STIRLING CITY CENTRE URBAN DESIGN + LANDSCAPE STRATEGY REPORT

FOR STIRLING CITY CENTRE ALLIANCE

NOVEMBER 2013

PLACE LABORATORY | SYRINX environmental pl

LIMITATIONS OF REPORT

This document is and shall remain the property of Syrinx Environmental Pl and Place Laboratory. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unathorised copying or use of this document in any form whatsoever is prohibited. No further information can be added without the consent of the Owner, nor does the report contain sufficient information for purposes of other parties or for other uses. The information contained in this report has been prepared in good faith, and accuracy of data at date of issue has been compiled to the best of our knowledge. However, Syrinx Environmental PL / Place Laboratory is not responsible for changes in conditions that may affect or alter information contained in this report before, during or after the date of issue.

REPORT DETAILS:

VERSION NO.	DATE	AUTHOR	REVIEWER	COMMENT
0	25/09/2013	SH/AC/KO	ALL	ISSUED AS DRAFT
1	22/11/2013	KO/AC	KO/AC	FINAL

1.0
INTRODUCTION
TO STIRLING CITY
CENTRE

PAGE 1

2.0
OVERALL
DIRECTION

PAGE 9

3.0
PROJECT
CONTEXT

PAGE 13

4.0
DEVELOPING THE
STRATEGIES

PAGE 35

5.0
DETAILED ELEMENTS

6.0
IMPLEMENTATION

7.0
APPENDICES

1.0
INTRODUCTION TO STIRLING CITY CENTRE

1.1 INTRODUCING THE STIRLING CITY CENTRE PROJECT

The Stirling Alliance has been charged with planning the development of the Stirling City Centre as a 'Strategic Metropolitan Centre' under the Department of Planning's Directions *2031: A Spatial Framework for Perth and Peel* to complement the Perth central area as a major activity centre.

Ultimately, the urban renewal of Stirling seeks to provide employment opportunities, housing and associated social infrastructure for an estimated future population of approximately 27,000 workers and 19,500 residents.

It is acknowledged that these yields for projected future population represent intended targets of the Stirling Alliance at a point in time (September 2013) and these may be subject to change.

The Stirling Alliance envisions Stirling City Centre as "a sustainable 21st century city, a place for everyone" and "a hub for a diverse and prosperous community, offering wellbeing for all." (Stirling Alliance, 2009).

A core set of values and principles underpin the direction for growth in Stirling City Centre to achieve this vision and are defined in *The Stirling City Centre Performance Framework*. These values are supported by the key areas of strategic focus including:

- Governance;

- Accessibility and Urban Form;

- Environmental Health;

- Community Wellbeing; and

- Economic Health.

Each area of strategic focus is further defined by a set of key objectives. This Urban Design and Landscape Strategy provides direction to meet these key objectives to ensure that the Alliance ultimately achieves this vision.

1.2 PURPOSE OF THE URBAN DESIGN AND LANDSCAPE STRATEGY

This Urban Design and Landscape Strategy (UDLS) will provide the overarching framework and strategic direction to guide the development of all future urban design and landscape elements to ensure delivery meets the principles and targets identified in the *Stirling City Centre Performance Framework*.

This UDLS sets out to:

▪ Provide a vision and framework for the public realm;

▪ Identify values and principles for improving the liveability and prosperity of Stirling City Centre that underpin the vision; and

▪ Present key opportunities and criteria for specific urban design and landscape elements.

The Strategy builds upon the knowledge and aspirations of key stakeholders and the local community with the aim of transforming Stirling City Centre through the creation of functional, sustainable, meaningful, inclusive and aesthetic public spaces that promote both people's health, happiness, and well being and the harmonious inter-relationship between built and natural environment.

WHAT DOES THIS STRATEGY ADDRESS?

Public Realm

The public realm referred to in this strategy includes all exterior places, linkages and built form interfaces that are physically and or visually accessible to the public regardless of ownership.

The UDLS does not specifically address building form or typology. A comprehensive *Urban Typology Framework* (CODA 2013) has been prepared and should be read in conjunction with this UDLS.

The public realm has been organised into three categories; streetscapes, parks and green spaces, and urban spaces.

▪ Streetscapes include the road, the footpaths, furniture, trees and building interfaces that combine to form the public realm character.

▪ Parks and green spaces include public open space that is publicly owned land for recreation (including parks, reserves, sporting grounds and waterways).

▪ Urban spaces include special purpose spaces that may be either local government owned or privately owned and managed, such as urban plazas, town squares, and transport interchanges.

Communal Open Space

Complementing the public realm are a series of external spaces that are accessible to and shared by residents within a defined community. This communal open space is required to be provided by individual developers within development lots.

Communal open spaces include, urban courtyards, roof gardens, public access ways. These spaces contain or provide access to communal facilities such as swimming pools, BBQs, play equipment, seating, gyms, courts and community gardens within development lots. These spaces will provide valuable additional open space to complement the public realm.

Communal open space is traditionally privately managed and used soley by building occupants, however spaces and facilities can be made accessible to the broader public.

PREVIOUS STUDIES

DRAFT STRUCTURE PLAN

DESIGN WORKSHOPS
Further design assessment of the South Station Govt. Hub, Station Precinct, Southern Precinct + Stream Alignment

DRAFT DETAILED AREA PLANS + GUIDELINES
Innaloo
Woodlands

DEVELOPMENT PLANS
Current DA's and Draft Development Plans including inc. Westfield, Dept. of Housing site, Event Cinemas, Stirling Cross.

CURRENT STUDIES

MASTER STRATEGY + DEVELOPMENT OF CONCEPT SCENARIO 1 FOR STAGE 1

Urban Design + Landscape Strategy
Urban Typology Framework
Integrated Transport Strategy
Utilities Infrastructure Strategy
Aboriginal Heritage Assessment
Community Needs Assessment
Environmental + water Investigations
Urban Stream Concept Design
Composite Plan

FUTURE STUDIES

FUTURE STUDIES + PLANS

Revised Structure Plan
Improvement Scheme
Local Development Plans
Other further studies + plans

Figure 1: Relationship to Previous and Current Studies.

1.3 RELATIONSHIP TO PREVIOUS AND CURRENT STUDIES

A series of studies have influenced the resulting UDLS for the City Centre.

The key document which guides the UDLS is the *Draft Structure Plan (Stirling Alliance 2011).* Informed by a series of initial studies and the "Festival of Ideas" this document sets out the key structural elements, articulates the vision and intent for the City Centre and the principles that underpin these. The document defines precincts within the city Centre and their associated development intensity, land-use distribution, arrangement of street blocks, movement networks and activity nodes.

Since the advertising of *Draft Structure Plan*, further design has been undertaken within specific precincts including:
- Approved development plans (inc. Event Cinemas, Stirling Cross) and concept plans (Westfield and possible Dept. of Housing site demonstration site)

- Preparation of Draft Detailed Area Plans & Design Guidelines for Innaloo & Woodlands

- Further Enquiry by Design Workshops which propose changes to the Draft Structure Plan arrangement .

The UDLS captures and builds upon the vision, intent and principles set for the City Centre in past studies, amalgamates shifts in the *Draft Structure Plan* that have arisen for further detailed work since it was prepared. The UDLS provides the overall direction for open space within the City Centre and is complemented by a set of parallel studies which the UDLS should be read in conjunction with.

These studies contribute to the development of the Master Strategy and Concept Scenario 1 for Stage 1 and include:
- *Urban Typology Framework* (CODA 2013) - This informs future planning and design with respect to street scale, built form interface, urban grain, materials and character.

- *Integrated Transport Strategy* (GHD 2013) - Defines transport modes, road networks and hierarchy.

- *Utilities Infrastructure Strategy* (GHD 2013) - Informs location of precinct water and energy infrastructure and the reticulation of services within the public realm.

- *Environmental & Water Investigations* (GHD 2013) - Informs the integration of environmental management measures within the public realm

- *Urban Stream Concept Design* (Syrinx 2013) - Defines the functional requirements of the urban stream.

- *Community Needs Assessment* (Hames Sharley 2013) - Defines the community services and public facilities required to support the forecast future population of the City Centre.

- *Ethnographic Heritage Consultations* (Big Island Research 2013) - Identifies and ascertains elements of cultural heritage significance and how Nyoongar people would like to see these within the City Centre.

- *Composite Plan* (Hames Sharley 2013) - Amalgamates all the previous and current studies within a consolidated base plan.

The Improvement Scheme, Revised Structure Plan, subsequent Local Development Plans and all other future studies and plans will be informed by the provisions of the UDLS.

Whilst some elements of the plan may change, the overall direction and principle with respect to the public realm will remain constant.

1.4 STRUCTURE OF THE DOCUMENT

The UDLS has been structured into six parts, broadly defined as the following:

- *Part One: Introduction* - Describes the purpose, scope and context of the strategy (this section).

- *Part Two: Overall Direction* - Establishes the broad principles for creating and maintaining good public places and sets the direction for the future of streetscapes, urban spaces, parks and green spaces. The principles provide the framework for the strategies and criteria that appear later in the document.

- *Part Three: Project Context* – Provides the historical context of the site, outlines what will change, how the city is transitioning, the current state of existing open space, and current and future community needs and aspirations.

- *Part Four: Developing the Strategies* – Establishes the structuring elements for the public realm and defines the character precincts. Specific strategies and criteria for public realm typologies demonstrate application of the principles to guide development.

- *Part Five: Detailed Elements* – Provides general attributes and recommendations on materials, furnishings and species for individual urban design and landscape elements.

- *Part Six: Implementation* – Provides key recommendations, considerations and responsibilities for individual government agencies and developers.

2.0
OVERALL DIRECTION

2.1 DEFINING THE PRINCIPLES

The planning, design and implementation of the public realm will play a pivotal role in achieving the vision for the Stirling City Centre by unifying built-form, environmental, economic and social aspirations for the project.

The six principles outlined on the following pages address the public realm specifically and expand on the objectives (Figure 1) identified in the *Performance Framework (*Stirling City Centre Alliance, April 2013). These are considered essential to the delivery of a sustainable 21st century city.

