



CITY OF COCKBURN
**THE LAKES REVITALISATION
STRATEGY**

BACKGROUND REPORT

DECEMBER 2015

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Introduction

This Background Report provides the justification for the Strategy recommendations by detailing:

- Relevant planning framework and policies to be considered;
- An explanation of the R-Codes;
- Regional context;
- Local context including: History, demographics, town centre and community facilities;
- A streetscape assessment;
- An Integrated Public Open Space Assessment;
- A Transport and Accessibility Assessment;
- Urban infill and medium density development lessons learnt by the City, and;
- Stakeholder consultation outcomes.

At the end of each chapter, key findings are summarised to inform the Strategy recommendations.

The Revitalisation Strategy reflects the comprehensive State Government planning framework embodied in various strategies and policies. The City's local strategic plans is also embedded in the Plan.

Planning policy framework

State Planning Strategy 2050

The State Planning Strategy 2050 (SPS) provides a guide for public and local authorities to frame their legislative responsibilities in matters that regard land use planning, land development and transport planning. The Strategy provides a set of principles based upon Community, Infrastructure, Environment, Economy, Regional Development and Governance. Through these principles the Strategy guides future planning decisions.

The SPS identifies planning considerations and strategic direction that relates directly to the formulation of the Lakes Revitalisation Strategy and provides the agenda for urban infill and urban regeneration projects throughout Perth, those directions include;

- Land Availability – ensuring the sustainable supply, use and development of land with a strong presumption in favour of the sustainability of prime agricultural land.
- Spaces and Places – creating spaces and places that foster culture, liveability, enterprise and identity.
- Affordable Living – enabling affordable living through housing diversity and compact settlements.
- Health and Well-Being – encouraging active lifestyles, community interaction and betterment.
- Environment – conserving biodiversity, achieving resilient ecosystems, protecting significant landscapes and managing the state's natural resources in a sustainable manner.

To view the State Planning Strategy 2050 visit www.planning.wa.gov.au

Directions 2031 and beyond: Metropolitan planning beyond the horizon

“Directions 2031 and Beyond” is a high level strategic plan that establishes a vision for future growth of the Perth and Peel regions. It provides framework to guide the detailed planning and delivery of housing, infrastructure and services necessary to accommodate growth.

A key objective within Directions 2031 and beyond is to manage and progress the relationship between where people reside and where people are employed, reduce travel times and cost, and the associated impact on transport systems and the environment.

Perth and Peel @3.5 million (draft)

The Perth and Peel @3.5 million document seeks to update the Directions 2031 Strategy, developed to engage Perth in a discussion on future expectations around accommodating an increasing population whilst maintaining a familiar lifestyle for residents. The document provides a guide to manage urban growth, achieve increased urban consolidation and residential housing choice, required to accommodate the long term population growth.

Under the ‘connected city’ scenario, the need to provide urban infill has been identified at a target rate of 47%; meaning that by 2050, 380,000 of the 800,000 new dwellings will be within strategic infill positions. The connected city approach relies upon strategies such as the Lakes Revitalisation Strategy, and previous City of Cockburn strategies, to deliver its objectives for the Perth Metropolitan area.

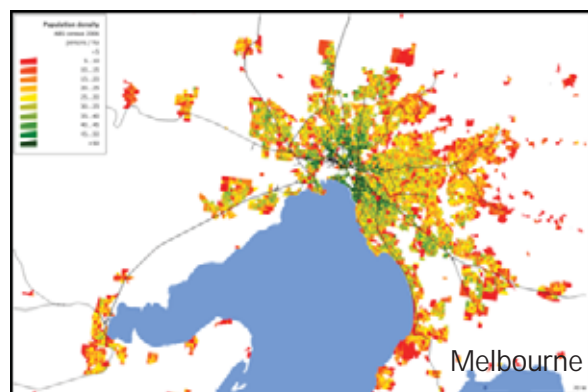
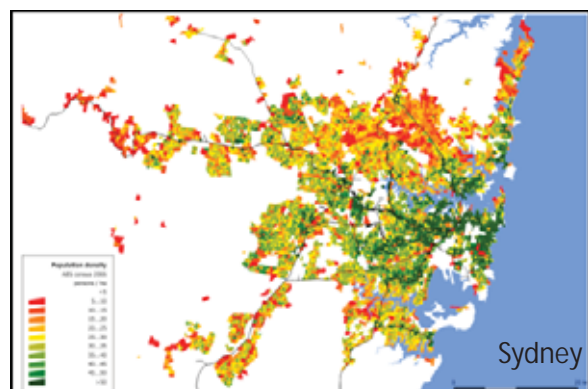
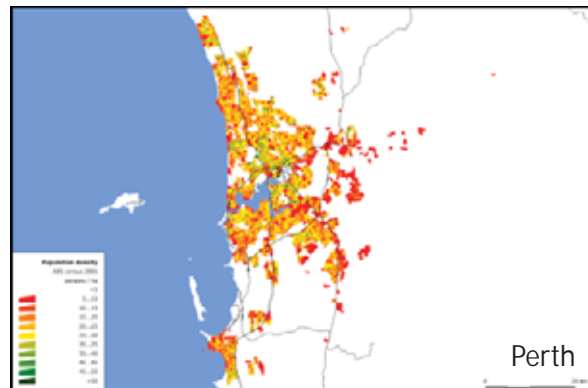
Images (Right) sourced from: <http://chartingtransport.com/2012/10/19/comparing-the-residential-densities-of-australian-cities-2011/>

Perth’s population 2011 **2,021,200**

3.5 million Perth’s projected population 2050

More than **1.5 million** new residents

800,000 new dwellings



The above images demonstrate the low density nature of Perth compared to Sydney and Melbourne. Red = low density, green = high density. Illustrating the need to consolidate housing options and reduce the negative impact of sprawl.

South Metropolitan Peel Sub-Regional Planning Framework: Perth and Peel @ 3.5 million (draft)

As an implementation mechanism of Perth and Peel @3.5 million, the Department of Planning released for advertising draft sub – regional planning framework documents, including the South Metropolitan Peel Sub-Regional Planning Framework. The draft Sub Regional Strategy focuses on establishing a long term and integrated framework for land-use and infrastructure provision.

Within the Sub-Regional Strategy the City of Cockburn is identified as requiring an estimated dwelling supply of approximately 14,678 dwellings that will provide an additional 32,292 residents by 2050. Furthermore, the draft strategy has identified a declining trend in the average household occupancy in the South-West subregion, together with an ageing population. This suggests it may be timely and appropriate to investigate opportunities to encourage diverse housing types when regenerating residential areas such as the Lakes area. Particularly given the ageing housing stock, some of which is up to 35 years old, currently located within the area.

State Planning Policy No. 3.1 – Residential Design Code of Western Australia

The Residential Design Codes of Western Australia (“the R-Codes”) provides the basis for the control, through local government, of residential development throughout Western Australia. The R-Codes aims to address emerging design trends, promote sustainability, improve clarity, and highlight assessment pathways to facilitate better residential design outcomes throughout Western Australia

The R-Codes provides minimum and average lot areas for each R code. Local planning schemes then apply an R coding, for example: R20, R30, R40, to residential zoned land which is used to control the subdivision of land.

Table (below) is an excerpt from Table 1 of the R-Codes and sets out the minimum and average site area for R20-R80 single and grouped dwellings and for multiple dwellings codes (above R30).

Please note that the table is inclusive of the amendments that were made to the R-Codes on 23 October 2015. This amendment affected the potential yield of apartments that can be built on blocks coded R30 and R35. A copy of the R-Codes and further details on the recent amendments can be found on the WAPC website.

| R-Code | Dwelling Type | Minimum site area per dwelling (m2) |
|--------|-------------------------------------|-------------------------------------|
| R20 | Single house* or grouped dwelling** | Min 350 Ave 450 |
| | Multiple dwelling | 450 |
| R25 | Single house or grouped dwelling | Min 300 Ave 350 |
| | Multiple dwelling | 350 |
| R30 | Single house or grouped dwelling | Min 260 Ave 300 |
| | Multiple dwelling | 300 |
| R35 | Single house or grouped dwelling | Min 220 Ave 260 |
| | Multiple dwelling | 260 |
| R40 | Single house or grouped dwelling | Min 180 Ave 220 |
| R50 | Single house or grouped dwelling | Min 160 Ave 180 |
| R60 | Single house or grouped dwelling | Min 120 Ave 150 |
| R80 | Single house or grouped dwelling | Min 100 Ave 120 |

Minimum site area requirements (extract from the R-Codes)

Multiple dwellings on land coded R40 and above are controlled in a different manner. Multiple dwellings are controlled via a plot ratio, maximum building height and minimum open space. Plot ratio is the ratio of the gross total of all floors of buildings on a site to the area of land in the site boundaries. The following table is an excerpt from Table 4 of the R-Codes which summaries the key control relating to multiple dwellings on land coded R40 and above.

| R-Code | Maximum Plot Ratio | Minimum Open Space (% on site) | Maximum height (m) | | |
|--------|--------------------|--------------------------------|----------------------|---------------------------------------|---------------------|
| | | | Top of external wall | Top of external wall (roof concealed) | Top of pitched roof |
| R40 | 0.6 | 45 | 6 | 7 | 9 |
| R50 | 0.6 | 45 | 9 | 10 | 12 |
| R60 | 0.7 | 45 | 9 | 10 | 12 |
| R80 | 1.0 | * | 12 | 13 | 15 |

Multiple and grouped dwelling general site requirements R30-R80 (extract from the R-Codes)

It is important to note that there are additional requirements under the R-Codes when considering the development and subdivision of land.

The above description of the R-Codes only covers requirements which relate to dwelling yield. Other requirements of the R-Codes include:

- Streetscape;
- Boundary setbacks;
- Open space;
- Access and parking;
- Site works;
- Building height;
- Privacy; and
- Designing for climate.

Further information see the following information sources:

Further information regarding the R-Codes - www.planning.wa.gov.au/Residential-design-codes.asp

For information to assist in further understanding:

- Housing types
- House and site design considerations
- Neighbourhood planning

See the *Towards Perth and Peel@3.5million - Diverse City by Design* document -

www.planning.wa.gov.au/dop_pub_pdf/Diverse_City_by_Design_Fact_Sheets.pdf

Explanatory guide to the R-Codes for R20 to R80

R20

An R Code of R20 means that an average of 450 m² is required per dwelling.

| Existing Lot Size | | 450-899 m ² | 900-1,349 m ² | 1,350-1,799 m ² | 1,800-2,249 m ² | 2,250 m ² plus |
|---|------------------------------|------------------------|--------------------------|----------------------------|----------------------------|------------------------------|
| Potential No. of dwellings ¹ | Single and Grouped Dwellings | 1 | 2 | 3 | 4 | 5 or more |
| | Multiple Dwellings | 1 | 2 | 3 | 4 | 5 or more |

R30

An R Code of R30 means that an average of 300 m² is required per dwelling.

| Existing Lot Size | | 300-599 m ² | 600-899 m ² | 900-1,199 m ² | 1200-1499 m ² | 1,500 m ² plus |
|-----------------------------|------------------------------|------------------------|------------------------|--------------------------|--------------------------|---------------------------|
| Potential No. of dwellings* | Single and Grouped Dwellings | 1 | 2 | 3 | 4 | 5 or more |
| | Multiple Dwellings | 1 | 2 | 3 | 4 | 5 or more |

R40

An R Code of R40 means that an average of 220 m² is required per dwelling.

| Existing Lot Size | | 220-439 m ² | 440-659 m ² | 660-879 m ² | 880-1099 m ² | 1,100 m ² plus |
|-----------------------------|---------------------------------|------------------------|------------------------|------------------------|-------------------------|---------------------------|
| Potential No. of dwellings* | Single and Grouped Dwellings | 1 | 2 | 3 | 4 | 5 or more |
| | Multiple Dwellings ² | 2-4 | 4-6 | 6-8 | 8-10 | 10 or more |

R60

An R Code of R60 means that an average of 150 m² is required per dwelling

| Existing Lot Size | | 150-299 m ² | 300-599 m ² | 600-749 m ² | 750-899 m ² | 900 -1,049 m ² | 1,050- 1,199 m ² |
|-----------------------------|---------------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|-----------------------------|
| Potential No. of dwellings* | Single and Grouped Dwellings | 2 | 3 | 3-4 | 4-5 | 6-7 | 7-8 |
| | Multiple Dwellings ² | 1-2 | 3-5 | 5-7 | 7-9 | 9-13 | 14-21 |

R80

An R Code of R80 means that an average of 120 m² is required per dwelling

| Existing Lot Size | | 180-359 m ² | 360-539 m ² | 540-719 m ² | 720-899 m ² | 900 -1,299 m ² | 1,300- 1,999 m ² |
|-----------------------------|---------------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|-----------------------------|
| Potential No. of dwellings* | Single and Grouped Dwellings | 1-2 | 2-3 | 3-4 | 4-6 | 7-9 | 10-15 |
| | Multiple Dwellings ² | 2-5 | 5-8 | 8-11 | 11-13 | 13-19 | 19-30 |

Notes:

- The ultimate lot yield will be affected by other factors. Some of these are listed below
 - whether an existing house is retained or not,
 - whether the proposed development is for a "battle-axe" subdivision,
 - the ability to vary the minimum site area requirements under Clause 5.1.1 Site Area of the R-Codes.
- Potential No. of Multiple Dwellings (above R40) have been calculated using an assumed average dwelling area of 65m². However, dwellings can be as small 40m².

City of Cockburn Planning Strategy

The City of Cockburn's Local Planning Strategy (LPS) sets out the long-term planning directions for Cockburn and provides the rationale for the zones and other provisions of the Town Planning Scheme 3. The LPS sets out the City's general aims and intentions for future long-term growth and change.

The following strategies from the LPS directly relate to the formulation of the Coolbellup Revitalisation Strategy:

- Promote development near public transport routes and minimise trip lengths in order to maximise local convenience and minimise the environmental impacts of private car users.
- Encourage cycling by defining and implementing cycle networks and promoting the provision of end-of-trip facilities.
- Provide a range of housing opportunities for a diverse mix of people.
- Promote mixed uses of land in communities, especially through the location of housing in commercial centres.
- Ensure neighbourhoods include appropriate amounts of local open space.
- Enhance local identity and character by preserving buildings and places with historic, architectural, scientific or scenic value.

City of Cockburn Sustainability Action Plan 2015/16

The City of Cockburn's Sustainability Action Plan 2015 – 2016, forms part of the City's integrated reporting platform. The action plan assists in identifying how the City will work towards the City's vision as the most attractive place to live, work, visit and invest in, within the Perth Metropolitan area. The following actions directly relate to the development of the strategy:

- To plan neighbourhoods with a range of residential densities which increase towards the neighbourhood's centre;
- Develop a strategic approach to community engagement, and
- Enhance a sense of community ownership and promote Cockburn as an attractive place to live, work and visit.

Contributing to these actions is the identified requirement to deliver the Lakes Revitalisation Strategy is a key action identified.

The Coolbellup, Hamilton Hill, and Phoenix Revitalisation Strategies.

All 3 strategies are adopted and provide a comprehensive plan to guide future development including guidance as to how future urban infill will be delivered and works required to facilitate improvements in the urban environment.

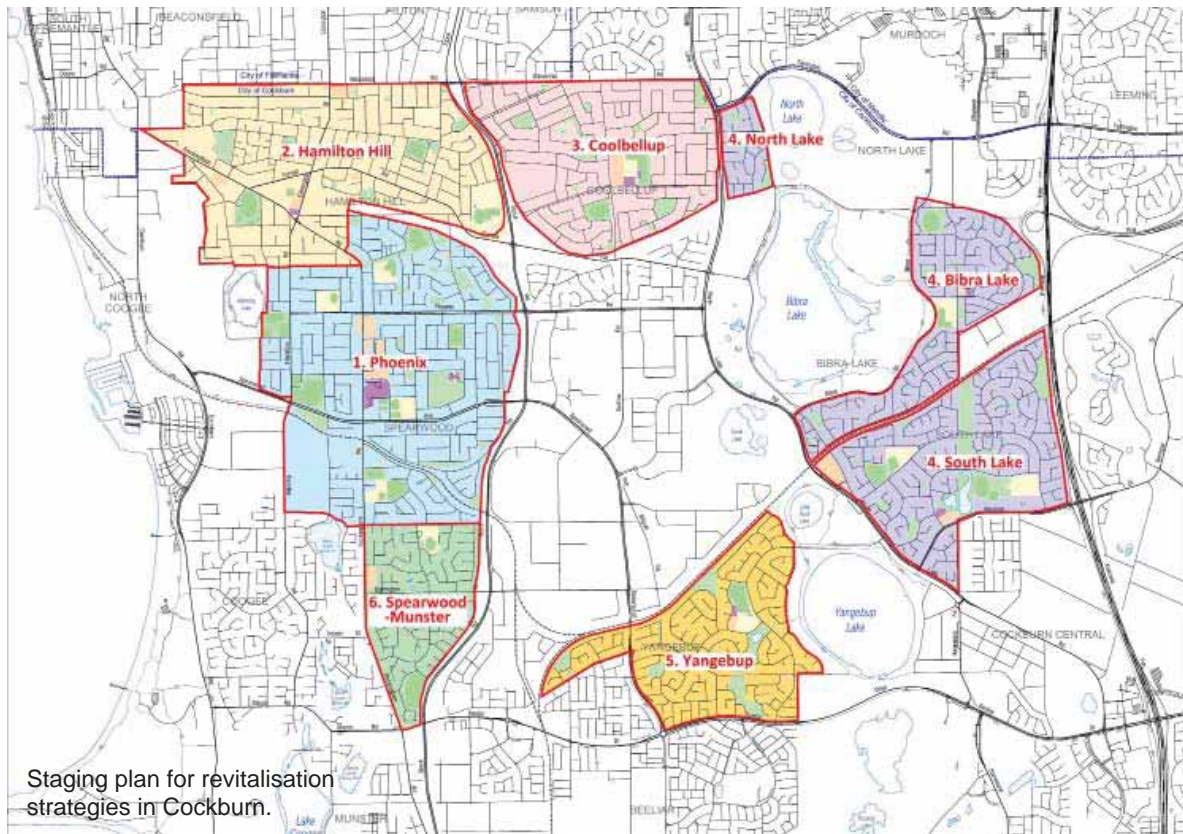
The Phoenix Revitalisation Strategy was a precursor to the Hamilton Hill Revitalisation Strategy and was finalised in May 2009. The Phoenix Strategy lies immediately to the south of the Hamilton Hill Strategy area. It provides a comprehensive plan to guide future development within the established suburb of Spearwood and a portion of Hamilton Hill. The Hamilton Hill Revitalisation Strategy identified amongst other recommendations identified strategies to address the ageing building stock and revitalise public areas.

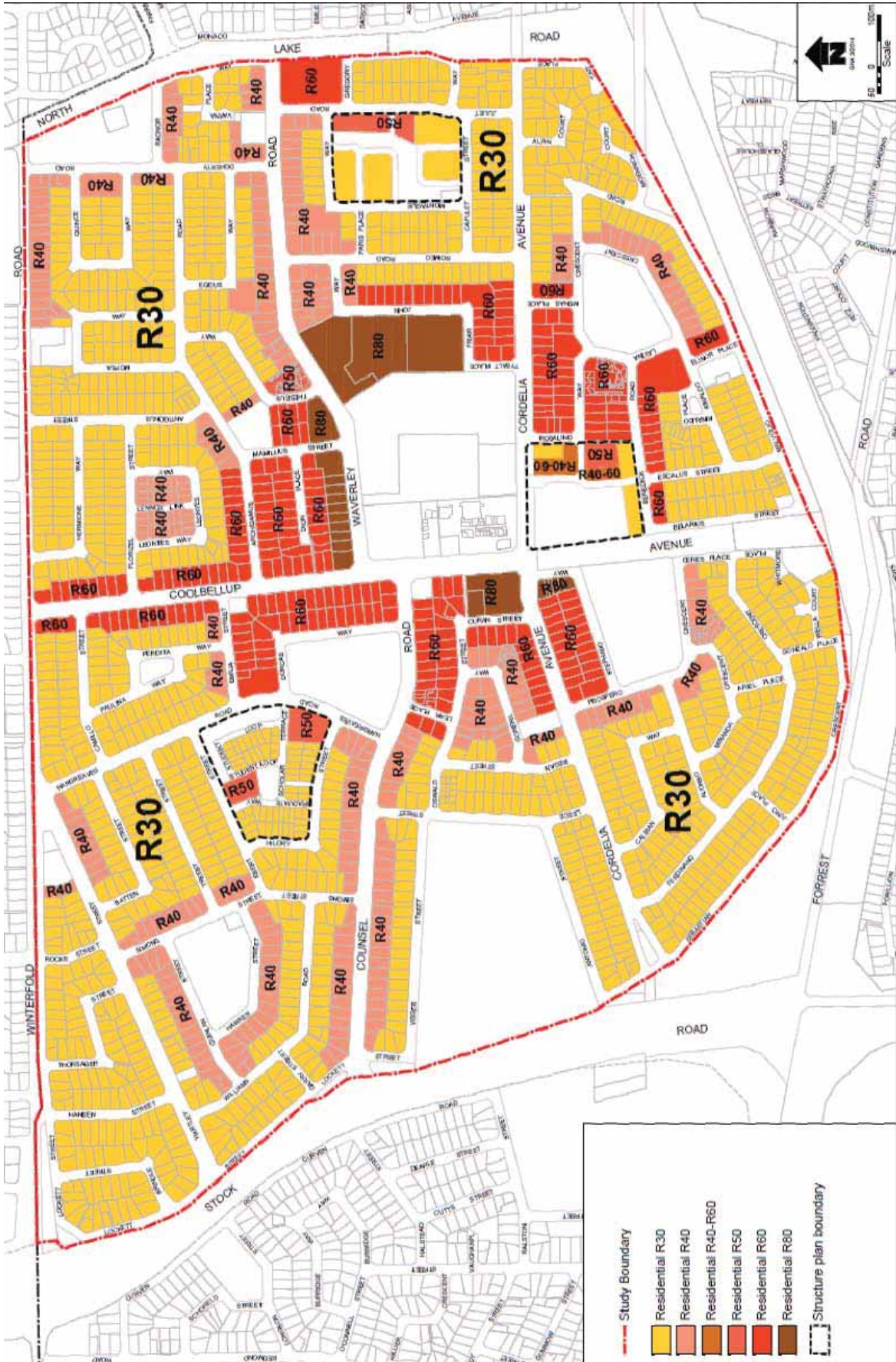
The Coolbellup Revitalisation Strategy for example focused on:

- Identifying opportunities to attract a more diverse building stock;
- Promoting good design outcomes by proposed changes to APD58 – Residential Design Guidelines, and;
- Opportunities to revitalise key streets.

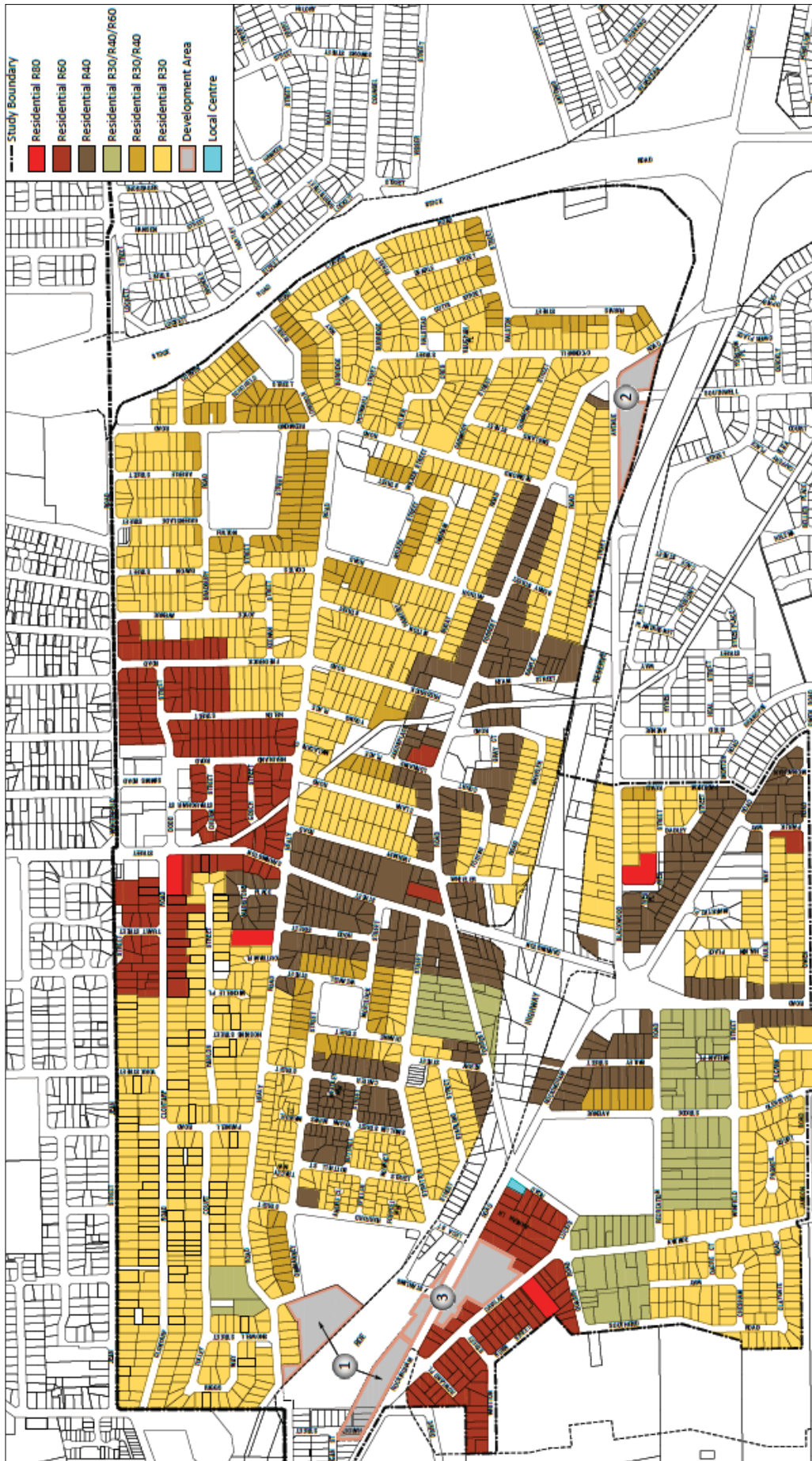
A copy of all 3 revitalisation strategies are available on the City's website.

The below figure provides the City's staging plan for revitalisation strategies across Cockburn.





Coolbellup Revitalisation Strategy Residential Density Zoning Plan (Extract from Coolbellup Revitalisation Strategy)



Hamilton Hill Revitalisation Strategy Residential Density Zoning Plan

Regional context

The Lakes suburbs are located within the South West corridor of the Perth metropolitan region approximately 18km from Perth CBD. At a regional level the area is well connected and in close proximity to the new Fiona Stanley Hospital, Murdoch University precincts, Fremantle city centre. The evolving regional centre of Cockburn Central is located to the south of the Lakes area, providing a strong provision of retail, recreation and support services.

The strategy area is close to major employment nodes including Fremantle, the Australian Marine Complex in Henderson, Jandakot Airport and Kwinana heavy industrial area, the growing and future nodes of Latitude 32 industrial area, Cockburn Central and Cockburn Coast.

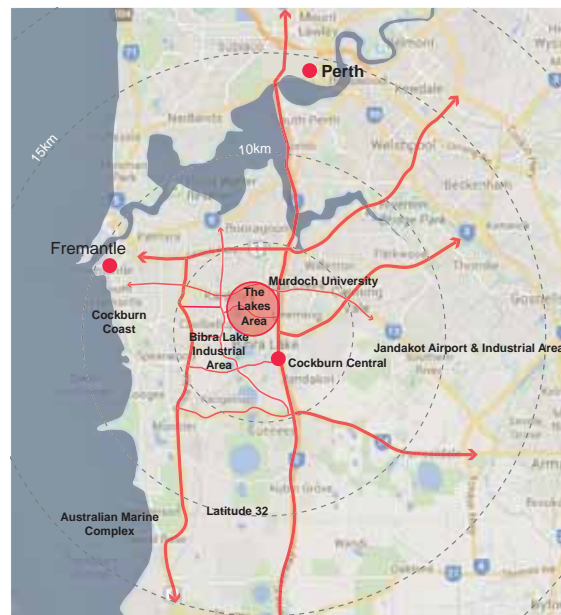
In close proximity are several educational centres including North Lake Senior High School, Lakelands High School and private institutions such as Waldorf School, Seton Catholic College and Emmanuel Catholic College. As a result the Lakes area is well located in terms of services, schools, community facilities and retail needs.

Local context

Aboriginal history

The City of Cockburn is known to the Indigenous traditional owners of the area as Beeliar Boodjar. Beeliar are one of the clans of the Whadjuk group of Nyungar and Beeliar Nyungar means 'river people'. Boodjar means land (City of Cockburn, n.d).

'The Dreaming' is a term used to describe Aboriginal creation stories about events



The Lakes suburbs and the surrounding region

within and beyond the living memories of Aboriginal people. The Dreaming shaped the physical, moral and spiritual world and continues to renew and sustain itself today. Nyungar responsibilities, beliefs and values have been based on the same principles. The content of Dreaming stories may change depending on the narrator, audience and location. However, the Rainbow Serpent, the Waakal is always depicted as fundamental to Nyungar Dreaming, creating the shape of the boodjar and giving foundation to the meaning of life. It is easy to look at the Beeliar wetland system and visualise this huge Waakal twisting up and down, making its way north to Fremantle and south to Mandurah (City of Cockburn, n.d).

Prior to European contact the Nyungar people were hunter gatherers who moved along definite routes determined by seasonal supplies of food and water. They lived in closely knit family groups related by kinship, and over the previous centuries, they had evolved a sound social framework and a finely tuned

established order (City of Cockburn, n.d).

The arrival of European explorers and settlers in the Swan River Colony in the late 1820s and the movement of people into the interior of Western Australia in the subsequent decade was to set in motion a period of enormous change for the Aboriginal inhabitants of Western Australia. The arrival of the Europeans, with their different attitudes to land ownership and tenure, was to have a devastating effect upon the traditional way of life of the people.

Investigation of the Cockburn region prior to European settlement in 1829 shows evidence of a large Aboriginal presence. Archaeological findings show camp sites in the vicinity of the freshwater lakes in the Cockburn Sound district, particularly near North and Bibra Lakes. Artefacts and rock engravings found in Cockburn reflect their use of the land.

There are still 16 archaeological sites found within Cockburn, most of which in the Lakes area. The Bibra and North lake area were used as campsites by Nyungar people due to the proximity to freshwater, good vegetation and the subsequent wildlife. Additional rock engravings are found in the area which reflects the use of the land by Nyungar people.

Given the different land management and attitudes between European settlers and Nyungar people, specific locations of the many campsites and artefacts are not recognised on City maps. However given the scope of the revitalisation strategy, there is no expectation that these sites will be disturbed. Rather what is important is to educate and highlight special areas of interest so as to encourage a link to the past and local heritage. This is already considerably discussed within the Bibra

Lake Management Plan but should also be embedded into the recommendations of the revitalisation strategy where possible such as through placemaking initiatives.

European history

Bibra Lake was originally known as Walliabup Lake, a Nyungar name for the area that was accepted by many early European settlers. The name 'Bibra' comes from the initial surveyor of the Lakes area Benedict Von Bibra, who allocated and sold lots to future pastoralists. The remaining suburbs in the Lakes area are named simply after their geographical position, North Lake and South Lake.

Following the settlement of the Swan River Colony in 1829, the Lakes area along with the rest of the Cockburn region was gradually settled by pastoralists during the 1850's to 1870's. In the decades following the 1870's market gardens began to emerge as the key land use within the Lakes area.

Technological change and a lack of infrastructure brought about a decline in Market gardening during the 1920's. With the introduction of the automobile, the time it took to travel between markets and the farm decreased, thus farmers could afford to live further South in areas associated with better soils. 1921 saw the establishment of North and Bibra Lake Progress Association, who sought the advancement of the Lakes area to a similar standard of the nearby Hamilton Hill and Spearwood market gardeners and town sites with the inclusion of electricity and extension of North Lake road through the Canning Highway.

Urban development of the Lakes area occurred later than other Cockburn

regions with most residential development being constructed during the 1980's at a zoning of R20. In the years following several parcels of land notably in the Southern portion of Bibra Lake and South Lake have been developed during the early 2000's at a higher zoning of R30.

There are 5 sites with heritage interests in the Lakes Revitalisation Strategy area. These include:

- Jandakot Hall
- Jandakot Hotel (Site)
- Residence: Meller
- Moreton bay Fig Trees
- Norfolk Island Pine Trees



Jandakot Hotel



Jandakot Hall - Anning Park

Jandakot Hall

Jandakot Hall has high social and recreational significance within the local community as a focal point for community activities.

The hall was constructed in the 1960's on the site formerly known as Anning Park Showground and Agricultural Hall. The hall is known for hosting Agricultural shows from 1902 and is still used for various sporting and is still regularly rented out for social events.

Jandakot Hotel (Site)

Jandakot Hotel is a private residence, formerly used as a Hotel, Tavern and Inn. The site retains its original fabric and has social significance to members of the local community.

Original owner and licensee, Walter Lawrence, built the Jandakot Hotel. A fire in 1909 destroyed most of the structure and it was reconstructed using pressed red brick. In 1938 the property was sold to the Lucken family who used the premises as a private residence. Today it functions as a private residence.

Residence: Meller

Residence: Meller is significant for its high architectural value as a substantial and well resolved residence within Cockburn. Built in 1890 as a homestead on the Meller family farm, the residence is now surrounded by suburban houses and public open space however, retains its exterior fabric of red sundried bricks.



Meller Residence

Moreton Bay Fig Trees

In close proximity to the study area, the 3 Moreton Bay Fig Trees located adjacent to the western side of the lake, on Progress Drive, are significant for their high level of aesthetic value and association with the Currie family, a prominent dairying family who formerly owned and farmed the land. The trees are a living reminder to the previous land use of Bibra and North Lake.



