENDIX A LAND USE DEVELOPMENT PLAN



Places Victoria

AURORA
DEVELOPMENT PLAN PART 2
Rev A : 2016

Places Victoria

APPENDIX B REFERENCES

The following were the results of studies leading to the preparation of ADP2.

Not included in this list are reports referenced by the project team members in their own reports.

ASR Research Pty Ltd (July 2001), *Stage 1 Quantitative Assessment of Social, Leisure & Open Space Infrastructure Requirements within the Epping North Strategy Plan Area*

ASR Research Pty Ltd (March 2004), *Epping North Revised Community Infrastructure Requirements*

BG Urban Solutions (June 2003), *Social Planning Assessment of Proposed Development by the Urban and Regional Land Corporation Aurora: Sustainable Community*

Biosis Research Pty Ltd (2004), *Cultural Heritage Survey of Aurora, Epping, Victoria*

Biosis Research Ltd (September 2005), *An Archeological Survey of 285 Craigieburn Road East, Epping, Victoria*

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City of Whittlesea (September 2002), *Epping North Local Structure Plan*

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MDG Landscape Architects (April 2006), *Urban Design and Landscape Approach for Aurora*

Places Victoria (February 2005), *Aurora Design Controls: Stage 1 – 3*

The Hornery Institute (April 2005), *Aurora Context Study*

TTMC Consulting Pty Ltd (May 2006), *Proposed Residential Development, Aurora, Epping North, Proposed Development Plan Transport Provisions and Traffic Engineering Assessment*

Urbis JHD Pty Ltd (April 2006), *Aurora Assessment of Retail and Commercial Uses*

Whittlesea Planning Scheme

APPENDIX C PROJECT TEAM

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Damien Hancox

Jim Higgs

Urbis JHD Pty Ltd

Rhys Quick

APPENDIX D ENQUIRIES

APPENDIX E PLANNING POLICY AND STATUTORY CONTROLS

APPENDIX E CONTENTS

SECTION 1: STATE PLANNING POLICY FRAMEWORK

The State Planning Policy Framework (SPPF) of the Whittlesea Planning Scheme (the Scheme) "provides a context for spatial planning and decision making by planning and responsible authorities " (Clause 11.01). The SPPF "seeks to ensure that the objectives of planning in Victoria (as set out in Section 4 of the Planning and Environment Act 1987) are fostered through appropriate land use and development planning policies and practices which integrate relevant environmental, social and economic factors in the interests of net community benefit and sustainable development " (Clause 11.02).

The SPPF contains a number of policies that are relevant to Aurora. The most relevant of the policy objectives are as follows.

- *"To ensure a sufficient supply of land is available for residential, commercial, industrial, recreational, institutional and other public uses " (Clause 14.01 Planning for urban settlement).*
- *"To facilitate the orderly development of urban areas " (Clause 14.01).*
- *"To assist achievement of a metropolis which has:*
  - ……
  - Enhanced environmental quality and liveability for the metropolitan population.
  - Improved functioning through best practice management of its infrastructure and urban development " (Clause 14.02 Metropolitan development).
- *"To assist the protection and, where possible, restoration of catchments, waterways, water bodies, groundwater, and the marine environment " (Clause 15.01 Protection of catchments, waterways and groundwater).*
- *"To assist the protection of:*
  - Life, property and community infrastructure from flood hazard.
  - The natural flood carrying capacity of rivers, streams and floodways.
  - The flood storage function of floodplains and waterways.
  - Floodplain areas of environmental significance " (Clause 15.02 Floodplain management).
- *"To assist the control of noise effects on sensitive land uses " (Clause 15.05 Noise abatement).*
- *"To assist the protection and conservation of biodiversity, including native vegetation retention and provision of habitats for native plants and animals and control of pest plants and animals " (Clause 15.09 Conservation of native flora and fauna).*
- *"To assist creation of a diverse and integrated network of public open space commensurate with the needs of urban communities and rural areas " (Clause 15.10 Open space).*
- *"To assist the conservation of places that have natural, environmental, aesthetic, historic, cultural, scientific or social significance or other special value important for scientific and research purposes, as a means of understanding our past, as well as maintaining and enhancing Victoria's image and making a contribution to the economic and cultural growth of the State " (Clause 15.11 Heritage).*
- *"To encourage land use and development that is consistent with the efficient use of energy and the minimisation of greenhouse gas emissions " (Clause 15.12 Energy efficiency).*
- *"To promote the provision of renewable energy, including wind energy facilities, in a manner that ensures appropriate siting and design considerations are met " (Clause 15.14 Renewable energy).*
- *"To encourage:*
  - Subdivisions in locations with access to physical and community infrastructure and providing a range of lot sizes, a convenient and safe road network, appropriate pedestrian and cycle paths, sufficient useable public open space and low vulnerability to fire.
  - Residential development that is cost-effective in infrastructure provision and use, energy efficient, incorporates water-sensitive design principles and encourages public transport use.
  - Opportunities for increased residential densities to help consolidate urban areas " (Clause 16.01 Residential development for single dwellings).
- *"To encourage the development of well-designed medium-density housing which:*
  - Respects the neighbourhood character.
  - Improves housing choice.
  - Makes better use of existing infrastructure.
  - Improves energy efficiency of housing " (Clause 16.02 Medium density housing).
- *"To encourage the concentration of major retail, commercial, administrative, entertainment and cultural developments into activity centres (including strip shopping centres) which provide a variety of land uses and are highly accessible to the community" (Clause 17.01 Activity centres).*
- *"To encourage developments which meet community's needs for retail, entertainment, office and other commercial services and provide net community benefit in relation to accessibility, efficient infrastructure use and the aggregation and sustainability of commercial facilities " (Clause 17.02 Business).*
- *"To integrate land use and transport planning around existing and planned declared highways, railways, principal bus routes and tram lines " (Clause 18.01 Declared highways, railways and tramways).*
- *"To ensure access is provided to developments in accordance with forecast demand taking advantage of all available modes of transport and to minimise impact on existing transport networks and the amenity of surrounding areas " (Clause 18.02 Car parking and public transport access to development).*
- *"To integrate planning for bicycle travel with land use and development planning and encourage cycling as an alternative mode of travel " (Clause 18.03 Bicycle transport).*
- *"To assist the integration of education facilities with local and regional communities " (Clause 18.07 Education facilities).*
- *"To plan for the provision of water supply, sewerage and drainage services that efficiently and effectively meet State and community needs and protect the environment " (Clause 18.09 Water supply, sewerage and drainage).*
- *"To facilitate the timely provision of planned infrastructure to communities through the preparation and implementation of development contributions plans " (Clause 18.12 Developer contributions to infrastructure).*
- *"To recognise the importance of telecommunications to all aspect of modern life and the essential and beneficial contribution of modern telecommunications facilities to local communities and the State and national economy " (Clause 18.13 Telecommunications).*

- *"To achieve high quality urban design and architecture that:*
  - Reflects the particular characteristics, aspirations and cultural identify of the community.
  - Enhances liveability, diversity, amenity and safety of the public realm.
  - Promotes attractiveness of towns and cities within broader strategic contexts " (Clause 19.03 Design and built form).

Aurora facilitates the implementation of the above policy objectives as follows.

- Aurora is within generally the Urban Growth Boundary, is designated as 'Future urban' within the Plenty Valley-Epping North growth area, is identified as 'residential - future' in the Municipal Framework Plan and forms part of the identified urban development area in the Epping North Strategic Plan (ENSP). ADP2 is the relevant structure plan that will facilitate the orderly development of the subject land.
- Aurora is opposite the Cooper Street Employment Area (on the south side of O'Herns Road). The population of Aurora creates a potential local labour source to support this Area.
- The dwelling density at Aurora will be significantly higher than 'conventional' subdivisions in growth areas to facilitate opportunities for high quality and sustainable public transport. Aurora incorporates a public transport corridor with a proposed station / interchange adjacent to each town centre. ADP2 envisages higher density, mixed uses surrounding the two town centres.
- The Scheme includes Edgars Creek, which traverses Aurora, in the Floodway Overlay (RFO). A planning permit is required generally to construct a building or construct or carry out works and to subdivide land in a RFO. A planning permit application is required generally to be referred to the relevant floodplain management authority.
- ADP2 retains Edgars Creek within a buffer area 15 metres wide on either side of the Creek and proposes to improve its habitat quality through revegetation, weed control and wetland creation designed to be suitable for the Growling Grass Frog, native fish and other aquatic species. A drainage management plan will also be developed to manage the stormwater runoff from Aurora into Edgars Creek.
- The Scheme includes that part of Aurora within 150 metres of the east edge of the reservation of the Craigieburn Bypass in Schedule 2 to the Design and Development Overlay (DDO2). A planning permit is required generally to construct a building or construct or carry out works and to subdivide land in DDO2. Any development in DDO2 which is associated with a specified use, including a dwelling, must include noise attenuation measures to the satisfaction of the Roads Corporation.
- A flora and fauna survey of the subject land has been completed and Aurora has been designed to protect the sites of greatest ecological value.
- The Aurora open space system protects and enhances natural and cultural features within a series of highly accessible and connected open spaces that provide a diverse range of recreation opportunities.
- The Aboriginal and European histories of the subject land have been investigated and Aurora has been designed to conserve and retain as much of the evidence of both histories as practicable.
- The orientation of the Aurora street network and the lots will maximise the potential for energy efficient buildings. A six-star energy rating is a compulsory requirement for each new dwelling at Aurora.
- ADP2 anticipates a lot size mix ranging from approximately 180 to 850 square metres, which will encourage a diverse range of housing options.
- Aurora incorporates two town centres providing a wide range of retail, commercial, community and residential opportunities. Each town centre is located adjacent to a public transport station / interchange, near the intersection of arterial streets and on the principle walking and cycling network.
- The arterial street network of Aurora is a loose grid that provides straightforward connections between the town centres, neighbourhood centres and public open spaces within and outside Aurora.
- ADP2 envisages a broad mix of land uses in close proximity to each other and to a high proportion of the dwellings, to facilitate walking and cycling between activities.
- The education facilities shown on the ADP2 map have been confirmed by the Department of Education and Training and the Catholic Education Office. These facilities are located generally on the edge of the walkable catchments of the public transport stations / interchanges to maximise the dwelling density within the catchments to support public transport. All of the education facilities are located on the principle walking and cycling network and adjacent to public open space.
- All services, including water supply, sewerage, drainage, gas, electricity and telecommunications (including fibre to the home), will be provided to all dwellings at Aurora in the manner that is the most economically sustainable and minimises the impact on the environment.
- Places Victoria will continue to work with Whittlesea to develop appropriate development contributions for the provision of physical and social infrastructure at Aurora and Epping North.
- All built form at Aurora will express a contemporary aesthetic and aspects of sustainable building design will become an integral part of the architecture. Places Victoria proposes a number of processes to ensure high quality in the built form.

