Discussion draft
Leneva-Baranduda
growth area
framework plan
2012

Wodonga’s sustainable growth area
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INTRODUCTION

The Leneva-Baranduda Growth Area Framework Plan 2012 (the Growth Plan) has been prepared by Wodonga Council to guide the future development of 19km² of vacant land in the Leneva Valley. This area has been identified in the Wodonga Planning Scheme as the appropriate area for the future growth of Wodonga. The Leneva-Baranduda growth area will service the medium to long-term residential land requirements for Wodonga for approximately the next 40 years.

The existing built up area of Wodonga and the township of Baranduda form an urban edge that in part defines the future development area. The remaining boundaries are generally defined by the 240m contour line of the surrounding hills and adjoining land south along Beechworth-Wodonga Rd. (The boundaries of the Growth Plan area are shown on the aerial photograph – refer to Map 1).

The land to be developed is generally flat farming land in the valleys.

The purpose of the Growth Plan is to provide a framework for development, including guidelines that will assist with the preparation of precinct structure plans for proposed future neighbourhoods. It is an evolution of the Leneva Structure Plan 2006 and importantly responds to and implements relevant sections of the Leneva Valley Design Guidelines 2010.

The Growth Plan identifies the location of encumbered land, neighbourhood precincts, activity centres, social infrastructure, roads and public space. It describes how the land is to be developed and how and where infrastructure and services are to be provided in order to support staged future growth. The Growth Plan:

- Is a strategic plan which guides the delivery of quality liveable urban environments;
- Guides the transition of rural land to urban land;
- Provides the vision of how the land should be developed and how this is to be achieved;
- Identifies the location of activity centres, residential areas, open space and employment precincts;
- Details the form of future land use and development;
- Identifies the main road network and the design of local streets;
- Identifies active and passive open space and linkages between residential areas;
- Acknowledges the WRENs waterways and conservation land as a major element in structuring urban growth and sustainable urban form;
- Provides elements to contribute to the vision of a green sustainable growth area; and

Integrated approach to planning

An integrated approach has been taken to ensure that the Growth Plan considers the existing physical setting, the location of activity centres, social infrastructure, transport infrastructure, schools and open space. All the elements contribute to a sense of place. The outcomes of the plan will include:

- Sufficient population density to support employment, commerce and the provision of social infrastructure;
- A sense of openness and environmental integration that captures the essence of place;
- Well located and accessible social infrastructure such as community facilities and schools;
- Neighbourhoods that have access to activity centres, local shops, and open space;
- Pedestrian friendly streets;
- A responsive open space network that encourages participation in healthy lifestyles; and
- A water smart city.
Map 1 - The boundaries of the Leneva-Baranduda growth area
The planning process
The use and development of the Growth Plan area will be governed by an urban growth zone (UGZ) which is proposed to be applied to the area. Unless otherwise stated in the proposed ‘schedule to the UGZ’, all land to be developed in Leneva-Baranduda will be subject to the provisions of the UGZ. The following broad statutory provisions will apply.

- A precinct structure plan (PSP) will be completed for each precinct defined within the Growth Plan area (refer to Map 2). Each PSP will be incorporated into the planning scheme to guide the use and development of land over the long term.
- Land use and development is to be carried out generally in accordance with the approved precinct structure plans.
- A permit is required to subdivide land. A ‘subdivision design response’ must accompany each application for a subdivision. The design response must indicate the proposed use and development of each part of the land and the staging of development for all land in contiguous ownership with the land under application.

Precinct structure plan (PSP)
The Growth Plan sets out the requirements for the preparation of PSPs that are required to be prepared for each precinct. The PSPs will reduce the time and cost of planning in growth areas and provide a comprehensively planned outcome, thus saving council, developers and future home owners time and money. PSPs will incorporate the following elements:

- Sustainable urban design;
- Housing;
- Collector and local streets;
- Employment and activity centres;
- Community facilities;
- Open space and natural systems - Native Vegetation Precinct Plan (formerly known as the WRENs) and waterways;
- Transport and movement;
- Integrated water management; and
- Utilities and energy.

Development staging
It is intended that precincts will be realised sequentially to ensure the adequate and efficient provision of infrastructure. Out of sequence development is discouraged. This will ensure development does not occur sporadically over the Leneva-Baranduda growth area. The release of land for urban development is likely to occur from two fronts - west from Wodonga and east from Baranduda. Subdivision within each precinct is also to occur in stages. The initial stages of development are to reflect the vision and set the development theme for the entire project. The objectives for development staging are:

- To ensure sequential development of precincts and subdivisions within precincts;
- To provide flexibility in land development and delivery of each precinct without compromising the overall vision;
- To provide core development areas early that seek to establish the development frame for the site; and
- To respond to the timing and delivery of infrastructure and upgrades.

Developer contributions plan (DCP)
Developer contributions are payments or in-kind works or services provided by developers towards the supply of infrastructure required to meet the future needs of a particular community. Levies can be raised through DCPs for a range of state and local government provided infrastructure including roads, public transport, storm water and urban run-off management systems, and community facilities. The area, density of housing, amount of open space and encumbered land varies within each precinct and across land ownerships. Inequities (across different land ownerships) in relation to the amount of open space or encumbered land will be addressed through the application of the DCP. DCPs will be prepared for each precinct as a requirement of the urban growth zone.
Map 2 - Leneva-Baranduda neighbourhood precincts
Vision for sustainability

The vision for Leneva-Baranduda is to ensure that growth occurs in a sustainable way, with world class infrastructure, and where innovation in design and development leads to economic, environmental and social cohesion. Sustainable growth will minimise emissions and waste while promoting urban design that delivers energy-efficiency as well as healthy and high quality outcomes for life.

A sustainable urban environment is one that involves development that neither depletes natural resources nor degrades the health and amenity of land and water environments. The growth area will achieve this through:

- Reinforcing the natural landscape setting including landmarks, conservation areas and waterways;
- Providing different types of housing including larger lots that promote opportunities for urban food production, gardens, domestic water storage and backyards for family recreation;
- Ensuring larger lots and well-sited structures are located to minimise soil disturbance and vegetation clearance on the highly visual slopes;
- Provide good access to basic transport services to reduce car dependency and facilitate the development of integrated non-motorised transport networks such as cycling and walking, by creating bicycle/pedestrian-friendly environments and pleasant public spaces;
- Ensuring natural assets of the area, including the WRENs and waterways, are secured and preserved for their diversity, passive recreation, linkages, visual and cultural landscape values; and
- Designing for resilience to the impacts of climate change, and in particular ensuring secure water supplies and the protection of water environments.

In addition to the above, the Growth Plan promotes the creation of diverse, walkable, compact, vibrant communities, made up of the same components as conventional development but assembled in a more integrated fashion, in the form of complete neighbourhoods. These contain housing, workplaces, shops, entertainment, schools, parks and civic facilities essential to the daily lives of the residents, all within easy walking distance to each other.

This vision is reflected in the following principles.

Guiding principles

An integrated approach to planning the growth area is proposed. The Growth Plan (refer to Map 3) has been developed in accordance with the following six principles. These principles form the framework for how we might be able to take the enormous challenge of transforming the valley, and how we can re-think the way we design, build and operate our future urban settlements. The future of Leneva-Baranduda is not just merely a technical matter of finding more eco-friendly energy solutions, but a question of holistic environmental and social sustainability and identifying principles for healthy communities. The main elements that make up the plan are explained in the remainder of this document.

Principle 1 - Integrate natural elements into the urban structure

Urban development is to respond to the landscape setting which is made up of the creeks and waterways, WRENs and other natural assets. These natural elements not only contribute to biodiversity and water quality, but provide the framework for the proposed future urban development. The urban structure takes advantage of the special landscape features by bringing these features into full public view from the roads, paths, open spaces and residential areas. The beauty of the natural environment, its rural heritage and connections are featured as part of the distinct urban character and sense of place.
Principle 2 - Liveable energy efficient neighbourhoods
Energy efficiency will be encouraged through greater reliance on renewable energy sources. This should be done at all levels of development from subdivision design and infrastructure provision, through to housing design. Waste recycling, reuse of water and the use of technology that enables energy efficient outcomes should be embraced and encouraged with future developers, builders, statutory authorities, service providers and the community.

Principle 3 - Socially sustainable communities
Each neighbourhood will provide housing diversity and choice for different socio-economic and demographic groups. The urban structure is to consist of sustainable neighbourhood precincts where every house will have access to local convenience shopping, social infrastructure and open space. Larger activity centres are to offer the advantages of living close to work, social infrastructure, retail activity and entertainment. The mix and location of these centres will reduce car dependency by being within walking distance of households, and by co-locating with schools, health services, convenience shopping and neighborhood/community hubs.

Principle 4 - Encourage participation in healthy lifestyles
There should be adequate provision of well-located open space that encourages access to a variety of active and passive recreational opportunities within walking distance of all households. Open space is the foundation of urban liveability. It underpins many social, ecological and economic benefits that are essential to the healthy functioning of the urban environment. The open space network is to contribute to the neighbourhood structure and be located in close proximity to activity centres, schools and community facilities. The open space network is to support and strengthen the WRENs and waterways. This will be done by aligning important lineal networks, such as bicycle and pedestrian pathways, adjacent to the WRENs to buffer sensitive environments.

Principle 5 - A low impact transport system
The adapted grid pattern of streets is to support the natural landscape elements and promote legibility and movement. Urban areas are to be connected by a low-impact bus transport system that provides easy accessibility and mobility between precincts, activity centres and popular destinations. The collector streets will provide bicycle lanes and linear open space links to promote walking and cycling connections within a safe and pleasant environment.

Principle 6 - A water smart city
Leneva-Baranduda is located within the North East Regional Water Authority's water supply district. Opportunities to reduce water consumption, improve water quality and protect aquatic habitats should underpin any development proposal. This can be achieved through rainwater collection, wastewater recycling and storm water harvesting techniques. Water smart and flood management concepts need to be adopted as part of the urban design. At a household level, rain water tanks, rain water and dual-water systems and low-flush toilets can be used to reduce potable water demand. Storm water treatments can be utilised to enhance open space, provide biodiversity, habitat and water quality improvements.
Leneva-Baranduda growth area framework plan 2012

Map 3 - The Leneva-Baranduda Growth Area Framework Plan
GROWTH TRENDS AND LAND BUDGET

This section outlines the demographic changes underpinning Wodonga's need to start planning for its future growth. It describes the land budget for the growth area, taking into account encumbered land and land proposed to be used for activity centres, open space and community facilities.

Demographic trends
Wodonga has experienced strong growth over the past 35 years and will continue to grow at close to two per cent per annum over the next 15 years. The projections for population growth predicts that Wodonga's population will increase to 54,777 by 2031. The average household size is expected to range from 2.57 persons per household in 2006 to 2.56 in 2031 (refer to Figure 1). Population trends indicate that there will be an increase in population growth resulting in an increased demand for land for new housing (refer to Figure 2).

