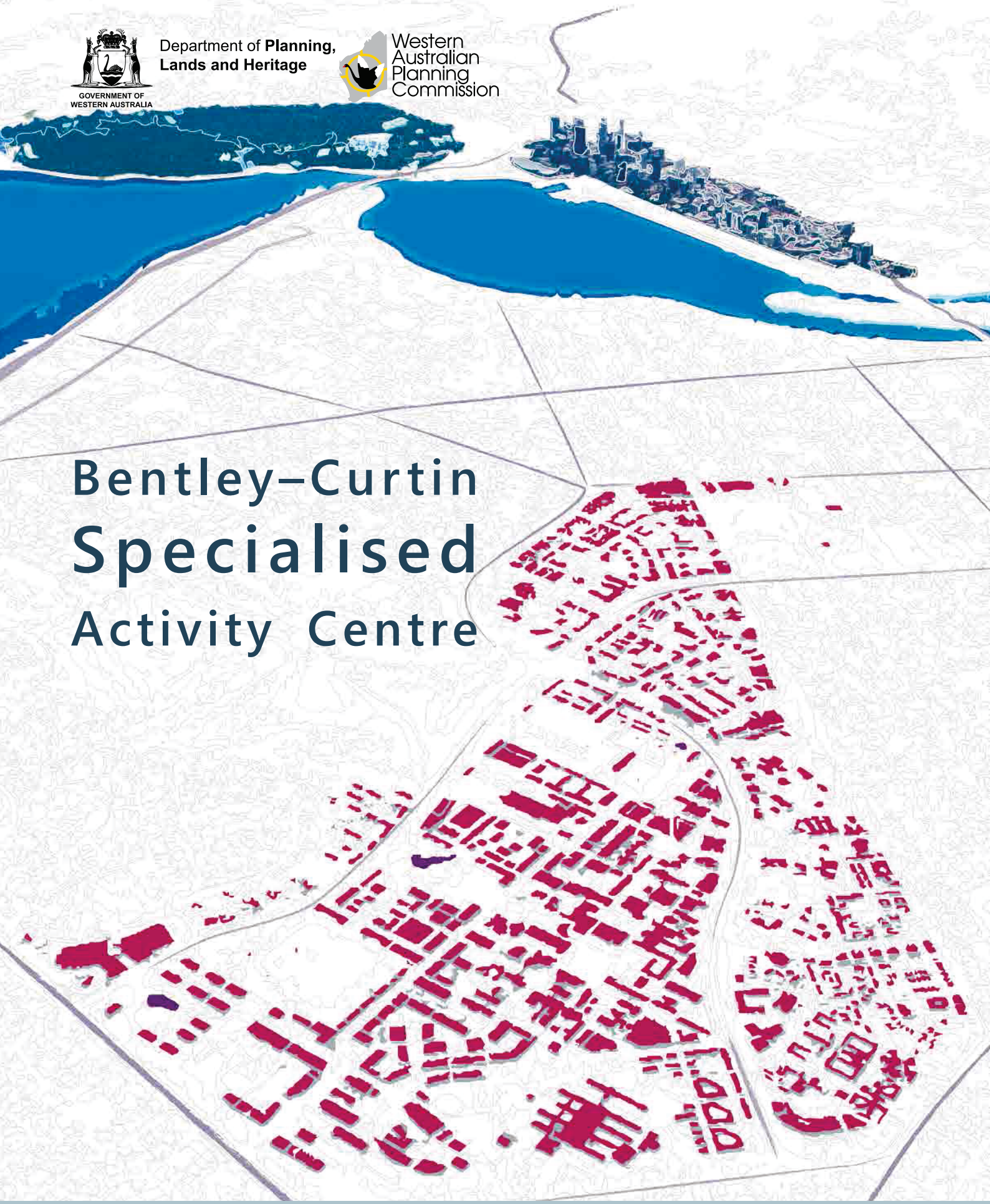
GOVERNMENT OF WESTERN AUSTRALIA

Department of **Planning, Lands and Heritage**

Western Australian Planning Commission



Bentley–Curtin Specialised Activity Centre

Specialised Activity Centre Plan

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Foreword

Minister for Transport; Planning; Lands

I am pleased to present the Bentley-Curtin Specialised Activity Centre Plan, an important strategic blueprint for this unique precinct.