SECTION 2: PLAN MELBOURNE - METROPOLITAN PLANNING STRATEGY

Plan Melbourne Metropolitan Planning Strategy (Plan Melbourne) is the Victorian Government's metropolitan planning strategy, guiding the way the city will grow and change over the next 40 years. It was published in 2014 and the *Plan Melbourne Refresh*, the current government's review and update of the plan, is due to be released in 2016.

Plan Melbourne includes Aurora generally within the Northern Subregion and Urban Growth Boundary (UGB) and designates it as an urban area. Unlike Lockerbie (Future Metropolitan Activity Centre or MAC) and Epping (Existing MAC), the two Aurora town centres are not specifically identified in Plan Melbourne. However, the plan does give direction to the strategic project of activity centre planning for municipalities.

Aurora responds as follows to the specific features described in Plan Melbourne, carried forward from objectives met under the previous Melbourne 2030 plan:

- ADP2 incorporates a public transport corridor with a proposed station / interchange adjacent to each primary activity centre. The creation of Aurora as a public transport oriented development will be enhanced significantly by the provision of a rail connection to the suburban passenger rail network.
- A minimum six-star energy rating is prescribed for each new dwelling at Aurora.
- Aurora has been designed to treat sewage locally to tertiary standard and to reticulate the recycled water back to lots for toilet flushing and private and public open space irrigation.
- Rainwater tanks for capture of roof water for hot water, bathroom and laundry uses are expected to be utilised at Aurora.
- ADP2 anticipates a typical lot size mix ranging from 180 to 650 square metres to encourage a range of housing options.

SECTION 3: MUNICIPAL STRATEGIC STATEMENT

The Whittlesea Municipal Strategic Statement (MSS) contained in Clause 21 of the Scheme "encapsulates significant planning policy directions for the municipality and in turn provides the strategic basis for statutory land use controls " (Clause 21.01).

The MSS describes the framework for growth area planning in Whittlesea, which, following on from Ministerial Directions and the MSS, includes strategic plans, local structure plans / incorporated plans, development plans and permits for subdivision. Whittlesea has prepared the ENSP which includes Aurora. ADP2 combines the local structure plan and DP for the subject land required by this framework.

The vision of Whittlesea for the Municipality is summarised in twelve key land use planning objectives and the Municipal Framework Plan, which identifies the subject land as 'residential - future' with one 'activity centre' on Harvest Home Road.

The key land use planning objective for Residential Growth Areas is *"to plan for a diverse series of residential communities that have a unique identity and sense of place, cater to all segments of the housing market and respect and incorporate local environmental and cultural features"* (Clause 21.06-1).

Epping North is identified specifically as a growth opportunity. Clause 21.06-1 states that investigations *"as to the suitability of urban growth occurring within the Epping North area will continue with the possibility of short to medium term growth occurring within the first stage of development subject to a comprehensive strategic planning process."* The preparation of this ADP2 is the final step in the 'comprehensive strategic planning process' required to demonstrate the suitability of the subject land for residential development.

Clause 21.06-1 summarises the development density, style of development, capacity and intended housing market for the Epping North (west) growth opportunity as follows:

- *"Medium to high density development with a target density across the entire area of approximately 19 dwellings per hectare.*
- *Comprehensive, permeable style of development which emphasises 'walkability', high quality and sustainable public transport, innovative and sustainable infrastructure solutions, protection of sites of high ecological and heritage value, activity centres with a wide range of commercial, community and residential opportunities, appropriate interfaces with and connection to adjoining land uses. Edgars Creek, stony rises and River Red-gum stands will form the basis of the public open space network.*
- *Maximum capacity of approximately 25,000 persons over a development life of approximately 16 years.*
- *Mixture of first, second and third home buyers seeking more sustainable outcomes, such as energy efficient dwellings, close proximity to activity centres, community facilities and public open space and the provision of a variety of easily accessible public modes of transport. Emphasis will be placed on the provision of a mix of lot sizes to encourage a range of housing options."*

Other relevant key land use planning objectives of the MSS are as follows.

- *"To effectively manage urban growth in a manner that maximises beneficial relationships between compatible land uses and which avoids inappropriate incursions into non-urban or environmentally sensitive areas " (Clause 21.06-2 Managing Urban Growth).*
- *"To promote the establishment of increased diversity and quality in housing provision to meet the needs of existing and future residents of the City of Whittlesea in a manner which contributes positively to local character and sense of place " (Clause 21.06-3 Housing Provision).*
- *"To create a better jobs / housing balance and achieve greater diversity in employment opportunities " (Clause 21.06-4 Employment and Economic Development).*
- *"To define the role and extent of a series of activity centres which establish a focus for the provision of accessible goods and services, employment generation, community meeting places and associated land uses " (Clause 21.06-5 Activity Centres).*
- *"To establish an efficient, interconnected (multi modal) transportation system which increases the level of accessibility and choice within and beyond the City of Whittlesea " (Clause 21.06-6 Transport and Accessibility).*
- *"To actively pursue resolution of provision of key strategic items of physical infrastructure for unserviced growth areas and to plan for and identify means to fund the establishment and maintenance of social and physical infrastructure in a timely and efficient manner " (Clause 21.06-7 Infrastructure Provision).*
- *"To progressively upgrade the image and appearance of the City of Whittlesea focusing on retention of local environmental features, landscape qualities and urban and landscape design improvements " (Clause 21.06-9 Image and Appearance).*
- *"To identify, permanently preserve and promote opportunities for the enhancement of local environmental assets which are vital to the maintenance of ecological processes " (Clause 21.06-10 Environmental Assets).*
- *"To plan for the comprehensive leisure and recreation needs of existing and future residents and to support the establishment of tourism enterprises that are compatible with the local environment and pattern of land uses " (Clause 21.06-11 Leisure, Recreation and Tourism).*
- *"To increase the level of protection for and opportunities for incorporation of the City's European and Aboriginal heritage " (Clause 21.06-12 Heritage and Culture).*

In general, Aurora responds as follows to the key land use planning objectives of the MSS.

- The net dwelling density (around 19 dwellings per hectare) at Aurora will be significantly higher than that identified for the Epping North (east) growth opportunity and 'conventional' subdivisions in the outer areas of Melbourne in order to facilitate opportunities for high quality and sustainable public transport. It is also intended to provide alternative housing options such as apartment-style dwellings at a denser level, as well as a small number of larger lots.
- The style of development and capacity of Aurora is in accordance generally with that outlined for the Aurora growth opportunity.
- The provision of a range of lot sizes at Aurora will encourage a variety of housing options to attract a mixture of first, second and third home buyers.
- Aurora will contribute to the protection of the non-urban and environmentally sensitive areas of Whittlesea as it is within generally the Urban Growth Boundary, is designated as 'Future urban' within the Plenty Valley-Epping North growth area that was identified by Melbourne 2030, is identified as 'residential - future' in the Municipal Framework Plan and forms part of the ENSP.
- The population of Aurora will create a potential local labour source to support the Cooper Street Employment Area on the south side of O'Herns Road.
- The two primary activity centres of Aurora are located approximately to attract a significant proportion of the undistributed retail floorspace in Whittlesea, as they are adjacent to the public transport stations / interchanges, near the geographic centre of Epping North (northern primary activity centre) and opposite the Cooper

Street Employment Area (southern primary activity centre).

- ADP2 incorporates a public transport corridor with two new stations / interchanges and an interconnected street network that allows for alternative modes of transport including convenient bus and car travel, walking and cycling.
- Places Victoria will continue to work with Whittlesea to agree on appropriate development contributions for the provision of physical and social infrastructure at Aurora and Epping North.
- Existing landscape character elements of the subject land will be an integral part of the landscape design of Aurora to aid the development of a local sense of place.
- A flora and fauna survey of the subject land has been completed and Aurora has been designed to protect the sites of greatest ecological value. The highest quality examples of Plains Grassy Woodland and stony rises are protected in conservation areas.
- The Aurora open space system protects and enhances natural and cultural features within a series of highly accessible open spaces that provide a diverse range of recreation opportunities for both passive and active recreation.
- The Aboriginal and European histories of the subject land have been investigated and Aurora has been designed to conserve and retain as much of the evidence of both histories as practicable.