<table>
<thead>
<tr>
<th>City of Wodonga</th>
<th>Forecast year</th>
<th>2006</th>
<th>2011</th>
<th>2016</th>
<th>2021</th>
<th>2026</th>
<th>2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Population</td>
<td></td>
<td>34296</td>
<td>37634</td>
<td>41779</td>
<td>46234</td>
<td>50574</td>
<td>54777</td>
</tr>
<tr>
<td>Change in Population (5yrs)</td>
<td></td>
<td>3338</td>
<td>4145</td>
<td>4455</td>
<td>4340</td>
<td>4203</td>
<td></td>
</tr>
<tr>
<td>Average Annual Change (%)</td>
<td></td>
<td>1.87</td>
<td>2.11</td>
<td>2.05</td>
<td>1.81</td>
<td>1.61</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td></td>
<td>13074</td>
<td>14434</td>
<td>16023</td>
<td>17707</td>
<td>19387</td>
<td>21064</td>
</tr>
<tr>
<td>Average Household Size (persons)</td>
<td></td>
<td>2.57</td>
<td>2.55</td>
<td>2.55</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
</tr>
</tbody>
</table>

Figure 1 – Forecast change in age structure
Source: Forecast I.D.

Figure 2 – Population trends
Source: Forecast I.D.
**Direction of future growth**

Once completed, the Growth Plan area will have a land area and population comparable to the city of Wodonga in 2012. There are already a number of existing growth fronts adjoining the growth area where there is approximately 3361 lots approved for development. Based on an average vacant lot sale of 350 houses per annum in Wodonga, there is approximately 10+ years supply of urban land if all of sales occurred in these areas alone. The active subdivisions occurring around the edges of the Leneva-Baranduda growth area are shown on Map 4 on the next page.

**Land budget**

The land budget for Leneva-Baranduda is outlined in the table below. In summary:

- The total area of land in the growth area is 1973ha, of which 647 ha is encumbered land not able to be used for urban development. The encumbered land primarily includes the land contained within the Native Vegetation Precinct Plan, the determined and designated waterways, and the Middle Creek flood plains.

- The net developable area within Leneva-Baranduda is therefore 1326ha, taking into account the encumbered land referred to above. The net developable area will include activity centres, the Baranduda Fields Regional Sports Precinct and other public open space, and primary and secondary schools. The area dedicated to these non-residential uses is approximately 287ha, leaving 1039ha of land for residential land including local streets.

- The net amount of residential land once streets have been taken out (20 per cent of the residential land) equates to 831 ha of land that could be subdivided. Based on this land area and a lot yield in the order of 15-18 dwelling per hectare, it is projected that approximately 14,000 lots could be created within the growth area.

Based on Wodonga household occupancy rate of 2.5 persons, the expected future population of Leneva-Baranduda is likely to be approximately 35,000 people.

<table>
<thead>
<tr>
<th>LAND DESCRIPTION</th>
<th>ha</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross developable area</td>
<td>1973</td>
<td></td>
</tr>
<tr>
<td>Encumbered land</td>
<td>647</td>
<td>WRENs, waterway buffers, VPO, Middle Creek flood prone land</td>
</tr>
<tr>
<td>Net developable area</td>
<td>1326</td>
<td></td>
</tr>
<tr>
<td>Sports precinct</td>
<td>67</td>
<td>Located opposite the proposed Baranduda town centre</td>
</tr>
<tr>
<td>Activity centres</td>
<td>64</td>
<td>May include medium density housing</td>
</tr>
<tr>
<td>Open space</td>
<td>124</td>
<td>Includes passive active open space</td>
</tr>
<tr>
<td>Primary schools</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Secondary schools</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Total non-residential land</td>
<td>287</td>
<td></td>
</tr>
<tr>
<td>Net residential land</td>
<td>1039</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 3 – Land use within the net developable area including residential and non-residential land**

*Source: Leneva Baranduda Land Budget.*
There is a significant amount of land approved for development on the fringes of Wodonga and Baranduda.

Figure: The majority of the land supply for future urban growth is to occur in the Leneva Baranduda Growth area.

Map 4 - Leneva-Baranduda growth area
NATURAL ELEMENTS AND CHARACTER

The landscape elements provide a natural framework for future urban development. The natural features such as the conservation land within the Native Vegetation Precinct Plan and the waterways that slice through the valleys become the integral elements of the urban structure. The waterways form linear open space for conservation and these green corridors provide opportunities to connect activity centres, social infrastructure, active open space and neighbourhood precincts. The urban structure takes advantage of the special landscape features of the site by bringing these natural elements into full view from roads, paths and from open space. These key natural elements become reference points from which people will orientate and position themselves in the community. The key landscape elements include:

- Baranduda Range and Bears Hill;
- Middle Creek and waterways; and
- The Native Vegetation Precinct Plan land.

The main natural elements are illustrated on Map 5.

Objectives

The landscape elements are one of the main structural elements to orientate future urban development. The layout of urban areas will be on relatively flat un-encumbered land with features such as the native vegetation and watercourses forming prominent green edges that penetrate into the urban areas. Landscape objectives are:

- To ensure that the natural elements and landmarks are integrated into the urban structure to assist with legibility and movement;
- To ensure conservation areas and waterways are buffered from urban development to enhance water quality and bio-diversity;
- To maximise the shared use of waterway and buffer areas for passive recreation and to provide opportunities to create linear links between urban areas; and
- To ensure that the visual impacts of development on elevated slopes are minimised.

Planning and design guidelines

Landscape features

- Surrounding hills and landmarks, Middle Creek, other waterways and native vegetation are to be conserved as natural components and are to be integrated as part of the desired future character of urban precincts.
- No urban development is to occur above the 240m contour, with open space and access points to the surrounding regional parks including Bears Hill and Baranduda Ranges.
- Development is located in response to the landform and takes advantage of the special features of the site including mature trees, conservation land, watercourses and landforms.
- The foothills and sloping land is to be reserved for low density housing. This will minimise environmental impacts and visual intrusions into the silhouette and natural backdrop provided by surrounding hills.
- Natural landmarks such as the lookout (central knoll) should be used as reference points to strengthen urban structure, legibility and way-finding.
- Collector roads and local streets are to provide a green edge to waterways and conservation land.
The WRENs

- The WRENs protects the flora and fauna habitat to ensure that a net gain is achieved in accordance with Victoria’s Native Vegetation Management – A Framework for Action (DSE 2002).
- The WRENs precinct is to be managed as a protected vegetation precinct with long term improvements to the health and habitat value of these areas (i.e. the net gain principle).
- Where possible, clusters of trees and individual trees in open space and on private property are to be conserved.
- Planting in encumbered land is to be selected from a species list produced by the Department of Sustainability and Environment or as agreed as part of WRENs vegetation offsets.

Waterways

- Designated and determined waterways need to be mapped and confirmed with the appropriate authority.
- Development must minimise environmental impacts including the number of road crossing points, the installation of services, drainage works and other adverse impacts caused by vegetation clearance.
- A flood overlay is to be included to the Middle Creek floodplain reserve.
- Water and catchment systems are to be integrated with streets and open space.
- Development must not impact detrimentally on the flow and quality of surface and ground water to ensure that waterways maintain a high level of water quality, including water sensitive urban design i.e. swales, wetlands etc.
- The linear spaces and buffers along waterways are to provide for drainage, biodiversity, protection of cultural assets and passive recreation, including shared bicycle and pedestrian paths that link residential precincts.

Photos 1A and 1B – The prominent and highly visible landscape of Leneva-Baranduda
Tree retention
The site has a number of groups of remnant trees scattered throughout land previously cleared for grazing purposes. There is also a variety of road verge plantings and cultural plantings associated with windbreaks, homestead access ways and home paddocks. The structure plan provides a vehicle for conserving as many trees as possible, but recognises that scattered individual trees may be difficult to conserve and successfully maintain. In general, all major groups of trees and roadside plantings are able to be conserved. Construction projects that involve earthworks can cause indirect loss of native vegetation. Of particular concern to the health of trees are the longer-term impacts of soil compaction and excavation (e.g. trenching for pipelines, cabling, etc.).

The main objectives for tree retention are:
- To retain vegetation as part of offset requirements;
- To protect the key environmental assets within the Native Vegetation Precinct Plan area and enhance populations of native plants and animals, with particular emphasis on threatened species and their habitats;
- To protect and manage the long-term health and habitat value of the native vegetation within the identified offset areas;
- To require the preparation of offset management plans to manage the offset sites and implement specific solutions;
- To encourage the protection of native vegetation shown as ‘to be protected’;
- To protect and enhance the connectivity and stepping stone effect of habitat zones and areas of native vegetation with appropriate native vegetation species; and
- To protect and manage the re-vegetation or regeneration of native vegetation.

Photos 2A and 2B – Examples of successful tree retention and protection
Map 5 - Natural elements
HOUSING

Leneva-Baranduda will provide a variety of housing to meet the needs of households as people move through different stages of their lives. This includes the provision of lifestyle opportunities on larger lots, housing suitable for families at suburban densities and smaller dwellings such as townhouses, units and apartments. Affordable and social housing is also to be integrated into all urban areas.

Population projections indicate that there will be a large number of families residing in the growth area, followed by an aged population by 2031 (25 per cent of the population being 65 years plus). This pattern of growth has implications for where people live and the type of housing required in the future. There are likely to be changes in demand for community facilities associated with different age groups, including health facilities, childcare centres and primary and secondary schools.

It is proposed that there be five residential precincts within the growth area (refer to Map 2). Each will be limited in size to encourage a greater sense of community and belonging, and hence increase the opportunity for greater interaction between local people and businesses with shared experiences and interests. The boundaries of neighborhood precincts are delineated based on residents’ proximity to social infrastructure, schools, open spaces and access to public transport services. The intent is to have approximately the same number of houses in each precinct. The size of each precinct varies due to the amount of WRENs, waterways and encumbered land.

Housing density is to be varied across the growth area to ensure housing diversity and choice. Larger lots are to be located in areas where there is greater environmental sensitivity, whilst suburban sized lots for young families and higher density housing will be in close proximity to activity centres. There are increased opportunities for higher density residential development in the activity centres (refer to Map 4). An indicative analysis of how the varying housing densities can be achieved is presented in Figure 4 below. This analysis does not include the potential for higher densities of housing that could be located in the activity centres (the dwelling yield at conventional, medium and low densities is shown in the figure below).

Objectives
The intent is for residential development to complement the landscape setting and maximise access to activity centres, facilities and services. Objectives are:
- To provide a variety of housing types that will meet the current and future requirements of the community;
- To vary housing densities according to the location of houses to activity centres, schools, social infrastructure and sensitive environments (see illustrations on following page); and
- To ensure that structures are sited and designed to minimise impacts on sloping land, disturbance of the environment and avoid intrusion into highly visual areas.

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Gross residential ha</th>
<th>Streets minus 20%</th>
<th>Net residential land ha</th>
<th>Lot size m²</th>
<th>Lot yield</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>794</td>
<td>159</td>
<td>635</td>
<td>550</td>
<td>11546</td>
<td>81.7</td>
</tr>
<tr>
<td>Medium</td>
<td>47</td>
<td>9.4</td>
<td>37.6</td>
<td>300</td>
<td>1254</td>
<td>8.9</td>
</tr>
<tr>
<td>Low</td>
<td>198</td>
<td>39.6</td>
<td>158.4</td>
<td>1200</td>
<td>1320</td>
<td>9.4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1039</td>
<td>208</td>
<td>831</td>
<td>1200</td>
<td>14120</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 4 – Percentages of conventional, medium and low density housing.
Planning and design guidelines

Density and neighbourhood character

• Individual neighbourhood precincts will have a land area of approximately 200ha, excluding public open space and encumbered land.
• Each neighbourhood precinct will consist of approximately 3000 dwellings, with a population in each precinct of approximately 6500 residents.
• Higher density housing on lots having a minimum lot size of 300m² will be located in or adjacent to activity centres where residents will have convenient access to shops, services and public transport hubs.
• Retirement villages or aged care facilities must be located in an activity centre or within 400m of an activity centre and public transport stop.
• Houses at suburban densities having a minimum lot size of 550m² will cover the majority of the residential area surrounding higher density houses and activity centres.
• Lower density housing on lots having a minimum area of 1200m² will be located around the elevated slopes to Bears Hill and Baranduda Ranges to minimise intrusion into prominent views.
• Where possible, retain the curtilage of existing rural/farm houses, outbuildings and landscape features where the boundaries of these lots are well defined by the lots morphology.
• The majority of houses are to be located within a 400m radius of an activity centre, services, open space and public transport.
• A least 70 per cent of lots across the residential areas should be orientated to the north or have good solar access to living areas and private open space.
• Buildings should address the main street frontage and open space must not penetrate behind houses out of view from roads.
• Development on steeper land including excavations, filling and vegetation clearance, must limit the impact on the environment (refer to Photos 3A and 3B).