ACCESSIBILITY AND URBAN FORM
Key Objectives

- A city that is active, vibrant and accommodates the working and residential populations.
- A city which has high quality built form design
- To manage parking
- Ensuring safe, legible and accessible road networks
- Public over private transport
- Travel demand management
- To ensure walking, cycling and public transport are the dominant modes of travel

COMMUNITY WELLBEING
Key Objectives

- Ensure affordable living and business opportunities
- Provide equitable access to a range of services
- Develop a strong cultural identity, shared vision and sense of place
- Promote a tolerant society
- Provide a safe, diverse, innovative and healthy city
- Provide open space for the community

ENVIRONMENTAL HEALTH
Key Objectives

- Restore and enhance the level of biodiversity
- Reduce pollution to healthy levels
- Reduce energy, water consumption
- Maximise water re-use
- Maximise renewable energy production
- Reduce waste

ECONOMIC HEALTH
Key Objectives

- Provide opportunity for greater economic investment to improve viability for business
- Support a strong economic identity
- Support high levels of diverse local employment
- Reduce cost of infrastructure

GOVERNANCE
Key Objectives

- Deliver the vision in a fair, effective and efficient way
- Deliver the vision in an progressive and systematic way
- Deliver the vision in a transparent and accountable way
- Deliver the vision in a collaborative way
- Build capacity across the system to enable growth and improvement

Figure 2: Key Result Areas and Objectives, *Performance Framework (*Stirling City Centre Alliance, April 2013).

Cultural Identity + Sense of Place

The setting of Stirling City Centre has a rich and varied past. Revealing and celebrating this history is an essential step in developing its future identity and liveability. It's important to understand the scale and direction of change that has shaped it's past and present and will shape its future.

Principles

- Retrace, reveal and celebrate the Indigenous and European cultural heritage of earlier generations to ensure a place of plenty is created;

- Reinstate components of the area's natural features that have been modified through development by expressing through new features – constructed or natural;

- Incorporate the effects of seasonal variations in water and vegetation to create a dynamic climate responsive city; and

- Represent Stirling's social diversity in the public places. Allow certain locations to respond to contemporary demographics or traditional associations, while avoiding the appropriation of an entire space by a single group.

A Welcoming Public Realm

The public realm should invite people into the city and make them feel welcome. A positive relationship between the built form and public realm is established when building interfaces are of a human scale, distances between key spaces are walkable, connections are comfortable and the quality of landscape softens perceptions.

Principles

- Promote a compact urban form with a fine-grained mix of land uses on single sites or land development parcels to minimise travel distances between destinations;

- Provide an attractive, safe, comfortable urban environment that is conducive to walking as the primary means of local travel;

- Ensure ground floor uses to buildings are active and contain frequent, transparent openings;

- Design simple robust layouts for public places with high-quality materials and details that tolerate wear and tear; and

- Ensure new facilities demonstrate exemplary design standards.

Diversity

A diverse community of both working and residential communities has a variety of needs and differing sets of cultural meanings about use of space. Offering a broad range of spaces of varying intensity and function is critical to address the changing demographic and contributes greatly to the texture of city life.

Principles

- Establish a well connected hierarchy of public spaces that complement each other and offer varying sensory experiences and activities; formal, incidental, open, intimate, sunny, sheltered, hard and soft;

- Provide a range of special purpose destinations that interact specifically to the functionality of the surrounding built form;

- Establish social and support activities and spaces that accommodate diverse cultures and age groups and their individual recreational needs, including specific facilities and activities for youths and seniors;

- Link cultural and community facilities to 'supportive' public spaces that enhance the profile and accessibility of co-located places; and

- Promote culture events and community involvement in open spaces, such as community food gardens and art related programs.

Equitable Access to Open Space

Access to high quality open space is fundamental to the liveability of higher density urban areas and to community well-being. It supports increased physical activity and social interaction, and provides a sense of space within an otherwise intensive built environment.

Principles

- Ensure safe and comfortable access within a walkable catchment of all residents to a diverse range of open space, from district to community to local parks with varying function and amenity;

- Ensure high quality communal open space is included in all multi-residential development lots to complement public open space;

- Reduce barriers to accessibility and create new connections in the east-west and north-south direction to knit the open spaces together;

- Redevelop underutilised street spaces and surplus pieces of public reserve to link otherwise public spaces to achieve a more equitable distribution of recreational open space; and

- Ensure no loss of highly valued existing and established community open space.

Connectedness

Connectedness is a key component of the public realm and open space network. All streets should be designed as places, not just as thoroughfares. They should encourage social interactions and create distinct and inviting spaces that people choose to experience. Streets should be places where people walk, shop, play, relax, sit and talk.

Principles

- Ensure continuous, fully accessible, generous public walkways and cycle paths are integrated within a city-wide network;

- Design streetscapes for pedestrian priority and promote safety, slow speeds and reduce the visual dominance and impact of cars;

- Design streets according to their hierarchy and to reflect precinct character - wider streets with greater regularity and narrower streets with greater idiosyncrasy and informality;

- Improve comfort and aesthetics of major road crossovers to link major attractions and destinations; and

- Provide respite areas and variety of places to pause along walking routes, protected from the sun, rain and wind.

Integrated Natural Systems

Biophilic design aims to make the built environment a more enjoyable experience. Green infrastructure provides the opportunity to create microclimates that are conducive to lingering and promotes the extended use of spaces, encourages social interaction and increases biodiversity within the urban environment.

Principles

- Incorporate areas of 'natural environment' with high biodiversity and complex biomass into the built environment;

- Increase native vegetation cover and establish ecological corridors and linkages;

- Increase vegetation and canopy cover to shade the hard surfaces of the city (streets and buildings) and improve thermal comfort at street level for pedestrians;

- Integrate WSUD throughout the public realm to improve stormwater quality entering waterways, enhance character and visual amenity, reduce hard surfacing and soften built form; and

- Establish programs for rooftop greening and community gardens, including providing incentives for private developments to incorporate roof gardens, biodiverse roofs and green walls.

3.0
PROJECT CONTEXT

3.1 SCENE SETTING

The setting of Stirling was once a place of plenty, a biodiverse and culturally rich landscape, and formed part of the greater network of wetlands that have gradually been drained or infilled during Perth's development history.

Understanding the sites natural and cultural makeup and the value of the underlying systems provides valuable cues for sustainably transforming into a 21st century biophilic city.

Much of Stirling's character and distinctiveness has been forgotten, eroded, or buried. Revealing these inherent characteristics - the underlying natural landform and systems, and the cultures that have shaped the city's development - has the potential for the urban landscape to connect and identify community with the site by integrating water, biodiversity and people.

From the elders

Waugal created the wetlands and water ways. Place of plenty. Place of celebration. Place of trade and to the coast. Travelled up and down the wetland chain. Plenty of "kep" – sweet water. "The declining vitality and health of the groundwater means the waugal might leave and the processes of renewal will be lost"

1829

The early days of settlement. Swan river colony. 1850 Mongers lake become a "market garden". 1880-90S thinking about draining herdsman and some private drainage of Osborne park. 1921 – Herdsman lake drained to the ocean as park overall nookenburra drainage district.

1953

Still a place of plenty. Osborne park market gardens. First subdivisions of Innaloo. Wealth from food productions

1963

Innaloo and Doubleview developed in 10 years. A place to live, Osborne park starting to change. Hertha rd tip commences. Market gardens still provide "plenty"

1973

Place of trade. Osborne park develops as an industrious place. Market gardening still in the lowlands. Still a place of plenty. The health of the water is beginning to decline

1978

Here comes the freeway. Moving up the wetland chain. A new form of travel on an old alignment. Half of lake Hertha filled with rubbish. Market gardening still in the low lands. Still a place of plenty The health of the water is beginning to decline. Herdsman is full of typha and burns regularly

1983

Place of trade. Freeway to Balcatta Rd. Osborne park lakes still providing some food. Market gardening displaced. Open water created in herdsman lake

1992

The train arrives. Drying climate starts to kick in. Market gardens almost all gone. No longer a place plenty
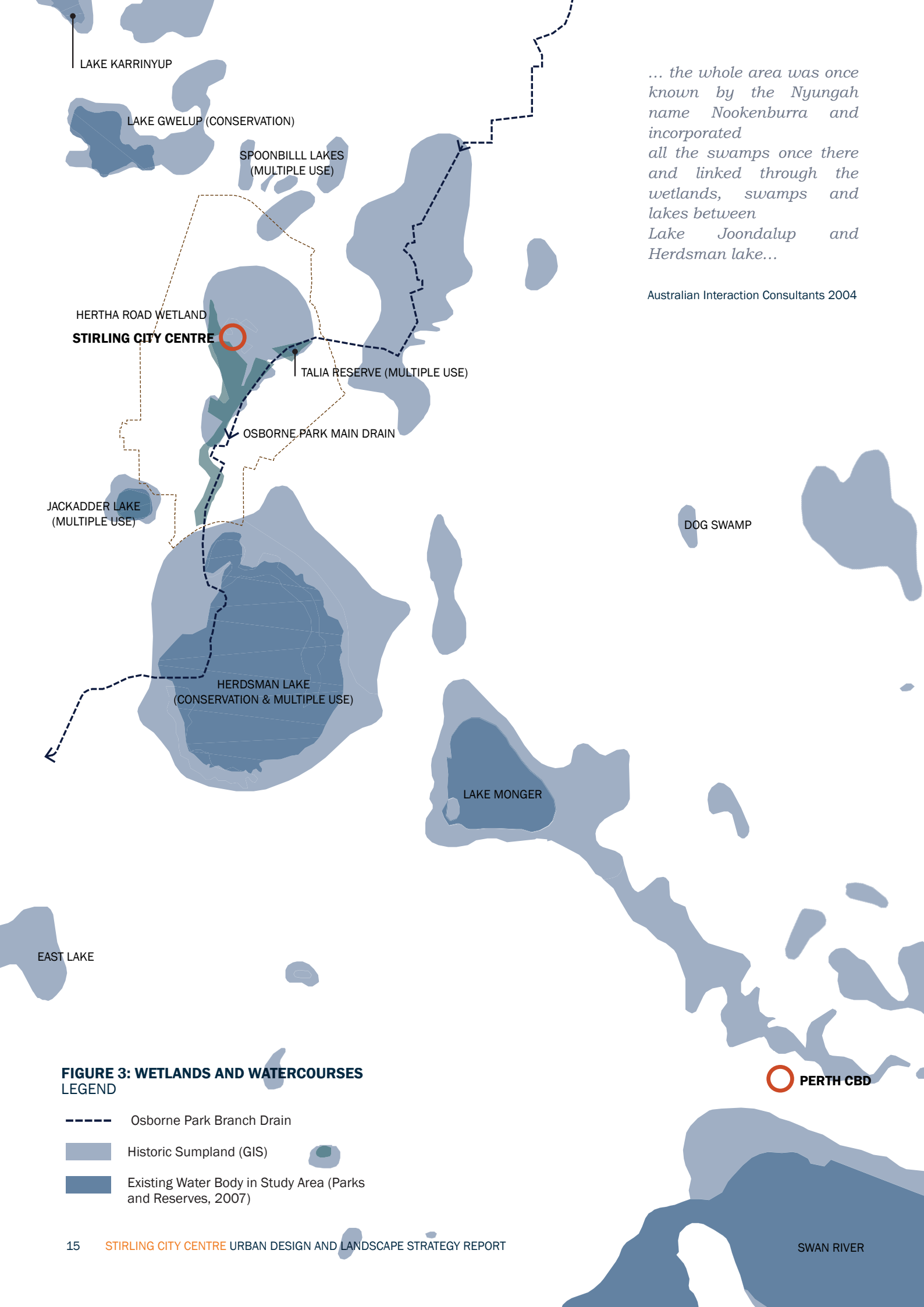
2003