Sections 2.2 to 6 and their corresponding Appendices provide a comprehensive explanation of the response of Aurora to the key land use planning objectives of the MSS.

SECTION 4: LOCAL PLANNING POLICIES

(a) Open Space Policy

The Open Space Policy (Clause 22.01) of the Scheme relates to the provision of open space in the Municipality.

The objective of this Policy is *"to provide a framework to undertake planning, provision, development and maintenance of an integrated open space system which meets the wide ranging needs of the community "*.

Section 5.5 describes the response of Aurora to the objective and policy directions of this Policy.

(b) Subdivision Design Policy

The Subdivision Design Policy (Clause 22.04) of the Scheme applies to subdivision for residential, rural residential, rural living, industrial and commercial development.

The objectives of this Policy are as follows.

- *"To achieve appropriate site responsive subdivision design for the creation of new undeveloped allotments for residential, rural residential, rural living, industrial and commercial development.*
- *To define and evenly apply municipal planning objectives for subdivision design.*
- *To create a sense of place and community focus through subdivision design.*
- *To promote subdivision that ensures integration, lot size diversity, efficient open space provision, movement, and appropriate streetscape design.*
- *To define the need for and requirements for site analysis procedures."*

Section 5 and the corresponding **Appendix J** provides a comprehensive explanation of the response of Aurora to the objectives and policy directions of this Policy.

(c) River Redgum Protection Policy

The River Redgum Protection Policy (Clause 22.10) of the Scheme applies to the protection of River Red-gums located in urban and rural areas.

The objective of this Policy is *"to ensure that the development of urban and rural areas takes into account the presence, retention, enhancement and long term viability of River Red Gums in urban areas."*

Section 5.3 describes the response of Aurora to the objective and policy directions of this Policy.

(d) Development Contributions Plan Policy

The Development Contributions Plan Policy (Clause 22.11) of the Scheme applies to new residential and non-residential subdivisions in the Municipality.

The objective of this Policy is *"to ensure the provision of basic infrastructure in a timely fashion to meet the needs generated by new development."*

The development contributions for Aurora are discussed in **Section 6** and provide the response to the objective and policy directions of this Policy. The infrastructure obligations within the ADP2 are set out in the form of an agreement in accordance with Section 173 of the Planning and Environment Act 1987. This agreement specifies the particular projects, costs and obligations for delivery and was signed by the relevant parties before the subject land was rezoned.

(e) Telecommunications Conduit Policy

The Telecommunications Conduit Policy (Clause 22.13) of the Scheme applies to subdivision and the construction of dwellings and other buildings and works in the Municipality.

The objective of this Policy is *"to ensure provision of conduits for optical fibre cabling, to facilitate future installation of advanced telecommunications services ."*

The engineering infrastructure of Aurora is discussed in **Section 3.7** and provides the general response to the objective and policy directions of this Policy. Conduits for an optical fibre cable will be provided as part of the works associated with the subdivision of the subject land. The service provider will run the optic fibre cable through the conduits in preparation for the occupation of dwellings.

SECTION 5: INCORPORATED DOCUMENTS

(a) Epping North Strategic Plan

Clause 21.05 of the Scheme describes the ENSP as setting *"the broad directions for urban development within Epping North covering issues such as the pattern of urban development, a neighbourhood based approach to more detailed local structure planning, open space, provision for a broad transport network, protection of environmental features, servicing, and provision for community, commercial and recreational facilities ."*

Integral to the overall layout of the ENSP is the creation of interlinked communities with each having a relationship to the central core or 'town centre', which is shown in Aurora on Harvest Home Road and surrounded by 'high density residential'.

Other key features of the ENSP include the following.

- Neighbourhood-based planning. Six broad neighbourhoods are identified in the ENSP, each with a 'neighbourhood centre' that will provide the educational, community, recreational and retail facilities required at a neighbourhood level. The majority of the subject land is within Neighbourhoods 2 and 3 and the remainder is within Neighbourhoods 1 and 4. The neighbourhood centres for Neighbourhoods 2 and 3 are shown to the south west and north west of the town centre, respectively.
- A main recreational precinct near the intersection of Harvest Home Road and Epping Road.
- An open space network that links areas of conservation value, the neighbourhood centres, the main recreational precinct and the town centre. Edgars Creek, which extends through Aurora, forms part of the open space network.
- A broad grid-based road pattern. Edgars Road, O'Herns Road and Harvest Home Road are shown as 'major roads - duplicated', excluding the section of Edgars Road north of Harvest Home Road, which is shown as 'major roads - single pavement'. The major road network shown at Aurora is arranged in concentric rings around the town centre with roads radiating out diagonally to link the town centre and four of the neighbourhood centres. Edgars Road is shown extending along the east boundary of Aurora south from Craigieburn Road East before forming the eastern concentric ring and then continuing due south (to the immediate west of the east boundary of Aurora), south of Harvest Home Road.
- The provision for alternative modes of transport. This includes a transport corridor shown extending north from O'Herns Road (to the immediate west of the east boundary of Aurora) to the east side of the town centre before continuing in a north west direction.

Regional Context

The ENSP acknowledges that further studies may be required to inform the preparation of Incorporated Plans. More detailed investigations of the subject land have been completed as part of the preparation of the Aurora Comprehensive Development Plan (incorporated in the Scheme) and ADP2 and are described in **Sections 2 and 3** and in **Appendix E, Appendix F, Appendix G and Appendix H**. Aurora responds as follows to the features shown on the ENSP.

- Aurora incorporates two primary activity centres providing a wide range of retail, commercial, community and residential opportunities, including a total of 20,000 square metres of retail and commercial floor space. In accordance with the ENSP, the northern primary activity centre is positioned on Harvest Home Road between the transport corridor to the east and Edgars Creek to the west. ADP2 envisages also higher density, mixed uses surrounding the two primary activity centres.
- ADP2 incorporates two local activity centres. In accordance with the ENSP, one of the local activity centres is to the south west of the northern primary activity centre. Both of the local activity centres are located on higher order streets and the principle walking and cycling network and incorporate an educational facility, a community activity centre and public open space. The local activity centre to the north of the northern centre also incorporates a small convenience centre.
- The Aurora open space system protects and enhances natural and cultural features within a series of highly accessible open spaces that provide a diverse range of recreation opportunities for both passive and active recreation. In accordance with the ENSP, the open space network connects Edgars Creek, the powerlines transmission easement and the portion of Plains Grassy Woodland of high regional conservation significance in the north west of Aurora.
- Edgars Road, O'Herns Road and Harvest Home Road within and adjacent to Aurora are intended to be divided arterial streets in their ultimate configuration, which is in accordance with the ENSP. **Section 5.12** provides further detail on the design of these streets.
- The arterial and neighbourhood connector street network of Aurora is a loose grid spaced generally between 600 and 900 metres. While it does not match the network of concentric rings and radiating diagonals of the ENSP, it does achieve the same outcomes by providing straightforward connections between the activity centres and public open spaces within and outside Aurora. Diagonal neighbourhood connector streets are used however, to facilitate access to the primary activity centres.
- The transport corridor of the ENSP is incorporated close to the east boundary of Aurora. A new station / interchange is proposed adjacent to each of the primary activity centres.

Section 5 provides a more comprehensive explanation of these responses. Based on the above, ADP2 is consistent generally with the ENSP.

(b) Aurora Comprehensive Development Plan

The purpose of the Comprehensive Development Zone includes *"to provide for a range of uses and the development of land in accordance with a comprehensive development plan incorporated in this scheme"* (Clause 37.02).

As required under the Comprehensive Development Zone, the key features of the Aurora Comprehensive Development Plan (ACDP) are as follows.

- Two activity centres - primary at planned transport nodes in the north and south of Aurora.
- An activity centre - secondary along the south boundary (O'Herns Road) of Aurora.
- An activity centre - tertiary in the south west corner of Aurora.
- One activity centre - local to the north of the northern primary activity centre and one to the south west.
- Three possible education centres in the north of Aurora and one possible centre in the south.
- Conservation areas spread throughout Aurora.
- Indicative main street corridors consisting of predominantly north-south and east-west streets.
- A north-south indicative public transport corridor close to the east boundary of Aurora.

As outlined above, ADP2 is consistent with the ACDP incorporating all of the key features.

SECTION 6: ZONING AND OVERLAYS

(c) Comprehensive Development Zone

The Scheme includes the subject land in Schedule 4 to the Comprehensive Development Zone (CDZ4).

The purpose of CDZ4 is as follows.

- *"To designate land suitable for urban development.*
- *To provide for development of land generally in accordance with the relevant endorsed comprehensive development plan.*
- *To pursue a more sustainable form of greenfield development based on traditional neighbourhood design principles.*
- *To engender a positive sense of place through incorporation of diverse streetscapes and good urban design in the public realm.*
- *To implement a high standard of contemporary architectural and urban design outcomes.*
- *To encourage a reduction in the use of natural resources such as potable water through the provision and utilisation of recycled water provided to future residents of the area to achieve the sustainability objectives identified in the Aurora Sustainability Covenant.*
- *To protect, retain and enhance the natural and cultural features of the land.*
- *To facilitate a mix of land uses, including residential, community, retail, commercial and recreational, to support a sustainable community.*
- *To facilitate a range of lot sizes with generally increased development densities and dwelling types to meet a diversity of lifestyle choices and to provide the opportunity for high quality and sustainable public transport.*
- *To assist in protecting and enhancing the Edgars Creek (as part of the larger Merri Creek Catchment) as an environmental, conservation and recreation asset of local significance, through sensitive design and landscaping.*
- *To provide for a range of pedestrian scale retail, commercial and community facilities of appropriate sizes to serve the needs of existing and future residents of the area.*
- *To provide a safe, efficient, highly permeable, multi modal and attractive movement network.*
- *To ensure that non-residential uses do not cause an unreasonable loss of amenity to people in areas set aside and used for dwellings."*

CDZ4 sets out when a planning permit is required to use land for a particular purpose and to construct a building or construct or carry out works, the associated conditions, the application requirements and the exemptions from notice and review. A planning permit is required to subdivide land within the CDZ4 (Clause 37.02-3).