Photos 3A and 3B – Buildings on steep slopes
## Leneva-Baranduda growth area framework plan 2012

<table>
<thead>
<tr>
<th>Medium density housing</th>
<th>Conventional density housing</th>
<th>Low density housing</th>
</tr>
</thead>
</table>

Photos 4A and 4B - High density residential housing is integrated with activity centres on lots with minimum lot size of 300m² (or 25 dwellings per hectare)

Photos 5A and 5B - Conventional housing on lots with minimum lot size of 550m² - 650m²

Photos 6A and 6B - Low density housing is to be located in areas where environmental and landscape considerations are important
Map 6 - Housing density and distribution
SOCIAL INFRASTRUCTURE AND
COMMUNITY SERVICES

The strength and viability of new communities depends on a number of factors including the development of social networks, the availability of community and civic activities, the creation of opportunities for cultural and social participation and the involvement of the community in leadership and self-help. Social infrastructure is fundamentally important to facilitate social interaction and engagement. The distribution of facilities can assist to build social networks that form the basis of healthy communities and lifestyles.

Community services include social, recreational, educational, leisure, support services, such as early childhood health, lifelong learning services and programs aimed at improving the quality of life for people (including new parents and their children, older adults and people with disabilities). Social infrastructure includes buildings such as multi-purpose community facilities located close to public transport hubs. These facilities may include libraries, maternal child and health centres, childcare facilities, kindergartens, leisure centres, community halls and sport and recreation facilities. Social infrastructure also includes active and passive open space, including parks and playgrounds.

The amount of land to be allocated for integrated community facilities will depend upon the population density and catchment area. The level and type of community facilities varies accordingly. The indicative provision of social infrastructure for different population thresholds are listed in Figure 6.

Objectives

The Growth Plan seeks to ensure the delivery of social infrastructure across the whole growth area at the regional, neighbourhood and local level, to meet the needs of residents over the short, medium and long term. The objectives of the provision of social infrastructure are:

- To provide access to social infrastructure across urban areas;
- To promote the concept of community hubs for place making and integrated planning and delivery;
- To strengthen links between social infrastructure, open space, employment and retail areas;
- To ensure flexible, affordable, efficient and self-sufficient social infrastructure; and
- To locate social infrastructure on sites which protect and enhance the values of the natural environment.

<table>
<thead>
<tr>
<th>Target population</th>
<th>Facility hierarchy</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population up to 10,000 people</td>
<td>Level 1</td>
<td>Primary and secondary schools, long day care centres, early year facility, neighbourhood houses, active open space/playgrounds</td>
</tr>
<tr>
<td>Population 10,000 - 30,000</td>
<td>Level 2</td>
<td>Primary and secondary schools, indoor recreation centres, community complex, youth facilities, maternal and child health, occasional child care, residential aged care, active open space, police station, ambulance station, fire station</td>
</tr>
<tr>
<td>Population 30,000 - 50,000</td>
<td>Level 3</td>
<td>Libraries, community arts centre, TAFE and secondary schools, indoor recreation centres bowls, tennis and active open space, community health services, early childhood intervention services, hospital, university</td>
</tr>
</tbody>
</table>

Figure 5 - The community facility hierarchy

Planning and design guidelines
The future planning of social infrastructure should promote the concept of community hubs. Social infrastructure has a far broader role than just providing accommodation for community services and activities.

Community complexes are places where people go to work, shop, learn, play and socialise. A complex of community facilities contributes to a neighbourhood’s sense of place, pride and connection. Community complexes consist of facilities for community use which may include meeting activity, maternal child and health services, kindergarten services, playgroup activities, toy library services, youth activity and educational programs. Some of the criteria addressed in designing community hubs are listed below. Figure 7 identifies the type and proposed location requirements for various social infrastructure identified to service the needs of the communities in the growth area.

Social infrastructure
• Co-location of social infrastructure in community hubs will increase the level of service integration and encourage greater resident utilisation and participation.
• Community facilities must be multi use and be accessible within 400m to 500m of residential neighbourhoods, activity centres and within a 10 minute walk of a transport stop.
• Each neighbourhood precinct will have a comparable level of infrastructure provision.
• Co-location of facilities will maximise the use of shared car parking.

- Where possible, community facilities are to be co-located under one roof to enable the sharing of resources.
- New facilities should be designed and operated to be flexible, affordable and efficient, minimising operational and maintenance costs.

Emergency services
• Higher order community facilities such as hospitals, emergency services and regional medical facilities should be located in the higher order activity centres such as the proposed Leneva Village Centre and Baranduda Town Centre (refer to the Chapter on Employment and Activity Centres in this plan).
• Where possible, law and emergency services should be integrated i.e. fire, police, SES and ambulance services.
• Emergency services should have a main road frontage, be easily accessible and be located so they can achieve good emergency response times.

Public and private schools
• Land is identified for five public primary schools each with 3.5ha of land located in or adjacent to activity centres (refer to Map 7).
• Private schools will be established in accordance with the demand for private school education (and are not currently shown on Map 7).
• Land is identified for one secondary school and/or TAFE with a land area of 8.4ha to 12ha to be located in the Baranduda Town Centre.
• Schools should have a service road access from arterial roads or a collector road and three road frontages if possible (refer to Photos 8A, 8B and 8C).
### Figure 6 - Social infrastructure requirements

<table>
<thead>
<tr>
<th>BARANDUDA TOWNSHIP (LEVEL 3)</th>
<th>LAND AREA HA</th>
<th>AREA m²</th>
<th>RECOMMENDED MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library</td>
<td>1.5</td>
<td>1500</td>
<td>A standalone facility and may incorporate other service and activity functions particularly meeting rooms and classroom space.</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
<td>Likely to be expansion of existing campus.</td>
</tr>
<tr>
<td>Hospital – Level 3 health care</td>
<td>1</td>
<td></td>
<td>Level 3 requires specialist resources, including GP care, nursing, some specialist care, diagnostic, and procedural services.</td>
</tr>
<tr>
<td>TAFE</td>
<td>8.4</td>
<td></td>
<td>The TAFE is to be a building in space setback from street frontages.</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>0.8</td>
<td>400</td>
<td>The building will incorporate 2 kindergarten rooms providing a total capacity of 60 licensed places that could be integrated into an early year’s facility on government primary school sites 3.8 ha in size.</td>
</tr>
<tr>
<td>Child care facility</td>
<td>0.8</td>
<td>100</td>
<td>Design requirements need to adhere to the Design Guide for Victorian Children’s Services (April 2005).</td>
</tr>
</tbody>
</table>

| Presentation space          |              | 800     | |

| Function/meeting rooms      | 1.5          | 1500    | The function room is to have a commercial kitchen. |
| Maternal and child health   | 0.8          | 100     | These facilities may be incorporated within schools. An outdoor play area of up to 700m² for play. |

| Toy Library                 |              | 120     | Incorporated into other facilities. |

| Active open space           |              | 2.0     | Focus on civic, meeting places and market space. |

| Emergency services          |              |         | The number and type of facilities, timing of development and location will be determined by a planning process undertaken by the Dept of Justice and the relevant service. The preferred facility model is an integrated emergency services precinct comprising a police station, ambulance station, SES unit and/or fire station. |
| Police                     | 0.4 to 0.6   |         | |
| Fire and SES               | 0.4          |         | |
| Ambulance                  | 0.4          |         | |
| SES Unit                   | 0.25         |         | |

<table>
<thead>
<tr>
<th>LENEVA VILLAGE CENTRE (LEVEL 2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>3.5</td>
</tr>
<tr>
<td>Maternal and child health</td>
<td>0.8</td>
</tr>
</tbody>
</table>

| Multi-purpose hall               |         |         | |
| Function meeting rooms           |         | 400     | Space will be component elements of the large community facilities. |

| Kindergarten                     | 0.8     | 400     | As for Level 1 Facilities. |

| Active open space                |         | 4000    | Located in conjunction for social infrastructure. |

<table>
<thead>
<tr>
<th>NEIGHBOURHOOD ACTIVITY CENTRE (LEVEL 1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten</td>
<td>0.8</td>
</tr>
<tr>
<td>Neighbourhood house</td>
<td>0.12</td>
</tr>
<tr>
<td>Maternal &amp; child health</td>
<td>0.8</td>
</tr>
<tr>
<td>Playgroup</td>
<td></td>
</tr>
<tr>
<td>Playground</td>
<td>0.15</td>
</tr>
</tbody>
</table>

| Public art                           |         |         | Site specific public art created by professional public artists. These should be used to strengthen local character to create distinct locations. |
Map 7 - Location of schools
ACTIVE AND PASSIVE OPEN SPACE

Open space is important for recreation and conservation of environmental and cultural values and is the foundation of urban liveability. The location and design of open space underpins many social, ecological and economic benefits that are essential to the healthy functioning of the urban environment. Public open space should be located and designed to foster social inclusion where all people and communities are given the opportunity to participate fully in political, cultural, civic and economic life (see Figure 7).

The importance of physical activity is well recognised as part of a healthy lifestyle. The health consequences of inactivity (obesity, diabetes, heart disease etc) and the annual costs associated with direct healthcare are well documented. High quality and accessible public open space is important in providing opportunities for people’s physical and mental health and well-being. Additionally, the social community benefits are well known, including providing tools for social connectivity and building community capacity.

On this basis, the open space network proposed for the Leneva Valley will encourage participation in healthy lifestyles by offering a variety of safe and attractive spaces that meet user requirements for organised sport and recreation activities. Active open space can perform a range of functions including formal recreation, informal space and recreation/sporting facilities. It includes playing fields intended for formal recreation and team participation such as tennis, football, soccer, cricket and netball. Active open spaces can also facilitate spontaneous activities as well as informal play areas for children and family recreation. Active open space may also include recreation facilities such as multi-purpose facilities, change rooms, spectator facilities and associated amenities.

Links between urban areas and destinations create the connections that unite all the layers of activity and resulting physical form of the city. Linear open space commonly follows water features (creeks), vegetated corridors, greenways and paths that slice through districts, creating edges and linking places. The landscape treatments may be formal or informal, but linear open spaces generally offer continuous greenery in contrast with the regular grid pattern of urban streets. It is often the linear systems that give richness to city form by contrasting with the urban grid and providing a presence to the landscape. The proposed distribution and location of open space in the Leneva Valley is illustrated in Map 9.