The city is now 1.5 Million people. Climate change acknowledged. Building a desalination plant. Creating activity centres. Stirling a obvious choice

2009

Today. Place of trade with great access . Within a sea of homes. Ikea arrives. Not much plenty and not that much celebration

Stirling Alliance, Festival of Ideas, 2009

LAKE KARRINYUP

LAKE GWELUP (CONSERVATION)

SPOONBILLL LAKES
(MULTIPLE USE)

HERTHA ROAD WETLAND
STIRLING CITY CENTRE ⭕

TALIA RESERVE (MULTIPLE USE)

OSBORNE PARK MAIN DRAIN

JACKADDER LAKE
(MULTIPLE USE)

DOG SWAMP

HERDSMAN LAKE
(CONSERVATION & MULTIPLE USE)

LAKE MONGER

EAST LAKE

... the whole area was once known by the Nyungah name Nookenburra and incorporated
all the swamps once there and linked through the wetlands, swamps and lakes between
Lake Joondalup and Herdsman lake...

Australian Interaction Consultants 2004

FIGURE 3: WETLANDS AND WATERCOURSES
LEGEND

- - - - Osborne Park Branch Drain

███ Historic Sumpland (GIS)

███ Existing Water Body in Study Area (Parks and Reserves, 2007)

⭕ **PERTH CBD**

SWAN RIVER

WATER

The Stirling City Centre has a strong historical and cultural connection with water and the wetlands of the area. The underlying wetlands of the Swan Coastal Plain created an area that was once a place of plenty, a place of celebration, and a place of trade.

The landscape provided a rich and diverse environment for the indigenous people. These wetlands were of significant value to the indigenous people and during the *Ethnographic Heritage Consultations* (Big Island Research, July 2013) were described akin to a "supermarket": a source of water and other resources, including water fowl, turtles and crustaceans and provided a key meeting, hunting and trading ground.

The low lying areas provided fertile grounds that later saw the rapid establishment of market gardening and agriculture. With this change came the modification of the wetlands natural values to accommodate agriculture, industrialisation and Perth's growing needs. Growth of suburbia and encroaching development saw increased infilling and degradation of their natural, cultural and biodiversity values, transforming the area to a place devoid of plenty and celebration.

Central to the site was once Nookenburra Swamp. The Osborne Park Branch Drain (OPBD) provides a reminder of this wetland that historically formed a core feature of the site.

Transforming the OPBD into an urban stream has the potential for it to become a major and defining feature of the area once again. The stream encourages a new relationship with water and will restore the ecological diversity and health of the waterways and groundwater. Developing the Stirling City Centre around the stream acknowledges the fact people are intuitively drawn to water and its inclusion in the public realm provides an opportunity to integrate sustainable water management practices and facilitate an increase in the level of native biodiversity within the City Centre that has been lost.

The urban stream reveals and celebrates water through the heart of the city once again, creating a reconceived journey along the wetland chain from Herdsman Lake to the south, to Lake Gwelup in the north.

1953

1974

2011

LAKE GWELUP

HERDSMAN COMPLEX

KARRAKATTA COMPLEX

Medium Woodlands
Tuart and Jarrah

STIRLING CITY CENTRE

Medium Woodlands
Tuart and Jarrah

Medium Woodlands
Tuart and Jarrah

Shrublands
Tea Tree thicket

BASSENDEAN COMPLEX

Perth Greenway - Link 23

Medium Woodlands
Tuart and Jarrah

COTTESLOE COMPLEX

HERDSMAN LAKE

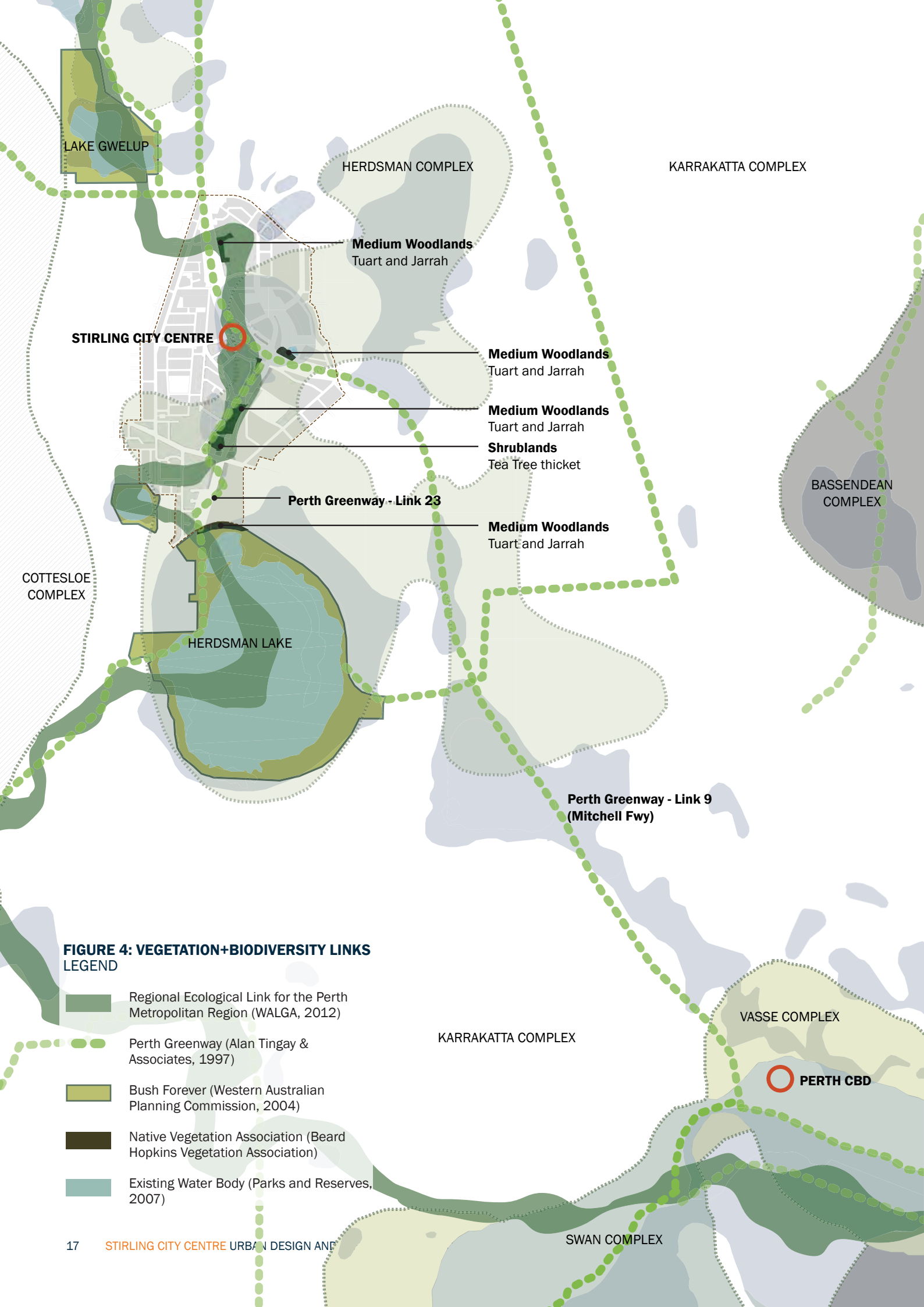**Perth Greenway - Link 9
(Mitchell Fwy)**

FIGURE 4: VEGETATION+BIODIVERSITY LINKS
LEGEND

- Regional Ecological Link for the Perth Metropolitan Region (WALGA, 2012)
- Perth Greenway (Alan Tingay & Associates, 1997)
- Bush Forever (Western Australian Planning Commission, 2004)
- Native Vegetation Association (Beard Hopkins Vegetation Association)
- Existing Water Body (Parks and Reserves, 2007)

VASSE COMPLEX

KARRAKATTA COMPLEX

PERTH CBD

SWAN COMPLEX

VEGETATION

The setting of Stirling was once abundant in vegetation and wildlife. The lower lying areas of the site, associated with Herdsman Lake and through the central Nookenburra swamp area are part of the Herdsman Complex (Heddle et al, 1980). The Herdsman Complex is characterised by woodland of *Eucalyptus rudis* and *Melaleuca* spp (*Melaleuca rhaphiophylla* and *Melaleuca preissiana*) over dense sedgelands.

The surrounding elevated areas are part of the Karrakatta Complex – Central and South. The Karrakatta Complex Central and South consist predominantly of an open forest of Tuart–Marri-Jarrah with the understorey of Banksia (*Banksia attenuata* and *Banksia menziesii* with sporadic occurrences of *Banksia grandis* and *Allocasuarina fraseriana*) over various shrubs.
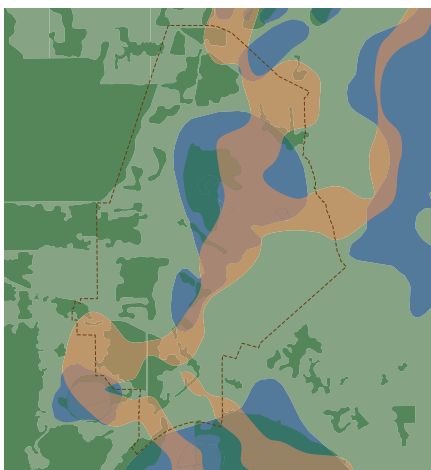
Gradually with the clearing of land for agriculture and land subdivision nearly all traces of this vegetation have diminished. The *District Water Management Strategy* (Essential Environmental, July 2011) identifies fragmented areas of vegetation remaining, mainly along the Mitchell Freeway, the OPBD, Osborne Park Hospital and Talia Wetland, however with limited ecological significance.
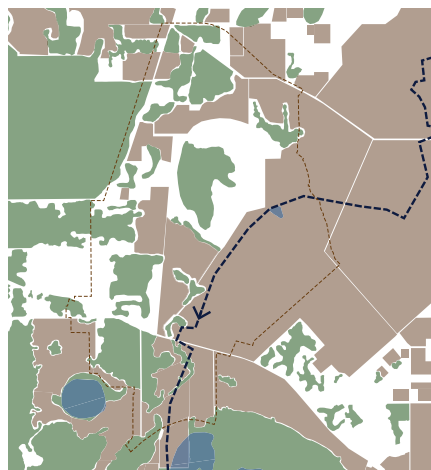
Bookending the site however, Lake Gwelup to the North and Herdsman Lake to the south, both Bush Forever sites and Conservation Category Wetlands, offer high biodiversity and amenity value. With the OPBD identified as part of the Regional Ecological Link for the *Perth Metropolitan Region* (WALGA, 2012), creation of a strong ecological corridor through the site, extending from Herdsman to Gwelup has the potential to assist in reconnecting the fragmented site to areas of significant bushland.