As outlined above, ADP2 incorporates all of the key features of the ACDP and is consistent therefore with the purpose of CDZ4. **Section 5** provides a comprehensive explanation of the response of Aurora to the purpose of CDZ4.

(d) Vegetation Protection Overlay

The Scheme includes the subject land in Schedule 2 (Significant Vegetation - River Redgum Grassy Woodland) to the Vegetation Protection Overlay (VPO2).

The vegetation protection objectives to be achieved in VPO2 are as follows.

- *"To protect and enhance the diversity of vegetation types and communities within Epping North*
- *To maintain and enhance the ecological integrity of indigenous vegetation within Epping North during its transition from rural to urban*
- *To allow for faunal movement through the area by the maintenance and enhancement of habitat links*
- *To protect the ongoing viability of vegetation communities by allowing for regeneration*
- *To preserve and maintain significant vegetation and the character of the area*
- *Preserve natural habitat for flora and fauna."*

A planning permit is required generally to remove, destroy or lop native vegetation in VPO2. A planning permit is not required to remove, destroy or lop vegetation that is not native vegetation.

The preparation of ADP2 involved a flora and fauna assessment of the subject land that considered all of the matters specified in VPO2 (refer to **Appendix F**). The Response of Aurora, which is outlined in **Section 5.3**, is consistent with the vegetation protection objectives of VPO2.

(e) Design and Development Overlay

The Scheme includes that part of the subject land within 150 metres of the east edge of the reservation of the Craigieburn Bypass in Schedule 2 (Hume Freeway - Metropolitan Ring Road to north of Craigieburn) to the Design and Development Overlay (DDO2).

The design objective to be achieved in DDO2 is *"to ensure that the development of land near the future alignment of the Hume Freeway between the Metropolitan Ring Road and Mount Ridley Road is undertaken with appropriate noise attenuation measures to minimise the impact of traffic noise on noise sensitive activities."*

A planning permit is required generally to construct a building or construct or carry out works (Clause 43.02-2) and to subdivide land (Clause 43.02-3) in DDO2. Any development in DDO2 which is associated with a specified use must include noise attenuation measures to the satisfaction of the Roads Corporation. The specified uses include accommodation (includes a dwelling), child care centre, education centre, indoor recreation facility, office, place of assembly, retail premises and display home.

(f) Development Plan Overlay

The Scheme includes the subject land in Schedule 23 (Aurora Development Plan) to the Development Plan Overlay (DPO23).

The purpose of the DPO is as follows.

- *"To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify areas which require the form and conditions of future use and development to be shown on a development plan before a permit can be granted to use or develop the land.*
- *To exempt an application from notice and review if it is generally in accordance with a development plan" (Clause 43.04).*

The DPO requires that a DP be prepared generally to the satisfaction of the responsible authority before a planning permit is granted to use or subdivide land, construct a building or construct or carry out works (Clause 43.04-1). Once the DP has been prepared to the satisfaction of the responsible authority, any planning permit application that is generally in accordance with the DP is exempt from notice requirements, decision requirements and review rights (Clause 43.04-2). Any permit granted must also be generally in accordance with the DP (Clause 43.04-1). The DP may be amended to the satisfaction of the responsible authority (Clause 43.04-3).

ADP2 is the DP required by DPO23. **Sections 2 to 7** address the required elements of DPO.

(g) Floodway Overlay

The Scheme includes Edgars Creek, which traverses the subject land, in a Floodway Overlay (RFO).

The purpose of the RFO is as follows.

- *"To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.*
- *To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.*
- *To reflect any declarations under Division 4 of Part 10 of the Water Act, 1989 if a declaration has been made.*
- *To protect water quality and waterways as natural resources in accordance with the provisions of relevant State Environment Protection Policies, and particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria)."*

A planning permit is required generally to construct a building or construct or carry out works (Clause 44.03-1) and to subdivide land (Clause 44.03-2) in a RFO. A planning permit application is required generally to be referred to the relevant floodplain management authority (Clause 44.03-4).

(h) Road Closure Overlay

The Scheme includes part of Vearings Road on the subject land in a Road Closure Overlay (RXO). The purpose of the RXO is as follows:

- *"To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify a road that is closed by an amendment to this planning scheme."*

The RXO states that a road included in the RXO is closed on the date that the notice of the amendment is published in the Government Gazette (Clause 45.04-1).

APPENDIX F FLORA, FAUNA AND CONSERVATION SIGNIFICANCE

APPENDIX F CONTENTS

SECTION 1: FLORA

(a) Vegetation Communities (Ecological Vegetation Classes)

The majority of the subject land supports exotic grassland, most of which is used for grazing. Remnants of five native Ecological Vegetation Classes (EVC) vegetation types are present on the subject land - Plains Grassy Woodland, Plains Grassland, Stony Knoll Shrubland, Stony Knoll Grassland and Grey Clay Drainage-line Herbland / Sedgeland Complex. These EVC vegetation communities are distributed within the landscape according to the features of the subject land, such as soil depth, soil structure, soil moisture, drainage and presence of rock.

(b) Flora Species

Biosis Research Pty Ltd between October 2000 and January 2005 completed a flora survey of Aurora and a list of species was compiled. A total of 257 vascular plant species was recorded including 131 (51 per cent) indigenous species.

One species of national significance (Matted Flax-lily, Dianella amoena), three species of state significance and 56 species of regional significance (within the Victorian Volcanic Plains Bioregion) were recorded at Aurora. The remaining native species that occur on the subject land are of local significance.

(c) Vegetation condition

The vegetation present on the subject land is significantly altered from its presumed original state due to disturbance factors such as grazing, clearing of trees and shrubs, weed invasion and removal of surface rock.

Plains Grassy Woodland EVC is represented mainly by over-storey remnants on the flattest portions of the subject land. These are predominantly River Red-gums over largely exotic understorey with few indigenous ground flora species remaining due to grazing and weed invasion. Most of the River Red-gums on the subject land are very old and there is relatively little regeneration. Some of the trees in the north west part of Aurora are showing signs of extreme stress (loss of foliage cover and dieback of canopy branches) and a proportion have died recently. Primary causes are believed to be lack of water during recent years of below average rainfall and grazing by Brush-tailed Possums.

Plains Grassland EVC on the subject land in divided into three sub-communities. While each sub-community contains some of the typical native species, exotic species are also found.

Stony Knoll Shrubland and Stony Knoll Grassland EVC occupy the more pronounced stony rises and occur in a mosaic with Plains Grassy Woodland and Plains Grassland. The stony rises are degraded to a varying extent by weed invasion, rock removal and grazing. The stony rises, however do support the greatest diversity of native species recorded during the survey including most of the significant species.

Edgars Creek and its tributaries are likely to have supported Grey Clay Drainage-line Herbland / Shrubland Complex EVC. The vegetation is now highly altered and mainly exotic due to grazing and trampling by stock. Stony and less disturbed sections of Edgars Greek retain small populations of native species.

The vegetation quality of the subject land has been assessed and the resultant habitat score represents vegetation that retains between 13 and 44 per cent of its original habitat quality.

SECTION 2: FAUNA

(a) Fauna Habitat Types

Fauna habitat types vary in size and quality throughout Aurora. The following main fauna habitat types are present on the subject land and have the following habitat qualities based on their importance for terrestrial vertebrate and aquatic fauna.

- River Red-gum woodland (medium/moderate to high quality).
- Stony rises (low to high quality).
- Waterways - Edgars Creek and tributaries (low to moderate-high medium quality).
- Wetlands - artificial (low-medium/moderate to high quality).
- Agricultural grasslands - predominantly non-rocky (low quality).
- Non-natural rock structures (low to medium/ moderate quality).
- Planted vegetation (low quality).
- Other man-made structures (low quality).

(b) Wildlife Corridors

Wildlife corridors are habitats that provide a dispersal route for species to move between larger areas of habitat. The following are the main wildlife corridors on the subject land and are important for conservation on at least the local level.

- Dry stone walls.
- Edgars Creek and tributaries.
- Agricultural grasslands.

(c) Fauna Species

Biosis Research Pty Ltd between October 2000 and January 20056 completed a fauna survey of Aurora and a list of species was compiled. A total of 81 terrestrial vertebrate fauna species was recorded on the subject land. These include 66 indigenous species (three mammals, 55 bird species, five reptiles and three amphibians) and fifteen introduced species (six mammals and nine birds).

Two species of national conservation significance - Growling Grass Frog (Litoria reniformis) and Golden Sun Moth (Synemon plana) - were recorded during the survey of Aurora. No fauna species of state conservation significance were recorded on the subject land. No fish species were captured during the survey of Aurora. Ten bird species listed as 'migratory' under the Environment Protection and Biodiversity Conservation (EPBC) Act were recorded during the survey, including two species that were breeding on the subject land.