Morton Bay Figs - Progress Drive

Norfolk Island Pine Trees

The 2 Norfolk Island Pines, planted in 1900, are significant in their representation of vegetation that has survived urban development of the Bibra and North Lake. The trees have significant social and historical value to the former dairying land use and the Dixon family who planted the trees.



Norfolk Pine Trees located on Hope Road (cnr Progress Drive)

Demographics

This section of the report analyses and documents current demographics of the Lakes area relative to the City of Cockburn and Perth averages and trends. This part of the background report helps in defining the unique character of the local population as well as predict the future populous of the area.

Collectively the Lakes area population is diverse, with diversity being demonstrated between the 3 suburbs – Bibra Lake, North Lake and South Lake.

The median age of residents in the Lakes area is 35 compared to the median age for all City of Cockburn residents of 34. When these figures are analysed a little closer it can be established that South Lake is generally represented by a younger demographic of 33 being the median age. North Lake and Bibra Lake median age sits at 39. This younger demographic is likely to be suggesting that younger families are entering the market in this location (in part) as a result of lower house prices (compared to Bibra Lake and North Lake).

The Lakes area has a significantly greater aged population profile than that of Cockburn overall with 18.6% of residents being 65 or older, compared with 10.3% respectively. However it is important to recognise that the Lakeside Village contributes greatly to this demographic trend and as a result the data is not reflective of the entire Lakes area. Rather the median age is likely to be more in line with the Cockburn average.

Almost 75% of households earn a weekly income between \$600 - \$3000 per week.

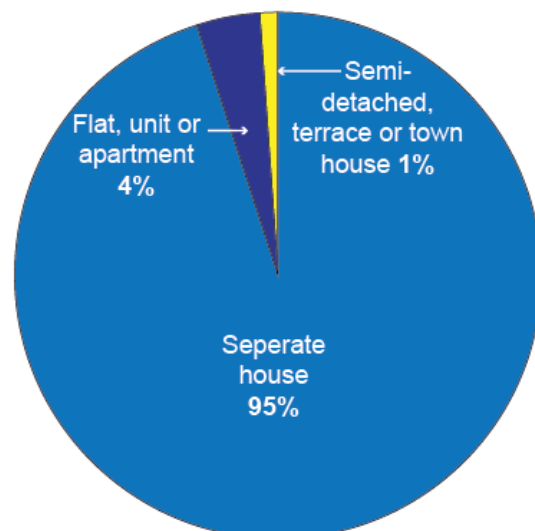
The type of jobs residents are employed to do relate to – 18.3% are classified as “Technicians and Trade workers” alongside 18.17% of ‘Professionals’.

These figures are very much consistent with the wider Cockburn average.

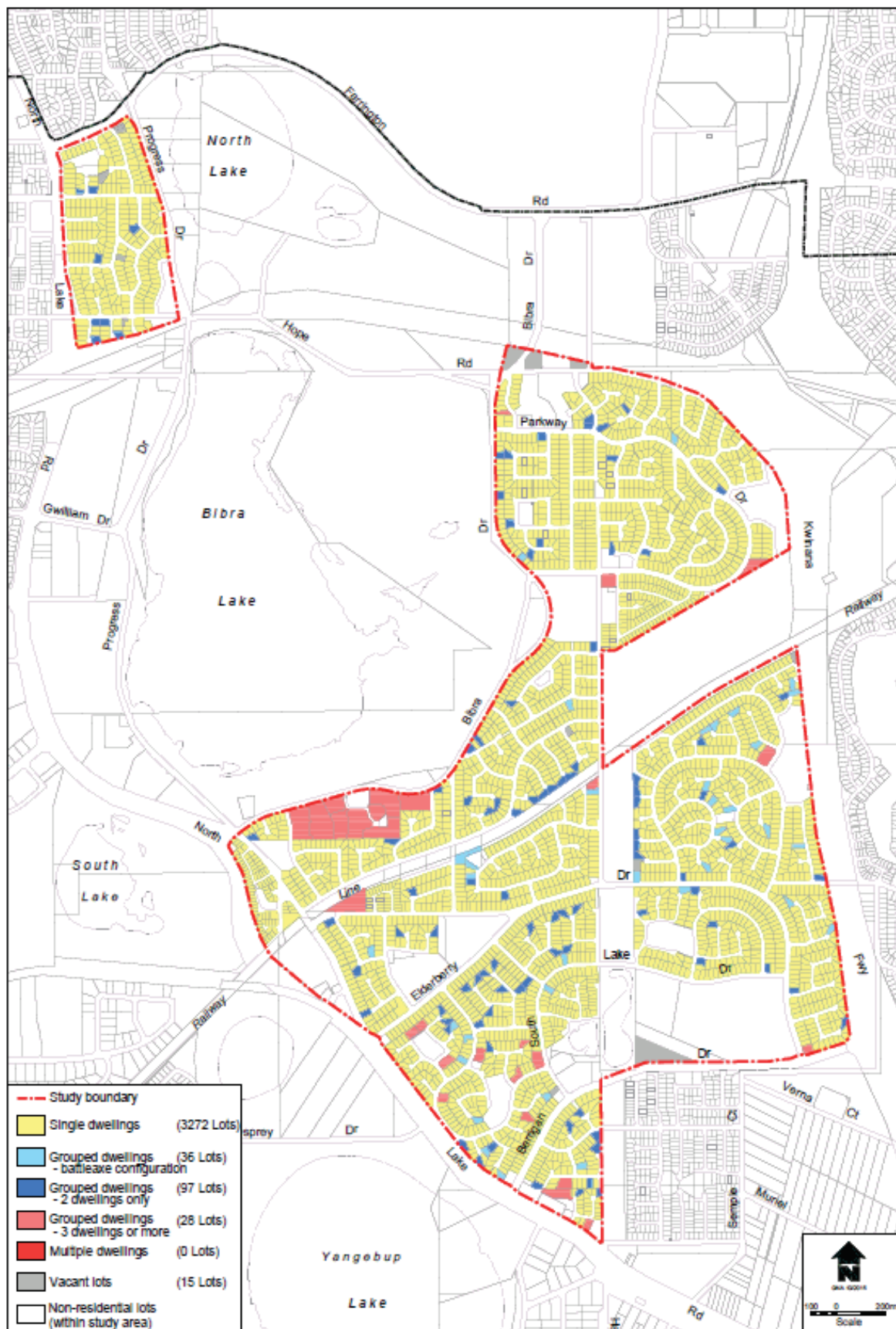
The Lakes residents are heavily dependent on car use as their primary form of travel to work. 71.9% of residents travel to work as a driver or passenger, similarly 71.5% of Cockburn residents uses the same method. Public Transport is a less utilised method with 5.6% of residents taking buses, trains and ferries to work, while Cockburn overall uses public transport for 7.3% of journeys. Walking to work is the least used transportation method with only 1.3% of Lakes residents walking to work and 1.1% of Cockburn overall walking to work.

Housing

There are 3,791 dwellings in the Lakes area. The structure and number of dwellings is shown in the below figure, illustrating a much higher proportion of households live in separate houses. This is consistent with the wider trend across Cockburn and the metropolitan region. Demonstrating a need to provide alternative housing types such as apartments and town houses.



The Lakes Dwelling Structure



The Lakes Existing Dwelling Structure Types

grouped dwellings of various scale and multiple dwellings in the Lakes area. By far the most common are single dwellings (3272).

The “Lakes Existing Lot Size Map” shows the current density codings, R-Codes, prescribed to residential land within the Lakes suburbs. Page 6 and 7 provides a detailed explanation of the R-Codes and the development potential under various density codes.

The majority of the Lakes is coded R20.

Figure (Left) provides an indication of the size of the single residential lots and undeveloped lots in the study area. Most residential lots in the Lakes range between 700m² and 750m² however a proportion (750 lots) are larger in size, between 750m² and 1,000m².

This analysis provides an understanding of the existing residential development within the area, but also the development implications of the proposed recoding’s outlined in Part 2 of the Strategy.

Demographic and housing summary and implications

The strategy must ensure that any future planning responds and supports demographic characteristics of the Lakes area currently, and forecasted. The key demographic characteristics and trends to be considered in the Lakes strategy relate to:

- A diverse and ageing population;
- Small and declining household sizes;
- A disproportionate number of single dwellings compared to smaller housing types
- High car dependency.

The purpose of the Strategy responds to the demographics characteristics and

trends. Through reviewing the residential densities, the Strategy supports creation of a greater diversity of housing types and sizes which will provide appropriate housing options for these smaller household sizes. Further the strategy seeks to encourage alternative transport modes through the revitalisation of the Lakes area key streets and public places.

Alternative, smaller, dwellings are likely to have the added advantage of contributing to an affordable living option.

Town Centre and community and recreation facilities

Shopping needs

There are 3 Local centres in the Lakes area;

- The Lakes Shopping Centre;
- South Lake Shopping Centre, and;
- Bibra Lake Shopping Centre.

These centres provide for daily short trip and in some cases, weekly shopping needs for the surrounding local catchment. In addition to these, the Lakes area is within the catchment of larger centres such as Gateways Shopping City, Kardinya Shopping Centre and Garden City. These centres provide more of the weekly shopping needs.

While the centres themselves provide for a range of shopping needs, and this will be improved with the arrival of ALDI at The Lakes Shopping Centre early 2016, opportunities exist to improve the presentation and interface with surrounding uses around these centres.

Any future works in and around the centres should include/consider:

- Opportunities to increase community events in and around the centres;
- Increased densities, particularly on land within the 400m walkable catchment. It is viewed that increased densities will contribute to the viability of the commercial centre by increasing the number of people in proximity to the Centre.
- Higher densities will assist in delivering larger buildings that will contribute towards reinforcing and enclosing these important areas and increasing activity and surveillance;
- Improve pedestrian amenity, safety, and street legibility;
- Encourage pedestrian and cycling to and from the centre through improved signage;
- Accommodate more trees; and
- Improve the relationship between the centres and surrounding public spaces and green areas.

The 3 concept plans provided on page X of the Strategy illustrate important concepts and functions to guide future development in and around these centres.

Community and health facilities

Most community support services in the area are provided through outreach services, meaning residents have to travel for these services. Most of these are in Coolbellup however Cockburn Central also provides a number of services such as through the Integrated Health Centre, the Youth centre and the Success Library.

In addition, a strip of health services are located along the Western section of Berrigan Drive including medical and dental clinics and massage services. A

Medicare Local is located in South Lake.

While the extent of this revitalisation strategy does not extend to proposing or reviewing services, it nonetheless does highlight the importance of ensuring good levels of public transport and connections exist between the Lakes Area, Coolbellup and Cockburn Central. This is analysed further within Transport Section of this Background Report.

Community halls and facilities

Bibra Lake Community centre

The Bibra Lake Community Centre is located immediately adjacent to the Bibra Lake Shopping Centre and the Bibra Lake Primary School. The hall was renovated 7 years ago with a focus on young children at which time the play area was upgraded. How the hall integrates with surrounding land uses into the future and addresses surrounding street frontages are important considerations to improve the amenity and function of the town centre.

South Lake Ottey Family and neighbourhood Centre

The Ottey Centre provides for a range of activities and functions including counselling, emergency food relief, co-health activities, classes, BBQ's for community events and has a children's play area. The centre is a facility that can be utilised for meetings.

The Ottey Centre is centrally located adjacent to the South Lake Shopping centre and fronts quality recreation open space area to the north of which links in with the green loop (See recommendation X). Good levels of public transport exist from Berrigan Drive.

Schools

The Lakes area has a sufficient level of schools for the population catchment, with 1 high school, 2 public primary schools and 1 private primary school.

A further 2 private schools, the Perth Waldorf School (Gwilliam Drive) and the Steiner School (North Lake Rd), are located in the periphery of the study area, on the Western side of Bibra Lake.

When considering schools in the context of the revitalisation strategy, it is important to ensure safe options exist for walking and cycling. This has directly informed the regional green route recommendation – see page 28 and 29 of the Strategy.

Entertainment and recreation facilities

Activities and infrastructure for teenagers in the study area and surrounding area include:

- The Youth Centre at Cockburn Central;
- Adventure World – Reportedly a number of young people have season passes access the western side of the lake;
- The skate ramps located on the eastern edge of Bibra Lake;
- The South Lake Leisure Centre (soon to relocate to Cockburn central West);



These combined with public transport options (buses to trains at Cockburn Central) provide relatively good facilities for teenagers. However opportunities exist to upgrade facilities surrounding the skate ramps. For example shade trees and group seating areas. This is discussed further in section X.

When the South Lake Leisure Centre closes good bus services to CCW will be required. This is discussed further in section X.

Recreation facilities in public parks are addressed within section X on page X.



Streetscape assessment

Streets are important shared spaces and their presentation and form impacts on the perception of a place. Generally the feedback provided within the visioning forums and the surveys was that attractive streets are important and while most streets were viewed favourably throughout the Lakes area, the following improvements were identified as being important to revitalise key streets:

- More quality street trees
- Better connected footpaths and cycle paths
- Improved directional signage

Additionally, residents in North Lake and Bibra Lake highlighted a need to improve street lighting.

Spatial definition of streets

The following provides an assessment on the spatial definition of streets within the study area:

North Lake

Given the quality landscaped frontages of most houses in the North Lake area, and the condition of homes, streets are generally present well.

Du Maurier Road and Masefield Avenue are important streets given their West-East connections for pedestrians and cyclists, in addition to Du Maurier Road being the central, main entry road into the suburb. These roads provide access through the suburb from Bibra Lake, through to Coolbellup.

The spatial definition of these streets is good given the consistent landscaping and dwelling setbacks.

Opportunities

Generally both of these streets are relatively attractive suburban streets however:

- Signage could aid in understanding route options for cyclists and pedestrians.
- A gateway treatment such as landscaping (gateway trees on the corner) or an alternative natural feature could punctuate the entry to the suburb on the corner of Du Maurier Road and Progress Drive. Sufficient space exists in the road reserve on the north western side of Du Maurier Road.

Progress Drive is also an important connecting street and is also sufficiently landscaped given its immediate frontage with the Bibra Lake Reserve.

Bibra Lake

4 streets given their extent and role as an important connector for most residents are important streets for Bibra Lake. These are Bibra Drive, Parkway Road, Annois Road and Meller Road.

Opportunities

- Improve the maintenance and presentation of the eastern side of Bibra Lake, along the edge of Bibra Drive:
- Enhance street tree planting along Annois Road, particularly down to the south where the road joins the railways crossing shared path.

- The planting of Jacaranda's along Parkway drive has already been undertaken. Given the wide nature of this street, further increases in dwelling bulk and scale could easily be accommodated and is likely to contribute to a more enclosed streetscape.



South Lake

- Street tree planting has already been undertaken along Elderberry Drive, Bolderwood Drive, Parkway Drive and Berrigan Drive.
- Opportunities exist to strengthen the gateways treatments along key entry points to the suburb.
- A portion of the North Lake Road verge requires maintenance to overgrown vegetation.



Streetscape assessment conclusion and recommendations

The opportunities identified here have directly informed the Strategy's recommendations, including:

1. Increasing densities along wider roads that have direct access to high frequency public transport . This will directly contribute towards improving the spatial definition of streets.
2. Several recommendations relate to streets and the enhancement around the 3 local centres. These are identified within table X of the strategy.



Stakeholder consultation

Stakeholder consultation took place through a resident and property owner's survey and two community visioning forums. The purpose of the consultation was to ensure the Lakes communities' views informed the preparation of the Strategy. The surveys and the forums were undertaken in June 2015.

The Lakes residents and property owners survey

All Lakes residents and property owners were sent a survey to gauge their opinions on a number of topics relating to the future of the suburb and satisfaction with the areas parks, street environment, pedestrian and cycle paths and traffic. Over 1100 completed surveys were returned to the City.

Outcomes

Key outcomes and resulting analysis is summarised as follows:

- While 78% of respondents currently consider their homes are about the right size, this number drops when considering future needs. In line with the forecasted national trend, this is likely to be in recognition of household sizes reducing due to children moving out of the family home, and an increase in older demographics. This highlights the importance of ensuring house types are diverse so that into the future the housing stock in the Lakes area meets the needs of residents.
- South Lake respondents are more likely to develop their property. North Lake and Bibra Lake are less likely. These figures suggest only some residents are interested in redeveloping and therefore this might suggest housing in targeted areas rather than broad scale density. Like other suburbs the City has undertaken revitalisation work within, it also highlights the likelihood that change will be incremental, allowing change to be managed.
- Of the respondents who are likely to develop their property, 59% of South Lake respondents, 57% of North Lake respondents and 51% of Bibra Lake respondents would develop their property within 5 years.
- 18% of North Lake residents wish for an allowance of more Housing throughout suburb, as compared to 30% in Bibra Lake and 53% in South Lake.
- Of respondents who would like to see an increase in housing, the primary type of housing respondents would prefer to see is 'a diverse mix of all types'. Again, given the dominance of single detached dwellings in the Lakes area, it highlights the need to provide alternative housing types.
- Bibra Lake, 85%, and North Lake 81% are satisfied with the streetscape in their suburb. South Lake however (50%) is less satisfied that the suburb's streets are attractive
- Overall, respondents are pleased with pedestrian and cyclist paths in the Lakes area.
- Overall, Traffic management and parking is considered safe and efficient within the Lakes area. Bibra Lake respondents 'agree' with this statement the most at 76%, followed by North Lake respondents at 75% and South Lake respondents 67%.
- A good response from South Lake and

Bibra Lake residents were received regarding bus services however the majority of residents in North Lake believe services in and around their suburb could be improved.

- Parks and open space are popular within the Lakes area. Between 83% and 89% of respondents from each suburb 'agree' that the Parks meet the needs of themselves and their families
- More shelters, BBQs and play facilities were the top 3 desired items to be incorporated into parks upgrades.
- 40% of Bibra Lake respondents, 42% of North Lake and 40% of South Lake respondents would be interested in taking part in a tree planting program.

Community visioning forums

Four community forums were held by the City in October aimed at drawing out and articulating The Lakes residents' "vision" for the future development of their suburbs.

The two Forums for North Lake and Bibra Lake residents were held on:

Monday June 8th, and

Wednesday June 10th

The two Forums for South Lakes residents were held on:

Monday June 22nd, and

Wednesday June 24th

The Bibra Lake and South Lake Forum were attended by approximately 160 community members. 110 attended the South Lakes Forums.

Workshop structure

Attendees were separated into tables and were asked to discuss the following questions:

1. What aspects of your suburb do you value and are important for the future?
2. What is your appetite for change in terms of new residential development and redevelopment within your suburb? Low, med, high?
3. Would you support a greater variety of housing and therefore residential densities throughout your suburb? If yes, where would you like to see medium to high residential densities provided?
4. What public domain improvements should take place for your suburb? (E.g., street trees, parks, public art, plantings and car parking under power line easements, improved public transit and facilities)

The table facilitators were asked to stimulate debate amongst those at their table, and to record both individual comments and collectively-held views.

The Forum attendees were asked to complete the same questions on the questionnaire, and to return them to the facilitator at the end of each Forum.

Attendees were also encouraged by the table facilitators to discuss each of the four questions in turn, and the facilitators had the responsibility of formulating a consensus "table view" for each question.

At the end of the workshop phase, a spokesperson from each table was asked to present, in turn, their table's responses to the four questions. Both individual comments and collectively-held views were articulated.

Community forum outcomes

Common responses emerged from these table presentations. These responses were briefly summarised and articulated by the facilitator after the individual table presentations were completed, and general agreement was voiced by the audiences. These consensus themes were generally consistent across both Forums, although the feedback from the second Forum was a little more diverse than from the first.

The following provides a summary of the consensus and themes for North Lake and Bibra Lake residents:

- Bibra Lake and North Lake residents greatly value and appreciate the lakes, wetlands and the natural environment. The existing trees, greenery, and flora and fauna are all rated highly by the community. The suburb's location and accessibility are seen as major advantages, and the sense of community is pronounced. The parks, other public open spaces, the quiet environment and the relative safety and security of the suburb are highly valued.
- Overall there is a low to medium appetite for change. Bibra Lake residents appear, however, to be more enthusiastic about change and renewal than North Lake residents.
- There is strong support for a greater variety of housing types to be provided: e.g., town houses, villas and grouped dwellings. A 2-3 storey maximum building height is generally supported.
- These higher density-type dwellings should preferably be provided in targeted areas, such as around shopping centres, parks and schools, and along the main public transport routes.
- There is good support for the view that subdivision of all single lots presently accommodating a single dwelling should generally be permitted, so that in future two dwellings can be accommodated on each lot in a "battle-axe"-type configuration.
- New housing should be of a high quality and maintain existing residential amenity, and development/design guidelines should be introduced alongside new R-Codes to ensure this occurs.
- The major public transport system in the locality (buses) is appreciated, but the community is strongly of the view that it needs upgrading through greater route choices, more direct routes, and higher frequency of services.
- More street trees need to be introduced – preferably native species.
- The quality and connectivity of the existing footpath and shared use path systems needs improving.
- Existing public open space reserves are highly valued, however there is scope for improvements to the standard and scope of the facilities within them. The opportunity exists to upgrade and improve the parks to encourage greater usage, particularly by the youth in the community. The value of the public open space reserves will increase over time as population and demand increases. Facilities that could be introduced include public toilets, shade

structures, drinking fountains, play equipment, seating etc. The local residents would like to be consulted by the City when changes are being planned.

- A café/food and drink outlet located on the edge of Bibra Lake would act as a new community focus, and would be welcomed. More public facilities generally around Bibra Lake would be appreciated, including on the Lake's east side.
- Better access into and out of the suburbs is required, and the two communities should be better linked.
- Some fenced-off dog exercise areas should be provided where dogs can be allowed to run without leads.
- The program of undergrounding the powerlines within the suburb should be completed as soon as possible.
- The local shopping centres could be upgraded and allowed to expand, provided sufficient car parking was also provided.
- There seems to be very little support, if any, for the extension of Roe Highway.
- The following provides a summary of the consensus and themes for South Lake residents:
 - South Lake residents greatly value and appreciate the lakes, wetlands and the natural environment. The existing trees, greenery, and flora and fauna area all rated highly by the community. The suburb's location and accessibility are seen as major advantages, and the sense of community is pronounced. The parks, other public open spaces, the quiet environment, the attractive streetscapes and the relative safety and security of the suburb are highly valued. The suburb's walkability is valued, as are the large residential blocks with gardens.
- There is a medium to high appetite for change. Very few residents want to resist change. Initiating zoning changes to permit the development of a wider choice of housing types is a high priority for the community.
- There is strong support for a greater variety of housing types to be provided: e.g., town houses, villas, grouped dwellings and apartments. A 2-3 storey maximum building height is generally supported.
- There was also a need expressed for more aged care housing and over-55s housing.
- Higher density-type dwellings should preferably be provided in targeted areas, such as around shopping centres, parks, along selected main roads, and along the main bus routes. However, there was also good support for allowing redevelopment to occur throughout the suburb.
- There is good support for the view that subdivision of all single lots presently accommodating a single dwelling should generally be permitted, so that in future two dwellings can be accommodated on each lot in a "battle-axe"-type configuration.
- New housing should be of a high quality and maintain existing residential amenity, and development/design guidelines should be introduced alongside new R-Codes to ensure this occurs.

- Existing public open space reserves are highly valued, however there is scope for improvements to the standard and scope of the facilities within them. The opportunity exists to upgrade and improve the parks to encourage greater usage, particularly by the youth in the community. The value of the public open space reserves will increase over time as population and demand increases. Facilities that could be introduced include public toilets, shade structures, drinking fountains, play equipment, seating etc. The local residents would like to be consulted by the City when changes are being planned.
- The program of undergrounding the powerlines within the suburb should be completed as soon as possible.
- The major public transport system in the locality (buses) is appreciated, but the community is strongly of the view that it needs upgrading through greater route choices, more direct routes, a higher frequency of services and greater reliability of services.
- The quality and connectivity of the existing footpath and dual-use path systems needs improving.
- More street trees need to be introduced – preferably native species and/or fruit trees.



The Lakes community consultation forum at Council Offices, June 2015.

- High quality entry statements to the suburb are required. These could be made up of a combination of attractive landscaping, signage and artworks.
- Street lighting should be upgraded, and better traffic management and traffic calming introduced to reduce vehicle speeds and improve safety for pedestrians and motorists.
- The existing, highly valued streetscapes should be maintained and/or improved.
- The appearance and parking availability of the local shopping centres require upgrading.
- There seems to be very little support, if any, for the extension of Roe Highway.

The key outcomes of the community consultation stage has directly informed the draft Strategy recommendations.

Land in proximity to major roads and the railway line

North Lake Road, Farrington Road, Kwinana Freeway and the freight railway line are considered to be ‘major transport corridors’ within the Lakes Revitalisation Strategy area. Therefore it is important to understand the potential impact of noise and vibration on nearby properties when making decisions regarding increased densities.

As a result the City engaged the services of an Acoustic Consultant to assess the Lakes study area to help formulate vehicle noise and vibration analysis. This analysis has, alongside other information, informed the proposed density plans identified within the draft Strategy.

The final report is currently under review however the following provides a summary of the key elements of the report and issues which landowners should be mindful of.

Understanding noise in Land Use Planning

Sound may be simply described as what we hear. Noise, for the purposes of this report, is unwanted sound. The World Health Organisation (WHO) in the *Night Noise Guidelines for Europe of 2009* considers there is ‘sufficient evidence’ that road and rail transport noise can adversely affect community health and amenity. The below image provides a range of measurements for typical noise levels. The 50dB to 60dB range is discussed further in the below sections with reference to land use planning.

Range of typical noise levels (Decibel ‘dB’)

| | | |
|------------|-----|-------------------------------------|
| Painful | 120 | Jet aircraft takeoff at runway edge |
| | 110 | Rock concert |
| | 100 | 225mm angle grinder at 1 metre |
| | 90 | Heavy industrial factory interior |
| Noisy | 80 | Shouting at 1 metre |
| | 70 | Freeway at 20 metres |
| | 60 | Normal conversation at 1 metre |
| | 50 | Night time Outdoor Noise Target |
| Quiet | 40 | Office airconditioning |
| | 30 | Typical bedroom design target |
| Very quiet | 20 | Whisper, rural bedroom at night |
| | 10 | Human breathing at 3 metres |
| | 0 | Threshold of typical hearing |

Road vehicle noise sources typically include engine exhausts (and truck engine braking), vehicle aerodynamics (flow turbulence) and the interaction between wheel and road or track.

Rail noise generally includes these factors plus safety horns, interaction or shunting between cars and wheel squealing on tight curves.

The below sections focusses on the issues of road and rail noise, and vibration, in the context of the Lakes Revitalisation Strategy.

Road and Rail Noise and Vibration (SPP 5.4)

Road and rail transport corridors play a vital role in moving people and goods, and they provide economic and social benefits to the community. Growing volumes of general traffic and freight in Western Australia has led to transport noise becoming an increasingly important consideration in land use planning.

Excessive noise has the potential to affect the health and amenity of a community as a whole, as well as the wellbeing of an individual. Sleep, relaxation and conversation can all be adversely affected by high levels of noise. There is also documented evidence that long-term exposure to high levels of noise may cause serious health, learning and developmental problems.

The Western Australian Planning Commission's *State Planning Policy 5.4 'Road and Rail Transport Noise and Freight Considerations in Land Use Planning ('SPP 5.4') and the associated 'Implementation Guidelines'* aim to promote a system in which sustainable land use and transport are mutually compatible.

SPP 5.4 seeks to minimise the adverse impact of transport noise, without placing unreasonable restrictions on noise-sensitive residential development, or adding unduly to the cost of transport infrastructure. SPP 5.4 aims to provide a standardised and consistent triple bottom line framework for the consideration and management of the impacts of transport noise and freight operations.

SPP 5.4 was prepared in conjunction and consultation with the Department of Environment and Conservation (DEC), Main Roads WA (MRWA), the Public Transport Authority (PTA) and the Western Australian Local Government Association (WALGA), as well as various industry bodies. SPP 5.4 has formed the basis for noise and vibration considerations within the drafting of the Lakes Revitalisation Study area.

The Lakes Noise and Vibration considerations

The Lakes Revitalisation Strategy is partially directed towards promoting urban expansion, encouraging higher density residential development and employment close to public transport and activity centres. The Strategy also aims to reduce car dependency by promoting public transport and active modes of travel, such as cycling and walking.

North Lake Road, Farrington Road, Kwinana Freeway and the **freight railway line** are considered to be '**major transport corridors**' within the Lakes Revitalisation

Strategy area. These major transport corridors are located in the vicinity of existing residential development and potential future residential development sites. It is possible that as North Lake, Bibra Lake and South Lake evolve as suburbs over time these transport routes will be flanked by higher density housing. The below image spatially identifies these major transport corridors within the Lakes Revitalisation Study Area.

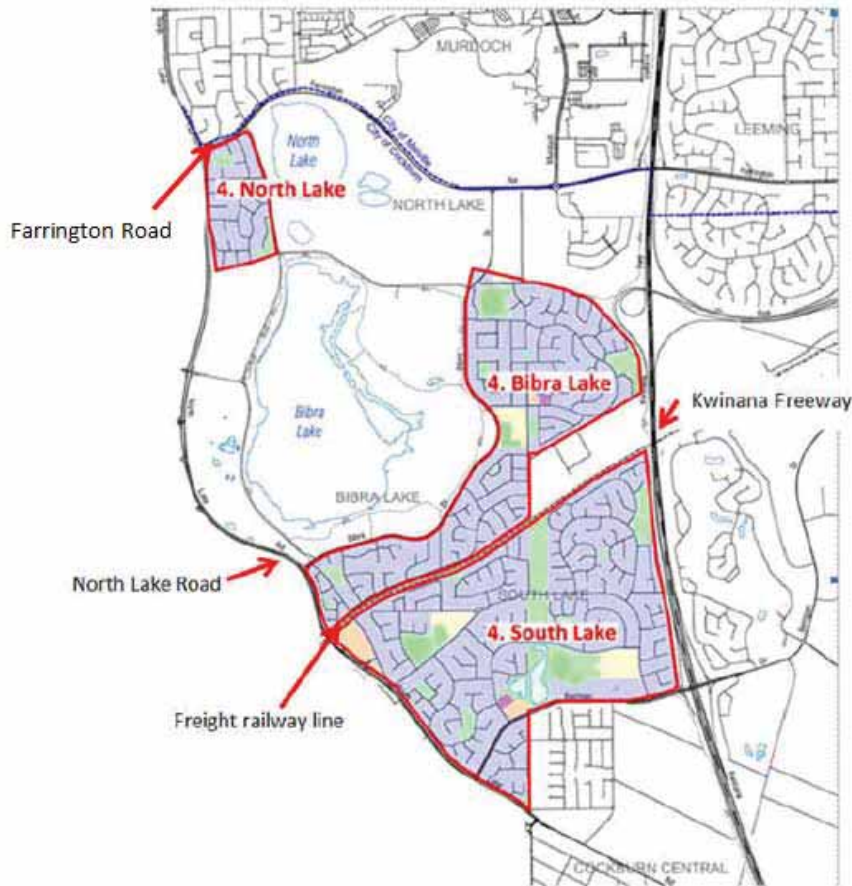
It is noted that the draft Roe 8 highway proposal includes its own separate Acoustic Report which was prepared by AECOM and peer reviewed by Lloyd George Acoustics.

The Roe 8 Acoustic report, as published on MRWAs website, specifies traffic noise monitoring will be conducted immediately post construction and then annually for 3 years to determine the accuracy of the predicted noise emissions and the adequacy of noise mitigation. The report further specifies if this post construction monitoring indicates that noise mitigation is not sufficient, Main Roads will consider upgrading the noise barriers adjacent to the affected areas.

At this early stage it is understood that the exact location, height and material of the noise walls associated with potential Roe 8 may be determined by the successful Alliance Contractor either late this year or early 2016. If the Roe 8 project comes to fruition, the construction of the noise walls will occur in accordance with the contractors detail construction program. For this reason, and that the City of Cockburn does not support Roe 8, the noise issues associated with Roe 8 have not been focused on in this report.

Noise issues and compliance with SPP 5.4 with regard to noise emissions from Roe 8 for existing noise sensitive development is the responsibility of Main Roads Western Australia. Roe 8 has therefore not been included in the below image. New noise sensitive development above the ground floor in the vicinity of Row 8, if constructed, will likely require some noise mitigation to ensure that noise sensitive areas are protected from noise intrusion, dependent upon development design.

Major transport corridors within the Lakes Revitalisation Strategy area



Noise Criteria

The noise criteria adopted within SPP 5.4 were developed after consideration of road and rail transport noise criteria in Australia and overseas, which were followed by a series of case studies to assess whether the levels were practicable. The SPP 5.4 noise criteria take into account the considerable body of research into the effects of noise on humans, particularly community annoyance, sleep disturbance, long-term effects on cardiovascular health, effects on children's learning performance, and impacts on vulnerable groups such as children and the elderly.

The below table sets out the outdoor noise criteria that apply to proposals for new noise-sensitive development. It is important to note SPP 5.4 does not place any noise restrictions on existing residential development. Therefore SPP 5.4 **does not** apply retrospectively to existing homes. This criterion is applicable only to new residences and only where these residences are affected by noise. The requirements of the Lakes Revitalisation Strategy Acoustic Analysis Report will apply only to new residential development in noise affected areas. The majority of residential land within the Lakes study area is predominantly not affected by excessive noise or vibration.

The outdoor noise criteria set out in the below table apply to the emissions of road and rail transport noise as received at a noise-sensitive land use. These noise levels apply at 1m from the most exposed, habitable façade of a proposed new building, at each floor level, and within at least one outdoor living area on each residential lot.

| Time of day | Noise Target | Noise Limit |
|--------------------|-----------------------------------|-----------------------------------|
| Day (6 am–10 pm) | $L_{Aeq(Day)} = 55\text{dB(A)}$ | $L_{Aeq(Day)} = 60\text{dB(A)}$ |
| Night (10 pm–6 am) | $L_{Aeq(Night)} = 50\text{dB(A)}$ | $L_{Aeq(Night)} = 55\text{dB(A)}$ |

In the application of the above outdoor noise criteria applicable to new noise-sensitive developments, the objective of SPP 5.4 is to achieve;

- Acceptable indoor noise levels in noise-sensitive areas (for example, bedrooms and living rooms of houses); and
- A reasonable degree of acoustic amenity in at least one outdoor living area on each residential lot.