Additionally the *Strategic Plan for Perth's Greenways* (Alan Tingay & Associates, 1998) contains recommendations for green corridors within the Stirling area. Enhancing the biodiversity value of the Greenways, will not only strengthen the ecological linkages but has the potential to buffer the site to the Freeway and enhance social amenity through multiple use corridors.

VEGETATION COVER PRE EUROPEAN SETTLEMENT

EARLY EUROPEAN SETTLEMENT

LATE 20TH CENTURY

LAKE GWELUP

STIRLING CITY CENTRE

3208
Artefact Scatter

3207
Artefact Scatter

3209
Artefact Scatter

3210
Artefact Scatter

HERDSMAN LAKE

3585
Burial

Aboriginal people used the resources of Ngurgenboro (Herdsman Lake) for at least 5,000 years before European occupation of Western Australia. Similar to other wetlands on the Swan Coastal Plain, the Lake has important spiritual significance. It also provided a source of protein in the form of frogs, tortoises, crustaceans and waterfowl.

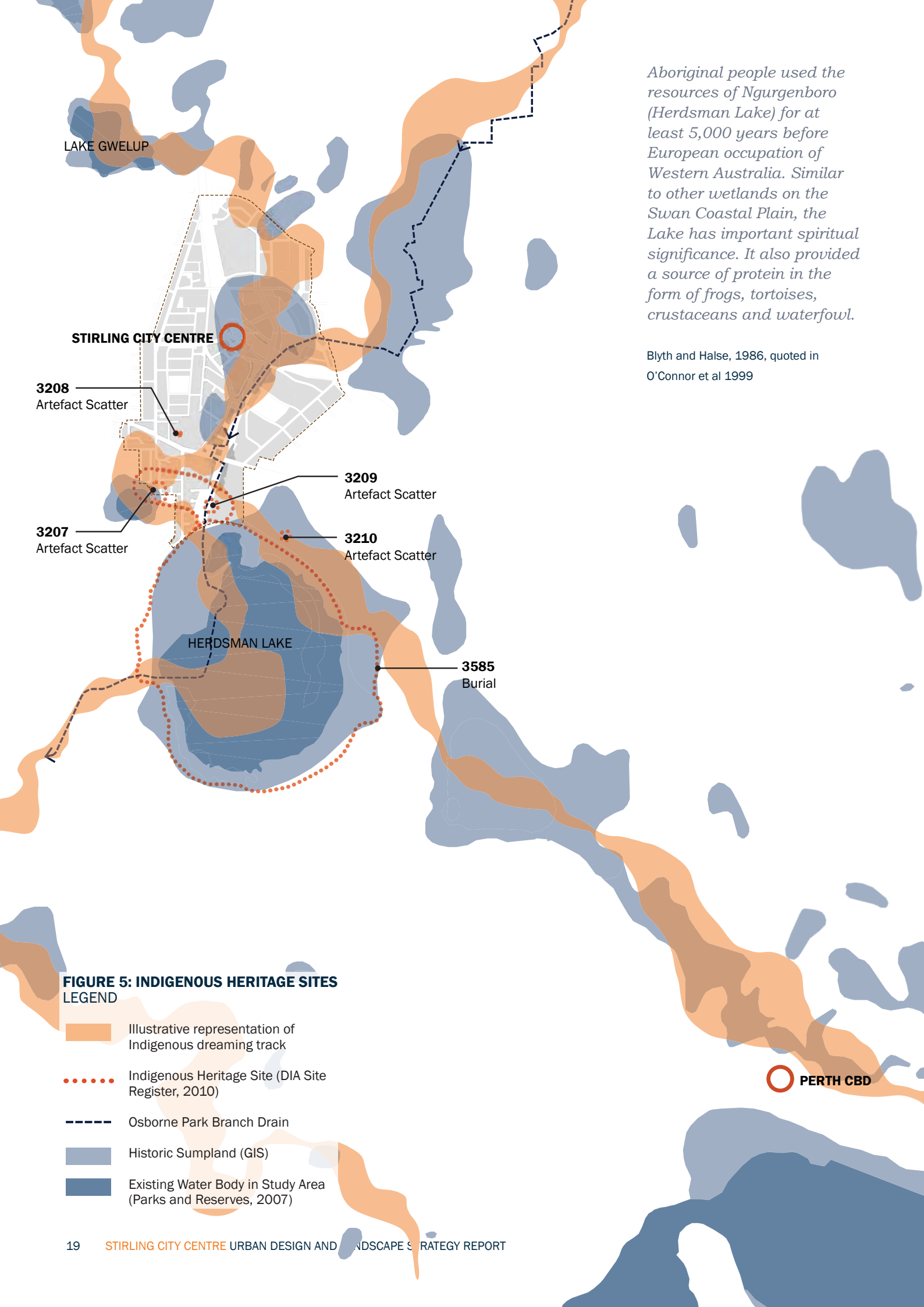Blyth and Halse, 1986, quoted in O'Connor et al 1999

PERTH CBD

FIGURE 5: INDIGENOUS HERITAGE SITES
LEGEND

Illustrative representation of Indigenous dreaming track

Indigenous Heritage Site (DIA Site Register, 2010)

Osborne Park Branch Drain

Historic Sumpland (GIS)

Existing Water Body in Study Area (Parks and Reserves, 2007)

PEOPLE

The Stirling City Centre traditionally has been, and continues to be, of particular social, spiritual and economic importance to Aboriginal groups living in and around the Perth metropolitan area. Travelling along the wetland chain, the wetlands formed a key strategic centre for Nyoongar groups, a gathering place, an 'administrative' centre and an important source of food, water and other resources. [1]

A recognised dreaming track or 'cultural complex' includes Herdsman Lake, Lake Gwelup, Lake Karrinyup, Lake Carine and all the swamps, creeks and wetlands in between and as a cultural landscape these features are still viewed as a living entity by Nyoongar people today. [2]

1 Big Island Research, *Ethnographic Heritage Consultations,* July 2013
2 Stirling City Centre Alliance, *Draft Structure Plan,* July 2011

With the establishment of the Swan River Colony, land in the Stirling area was granted to settlers. These early European settlers continued to draw on the resources provided by the wetlands, converting many of them into market gardens. The early market gardeners developed Stirling as a rural community, and continued the legacy of a place to live, trade, and gather. The main drain running through the site, although progressively modified, continued to provide a defining core feature of the area for irrigation, agriculture and recreation.

The market gardens formed the heart of the area and created wealth from food productions. Dairies, poultry and pig farming continued to grow and become prime industries in the area. With increasing population and industry developing, the demand for land after WWII marked the end of primary industries. Innaloo continued to develop as a residential subdivision and Osborne Park began developing as a place light industrial and commercial use. Innaloo would eventually be defined by big box retail cementing it as a place of trade today.

With the redevelopment of a new city, the central ecological corridor and urban stream has the opportunity to retrace the cultural complex of the Aboriginal heritage of the area and highlight this in the context of a modern development. A reinterpretation of an earlier water system, will allow community interaction and enjoyment and re-establish this as a central recreational, gathering and celebration place.

EDWARDS FAMILY, 1922

ROBINSON MARKET GARDEN, 1922

TRAM DEPOT, 1903

FIGURE 6: PROPOSED DEVELOPMENT
LEGEND

- – – – **Site Boundary**
- ······ **Precinct Boundary**
- —— **Major Private land holdings**
- ▨ **New Development (Private)**
  Mixed use
- ▬ **New Development (Government)**
  Mixed use
- ▨ **New Development (Government)**
  Subject to remediation
- ▨ **Redevelopment (Private) -**
  Intensification of residential
  density only
- ▬ **Redevelopment (Private) -**
  Residential to mixed use
- ▬ **Redevelopment (Private) –**
  Retail/Commercial to mixed use
- ▨ **Redevelopment (Private) –**
  Industrial to mixed use
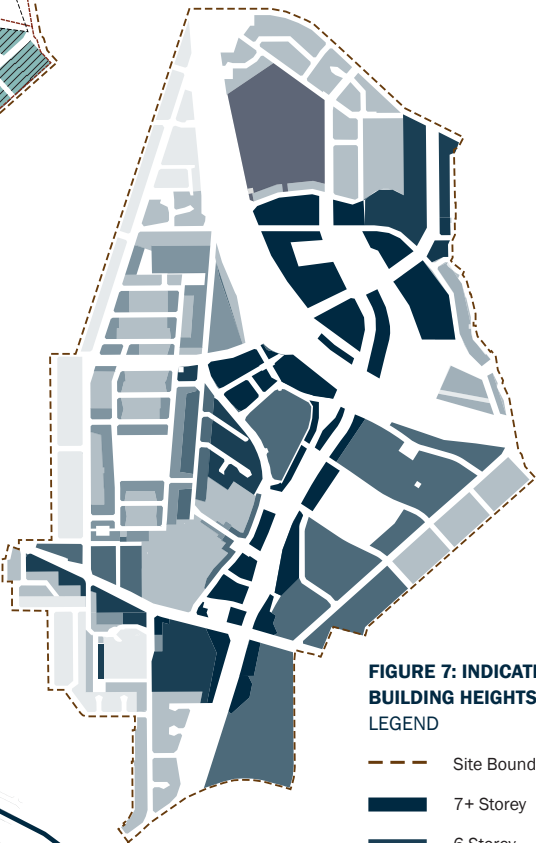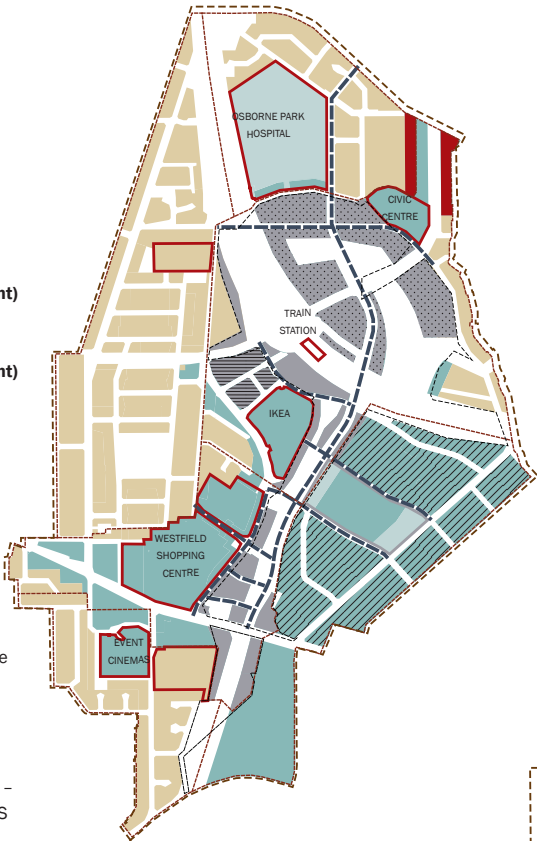- ▬ **Redevelopment (Government) –**
  Industrial to public use and POS
- ▬ ▬ **New Roads**