SECTION 3: CONSERVATION SIGNIFICANCE

Biosis Research Pty Ltd between October 2000 and January 20056 completed an assessment of the conservation significance of the flora and fauna at Aurora. Due to the substantial modification of the original vegetation and habitats, much of the subject land has very low conservation significance. Areas of conservation significance at Aurora are listed below and the map following shows their location.

Two areas of national significance, containing the following attributes:

- Populations of Golden Sun Moth (national significance), Matted Flax-Lily (national significance) and Tough Scurf-Pea (Cullen tenax) (state significance);
- Relatively large and high quality examples of Plains Grassland EVC (endangered) and Stony Knoll Grassland EVC (endangered);
- Suitable (but not ideal) stony rise habitat for Striped Legless Lizard (Delmar impar) (national significance) and other ground-dwelling vertebrates of regional and local significance.

Three areas of state significance comprising a farm dam and Matted Flax-lily site, containing the following relevant attributes:

- One of the largest documented populations of the Growling Grass Grog (national significance) within the Merri Creek Corridor, which is likely to be a breeding population;
- Likely to function as a source population for the Growling Grass Frog from which Edgars Creek and any associated waterbodies could be re-populated;
- A spring-fed and therefore permanent wetland that may function as a drought refuge for the Growling Grass Frog;
- Little or no access by stock that allows abundant growth of aquatic vegetation;
- Relatively large population of Matted Flax-lily;
- Modified example of Plains Grassland EVC.
- Least robust populations of Golden Sun Moth within Aurora.

Two areas of high regional significance, containing the following attributes:

- High quality examples of Stony Knoll Grassland EVC;
- Populations of Matted Flax-lily and Pale-flower Geranium (Geranium sp. 3) (state significance);
- Up to thirty plant species of regional significance;
- Suitable stony rise habitat for the Striped Legless Lizard and other ground-dwelling vertebrates of regional and local significance;
- Multiple old-growth trees with abundant hollows for roosting, nesting and other activities by hollow-dependent fauna;
- Habitat for a range of woodland-dependent fauna, including birds, reptiles and marsupials.

Three types of areas of regional significance, including:

- Stony rises and associated grassland that contain areas of Stony Knoll Shrubland EVC and Stony Knoll Grassland EVC, small populations of Matted Flax-lily, up to 30 regionally significant flora species and suitable (but not ideal) stony rise habitat for Striped Legless Lizard and other ground-dwelling vertebrates of regional and local significance;
- Edgars Creek that provides ephemeral habitat for aquatic fauna and flora, is an example of Grey Clay Drainage-line Herbland / Sedgeland Complex EVC, is habitat and a wildlife corridor for significant ground-dwelling fauna species (including Growling Grass Frog) and is suitable (but not ideal) habitat for Striped Legless Lizard and other ground-dwelling vertebrates of regional and local significance along the rocky areas bordering the watercourse;
- Scattered mature / old-growth trees that provide modified woodland habitat for selected hollow-dependent and some woodland-dependent fauna and perches for birds.

Three types of areas of high local significance, including:

- Stony rises that provide remnants of Stony Knoll Shrubland EVC and Stony Knoll Grassland EVC and modified habitat for some ground-dwelling fauna, particularly reptiles;
- Dry stone walls that contain abundant loose surface rock providing protection, breeding and foraging and potentially a wildlife corridor between stony rises for a range of ground-dwelling vertebrates;
- A stand of young River Red-gums on Harvest Home Road that provides woodland habitat for some woodland-dependent fauna and has the potential for higher conservation value if the trees reach maturity.

All other remnant indigenous vegetation and habitat features have at least local conservation significance. Other areas dominated by non-indigenous plant species (for example, agricultural grasslands) have little or no value for flora however, they may be used by fauna species for movements between better quality habitat areas and for foraging activities by other species such as birds of prey.

APPENDIX G CULTURAL HERITAGE

APPENDIX G CONTENTS

SECTION 1: ABORIGINAL HISTORY

Biosis Research Pty Ltd completed a field survey and subsurface archaeological testing program in consultation with the Wurundjeri Tribe Land Compensation and Cultural Heritage Council Incorporated. These investigations have demonstrated that Aboriginal archaeological sites survive on several stony rises and along water courses in Aurora.

The subject land lies within the boundary of the Kulin Aboriginal people, who identified themselves as members of "a regional block or confederacy - maintained by intermarriage, a common language and mutual interests " (Barwick, D.E. (1994) 'Mapping the Past: An Atlas of Victorian Clans 1835 - 1904', Aboriginal History, Vol. 18 No 1 - 2, pp. 100 - 131). The lands of the Kulin people cover much of present day western and central Victoria.

Within the Kulin Nation, groups identify themselves by a language name and typically share a common dialect or manner of speaking, as well as economic and political affiliations. The subject land is located in the territory of the Woi wurrung who were composed of a number of clans that spoke the same language. Their territory extended from Kyneton to West Gippsland and the Werribee River and Bacchus Marsh to Mount Baw Baw. The language group occupied most of present metropolitan Melbourne, except for the southern suburbs and areas around Port Phillip Bay.

The Wurundjeri balug clan of the Woi wurrung language group occupied the region containing the subject land. This clan was divided into two patrilineal groups: the Wurundjeri willam and Bulug willam. The Wurundjeri willam, which means 'white gum tree dwellers', would have inhabited the region. The camp sites of the Wurundjeri willam were located along the main creeks and rivers although camp site location and activity would have been influenced by seasonal changes. In summer, base camps were likely to have been established in open locations in the Plenty Valley. In winter, the stony rises would have provided good vantage points and dry camp sites in an otherwise swampy environment.

The confluence of the Merri Creek and Edgars Creek and the surrounding volcanic plains would have provided a diversity and wealth of resources on which Aboriginal people could depend for food. Permanent fresh water in Merri Creek and rock pools and swampy depressions around Edgars Creek combined with an accumulation of fertile, organic soils would have encouraged an abundance of flora and fauna resources for food.

No Aboriginal archaeological sites have been recorded previously on the subject land. The majority of Aboriginal archaeological sites found at Aurora during the survey are on the higher stony rises close to creeks and former swamps. Some areas of high Aboriginal archaeological potential were not investigated using sub-surface testing because they were on stony rises with high natural significance, which are to be conserved. The sites below have been identified and are shown on the map following Section 2.3.2.

SITE NAME	SITE TYPE	SIGNIFICANCE
Luppino 1 (AAV 7822-0772)	Surface artefact scatter	6 (moderate)
Mandie 1 (AAV 7822-0684)	Isolated artefact	3 (low)
Mandie 2 (AAV 7822-0685)	Surface artefact scatter	6 (moderate)
Jenkins 2 (AAV 7822-1267)	Isolated artefact	5 (moderate)
Scaffidi 1 (AAV 7822-0773)	Surface artefact scatter	6 (moderate)
Shine 1 (AAV 7822-1411)	Surface artefact scatter	3 (low)
Ceccomancini 1 (AAV 7822-0639)	Surface artefact scatter	5 (moderate)
Ceccomancini 2 (AAV 7822-0687)	Surface artefact scatter	7 (high)
Konas 1 (AAV 7822-1265)	Surface artefact scatter	6 (moderate)
Konas 2 (AAV 7822-1431)	Isolated artefact	3 (low)
Cotters Road 1 (AAV 7822-0686)	Surface artefact scatter	6 (moderate)
Cotters Road 2 (AAV 7822-1757)	Isolated artefact	3 (low)

SECTION 2: EUROPEAN HISTORY

Biosis Research Pty Ltd has completed a field survey of all features of historical interest.

European occupation of Epping North came after Batman's Treaty with the local Aboriginal people (1835) ceded 600,000 acres, including Whittlesea, to the Port Phillip Association. The Wollert Pastoral Run extended over Aurora and was first leased by John Pike. Charles Caldwell Campbell held the run between 1840 and 1850. The early squatters and landowners were constantly under threat of government displacement and the risk of losing capital discouraged them from developing their properties. These risks coupled with the effects of the 1851 bushfires means that traces of early settlement are extremely rare.

The subject land remained pastoral until it was surveyed into modest farms in the mid 1840s. Many properties went to auction on 27 January 1853 and those who purchased were of English, Irish, Scottish or German descent. At this time the village reserve was surveyed and the name Epping arose. After the land sales in the 1850s, there was increasing pressure for small scale farming and most properties were purchased by absentee landlords who leased them to tenant farmers for dairy farming and cultivation. The relative fertility of the basalt clay soils made the region a significant agricultural producer.

Increasing settlement encouraged the development of roads and village-like settlements at key points along transport routes, which set the pattern of small farms that is still typical of the region today. Occupants began to use the reserves of bluestone in the region when rebuilding their farms after the 1851 bushfires.

With the discovery of gold (1851 - 1888) to the north, the population within the region rose sharply. Although the region was not mined, it became an important food producer and supplier to the goldfields.

The period that followed the Gold Rush and land boom was known as the 1890s depression (1888 - 1901). A minor boom followed this depression and was associated with the opening of the rail link between Melbourne and Heidelberg. The rail links also allowed the expansion of dairying to supply Melbourne and from the 1890s to World War Two, Epping became one of the prime dairy farming districts in Victoria.

No historical sites have been recorded previously on the subject land. The historical sites below have been identified on the subject land and are shown on the following map.

In addition to the above sites, basalt dry stone walls are located throughout the subject land. The main reasons for building walls were to provide property boundaries and to facilitate stock management, particularly after shepherds left for the gold fields and stock needed to be divided. Another reason was to clear the paddocks of rubble to improve pasture and mobility. Dry stone walling was used extensively in Ireland, Scotland, Germany and England, from where many of the early settlers originated. In the Epping region walls were usually made of freestone and cut stone was not introduced. As the farms were relatively small, dry stone walls were used extensively.