This plan embodies the Government's vision to create a more compact and connected city by locating places of employment, infrastructure and services close to where people live.

Bentley-Curtin is home to significant economic, knowledge industry and commercial activity, including Curtin University, CSIRO, government departments and TAFE facilities.

Rejuvenating and modernising the area represents an investment in education, technology and jobs.

This plan proposes to optimise the precinct's existing strengths and enable diversification to create more employment and enterprise opportunities.

By facilitating the ongoing transformation of this area we can capitalise on existing assets, stimulate sustainable growth and bring a vibrancy that attracts both people and investment.

An important principle of this plan is the inclusion of cycling and walking access alongside public transport. Equally, public spaces and landscapes should be designed to enhance connectivity and sense of place.

Perth's population is expected to keep growing and continuous development at the fringes can no longer be sustained. A thoughtful, consultative and methodical approach to activating areas such as the Bentley-Curtin precinct will ensure we can support population growth in way that enhances those places where we live, work and relax.

Hon. Rita Saffioti, MLA
Minister for Transport; Planning; Lands

This structure plan is prepared under the provisions of the City of South Perth Town Planning Scheme No. 6 and Town of Victoria Park District Planning Scheme No. 1.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

6 June 2018

In accordance with Schedule 2, Part 5, Clause 44 of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry: 6 June 2028

Summary

Bentley-Curtin planning

The Bentley-Curtin Specialised Activity Centre has a unique combination of education, research, technology, aged care and specialised functions. It is the location of State Government agencies, Curtin University, the CSIRO and numerous private and commercial organisations.

As a specialised activity centre, Bentley-Curtin is home to regionally significant economic and institutional activities which support the diversification of the Western Australian economy. Its existing characteristics, significance as an employment centre, close proximity to central Perth, public transport services, available land and long-established institutions present further opportunities for renewal and intensification.

Contemporary planning that aligns with current State Government strategic objectives will support twenty-first century economic, social and environmental drivers to influence change. There is potential for a more urbanised activity centre with improved amenity and choice to attract and support the people and organisations of Bentley-Curtin.

The principles to inform planning and achieve the vision include an increased mix of land uses, incorporating residential diversity close to employment and education, more efficient use of land, improved options for transport accessibility and a public realm and built form which encourages connectivity and legibility to promote an active, urban condition.

As recognised in the vision for Bentley-Curtin, the proposals within this plan are aimed at enhancing Bentley-Curtin an attractive choice for education, employment and living.

The vision

An innovative, creative and collaborative centre of excellence in science, technology, education and research supporting the State's economic growth through the development and commercialisation of ideas into viable and sustainable enterprises. A vibrant place that is accessible, safe, sustainable, affordable and attractive for people to study, work, live and enjoy life.

Activity and uses

Vitality and activity in Bentley-Curtin is expected to increase with 9,500 residents (including students) and over 20,000 employees living and working in an urban environment of greater intensity and density. The introduction of a diversity of residential uses, including private dwellings, for students and visiting professionals, and clusters of mixed use activities in concentrated nodes will contribute to high-quality amenity for residents, workers, students and visitors.

The strategic plan (*Figure* i) summarises proposed land uses to reflect prominent activity and provides the context for development in Bentley-Curtin.

Landscape

The landscape character, based on the existing qualities and iconic features of Bentley-Curtin, will provide multi-functional open spaces and links for human activity and biodiversity. It will be an essential component of the urban structure and Bentley-Curtin's legibility and sense of place.