In areas where the noise target is likely to be exceeded mitigation measures will need to be implemented by the landowner or developer with a view to achieving the target levels in at least one outdoor living area.

Noise Assessment

The SPP 5.4 guidelines give detailed information on methods for measuring and predicting transport noise levels for the purpose of undertaking noise assessments.

For new residential noise-sensitive developments, SPP 5.4 specifies noise assessments should generally be conducted **as early as is practicable in the planning process**. On this basis the City of Cockburn engaged the services of an Acoustic Consultancy to assess the Lakes study area to help formulate vehicle noise and vibration analysis. This analysis has partially informed the draft proposed density plan. The full report and its findings will soon (once finalised) be made **publicly available** to assist landowners in making **informed development decisions** for the future. This information is **not** intended and in **no way precludes** residential development. The findings are purely for community and landowner consideration at the **onset** of any **new development** consideration. This approach is highly recommended by the City of Cockburn.

The findings within the *Lakes Revitalisation Strategy Acoustic Analysis Report* can be considered, in some respect, as a platform for further discussion with regard to noise and vibration sensitive design principles. Further discussions can be organised at the request of a landowner with either the City’s Environmental Health Officers - ‘Acoustic Specialists’ or the City’s planning departments. The City will work towards preparing *The Lakes Acoustic Guidelines* in the future, subject to Council approval,

which will aim to provide further clarification and direction with regard to the acoustic report's 'summary of findings'.

SPP 5.4 currently specifies in areas where the outdoor noise limit is likely to be exceeded a detailed noise assessment in accordance with the guidelines should be undertaken by the developer. The Lakes Revitalisation Strategy Acoustic Report is not intended to act as or replace a lot specific noise assessment report for the purposes of SPP 5.4. The Lakes Revitalisation Strategy Acoustic Report, as mentioned above, can assist in initial development decision making. The early decision making regarding noise and vibration can lead to higher levels of amenity for residents.

Landowners with properties in proximity to major corridors should aim to incorporate good noise sensitive design into their proposed new dwellings before they commence the house design process. Early noise and vibration consideration can achieve development outcomes which are more **effective**, **efficient** and **within budget**.

Possible noise management and mitigation measures

A range of noise mitigation measures are available to meet the noise criteria. SPP 5.4 specifies the following as a guide;

- Construction of noise attenuation barriers such as noise walls (often brick or concrete);
- Building design, such as locating outdoor living areas and indoor habitable rooms away from noise sources; and
- Building construction techniques, such as upgraded glazing, ceiling insulation and sealing of air gaps. Note that where upgraded glazing is used, the benefit is only realised when windows are kept closed and, as such, mechanical ventilation will be required in these circumstances.

The document *'Reducing Traffic Noise - A Guide for Homeowners, Designers and Builders (published in 1991 by the State Pollution Control Commission, Roads and Traffic Authority, NSW Department of Housing)'* also provides appropriate guidance on site planning, housing design and building techniques to reduce road traffic noise. It can also be applied to rail noise.

Vibration Assessment

Whilst under the SPP 5.4 vibration is excluded from the noise assessment requirements, the City recognises that ground borne vibration associated with freight rail transportation can have a considerable amenity impact to noise sensitive development. Noise emissions traveling through the air can generally be mitigated using common noise attenuation treatments to exclude noise from entering noise sensitive areas such as bedrooms and living areas where these areas are facing the noise source.

Vibration can however, cause noise effects to areas of the house which do not face the transport corridor. Referred to as regenerated noise, this is caused where ground vibration causes the building structure to vibrate and create noise within the building. This means that specific treatments and design measures to address regenerated noise, may be necessary where ground borne vibration is a concern.

Lakes Revitalisation Strategy Acoustic Analysis summary of findings

As mentioned above, the draft Lakes Revitalisation Strategy Acoustic Analysis Report is currently a work in progress. The report will be made available to the public following its finalisation. The City's project team will work towards preparing **The Lakes Acoustic Guidelines** in the future which will aim to provide further clarification and direction with regard to the acoustic report's 'summary of findings'.

Transport and accessibility

The final section of the Background Report provides a thorough analysis of transport with regards to the Lakes study area.

Residents expressed a desire for accessibility to be improved and vitally for new development not to negatively impact on traffic levels.

As a result the assessment has responded appropriately and informed the recommendations listed within the Strategy on page X.

Importantly these actions are closely linked with the City of Cockburn Integrated Transport Plan Strategy Report

Transport

Streets within residential neighbourhoods provide a role and contribute to communities far beyond that of the needs of the car. If designed effectively, streets can enhance the general attractiveness and 'liveability' of a neighbourhood.

Liveability of an area can be enhanced through the aesthetics of the streets, spatial definition and good functionality for all transport modes including cycling, walking and driving. Well-designed streets can enhance the economic attractiveness of neighbourhoods and contribute to increased residential property values.

Residential development and the supporting road network was first established in the Lakes study area in the early 1980s and while the network still supports the locality, opportunities exist to revitalise the streets that are now approximately 35 years old. Accordingly this section provides a review of the networks current performance and provides recommendations to support future growth.

Aerial Photograph – Initial residential subdivision of the Lakes Study area 1981.



Pedestrians and cyclists

The number of Perth residents cycling to work or for pleasure has increased more than fivefold over the past 15 years and the trend is expected to continue. The vision of the *Department of Transport's Western Australian Bicycle Network Plan 2014-2031* ('WABN') is to make WA a place where cycling is safe, connected, convenient and a widely-accepted form of transport. The State target is to double the number of cycling trips in WA within five years. The objectives of the WABN Plan take a whole-of-government approach to cycling, which includes:

1. *Build evidence and demonstrate the benefits of cycling for the community;*
2. *Encourage cycling to build active and healthy communities;*
3. *Provide a high-quality, interconnected bicycle network;*
4. *Improve the level of safety for people cycling; and*
5. *Build and enhance relationships with advocacy groups and stakeholders.*

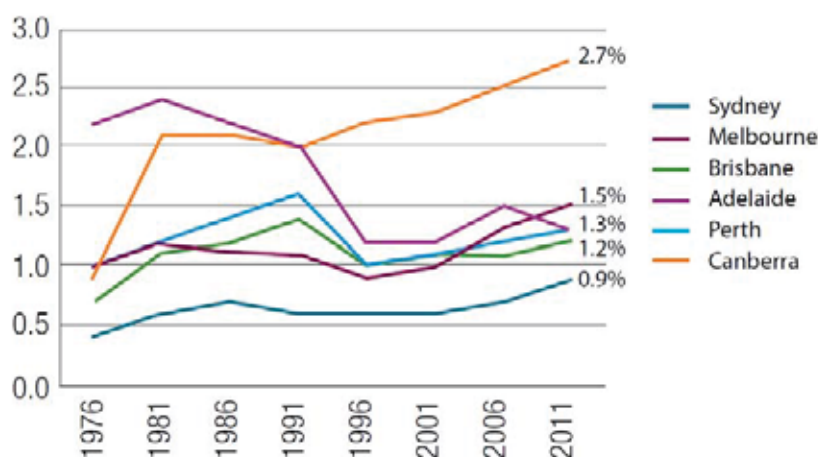
The above 5 objectives are very much supported by the City of Cockburn and form a guide to the 'Recommendations for Bike & Pedestrian Planning', as outlined below in this report.

Existing Cyclist Volumes

Main Roads Western Australia and the *Department for Planning* separately undertake annual counts of cyclist which includes areas around the Perth CBD, Fremantle and other selected locations. Unfortunately, counts are not undertaken by the *Department of Planning* or *Main Roads Western Australia* within the City of Cockburn.

According to baseline data established for the *National Cycling Strategy 2011-2016: gearing up for active and sustainable communities*, Western Australia ('WA') has cycling participation rates significantly higher than the national average.

Cycling rates – journeys to work by capital city 1967-2011 (source: WABN).



Approximately 22 per cent of Western Australian residents cycle in a typical week (year 2011 data). It is encouraging to note that the national cycling survey revealed WA has one of the highest national levels of participation among children with roughly 57 per cent of children aged less than 10 years old and about 45 per cent of children aged 10-17 riding each week.

In a typical week 77 per cent of people who cycle do so for recreation, again a significant higher rate than the national average. Also in a typical week, about 159,000 people in WA make at least one trip for transport purposes, including riding to work, education, shopping or visiting friends and relatives.

“Across the developed world, there are a number of constant factors in travel behaviour, which have not changed noticeably in decades. Among these are that most car journeys are short enough to be walked or cycled (Moving Australia 2030).”

Perth’s relatively flat topography and Mediterranean climate, characterised by moderate rainfall, hot summers and mild conditions over the rest of the year, make it ideal for cycling. As a mode of transport, cycling provides numerous benefits for individuals and communities, broadly falling into three categories those being economic, environmental and social.

Benefits of increasing cycling in the community (source: WABN).



Current government initiatives to encourage cycling and community social interaction

‘Travel-Smart’ and ‘Your Move’ are two programs instrumental in inspiring local residents to opt for active travel modes for short trips in and around the City. Travel-

Smart is a state government initiative which is provided at a local level by the City's Travel-Smart Officer and provides a suite of initiatives and events to City employees, local schools and the local community.

The City's Travel-Smart Officer has worked closely with staff from the *Department of Transport* and the *Department of Sport and Recreation* to see the development and provision of 'Your Move'. 'Your Move' has resulted in over 10,000 Cockburn households setting personalised goals to motivate them to switch car trips to active modes and increase physical activity by providing highly personalised information, feedback and support.

The City's Travel-Smart officer has close contact with primary schools by engaging them with the 'Travel- Smart to School' program. The City supports schools to engage their teachers, parents and children in becoming more active for the school day commute by leaving their cars at home.

Children who ride, scoot, walk and take public transport to school benefit in many ways, additional minutes of physical activity, they engage with their surroundings, they can have a greater sense of confidence and connectedness to the communities and also develop an understanding and an interest in the concepts surrounding sustainability.

Parents who accompany their children by bike or on foot act to reduce the congestion on local roads and make roads safer for their school communities. The City Travel-Smart program provides small grants to schools to hold special event days to promote 'National Ride to School Day', 'Walk Safely to School Day', 'Walk Over October' and Walk to School Day to inspire and celebrate year round achievements of families who opt for active travel

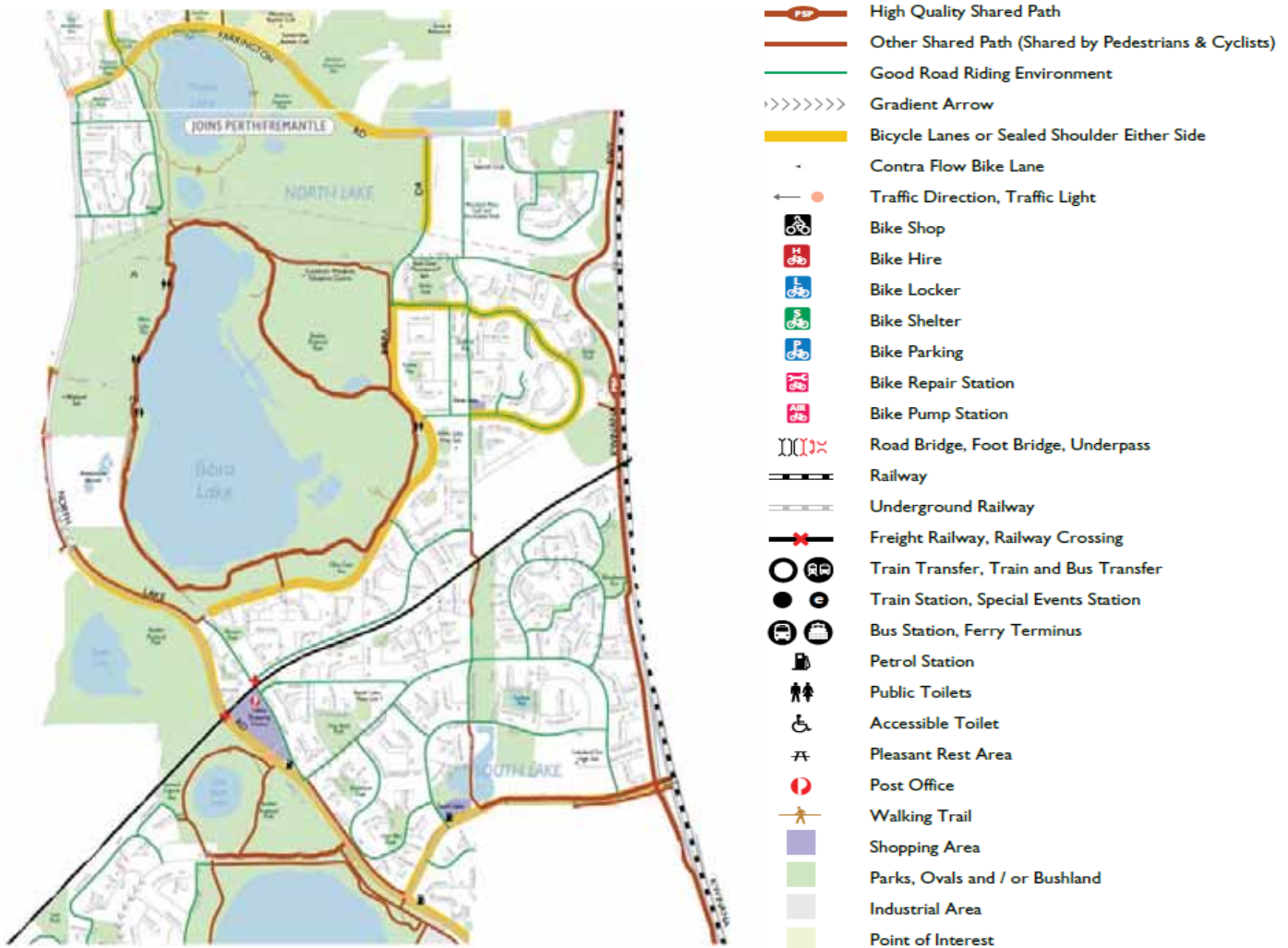
The Role of the Local Government in the delivery of the Western Australian Bicycle Network Plan

With State Government support, the City of Cockburn is responsible for providing and maintaining bicycle facilities within the City of Cockburn. The *Department of Transport* is currently working with the City of Cockburn to complete new Local Bicycle Routes (LBR) through the *Perth Bicycle Network Local Governments Grants Program*. The responsibility of the City of Cockburn with regard to bicycle planning, as set by the State Government, includes the following tasks:

1. *Manage and maintain local cycling facilities to appropriate standards.*
2. *Complete and maintain local bicycle plans and ensure that they integrate with the WABN Plan and neighbouring LGA plans.*
3. *Ensure that the design of all roads, parks and other council facilities include adequate consideration of cyclists.*
4. *Ensure land is set aside along river foreshores for completion of the Recreational Shared Paths network.*

- Incorporate the requirement to provide end of trip facilities in buildings within local government town planning schemes.

Existing major bicycle infrastructure and bike map for the Lakes study area (Source: Department of Transport)



The above image makes reference to ‘Principal Shared Paths’ and displays ‘Local Bicycle Routes’. For ease of reference and consistency these terms are defined below:

Principal Shared Paths (PSPs):

These high-standard routes are for longer, more direct trips between centres with minimal interruptions from other traffic and are strategic links into urban corridors. A standard PSP is 3-4 metres wide, as straight and flat as possible, surfaced with red asphalt with at least 0.5 metre compacted limestone shoulders. In addition, a 0.5 metre clearance from obstructions is required wherever possible and at intersections is adopted where feasible to give grade separation and uninterrupted access.

Local Bicycle Routes (LBRs):

LBRs aim to provide connections for cyclists to undertake purpose-orientated trips across the metropolitan area. LBRs tend to follow quiet suburban access roads and pass shops, schools and other local community facilities. It is intended that these routes link with the strategic PSP networks. LBRs allow less confident and less experienced riders to cycle in quiet traffic environments where continuity and speed are not as important as safety. Additionally, all local roads should be designed to cater for cyclists' needs and just because a road is not marked as a LBR it should not be precluded for consideration.

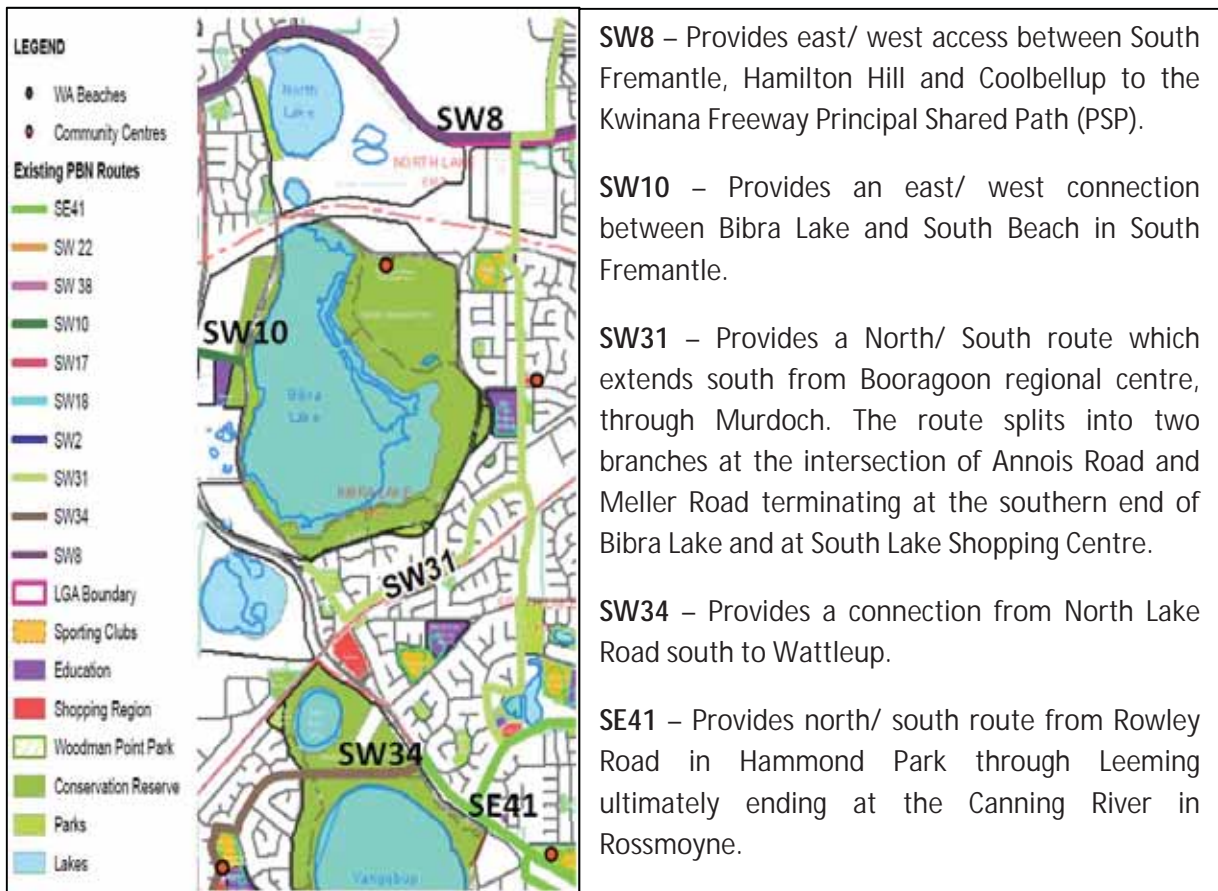
The City of Cockburn Bicycle and Footpath Plan 2010 provides an assessment of the City's pedestrian and cyclist networks. The plan identifies a range of built and non-built recommendations for improving the network, encouraging its use and monitoring future use. Opportunities exist to encourage walking and cycling through the upgrading of some of the pathway environments and to ensure important paths link with the wider network beyond the Lakes study area boundaries.

The Department of Transport has allocated \$45,000 to the City of Cockburn for the preparation of a City wide revised Bicycle Plan (source: Department of Transport 2015-2016 Awarded Projects). As the existing '*City of Cockburn Bicycle Network and Footpath Plan*' was prepared in July 2010 it is somewhat outdated and requires revision. The future revised Bicycle Plan project has not yet commenced however it is expected to be initiated at the end of 2015.

In early 2015 the City's Lakes study area project officers undertook a series of site inspections including bike tours to explore and rate the current bicycle networks within the Lakes study area. The below sections further identifies areas where the project officers consider bicycle network improvements are required, and includes some of the recommendations as outlined in the 2010 plan which have not yet been completed.

It is important to note that the future revised bicycle plan will include targeted community consultation as a separate process. The future revised bicycle plan will be focused on the City of Cockburn as a whole and therefore aspects of the plan will cover the Lakes study area.

This image illustrates the existing major bicycle routes within The Lakes study area (source City of Cockburn 2010 Bicycle Network and Footpath Plan)



Road intersection analysis, pedestrian and cyclist safety

Crash statistics maintained by Main Roads WA provides locations where potential safety issues exist for cyclists and pedestrians on the road network. In total there has been an average of 11.8 cyclist crashes and 13.6 pedestrian crashes from 2003 to 2007 within the City of Cockburn.

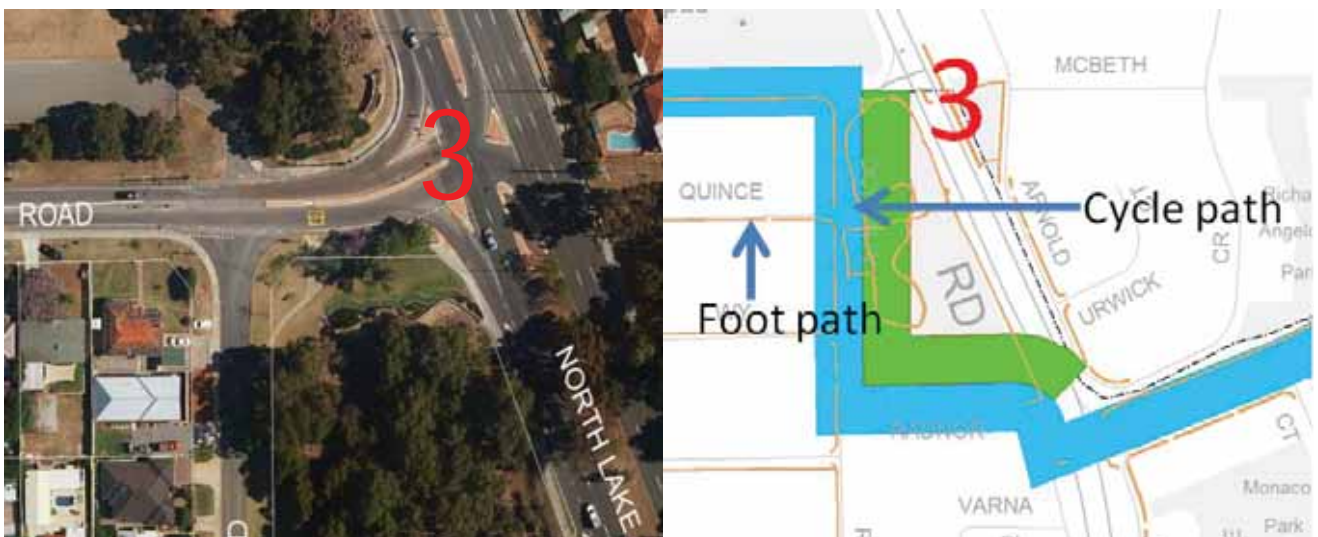
In total 6 intersections within the City’s top twenty intersections, ranked by frequency of crash, are on an existing Perth Bicycle Network route of which 3 are directly within, or within close proximity, to The Lakes study area. These locations are summarised in the below table.

Intersection located on existing Perth Bicycle Network involving crashes – The Lakes study area

| City Rank (out of 20) | Road 1 | Road 2 | Road 3 | PBN Route | Crash involving pedestrians | Crash involving a Cyclist |
|-----------------------|-----------------|-----------------|--------------|-----------|-----------------------------|---------------------------|
| 3 | North Lake Road | Winterfold Road | N/A | SW8 | 0 | 0 |
| 4 | North Lake Road | Gwilliam Drive | Forrest Road | SW10 | 0 | 1 |
| 6 | North Lake Road | Farrington Road | N/A | SW8 | 0 | 1 |

Whilst the number of cyclists and pedestrians involved in crashes at these intersections is relatively low the impacts of a crash on these vulnerable road users can be very high. These locations are large un-signalised intersections carrying high volumes of traffic including heavy vehicles. The below figures provide a visual representation of these locations.

Top 20 ranked intersections for crashes within the City of Cockburn that involved either a pedestrian or a cyclist – Item 3 – Corner North Lake Road and Winterfold Road.



Top 20 ranked intersections for crashes within the City of Cockburn that involves either a pedestrian or a cyclist – Item 4 – Corner North Lake Road and Forrest Road.



Top 20 ranked intersections for crashes within the City of Cockburn that involves either a pedestrian or a cyclist – Item 6 – Corner North Lake Road and Farrington Road.



The high volume of crashes at Give Way or un-signalised intersections suggests that at these locations motorists are perhaps not expecting to stop. This is coupled with the fact that the majority of crashes at intersections are ‘right angle’ crashes, which suggests that one or more of the parties are either failing to stop, give way or see the other party.

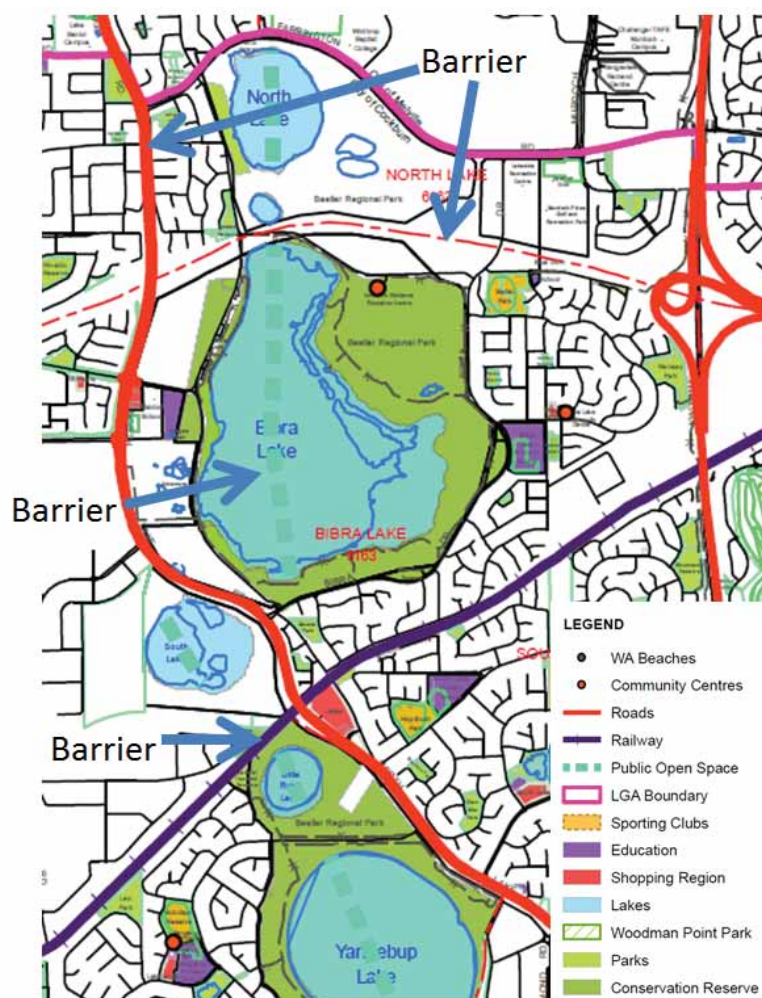
The above three intersections are within the City’s top 20 crash locations for the City of Cockburn. Intersections 4 and 6 are located on the existing Perth Bicycle Network route whilst intersection 3 on occasion is used by cyclists to cross North Lake Road.

Cyclists are required to use these intersections, either on road or off road. Most crashes reported by *Main Roads Western Australia* occurred at mid-block locations suggesting that there may be a lack of safe mid-block crossing facilities available within these locations. Opportunities exist for improvement in these three locations.

Physical Barriers to Walking and Cycling

Physical barriers to cycling can take a number of forms. Within the Lakes study area, barriers include significant road and rail infrastructure as well as large areas of regional open space. The below image outlines the regional barriers to cycling and pedestrian movement.

Barriers to cyclist & pedestrian movement at a regional level



Whilst none of the barriers identified within the above figure may actually prevent people from cycling or walking for a particular trip they often discourage the use of these modes. Physical barriers can discourage the use of these modes by adding a significant distance to a trip or through the creation of a hostile environment for pedestrians and cyclists.

Significant physical barriers to walking and cycling within and surrounding the Lakes study area include:

1. Roe Highway (future extension – shown as a dashed red line in above figure).
2. Freight Railways
3. Regional Parks surrounding North Lake, Bibra Lake, South Lake, Little Rush Lake and Yangebup Lake
4. North Lake Road

Along many major roads signalised intersections represent the most common opportunity to cross. Where intersections do not include pedestrian crossing facilities (ramps, signals etc) potential barriers to pedestrian and cyclist movements can occur. It is important to note that physical barriers to walking and cycling are likely to be interpreted by each individual differently. What one person may perceive as a barrier may not be a barrier to another.

The freight railway presents a significant physical barrier to cyclists and pedestrian movement between Bibra Lake and South Lake. Only two railway crossing locations are located within the Lakes Study area, the first is in the vicinity of Annois Road/ Apará Court and the second in the vicinity of Meller Road/ Little Rush Close. This second crossing is particularly important as it is located in close proximity to the Lakes Shopping Centre and provides access to the centre from the Lakeside Retirement Village to the north of the line. Both intersections require improvements.

Aerial photograph and street view of Annois Road/ Apará Court railway crossing – (SW 31)



The City's planning officers investigated the above site in early 2015 during the background study bike tour. It was noted that the City's bike path classification

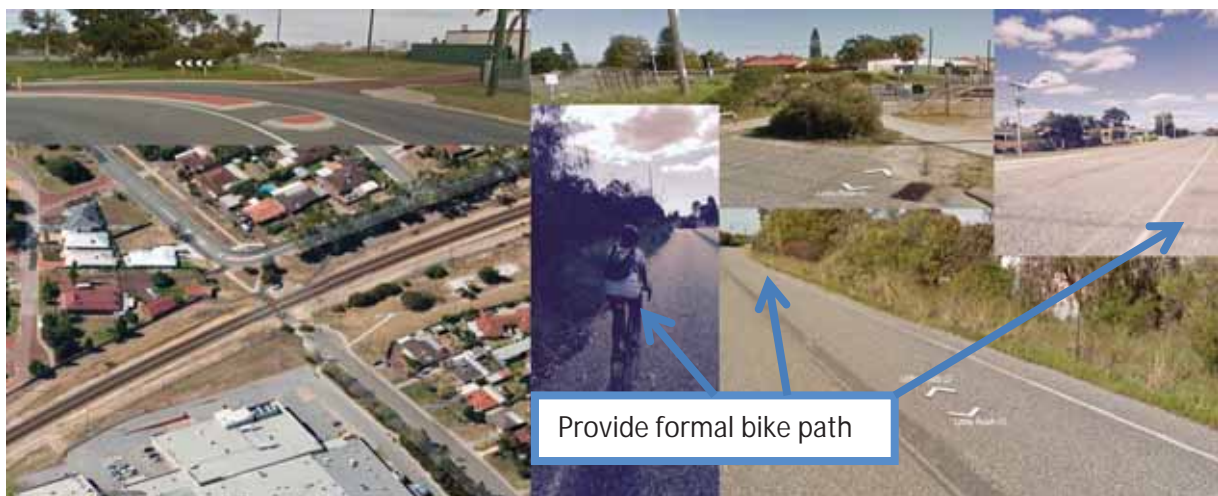
signage, in this location and throughout the study area, is particularly small and in the officers' opinions signage could be improved.

Signage improvements should be focused on size, placement and information provided. Improved signage is likely to encourage increased cycling activity by providing information to cyclists regarding trip distances and destination points, particularly for inexperienced cyclists.

This stretch of the SW31 extends beneath the above ground Western Power heavy duty 330kV lines and through a heavily vegetated area. From the road cyclists or pedestrians unfamiliar with the area would be unaware of the purpose of the path and its destination point.

The railway crossing in its current design is considered to be unsafe. The path should be re-aligned to perpendicularly meet the formal railway crossing rather than bend towards the formal crossing within 1 metre of the railway line. Coupled with debris and sand coverings the current path/ railway intersection design encourages crossing the railway line in an unsafe manner and potentially creates a tripping hazard.