Along the remaining dry stone walls there are a number of associated stone features, such as animal enclosures, yards and pens. The dry stone walls at Aurora illustrate a pattern of small scale farming that developed in Epping in the 1850s and is still evident today. In general, the dry stone walls located on the subject land are of low to medium heritage significance.

In most parts of Aurora there is evidence of very small scale quarrying. This evidence is in the form of numerous depressions where in situ basalt floaters appear to have been removed, broken surfaces, rock drill marks and remaining stones. These features are too numerous to record.

Small quarry holes are a feature of most of the stony rises on the subject land. They are most common on the larger stony rises closest to the sites of former bluestone buildings (for example, 200 metres east of Old Myee-Alhern's farm and 100 metres west of Lehmann's farm). These quarries are clearly the sources of building stone for the homesteads and barns of the earliest farm complexes in the 1850s and 1860s.

SITE NAME	SITE TYPE	YEAR OF CONSTRUCTION (Approximately)	SIGNIFICANCE
Pike's homestead (H7822-0375)	Stone foundations, artefact scatter	1850's	High
Lynch Park farm (H7822-0374)	Building foundations, brick and rubble scatter	1940s or earlier	Low
Edgars Creek ford (H7822-0275)	Basalt cobbled ford	1880 - 1930s or earlier	Low
Ziebell's dairy (H7822-0260)	Bluestone dairy remnants, homestead debris	1901	High
Old Myee-Ahern's farm (H7822-0377)	Homestead complex	1860s	High
Lehmann's farm (H7822-0376)	Homestead ruins, building material scatters	1860's	Medium
Long's house	House and garden	1915	Medium

APPENDIX H SOCIAL INFRASTRUCTURE

APPENDIX H CONTENTS

SECTION 1: METHODOLOGY

The approach of Places Victoria to determining what social infrastructure will be required for Aurora and where it will be located has been guided by the following key influences and objectives.

- Whittlesea key strategic and policy documents including the Housing Strategy, Community Activity Centres Review and Quantitative Assessment of Social, Leisure and Open Space Infrastructure Requirements within the Epping North Strategy Plan Area (the ASR report).
- The Aurora Visioning Workshop in December 2004.
- The Aurora Context Study prepared by the Hornery Institute.
- Maximising access to community, commercial and public transport services and facilities within walkable catchments.
- Consultation with key service providers including the Department of Education and Training (DET) and Catholic Education Office (CEO).
- The post occupancy feedback from residents of other equivalent outer suburbs that highlights the social and economic costs to residents of not being offered a range of community, commercial and public transport facilities within feasible walking distance. These costs include social isolation, increased financial burden of additional vehicle ownership and lack of independent access for key groups within the community including youth, mothers at home with young children and older adults no longer able to drive a vehicle.
- The experience of community centres within Places Victoria developments, such as at The Boardwalk, Roxburgh Park and Cairnlea.

SECTION 2: COMMUNITY ACTIVITY CENTRES REVIEW

In February 2001, Whittlesea completed a review of its community activity centres (CAC). The purpose of the review was to assess the success of existing CAC and determine their future role and function in both new and established communities.

With regard to the performance of the three multi purpose CAC in operation within the Municipality in 2000 - 2001, the key findings from the review were as follows.

- The three CAC were operating well in terms of being financially healthy and with strong committees of management.
- Future CAC should have the following components / attributes:
  - located in prominent and attractive neighbourhood settings;
  - ample storage areas;
  - consulting rooms for visiting services;
  - a welcoming foyer space;
  - small meeting rooms;
  - a large hall;
  - sufficient office and administration space.
- Emphasis should be on community development, using the CAC as a vehicle for generating resident interaction and community activity.

SECTION 3: THE ASR REPORT

In 2001, Places Victoria and Whittlesea engaged the services of ASR Research Pty Ltd to prepare a preliminary quantitative assessment of the likely social, leisure and open space infrastructure requirements within the ENSP area, including Aurora and non-Places Victoria land.

The ASR report comprised a review of the Whittlesea planning documents that have relevance to the provision and design of open space and community facilities in Epping North and an assessment of the Epping North service and facility requirements. The ASR report was based on a total population of 40,000 people with 25,000 within Aurora and 15,000 in the remainder of Epping North.

The ASR report identified the following key planning principles.

- Whittlesea community centres, where possible, should be:
  - consolidated into larger multi-functional centres (CAC);
  - equitably distributed throughout the growth area;
  - located adjacent to other community facilities such as schools and active and passive public open spaces and in areas accessible by public transport and walking and cycling paths to create neighbourhood hubs.
- Regional-level components, such as a performing arts space or adult day care centre, should be located together in a central recreation / community services hub. This hub should be situated within or close to the major retail / commercial area.
- Whittlesea active and passive public open space should be:
  - high quality to facilitate heavy use for sport;
  - accessible places for teenagers
  - attractive settings for children's play opportunities.
- The public open space network has a key role in shaping the nature, character and identity of urban development.

SECTION 4: THE ASR REPORT REVIEW

The ASR report was reviewed in 2004 in order to:

- consider the implications of increased population in Epping North, excluding Aurora, from 15,000 to 25,000 people;
- consider the indicative costs of land required for community infrastructure;
- review a draft ADP2.

Aside from the population increase, the ASR report review did not alter the other assumptions or underlying planning principles. The ASR report review did clarify the recommendations for Aurora and has been used for comparison with the community infrastructure package proposed by Places Victoria.

SECTION 5: EDUCATION

Provision at Aurora (including the ADP1 area) of education facilities, including three State primary schools, one State secondary school and two Catholic primary schools, is planned by the DET and the CEO. It is understood that there may be ultimately some variation in the DET class components to suit the needs of the community.

The location of these schools will be determined having regard to:

- the confirmed location of a DET primary school to the east of Section A of Aurora in the ENLSP;
- the confirmed location of a CEO primary school in Section A of Aurora;
- the DET requirement for any school to be a minimum of 400 metres from a transmission easement;
- extensive consultation with the two education

providers concerning specific site and access requirements such as site area requirements, the number of preferred street frontages, proximity to the principle walking and cycling network and linkages to open space networks, public transport, town centres and complementary community facilities.

SECTION 6: WALKING AND CYCLING NETWORK

A comprehensive walking and cycling network linking all of the facilities and services in the ENSP is required to facilitate accessibility and choice for residents. The network should be designed to promote walking and cycling as equally important and attractive modes of transport to the private car and should meet therefore the actual and perceived safety needs of all potential users.

SECTION 7: COMMUNITY DEVELOPMENT

Places Victoria recognises the requirement for a community development strategy (CDS) as an important complement to the provision of community services and facilities. The Aurora CDS will be prepared in conjunction with Whittlesea to maximise opportunities for the integration of Aurora with the surrounding community. The CDS should facilitate new residents meeting each other and slowly, over time, developing the new social support networks that are important to the general well-being of the community.

APPENDIX I TRANSPORTATION

APPENDIX I CONTENTS

SECTION 1: EXISTING ROAD NETWORK AND TRAFFIC VOLUMES

Aurora is bounded by Craigieburn Road East to the north, O'Herns Road to the south and the Craigieburn Bypass to the west. Harvest Home Road, Vearings Road and a number of other minor roads extend in to or through the subject land. Epping Road is approximately 1.6 kilometres east of the east boundary of the subject land. The above roads are generally of rural standard and have reservations of approximately 20 metres.

Craigieburn Road East and Epping Road each have a single, two-lane, two-way carriageway with reservations originally 20 metres wide but widened to 40 metres wide in some places. O'Herns Road is sealed to a width of approximately 6.5 metres between Epping Road and a point approximately 3 kilometres to the west. Harvest Home Road has a sealed pavement of approximately 6.5 metres wide between Epping Road and a point approximately 1.1 kilometres to the west. Other sections of these roads and the minor roads within the subject land are unsealed.

The existing farming and rural residential uses of the subject land generate low volumes of traffic. There are more intensive land uses on nearby land, including the Epping Soccer Stadium and Epping RSL Club at the south west corner of Harvest Home Road and Epping Road. Uses on the south side of O'Herns Road such as the Casa D'Abruzzo Club, a dog pound and some rural / industrial uses near the south west corner of O'Herns Road and Epping Road, also contribute to existing traffic volumes on O'Herns Road.

It is estimated that the traffic volumes on the roads surrounding and through the subject land generally do not exceed 200 vehicle movements per day. The exceptions to this are the sections of road east of the dog pound on O'Herns Road and east of the Epping RSL Club on Harvest Home Road. On these sections of road, TTM Consulting Pty Ltd (TTM) estimates that the existing traffic volume is less than 1000 vehicle movements per day.