Objectives

Open space should be integrated into the urban fabric and be equitably distributed across neighbourhood precincts providing access to all users. The open space network should enhance neighbourhood structure and provide well located, appropriately sized and connected spaces to meet the needs of the community and to integrate and restore appropriate environmental features. Objectives are:

- To ensure there is a sufficient amount of well-located open space within walking distance of residential areas;
- To provide a variety of open spaces that meet the sport and recreational needs of the community;
- To ensure that open space, residential areas and activity centres are connected; and
- To ensure open space is attractive and safe.

<table>
<thead>
<tr>
<th>Open space values</th>
<th>Relaxation</th>
<th>Exploration</th>
<th>Social and family interaction</th>
<th>Exercise</th>
<th>Contributes to urban structure</th>
<th>Economic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relaxation</td>
<td>Sports (competing &amp; for spectators)</td>
<td>Improving and maintaining environmental quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploration</td>
<td>Children’s plan &amp; development</td>
<td>Nature, wildlife habitat and biodiversity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and family interaction</td>
<td>Opportunities for seniors activities</td>
<td>Water management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>Learning</td>
<td>Interaction with the natural environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributes to urban structure</td>
<td>Linkage</td>
<td>Visual amenity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic value</td>
<td>Healthy lifestyles</td>
<td>Spiritual associations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Planning and design guidelines
Open space should be viewed as a major structural element of the city. With good subdivision design, open space has the potential to increase land values and add value to commercial and retail uses by strengthening destinations and contributing to a landscape aesthetic that is valued by the community. Decisions about the amount of open space should not disadvantage access and aspirations of new communities as they settle in neighbourhood precincts. The intent is to provide sufficient open space in accordance with the following guidelines.

Amount and location of open space
- Future generations should not be disadvantaged in terms of having access to open space.
- 10 per cent of the net developable areas (1326ha) is to be provided as open space areas with:
  o Six per cent being designated active open space;
  o Two per cent in activity centres; and
  o Two per cent passive open space.
- Open space should be integrated into the urban fabric and active open space should be equitably distributed across neighbourhood precincts providing access to all users.
- Residents should have at least one active open space area within 400m of their houses.

Type and size of open space
- Wodonga Council has identified a range of sports grounds and facilities that will be required in Leneva-Baranduda (refer to Figure 8).
- The size and design of neighbourhood parks and local parks must be in accordance with Draft Open Space Strategy 2011.
- The size and design of playgrounds must occur in accordance with council’s Playground Strategy 2010.
- Active sport and recreation areas are to include community pavilions that house facilities such as change rooms, meeting rooms, kitchen/catering areas, toilets and showers (see the dimensions of community pavilions at a district, neighbourhood and local scale).

<table>
<thead>
<tr>
<th>Name</th>
<th>Leneva Baranduda active open space</th>
<th>Area ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Rules &amp; Netball Facilities</td>
<td>Low level local football venue 2 ovals, pavilion, car park, 2 netball courts and open space). 1 Senior cricket oval to be incorporated into this facility.</td>
<td>8.0</td>
</tr>
<tr>
<td>Cricket</td>
<td>2 synthetic/junior cricket ovals required adjacent to schools or other open space development</td>
<td>1.2</td>
</tr>
<tr>
<td>Soccer</td>
<td>Low level soccer venue (2 senior pitches, i junior pitch, pavilion and car park)</td>
<td>5.7</td>
</tr>
<tr>
<td>Tennis</td>
<td>Unstructured tennis should be encouraged within open space areas i.e. rebound tennis walls</td>
<td>0.2</td>
</tr>
<tr>
<td>Lawn Bowls</td>
<td>Low level bowls facility</td>
<td>1.5</td>
</tr>
<tr>
<td>Skate/BMX Facilities</td>
<td>Provision for local level skate/BMX general facility</td>
<td>TBC</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>17.8</td>
</tr>
</tbody>
</table>

Figure 8 - Active sports and recreation facilities
Neighbourhood and other play spaces create a precinct focus that complement activity centres, schools and social infrastructure.

Active open space should have dimensions to accommodate different activities, and the provision of pavilions in accordance with the minimum size listed below.

- Sports grounds 2000m² – 3000m²
- Neighbourhood parks 1500m² plus
- Local parks/playgrounds 800m²

Public open space should be bounded by streets with buildings oriented towards the open space to provide outlook and passive surveillance. There should be no back fences to public open space.

- Parks should be located so that at least 50 per cent of their perimeter length directly faces two street frontages.
- There should be 30 per cent visual penetration into active open space with casual surveillance from streets.
- In activity centres, emphasis should be given to open space with simple regular geometries, edge treatments, centre median and a combination of soft and hard spaces.

- Open space should be located to strengthen buffers to the native vegetation and waterways, especially where the native vegetation is insufficient.
- Open spaces should incorporate smart water features.
- Places of heritage or cultural significance will be located in the open space network.
- Spaces should be designed to maximize public safety as per Figure 10.

<table>
<thead>
<tr>
<th>Element</th>
<th>District</th>
<th>Neighbourhood</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting/function space</td>
<td>450 m²</td>
<td>250 m²</td>
<td>100 m²</td>
</tr>
<tr>
<td>Storage</td>
<td>350 m²</td>
<td>300 m²</td>
<td>175 m²</td>
</tr>
<tr>
<td>Kitchen/bar</td>
<td>150 m²</td>
<td>150 m²</td>
<td>50 m²</td>
</tr>
<tr>
<td>Meeting space (club)</td>
<td>200 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilets/change rooms</td>
<td>350 m²</td>
<td>300 m²</td>
<td>175 m²</td>
</tr>
<tr>
<td>Total community pavilions</td>
<td>1,500 m²</td>
<td>1,000 m²</td>
<td>500 m²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sightlines</td>
<td>Ensure that routes have good sightlines to entrances and exits with landscaping pruned to ensure that sightlines are clear and opportunities for surveillance enabled</td>
</tr>
<tr>
<td>Lighting</td>
<td>Lighting of public spaces and routes used at night can improve safety and surveillance and increase usage</td>
</tr>
<tr>
<td>Active frontages</td>
<td>Design buildings to provide natural surveillance of the street. For example: windows overlooking footpaths; building entrances facing the street that are easily visible and accessible from the street frontage; other building exits that are lit and have direct links to carparks and footpaths</td>
</tr>
<tr>
<td>Public open space</td>
<td>Locate parks, play areas and public open spaces so they are visible from adjoining buildings such as houses, streets and schools</td>
</tr>
<tr>
<td>Carparks</td>
<td>Carparks - design carparks to maximise natural surveillance and pedestrian visibility and ensure that there is safe and convenient pedestrian access</td>
</tr>
<tr>
<td>Street crossings</td>
<td>Street crossings - Provide safe (signalised) street crossings on busy streets, along direct, preferred routes for pedestrians and cyclists, to schools, shops, parks and public transport stops</td>
</tr>
</tbody>
</table>

Figure 10 – Safety design criteria
Shade features

- The design of open space should consider the microclimate, the location of facilities and services, built shade structures and trees.
- Seating should be strategically placed to use natural shade where safe to do so.
- Shelters should be designed to provide optimum summer shade as well as rain protection.
- Tree planting should be undertaken along cycling and walking tracks to enhance shade provision.
- Consideration should also be given to locating trees to maximise provision of summer shade between the hours of 11am and 3pm.

Linkages

- Linear open space should be used to establish connections between local neighbourhood precincts, activity centres and social infrastructure. It also provides safe, convenient and legible routes to points of attraction beyond the Leneva-Baranduda growth area.
- The natural systems of the site should be linked, extended and reinforced, particularly the natural watercourses and habitat.
- Where appropriate, waterways may be integrated into open space, while at the same time sharing the space with land retained for drainage.
- The use of Middle Creek should be investigated as a significant ‘green spine’, providing opportunities for conservation, food production, passive recreation and linkages. The width of the flood plain reserve provides the opportunity to establish shared pedestrian and bicycle paths both sides of the creek. The fertile soils could also be used for community gardens and urban food production.

Urban areas should be linked with comfortable well-designed paths and public spaces including natural and constructed shade elements (refer to Photos 9A, 9B and 9C).
Linkages cont’d

- Linear paths are to be provided within 1km or 95 per cent of all dwellings.
- Investigate the feasibility of extending the Wodonga trail network (refer to Map 8):
  - Along the north and south side of Middle Creek;
  - Connecting an underpass from the Baranduda Sporting Fields and to the Baranduda town centre;
  - Both sides of Baranduda Bld or possibly along the centre median;
  - As part of the cross section of Fredrick Street Rd, Kinchington Rd, Streets Rd, Martins Rd and Boyes Rd; and
  - Along main connecting waterways.
- Provide regular and safe pedestrian and bicycle connections linking across major arterial roads.
- Investigate pedestrian friendly crossings of Baranduda Bld at regular intervals.
- The cycle network will consist of a combination of shared street, dedicated street lanes and shared paths (parks and streets). Wherever possible, the network should take advantage of the street lighting and allow for casual surveillance by residents and drivers.
- Bicycle lanes will be provided on all collector roads.
- Areas that require design solutions to resolve the issues around junctions and interfaces between the natural linear buffers and collector roads, pedestrian links and bike paths will be clearly identified.
- Footpaths or shared paths are designed and constructed wherever practical to be of appropriate width, longitudinal gradient, and sight distance and curb details to cater for user types, including access for all abilities (refer to Figure 11).
- Linkages will protect and add to local vegetation and fauna habitat.
- The shared use of encumbered land for drainage, biodiversity and passive recreation purposes will be encouraged.
- Shared pedestrian and bicycle

<table>
<thead>
<tr>
<th></th>
<th>Local access path</th>
<th>Commuter path</th>
<th>Recreational path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desirable</td>
<td>2.5m</td>
<td>3.0m</td>
<td>3.5m</td>
</tr>
<tr>
<td>Acceptable</td>
<td>2.0 - 2.5m</td>
<td>2.0 - 3.5m</td>
<td>3.0 - 4.0m</td>
</tr>
</tbody>
</table>

Figure 11 - Minimum dimensions of shared paths
Map 8 - Wodonga's significant trail networks
Map 9 - The public space network
EMPLOYMENT AND ACTIVITY CENTRES

There are different sizes and types of activity centres, ranging in functions from major activity centres to neighbourhood centres and local centres. The range of shops and services depends on the distance that people are willing to travel to purchase those goods and services. To one extent or another, all centres create a place for the community to gather and undertake a range of activities, including shopping, work (mostly professional and community services), eat, drink, recreation and leisure.

The Municipal Strategic Statement (MSS) of the Wodonga Planning Scheme states that the Baranduda Town Centre should become a secondary town centre to the Wodonga central business area (refer to Figure 12). The Leneva Village Centre is to be developed as a large neighbourhood activity centre that is able to take advantage of its gateway location to Wodonga, and on the corner of Baranduda Bld and Beechworth-Wodonga Rd.

The growth area will also comprise a number of smaller local neighbourhood centres to encourage walking trips and provide a focal point for community activity. The local centres will provide convenience shopping and contribute to the reduction of social isolation by providing places where members of the community can meet and interact (refer to Map 10).

It is estimated that that growth area will contain 35,000 residents of which 17,676 will be working residents (applying the labour force to resident population ratio of 50.36 per cent (based on the ABS 2006 Census of Wodonga Urban Centre)). This estimated employment capacity has the potential to meet the job needs of 32 per cent (or 5641 persons) of the estimated resident-work force of the Leneva-Baranduda growth area (refer to Figure 13). Adjacent to the northern boundary of the Leneva-Baranduda growth area, lies Baranduda Enterprise Park. This industrial land consists of 265ha of industrial land which is fully serviced and has no infrastructure or access constraints and is largely undeveloped.