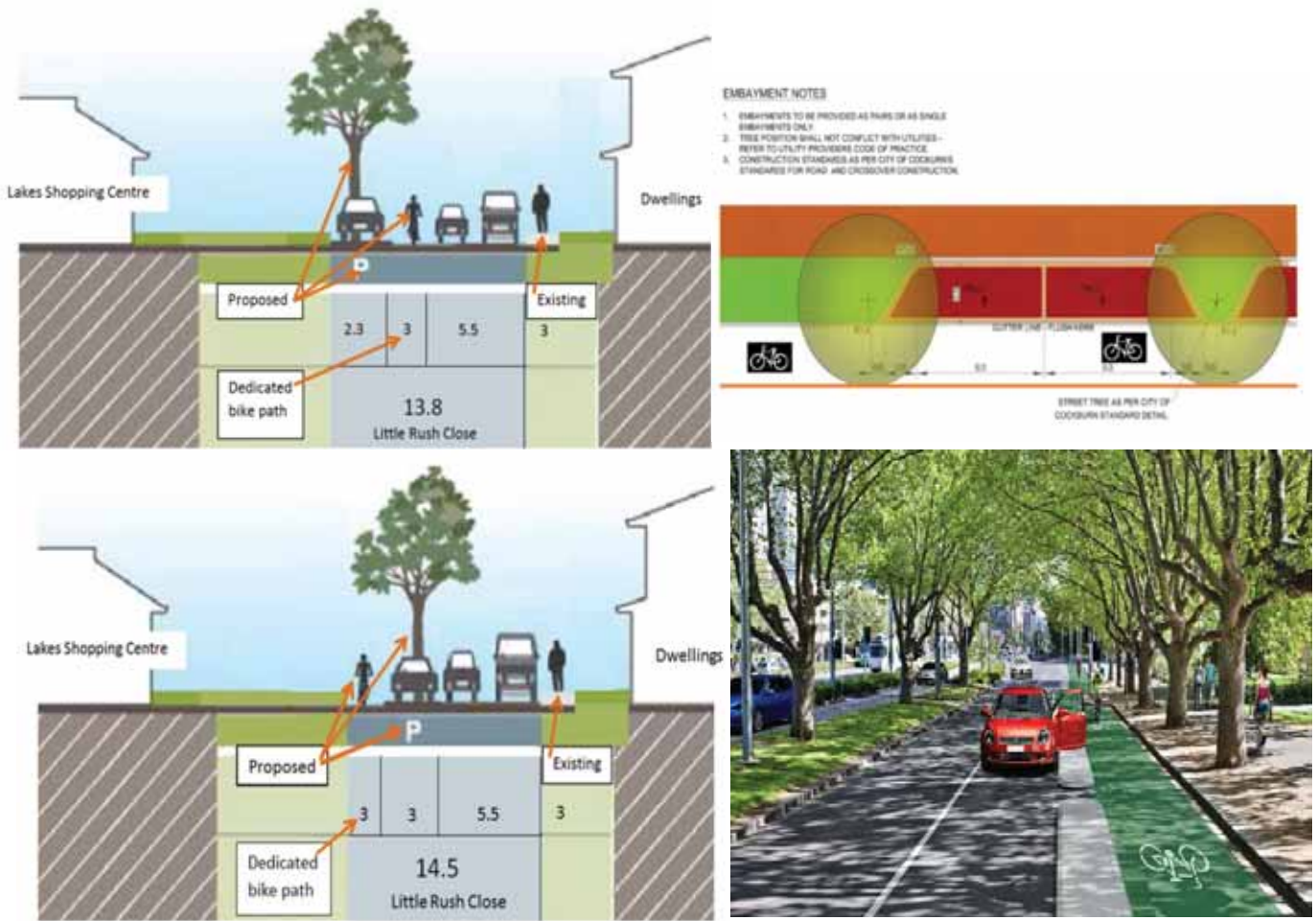
Aerial photograph and street view of Prout Way/ Little Rush Close railway crossing.



Little Rush Close is sufficiently wide to accommodate a formal bike path. Vegetation maintenance is also required as is evident from the above figure. On street parking could be provided too to narrow the street which will reduce motor vehicle speeds and provide a safer environment for cyclists and pedestrians.

The below cross sections offer two indicative design concepts for Prout Way/ Little Rush Close to help improve the cyclist and pedestrian environment which would ultimately contribute to state objectives 1-4 and local objectives 1-5 of the WABN.

Preliminary indicative cycling, pedestrian and community improvement concepts for Little Rush Close (see recommendation # 4).






The Lakes themselves and the surrounding green space can form a barrier to pedestrians and cyclists wishing to travel east-west across the City. A limited network of paths currently provides access around the lakes that can be used to travel in an east west direction.

Further improvement options to the cycling and pedestrian environment

The City of Cockburn Bicycle and Footpath Plan 2010 includes recommendations within the Lakes study area that require infrastructure to be constructed, signage or line marking to be provided. The below mentioned improvements, as identified in the 2010 plan, have not been undertaken to date. The implementation of these recommendations will improve the cycling and pedestrian environment within the Lakes study area.

Bike planning recommended improvements table – Extracts from the CoC Bicycle and Footpath Plan 2010.

| ID # | ID – Pursuant to the City of Cockburn Bicycle and Footpath Plan 2010 | Description of works identified by the City of Cockburn Bicycle and Footpath Plan 2010 | Locational map |
|------|--|--|---|
| 1 | B5 – North Lake Road | <p><u>Description:</u> Marking of the existing path as a Shared Use Path (SUP) on the northern side of North Lake Road from Semple Court to Berrigan Drive.</p> <p><u>Purpose:</u> This will improve access along North Lake Road to the Lakes Shopping Centre and improve connectivity between SE41 and SW34/SW31.</p> |  |
| 2 | B15 - Extension of SW34 | <p><u>Description:</u> Extension of PBN route SW34 north along North Lake Road to the Lakes Shopping Centre.</p> <p><u>Purpose:</u> Currently SW34 terminates at the intersection of Osprey Drive and North Lake Road. By extending it north approximately 600m this route will now terminate at a trip attractor. Alternatively the footpath along North Lake Road through to Little Rush Close could be upgraded to a formalised bicycle path.</p> |  |
| 3 | Coleridge Place | Provision of new footpath through the core of this residential cell along Coleridge Place in North Lake. |  |

General maintenance and improvement requirements throughout the Lakes study area.



City of Cockburn Integrated Transport Plan Strategy Report – Cycling ‘Hot Spots’ analysis

The City of Cockburn has a combination of on and off-road cycling facilities as shown in the image titled *Existing major bicycle infrastructure and bike map for the Lakes study area* (Source: Department of Transport as shown earlier in this report).

A principal Shared Path (PSP) along the western side of Kwinana Freeway serves as a major north-south connection for Cockburn cyclists. The community has raised concerns that there is currently a lack of east-west connection to the PSP on Kwinana Freeway. The desired connections include Farrington Road, Hope Road, Armadale Road, Forrest Road (via Bibra Lake and Hope Road), Rowley Road and across North Lake Road.

In addition, there is a need to improve cycling access to key coastal destinations, particularly Woodman Point and Coogee Beach. A continuous path from Beeliar Drive on to Mayor Road and to the AMC Henderson Marine Facility was also identified as an item of interest. Other concerns include the following:

1. Cycle lanes terminating short of intersections
2. Lack of maintenance on existing pathways.
3. Desire for continuous paths on busy arterial roads, such as North Lake Road, Stock Road, Cockburn Road and Russell Road.
4. Rails/ ‘U’-bars restricting access to paths.

The below table identifies the cycling ‘hot Spots’ that are of particular concern for the community of North Lake, Bibra Lake and South Lake as derived from the community collaborative analysis which was extracted from the City of Cockburn Integrated Transport Plan in 2014.

The City applies for PBN funding, as mentioned earlier, on an annual basis and is relatively successful at obtaining grant funding to implement cycling infrastructure in Cockburn. The City of Cockburn is responsible for providing and maintaining bicycle infrastructure within the City of Cockburn. The below tables and figures are reflective of the responsibility of the City of Cockburn as set by the State Government. In particular the below table and figures provide specific examples within the Lakes Study area where the City of Cockburn should;

- 1. Manage and maintain local cycling facilities to appropriate standards.**
- 2. Ensure that the design of all roads, parks and other council facilities include adequate consideration of cyclists.**

The below table should be read in conjunction with the following site map and site photographs for ease of reference and clarity.

The Lakes Study area community cycling ‘Hot Spots’ of concern.

| Site | Location | Community Comment | Officer Comment | Proposed Action |
|-------------|--|--|---|--|
| 1 | Farrington Road north of Waugh Court | <i>“Farrington road intersection disappearing cycle lane. Demarcate cycle lane on road”.</i> | The below photograph ‘2’ of this site demonstrates the ending of the cycle lane as the vehicle slip lane emerges. | Appropriate line markings or signage to be implemented in this location. |
| 2 | Radnor Way/ North Lake Road at Farrington Road traffic lights intersection | <i>“Remove barriers to direct access from Farrington Road, put traffic calming and clear signage each side of cycle path entry to protect cyclists”.</i> | The below photograph ‘1’ of this site demonstrates a car dominated environment with bicycle and pedestrian access as a secondary consideration. Farrington Road is on the City of Cockburn major bike path ‘SW8’ which provides cyclists with an important east west access between South Fremantle, Hamilton Hill, Coolbellup, North Lake AND Bibra Lake to the Kwinana Freeway PSP. It is therefore considered appropriate to improve the environment in favour of cyclists and | This crossing (photograph 1) should be widened and the barriers removed/ or improved. The road treatment should be colour coded or marked to inform motorists that the crossing is for cyclists and pedestrians. Signage may be of great assistance in achieving this objective. |

| | | | | |
|------|--|---|--|--|
| | | | pedestrians. | |
| 3(a) | Monaco Avenue/ Masefield Avenue corner in North Lake. | <i>“Cycle connection to Masefield Ave needs to be more direct, and traffic calming put before the corner in both directions.”</i> | The indirect nature of the path is reflective of the gradient of that stretch of the land. It is unlikely that the City could improve the gradient or connectivity of this stretch of the bike/ pedestrian path. | Traffic calming or line marking recommended for the Monaco Avenue/ Masefield Avenue corner in both directions. |
| 3(b) | North Lake Road closest to Cordelia avenue/ Monaco Avenue | <i>“Cycle crossing at North Lake Road needs to be enlarged and improved. A bridge would be even better.”</i> | The path is consistent with the standard path width. The vegetation however may result in sightline issues. | Provide appropriate road demarcation/ markings on North Lake Road at this bicycle intersection to advise road users of the bicycle/ pedestrian path. The markings should encourage motorists to consider the safety of cyclists and pedestrians. |
| 4(a) | Railway crossing Prout Way and Little Rush Close | <i>“Railway crossing needs to be more cycle friendly – i.e smooth out the crossing, and remove ‘cycle demount’ signs. The Dutch can do this!”</i> | Any changes to this crossing will require Public Transport Authority approval. | The City to discuss with the PTA the possibility of improving the crossing to better serve cyclists and improve the cycling environment but not to compromise on safety. |
| 4(b) | Railway crossing Prout Way and Little Rush Close | <i>“Cycle path to be improved. Needs widening, smoothing and removal of ‘U’-bar, which is redundant”.</i> | It is agreed the U-bar serves no purpose in this location. | The Lakes background report provides for ‘recommendation 4’ which proposes an upgrade to Little Rush Close and Prout Way. The proposed design aims to widen the cycle/ pedestrian path and provide for traffic calming. The ‘U’ bars should be removed as it serves no purpose as motor vehicles are restricted in this location as the cul-de-sac ends and the railway crossing fences prohibit vehicles crossing this path. Also a cul-de-sac is a low |

| | | | | |
|----|--|---|--|--|
| | | | | speed environment. |
| 5 | Freight Railway Line | <i>“New shared path along rail reserve would provide direct link to freeway shared path from Yangebup and South Lake”.</i> | From a cycling infrastructure provision there may be merit with this suggestion. The obvious concern is safety and liability in relation to a path adjacent to high speed trains, particularly under bridges where the reserve is narrow. Residents from Yangebup and South Lake currently have access to paths south of Bibra Lake and via Discovery Drive in Bibra Lake. | The railway reserve falls within the control of the State government and falls beyond the scope of the project. Notwithstanding the City should discuss this option in detail with the Public Transport Authority. Alternatively the footpath along Discovery Drive could be demarcated to be a shared use path to provide access to Kwinana Freeway from Yangebup and South Lake. |
| 6. | Principal Shared Path west of Kwinana Freeway east of Virgilia Terrace | <i>“Little kink in Principal Shared Path is dangerous, you cannot see traffic ahead, cyclists cut corner to maintain speed up the hill or going too fast downhill”.</i> | The below photograph ‘7’ of the site shows acute angle of this stretch of bicycle path. The vegetation limits sightlines and accordingly this section appears to be unsafe when used by two passing cyclists particularly at high speeds. | The City to discuss safety improvement options with the State government. |
| 7. | Principal Shared Path west of Kwinana Freeway east of Jindabyne Heights/ Wapengo Close in South Lake | <i>“Bushes at all ‘T’ intersections on cycle-way need clearing or regular trim for visibility when giving way”.</i> | The below photograph ‘6’ of the site shows the trees overgrowing and causing sight line and therefore safety issues. | The City to clear or to request that the State government clear/ maintain sight lines by reducing/ removing vegetation close to the edges of corners. This is to be an ongoing exercise or alternatively the vegetation to be removed or replaced as appropriate to ensure sightlines are adequate improved. |

The Lakes Study area community cycling 'Hot Spots' of concern site map.



The Lakes Study area community cycling 'hot spots' of concern site images.



Recommendations to improve cycling and Pedestrian environments within the Lakes Study Area.

1. Undertake a vehicular safety review and implement safety measures to improve the four below mentioned road intersections for cyclists and pedestrians.
 - a) Intersection of North Lake Road and Winterfold Road (SW8).
 - b) Intersection of North Lake Road, Gwilliam Drive and Forrest Road (SW10).
 - c) Intersection of North Lake Road and Farrington Road (SW8). This intersection also requires vegetation overgrowth maintenance which currently obstructs pedestrian visibility.
 - d) Intersection of North Lake Road and Elderberry Drive.
2. Improve signage for all major 'SW' bike paths within the Study Area. Signage improvements should be focussed on size, placement and information provided. Improved signage should encourage increased cycling activity by providing information to cyclists regarding trip distances and destination points.
3. The Annois Road/ Aparra Court railway crossing should be re-aligned to perpendicularly meet the formal railway crossing rather than bend towards the formal crossing within 1 metre of the railway line. The path should be provided with curbing (closest to the railway line) to formalise the path and separate from the adjoining sand and debris. This location requires railway crossing safety signage and lighting should be provided at the intersection and possibly along the path to improve safety.
4. Little Rush Close & Prout Way should be modified to accommodate a dedicated/ separate formal bike path. Vegetation maintenance is also required along this road. On street parking or alternatively street trees should be provided to narrow the street width which will reduce motor vehicle speeds and provide a safer environment for cyclists and pedestrians (see the above cross sections for indicative details).
5. Line and image mark the existing stretch of path as a shared use path (SUP) on the northern side of North Lake Road from Semple Court to Elderberry Drive / Little Rush Close (See ID # 1 above – Table Bike planning recommended improvements table – Extracts from the CoC Bicycle and Footpath Plan 2010.).
6. Extend the Perth Bicycle Network route SW34 north along North Lake Road to the Lakes Shopping Centre (See ID # 2 above – Table Bike planning

recommended improvements table – Extracts from the CoC Bicycle and Footpath Plan 2010.).

7. Provide a new footpath through the core of North Lake along Coleridge Place (See ID # 3 above – Table Bike planning recommended improvements table – Extracts from the CoC Bicycle and Footpath Plan 2010.).
8. Public access ways (PAWs) within the lakes study area require vegetation maintenance, signage and the provision of bicycle symbol ground markings.
9. Bicycle symbol ground markings require maintenance / repainting throughout the Lakes study area.
10. Implement the seven ‘Proposed Actions’ as specified by *The Lakes Study area community cycling ‘Hot Spots’ of concern table*.
11. Implement, if not already done so, the upgrades to the ‘Bibra Lake Circuit’ (Project e) as identified by The City of Cockburn Trails Master Plan 2013. This involves 5 tasks as follows;

| Tasks |
|---|
| 1. Install <i>Lakes, Lookouts and Legends</i> trailhead signage at 4 locations: at trailhead on Progress Drive; at parking area near corner of Progress Drive and Bibra Drive; at Cockburn Wetlands Education Centre and at parking area on Bibra Drive (north of Parkway Road). |
| 2. Install promotional signage (double-sided) at corner Farrington Road / Progress Drive; North Lake Road / Farrington Road; Bibra Drive / Progress Drive; North Lake Road / Bibra Drive and double sided fingerboard at entrance to trailhead on Progress Drive. |
| 3. Install trail directional markers on posts with arrows with distance plates. (12) |
| 4. Install additional “Please Share” signage (x3). |
| 5. Install interpretive panels (see separate list) including panels on existing (old) bird hide. (Allow for 12 panels: 600mm x 350mm). <ul style="list-style-type: none"> • Research and writing • Design and manufacture • Graphics (photos and drawings) • Installation |

12. Implement, if not already done so, the upgrades to the ‘Little Rush Lake Trail’ (Project i) as identified by The City of Cockburn Trails Master Plan 2013. This involves 13 tasks as follows;

| Tasks |
|---|
| 1. Install <i>Lakes, Lookouts and Legends</i> trailhead signage at 3 locations: Proposed Parkes St trailhead; Osprey Drive entrance; and playground entrance (Grassland Loop). |
| 2. Install promotional signage (double-sided) on North Lake Road (opposite entrance to trailhead). |
| 3. Construct 10m asphalt path from proposed trailhead (at northern end of Parkes St) to existing path along North Lake Road. |
| 4. Construct 20m asphalt path from existing concrete path along North Lake Rd to existing crushed limestone trail. |
| 5. Install trail directional markers on posts with directional arrows (11). |
| 6. Install road crossing warning signage (on trail both sides of road and on Osprey Dr both sides of trail crossing). |
| 7. Construct 50m crushed limestone spur trail. |
| 8. Construct 10m viewing platform |
| 9. Revamp existing Beelihar Wetlands Heritage Trail artworks. |
| 10. Re-construct 30 crushed limestone trail |
| 11. Construct 15m boardwalk |
| 12. Construct bird hide at end of boardwalk |
| 13. Install interpretive panels (see separate list). (Allow for 1 panel: 600mm x 350mm). <ul style="list-style-type: none"> • Research and writing • Design and manufacture • Graphics (photos and drawings) |

13. Implement, if not already done so, the upgrades to the 'South Lake Trail' (Project q) as identified by The City of Cockburn Trails Master Plan 2013. This involves 9 tasks as follows;

| Tasks |
|---|
| 1. Install <i>Lakes, Lookouts and Legends</i> trailhead signage at 2 locations: near interpretive shelter off Bushland Ridge, and on western side near proposed access point from North Lake Road. |
| 2. Install promotional signage at cnr North Lake Rd / Discovery Dr (double-sided); cnr Discovery Drive / Sustainable Ave (single-sided); cnr Sustainable Ave / Bushland Ridge (single-sided) and fingerboard opposite entrance to trail; and opposite proposed new trailhead off North Lake Road. |
| 3. Fieldwork to confirm preferred trail route; interpretive sites; location of signs |
| 4. Consultation (with Council staff, DEC, other stakeholders; etc) |
| 5. Preparation of simple Trail Development Plan (including mapping; sign plans; sign designs; interpretive topics/sites) |
| 6. Allowance for installation of trail directional markers on posts with directional arrows (allow for 10). |
| 7. Allowance for trail construction and trail surfacing (750 metres). Note: path on western side of lake has been costed in Beelihar Lakes Trail improvements. |
| 8. Allowance for development of new trailhead off North Lake Road using existing access (management access gate) and limestone road. |
| 9. Install interpretive panels (see separate list). (Allow for 4 panels: 600mm x 350mm). <ul style="list-style-type: none"> • Research and writing • Design and manufacture • Graphics (photos and drawings) • Installation |

Public Transport

Physical inactivity costs Australia \$13.8 billion a year (Moving Australia 2030 - KPMG Econtech 2008). The direct annual health care cost incurred to treat the symptoms of inactivity was estimated to be \$719 million in 2007-08, and it is estimated that 16,178 Australians die prematurely each year due to physical inactivity.

Physical inactivity is a major contributor to the burden of chronic disease, including cardiovascular disease, and is an important driver of the overweight/obesity epidemic.

Despite greater understanding of the significant health burden of physical inactivity, it remains disturbingly prevalent in Australia.

The Heart Foundation has developed a Blueprint for an Active Australia outlining key action areas required to increase population wide physical activity levels to achieve community wide benefits in health, the environment, social policy and the economy.

Both the Blueprint for an Active Australia and the Australian Government's National Preventative Health Strategy have recognised that increasing walking and cycling for transport has significant potential to boost physical activity levels in Australia, but requires investment, cooperation, coordination and collaboration between different levels of government and other sectors, including transport (Moving Australia 2030).

Perth faces serious issues in the twenty-first century. These include high cost of providing services and facilities to cater for continued rapid expansion, the need for greater housing affordability, and a desire for greater social, economic and environmental sustainability, the need for more locally-based employment and the ability to provide public transport more efficiently.

The design and layout of a subdivision is a fundamental determinant of the urban forms which:

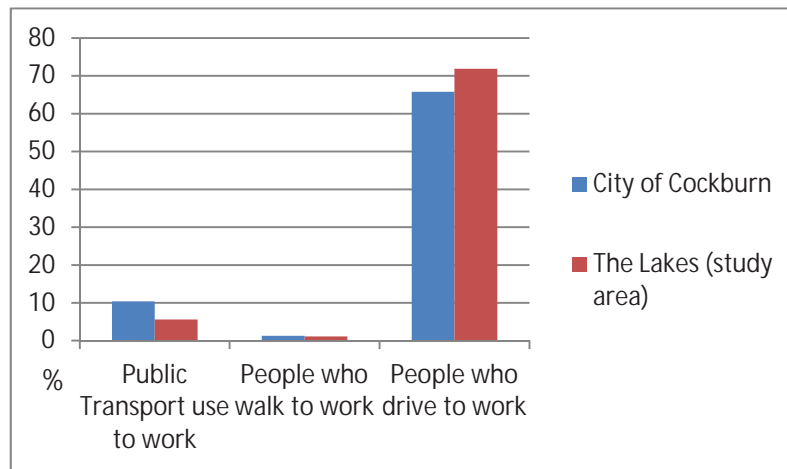
- Sets the urban character and design of an area;
- Allows or inhibits social interaction and therefore influences the likelihood of community formation;
- Forces car dependency or reduces it by encouraging the non-car modes of walking, cycling and public transport;
- Gives or denies access to facilities for all users of the urban environment; and
- Provides or prevents opportunities for locally based business and employment.

The Lakes Study area has a higher dependency of car usage than people using public transport to get to work each day. In comparison to the City of Cockburn average the Lakes Study area has a higher proportion of people who drive to work, as a passenger or as a driver, and a lower proportion of people that use public transport to work.

The proportions of people who walk to work in the Lakes Study area are relatively consistent with that of the City of Cockburn as a whole. The below figure identifies

that only 5.6% of residents within the Lakes study area use public transport to work where as 10.4% of residents within the City of Cockburn use public transport to work.

City of Cockburn and the Lakes Study area methods used to travel to work.



The Lakes study area is well connected to public transport with the area being serviced by five bus routes of which three services provide access to the Murdoch Station, Cockburn Central Station or the Fremantle Station. The local bus services provide public transport to two train stations, which intern provide residents with access to the wider metropolitan area. The above data possibly reflects the need for a behavioural change towards public transport and/ or the need to improve the infrastructure/ services to better suit local residents.

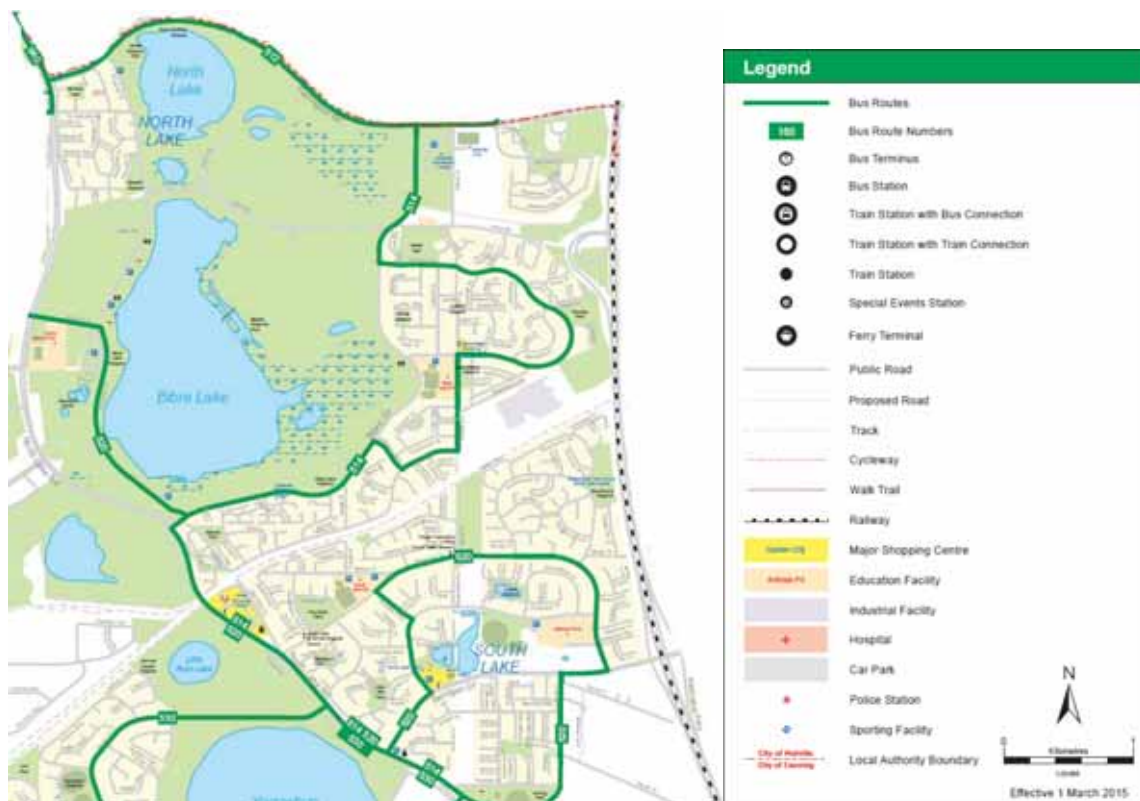
The bus routes are identified in the below table and image below. Important local community facilities are well serviced by public transport. Bibra Lake Primary School is serviced by the 514 service which runs from Murdoch Station to Spearwood Avenue/ Hamilton Road. This service runs centrally through the Lakes Study area along Bibra Drive, Parkway Road and Northlake Road which is within a 5 minute walking distances to most properties within the Lakes.

The 514 service runs directly past the Lakes Shopping Centre providing residents and students with direct access to the local shops, primary school and Murdoch Station. Along Northlake Road residents have access to the 520 service which connects from the 514 service extending centrally through South Lake past South Lake Primary School, Lakeland Senior High School and the Local Centre site at the corner of Berrigan Drive and South Lake Drive.

Current bus services within the Lakes study area.

| Bus Route numbers | Starting point | | Ending point | |
|-------------------|--------------------|-------------|------------------------------------|-------------|
| | Location | Stop number | Location | Stop number |
| 512 | Murdoch Station | 23718 | Spearwood Avenue/ Hamilton Road | 26869 |
| 514 | Murdoch Station | 23717 | Cockburn Central Station | 23635 |
| 940 | Esplanade Bus-port | 12212 | Hamilton Hill Hall | 25562 |
| 520 & 530 | Fremantle Station | 10432 | Cockburn Central Station | 23635 |

Transperth’s existing bus network map within the Lakes Study Area



Bus Stop Infrastructure

The Western Australian Local Government Association (‘WALGA’) has been working with the Local Government sector and negotiating with the Public Transport Authority (‘PTA’) for a number of years in an endeavour to clarify and advise on Local Governments involvement with regard to public transport bus stops infrastructure.

The *Bus Stop Infrastructure Partnership Agreement* was developed in conjunction with the PTA. The Agreement was approved by the WALGA State Council at its March 2015 meeting. The purpose of the Agreement is to define the roles and

responsibilities for providing and maintaining bus stop infrastructure. This agreement will assist in ensuring that investments by the PTA and Local Government in bus stop infrastructure deliver benefit to the community. In particular, the Agreement outlines the communication required between the PTA and Local Government before works commence at or around bus stops. The Agreement also details the responsibilities when bus stop infrastructure is upgraded, removed or relocated.

Through the negotiation phase of developing this agreement, the PTA has introduced a new subsidy known as the Bus Shelter Maintenance Assistance Scheme ('BSMAS'). In recognition of the costs incurred by Local Governments maintaining bus shelters, the PTA agrees to provide funding support to participating Local Governments under the BSMAS. Total funding for the BSMAS will be capped to a total of \$500,000 per annum. BSMAS payments will be made on a per shelter basis.

Integrated Transport Plan (ITP)

A month-long community engagement period during August 2013 was held in the course of the City of Cockburn's 'Integrated Transport Plan'. The community input was solicited using an online e-engagement tool called 'Collaborative Map'.

Users were able to add an unlimited number of comments to the map by category and were able to 'agree' or 'disagree' with comments posted by others on the map. Over the month-long engagement a total of 612 unique comments were posted. There were 938 visits to the website and 2,360 votes were made on the comments.

Public Transport was a key focus of the community during the collaborative mapping exercise. The below image shows the 'Hot Spot' locations where clusters of comments were raised. The darker the circle, within the below image, the greater number of comments.

The issues raised as a result of the survey which relate to the Lakes Study area can be summarised as follows;

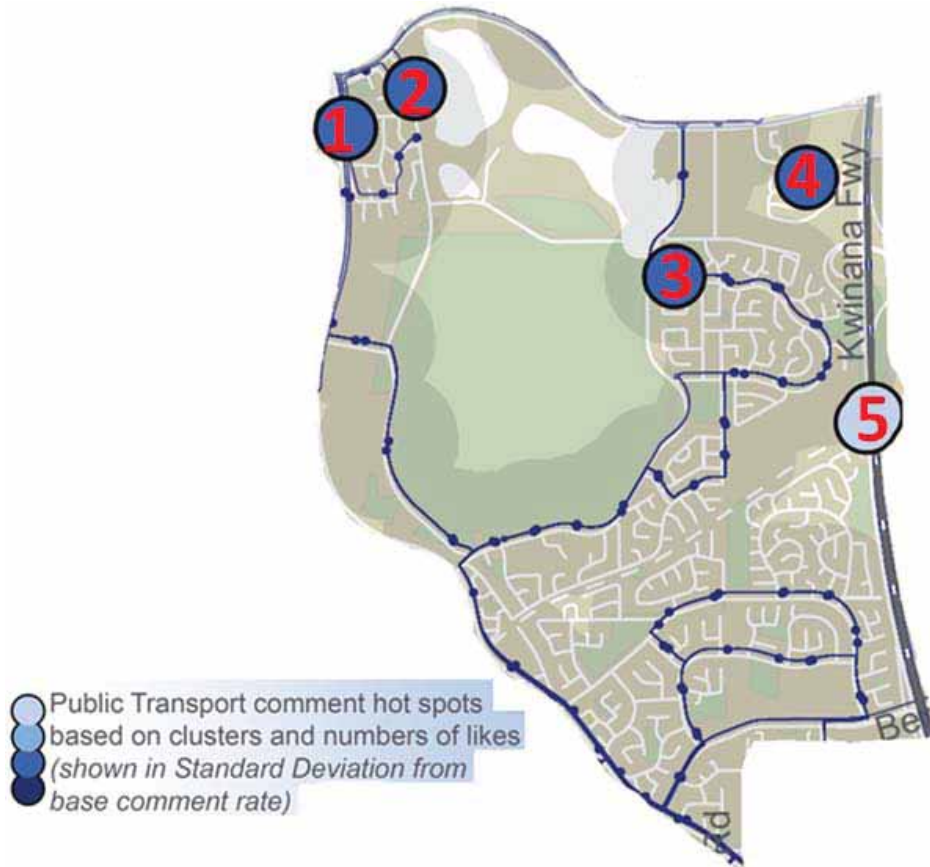
- 1. Bibra Lake: lack of public transport services to this employment node.**
- 2. General Comment: 'long travel times' and limited service coverage at evenings and on the weekends.**
- 3. General Comment: Cycle lanes terminating short of intersections**
- 4. General Comment: Lack of maintenance on existing pathways.**
- 5. North Lake Road: desire for continuous paths on the busy arterial road.**
- 6. General Comment: Rails/U-bars restricting access to paths.**

The collaborative mapping exercise as produced by the ITP in 2014 included a brief questionnaire on current travel patterns and reasons for using a chosen travel mode. The two key lessons learnt, which applies to the City of Cockburn as a whole, include the following:

- 1. Car use is high because motorists do not have public transport as an available alternative.* This is either a perception requiring more information on available public transport options to be made available or that there are limited public transport options available and the existing options require improvement.

2. Convenience is a strong reason why some people chose non-car travel modes.

Collaborative Map –Public transport comments overlaid with the existing public transport network within the Lakes Study Area



The Lakes Study area community public transport ‘Hot Spots’ of concern.

| Site | Location | Community Comment | Officer Comment | Action |
|------|--|---|--|--|
| 1 | South of Waverley Road and North Lake Road intersection. | “A bus service all the way along North Lake Road from end to end is lacking”. | The 940, 513, 512 and 520 services provide a service to North Lake and the land to the west of the Lakes study area. None of these services follow North Lake Road from end to end. North Lake is classified as a ‘District Distributor A’ road. | Consult with the Public Transport Authority to investigate whether it is possible to modify existing services or provide a new service to travel along North Lake road. This is to be undertaken by the City’s travel smart officer in |

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| | | | | consultation with the Strategic Planning department. |
| 2 | Progress Drive | <i>“Need public transport for the locals to get to the train station, especially the elderly.”</i> | Progress Drive is approximately 800 metres in length. North of Progress drive is serviced by the 512 bus which travels along Farrington Road. From the 512 bus the 514 bus is accessible from Farrington Road/ Murdoch Drive. The 514 service travels from Murdoch Station to Cockburn Central Station. Accordingly the current 512 and 514 provide residents along Progress Drive with public transport to the train station. The footpath provision along Progress Drive and Farrington Road appear to be in good condition. Progress drive has been modified to provide for chicanes as a traffic calming device. Accordingly the pedestrian environment is considered to be acceptable and not in need of immediate improvement. | No direct action recommended. Possibly more promotion of the current and planned public transport services would be of benefit to the community. This is to be undertaken by the City’s travel smart officer in consultation with the Strategic Planning department. |
| 3 | Parkway Road east of Bibra Drive. | <i>“514 buses are too few in number. Coming every hour is too large a window. Would appreciate a direct bus to/ from the City like in the past.”</i> | It is noted that the bus service comes every hour on weekdays, weekends and also on public holidays. | Consult with the Public Transport Authority to investigate whether it is possible to increase the frequency of the 514 bus service. This is to be undertaken by the City’s travel smart officer in consultation with the Strategic Planning department. |
| 4 | Allendale Entrance subdivision. | <i>“No Public Transport (buses) in this subdivision”.</i> | The Allendale Entrance subdivision falls outside the scope of the Lakes Study area. Notwithstanding the subdivision is within a maximum 700 metre walk from Farrington Road which provides access to the 512 bus service which terminates at Murdoch Station commencing | No direct action recommended. |

| | | | | |
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| | | | from Spearwood Avenue/ Hamilton Road. | |
| 5 | Kwinana Freeway and freight line intersection Bibra Lake/ Jandakot. | <i>“Intersection of 2 rail lines. Passenger function to Fremantle and Airport needs to be added to this existing freight line.”</i> | Freight lines cannot service the community in a public transport capacity. This issue falls beyond the scope of the Lakes Project. | No action recommended. |

Recommendations for Public Transport improvements and increasing Public Transport patronage within the Lakes Study Area.