SECTION 2: EXISTING PLANNING FRAMEWORK

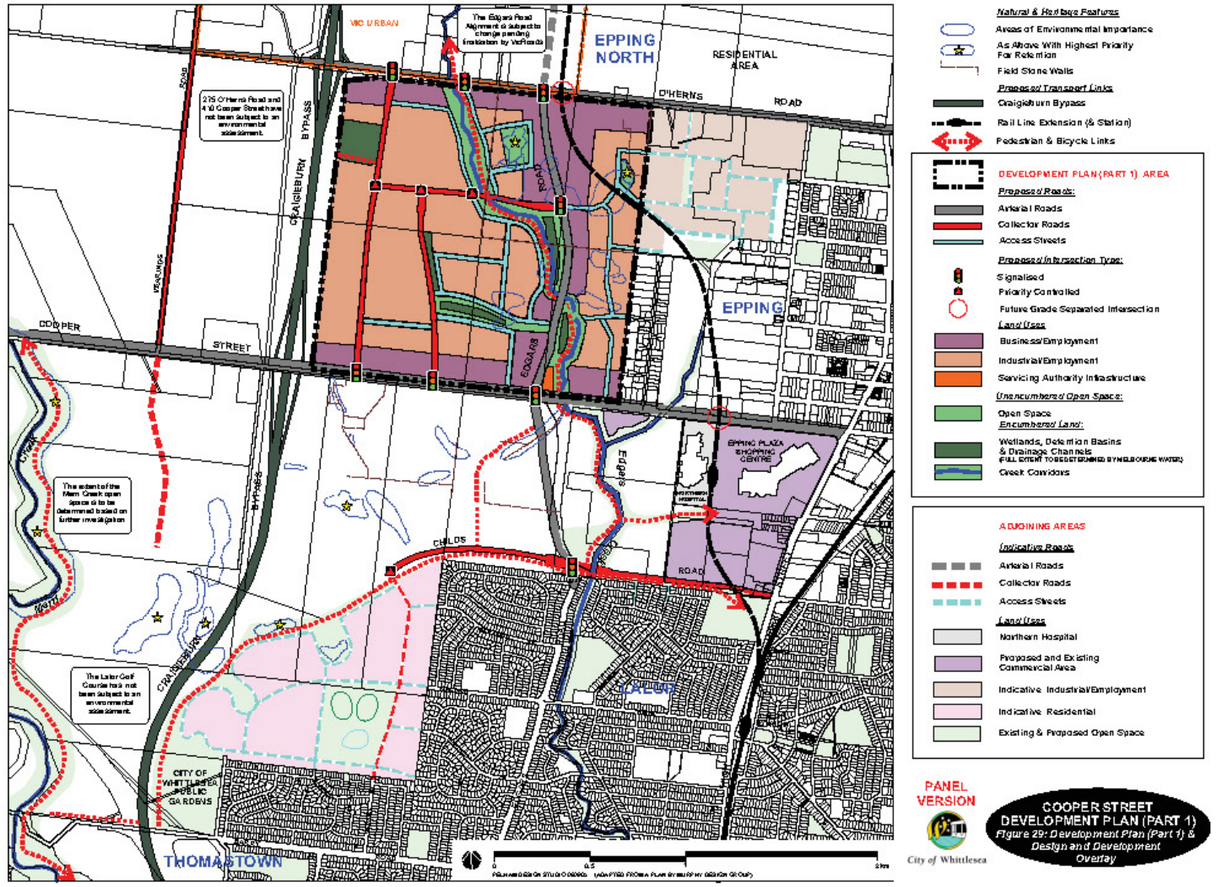
(a) Epping North Strategic Plan

The ENSP incorporates grid-based design principles to ensure that a positive sense of place is progressively established. Integral to the overall layout of the ENSP is the creation of interlinked communities with each having a relationship to the central core or 'town centre'. It is intended that the communities / neighbourhoods will each have local variation and identity but will collectively contribute to the road network and critical mass required to support the town centre.

The concentric rings of the road network combined with offset diagonal transport links have been designed to enhance physical access and visual connections between the neighbourhoods and public open spaces. The road network is anticipated to provide convenient and direct public transport access. The alignment and cross sections of the key transport routes will also provide the opportunity for the establishment of boulevard-style tree planting.

(b) Cooper Street Employment Area

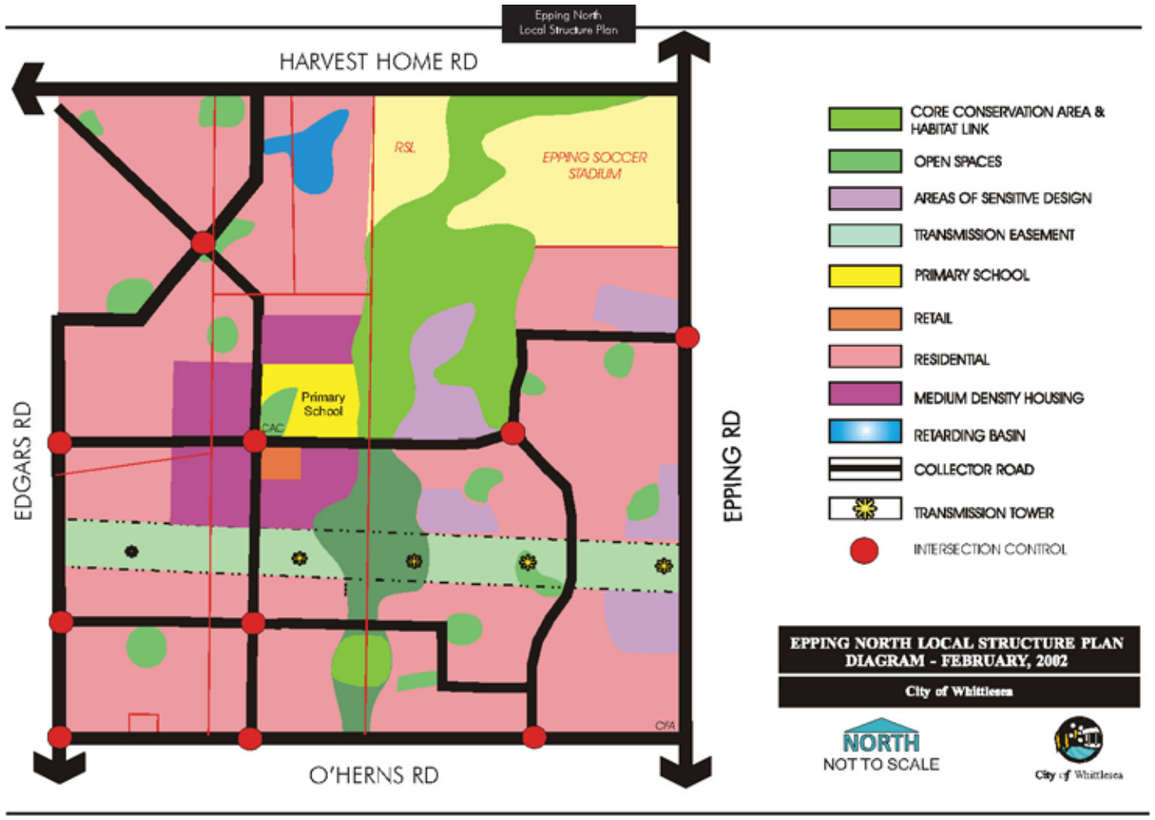
The close proximity of the Cooper Street Employment Area to Epping North, including Aurora, is an important component of the Whittlesea vision for Epping North as a sustainable urban growth area.



Cooper Street Development Plan (Part 1)

(c) Epping North Local Structure Plan

The land to the immediate east of the subject land is included in the Epping North Local Structure Plan (ENLSP). Section A of Aurora forms the north west corner of the ENLSP. The ENLSP anticipates approximately 1850 residential lots and a neighbourhood centre, consisting of a DET primary school, retail, community and open space facilities.



Epping North Local Structure Plan

(d) Extension of Epping Railway Line

The following two proposals to extend the Epping railway line are currently before the State government.

- Extend from Lalor station to Aurora and possibly to Donnybrook.
- Extend from Epping station to South Morang and beyond to Mernda.

The State Government transport blueprint Meeting Our Transport Challenges: Connecting Victorian Communities, states that the extension of the railway line from Epping to South Morang is a long term project to be developed progressively over 25 years. The South Morang extension was completed ahead of this anticipated date, opening in May 2012. The State Government also has a policy that prevents new road level crossings of railway lines.

The Department of Infrastructure is preparing a Public Acquisition Overlay for the public transport corridor to link Lalor station, Epping Plaza, The Northern Hospital, the Cooper Street Employment Area, Aurora and Donnybrook. The reservation is generally 27 metres wide with variations to accommodate stations and topographical constraints.

(e) Craigieburn Bypass

The Craigieburn Bypass connects the Western Ring Road at Campbellfield to the Hume Freeway at Kalkallo.

Access arrangements to the Craigieburn Bypass are as follows.

- A fully directional interchange at the Western Ring Road.
- A full diamond interchange at Cooper Street (proposed).
- A full diamond interchange at O'Herns Road (proposed).
- A south-facing half diamond interchange at Craigieburn Road East (constructed).
- All movements at the Hume Freeway (constructed).

Based on advice from VicRoads it is anticipated that the southern ramps at the O'Herns Road interchange may be provided before the northern ramps.

(f) E6 Alignment

The E6 alignment (4.5 kilometres east of Aurora) forms the east boundary of the ENSP area. The E6 is a proposed north-south primary arterial route, which will extend from the Metropolitan Ring Road in the south to Bridge Inn Road in the north. It will provide an alternative north-south route for both Epping North and Mernda / Doreen that will alleviate pressure on High Street / Epping Road and Plenty Road.

A reservation exists for the E6 between the Metropolitan Ring Road and Findon Road. No reservation yet exists north of Findon Road however, north of Harvest Home Road it is proposed that the E6 alignment will utilise the Bindts Road reservation. Bindts Road is an unsealed local road, which extends from Harvest Home Road to Bridge Inn Road and has a 15 to 18 metres wide reservation.

(g) Edgars Road

Edgars Road provides arterial road access from the Western Ring Road to Cooper Street. Edgars Road is proposed to extend north of Cooper Street to at least Craigieburn Road East.