Transport

A more integrated street network, the coordinated management of parking, additions to the pedestrian and cycling networks and expanded public transport services will evolve to accommodate growth. Along with the relocation of the bus station, this will give greater priority to non-car travel, support alternative travel options and provide a high level of connectivity to areas within and surrounding Bentley-Curtin.

Development concept

As buildings are renewed over time, they will vary in scale, height and activation across Bentley-Curtin with development recognising and addressing specific urban conditions and natural features. Development is encouraged to improve pedestrian amenity and reinforce areas of high intensity while integrating with adjoining existing residential areas in locations of lower density and intensity at the edge of the activity centre.

Future planning

Development and progress within Bentley-Curtin is largely reliant on landholders, land availability, market conditions and changes to legislations and planning instruments.

This strategic plan is intended to guide planning and development to 2031 by informing local planning scheme amendments and further detailed planning. Where proposals in this plan are not currently permissible, the requirement to comply with or amend existing conditions remains. Eight precincts across Bentley-Curtin have been identified in this document, with some having redevelopment potential which will need to be guided by local structure plans and detailed planning to address detail and design matters.

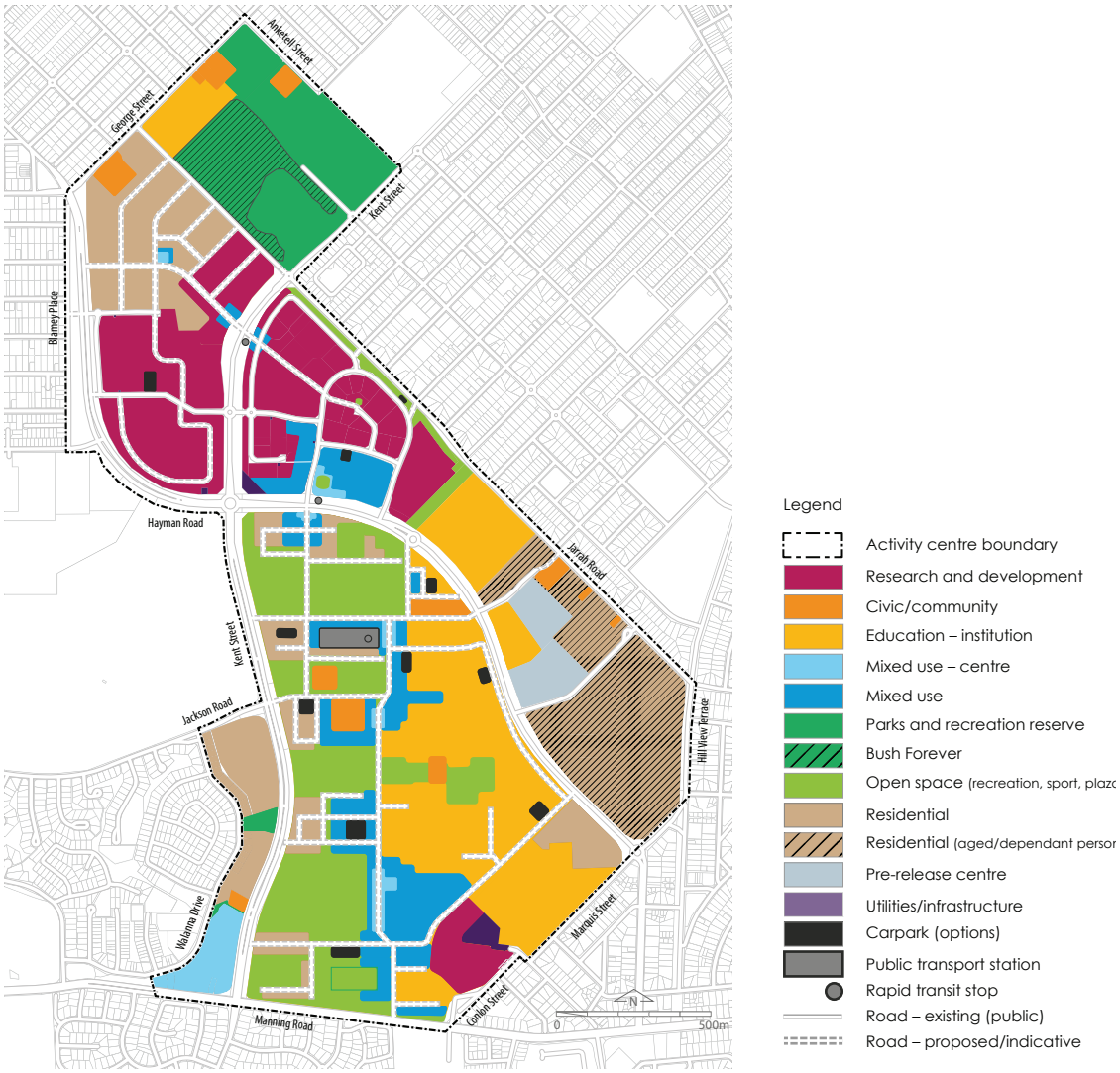

Figure i: Strategic plan

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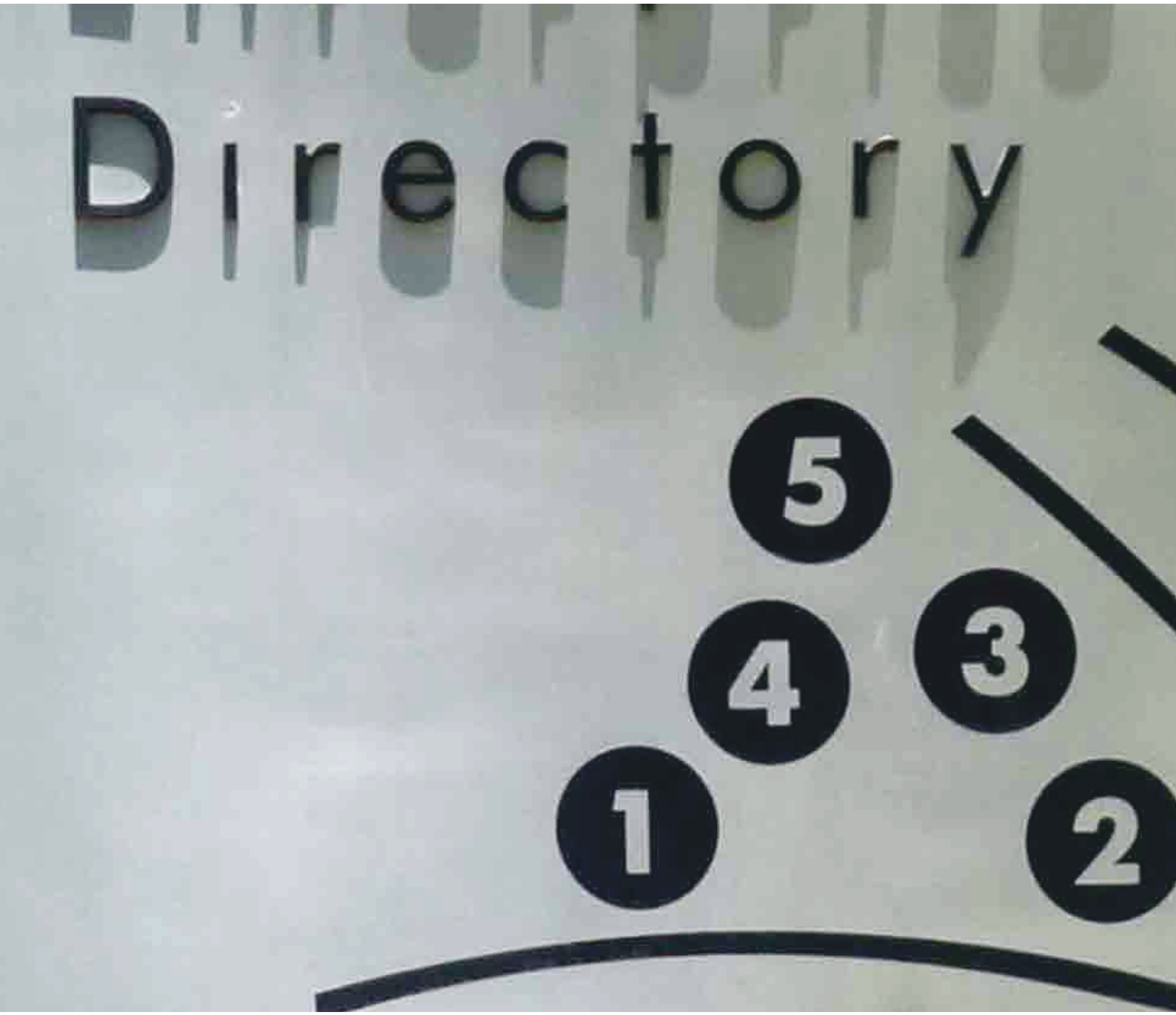
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1. Introduction