The design of activity centres should be generally consistent with the role and function that the centre plays in the hierarchy of activity centres. The intent is to have a legible layout where people are able to form clear mental images of where they are going (way-finding). Activity centres are envisaged to become special places with a character that creates a high quality public domain, and includes a series of streets and squares that contribute to specific place settings. This will require well designed architecture and movement spaces, full of interest and visual richness. The intent is to achieve a high quality built environment consisting of street edge shops, active frontages and a comfortable public realm where walking is encouraged as a priority.

Objectives

Activity centres are to be developed to become strong community destinations including employment, commerce, cultural exchange and entertainment. Although retail is one of the main uses, a contemporary mix of hospitality, leisure facilities, social infrastructure and learning combine to create a broad spectrum of consumer use. Objectives are:

- To make strong destinations with employment, educational, shopping, civic activities and local services;
- To create memorable outdoor spaces flanked by well-designed architecture and allow for pedestrian movement and spaces full of interest and visual richness; and
- To ensure that main streets are pedestrian friendly places where people come together to live, work and meet both day and night.
Leneva-Baranduda growth area framework plan 2012

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Type</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>General retail</td>
<td>44 m² per worker</td>
</tr>
<tr>
<td>Commercial</td>
<td>General commercial</td>
<td>30 m² per workers</td>
</tr>
<tr>
<td>Industrial</td>
<td>General industrial</td>
<td>15 workers per ha</td>
</tr>
<tr>
<td>Community Infrastructure</td>
<td>Kinder garden</td>
<td>5 workers per kindergarten</td>
</tr>
<tr>
<td></td>
<td>Library facility</td>
<td>10 workers per library</td>
</tr>
<tr>
<td></td>
<td>Childcare facility</td>
<td>20 workers per childcare</td>
</tr>
<tr>
<td></td>
<td>Maternal and child health centres</td>
<td>15 workers per health centre</td>
</tr>
<tr>
<td>Education Infrastructure</td>
<td>Primary schools</td>
<td>40 workers per primary school</td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>30</td>
</tr>
</tbody>
</table>

Figure 13 - Benchmark assumptions for employment  

Figure 12 - Activity centre hierarchy  
Source: Urban Enterprises
Planning and design guidelines

Role of activity centres
- The Wodonga central business area (CBA) will retain its role as the primary retail centre in the municipality.
- A major activity centre known as the Baranduda Town Centre will be located approximately 9km south west of the CBA, and will be second in the hierarchy to the CBA.
- The Leneva Village Centre will be a large neighbourhood centre and should be located on the southern side of Baranduda Bld to capitalise on good access from bordering arterial roads.
- Local neighbourhood centres are located on arterial roads or connector streets and include, where possible, a viable convenience store. They should also be equitably distributed across the remaining residential areas, and be co-located with primary school and community facilities.
- Sufficient retail floor-space should be provided to meet the needs of local residents at certain population thresholds to meet the demand for food retail including supermarkets, take-away food and cafes (refer to Figure 14).

Layout of activity centres
- Activity centres will have a clearly defined network of streets and squares consisting of simple geometric forms that provide a unifying framework between buildings.
- Where possible, a sense of enclosed space should be created. This is achieved where buildings and other physical forms, such as trees, give shape and a three-dimensional aspect to space.
- A detailed master plan will be prepared prior to the development of the Baranduda Town Centre.
- An adapted grid network of streets that contribute to permeability and movement will be created. Streets should contribute to the formation of urban blocks. Shops, terrace masses and houses that characterise street and squares should be encouraged.
- Employment uses that have a high employment density and/or frequent visitors (e.g. offices, retailing, community facilities) will be located in Leneva Village Centre and Baranduda Town Centre.
- The two larger centres will incorporate landmarks in the form of entry thresholds, such as a clock-tower or other elements which are located on street corners and provide a visual reference point from various vantage points in the growth area.
- Footpaths will have a minimum width of 4m with seats, services and native planting to provide shade and soften the local micro-climate.
- A street network should facilitate safe pedestrian and cycling links to the surrounding area.

Streets and open space
- High quality built environment consisting of street edge shops, active frontages and a comfortable public realm where walking is encouraged.
- Design town and village streets with ready access, visibility and pedestrian shelter suitable for retail and commercial activity.
- Activity centres are to be street based with comfortable pedestrian friendly streets.
- Shop fronts should define the main street and be built to the property boundary.
- Street based centres are planned with a pattern of streets, squares and open space for people to meet, engage in cultural activities or reflective space.
- Well-designed buildings and groups of buildings that form active built form edges to shopping streets and a three dimensional frame that creates a human scale to the open space are planned.
- Landscape buffers will be provided to Baranduda Bld and the Beechworth-Wodonga Rd, reinforcing the green gateway to Wodonga.
- All vehicle movement should be restricted to 40km/h or less, and streets should be designed for pedestrian safety.
- Parallel parking is to be provided on main streets with car parks located to the rear or periphery of activity centres.
- Bus stops should be well designed to accommodate safe access and egress for all members of the community.
- Bicycle parking should be provided in highly visible locations, close to pedestrian access ways and gathering spaces.
- Street lights approved by council are to be located at regular intervals.
### Activity Centre Hierarchy

<table>
<thead>
<tr>
<th>Activity Centre Hierarchy</th>
<th>Land Area ha</th>
<th>Retail Floor area m²</th>
<th>Description</th>
<th>Land use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baranduda Town Centre</td>
<td>39.0</td>
<td>26000</td>
<td>Secondary Town Centre to Wodonga CBA</td>
<td>2 supermarkets, 1 DDS, mini majors and specialty shops</td>
</tr>
<tr>
<td>Leneva Village Centre</td>
<td>10.4</td>
<td>12000</td>
<td>A village centre, larger than a neighbourhood centre</td>
<td>1 supermarket, specialty shops and mini majors.</td>
</tr>
<tr>
<td>Neighbourhood Centres</td>
<td>2.0</td>
<td>4000</td>
<td>4 neighbourhood centres with 1,000 sq. m of local shops</td>
<td>Retail floor space, capped at 1,000 sq. m with local shops only.</td>
</tr>
</tbody>
</table>

Figure 14 – Activity centre floor areas and land uses.

### Type of space

<table>
<thead>
<tr>
<th>Type of space</th>
<th>Dimensions</th>
<th>Suggested application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large squares/plazas</td>
<td>57m by 135m</td>
<td>Upper size limit. A large community space could be considered for events in Baranduda Town Centre</td>
</tr>
<tr>
<td>Intimate squares/plazas</td>
<td>15m by 21m</td>
<td>A series of small squares is anticipated to be incorporated into the design of Leneva Village Centre</td>
</tr>
</tbody>
</table>

Figure 15 – Design of town squares and plazas
Built form

- Buildings should provide a frame to the street, whilst creating outdoor spaces that relate to a human sense of scale at an activated street level.
- The heights of buildings in activity centres should not exceed a ratio of 3:1 (i.e. the surrounding buildings should not be more than three times higher than the width of the enclosed open space in activity centres).
- A variety of medium density dwelling types including shop top housing, townhouses and small lot houses should be provided.
- Prominent public buildings (e.g. libraries) should be surrounded by open space and greenery.
- Outside core areas, locate a mix of accessible dwellings for people with disabilities, elderly people and families with children.
- In town and village centres, design for flexible internal configurations which support future commercial uses on the ground floor, with residential on upper levels encouraged.
- The development of the supermarket and enclosed retail outlets must provide atriums that bring natural light into buildings and visually connect to the street through active frontages.
- Corner sites, where the “main street” meets an arterial road, should be designed with taller building heights that anchor the “main street” to the intersecting road.
- Laneways and pedestrian connections will be provided between the “main street” and carparks, which will be located to the rear of buildings.
- Roof mounted mechanical plant and services structures should be included within parapet lines and hidden from view.
- The design of facades should provide continuous awnings for weather protection.
- Waste collection points should be located to the rear of buildings and screened from public views.
- Side building facades should not exceed 10m without articulation, windows, activity or visual interest.
- The design of active built form frontages should achieve Grade A, B or C in major centres as listed below in Figure 16.

<table>
<thead>
<tr>
<th>SCALE OF ACTIVE FRONTAGES</th>
<th>Grade A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More than fifteen premises every 100m</td>
</tr>
<tr>
<td></td>
<td>A large range of functions/land uses.</td>
</tr>
<tr>
<td></td>
<td>More than twenty-five doors and windows every 100m.</td>
</tr>
<tr>
<td></td>
<td>No blind/blank facades and few passive ones.</td>
</tr>
<tr>
<td></td>
<td>Much depth and relief in the building surface.</td>
</tr>
<tr>
<td></td>
<td>High quality materials and refined details.</td>
</tr>
<tr>
<td>Grade B</td>
<td>Ten to fifteen premises every 100m.</td>
</tr>
<tr>
<td></td>
<td>More than fifteen doors and windows every 100m.</td>
</tr>
<tr>
<td></td>
<td>A moderate range of functions/land uses.</td>
</tr>
<tr>
<td></td>
<td>A blind/blank or few passive facades.</td>
</tr>
<tr>
<td></td>
<td>Some depth and modelling in the building surface.</td>
</tr>
<tr>
<td></td>
<td>Good quality materials and refined details.</td>
</tr>
<tr>
<td>Grade C</td>
<td>Six to ten premises every 100m.</td>
</tr>
<tr>
<td></td>
<td>Some range of functions/land uses.</td>
</tr>
<tr>
<td></td>
<td>Less than half blind/blank or passive facades.</td>
</tr>
<tr>
<td></td>
<td>Very little depth and modeling in the building surface.</td>
</tr>
<tr>
<td></td>
<td>Standard materials and few details</td>
</tr>
</tbody>
</table>

Figure 16 - Active built form frontages
The public realm
- The design of public space in activity centres should enhance the cultural meaning, activities and memories associated with the use of space.
- The public realm should invite social interaction and have consistent design themes that clearly distinguish public from private space.
- Flat, wide footpaths that make it easy and comfortable for people to shop. Neutral colours are preferred as these reflect the rural outlook of the centre.
- The treatment at the edge of the public realm should define the boundaries of the space and provide for comfort to the potential users i.e. raised edges with seating, trees and shade, street furniture and lighting.
- The centre of spaces such as squares and plazas should have architectural features that are visually interesting, reflect the local culture or history, and promote community involvement.
- The design element seeks to define how the city's identity and values can be captured in the visual and physical qualities of its urban landscape.
- Urban art is encouraged to promote cultural interaction and activate public spaces via performances, events, and installations, and to create engaging and surprising activities.
- Building on the southern footpath of the street must not be overshadowing at the winter solstice.

The night time economy
- The propagation of the night time economy will require maintaining the right mix of land use.
- Public transport late at night will be provided and cars will be encouraged to add liveliness to centres at night.
- Quality, well designed restaurants will be attracted to activity centres that address the street.
- A café culture and alfresco dining will be developed.
- A quality hotel will be built in the Baranduda Town Centre to populate the centre outside of normal working hours.
- Family friendly attractions/services such as a night market, cinema, ice rink, concert venue and other non-alcohol based activities will be provided.
- Unique features about Wodonga will be identified and marketed.
- Residential uses in centres, above and behind shops will be provided.