OSBORNE PARK
HOSPITAL

CIVIC
CENTRE

TRAIN
STATION

IKEA

WESTFIELD
SHOPPING
CENTRE

EVENT
CINEMAS

FIGURE 7: INDICATIVE
BUILDING HEIGHTS
LEGEND

- – – – Site Boundary
- ▬ 7+ Storey
- ▬ 6 Storey
- ▬ 5 Storey
- ▬ 4 Storey
- ▬ 3 Storey
- ▬ 2 Storey

CEDRIC ST

ELLEN STIRLING BLVD

MITCHELL FREEWAY

STEPHENSON AVE

SCARBOROUGH BEACH RD

FIGURE 8: MOVEMENT NETWORK
LEGEND

- – – – Site Boundary
- ▬ Mitchell Freeway
- —— Major Road
- —— Minor Road
- – – – Proposed Road
- ⊞⊞⊞ Proposed Light Rail
- ⬤ Proposed Light Rail Stop
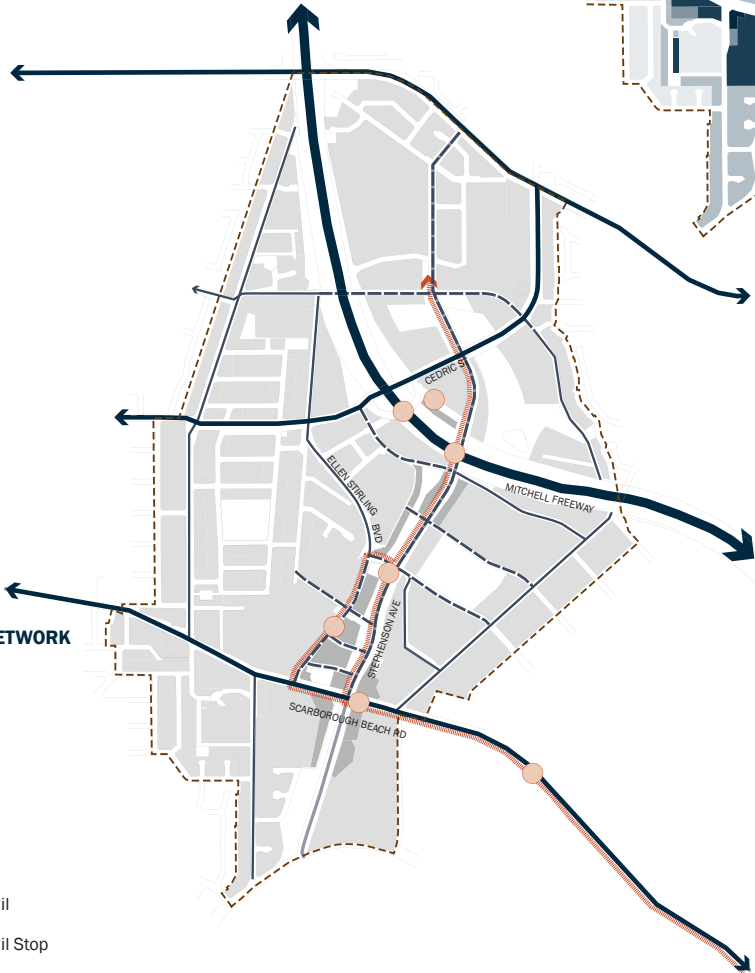
3.2 WHAT WILL CHANGE

Proposed Population and Employment

The Stirling Alliance has responded to the challenges set out in *Directions 2031* (WAPC, August 2010) by establishing targets for population and employment. The targets for Stirling City Centre were revised by the Stirling Alliance in June 2013 to 19,500 residents and 27,000 jobs (Popescu, V 2013, pers. comm., 26 June). These targets have implications for the amount, location, intensity and form of development and ultimately drive the type , distribution and quality of the public realm.

The land use zoning within the *Draft Structure Plan* (Stirling Alliance, July 2011) provides for an intensive mixed-use (including residential) activity centre anchored off existing transport and retail nodes (Station, Southern and Osborne Park Precincts) supported by increased density of housing within existing residential neighbourhoods (Innaloo, Northern and Woodlands Precincts). Indicative building heights and plot ratios proposed respond to the increased target population and employment for the Stirling City Centre.

Proposed Yield Build-out

The Stirling Alliance (Popescu, V 2013, pers. comm., 26 June) has developed a forecast of yield build-out within land available for development (vacant land) and redevelopment (occupied land). This development scenario proposes a transition time frame from existing use and density to the ultimate scenario and will influence the staging and prioritisation of new and upgraded open space to ensure the quantity, quality and diversity of open space adequately cater to the increased population.

Transport network

In order to enable the population and employment targets to be achieved a significant increase in the use of alternative transport modes is required.

These aspirations require the management of demand for parking and the provision of:
- A light rail transit (LRT) system;
- High quality and safe walking and cycling infrastructure;
- Improved access to, from and across the Mitchell Freeway;
- New local roads to improve accessibility; and
- A bypass route for freight.

The *Integrated Transport Strategy* (GHD, 2013) indicates the location of light rail route and key road connections that will be necessary to achieve the distributed movement network, providing for regional traffic and local circulation.

The *Integrated Transport Strategy* (GHD, 2013) notes that studies undertaken to date and market research suggest that the full development aspiration, mode share targets, and car parking targets of the city are dependent upon provision of a light rail system.
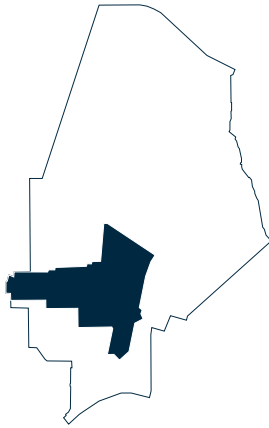
Southern Precinct – Activity Heart

- Mixed-use development with focus on shopping
- Day time shoppers from surrounding residential catchment
- Day time workforce from Osborne park
- Night time entertainment destination

Yield Distribution per Precinct

3% · 42% · 8% · 1% · 46%
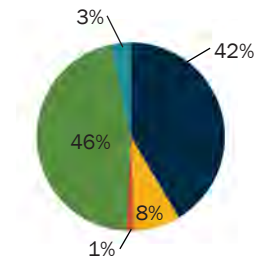
Percentage Contribution of Total SCC:

- 14% Total Residential Population (2800 residents)
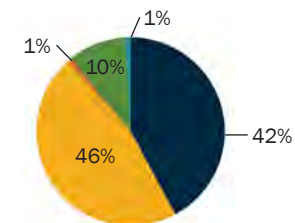- 21% Total Worker Population (5600 workers)
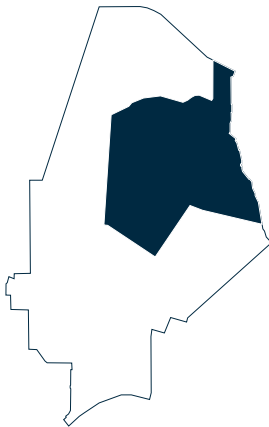
Station Precinct - Commercial Hub

Station South

- Predominance of office workers
- Large government departments supplemented with commercial / office
- Dining and entertainment to support workforce
- Cultural centre as attractor
- High density housing accommodating working singles and couples

Station North

- Medium and high density apartments.
- Civic and education precinct attracting students
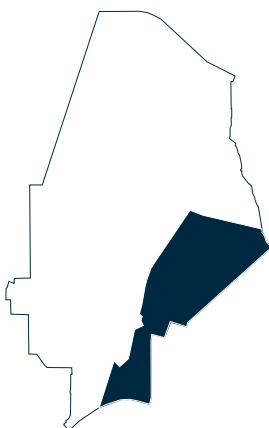
Yield Distribution per Precinct

1% · 1% · 10% · 46% · 42%

Percentage Contribution of Total SCC:

- 27% Total Residential Population (5,300 residents)
- 39% Total Worker Population (10,400 workers)

Osborne Precinct – Premium comparison shopping destination

- Mixed-use development
- Medium density apartments
- Office/Commercial with showroom style retail

Yield Distribution per Precinct

1% · 69% · 16% · 1% · 39%

Percentage Contribution of Total SCC:

- 24% Total Residential Population (4700 residents)
- 32% Total Worker Population (8700 workers)

FIGURE 9: PRECINCT LAND USE AND YIELDS
LEGEND

■ Dwelling Floorspace sqm(NLA)	■ Office Floorspace sqm(NLA)	■ Health / Welfare / Community Floorspace sqm (NLA)

Innaloo Precinct – High amenity inner city neighbourhood

- Intensification of residential over-time

- Residential properties that are already strata-titled (grouped dwellings) or have undergone recent transformation are unlikely to significantly change.