(h) Epping Road

The ENLSP specifies that Epping Road will be upgraded from a two-lane undivided road to a four-lane divided road with a reservation width of 36 metres. This cross section makes provision for a 7 metres wide central median to accommodate a double row of trees and a 5 metres wide nature strip on each side to accommodate a single row of trees. A 2.5 metres wide bike lane is proposed to be included on each carriageway but no provision is made for parking. Parking will be accommodated in the service roads required to control access to Epping Road.

SECTION 3: TRAFFIC MODELLING

Several analyses of future traffic volumes and road network requirements for Epping North were completed for Whittlesea and VicRoads, prior to the commencement of planning for Aurora. These studies were associated with particular projects and were based on the population and employment trends at the time of the respective studies.

Grogan Richards Pty Ltd predicted future (ultimate development) traffic as part of the preparation of the ENSP and ENLSP.

Greg Tucker and Associates Pty Ltd (GTA) completed modelling for the Cooper Street Employment Area. The daily traffic volumes calculated included existing, Epping North and Cooper Street Employment Area traffic.

Veitch Lister Consulting Pty Ltd (VLC) completed modelling, on behalf of VicRoads, for the 'Whittlesea ultimate development'. This modelling was based on the assumption of development north of Craigieburn Road East. This land is outside the urban growth boundary of the Scheme, it is therefore unlikely that the development and associated traffic modelling assumed is a realistic reflection of the urban outcomes expected in the short to medium term.

Whittlesea has recently completed a 'future road needs' study, which is partly based on traffic flow modelling for the 'ultimate' land development of Epping North and the surrounding area. This study considers one scenario with development north of Craigieburn Road East and one without this development.

TTM has prepared a 'Traffikplan' model for Aurora and its surrounds. In the studies above, Aurora was not considered with the higher dwelling density and fine-grain road network now proposed. The arterial street traffic volume estimates will be higher therefore in the GTA, VLC and 'Future Needs' studies than when more numerous and / or lower order street connections are considered, such as in the TTM modelling. Grid based street design places an emphasis on distributing traffic onto lower order streets, therefore it is important they are taken into account.

The afternoon peak period traffic volumes have been modelled by TTM and the outcomes converted to daily volumes for the key streets in the network, as demonstrated in the diagram below. In mixed-use developments, such as Aurora, the traffic demands are typically higher in the afternoon peak period than in the morning peak period. Through traffic on the Craigieburn Bypass was omitted from the modelling.

The following table provides a comparison between the daily traffic volumes for the ultimate development of Epping North forecast by TTM and the other studies outlined above. While there is obviously some variation between each of the analyses, the TTM modelling most accurately reflects the development proposed at Aurora.

STREET	LOCATION	GROGAN RICHARDS PTY LTD (1999)	GREG TUCKER AND ASSOCIATES PTY LTD (2001)	VEITCH LISTER CONSULTING PTY LTD (2001)	WHITTLESEA: NO DEVELOPMENT NORTH OF CRAIGIEBURN ROAD EAST (2005)	WHITTLESEA: DEVELOPMENT NORTH OF CRAIGIEBURN ROAD EAST (2005)	TTM CONSULTING PTY LTD (2005)
O'Herns Road	At Craigieburn Bypass ramps	17,900	24,500	41,988	43,600	53,600	44,600
O'Herns Road	Scanlon Drive to Edgars Road	20,200	24,500	21,938	24,900	27,500	36,400
O'Herns Road	East of Edgars Road	20,100	31,200	28,650	23,400	21,700	26,600
Edgars Road	North of O'Herns Road	31,400	32,900	22,386	23,400	17,600	14,750
Scanlon Drive	North of O'Herns Road	-	-	27,109	42,600	60,900	24,600
Scanlon Drive	South of Harvest Home Road	-	-	10,713	-	-	17,500
Harvest Home Road	East of Edgars Road	12,800	-	19,480	-	-	10,050

APPENDIX J INDICATIVE STREET TREE PLANTING LIST

APPENDIX J CONTENTS

SECTION 1: STREET TREES

The selection of particular street trees for each stage of subdivision will be refined and reviewed over time. An indicative list of species is as follows.

STREET TYPE / INDICATIVE PLANT SPECIES	EVERGREEN (E) / DECIDUOUS (D)	TYPICAL HEIGHT AT MATURITY (meters)
Arterial Street		
Spotted Gum (Corymbia maculata)	E	20
Smooth-barked Apple (Angophora costata)	E	15 - 20
Neighbourhood Connector Street		
Central medians and side verges		
Blackwood (Acacia melanoxylon)	E	15 - 20
Spotted Gum (Corymbia maculata)	E	15 +
River Peppermint (Eucalyptus elata)	E	15 - 20
Yellow Box (Eucalyptus melliadora)	E	15 - 20
'Rosea' Red Ironbark (Eucalyptus sideroxylon 'Rosea')	E	10 - 20
Narrow-leaved Peppermint (Eucalyptus radiata)	E	15 - 20
Median-Divided Street (30 metres road reserve)		
Central medians		
Red Spotted-gum (Eucalyptus mannifera ssp. Maculosa)	E	10 - 20
Red Box (Eucalyptus polyanthemos)	E	15 - 20
Side verges		
Red Flowering-gum (Corymbia ficifolia)	E	6 - 10
Wallangarra White-gum (Eucalyptus scoparia)	E	10 - 15

STREET TYPE / INDICATIVE PLANT SPECIES	EVERGREEN (E) / DECIDUOUS (D)	TYPICAL HEIGHT AT MATURITY (meters)
Town centres		
Japanese Zelkova (Zelkova serrata 'Green Vase')	D	14 - 20
Compact Robinia (Robinia pseudoacacia 'Bessoniana')	D	10 - 14
Chinese Elm (Ulmus parvifolia)	D	10 - 12
Access Street (east-west streets with minimal set back to dwellings)		
Dwarf Apple Myrtle (Angophora hipida)	E	6 - 10
Rose She-Oak (Allocasuarina torulosa)	E	10 - 15
Yellow Gum (Eucalyptus leucoxylon spp. Connata)	E	10 - 12
Eukie Dwarf Yellow-gum (Eucalyptus leucoxylon 'Eukie Dwarf')	E	5 - 7
'Little Spotty' (Eucalyptus mannifera - dwarf form)	E	5 - 7
Gippsland Manna-gum (Eucalyptus pryoriana)	E	12 - 14
Pink Gum (Eucalyptus fasciculosa)	E	6 - 10
Dwarf Yellow-gum (Eucalyptus leucoxylon dwarf)	E	6 - 10
Wallangarra White-gum (Eucalyptus scoparia)	E	10 - 15
Cimmaro (Fraxinus pennsylvanica 'Cimmzan')	D	13
White Cedar (Melia azaderach)	D	6 - 10
'Red Spire' (Pyrus calleryana 'Red Spire')	D	8 - 10
Callery Pear (Pyrus calleryana 'Arisocrat')	D	11
Pear (Pyrus calleryana 'Glen's Form Chanticleer')	D	11
Manchurian Pear (Pyrus ussuriensis)	D	12 - 13
Japanese Zelkova (Zelkova serrata 'Green Vase')	D	12 - 14

STREET TYPE / INDICATIVE PLANT SPECIES	EVERGREEN (E) / DECIDUOUS (D)	TYPICAL HEIGHT AT MATURITY (meters)
Access Street (north-south streets with minimal set back to dwellings)		
Lightwood (Acacia implexa)	E	6 - 10
Blackwood (Acacia melanoxylon)	E	6 - 10
Coastal Banksia (Banksia integrifolia)	E	10 - 15
Dawson River Bottlebrush (Callistemon viminalis 'Dawson River')	E	6 - 10
Red Flowering-gum (Corymbia ficifolia)	E	6 - 10
Yellow Bloodwood (Corymbia eximia)	E	6 - 10
Silver Gum (Eucalyptus crenulata)	E	6 - 10
Large-fruited Yellow-gum (Eucalyptus leucocylon ssp. Megalocarpa)	E	6 - 10
Eukie Dwarf Yellow-gum (Eucalyptus leucoxylon 'Eukie Dwarf')	E	5 - 7
Snow Gum (Eucalyptus pauciflora 'Little Snowman')	E	7
Coral Gum (Eucalyptus torquata)	E	6 - 10
Kanooka (Tristaniopsis laurina)	E	6 - 10
Access lane		
Small to medium-sized deciduous trees		
Bechtel Crab Apple (Malus ioensis 'Plena')	D	4 - 6
Crepe Myrtle (Lagestroemia indica 'Natchez')	D	6 - 8
Crepe Myrtle (Lagestroemia indica with Lagestroemia fauriei 'Zuni')	D	4
Pear (Pyrus calleryana 'Capital')	D	8 - 11
Pear (Pyrus betulaefolia 'Southworth Dancer')	D	5 - 7
Pear (Pyrus tadshiskistanica)	D	8

STREET TYPE / INDICATIVE PLANT SPECIES	EVERGREEN (E) / DECIDUOUS (D)	TYPICAL HEIGHT AT MATURITY (meters)
Small evergreen trees		
Bottlebrush (Callistemon salignus)	E	4 - 6
Bottlebrush (Callistemon 'Harkness')	E	4 - 6
Bottlebrush (Callistemon 'King's Park Special')	E	4 - 6
Lemon (Citrus limon 'Eureka')	E	7
Pin Cushion Hakea (Hakea laurina)	E	4 - 6
Pink Spike Hakea (Hakea coriacea)	E	4 - 7
Olive (Olea europaea (seedless)	E	5 - 7

Places Victoria

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