Signage
- The use of symbolic and way-finding signs in high profile locations could create visual interest and meaning, and may be considered by council.
- Signage must be directly related to the operation on that site and the goods and services available.
- A sign must not create a traffic hazard due to its size, colour, movement, illumination, position, shape and standard for design construction.
- Signs must not in any way diminish the visibility or effectiveness of any information, safety, warning, traffic control or other like sign of council/statutory authority.
- Signs are not to visually dominate buildings, walls, parapets or landscaped surrounds.
- Symbolic signs and other signs should reinforce the streetscape character, contribute to the image of buildings and relate to the location and dimensions to the buildings on which they are placed.
- Council should develop a signage policy that relates to the use of buildings and embraces the image and identity of the urban setting.

Street lights
- Street lights must be supplied to the satisfaction of the responsible authority. They should illuminate roadways, public and pedestrian areas to a standard that provides a safe and comfortable visual environment for pedestrians and vehicles at night.
- Lights must illuminate public and pedestrian areas to a level that will reduce the risk of crime to people and property.
- Lights must enhance the aesthetic quality of public spaces at night, which includes providing light sources that give a natural appearance to people and surroundings, with good colour rendition.
- The best available technology, preferably solar, must be used for the effective conversion of light to illumination.
Images of the city

Photo 10A - Activity centres characterised by buildings, people, places and spaces

Photo 10B - The cross section of the main street of Point Cook provides for pedestrian friendly tree lined streets

Photo 10C - Plate paved footpaths and awnings contribute to pedestrian comfort and the quality of the public realm at Point Cook shopping centre

Photo 10D - The entrance to activity centres should have a landmark building that communicates a sense of arrival to the village centre

Photo 10E - A sense of building enclosure creates a setting for social and cultural activities to take place

Photo 10F - Active built form frontages create an overlaps between outdoor and indoor space
INTEGRATED MOVEMENT NETWORK

Baranduda Bld is the main arterial route between Wodonga, the proposed Leneva Village activity centre and proposed Baranduda Town Centre. It is anticipated that the boulevard will be duplicated when required. Beechworth-Wodonga Rd is the main arterial connection between Beechworth and Wodonga and could be duplicated in the future if required. Kinchington Rd, Martins Rd, Frederick Streets Rd and Boyes Rd are local roads that were historically developed for farming activity and related rural uses. The road reserves contain a significant amount of native vegetation and habitat for local fauna and flora. The protected vegetation prevents upgrades or a change in the local role of these roads (refer to Map 11).

Wodonga has an extensive network of pedestrian and cycle paths that connect the different suburbs of Wodonga. The Wodonga Trails Network should be extended into the growth area and eventually link across both sides of Middle Creek, Baranduda Bld and along country roads which will have local traffic only.

An integrated transport system is proposed for the growth area to promote a more liveable and sustainable city. An integrated system can also increase economic potential through the optimisation of infrastructure investment. The integrated system should include arterial roads, collector roads and local streets. The networks make a significant contribution to the urban structure, creating ease of movement and do not detract from the sense of openness and landscape setting associated with Leneva-Baranduda. The intent is to develop an efficient, legible and safe road network that has the capacity to service the new urban areas of Leneva-Baranduda.

The Wodonga Sustainable Transport Strategy provides the broad direction for future transport in the city. The intent of the strategy is to contribute to sustainable development by enabling a well-connected community, with facilities to encourage safe walking and cycling, innovative traffic management measures, the provision of good public transport and easy access to local services. A key element of this strategy is to have a successful local public transport service which is reliable, easy to use and links people to popular destinations and employment centres on a regular schedule.

Objectives
The objectives of the integrated transport network are to provide:

- A modern integrated, targeted and well used public transport system;
- A walking and cycling friendly city;
- Communities and businesses safely connected by roads; and
- Improved independence and social connectedness for the transport disadvantaged.

Planning and design guidelines

Baranduda Bld
- Baranduda Bld is to be developed as the main arterial route linking Leneva-Baranduda to the surrounding areas. It should be designed for pedestrians, bicycles, public transport, cars and trucks.
- Traffic volumes will be assessed in relation to the need for a major upgrade to the boulevard, with a view to modifying the cross section of Baranduda Bld to make it more efficient and safe including:
  - A reduction in width from 80m to 60m;
  - Provide service road and residential/commercial edge facing the service road;
  - The introduction of traffic lights at the intersection with Beechworth-Wodonga Rd when required;
  - Design for different modes of transport including heavy vehicles, buses, cars, bicycles; and
  - Provide safe pedestrian crossing points at regular intervals including safe cycling intersections.

- Developments that propose landscape mounds and rear yard development along Baranduda Bld and Beechworth Rd will be discouraged;
- Reduce the impact of traffic with soft landscaping and trees that separates vehicle traffic from pedestrians;
- Design for slower traffic speeds and a pedestrian friendly boulevard environment; and
- Regular and safe pedestrian and bicycle crossing points will be a feature of the boulevard design.
Leneva-Baranduda growth area framework plan 2012

Map 11 - Leneva-Baranduda is well connected by freeways and arterial roads

Photo 11A - Baranduda Bld the main access to Leneva
**Beechworth-Wodonga Rd**
- Beechworth Rd should be retained as an arterial road, duplicated when required, with suitable intersection designs to facilitate safe, efficient turning movements.
- The number of access points and roundabouts on Beechworth Rd are to be limited to maintain the efficiency of this arterial road.
- Investigate options to use a right hand turning lane from Beechworth-Wodonga Rd into Leneva Village Centre and a left hand turning lane along with suitable speed limits to enable access to the lot on the west side of this intersection.
- The landscape vistas framed by Beechworth-Wodonga Rd and Baranduda Bld to the Baranduda Range are to be incorporated into development along Beechworth Rd.
- A greenway encompassing a shared bike pedestrian pathway/bike lane on both sides of the road will be investigated.

**Photo 12A - Beechworth-Wodonga Rd**

**Collector roads**
- The connector streets are to provide a major structural element and framework for new developments.
- A road edge is to be provided along the boundary of the proposed Bears Hill Regional Park and Baranduda Ranges where the grade of the hill allows.
- Connector roads are to be located at approximately 800m –to 1000m spacing.
- Where connector streets intersect with main arterial roads, the use of signals or roundabouts will need to be considered.
- The collector roads are to support, complement and provide an edge to the Native Vegetation Precinct Plan vegetation and waterways.
- The design features of collector roads and intersection treatments are:
  - To design for a network of collector roads and local streets that provide access to residential areas, activity centres and public transport;
  - To minimise the impact of road crossings on the native vegetation areas and designated waterways;
  - Planted centre median strip;
  - Footpaths on either side;
  - Parallel parking;
  - Bicycle lanes; and
  - Common trenching for services.
- The intersection of arterial and collector roads will require additional traffic control measures. It is proposed that the following intersection controls will be incorporated in the development:
  - Arterial to Arterial – traffic signals;
  - Arterial to Connector - un-signalised with roundabouts;
  - Access Street to Access Place – un-signalised; and
  - Safe pedestrian bicycle crossings.
Local streets

- Country roads will have a local function where the biodiversity values are to be managed as part of the Native Vegetation Precinct Plan. Service lanes are planned to run parallel with Kinchington Rd, Martins Rd and Fredrick Streets Rd.
- Local streets are to have an adapted grid layout that minimise crossings of native vegetation and waterways.
- The street network takes account of the topography and vegetation, respects any existing or potential site assets, and takes advantage of opportunities for views and vistas.
- The street network is designed around the site’s natural character to give a sequence of spatial experience that is unique to the place.
- The road pattern for new development is to maximise connectivity and accessibility avoiding the use of cul-de-sacs in preference to through-connecting streets.
- Streets and roads are to remain the focus of activity with development being required to properly address the street frontage, with buildings positioned to front onto streets.
- Local streets are to provide a green edge to the native vegetation and waterways.
- The streets should be accessible and offer pedestrian parity, enabling people to walk or cycle to local destinations such as neighbourhood shops, public transport, workplaces, schools, parks and community facilities.
- Designed for 50km speed limit and bus compatibility.
- The road verge on the lower level should incorporate water sensitive urban design features and native vegetation. Common trenching for services should be used.
- The layout of local streets should optimise solar access to the living areas and courtyards of houses.
- Streets should be tree lined.

Car parking

- In residential areas, on-street car parking is to be provided on all streets (except rear lanes) to the maximum extent possible, with street trees planted between bays.
- Dwellings and mixed use development with rear lanes to have rear accessed parking to eliminate driveway crossovers on the primary frontage.
- The amount of centre block communal or group parking provided should be adequate for the commercial components of the whole block.
- Shared parking/on-street parking is to be counted in the overall parking analysis.
- Parking areas, loading docks and service areas shall not be visible from significant streets or public places/spaces.
- Servicing for small shops should be from the street or rear lane, outside of core working hours.
- Servicing for large footprint buildings should be via dedicated loading docks.
- All waste collection shall be from rear lanes.
- Car parking requirements may be reduced where there is a mix of uses and will be a secondary consideration to creating a sense of place and urban amenity.
- Landscaping should be designed to be integrated into streetscapes and to break up consolidated car parking with greenery.
- On-street parking is to be provided especially in areas with ground floor retail activity and for residential and visitor parking.
- Use on-street parking as one component of a buffer to traffic especially in areas of high pedestrian activity.
- Parking facilities should use minimal areas of impervious surfaces to reduce stormwater run-off.
- Streets should be wide enough to accommodate appropriate levels of on-street parking.
- Car-parking should cater for the efficient provision of public utilities.

Street trees

- Street tree planting should be consistent with Wodonga’s Street Tree Strategy and:
  - Provide a pattern of planting that strengthens legibility and movement along streets;
  - Maintain a sense of scale on narrow and wide streets;
  - Provide visual buffers where required;
  - Install planting that enhances architectural features, strengthen vistas and provide shade;
  - Achieve unity of design by repetition of certain plant varieties and other materials along the street with consistent spacing;
  - Create a low maintenance landscape of streets lined with canopy of trees; and
  - Provide additional trees in parking lanes where possible, say one to every three parking spaces to supplement verge tree planting.
**Footpaths**
- Pedestrian footpaths are integrated to the normal street network.
- The cycle network is a combination of shared street, dedicated street lanes, shared paths (parks and streets) and dedicated paths (parks) that link the main points of attraction, particularly the schools and town centre with the open space network.
- Cycle/footpaths in open space are aligned approximately parallel with the park edge streets wherever possible to take advantage of the street lighting and allow for casual surveillance by residents and drivers.
- Footpaths or shared paths are designed and constructed wherever possible and practical to be of appropriate width, longitudinal gradient, and sight distance and kerb details to cater for the likely population and user types, including people of all abilities.

**Public transport**
- Future urban development will be planned in a manner that promotes the use and viability of public transport.
- Bus stops should be located in activity centres, near schools and within a reasonable walking distance of a bus service from residential areas.
- Local transit services should be provided from day one of development so that residents have a viable alternative to the private car.
- Providing well located bus stops to ensure that at least 90 per cent of homes and businesses within the growth area are within 400m – a comfortable seven to eight minute walk – of a transit route.

- Create public transport nodes at neighbourhood centres.
- In areas where the road requires a bus network or bus stop, bus stops must:
  o Be designed as an integral element of activity centres and employment areas, schools and sports facilities; and
  o Capture the essence of their location through the use of building materials, colours, imagery and symbolism (include urban art and surface articulation reflecting local character and context where appropriate).