1. Undertake an audit and prepare a plan to upgrade ‘core bust stop infrastructure’ (as defined by the Partnership Agreement between WALGA and the Public Transport Authority paper) including bus stop poles, level concrete hard-stand passenger boarding area at correct height, tactile ground surface indicators and appropriate connecting concrete pathways. The first stage of upgrades should focus on the local centre shop sites and those stops closest to primary and high schools. This is to be undertaken by the City’s engineering services in consultation with the Strategic Planning department.
2. Promote the use of Co-funded ‘TravelSmart’ programs, to residents and their employers, which are currently administered by the Department of Transport which encourages travel behaviour change in targeted workplaces, schools and neighbourhoods. This it to be undertaken by the City’s Travel Smart Officer in consultation with the City’s Strategic Planning Department.
3. Support active living and ageing principles by funding implementation of the Healthy Spaces and Places initiative. Strategic Planning to prepare a working concept targeted at the Lakes Study area.
4. Support programs that encourage active travel to school. This it to be undertaken by the City’s Travel Smart Officer in consultation with the City’s Strategic Planning Department.
5. Implement the three identified actions as prescribed by the above table - The Lakes Study area community public transport ‘Hot Spots’ of concern. The responsibilities of these tasks are outlined within the table.

Road Safety and congestion

Current traffic conditions in the City of Cockburn involve pronounced peak traffic conditions during weekday commuter peaks and in the lead up to long weekends due to people travelling south along Kwinana Freeway. North-south heavy vehicle flow between western industrial areas such as Henderson and Fremantle, and east-west between the Kwinana Freeway and Fremantle, also affect the overall congestion within the transport network in the City of Cockburn.

Existing road hierarchy within the Lakes Study Area



The City of Cockburn's Integrated Transport Plan Strategy Report, which was published in 2014, revealed the City of Cockburn community's concerns in relation to road safety. The concerns raised by the community were received from the entire municipality area which includes the Lakes Study area.

The below image shows the road safety comments raised by the Cockburn community in 2014 overlaid over the actual crash data (sourced from Main Roads Western Australia) for the period 2008 to 2012 specific to the Lakes Study area.

The below figure shows a clear correlation between community views on locations where road safety is an issue and actual crash occurrences. This is not surprising given that congestion can lead to safety issues mainly stemming from driver impatience and frustration. Examples include travelling too close to the vehicle in

front (i.e. tailgating), speeding through signalised intersections, running amber/ red signals, picking insufficient gaps to enter the major traffic stream from side streets/ driveways and traffic queues blocking intersections.

Collaborative mapping road safety comments (2014) overlaid on MRWA crash records (2008-2012)



The City of Cockburn annually applies for, and is successful in obtaining, Black Spot Program grant funding from Main Roads WA for road safety improvements. Projects recently completed under the Black Spot Program within, or in close proximity to, the Lakes Study area include the following:

- Instillation of signal mast arms on North Lake Road at three intersections.
- The instillation of a roundabout at the intersection of North Lake Road and Bibra Drive in Bibra Lake. The roundabout is expected to lower vehicle travelling speeds through the intersection and improve the efficiency of the intersection by providing safe gaps in the flow of traffic for right hand turning manoeuvres.
- North Lake Road/ Osprey Drive – adding a left turn pocket in Osprey Drive and extending the right turn pocket to North Lake Road including traffic signal modifications and installation of traffic masts. This included kerbing and footpath reinstatements.
- North Lake Road – Kentucky Court to Hammond Road duplication of the carriageway and removal of overhead power lines. This stretch of North Lake Road falls outside the Lakes Study area.

Previous North Lake/ Bibra Drive intersection (L) with the recently installed roundabout intersection treatment (R).



Safety improvement options for all transport system users

The Community has expressed concerns that there are road safety issues in the City of Cockburn. These are identified by the wider community as follows:

- Speeding on residential streets
- Lack of pedestrian footpaths and pedestrian crossings
- Close intersection spacing and poor traffic signal coordination causing rear-end collisions.
- Issues around schools, such as vehicles parking on footpaths, motorists exceeding 40km/h in school zones and a need for more dedicated off-street parking.
- Localised issues where roundabouts, stop signs, turning pockets or signals need to be introduced.
- Poor road geometry, such as blind corners and motorists speeding around curves.
- Long delays to access busy roads such as Beeliar Drive, from side streets.
- Maintenance issues relating to road surfaces and obstruction of sight distances by roadside vegetation.
- “Hooning” behaviour in residential streets.


The red numbers within the above image – (*Collaborative mapping road safety comments (2014) overlaid on MRWA crash records (2008-2011)*) correlates to the below table which provides a snapshot of the current issues, as described by the Cockburn Community, associated with the Lakes Study area.

The Lakes Study area community congestion and motor vehicle congestion 'Hot Spots' of concern.

| Site | Location | Community Comment | Officer Comment | Recommended Action/ Engineering Response |
|-------------|---|---|---|---|
| 1 | Waverley Road and North Lake Road intersection | <i>"Motorists do not keep a clear way for those of us who need to turn left and then right into Farrington Road."</i> | This site falls outside of the Lakes Study area however it is expected that the impacts of this intersection will hinder the residents within the Lakes Study Area. | <p>Traffic on North Lake Road (the major road) has priority over Waverley Road (the minor road) and is not required to give-way to Waverley Road traffic. It should always be anticipated that vehicles exiting a minor road onto a major road is likely to be delayed to some degree, particularly during peak hours.</p> <p>This location shall be monitored because it is expected that if Roe Highway is extended to Stock Road, with an interchange at North Lake Road, then the volume of traffic turning right into Farrington Road will reduce significantly and there should also be greater gaps on northbound traffic on North Lake Road, making it easier to turn in/ out of Waverley Road.</p> |
| 2 | North Lake Road and Bibra Drive intersection | <i>"During peak hour the Bibra Drive/ North Lake Road intersection is very dangerous, especially for traffic trying to leave Bibra Drive onto North Lake Road."</i> | As part of a successful State Blackspot Grant funding the City of Cockburn in April 2015 installed a roundabout, at this intersection, to improve safety by providing safe gaps in the flow of traffic for right hand turning manoeuvres. | No further action required following the instillation of the roundabout. |
| 3 | North Lake Road and Elderberry Drive intersection | <i>"Only exit onto North Lake Road dangerous junction, no lights constant flow on North Lake Road makes it hard"</i> | This intersection is currently an uncontrolled 'T' intersection and appears to be a potential congestion point. North Lake Road is classified as a 'District Distributor | The installation of traffic signals at the North Lake Road/ Elderberry Drive intersection would not be approved by Main Roads WA because of the close proximity of existing traffic signals at Omeo Street 200m to the north-west and Osprey Drive |

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| | | <i>to get into flow of traffic filter lane”.</i> | A’ road and Elderberry Drive is classified as a ‘Local Distributor’. | 400m to the south-east. The instillation of a dual-lane roundabout (like the one recently constructed at Bibra Drive) will be investigated and considered as a Black Spot Program project for the 2017/18 financial year. |
| 4 | Elderberry Drive and Tarndale Way intersection. | <i>“School parents parking inappropriately cause visibility issues and park too close to the corner”.</i> | This intersection is located opposite a pedestrian access point. It is expected parents would park here during peak student pick up/ drop off times. Elderberry is classified as a ‘Local Distributor’ road. | Investigate possible parking provision options for this intersection or alternatively explore pedestrian entry point relocation away from the intersection. This is to be undertaken by the City of Cockburn; Strategic Planning Department in consultation with Engineering Department. |
| 5 | Bloodwood Circle and Pavonia Heights intersection. | <i>“This junction of Bloodwood and Pavonia Heights is dangerous. Cars going south on Bloodwood go too fast downhill there is also limited sight from Pavonia”</i> | The intersection vehicle sightlines may be an issue for motorists. Further investigation is recommended. | City road engineer’s to investigate and implement improvement options or nomination for State ‘Black Spot’ Funding. Subject to their professional review. |
| 6 | Elderberry Drive | <i>“School zone is not clearly marked, road is too wide and signs are not seen or are ignored, Better line marking needed and electronic signs.”</i> | Elderberry Drive is classified as a ‘Local Distributor’ road and consists of; a 25 metre road reserve with a 10 metre carriageway, footpaths on both sides and a 2 metre median island in-between lanes. The dwellings are setback approximately 15 metres from the street with the school side development setback in excess of 80 metres. The road environment is conducive to | City road engineer’s in consultation with City Planners to investigate and implement traffic calming, parking provision, dedicated bicycle path and street tree provisions. Design concepts to be prepared by the Strategic Planning department for Elderberry Drive. Implementation of the works to be undertaken by the City of Cockburn Engineering department. |

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| | | | speeding. | |
| 7 | Berrigan Drive and Elderberry Drive intersection. | <i>“Rotary or controlled intersection needed here to improve vehicular crossing and slow vehicles next to the school”.</i> | Berrigan Drive is classified as a ‘District Distributor A’ road and Elderberry Drive is classified as a ‘Local Distributor’ road. The intersection is heavily developed including 4 east west vehicle lanes, an additional east west bicycle lane and a turning lane. These roads intersect with a dual lane road. During peak periods it is imagined that pedestrian crossing can be somewhat difficult. | As shown in the Murial Court Local Structure Plan it is planned to realign both the southern end of Elderberry Drive and northern section of Semple Court to form a 4-leg intersection with Berrigan Drive. That new intersection will be constructed as a roundabout or traffic signals (subject to Main Roads WA approval), subject to further investigation. This project is tentatively scheduled for 2020-22 on the City’s Regional and Major Roadworks 2013-2030 plan, but timing will be dependent on funding availability and of progress of development in the Murial Court precinct. |
| 8. | Berrigan Drive immediately east of South Lake Drive | <i>“Cars and particularly trucks turning in and out of the pub and parking on the side of Berrigan creates a danger on the bend”.</i> | This appears to be a management issue. | No direct action recommended under the Lakes Project. |
| 9. | North Lake Road and Berrigan Drive Intersection | <i>“Need to make left turning lane longer”.</i> | North Lake road is classified as a ‘District Distributor A’ road which intersects with Berrigan Drive which is also classified as a ‘District Distributor A’ road. Traffic volumes in this location during peak periods may warrant the need for an increased left turning lane length subject to engineering safety standards and planning merit. | The City’s Engineering Services officers previously identified the need for some improvement of this intersection and have applied for grant funding from the 2015/2016 State Black Spot Program to extend the left turn lanes on the west (North Lake Road and north (Berrigan Drive) legs of the intersection and improve street lighting. That project has been recommended for funding and it is anticipated an announcement will be made by the Minister for Transport soon. |

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| 10. | North Lake Road and Hammond Road roundabout leg intersection. | <i>“Dangerous intersection – traffic heading south reduced to one lane by vehicles turning right”.</i> | Hammond Road is classified as a ‘District Distributor B’ Road and North Lake Road is classified as a ‘District Distributor A’ road. The intersection is in close proximity to Thomas Street. The current road design/ treatment appear to be a possible spot for major traffic congestion during peak periods. | This intersection will be improved as part of the current widening of North Lake Road, from Hammond Road to Kentucky Court, to 4-lanes. Separate turn lanes will be provided at Hammond Road for safety and to minimise disruption to continuing traffic. |
| 11. | North Lake Road and Semple Court intersection | <i>“This corner requires a turning lane. Large volumes of traffic hold up the north lane when turning, and turning from Semple Court is dangerous”.</i> | North Lake Road is classified as a ‘District Distributor A’ road which intersects with Semple Court, a ‘District Distributor B’ road. This intersection is an uncontrolled intersection which during peak times may be subject to unacceptable traffic jams. | This intersection will be improved as part of the current widening of North Lake Road to 4-lanes. A protected right turn lane will be provided in the median for motorists turning into Semple Court, and motorists turning right from Semple Court will be able to turn in two stages by temporarily storing in the median on North Lake Road. |

Traffic impact assessment

Transport infrastructure should be planned and, if need be, improved to match increased traffic demand. In the case of the Lakes Revitalisation study area the draft changes to existing density codes is predicted to have a negligible impact on the transport network. The predicted increased traffic flows can be managed by the existing road network and already planned intersection upgrades as outlined earlier in this report.

The WAPC's State Planning Policy No. 1 (February 2006) sets out the key principles relating to environment, community, economy, infrastructure and regional development; which should guide the way in which future planning decisions are made. The objective of the infrastructure component is:

“to facilitate strategic development by making provision for efficient and equitable transport and public utilities.”

The City of Cockburn has undertaken three revitalisation strategies to date, with the Lakes Revitalisation Strategy being the fourth. These include the suburbs of Spearwood (Phoenix), Hamilton Hill and Coolbellup.

These strategies have been adopted and the associated scheme amendments (residential up-coding) have been gazetted. Following the gazettal of these amendments landowners within these areas have undertaken development and subdivision in accordance with the higher density codes.

Infill development has been calculated at a rate of **43 to 50** additional dwellings per annum in the suburb of Spearwood (Phoenix) as outlined in 'Forecast id'. The data indicates a **3% to 5%** increase in yearly infill development.

Last year 'Population id' undertook a population forecast analysis across the City of Cockburn including Coolbellup. Infill is assessed by doing a lot size analysis and assuming that, of existing lots that have potential for redevelopment over the forecast period, a percentage will do so and, depending on the size of those lots, there will be a net dwelling gain of between 1 – 10 dwellings. This gives a source of development for the future.

It is assumed that infill will increase as existing major site opportunities are exhausted. It does also, of course, depend on the housing market for the area and competing areas within both the local government area and the region.

On this basis it was identified in Coolbellup a 512 dwelling gain through major site development, and a further 451 dwellings through infill. The allocation of infill rates to the area was based on;

- a) what is expected in neighbouring localities such as Hamilton and Spearwood;
- b) type of housing stock,
- c) residential lot size and shape; and

d) the amount of housing stock.

The level of infill in Coolbellup has risen from **10 to 30** dwellings per annum by the end of the forecast period.

Estimated additional vehicle trip generation is an approximate guide only and is based on 9 daily vehicle trips per dwelling. This is currently the industry 'best practice' as recommended in the WAPCs 'Transport Assessment Guidelines' and the Traffic Authority's Guide to Traffic Generating Development (October 2002).

The additional number of dwellings generated by the greater number of homes on higher density lots is offset by the reduced number (up to half) of trips typically generated by the higher density land use. In addition, for the purposes of the City's traffic impact assessment, no allowance has been made for any reduction in vehicle trips due to trips made by alternative modes such as public transport, walking, cycling or car share. As a result, the City's estimated trip numbers are considered a worse-case scenario.

Notwithstanding the above, this report aims to identify issues and specify recommendations to improve pedestrian, cycling and public transport infrastructure as outline in previous sections. These improvements are expected to partly offset a proportion of car trips for cycling, public transport or walking.

An increase in residential density, as drafted in this report, for the Lakes study area translates to a predicted negligible increase in traffic on the road network. This is for various reasons as described above within the Coolbellup and Spearwood case studies. The below table provides further detail on the City of Cockburn's traffic survey results.

The City of Cockburn has undertaken a series of traffic counts as part of our traffic impact analysis. The surveys were conducted at a date and time considered suitable by the City's engineering services. The traffic surveys were conducted during August 2015 in the following 20 locations.

Traffic survey locations undertaken August 2015



The Lakes Revitalisation Strategy traffic surveys – August 2015

| | Road | Suburb | Section | Road function | Average weekday traffic (vehicles) |
|----|--|------------|--------------------------------|---------------------------|------------------------------------|
| 1 | Bibra Drive (District Distributor B) | Bibra Lake | 80m south of Fantail Drive | Integrator B arterial | 7,536 |
| 2 | Hope Road (Access Road) | Bibra Lake | 200m west of Bibra Drive | Access street | 6,153 |
| 3 | Hope Road (Access Road) | Bibra Lake | 60m east of Bibra Drive | Access street | 1,480 |
| 4 | North Lake Road (District Distributor A) | Bibra Lake | 400m north of Bibra Drive | Integrator A | 29,856 |
| 5 | North Lake Road (District Distributor A) | Bibra Lake | 250m south of Bibra Drive | Integrator A arterial | 35,345 |
| 6 | Du Maurier Road (Access Road) | North Lake | 60m west of Progress Drive | Access street | 739 |
| 7 | Masefield Avenue (Access Road) | North Lake | 60m west of Progress Drive | Access street | 1,008 |
| 8 | Progress Drive (Local Distributor) | North Lake | 200m south of Farrington Road | Neighbourhood connector B | 2,105 |
| 9 | Progress Drive (Local Distributor) | North Lake | 180m north of Hope Road | Neighbourhood connector B | 1,328 |
| 10 | Progress Drive (Local Distributor) | North Lake | 280m north of Gwilliam Drive | Neighbourhood connector B | 6,475 |
| 11 | Elderberry Drive (Local Distributor) | South Lake | 130m east of North Lake Road | Neighbourhood connector | 6,322 |
| 12 | Elderberry Drive (Local Distributor) | South Lake | 50m east of Apara Court | Neighbourhood connector | 3,518 |
| 13 | Elderberry Drive (Local Distributor) | South Lake | 20m north of Jindabyne Heights | Neighbourhood connector | 5,517 |
| 14 | North Lake Road (District Distributor A) | South Lake | 300m south of Berrigan Drive | Integrator A arterial | 27,021 |
| 15 | North Lake Road (District Distributor A) | South Lake | 220m north of Berrigan Drive | Integrator A arterial | 34,220 |

| | Road | Suburb | Section | Road function | Average weekday traffic (vehicles) |
|----|---|------------|---------------------------------------|------------------------------|------------------------------------|
| 16 | South Lake Drive (Local Distributor) | South Lake | 120m north of Berrigan Drive | Neighbourhood connector B | 3,732 |
| 17 | South Lake Drive (Local Distributor) | South Lake | 50m west of Elderberry Drive | Neighbourhood connector B | 2,250 |
| 18 | Farrington Road (Oct 2015) | North Lake | 200m east of North Lake Road | Integrator A arterial | 21,613 |
| 19 | Farrington Road | North Lake | 200m west of Murdoch Drive | Integrator A arterial | 26,554 |
| 20 | Berrigan Drive (Aug. 2012) | South Lake | 150m west of Kwinana Freeway | Integrator A arterial | 25,512 |

Roe 8 – Roe Highway Proposed Extension

The proposed \$1.6 billion Perth Freight Link, officially launched on 19 May 2014 as part of the Federal Budget, is the largest proposed road infrastructure project ever to be undertaken in Western Australia.

If constructed, the works will provide a major link in the Perth Urban Transport Corridor, through a dedicated east-west freight connection between Perth's heartland industrial areas, such as Kewdale, Welshpool and Fremantle Port.

The ethos of the 'Option 1' proposal, as designed by Main Roads Western Australia, is that current stop-start traffic will be replaced with free-flowing vehicle movement.

The project is expected to link with the \$1 Billion Gateway WA project and the \$1.2 billion North Link WA (Perth to Darwin Highway) project to provide a free-flowing 85km route from Muchea to Fremantle Port and Perth's southern industrial and trade centres.

Main Roads Western Australia advises the major works contracts are scheduled to be awarded in late 2015 with infrastructure works expected to commence in early 2016 and be completed in 2019.

Roe 8 is a proposed 5.2 kilometre extension of Roe Highway from Kwinana Freeway to Stock Road. It includes a major upgrade to the existing Kwinana Freeway-Roe Highway interchange as well as interchanges and flyovers at Murdoch Drive, Bibra Drive, Progress Drive, North Lake Road, Coolbellup Avenue and Stock Road.

Two proposed Freight transportation infrastructure upgrade options as proposed by Federal and State government.



City of Cockburn's position – Roe 8

The City of Cockburn at its Ordinary Council Meeting held on 11 June 2015 resolved **not** to support 'Option 1 (MRS)' freight transportation infrastructure upgrade option but rather the City supports Option 2 (Rail).

The City of Cockburn's reasoning, as partially extracted from the 11 June 2015 Council meeting, is outlined as follows:

"The City proposes the construction of an intermodal facility (similar to that currently in Forrestfield) in the Latitude 32 Precinct. Such a facility forms part of Directions 2031 planning for the region and has long had a concept District Structure Plan prepared. This facility will support the storage, packing and movement of containers for freight generated from the south-metropolitan area that goes to and from Fremantle. It would utilise existing rail infrastructure, whilst also catering to a future outer harbour, which will be located in close proximity to the facility, but would not be dependent on the construction of a port for its viability. The bulk of the land required for this facility is also in Government ownership."

The City of Cockburn formally resolved to;

- 1) *"call on the State Government to bring development of the intermodal facility for the Outer Harbour forward by investigating and costing the City's proposal to construct an intermodal facility (similar to that currently in Forrestfield) in the Latitude 32 Precinct including the associated infrastructure as a realistic alternative to the construction of Roe 8 and cease actions associated with the proposed Roe 8 in terms of awarding contracts for its construction while the process above is completed;*
- 2) *discuss with the Mayors and CEOs of the City of Fremantle, Town of East Fremantle and the City of Armadale the alternative described in clause (1) above in an endeavour to get their "in principle" support by 21 July 2015;*
- 3) *seek the Mayor and Chief Executive Officer to organise urgent meetings to put the case for the alternative described in clause (1) above with the:*
 1. *Premier, the Treasurer, the Minister for Transport and the Member for Jandakot;*
 2. *Leader of the Nationals;*
 3. *Leader of the Opposition and the Shadow Minister for Transport;*
 4. *Greens WA;*
 5. *Federal Member for Fremantle.*
- 4) *develop a social media strategy and commence an online campaign in support of the alternative described above in clause (1) above, utilising the material attached to the Minutes;*
- 5) *notify the Rethink Perth Freight Link Group of the outcome of Council's deliberations; and*

6) *engage community and other groups across the City to support the Alternative to Roe 8 proposal outlined in clause (1) above.*”

The Lakes Study area revitalisation background report aims to provide a holistic overview of the project area which involves outlining the details of Roe 8. The long term outcome may include either ‘Option 1’ or ‘Option 2’, as described above, as proposed by the State and Federal Government. Both options will have a variety of implications on the Lakes Study area and the current and future communities which visit and reside within North Lake, Bibra Lake and South Lake.

The City of Cockburn does not support the MRS alignment ‘Option 1’ as described above however this report aims to briefly explore and highlight the potential outcomes of ‘Option 1’ and ‘Option 2’ on the Lakes Study area.

The Metropolitan Region Scheme (MRS) ‘Option 1’ Alignment Proposal

If constructed the Roe Highway Extension is expected to carry around 4,800 Heavy Commercial Vehicles (HCV) per weekday in 2031 between Stock Road and North Lake Road and 6,900 between North Lake Road and the Kwinana Freeway.

In part these trips are expected to be transferred from Leach Highway and South Street. A further 4,000 to 6,000 trips transfer from other adjacent local roads and from roads further south, such as Russell Road, Rowley/ Wattleup Road, Anketell Road and Thomas Road.

The Main Roads Western Australia ‘Roe Highway Strategic Review Final Report October 2009 (MRWA 2009)’ promotes Option 1 as a shorter distance for freight transportation, in comparison to Option 2.

The Rail Alignment ‘Option 2’ Proposal

For freight traffic originating or terminating at Fremantle Port, or the Myaree or O’Connor industrial areas, the rail alignment route would be about 6 kilometres longer than both the existing route along Kwinana Freeway and Leach Highway and the new Roe Highway route along the MRS alignment (MRWA 2009).

For freight following a north-east and south west trajectory between Kewdale and Welshpool in the east and the Kwinana and Rockingham industrial areas and the future potential Outer Harbour, in the south west, the journey via the rail alignment and then onto Stock would be roughly to 3.5 kilometres shorter (to the future Outer Harbour) than the existing route, and about 2 kilometres shorter than the MRS alignment option. The ‘RHE rail’ link would also allow trucks to get from the Roe Highway/Kwinana Freeway interchange to the southern section of Stock Road (anticipated to be near Freeway standard by 2031) without having to travel on any sections of the Kwinana Freeway, which is anticipated to be heavily trafficked even with just passenger traffic (MRWA 2009).

The modelling suggests that the RHE along the rail alignment would attract around 6,000 HCVs per weekday in 2031. This volume of heavy and commercial vehicle traffic is approximately the same as would be carried by the MRS alignment. Overall, the rail alignment appears more successful in drawing HCVs from the southern

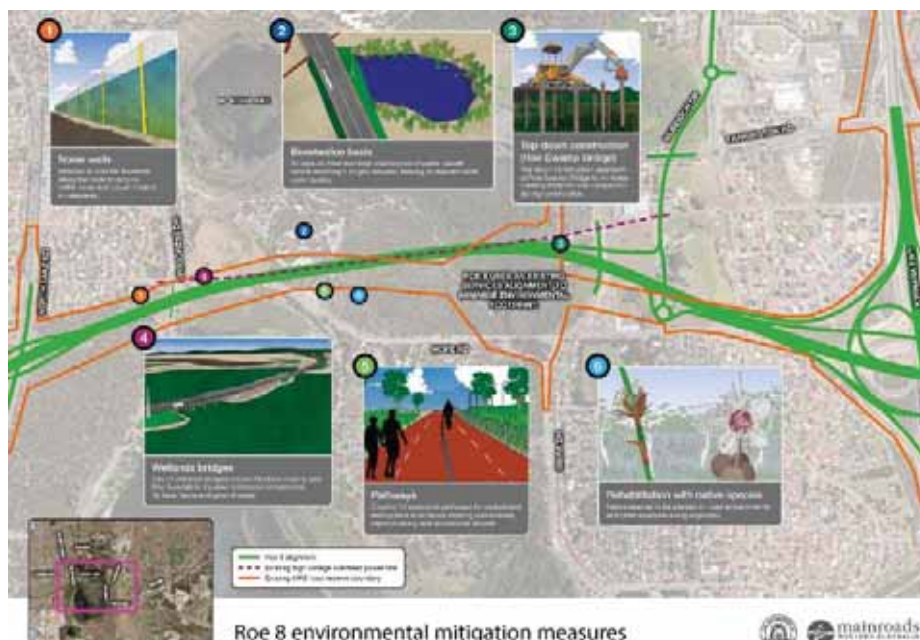
section of the Kwinana Freeway compared with the MRS alignment, but less successful at drawing this traffic from Leach Highway and South Street (MRWA 2009).

Proposed 'Option One' (MRS) Roe 8 concept design (MRWA 2012)



The Rail alignment option would avoid the potentially significant complexities and costs that are likely to be associated with the MRS alignment proposal in avoiding the Beeliar Regional Park. However, on balance the State Government is of the option that it would be less effective than the MRS alignment. This is because, in their view, it would result in a lesser reduction in traffic diversion than the MRS alignment proposal, would involve complicated and costly property resumption strategies, and is likely to be difficult to provide connectivity at highway standard as the interchange of the Roe and the Kwinana Freeway has been constructed. The MRS alignment as promoted by the State government would be a significant east-west linkage in the southern metropolitan area and it is said to support demand for between 47,000 and 79,000 vehicles per day by 2031 (MRWA 2009).

Roe 8 environmental mitigation measures as proposed by MRWA



Roe 8 - North Lake Road interchange

The below image provides a visual representation of the section of North Lake within the Lakes Study area that abuts the proposed Roe 8 extension. Masefield Avenue, the southern east/west road within North Lake, has three streets approximately 50 to 90 metres in length which terminate at a cul-de-sac which abuts the Roe Highway road reservation to the south.

At present, as indicated in the aerial photograph below, the residents within the southern part of North Lake, between North Lake Road and Progress Drive, are not provided with a direct east/west bicycle or pedestrian path to provide access from North Lake Road to Progress Drive.

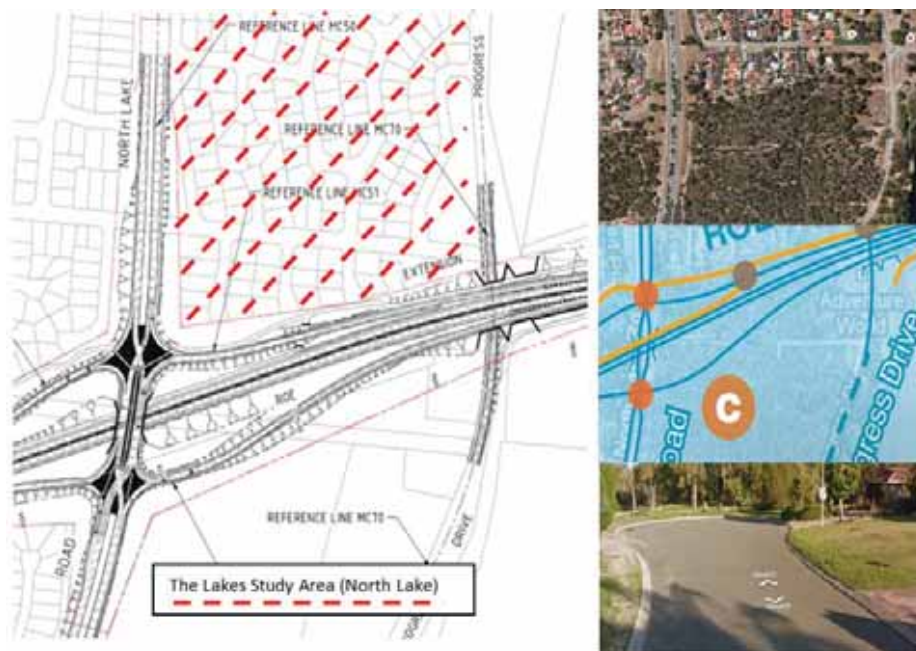
In order for cyclists or pedestrians to access Kwinana Freeway, and the wider metropolitan public transportation services, residents are required to travel 580 metres north from the south of North Lake and cross North Lake via Du Maurier Road and then head back south, down Progress Drive, towards Hope Road.

Cyclists and Pedestrians travelling in an east/ west direction from west of North Lake are required to cross North Lake Road at the North Lake/ Waverley Road Intersection which is currently informally used as a crossing point and not designed for pedestrian or cyclist crossing.

Under the current MRWA Roe 8 proposal the intersection of North Lake Road/ Roe Highway and Progress Drive provides for separated full movement dedicated shared use paths. These paths propose a more direct link from east to west terminating at Kwinana Freeway and assumingly a safer environment for pedestrians and cyclist than what is currently provided for. The below image provides a visual representation of the current proposed design concept.

The Roe 8 MRS 'Option 1' design appears to provide a more direct and safer environment for cyclists and pedestrians, particularly to those traveling east from west of North Lake Road. The current MRS design provides for two flyovers at the intersection of Roe Highway/ North Lake Road and Roe Highway/ Progress drive. These flyovers allow for vehicular traffic to continue flowing in a north/ south direction along North Lake and Progress Drive whilst allowing for east/ west movement for freight and other vehicles along Roe Highway. These flyovers require a significant amount of bunding and retaining which will raise the height of the roads above that of the existing residential properties. In order to combat the road noise from the raised roads noise walls are proposed by MRWA to be installed at specific locations along the route to reduce traffic noise and visual impacts on residents.

Roe 8 North Lake Road interchange – current preferred concept design (MRWA)



Roe 8 - Murdoch Drive Extension

Murdoch Drive as proposed under the Roe 8 design concept will extend from Bramanti Road as a new roundabout extension. The proposed extension is drafted to include 4 lanes and 2 turning lanes, one directed to the west and the other directed to the east.

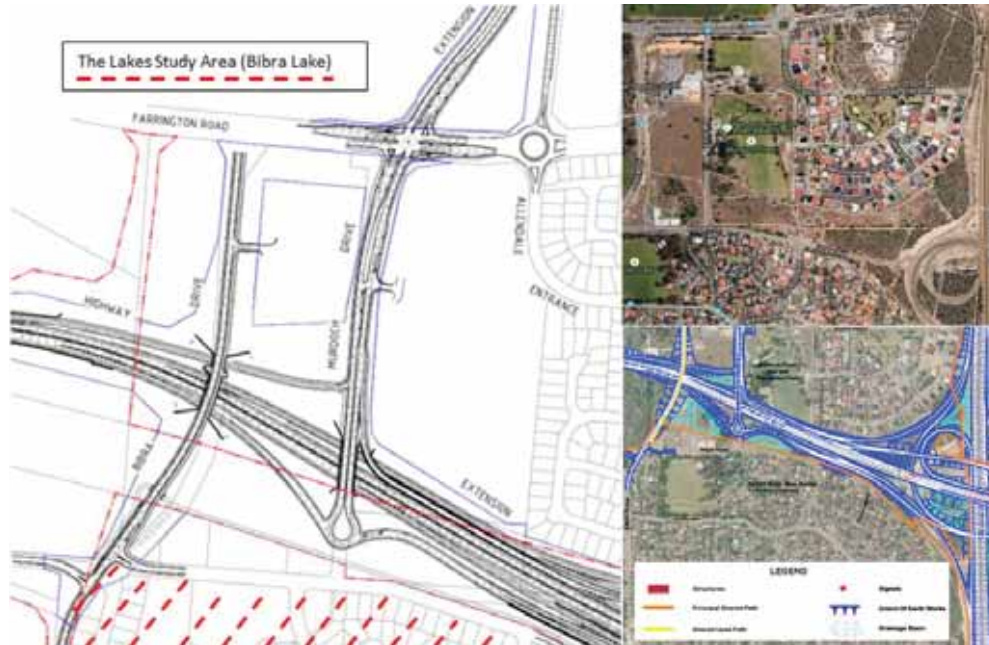
Murdoch Drive extension is partly proposed over the parkland and native vegetation located to the south east of Chelodina Reserve. The extension is proposed to intersect with Farrington Road, as a 4 way intersection, which then forms an upgrade to the existing Baker Court. Baker Court under the proposed 'Option 1' design will be renamed to Murdoch Drive, which is shown in the below image as 'Murdoch Drive Extension'.