- Northern half of precinct expected to continue to accommodate aged care facilities

- Limited commercial opportunity

Yield Distribution per Precinct

1%
99%

Percentage Contribution of Total SCC:
- 16% Total Residential Population (~3100 residents)
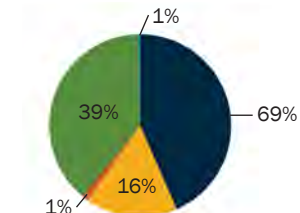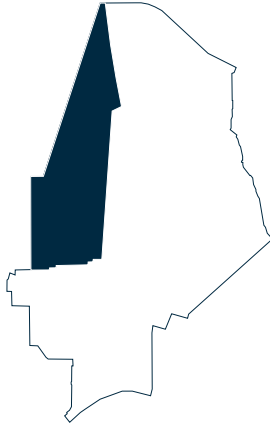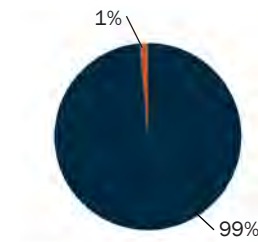- 1% Total Worker Population (100 workers)

Northern Precinct – Health destination

- Intensification of residential over-time

- Redevelopment of the Osborne Park hospital to address Stephenson Avenue

- Employment growth associated with allied medical services

- Opportunity to develop as a transition area for aged care, rehabilitation and people with disabilities

Yield Distribution per Precinct

<1%
19%
12%
69%
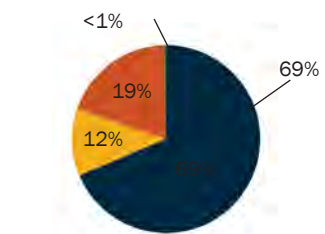
Percentage Contribution of Total SCC:
- 10% Total Residential Population (1900 residents)
- 5% Total Worker Population (1400 workers)

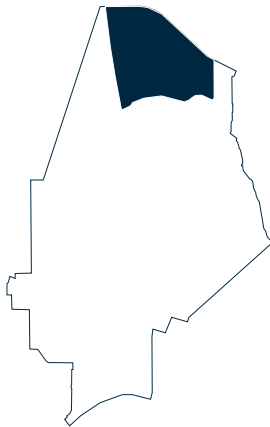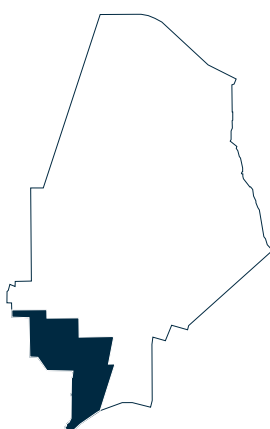## Woodlands Precinct – High amenity inner activated residential precinct

- Intensification of residential over-time

- Residential properties that are already strata-titled (grouped dwellings) or have undergone recent transformation are unlikely to significantly change.

- Live work opportunities

- Convenience retail for local residents

Yield Distribution per Precinct

2%
10%
11%
77%
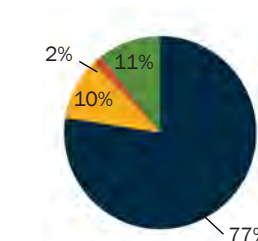
Percentage Contribution of Total SCC:
- 9% Total Residential Population (1800 residents)
- 3% Total Worker Population (900 workers)

Shop / Retail and Other Retail Floorspace sqm(NLA)

Entertainment / Recreation / Culture Floorspace sqm(NLA)

FIGURE 10: EXISTING POS
LEGEND

OSBORNE RESERVE

400m

LAGA COURT
RESERVE

CROXTON PLACE

ODIN RESERVE

ELTON PLACE
RESERVE

BAJADA
RESERVE

HERTHA PLACE RESERVE

400m

HERTHA
GENEFF
RESERVE

HERTHA NORTH
RESERVE

800m

HERTHA GENEFF
LUBA RESERVE

STIRLING CIVIC
GARDENS

LAGRANGE
DONGARA
RESERVE

800m

TALIA
RESERVE

400m

TALBOT WAY RESERVE

- - - Site Boundary
○ Walkable Catchment
Local POS
Local POS Below Minimum
Size Requirement
Community POS
Special Purpose POS

3.3 OPEN SPACE PROVISION

Open space provision for Stirling City Centre comprises both public open space (POS) and communal open space within development lots. For the purposes of this strategy, this is defined as the following:

Public Open Space: Land that is accessible to or directly benefits the broad public, including people who do not live within the City Centre (including parks, greenspaces and urban spaces).

Communal Open Space: Land that is accessible to and shared by residents within a defined community, e.g. Land set aside for the use of residents in one building or a cluster of buildings.

POS and communal open space each play a specific role in providing recreational amenity, each of these forms of open space fulfilling a different role, one complementing the other. The intended function of each of the typologies of open space is outlined in *Part Four: Developing the Strategies.*

In developing the UDLS the role of each existing open space was assessed and its distribution mapped. This assessment forms the basis for understanding what open space exists now, any deficiencies to be addressed and consideration of future change.

A detailed breakdown of current and proposed open space is included in Appendix 1 .

Current POS Provision

Currently, the POS network in the Stirling City Centre study area consists of 14 sites totalling approximately 32 hectares. Classification and requirements for each of the City of Stirling Public open space typologies is included in Appendix 1.

Each of these POS play an important role within the network, however, the social, recreational and ecological value of each space varies widely.

Many of these smaller spaces offer little diversity or recreational amenity and do not meet the City's minimum size requirements of 0.2 ha for a local park.

Challenges Identified by City of Stirling

The *POS Analysis for the Stirling City Centre* (City of Stirling, June 2010) analysed the current and future demands on POS within the City Centre, the outcomes this analysis identified that the existing quantity of POS equates to only 9% POS for the area (noting that this is slightly under the legislative requirement for 10% POS).

The City of Stirling anticipates that the need for POS will continue to grow and would be in excess of 10% when the City Centre is redeveloped given the following:

- The high projected increase in population for an area that is perceived to already lack public open space; and

- The pressure on active POS in the City currently (The City's 50 plus active reserves are generally already at capacity).

Figure 11: Current Gaps in Provision

Within the boundary of the study area the following gaps in overall provision have been identified, based on 'as the crow flies' walkable catchments. This analysis diagram opposite does not consider qualitative value of existing parks.

Existing gap in access to current community and local POS

Figure 12: Major Barriers

Many of the existing local parks in their current state offer very little diversity or amenity and are considered under the City of Stirling minimum size requirement of 0.2ha.

Considering the identified roads as barriers and the poor quality of many of the local parks the following further gaps were identified.

Major barrier

Local POS Below 0.2ha

Existing gap in equitable access to high quality open space

DISTRIBUTION AND GAPS

A key objective in planning future open space is to provide high quality spaces within easy walking distance for the majority of the community. Based on the City of Stirling's POS Analysis of the proposed city centre, a 800 metre walkable distance has been used for district and community parks, and a 400 metre walkable distance is used for local parks.

Major roads across the study area form significant barriers that limit safe, comfortable and equitable access. The gap analysis diagrams indicate that when walkable distances are applied to the existing open space network, there are sizeable gaps in the distribution of open space, most notably in areas where significant population growth is anticipated.

The forecast population growth will mean more people living and working in higher density neighbourhoods. Increasing urban densities will result in more people needing to use open space to maintain their physical and mental health and wellbeing. This will place additional demand on existing open spaces and in some areas create the need to provide additional open space. Growth will require improvement to the quantity, diversity, quality and natural features of open space to adequately cater to the increased population.
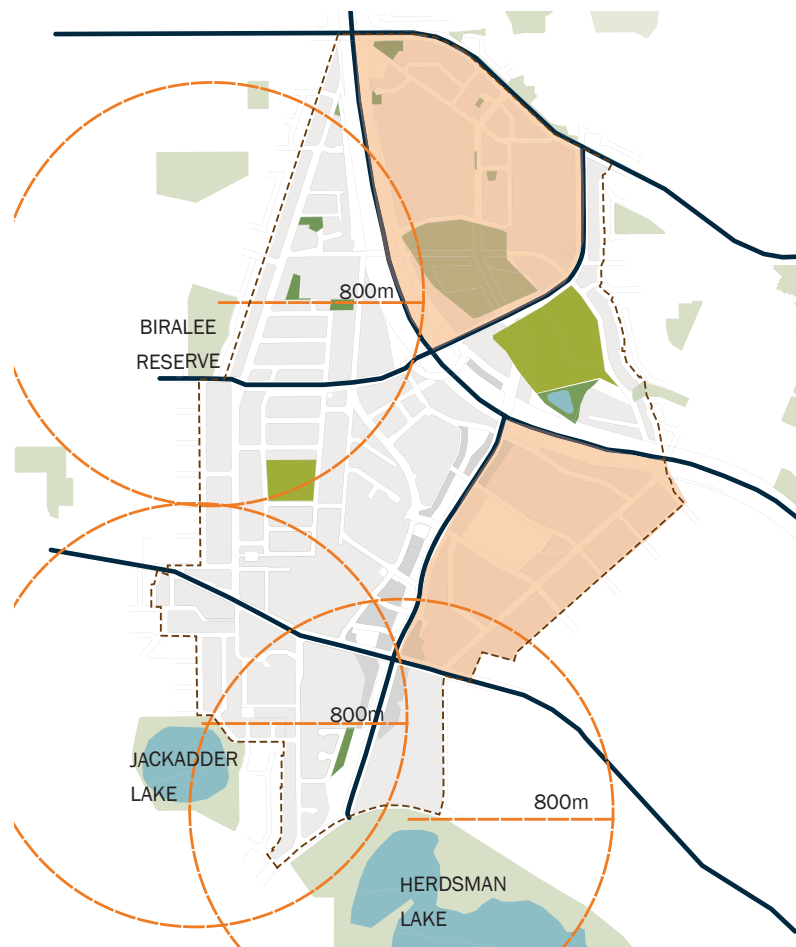
Figure 13: Parks Adjacent to Study Area

The study area is bordered by a number of high quality parks and reserves. Jackadder Lake, Herdsman Lake, and Biralee Reserve are all within a 800m radius of areas identified as gap areas. These parks should be considered as valuable POS to workers and residents within a walkable catchment.