*Photo 13A - Parallel parking is to be provided within a green edge to footpaths and buildings*
Options for Road design

Photo 14A - The visual impact of traffic is softened by centre mediums

Photo 14B - Service roads provide for more controlled traffic conditions

Photo 14C - Bus shelters can communicate information as well as providing a public transport function (photo Perth Western Australia)

Photo 14D - Bicycle lanes are proposed to located on arterial and collector roads

Photo 14E - Local activity centres are to be located on collector roads

Photo 14F - Streets in activity centres can support a variety of land uses
Figure 17 - Options for road cross sections
GREEN CITY INFRASTRUCTURE

The following proposed urban design elements focus on providing an appropriate potable water supply, utility services and infrastructure to ensure that development occurs using the best available technology for a greener future.

In particular, there is an opportunity to pursue a “water smart cities” approach to incorporate water supply and water use options for future communities. An integrated water management plan is to be developed to investigate the options and opportunities available for water supply and use in Leneva. The recent long term drought and subsequent flood events have highlighted issues that council should take into account with the design of new subdivisions. Further strategic work will be undertaken with respect to overall stormwater, flood strategy, waterway plans, and water supply options to inform PSPs. These will link in with open space and recreation facilities. Final stage stormwater, drainage design and maintenance plans will occur at the subdivision scale.

Integrated water management can include:

- Potable water supply from the North East Regional Water Authority (NERWA);
- Reclaimed water from the NERWA treatment plant at West Wodonga. The supply pipeline and other infrastructure will be extended to Leneva to enable use for public open space, gardens and toilet flushing;
- Reclaimed water from local wastewater treatment plants reused (e.g. purple pipe);
- Reclaimed water from stormwater harvesting schemes into storages for reuse for public open space;
- Raw water use e.g. river water, groundwater;
- Water treatment prior to discharge to waterways; and
- Sewerage collection and disposal.

Objectives

The objectives of integrated water management are:

- To ensure each house is supplied with a reliable source of drinking water;
- To prevent the flooding that could cause damage to property or risk to the safety of residents;
- To mitigate erosion by slowing water runoff to receiving streams, and to ensure the maintenance of water quality and environmental health of the waterways;
- To provide open space all year round for community use to enhance a healthy community lifestyle;
- To provide for safe sewerage and stormwater collection and disposal systems; and
- To provide connections to utilities and services.

Planning and design guidelines

- The provision of services will be undertaken by developers and designed, constructed and managed to the satisfaction of the relevant water authorities.
- A sewerage waste water system is provided for the maintenance of public health and the management, treatment and disposal of effluent in an environmentally friendly manner and licensed through EPA requirements.
**Urban stormwater**

Stormwater treatment can be broken down into three overlapping categories as demonstrated in Figure 18.

- An urban stormwater system is to ensure that rain water is collected and disposed of so that the public health and safety is maintained. This is achieved by having a system which can operate during periods of minor and major storm events, while continuing to collect and remove road and lot drainage as well as water runoff.
- Works must be designed and managed by the developer until the end of any maintenance period, and in accordance with the relevant design codes to the satisfaction of the relevant drainage authority.

- Stormwater management is to be designed to protect people and indoor property from the effects of an extreme flood with an average recurrence interval (ARI) of 100 years (i.e. the one per cent probability flood).
- Stormwater runoff and urban stormwater must be treated to protect environmental values and physical characteristics of the receiving waters from degradation.
- Drainage treatment systems must be designed to ensure:
  - Water quality is enhanced to best practice standards;
  - Detention of storm water, rather than rapid conveyance;
  - Vegetation is used for filtering purposes;
  - Landscaping elements such as swales retain water locally; and
  - Waterways are protected for environmental, recreational and cultural values.
- The systems are to be designed in accordance with Best Practice Water Sensitive Urban Design Guidelines and Clause 56 requirements which state the objectives to be met for storm water treatment.
- Opportunities to enhance water security should be explored by council, for example providing recycled waste water for use of watering sports ovals (see the scope of the possible options below).

### Site elements
- Allotment density and layout
- On-site retention (infiltration)
- Porous pavement
- Sand filter
- Buffer strip
- Grassed or vegetated swales
- Bio-retention system
- Rain garden
- On-site detention
- Rainwater tank for storm water reuse
- Roof top greening

### Precinct elements
- Designated waterways (swales, hollows, depressions)
- Street layout and streetscape
- Road design
- Precinct retention (infiltration)
- Porous pavement
- Sand filter
- Buffer strip
- Grassed or vegetated swales
- Bio-retention system
- Urban forest/WRENs
- Constructed wetlands & treatment ponds
- Storm water reuse

### Regional elements
- Designated waterways (waterways linked directly to Middle Creek)
- Public open space
- Multiple use corridors
- WRENs (vegetation precincts/connectivity)
- Constructed wetlands & treatment ponds
- Storm water reuse

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*Figure 18 - Stormwater treatment categories*
**Recycled water**
- Recycled waste water can be sourced from the waste water treatment plant and provided to Leneva from the plant via a separate pipe system. This can be provided for either public open space and or household use (outside garden use and toilets). The reuse and treatment of effluent would require significant infrastructure, including treatment facilities, pumping stations, rising mains, storage and distribution systems.
- The reuse of waste water for watering parks and gardens would reduce the demand for potable water and in particular help in reducing peak demand.
- Households could provide their own grey water systems and rainwater tank systems collecting rain water. This would involve changing a household plumbing system in order to allow for the collection of grey water for household appliances such as washing machines etc.
- Any recycled water use system must be designed, constructed and managed in accordance to the satisfaction of the relevant water authority, Environmental Protection Authority and Department of Human Services.

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**Utilities and services**
Residential areas must be adequately serviced with electricity, gas, street lighting and telecommunications in a timely, cost-effective, coordinated and efficient manner. The intent is to ensure development is provided with appropriate utility services and infrastructure and to ensure that development does not unreasonably overload the capacity of utility services and infrastructure. To plan and coordinate delivery of infrastructure to meet housing and employment targets in Leneva -Baranduda growth area:
- Development must be connected to services, including electricity, gas and telecommunication;
- Utility services or infrastructure must have spare capacity to service development;
- Development should not unreasonably exceed the capacity of utility services and infrastructure; and
- Common trenches should be used to lead to a high level of land efficiency and reduced development costs.

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**Stormwater reuse and harvesting**
- Stormwater reuse and harvesting projects will be considered by the responsible authority in relation to:
  - Assessing the context of a project within a broader integrated strategy;
  - Urban water cycle management and risk assessment;
  - Treatment of stormwater to address risks to public health and the environment, and meeting any additional end-use requirements; and
  - Ensuring that potential impacts to public health and the environment are managed appropriately and the project remains sustainable.

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*Photo 15A – Use of rain gardens*
Electricity
- All new electricity supply infrastructure (excluding infrastructure to support cables with a voltage greater than 66kv) must be provided underground (excluding substations),
- New substations must be identified at the subdivision design response stage to ensure effective integration with the surrounding neighbourhood and to minimise amenity impacts.
- The design of subdivision electricity infrastructure must consider the practicality of removing existing above ground electricity lines in the local and arterial road network, both within and abutting the subdivision, and re-routing lines underground through the subdivision.
- Public and communal street lighting should minimise energy consumption while maintaining adequate illumination. Energy-efficient lighting systems should be used wherever possible.
- Solar powered street and park lights should be considered in parks and along linear spaces where the need for expensive underground power cabling can be avoided.
- Street lights should also create ambience and character in residential projects, and many power authorities have widened the range of standard fittings available to developers.

Telecommunications
- All dwellings and businesses must have access to broadband internet.
- Developers must incorporate trenching during construction to allow for future technology such as fibre optic cabling.
- Telecommunications infrastructure must protect important public views such as vistas to surrounding hills, vistas to significant public buildings and terminating vistas along streetscapes unless a need to do otherwise is demonstrated.
- Sites for telecommunication towers be identified within a PSP.
SUMMARY

Overall design response (refer to Map 3)
The urban structure of the Leneva-Baranduda growth area is one that responds to the existing landforms, Middle Creek and other waterways and conservation areas. The natural features are structural elements that form the skeleton of the new urban areas. Middle Creek Reserve, the linear spaces and conservation land link the urban areas, and these natural elements maintain an association with the environs now commonly associated with Leneva-Baranduda. The natural elements that penetrate into neighbourhood precincts will become a part of our collective memory of the place.

The natural elements of the urban structure are reinforced by an adapted grid network of collector roads and local streets that complement and reinforce the WRENs and waterways. The road network provides an edge, buffer and boundary to the conservation areas and waterways. All roads are required to provide an urban frontage to the WRENs and watercourses, and will provide a highly visible urban edge that defines the boundaries to the natural environs. The green edge separates unencumbered areas from residential development that will culminate in retaining a natural aspect and a sense of openness in urban areas. Urban development will support the environmental elements and vice versa.

The location of active and passive open space reinforces the natural elements and the structure of neighbourhood precincts. The open space network is located around the edges of residential areas where these open spaces complement, support and strengthen the native vegetation and waterways. The natural areas provide a natural backdrop for playing fields that are located close to residential areas and link to a variety of open spaces as part of the open space network (refer to Figure 19).

The open space system is designed to reinforce the native vegetation and waterways as a major structural component of each precinct. The fingers of greenery, vegetation and linear open space assist to maintain an association with the natural elements of the urban structure, as well as providing opportunities for linkage and passive recreation. The designated waterways that feed into Middle Creek from the surrounding slopes create linear corridors that cut through urban areas. In some places, passive open space has been used to widen the land adjacent to waterways to create major linear open space connections.

The modified grid network of collector roads provides an edge to conservation land and waterways. The collector roads minimise crossing of the WRENs and waterways. The collector road layout provides alternate routes from Baranduda Bld to Beechworth-Wodonga Rd and alleviates traffic at the intersection of these major arterial links.

A feature of the urban structure is the equitable distribution of activity centres, social infrastructure and open space within walking distance of most residential areas in Leneva-Baranduda. Each neighbourhood precinct will have a sustainable population to maintain access to local shops, primary schools, health facilities and active open space. Social infrastructure is located in activity centres to ensure access to facilities and services such as early years

Baranduda Bld and Beechworth-Wodonga Rd are to be developed as a green axis of movement, connecting activity centres and residential areas close to the surrounding highways. These arterial roads are designed for high volumes of traffic and heavy vehicle movements. The boulevards are to have bands of movement that will allow for the arterial to operate as a major transport corridor, and will be well-developed with direct pedestrian and bicycle connection between activity centres. The tree lined pedestrian friendly boulevards, streets and open space are to provide outdoor spaces where meaningful experiences and cultural exchange can occur. The collector roads minimise crossing of the WRENs and waterways and provide alternate routes from Baranduda Bld to Beechworth-Wodonga Rd, alleviating traffic congestion at the intersection of these major arterial links.
learning facilities, neighbourhood houses and health services. Primary schools are strategically located adjacent to local activity centres with social infrastructure and open space. The grouping of services in and around activity centres strengthens the role of activity centres.

Baranduda Town Centre is to become a secondary centre to Wodonga CBA and regional infrastructure such as libraries, hospital, law and emergency services are to be located in the Baranduda Town Centre. The town centre will contain more retail floor space including supermarkets, social infrastructure, civic buildings and spaces and higher density housing. Leneva Village Centre located on the intersection of Beechworth-Wodonga Rd and Baranduda Bld will become a large neighbourhood centre. This will be strategically located to capitalise on the movement along arterial roads.