Bibra Drive and the Murdoch Drive Extension are proposed as flyovers over the Roe Highway extension. These roads are designed and proposed to be raised in height at these intersections as shown in the below image. The raised road heights are proposed and designed to carry large volumes of freight and passenger vehicles and therefore the design, as proposed by MRWA, includes appropriate noise walls to mitigate traffic noise on the existing Bibra Lake and surrounding residents.

The 'South Metro Connect' draft MRWA Roe Highway extension design provides an earth bund and three drainage basins to the north of Bibra Lake to accommodate the raised proposed Murdoch Drive extension and Bibra Drive crossing. The design proposes to cul-de-sac the existing hope road and provides a principal shared bicycle path ('PSP') to extend beyond the cul-de-sac, run separately to the north of Roe and then underneath the proposed Roe Highway extension. The PSP is then proposed underneath two proposed vehicle paths at North Lake westwards terminating in Hamilton Hill close to Hamilton Senior High School closest to O'Connell Street. Under the proposed MRWA 'Option 1' design residents of Bibra

Lake will benefit from the provision of a dedicated and almost uninterrupted PSP which travels in an east west direction from Leeming to Hamilton Hill.

Roe 8 Murdoch Drive Extension – current preferred concept design (MRWA)



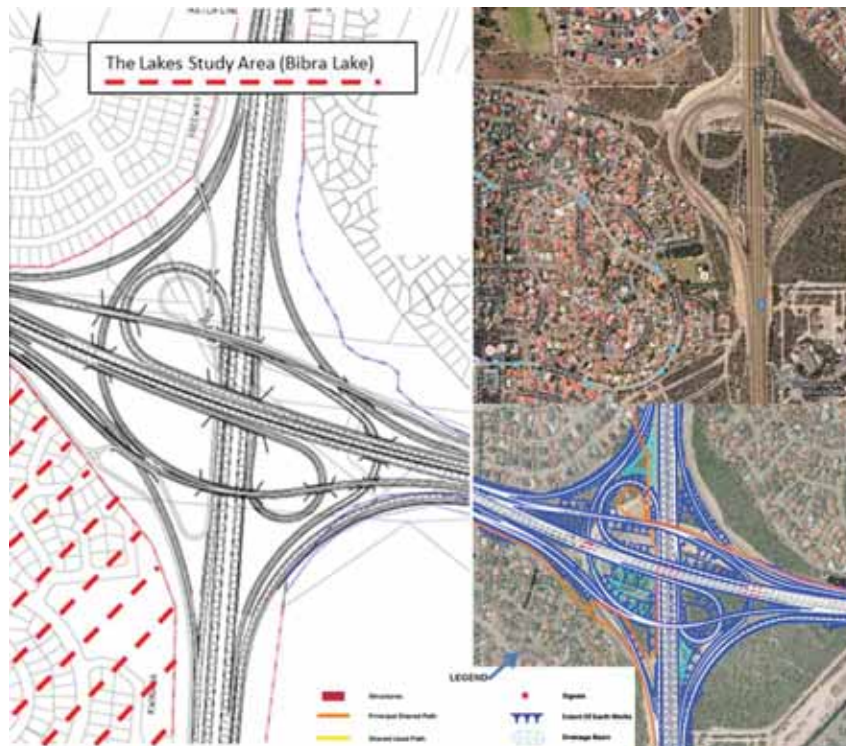
Roe 8 – Kwinana Freeway

The Kwinana freeway interchange reserve currently does not permit any direct vehicle access from Bibra Lake. Under the proposed design no direct vehicle access is proposed.

An existing children's slide and swing set is currently located on a managed lawn area along the Hope Road/ Roe Highway road reserve. This is in-between Gilchrist Avenue and Pausin Crescent in Bibra Lake.

Under the proposed Roe 8 design the slide and swing set will be removed to make allowed for Pausin Crescent to extend west as a new road directly to Gilchrist Avenue. At the moment (pre-Roe 8) Pausin Crescent extends directly to Hope Road to the east. The Roe 8 design proposes to terminate the existing Hope Road/ Pausin Crescent link as a cul-de-sac.

Kwinana Freeway Interchange – current preferred concept design (MRWA)



Recommendations to improve Road Safety and congestion within the Lakes Study Area

1. Implement the eight (8) actionable items identified as specified by *The Lakes Study area community congestion and motor vehicle congestion 'Hot Spots' of concern table* (as outlined above). The responsibilities of the recommended actions are outlined within the table. This includes items 3, 4, 5, 6, 7, 9, 10 and 11 from the table.
2. Continue to not support Roe 8.

Appendices

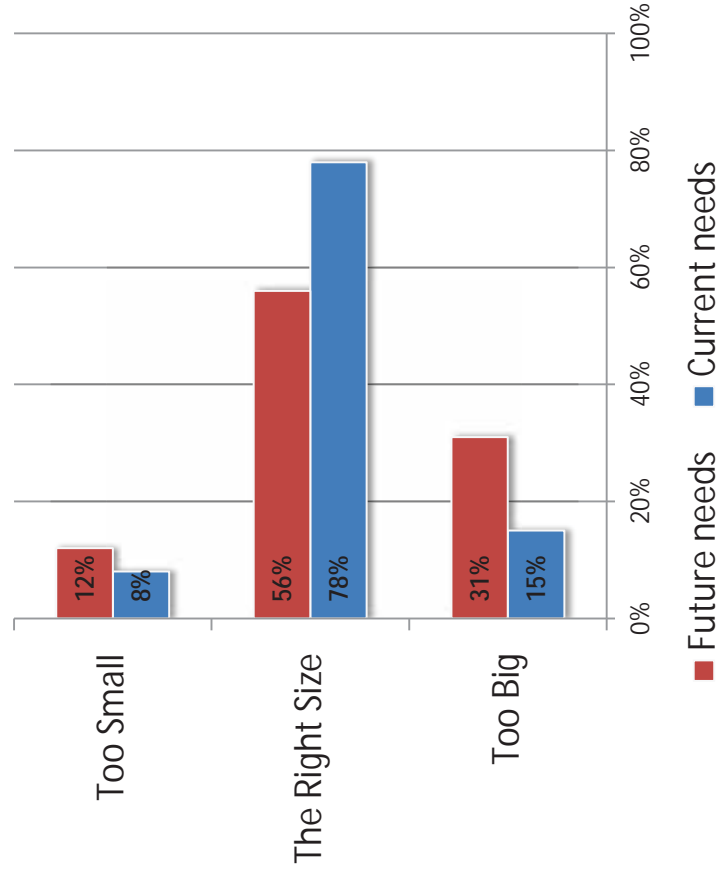
Appendix 1: Outcomes Report - Residents and Landowner survey

Appendix 2: Outcomes Report: Community Visioning Forum.

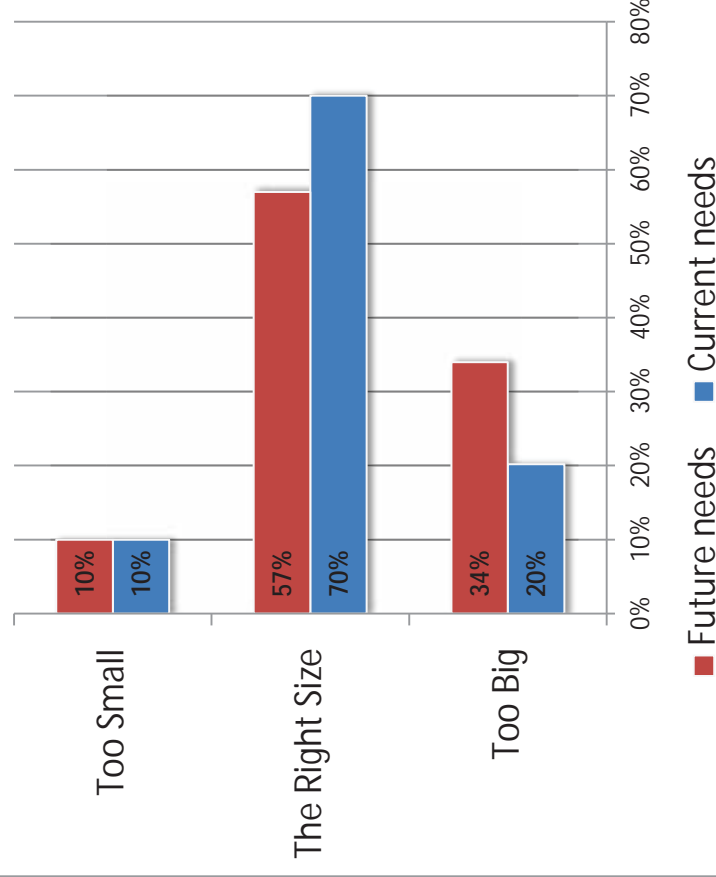


Responses Part One – You and Your Home

Q2/Q4. Dwelling sizes are considered...

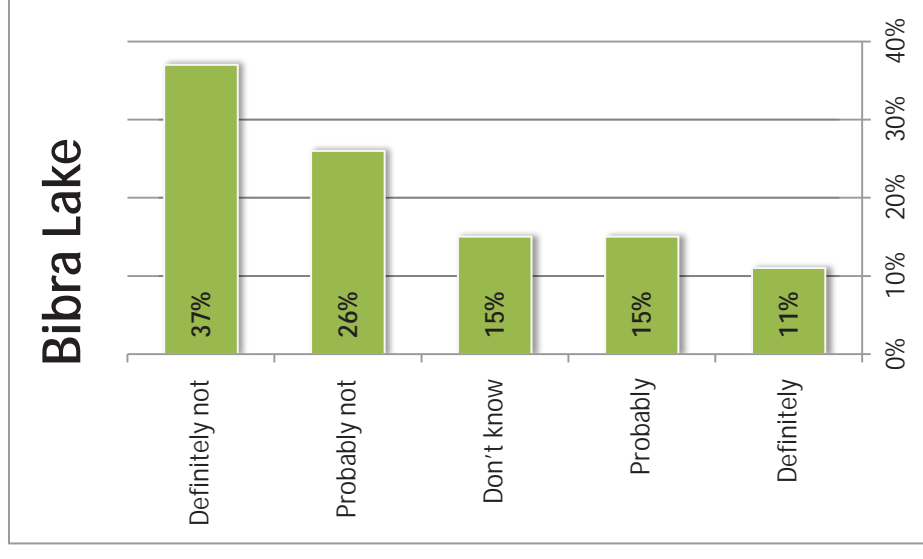
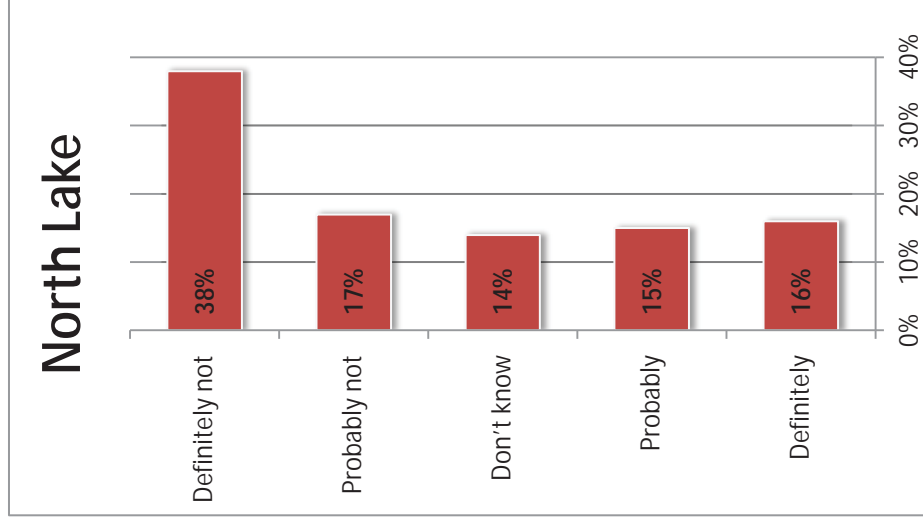
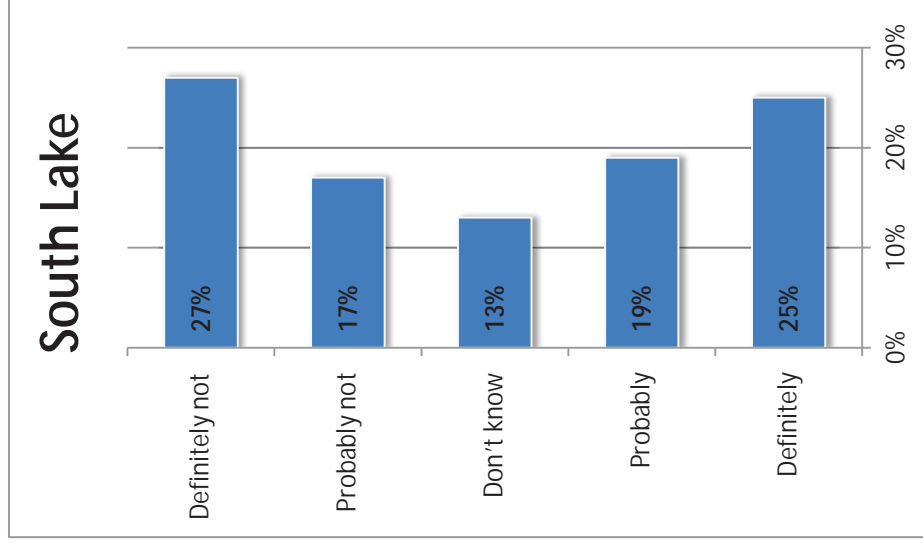


Q3/Q5. Backyard sizes are considered...



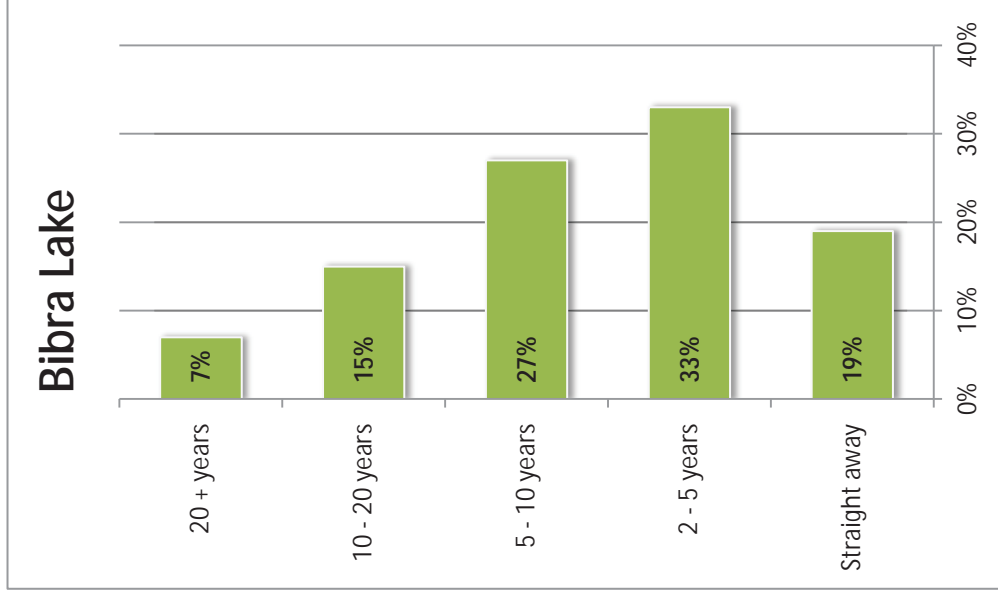
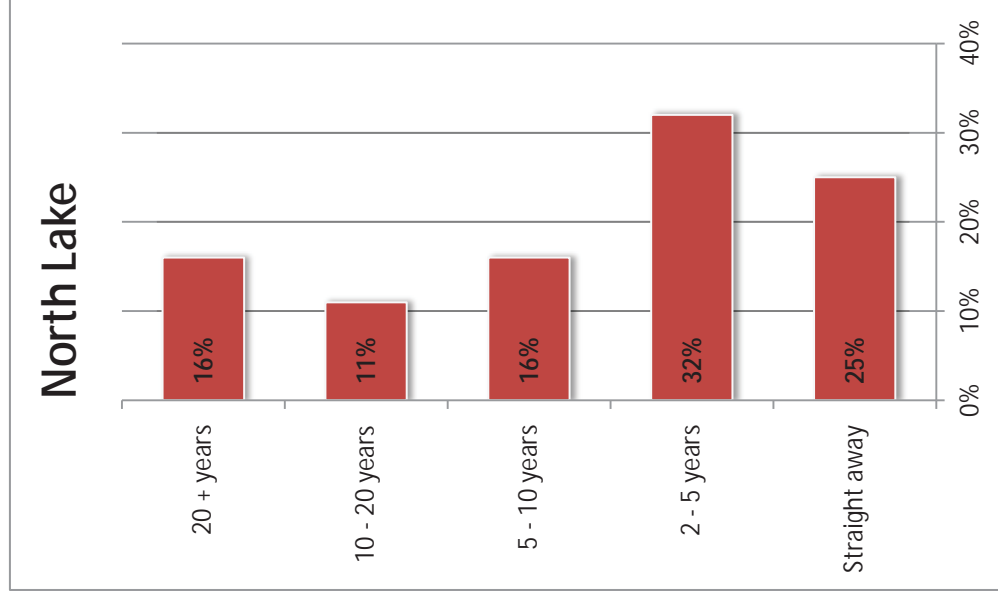
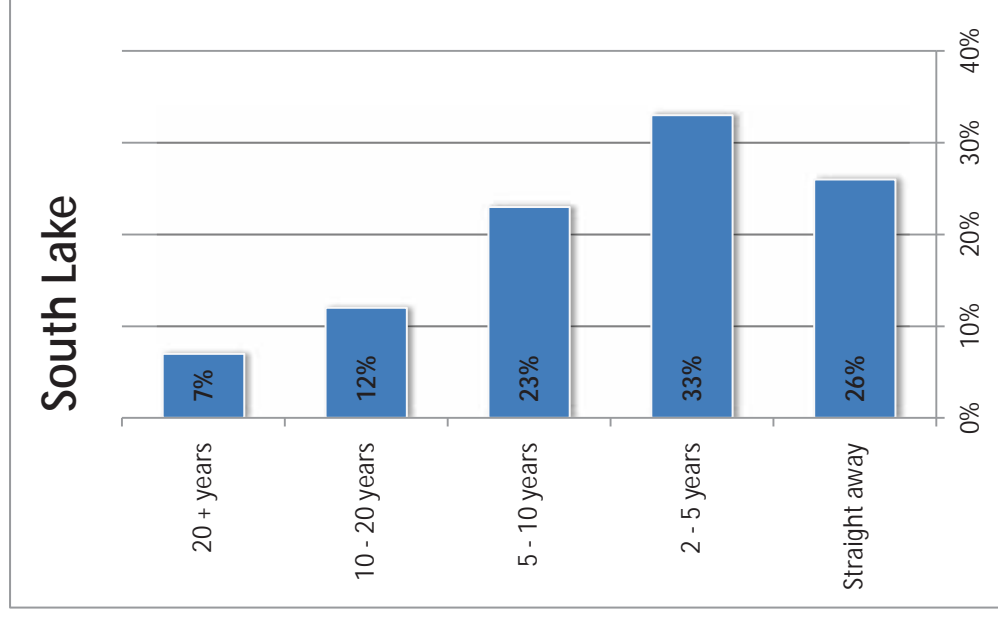
While 78% of respondents currently consider their homes are about the right size, this number drops when considering future needs. In line with the forecasted national trend, this is likely to be in recognition of household sizes reducing due to children moving out of the family home, and an increase in older demographics. This highlights the importance of ensuring house types are diverse so that into the future the housing stock in the Lakes area meets the needs of residents.

Q6. If rezoning occurred what is the likelihood of residents subdividing or redeveloping their property?



South Lake respondents are more likely to develop their property. North Lake and Bibra Lake are less likely. These figures suggest only some residents are interested in redeveloping and therefore this might suggest housing in targeted areas rather than broad scale density. Like other suburbs the City has undertaken revitalisation work within, it also highlights the likelihood that change will be incremental, allowing change to be managed.

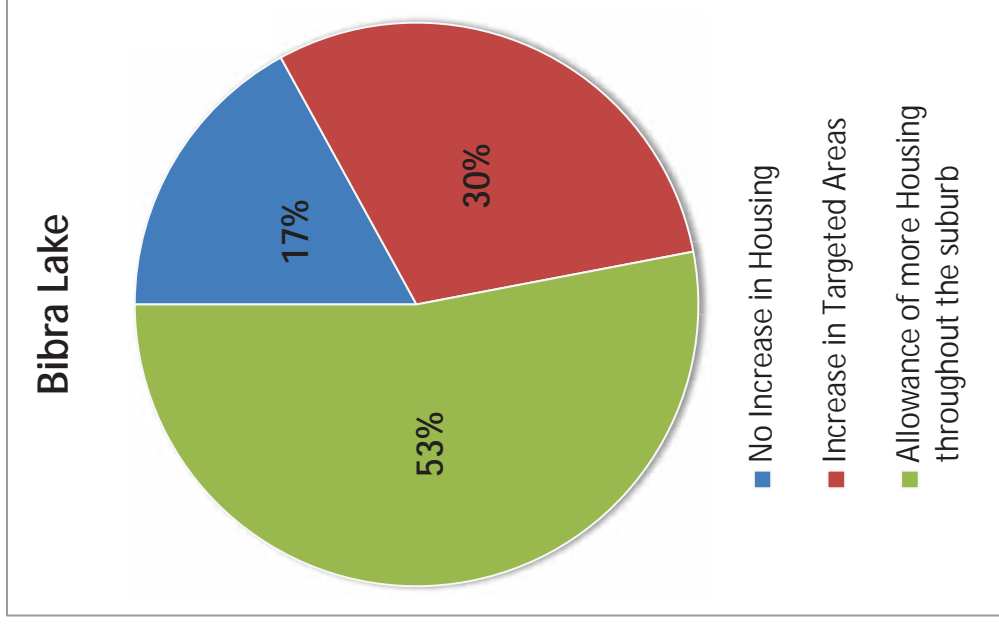
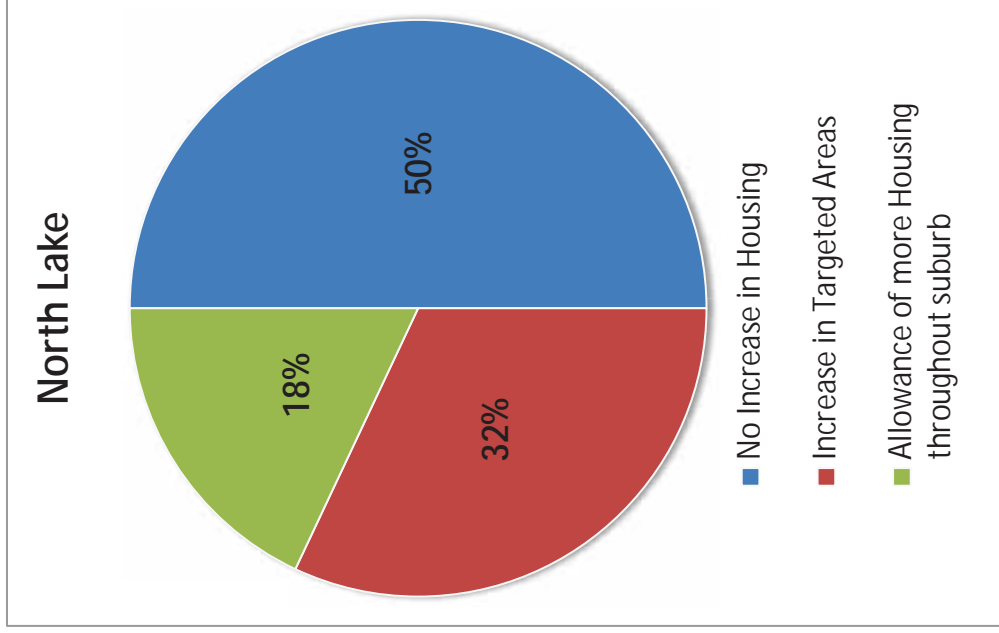
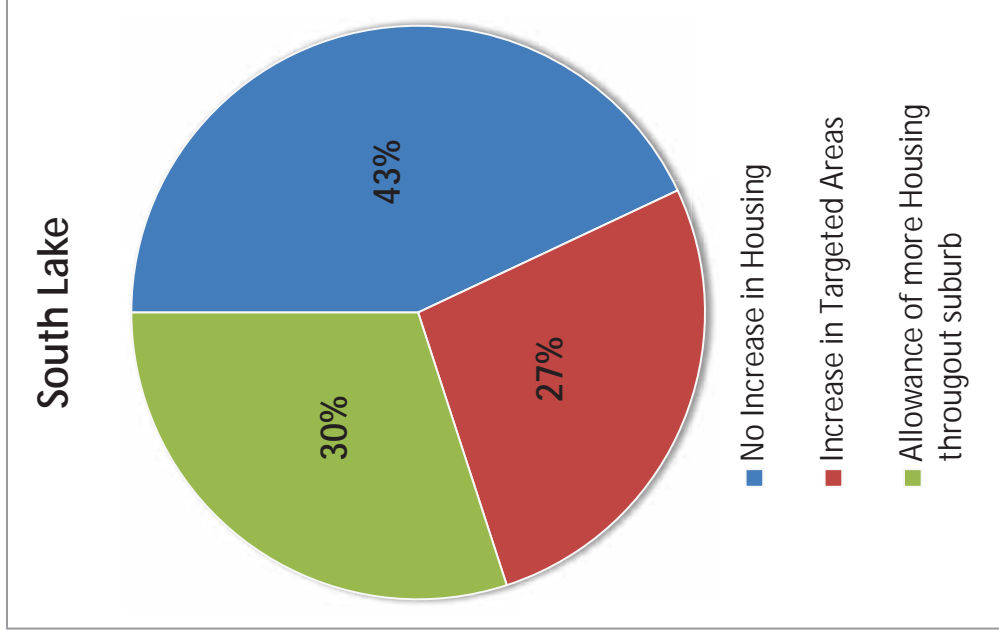
Q7. Of those respondents who are likely to subdivide or redevelop, in what timeframe would you consider subdividing or redeveloping?



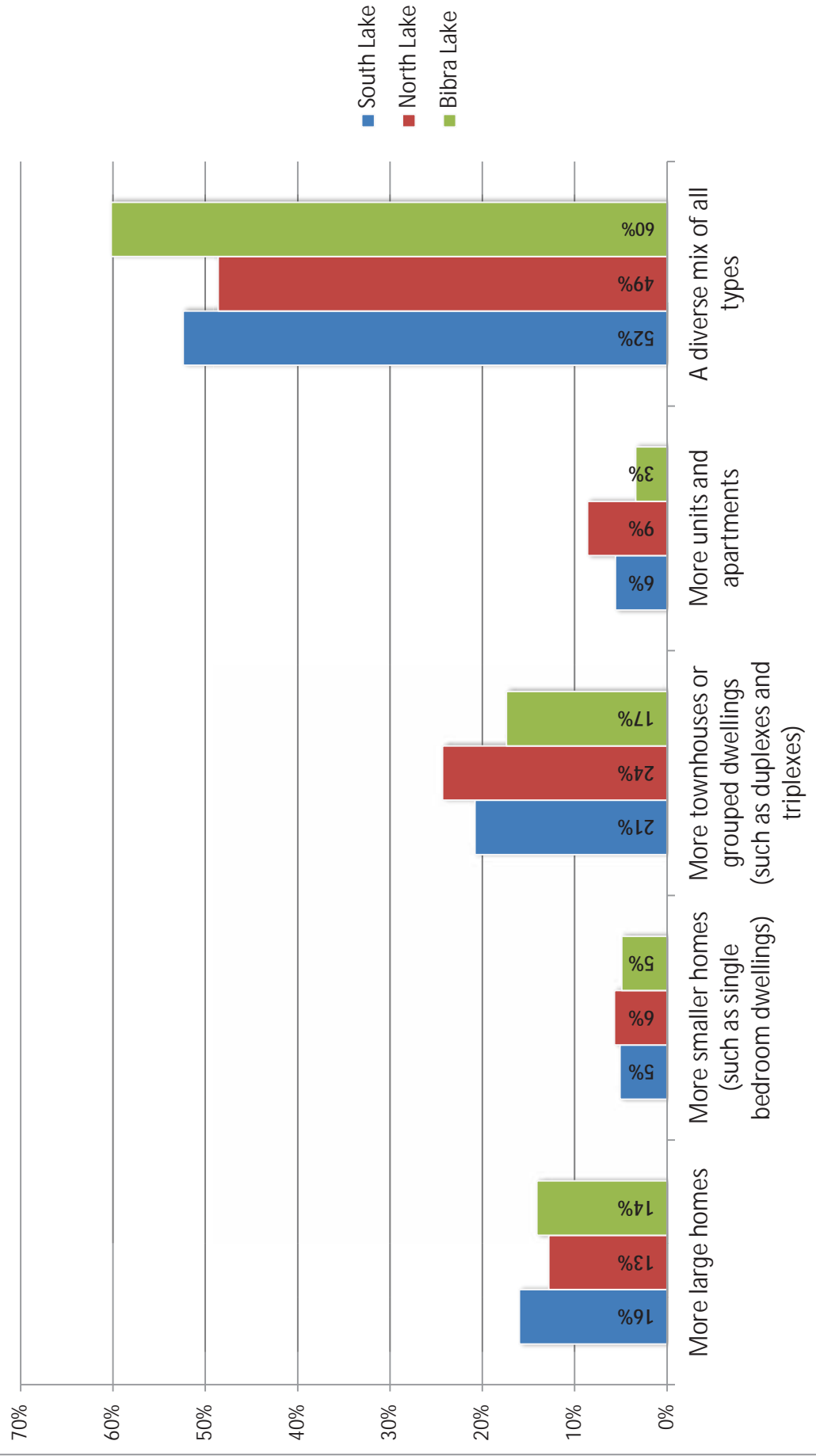
Of the respondents who are likely to develop their property, 59% of South Lake respondents, 57% of North Lake respondents and 51% of Bibra Lake respondents would develop their property within 5 years.

Responses Part Two – Your Neighbourhood

**Q1. Would residents like to see an increase in housing within their suburb?
If so, how would residents like to see this additional housing distributed?**



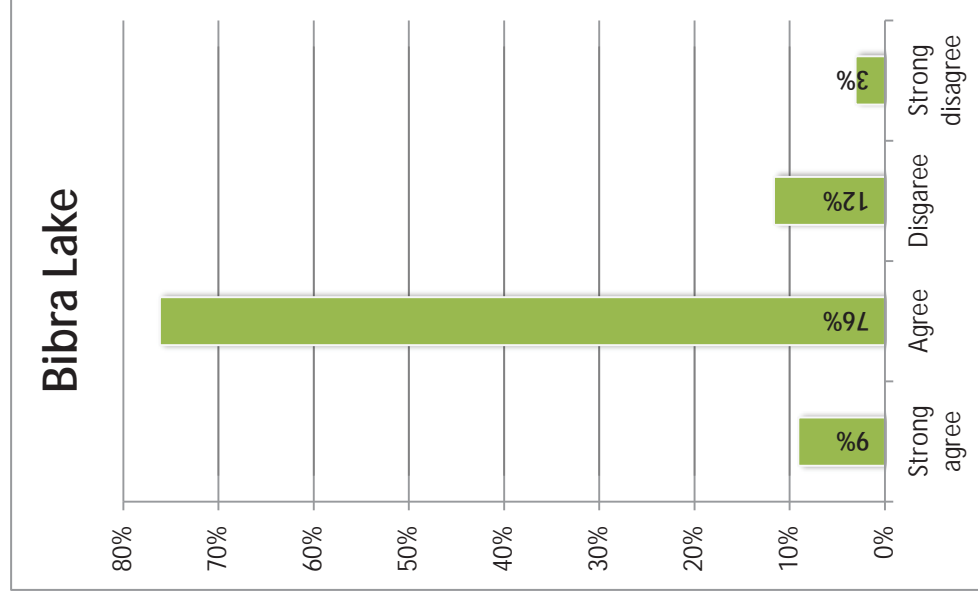
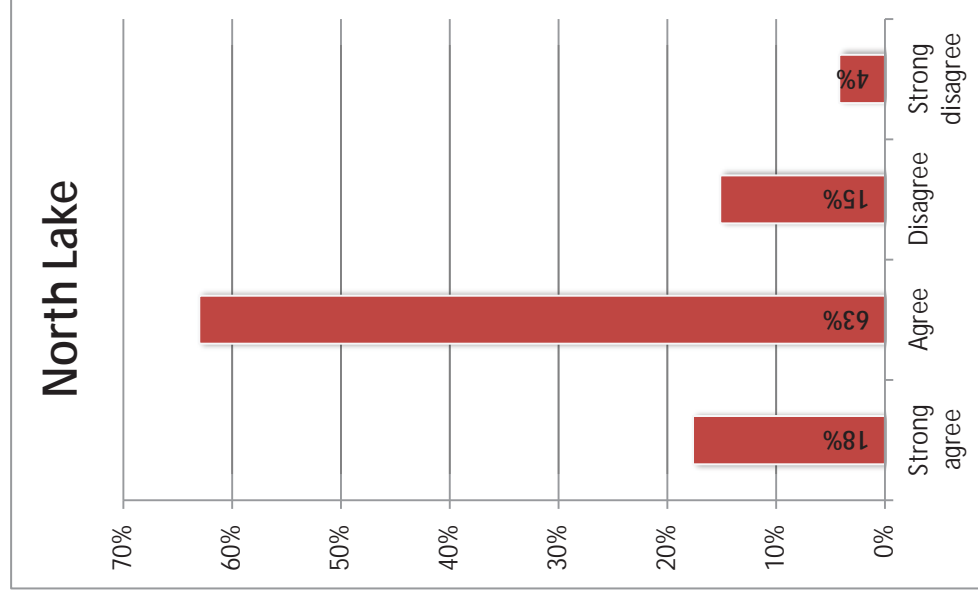
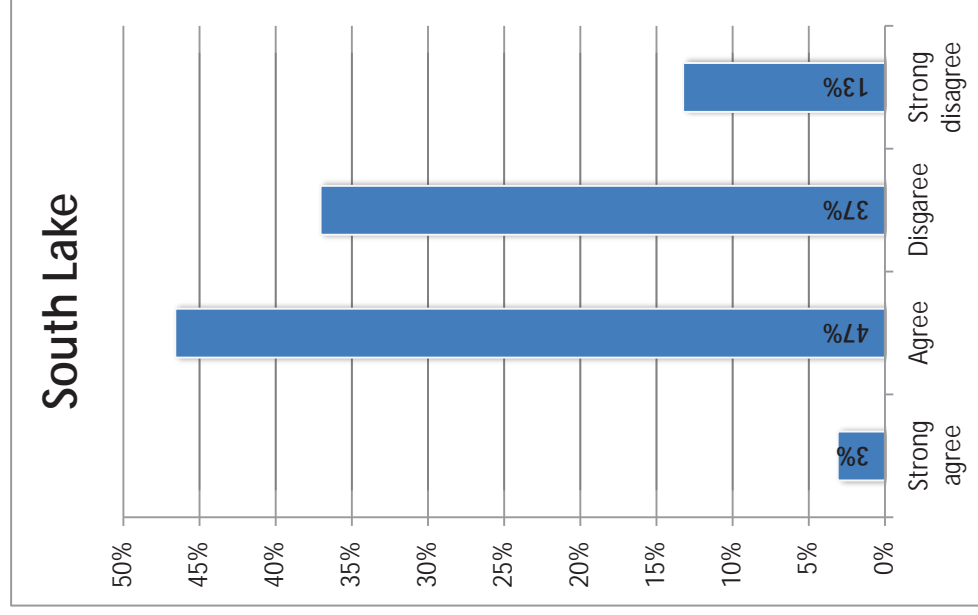
Q2. What type of Housing would respondents like to see more of?