FIGURE 14: PROPOSED POS DISTRIBUTION + HIERARCHY
LEGEND

- – – Site Boundary
- Local POS
- Community POS
- District POS
- Special Purpose POS/ Urban Spaces
- Urban Stream Corridor
- Linear Park
- Ecological Link
- Existing POS
- Existing Local POS Potentially Converted to Community Gardens
- Recommended Location for POS (outside study area)
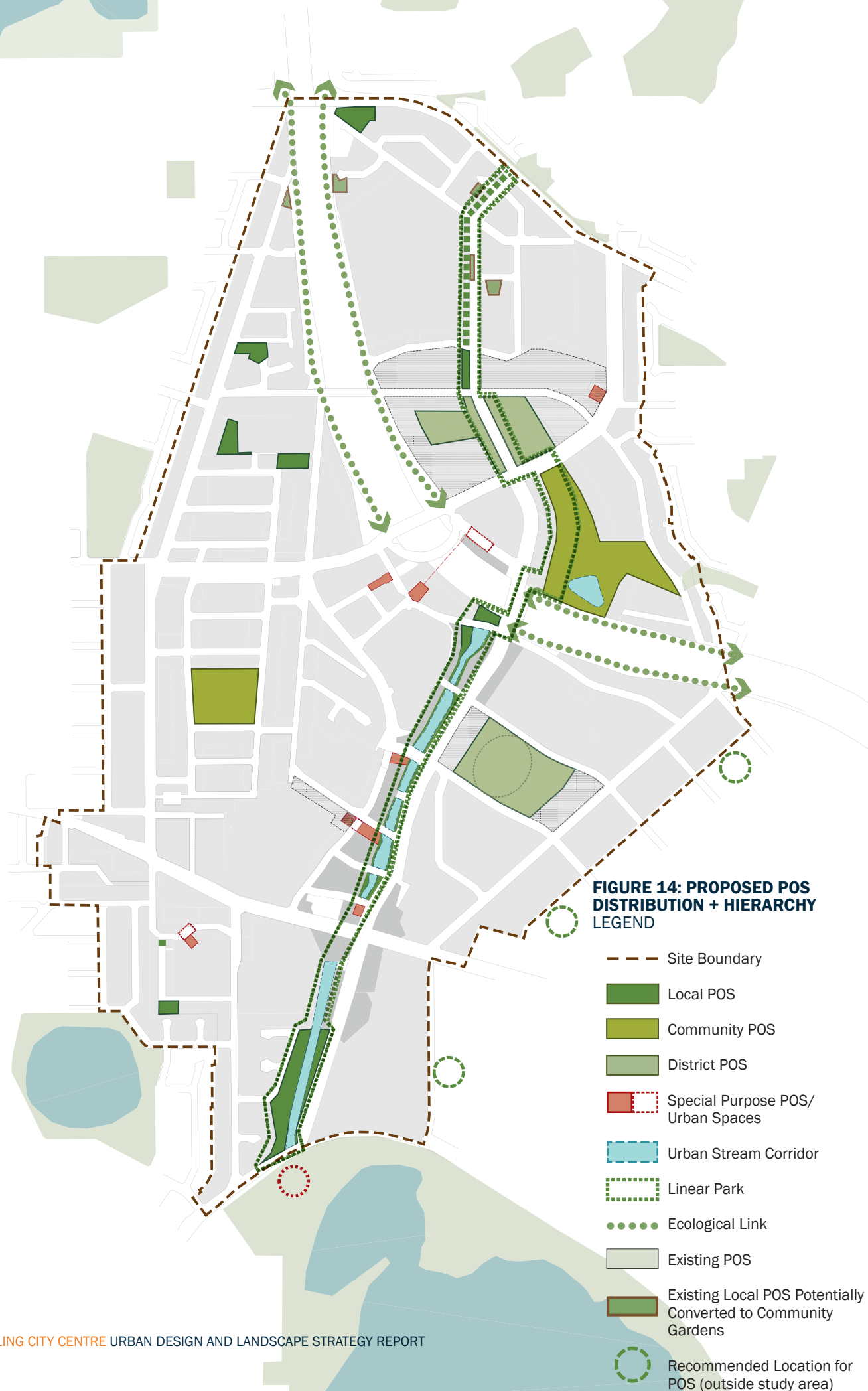
OPEN SPACE PROVISION - THE PLAN

The POS plan identifies locations for the proposed additional or expanded POS required to cater for the forecast growth described in the *Draft Structure Plan* (Stirling Alliance, 2011) and summarised in this report.

The POS provision is driven by the UDLS principles and the requirements of the City of Stirling. The proposed distribution of POS has been developed to connect, link and strengthen the existing provision. The challenge is to deliver new POS of the highest quality, and to ensure the following principles are met:

- Public open space provision offers high quality diverse experiences, is visually appealing, is accessible, has an appropriate amenity level and is provided and managed in a sustainable way;

- Improve functionality and profile of retained POS;

- Consolidation and/or consideration for alternative function of existing underutilised parks or those identified as below minimum size requirements. Opportunity exists for these to be converted to community food gardens (subject to analysis and further verification by the CoS);

- New spaces appropriately sized in regards to maintenance and development (where public open spaces less than 0.2 hectares in size are generally considered unsustainable to maintain or develop);

- New POS appropriately sized to accommodate the expected activities and amount of use generated by the size of the catchment population relative to its function;

- Equitably located taking into consideration all potential barriers (e.g access to transport, major roads);

- Co-location and sharing opportunities are considered to maximise use of community resources and achieve management efficiencies. Particularly co-locating district spaces with school sites to allow shared use and management, where desirable, by both organisations. Additionally, these public open spaces may also be located with key community recreational and social facilities and services to effectively create key hubs or activity areas within a community; and

- Acknowledge that the City of Stirling is currently at capacity with the provision of district reserves.

Part Four: Developing the Strategies provides further information on the intent and purpose of each proposed open space.

5% or
1.3ha/1000p

3% or
0.4ha/1000p

21% or
1.4ha/1000p

5% or
o.5ha/1000p

8% or
0.6ha/1000p

10% or
1.3ha/1000p

9% of total SCC Area
or 0.94ha/1000p
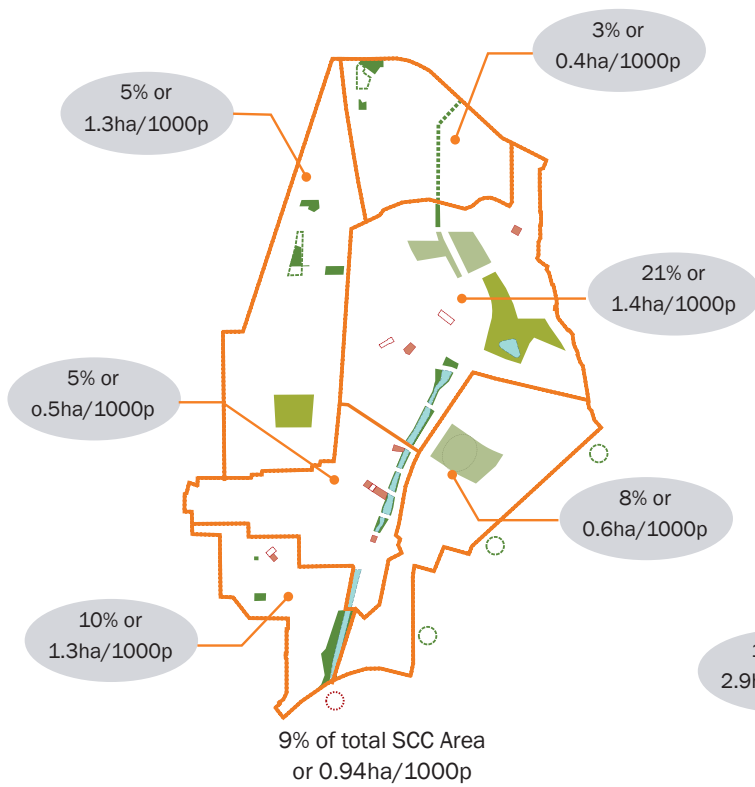
FIGURE 15: PUBLIC OPEN SPACE

12% or
2.9ha/1000p

15% or
2.7ha/1000p

17% or
1.2ha/1000p

17% or
1.6ha/1000p

16% or
1.2ha/1000p

16% or
2.2ha/1000p

Mixed use - 25% of Lot Area for Communal Open Space

Residential - 20% of Lot Area for Communal Open Space

15% of total SCC Area
or 1.63ha/1000p

FIGURE 16: COMMUNAL OPEN SPACE

17% or
4.2ha/1000p

18% or
3.2ha/1000p

43% or
3.0ha/1000p

25% or
2.3ha/1000p

24% or
1.9ha/1000p

30% or
4.1ha/1000p

26% of total SCC Area
or 2.75ha/1000p
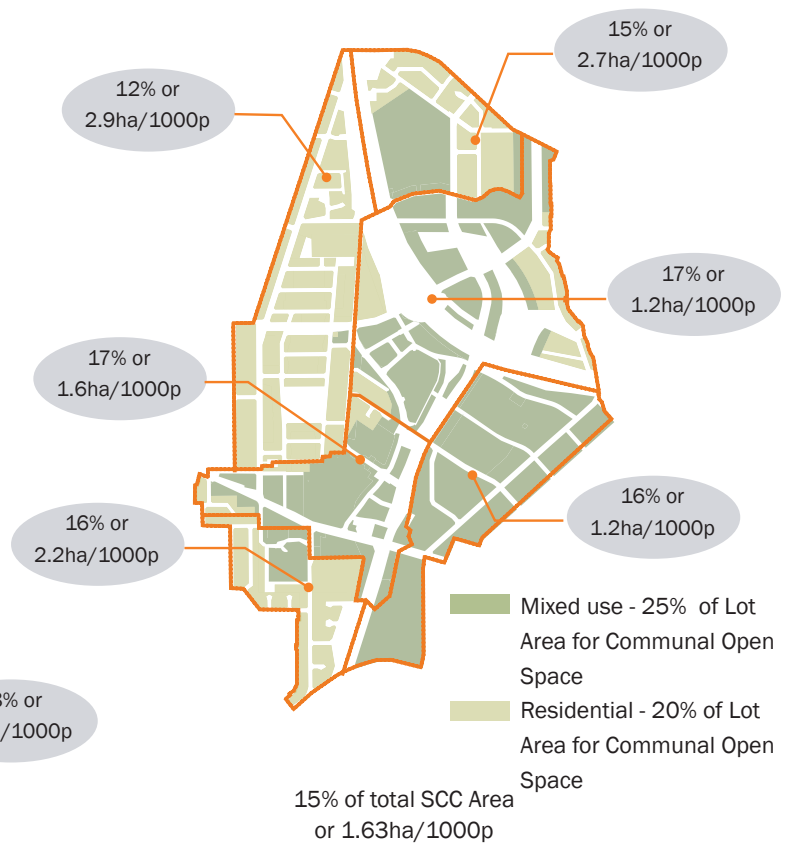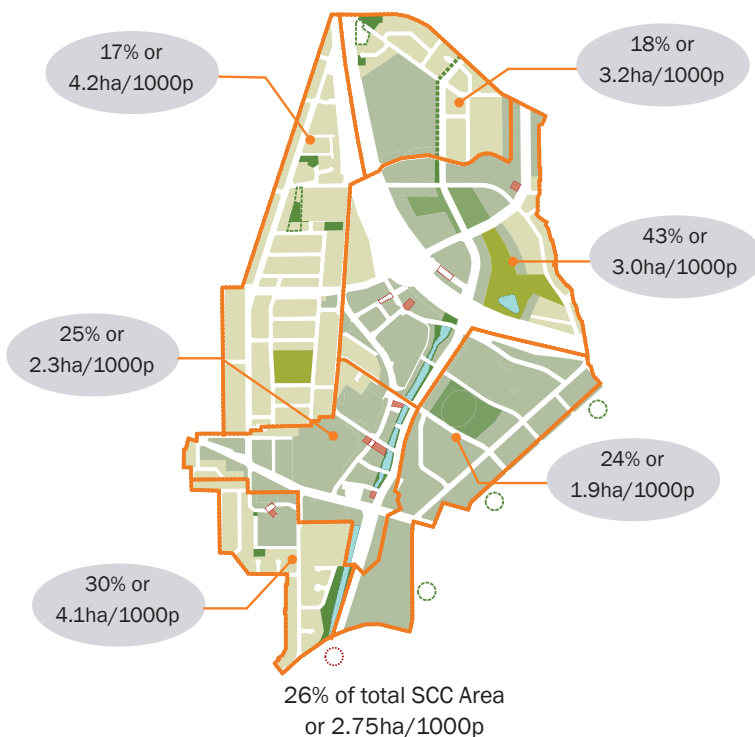
FIGURE 17: TOTAL OPEN SPACE

Note: All diagrams show figures as both a % of total precinct area and ha / 1000 people value.