The urban character is achieved by the use of different housing typologies as a response to environmental opportunities and constraints. Medium density housing is located in and around the edges of activity centres. Conventional density housing varies in lot size throughout the urban areas and is dependent upon environmental opportunities and constraints, and the location of activity centres. Low density residential areas are located around the foothills and lower slopes of Bears Hill and the Baranduda Ranges. The larger residential lots are intended to limit the overall number of houses and associated environmental impacts associated with houses being constructed on elevated highly visible land.

Water sensitive urban design is to protect and enhance natural water systems within urban developments. By promoting and protecting natural waterways as assets, they will be allowed to function more effectively, supporting the ecosystems that rely on them. Stormwater treatments are integrated into the landscape by incorporating multiple use corridors that maximise the visual and recreational amenity of developments. The natural stormwater drainage system can be utilised for its aesthetic qualities within parklands via walking paths, making use of natural topography such as creek lines and ponding areas. The intent is to improve the quality of water draining from urban development into a receiving environment. Water sensitive urban design aims to minimise the drainage infrastructure cost of the development. The reduction of downstream drainage infrastructure, due to reduced peak flows and runoff, minimises the development costs for drainage whilst enhancing natural features such as rivers and lakes that add value to the properties of the area.

Figure 19 - Possible design response adjoining WRENs
Active Open Space - Land set aside for the specific purpose of formal outdoor sports by the community.

Activity Centre - Provides the focus for services, employment and social interaction. A centre where people shop, work, meet, relax and live. Usually well-served by public transport, they range in size and intensity of use. In the growth areas, these are referred to as principal activity centres, major activity centres, neighbourhood activity centres and local centres. For further information refer to Melbourne 2030.

Arterial Road - A higher order road providing for moderate to high volumes at relatively high speeds typically used for inter-suburban journeys and linking to freeways. Declared arterial roads are identified under the Road Management Act 2004 and managed by the state government.

Community Facilities - Infrastructure provided by government or non-government organisations for accommodating a range of community support services, programs and activities. This includes facilities for education and learning (e.g. government and non-government schools, universities, adult learning centres); early years (e.g. preschool, maternal and child health, childcare); health and community services (e.g. hospitals, aged care, doctors, dentists, family and youth services, specialist health services); community (e.g. civic centres, libraries, neighbourhood houses); arts and culture (e.g. galleries, museums, performance space); sport, recreation and leisure (e.g. swimming pools); justice (e.g. law courts); voluntary and faith (e.g. places of worship) and emergency services (e.g. police, fire and ambulance stations).

Conventional Density Housing - Housing with an average density of 10 to 15 dwellings per net developable hectare.

District Park - An area of open space that incorporates a large area for active open space. This would normally incorporate two ovals and be a minimum of 8ha in size.

Encumbered Land - Land that is constrained for development purposes. Includes easements for power/transmission lines, sewers, gas, waterways / drainage; retarding basins/wetlands; landfill; conservation and heritage areas. This land may be used for a range of activities (e.g. walking trails, sports fields). This is not provided as a credit against public open space requirements. However, regard is taken to the availability of encumbered land when determining the open space requirement.

Frontage - The road alignment at the front of a lot. If a lot abuts two or more roads, the one to which the building or proposed building faces.

Gross Developable Area - Total precinct area excluding encumbered land, arterial roads and other roads with four or more lanes.

Growth Area - Areas on the fringe of Wodonga around major regional transport corridors that is designated for large-scale change, over many years from rural to urban use.

High Density Housing - Housing with an average density of more than 20 dwellings per net developable hectare.

Housing Density (Gross) - The number of houses divided by gross developable area.

Housing Density (Net) - The number of houses divided by net developable area.

Linear Open Space Network - Corridors of open space, mainly along waterways that link together form a network. Linear Parks and Trails - See Linear Open Space Network.

Land Budget Table - A table setting out the total precinct area, gross developable area, net developable area and constituent land uses proposed within the precinct.

Local Centre - An activity centre smaller than a neighbourhood activity centre which may include a small limited line supermarket or convenience store of between 500m² and 1500m², plus non-retail uses.

Lot - A part (consisting of one or more pieces) of any land (except a road, a reserve, or common property) shown on a plan, which can be disposed of separately and includes a unit or accessory unit on a registered plan of strata subdivision and a lot or accessory lot on a registered cluster plan.

Local Street - A lower order street providing for low to moderate volumes and moderate speeds linking local streets to the arterial network. Managed by the relevant local council.

Lower Density Housing - Housing with an average density of less than 10 dwellings per net developable hectare.

Main Street - A function of an activity centre, where vitality and activity are created by orienting uses towards the street, and ensuring that the primary address of all retail stores is the street. Normally this would be a connector street rather than arterial.

Major Activity Centre - Activity centres that have similar characteristics to Principal Activity Centres but serve smaller catchment areas. For further information refer to Melbourne 2030.
Medium Density Housing - Housing with an average density of 16 to 30 dwellings per net developable hectare.

Native Vegetation - Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses.

Native Vegetation Precinct Plan - A plan, as specified in clause 52.16, relating to native vegetation within a defined area that may form part of the precinct structure plan. Native vegetation precinct plans are incorporated into local planning schemes and listed in the schedule to Clause 52.16. A native vegetation precinct plan can form part of a precinct structure plan.

Neighbourhood Activity Centre - Activity centres that are an important community focal point and have a mix of uses to meet local needs. Accessible to a viable user population by walking, cycling and by local bus services and public transport links to one or more principal or major activity centres. This should be of sufficient size to accommodate a supermarket. For further information refer to Melbourne 2030.

Net Developable Area - Land within a precinct available for development. This excludes encumbered land, arterial roads, railway corridors, government schools and community facilities and public open space. It includes lots, local streets and connector streets. Net Developable Area may be expressed in terms of hectare units (i.e. NDHa).

Net Residential Area - As for Net Developable Area but excluding commercial/retail component of activity centres and known nongovernment school sites and other existing or permitted non-residential land uses (e.g. golf course sites).

Passive Open Space - Open space that is set aside for parks, gardens, linear corridors, conservation

bushlands, nature reserves, public squares and community gardens that are made available for passive recreation, play and unstructured physical activity including walking, cycling, hiking, revitalisation, contemplation and enjoying nature.

Precinct - An area of land within the urban growth zone for which a precinct structure plan is to be produced. Precincts are defined in the Leneva Baranduda Growth Area Framework Plan.

Precinct Structure Plan - A statutory document that describes how a precinct or series of sites within a growth area will be developed over time. A precinct structure plan sets out the broad environmental, social and economic parameters for the use and development of land within the precinct.

Principal Public Transport Network - A high-quality public transport network that connects principal and major activity centres, and comprises the existing radial fixed-rail network, extensions to this radial network and new cross-town bus routes.

Public Open Space - Land that is set aside in the precinct structure plan for public recreation or public resort; or as parklands; or for similar purposes. Incorporates active and passive open space.

Public Transport Interchange - Places where people can access or change between multiple public transport routes. For example, between train and bus or a multi-route bus station at a major activity centre

Social Housing - Non-profit housing owned and managed for the primary purpose of meeting social objectives such as affordable rents, responsible management, security of tenure and good location in relation to employment services. The term encompasses public housing and includes housing owned or managed by housing associations and community housing.

Social Infrastructure - Community facilities plus public open space.

Urban Growth Boundary - A statutory planning management tool used to set clear limits to metropolitan Melbourne's urban development.

Urban Growth Zone - Statutory zone that applies to land that has been identified for future urban development. The UGZ has four purposes: (1) to manage transition of non-urban land into urban land; (2) to encourage development of well-planned and well-serviced new urban communities in accordance with an overall plan; (3) to reduce the number of development approvals needed in areas where an agreed plan is in place; and (4) to safeguard non-urban land from use and development that could prejudice its future urban development.

Walkable catchment of an activity centre - Within 400m of a neighbourhood activity centre, or 800m of a principal or major activity centre.

Water Sensitive Urban Design - A sustainable water management approach that aims to provide water-quality treatment, flood management and green landscapes. Key principles include minimising water resistant areas; recharging natural groundwater aquifers (where appropriate) by increasing the amount of rain absorbed into the ground; encouraging onsite reuse of rain and incorporation of rain gardens; encouraging onsite treatment to improve water quality and remove pollution, and using temporary rainfall storage (retarding basins/wetlands) to reduce the load on drains.
REFERENCES, ACTS AND AUTHORITIES


Activity Centre Design Guidelines, Department of Sustainability and Environment, January 2005. (http://www.dpcd.vic.gov.au/)


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Creating a City that Works: A position paper on passenger transport and urbanisation by the Commissioner for Environmental sustainability, Commissioner for Environmental sustainability, May 2007.


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VPP Practice Note – Preparing a native vegetation precinct plan, September 2008 (http://www.dse.vic.gov.au)


VPP Practice Note – Urban Growth Zone, Department of Planning and Community Development, June 2008.
The Albury Wodonga region has been subject to a plethora of studies and strategies. The direction and policies that are included in this Growth Plan have been influenced by these documents. The following documents are of particular relevance:

Albury Wodonga Regional Planning Strategy; (Albury Wodonga Region Planning Committee 1991)

Sustainability You’re Future in Balance; (Albury Wodonga Region Planning Committee)


Healthy Lifestyles in a Health Community - An integrated approach to Municipal Health Planning 1997

Albury Wodonga the Gateway to Growth - (Macroplan 1998)

Lake Hume Development Strategy- (Discussion paper 1994)

Leneva Baranduda Growth Area Framework Plan; (EDAW 1998)

Leneva Design Guidelines 2010 (Annand Alcock)

North Leneva Baranduda Planning Scheme Amendment July 2010 (Habitat Planning)

North Leneva Baranduda Village Centre Design Guidelines January 2005 (Annand Alcock Urban Design)

North Leneva Baranduda Mixed Use Precinct Guidelines July 2004

North Leneva Baranduda Town Centre Market Assessment (Macroplan December 2009)

North East Regional River Health Strategy; (North East Catchment Management Authority 2006 )

North East Regional Catchment Strategy; (North East Catchment Management Authority 2004)

City of Wodonga Corporate Plan 2009-13; (City of Wodonga 2009)

Review of Rural Living Opportunities; (Albury Wodonga Regional Planning Committee March 1993)


Gateway Island Master-Plan Review, Coomes Consulting Group, August 2002

Rural City of Wodonga Statement of Policy in Respect to Developer Contributions, 1994.
There are a number of other supporting documents that support the Leneva Baranduda Growth Area Framework Plan:

- Department of Sustainability and Environment - Growth Area Framework Plans 2006
- North Leneva Baranduda Town Centre Market Assessment
- Design and Siting Guidelines - Bushfire Protection for Rural Houses
- Wodonga Retained Environmental Network (WRENs), Leneva Baranduda Valley report, September 2006, I Davidson, et al.; (Native Vegetation Precinct Plan)
- Waterways Survey for Streets Road, March 2004, Glenda Datson;
- Preliminary Geotechnical Assessment of Proposed Rezoning of Leneva Baranduda Valley Properties, September 2004, Coffey;
- Limited Environmental Site Assessment, Streets Road Leneva Baranduda, September 2004, Coffey;
- The Leneva Baranduda Valley Drainage Strategy, February 2011, GHD.
- Draft Wodonga Activity Centre Strategy Review; Urban Enterprise Pty Ltd May 2012