Of respondents who would like to see an increase in housing, the primary type of housing respondents would prefer to see is 'a diverse mix of all types'. Again, given the dominance of single detached dwellings in the Lakes area, it highlights the need to provide alternative housing types.

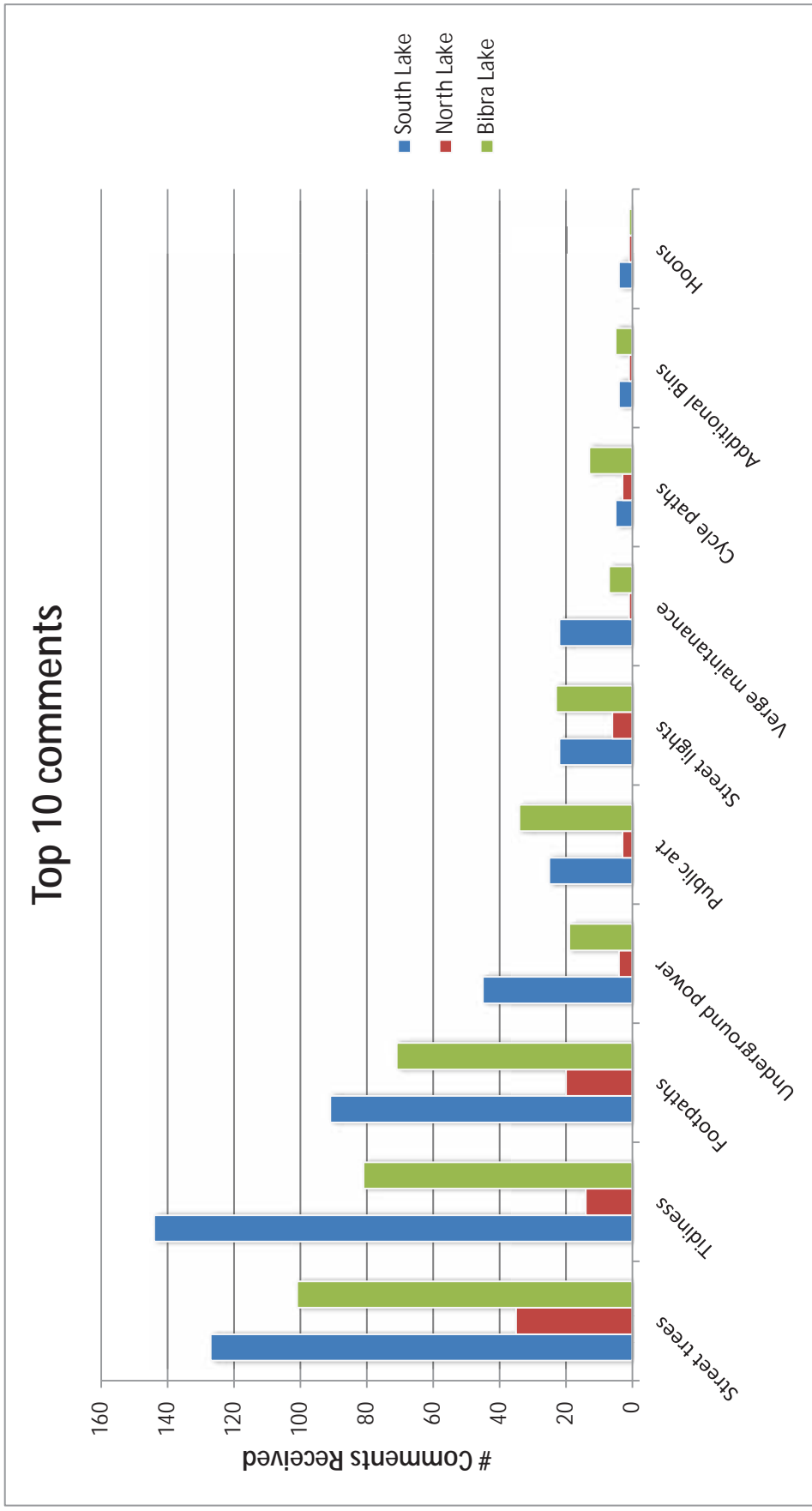
Responses Part Three – Community Satisfaction

Q1. Streetscapes within resident suburb are considered attractive:



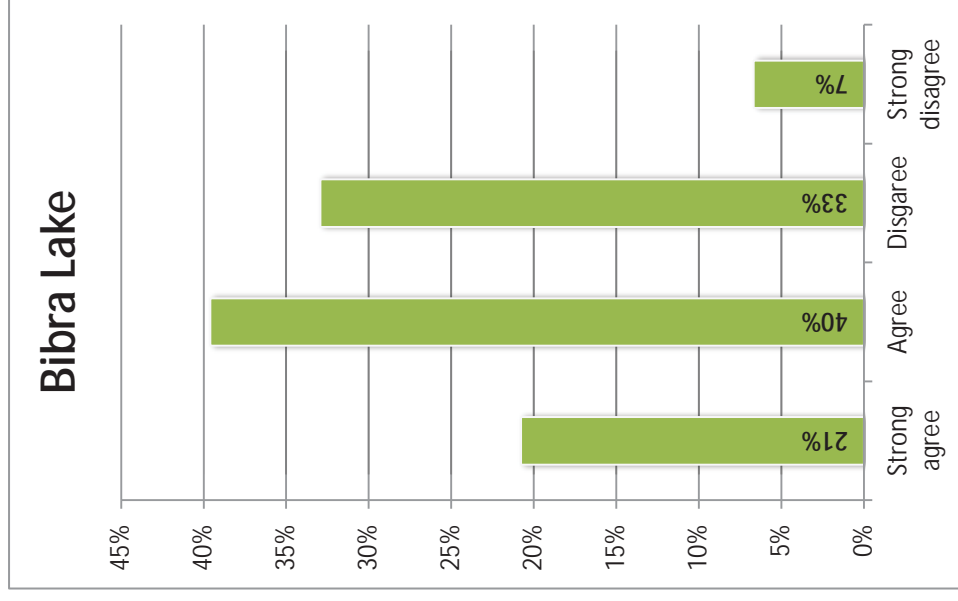
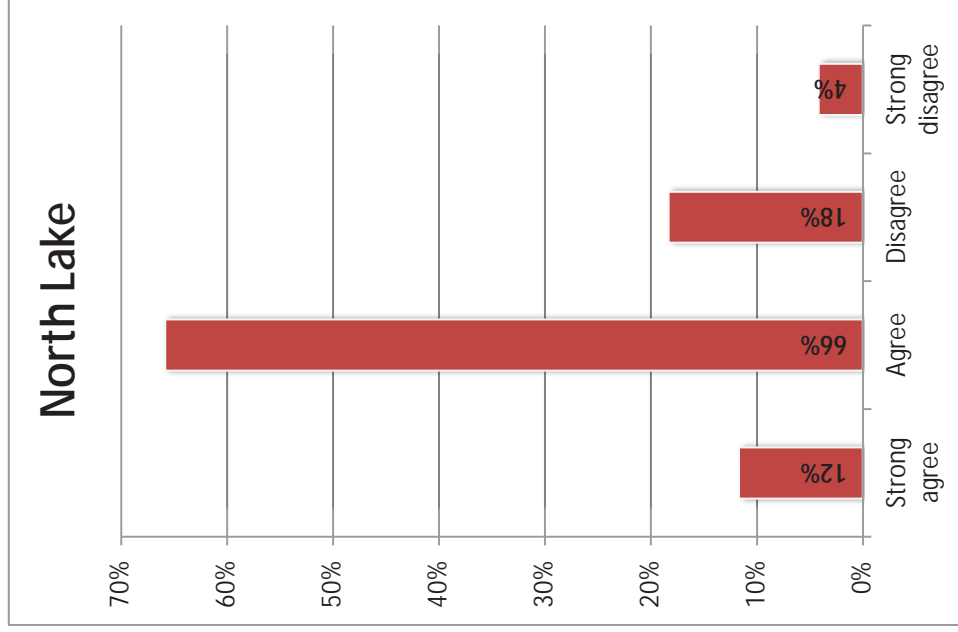
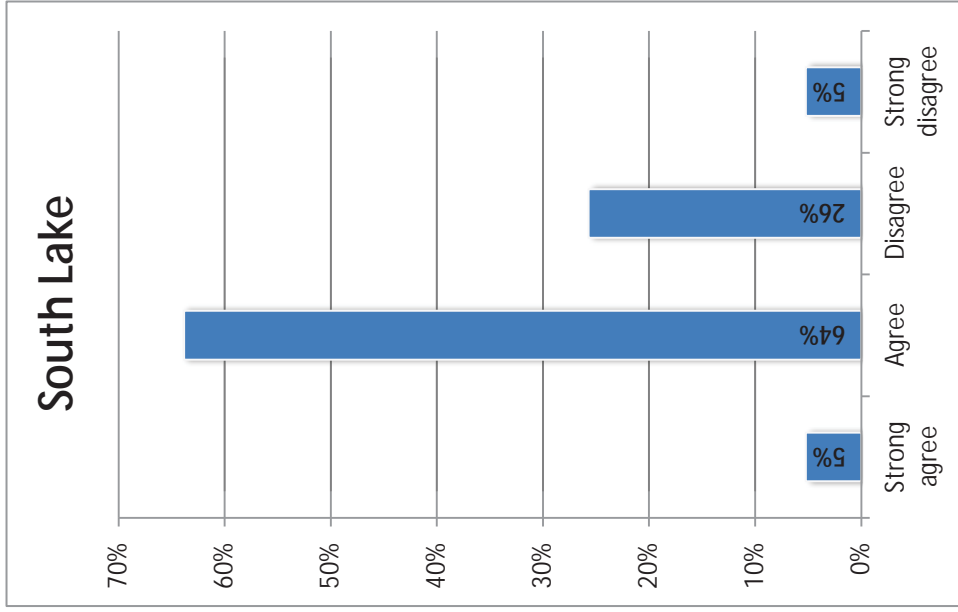
Bibra Lake, 85%, and North Lake 81% are satisfied with the streetscape in their suburb. South Lake, 50%, however is less satisfied that the suburb's streets are attractive

Q2. What streetscape elements and characteristics within the Lakes area are in need of improvement?



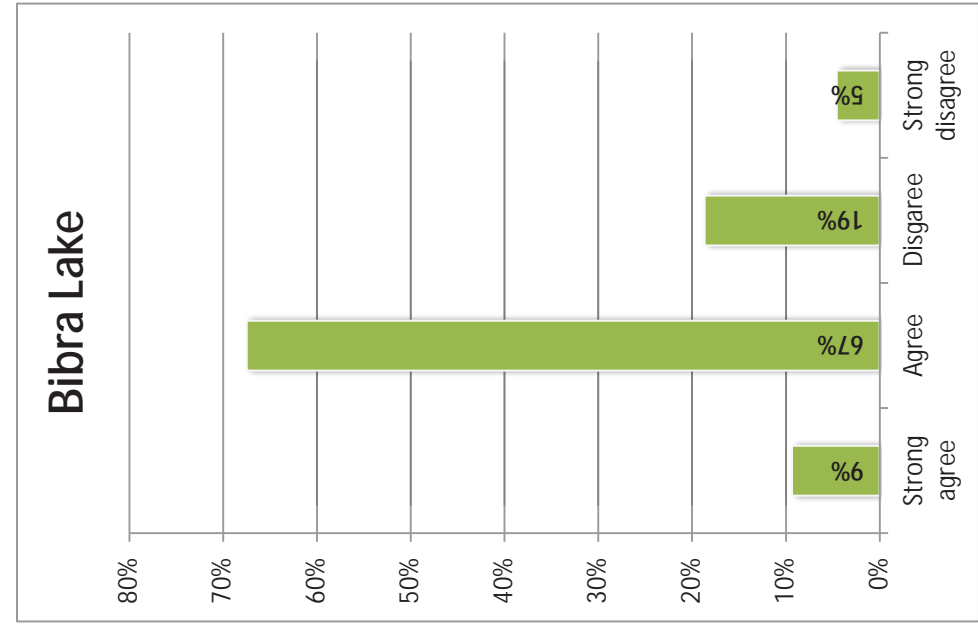
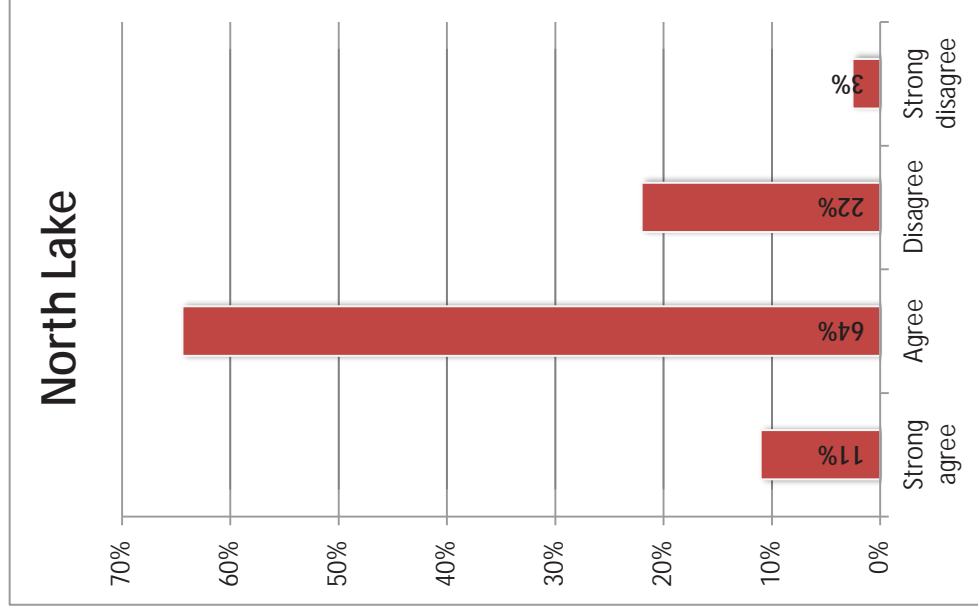
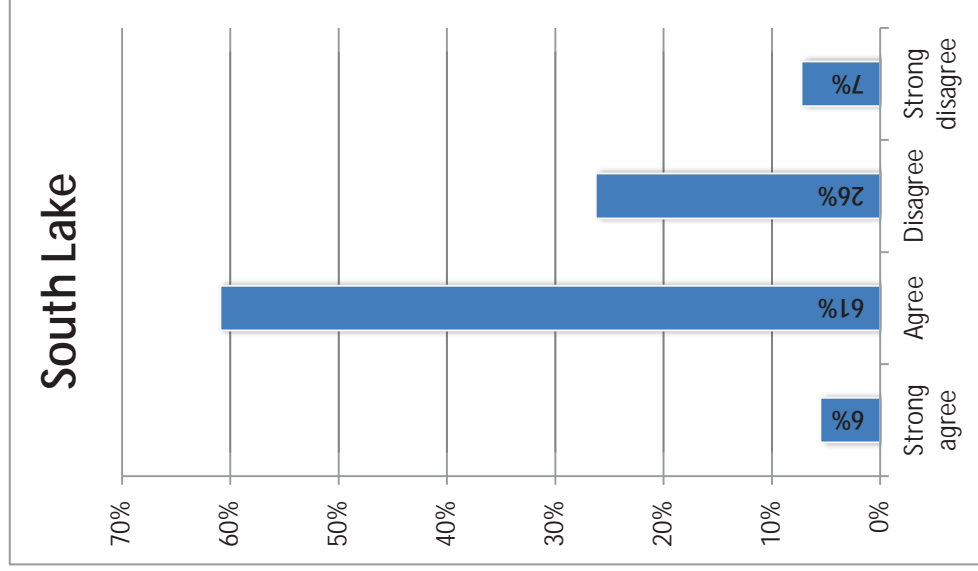
This list directly assists the City in understanding where new streetscape projects should be targeted with the top 3 projects focused on street trees, cleanliness and footpaths.

Q3. Pedestrian and Cycle Paths within my suburb are considered safe, well maintained and well connected:



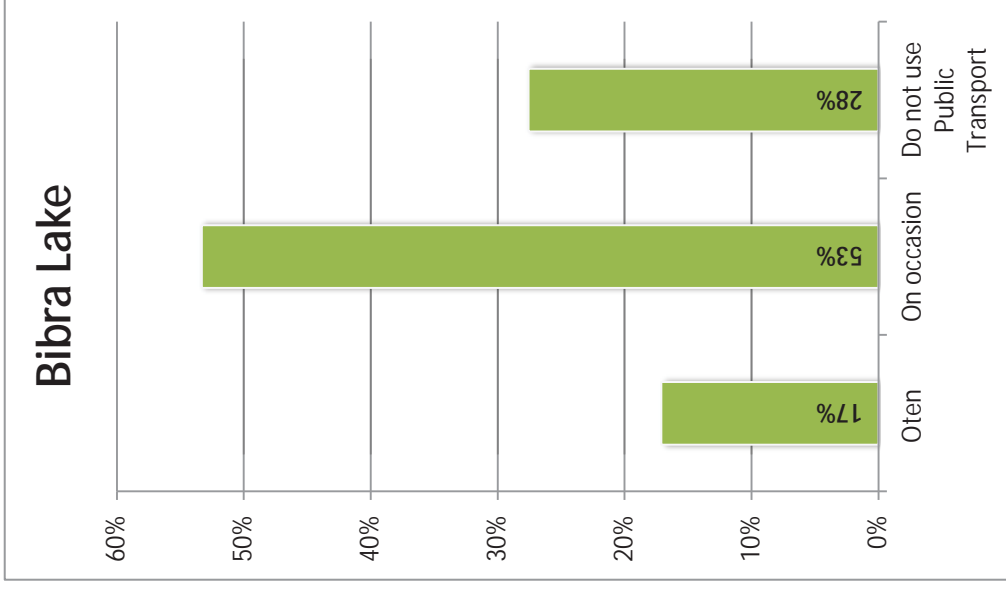
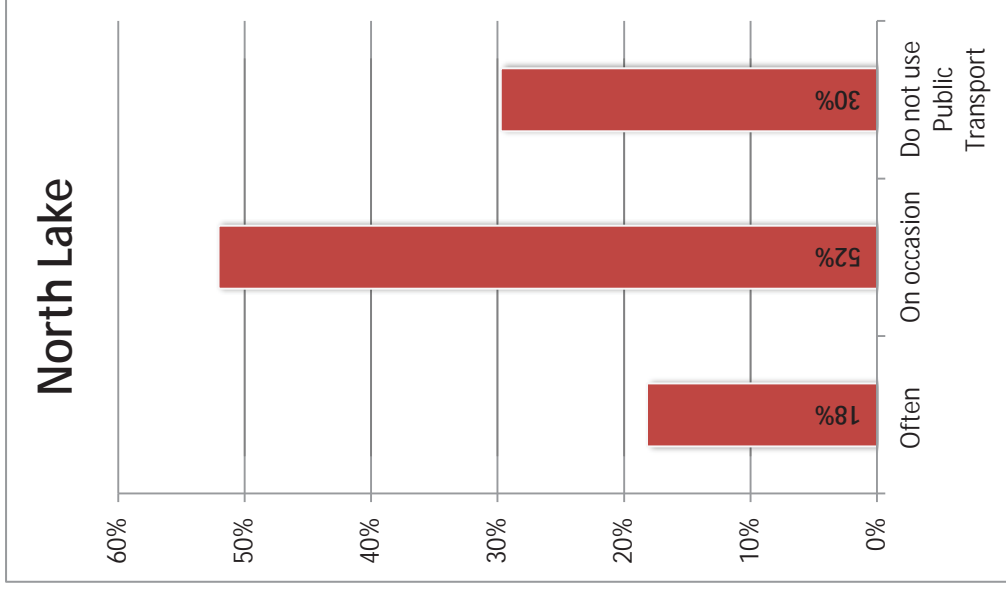
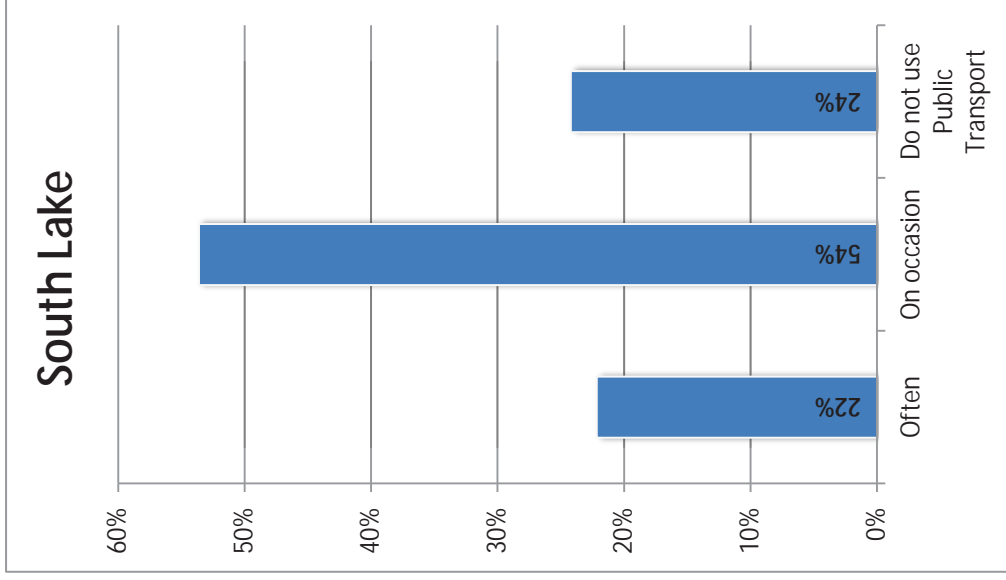
Overall, respondents are pleased with pedestrian and cyclist paths in the Lakes area. The most satisfied suburb was North Lake with 78% of respondents 'agreeing' their suburb is safe, well maintained and well connected. The next suburb is South Lake with 69% of respondents agreeing and Bibra Lake with 61% of respondents agreeing.

Q4. Traffic Management and Parking within my suburb is considered safe, well maintained and efficient:



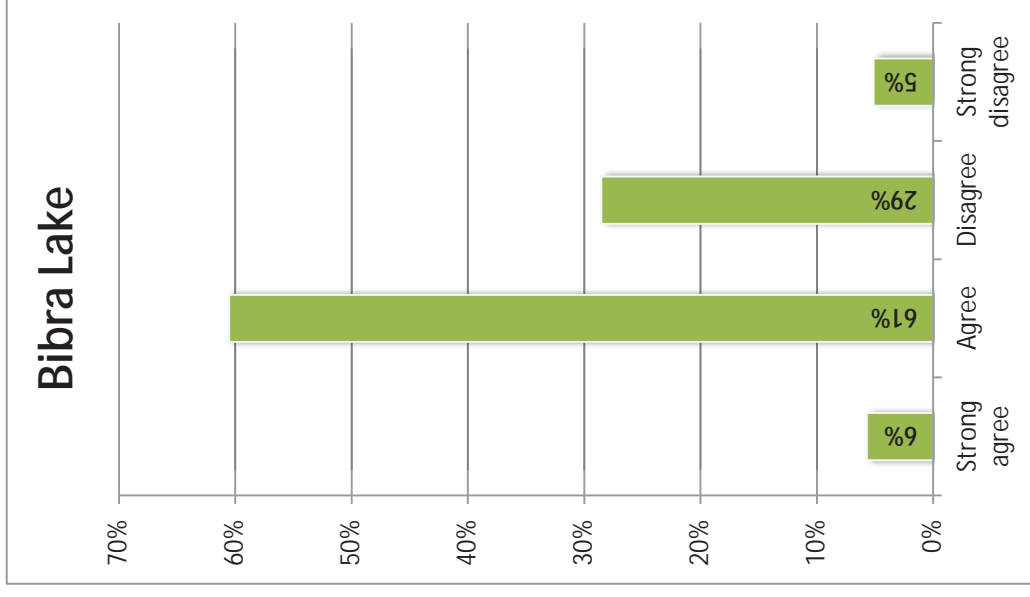
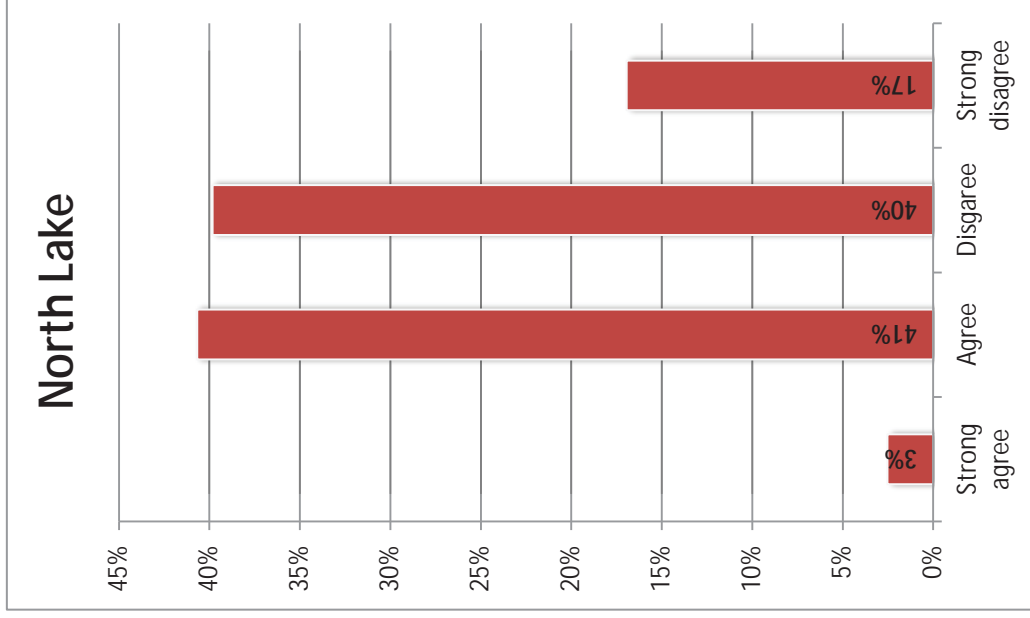
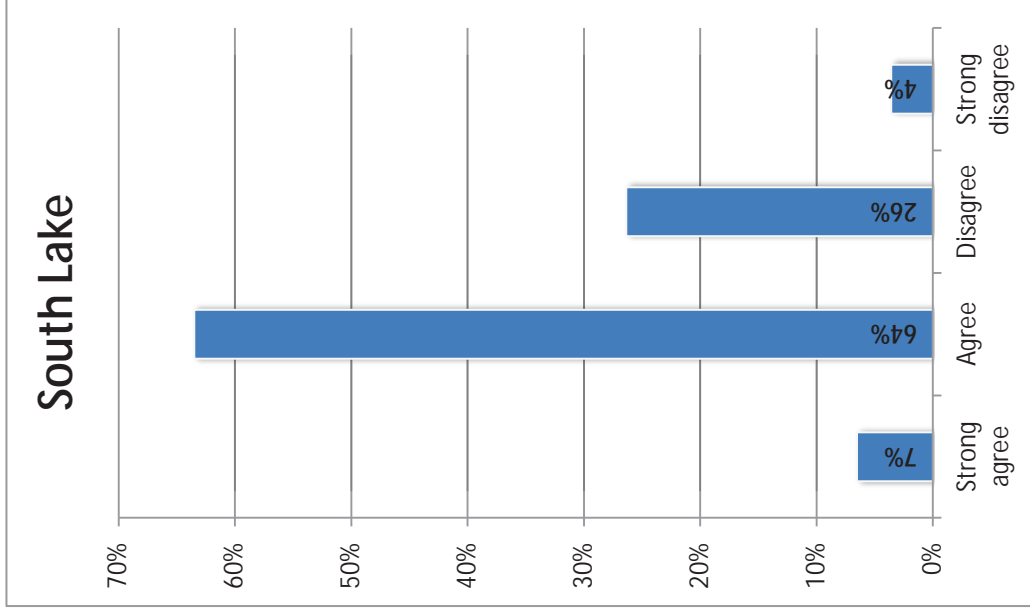
Overall, Traffic management and parking is considered safe and efficient within the Lakes area. Bibra Lake respondents 'agree' with this statement the most at 76%, followed by North Lake respondents at 75% and South Lake respondents 67%.

Q5. How often do residents use *public transport* within their suburb?



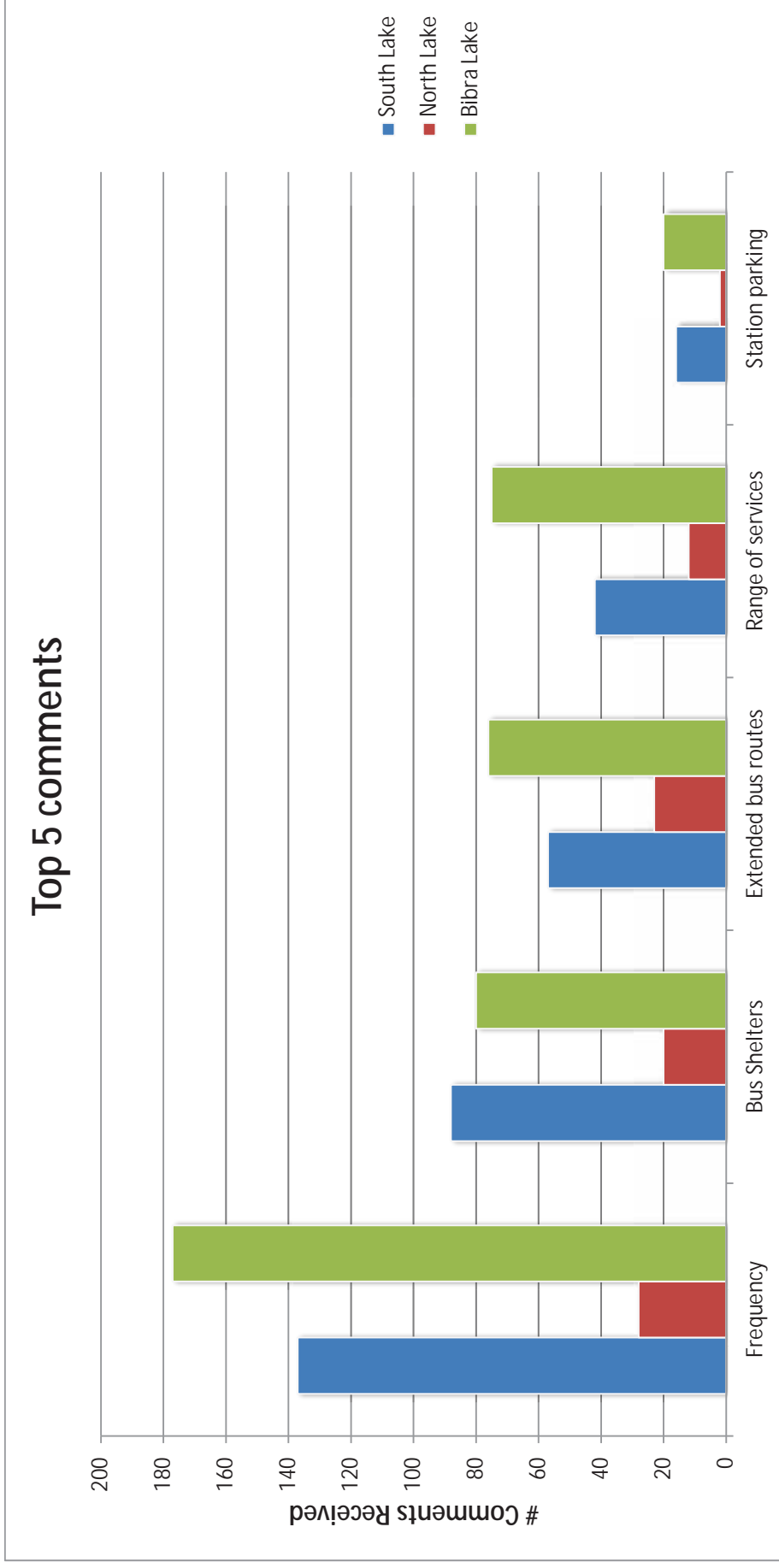
While on average 50% of residents use public transport there remain opportunities to promote a greater use of bus facilities.