PLANNING FOR OPEN SPACE

Current research on the provision of open space (public and communal) in higher density developments supports the justification for a good provision of open space to compensate for a lack of private open space. Current studies also acknowledge that the current value of 10% for residential subdivision may not be appropriate with respect to denser urban infill developments.

To assist the Stirling Alliance assess the suitability of the proposed allocation of POS within the UDLS, a high level assessment of open space provision within the City Centre (overall and by individual precinct) has been undertaken from the perspective of both quantity of open space area (as a proportion of the total land area) and of open space area per person.

Additionally, a number of comparative case studies were reviewed to assess the functional requirements, sizing and arrangement to calibrate the public spaces within the UDLS. These studies are provided in Appendix 3 and 4.

Benchmarks

From the perspective of provision on the basis of a percentage of total development area, recent research into higher density developments (City of Charles Sturt, 2010) identifies some best practice urban developments in Australia and overseas have allocated 25%-50% of the development area for open space

From the perspective of provision on the basis of area per person, the study undertaken by City of Charles Sturt, suggests there is justification for around 2 hectares per 1,000 people for recreation open space (parks and linear parks) and around 1.5-2 hectares per 1,000 people for sporting open space. The study recognises however it would be unrealistic to require 4 hectares per 1,000 people in a higher density development as this would require too much land and could result in high rise buildings and affordability issues.

In each case it is acknowledged these quantities can include contribution by communal and private open space.

Open Space Provision - The Numbers

The outcomes of the high level assessment are as follows, further supporting detail is provided in Appendix 2.

Public Open Space Provision

The provision of POS within this UDLS equates to 9% of the Structure Plan Area or 0.94 ha per 1000 people. The amount of POS within each precinct is shown opposite in Figure 15.

The Northern, Osborne and Southern Precincts are below the 1ha per 1000 people with respect to POS. An increase in public open space in the Northern (~2ha) and Osborne (~3ha) precincts, would enable the 1 ha per 1000 people to be achieved.

Local Development Plans for these areas should consider opportunities (through acquisition, incentives or developer contributions etc) to convert communal open space provision to public open space.
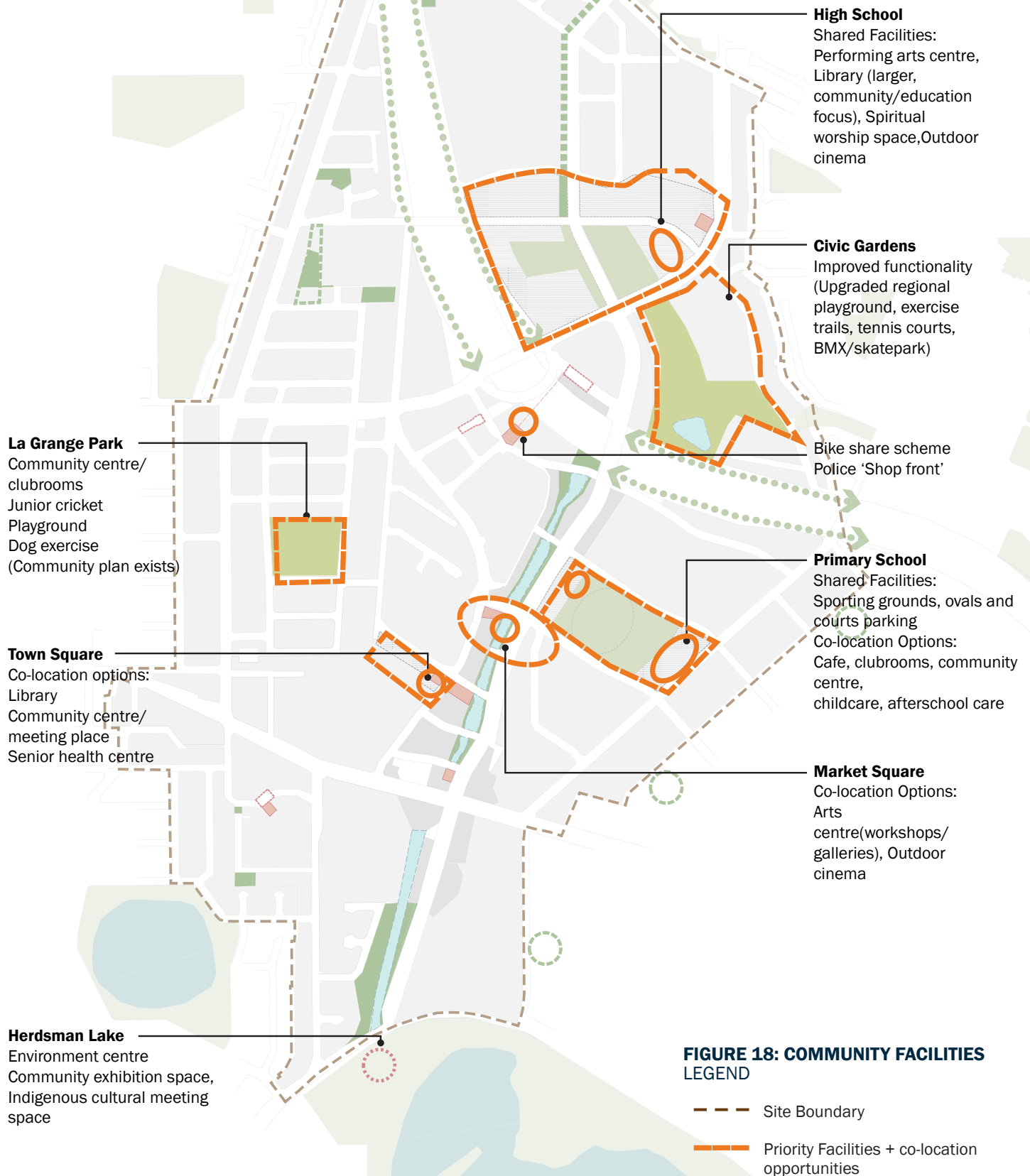
Communal Open Space Provision

With the contribution of the estimated communal open space provision within development lots, a further 15% (or 1.63 ha per 1000 people) of open space is potentially available across the Structure Plan Area. The amount of communal open space within each precinct is shown opposite in Figure 16.

Overall Open Space Provision

Whilst the proportion of POS in relation to the total City Centre area is lower (9%) than the minimum 10% prescribed within the City of Stirling Public Open Space Strategy, the provision of communal open space within lots can complement POS and achieve an overall open space provision of ~26% and an average of 2.7h ha / 1000 people as shown in Figure 17 opposite.

It should be noted that many variables influence the values, including total population, employment self containment rates, age and demographics all of which are currently forecasts. Further studies are required with respect to POS provision in infill developments in the Perth Metropolitan Area which are beyond the scope of the UDLS. Review of provision should be undertaken as these studies are progressed.

High School
Shared Facilities:
Performing arts centre,
Library (larger,
community/education
focus), Spiritual
worship space,Outdoor
cinema

Civic Gardens
Improved functionality
(Upgraded regional
playground, exercise
trails, tennis courts,
BMX/skatepark)

La Grange Park
Community centre/
clubrooms
Junior cricket
Playground
Dog exercise
(Community plan exists)

Bike share scheme
Police 'Shop front'

Primary School
Shared Facilities:
Sporting grounds, ovals and
courts parking
Co-location Options:
Cafe, clubrooms, community
centre,
childcare, afterschool care

Town Square
Co-location options:
Library
Community centre/
meeting place
Senior health centre

Market Square
Co-location Options:
Arts
centre(workshops/
galleries), Outdoor
cinema

Herdsman Lake
Environment centre
Community exhibition space,
Indigenous cultural meeting
space

FIGURE 18: COMMUNITY FACILITIES
LEGEND

- - - Site Boundary

▬▬▬ Priority Facilities + co-location
opportunities

3.4 COMMUNITY INFRASTRUCTURE NEEDS

The *Community Needs Assessment* for the Stirling City Centre (Hames Sharley 2013) assesses the community services and public facilities required to support the forecast future population of the City Centre.

The Stirling Alliance Urban Design and Landscape and Community Working Groups were subsequently consulted to assess whether key community needs proposed for the City Centre met the aspirations of the community and the City of Stirling and identify any additional facilities not included.

In summary, the community facilities proposed for the Stirling City Centre are as follows:

Amenities:
- Plazas / Squares
- Community Centre
- Public Library
- District Community Centre
- Regional Cultural Facility
- Community day-care

Recreation + Sports:
- Sportsgrounds
- Local Park
- Ancillary Open Space
- BMX / Skate Park
- Hard Courts
- Aquatic Centre
- Public Club Rooms

Education:
- Primary School
- High School

Co-sharing of facilities is required to accommodate the spatial needs of the facilities within the limited land available.

The facilities listed are those proposed to be delivered by State or Local Government. Facilities such as nursing homes, retirement accommodation and a portion of child care facilities will be provided by private developers. Future Design Guidelines will need to ensure building design can future proof the ability to accommodate the facilities at a later date as the market need arises.

Provision of a high school is proposed however requires a multi-storey typology or additional land to accommodate the spatial requirements. Whether these are government or non-government schools requires further discussion with Department of Education.