Q6. My suburb is well serviced by Public Transport:



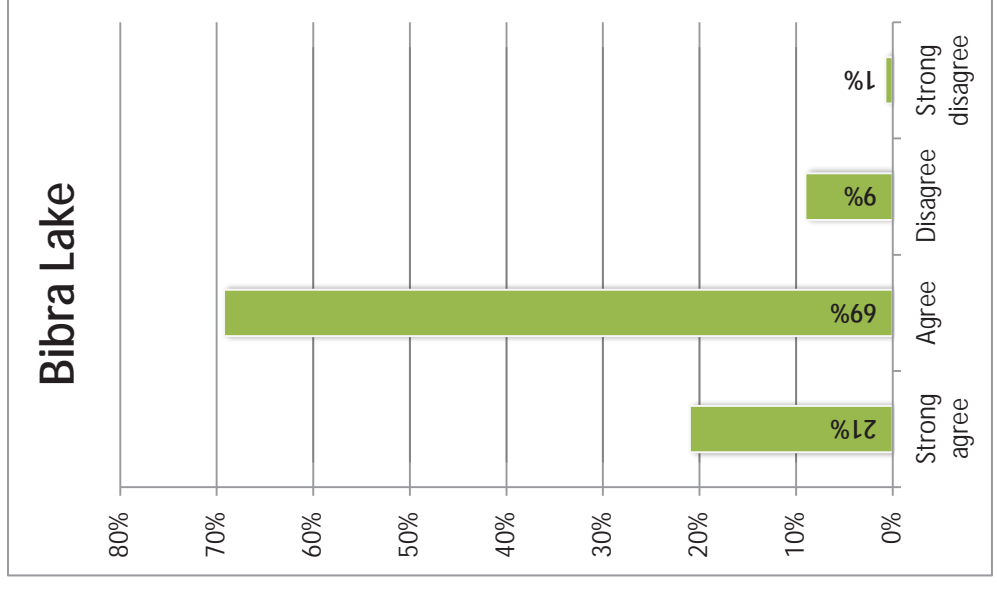
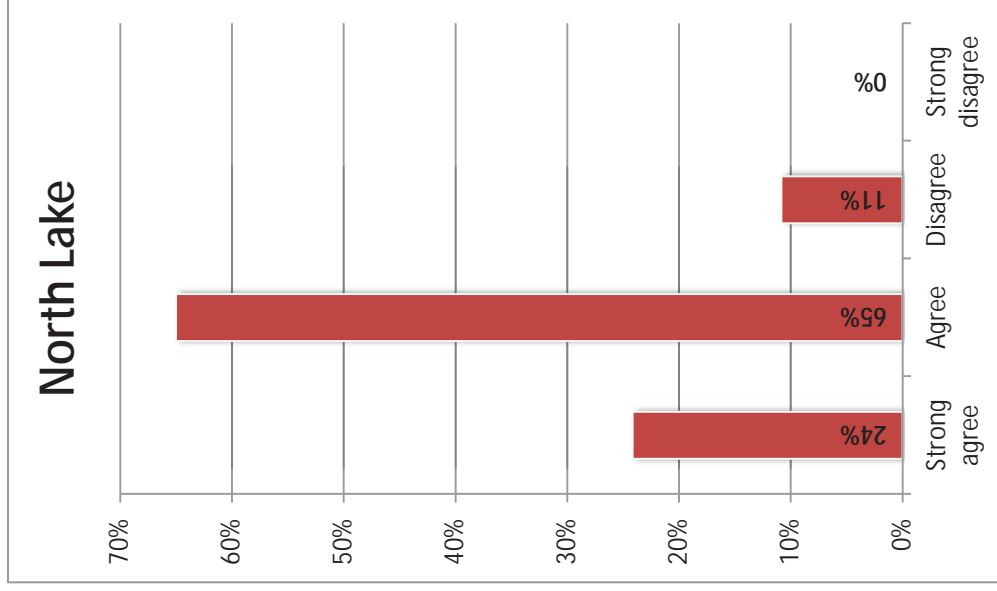
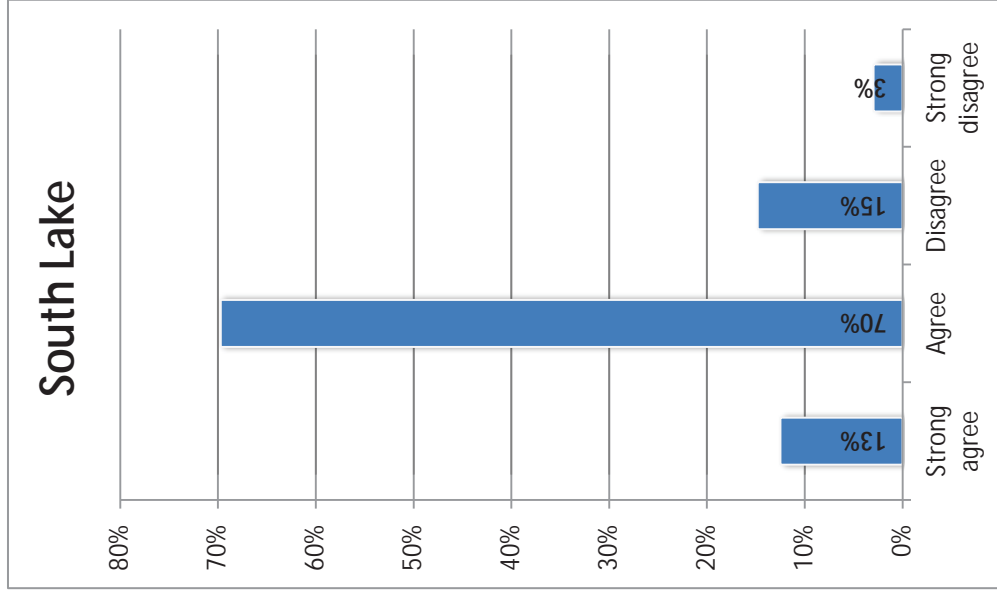
A good response from South Lake and Bibra Lake residents was received regarding bus services however the majority of residents in North Lake believe services in and around their suburb could be improved.

Q7. What Public Transport elements would you recommend to help increase the use of Public Transport?



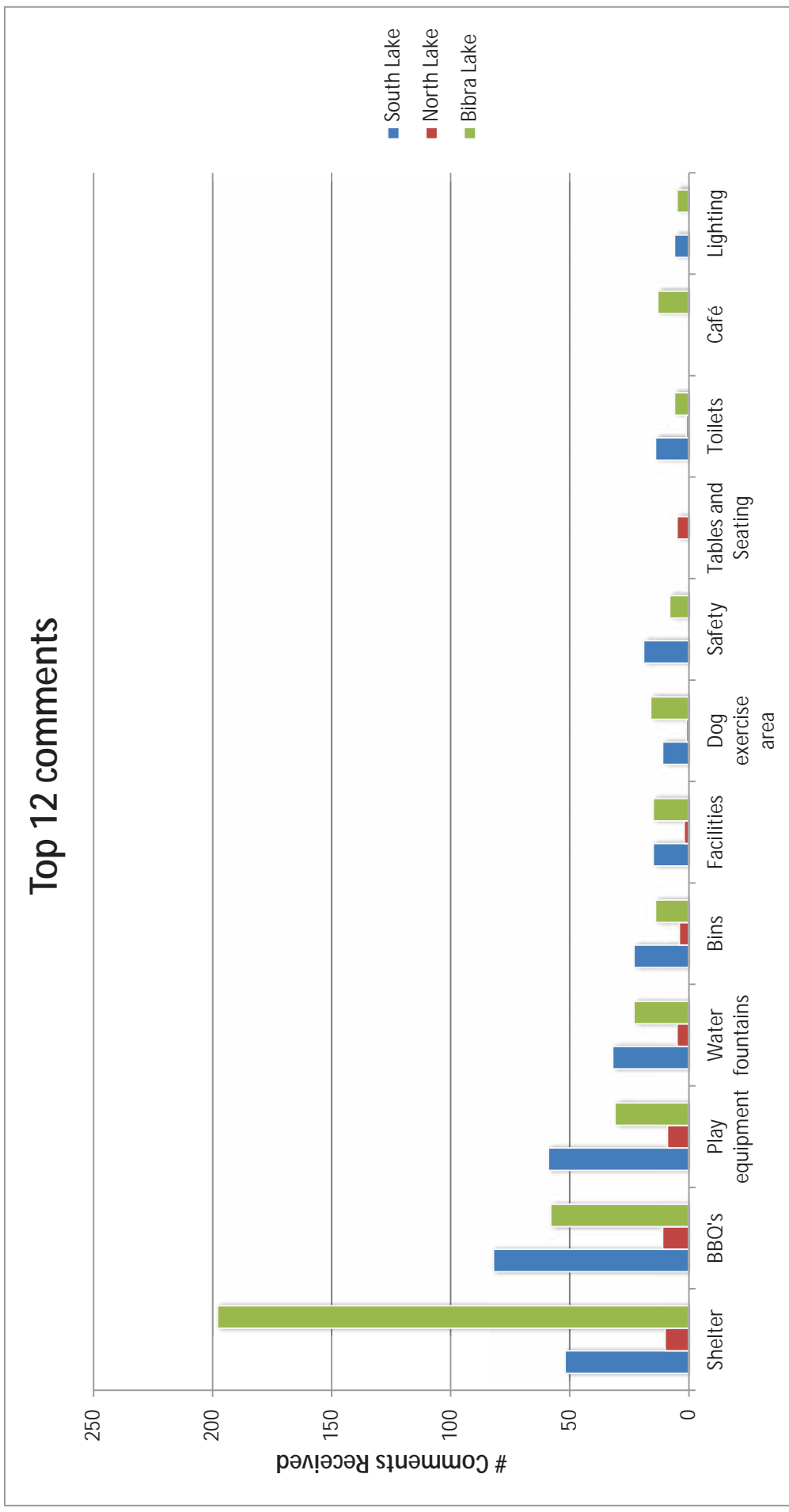
These results suggest the City should undertake discussions with the Public Transport Authority to review bus frequency times, especially in South Lake and Bibra Lake. Bus facilities should also be reviewed.

Q8. The Parks within my suburb meet my needs and the needs of my family:



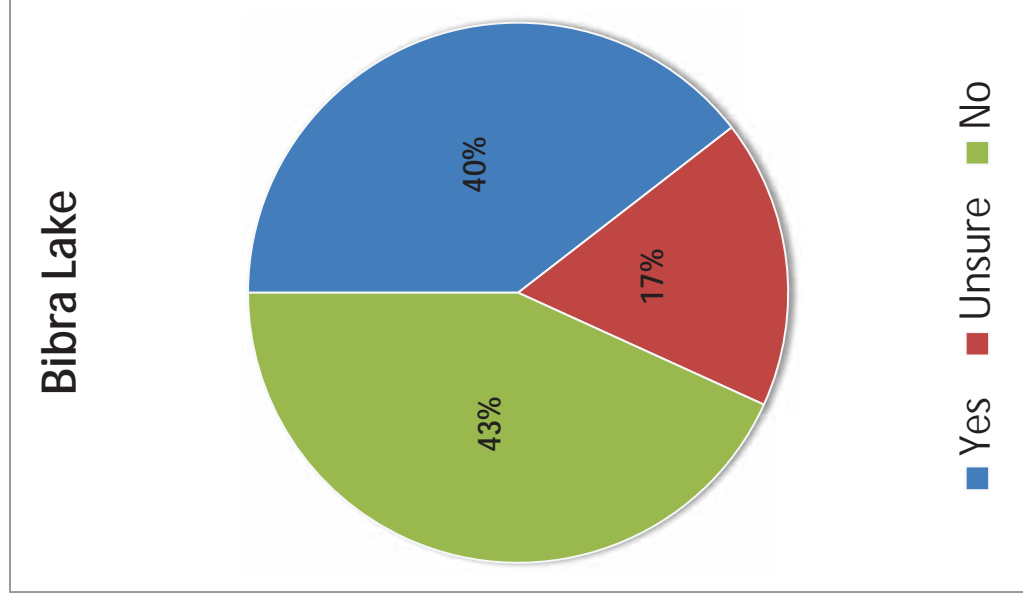
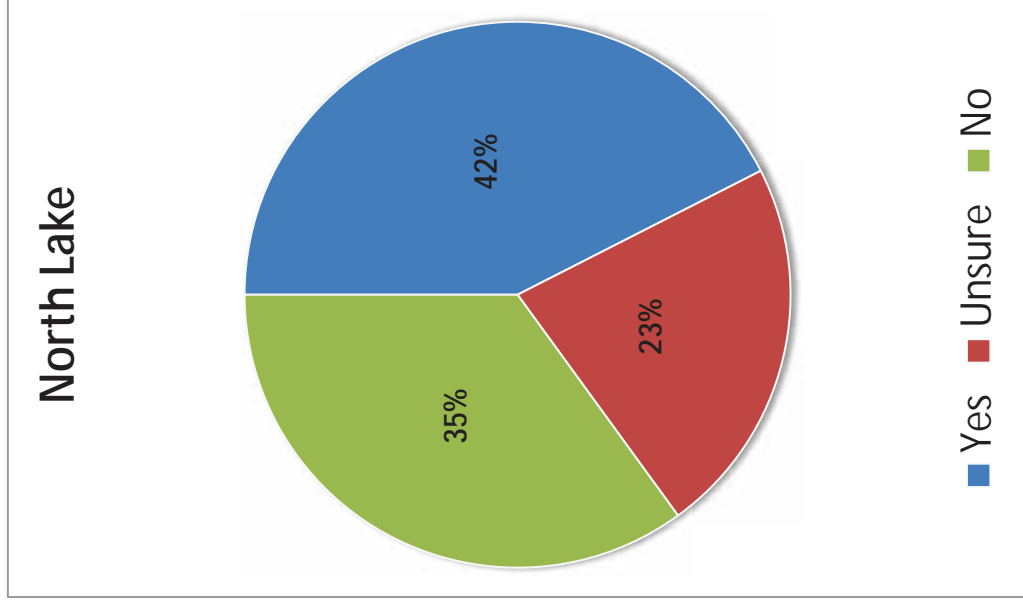
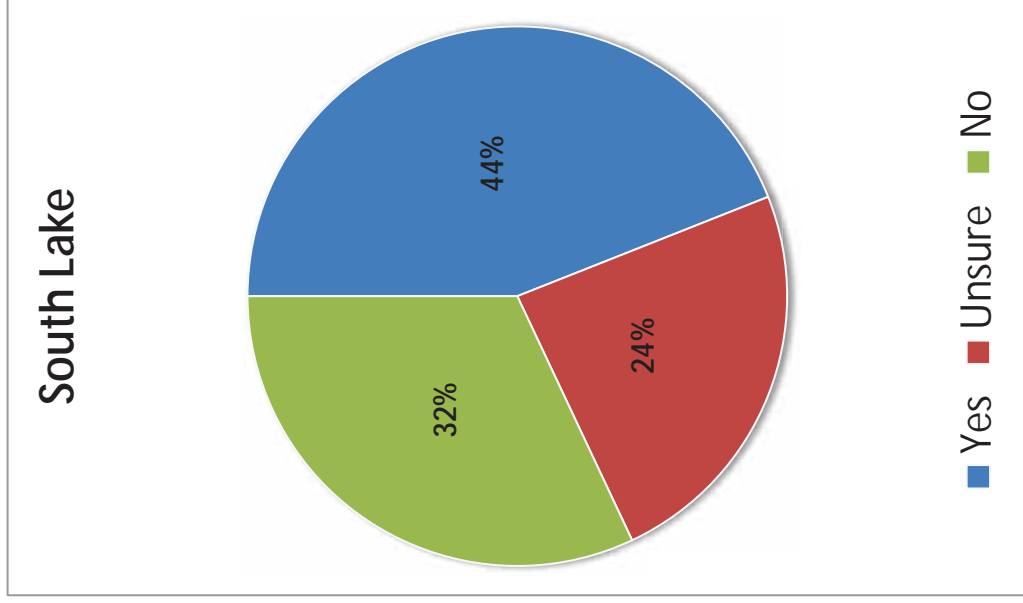
Parks and open space are popular within the Lakes area. Between 83% and 89% of respondents from each suburb 'agree' that the Parks meet the needs of themselves and their families

Q9. What elements of the Parks could be improved upon?



This list directly assists the City in understanding where improvements can be made to parks.

Q10. Respondents interested in taking part in tree planting program



40% of Bibra Lake respondents, 42% of North Lake and 40% of South Lake respondents would be interested in taking part in a tree planting program

CITY OF COCKBURN

FACILITATION OF THE LAKES REVITALISATION STRATEGY COMMUNITY VISIONING FORUMS

~ OUTCOMES REPORT ~

BACKGROUND

The Lakes Revitalisation Strategy is the latest of the City of Cockburn's revitalisation projects. The previously completed Phoenix, Hamilton Hill and Coolbellup Revitalisation Strategies have provided comprehensive plans to guide future development within the established suburbs of Spearwood, Hamilton Hill and Coolbellup respectively. The Strategies will guide the planning and delivery of future housing types and housing choice to those suburbs, as well as identifying the works required to facilitate improvements to the natural and urban environments.

As part of the initial community consultation for The Lakes Revitalisation Strategy, Chris Antill Planning and Urban Design Consultant was appointed to help prepare a program for, and to facilitate, four community forums aimed at drawing out and articulating the residents' "vision" for the future development of their suburbs, with the principal emphasis on housing types and housing choice.

PROGRAM FOR THE COMMUNITY VISIONING FORUMS

Four Forums were held on the evenings of:

- Monday June 8th
- Wednesday June 10th
- Monday June 22nd, and
- Wednesday June 24th.

The first two forums were attended by residents of the North Lake and Bibra Lake communities, and the second two forums were attended by residents of South Lake.

The first two forums were attended by a total of approximately 160 community members, and the second two forums by approx. 110 community members (total of approx. 270).

The program for each forum was similar:

- Introduction;
- A presentation by the facilitator explaining the forum format and general aims;
- A presentation by the City's Manager of Strategic Planning explaining background and context information;
- Workshop [(attendees working in groups of approx. 5-7 with the assistance of a table co-ordinator (City of Cockburn staff member and planning students from Curtin University)];
- Presentations by a spokesperson from each table;

- Brief summation by the forum facilitator of the common “themes” and consensus views that emerged from the individual table presentations;
- “Where to from here, and next steps” explanation by the City’s Manager of Strategic Planning;
- Close of forum.

Each forum ran for about three hours.

WORKSHOP STRUCTURE

The attendees were asked to debate and discuss five questions (see **Appendix 1**). A period of approximately 45 minutes was allocated to this part of the forum. The table co-ordinators were asked to stimulate debate amongst those at their table, and to record both individual comments and collectively-held views.

Attendees were encouraged by the table co-ordinators to discuss each of the five questions in turn, and the co-ordinators had the responsibility of formulating a consensus “table view” for each question.

At the end of the workshop phase, a spokesperson from each table was asked to present, in turn, their table’s responses to the five questions. Both individual comments and collectively-held views were articulated.

Each evening concluded with an attempt to summarise the individual table responses, however, given the large attendance at each of the four forums, there was, unsurprisingly, a diverse range of views. This was reflective of the diverse nature of the suburbs, as well as the differing needs and aspirations of the attendees.

As a result, in addition to each table presenting, all of the notes taken at the tables by the co-ordinators were collected for analysis in preparing this Outcomes Report.

CONSENSUS THEMES ACHIEVED

A number of clearly identifiable and consistent responses emerged from the table presentations and the table notes.

The consensus themes of the first two forums (Bibra Lake and North Lake) were generally consistent across both forums. Likewise, the consensus themes of the second two forums (South Lake) were also generally consistent across both.

(1) North Lake & Bibra Lake:

What aspects of North Lake/Bibra Lake do you value and are important for the future?

(Most commonly mentioned values listed first)

The most highly valued aspects were:

- The lakes/wetlands/natural environment;
- The greenery/trees/flora/fauna;
- The suburb’s location and proximity to surrounding facilities/freeway/train station/attractions/employment, and accessibility to local shops and schools;
- Community pride/sense of community;

- Quiet environment;
- The public open spaces/parks;
- Safety and security;
- Wide, attractive streets/streetscapes/current dwelling setbacks;
- The walkways/cycleways;
- Existing character/amenity;
- Low traffic volumes/no through traffic; and
- Good distribution of shopping facilities.

Other aspects of value included:

- The current low density of development/low building heights;
- Underground power;
- The walkability of the suburbs;
- Public transport; and
- Aged care facilities.

What is your appetite for change in terms of new residential development and redevelopment within North Lake/Bibra Lake? Low, medium, high?

The individual tables rated their appetites for change as follows:

- | | |
|---------------|----|
| ▪ Low | 4 |
| ▪ Low-medium | 6 |
| ▪ Medium | 10 |
| ▪ Medium-high | 1 |
| ▪ High | 0 |

It appeared that North Lake attendees were generally less enthusiastic about the prospect of change and renewal than the Bibra Lake attendees.

Would you support a greater variety of housing and therefore residential densities throughout North Lake/Bibra Lake? If yes, where would you like to see medium to high residential densities provided?

There was very strong support for a greater variety of housing to be provided in the future. The most common responses were:

- More variety generally – e.g., town houses, villas, grouped dwellings (10 tables)
- Battle-axe lots/maximum of two dwellings/lot (6 tables)
- No high density (6 tables)
- More retirement housing (2 tables)

There was generally good support for “targeted change”. This was identified as permitting higher densities in the following locations:

- Around activity centres/shops/schools;
- Around parks;
- Along public transport corridors;
- Around the lake;
- Closer to Fiona Stanley Hospital/Murdoch;
- Along the railway reserve.

There was strong support for the principle of future housing types maintaining existing residential amenity, and having quality design, possibly through the imposition of appropriate design guidelines.

There was also support for restricting building heights to a 2 or 3 storey maximum.

What public domain improvements should take place for North Lake/Bibra Lake? (e.g., street trees, parks, public art, plantings and car parking under power line easements, improved public transit and facilities)

(Most commonly mentioned proposed improvements listed first)

Proposals receiving strong support included:

- Improve public (bus) transport (i.e., higher frequency of services, greater route choices, more direct services);
- Provide more (appropriate/native) street trees;
- Improve the quality and connectivity of footpaths and shared use paths;
- Upgrade facilities and levels of maintenance at parks and public open spaces (e.g., toilets, shade structures, drinking fountains, play equipment, seating etc.); and
- Improve street lighting.

Other improvements receiving good support included:

- Provide a café/food and drink outlet on the edge of Bibra Lake (possibly to also act as a new community focus or hub);
- Provide better road access and more access points in/out of the suburbs, and between the North Lake and Bibra Lake communities;
- Provide some fenced parks/off-leash dog areas;
- Provide better public facilities at the lakes (including the east side of Bibra Lake);
- Extend underground power to all of the suburbs;
- Improve parking at the shopping centres; and
- Upgrade/expand the local centres.

Other improvements receiving support included:

- Protect the environmental assets of the area;
- Upgrade street lighting;
- Provide more information/education regarding the lakes and wetlands;
- Protect/improve streetscapes;
- Upgrade the skate park;
- Protect the environmental assets of the area;
- Eradicate the mosquitoes/midges associated with the lakes;
- Stop trail bikers;
- Provide lighting around Bibra Lake;
- Improve traffic flows/ease congestion;
- Improve parking around the lakes;
- Provide more seating and public amenities;
- Provide community gardens;
- Provide street markets;
- Ameliorate freeway noise.

What are the three priority actions that authorities could take which would improve your community?

(Most commonly mentioned priorities listed first)

- Protect/enhance the lakes/wetlands/natural areas/wildlife (easily the highest priority);
- Upgrade public transport;
- Improve public open space facilities/environments;
- Improve levels of access and safety for pedestrians and cyclists;
- Upgrade road connectivity;
- Improve the appearance/maintenance levels within the area;
- Minimise the impact of any higher densities that may be provided;
- Provide more, and more appropriate, street trees;
- Improve street lighting and extend underground power.

There appeared to be no support stated by any individual or table for the Roe Highway extension.

SUMMARY

- Bibra Lake and North Lake residents greatly value and appreciate the lakes, wetlands and the natural environment. The existing trees, greenery, and flora and fauna are all rated highly by the community. The suburb's location and accessibility are seen as major advantages, and the sense of community is pronounced. The parks, other public open spaces, the quiet environment and the relative safety and security of the suburb are highly valued.
- Overall there is a low to medium appetite for change. Bibra Lake residents appear, however, to be more enthusiastic about change and renewal than North Lake residents.
- There is strong support for a greater variety of housing types to be provided: e.g., town houses, villas and grouped dwellings. A 2-3 storey maximum building height is generally supported.
- These higher density-type dwellings should preferably be provided in targeted areas, such as around shopping centres, parks and schools, and along the main public transport routes.
- There is good support for the view that subdivision of all single lots presently accommodating a single dwelling should generally be permitted, so that in future two dwellings can be accommodated on each lot in a "battle-axe"-type configuration.
- New housing should be of a high quality and maintain existing residential amenity, and development/design guidelines should be introduced alongside new R-Codes to ensure this occurs.
- The major public transport system in the locality (buses) is appreciated, but the community is strongly of the view that it needs upgrading through greater route choices, more direct routes, and higher frequency of services.
- More street trees need to be introduced – preferably native species.

- The quality and connectivity of the existing footpath and shared use path systems needs improving.
- Existing public open space reserves are highly valued, however there is scope for improvements to the standard and scope of the facilities within them. The opportunity exists to upgrade and improve the parks to encourage greater usage, particularly by the youth in the community. The value of the public open space reserves will increase over time as population and demand increases. Facilities that could be introduced include public toilets, shade structures, drinking fountains, play equipment, seating etc. The local residents would like to be consulted by the City when changes are being planned.
- A café/food and drink outlet located on the edge of Bibra Lake would act as a new community focus, and would be welcomed. More public facilities generally around Bibra Lake would be appreciated, including on the Lake's east side.
- Better access into and out of the suburbs is required, and the two communities should be better linked.
- Some fenced-off dog exercise areas should be provided where dogs can be allowed to run without leads.
- The program of undergrounding the powerlines within the suburb should be completed as soon as possible.
- The local shopping centres could be upgraded and allowed to expand, provided sufficient car parking was also provided.
- There seems to be very little support, if any, for the extension of Roe Highway.

(2) South Lake:

What aspects of South Lake do you value and are important for the future?

(Most commonly mentioned values listed first)

The most highly valued aspects were:

- The suburb's location and proximity to surrounding facilities/freeway/train station/attractions/employment, shopping and accessibility to local schools;
- The parks and open spaces; and
- The lakes/wetlands/flora & fauna, natural environment.

Other aspects of value receiving good support included:

- The suburb's quietness;
- Public transport, especially the bus service;
- The streetscapes/greenery/trees;
- The sense of community that prevails;
- Safety and security;
- The suburb's walkability; and
- Large blocks with gardens.

Other values receiving some support included:

- The Leisure Centre;
- The suburb's affordability;
- The footpaths and cycle paths;
- The wide streets;
- The shopping centres; and
- The lack of high rise/high density development.

What is your appetite for change in terms of new residential development and redevelopment within South Lake? Low, medium, high?

The individual tables rated their appetites for change as follows:

- | | |
|---------------|---|
| ▪ Low | 1 |
| ▪ Low-medium | 0 |
| ▪ Medium | 6 |
| ▪ Medium-high | 6 |
| ▪ High | 8 |

Would you support a greater variety of housing and therefore residential densities throughout South Lake? If yes, where would you like to see medium to high residential densities provided?

There was very strong support for a greater variety of housing to be provided in the future.

- More variety generally – e.g., town houses, villas, grouped dwellings, apartments (20 tables), including battle-axe type development (7 tables).

There was also very strong support specifically for “targeted change” (17 tables). This was identified as permitting higher densities in the following locations:

- Around activity centres such as shops;
- Around parks;
- Along selected main roads (such as Elderberry Drive and Berrigan Drive); and
- Along bus routes.

Five tables also suggested that medium density housing could be permitted throughout the suburb.

There was good support for the principle of future housing types maintaining existing residential amenity, and having quality design, possibly through the imposition of appropriate design guidelines.

Views on height limits varied between one and four storeys maximum. There seemed to be greatest support for restricting building heights to 2 to 3 storeys maximum.

The need for more aged care housing and over-55s housing was also mentioned by three tables.

What public domain improvements should take place for South Lake? (e.g., street trees, parks, public art, plantings and car parking under power line easements, improved public transit and facilities)

(Most commonly mentioned proposed improvements listed first)

Proposals receiving strong support included:

- Upgrade facilities and levels of maintenance at parks and public open spaces (e.g., toilets, shade structures, exercise equipment, nature play, lighting, drinking fountains, play equipment, seating, BBQs, parking etc.);
- Underground the powerlines;
- Improve public (bus) transport (i.e., higher frequency of services, greater route choices, more direct services, greater reliability of services); and
- Improve the quality and connectivity of footpaths and shared use paths.

Other improvements receiving good support included:

- The need for more, and more appropriate (native or fruit) street trees;
- Upgrading of suburb entry statements (landscaping, signage, art works);
- Upgrading of street lighting;
- Traffic calming, better traffic management;
- Maintain/improve streetscape character; and
- Improve the building appearance and car parking availability at the local shopping centres.

Other improvements receiving support included:

- Upgrade the pedestrian accessways;
- Improve the number and accessibility of parks;
- Provide an enclosed (off-leash) dog exercise area;
- Provide more main road crossing points;
- Improve the area under the major powerlines;
- Provide more street art/public art;
- Stop the use of trail bikes within the suburb; and
- Upgrade security.

What are the three priority actions that authorities could take which would improve your community?

(Most commonly mentioned priorities listed first)

- Upgrade facilities and levels of maintenance at parks and public open spaces (e.g., toilets, shade structures, exercise equipment, nature play, lighting, drinking fountains, play equipment, seating, BBQs, parking etc.);
- Underground the powerlines;
- Initiate zoning changes to permit the development of a wider choice of housing types; and
- Provide more street trees/upgrade streetscapes.

Other significant priorities included:

- Improve public (bus) transport (i.e., higher frequency of services, greater route choices, more direct services, greater reliability of services);
- Improve traffic management generally;
- Upgrade the suburb entry statements (landscaping, signage, art works); and
- Improve the quality and connectivity of footpaths and shared use paths.

There appeared to be very little support for the Roe Highway extension.

SUMMARY

- South Lake residents greatly value and appreciate the lakes, wetlands and the natural environment. The existing trees, greenery, and flora and fauna area all rated highly by the community. The suburb's location and accessibility are seen as major advantages, and the sense of community is pronounced. The parks, other public open spaces, the quiet environment, the attractive streetscapes and the relative safety and security of the suburb are highly valued. The suburb's walkability is valued, as are the large residential blocks with gardens.
- There is a medium to high appetite for change. Very few residents want to resist change. Initiating zoning changes to permit the development of a wider choice of housing types is a high priority for the community.
- There is strong support for a greater variety of housing types to be provided: e.g., town houses, villas, grouped dwellings and apartments. A 2-3 storey maximum building height is generally supported.
- There was also a need expressed for more aged care housing and over-55s housing.
- Higher density-type dwellings should preferably be provided in targeted areas, such as around shopping centres, parks, along selected main roads, and along the main bus routes. However, there was also good support for allowing redevelopment to occur throughout the suburb.
- There is good support for the view that subdivision of all single lots presently accommodating a single dwelling should generally be permitted, so that in future two dwellings can be accommodated on each lot in a "battle-axe"-type configuration.
- New housing should be of a high quality and maintain existing residential amenity, and development/design guidelines should be introduced alongside new R-Codes to ensure this occurs.
- Existing public open space reserves are highly valued, however there is scope for improvements to the standard and scope of the facilities within them. The opportunity exists to upgrade and improve the parks to encourage greater usage, particularly by the youth in the community. The value of the public open space reserves will increase over time as population and demand increases. Facilities that could be introduced include public toilets, shade structures, drinking fountains, play equipment, seating etc. The local residents would like to be consulted by the City when changes are being planned.

- The program of undergrounding the powerlines within the suburb should be completed as soon as possible.
- The major public transport system in the locality (buses) is appreciated, but the community is strongly of the view that it needs upgrading through greater route choices, more direct routes, a higher frequency of services and greater reliability of services.
- The quality and connectivity of the existing footpath and dual-use path systems needs improving.
- More street trees need to be introduced – preferably native species and/or fruit trees.
- High quality entry statements to the suburb are required. These could be made up of a combination of attractive landscaping, signage and artworks.
- Street lighting should be upgraded, and better traffic management and traffic calming introduced to reduce vehicle speeds and improve safety for pedestrians and motorists.
- The existing, highly valued streetscapes should be maintained and/or improved.
- The appearance and parking availability of the local shopping centres require upgrading.
- There seems to be very little support, if any, for the extension of Roe Highway.

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Chris Antill Planning & Urban Design Consultant

16.07.2015

APPENDIX 1 – Questions

THE LAKES VISIONING FORUMS ~

1. What aspects of North Lake/Bibra Lake/South Lake do you value and are important for the future?
2. What is your appetite for change in terms of new residential development and redevelopment within North Lake/Bibra Lake/South Lake? Low, medium, high?
3. Would you support a greater variety of housing and therefore residential densities throughout North Lake/Bibra Lake/South Lake? If yes, where would you like to see medium to high residential densities provided?
4. What public domain improvements should take place for North Lake/Bibra Lake/South Lake? (e.g., street trees, parks, public art, plantings and car parking under power line easements, improved public transit and facilities)
5. What are the three priority actions that authorities could take which would improve your community?

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