1.1 Introduction to Bentley–Curtin

Bentley-Curtin Specialised Activity Centre has a unique and distinct mix of education, research, technology and residential functions. Many State agencies are located within Bentley-Curtin along with Curtin University. Additionally, private, commercial and Commonwealth landholdings contribute to the research focus and diversity of Bentley-Curtin which has an estimated working population of more than 8,000 people.

Bentley-Curtin is located six kilometres south-east of the Perth central area; however, the 345 hectare area is sparsely developed, has a small permanent population, limited services for it's many daily visitors and no recognisable nodes of activity.

1.2 About this plan

The Specialised Activity Centre Plan sets a long-term vision for Bentley-Curtin and is intended to guide planning and development by informing local planning scheme reviews, amendments and further detailed planning.

The plan promotes an urbanised environment with improved public amenity and an increased mix of land uses. Residential diversity in convenient locations close to places of employment and education is anticipated to make Bentley-Curtin an attractive choice for education, employment and living. Bentley-Curtin will:

- continue building on the State's successful science, research, technology, and innovation focus
- expand as a vibrant hub for people to meet and exchange ideas
- make better use of vacant and under-utilised land close to central Perth and recreation areas
- facilitate opportunities to live close to work
- become a more sustainable and diverse centre closely linked to efficient public transport.

The Vision

Bentley-Curtin Specialised Activity Centre

An innovative, creative and collaborative centre of excellence in science, technology, education and research supporting the State's economic growth through the development and commercialisation of ideas into viable and sustainable enterprises. A vibrant place that is accessible, safe, sustainable, affordable and attractive for people to study, work, live and enjoy life.

Purpose and scope

The Plan is intended to guide change to 2031, recognising further capacity in the longer term. Specifically, it:

- confirms the role of Bentley-Curtin as identified in *Directions 2031 and Beyond* and the *Central Sub-regional Planning Framework*
- provides the strategic framework for coordinating subsequent planning and development including Metropolitan Region Scheme (MRS) and local planning scheme amendments, legislative changes and local planning
- sets out the key structural elements essential to realise the opportunities within Bentley-Curtin
- is informed by economic and infrastructure capacity analysis, a landscape public realm strategy and a transport assessment
- provides general guidance on provision of social infrastructure to assist local government and key stakeholders
- assists forward planning for infrastructure based on potential employment and residential populations.

Local government and landowners are encouraged to implement this strategic plan through local planning scheme amendments or reviews and/or the preparation and endorsement of structure plans. Ultimately, local planning schemes will retain control and planning provisions that guide and assess development within Bentley-Curtin.

Vision and consultation

Preparation of this plan was overseen by a project working group consisting of State and local government and Curtin University representatives. The project working group established the vision for Bentley-Curtin to guide future development. The plan is informed by consultation with key stakeholders, previous consultation and planning processes and current economic analysis.

1.3 Activity centre area

Bentley-Curtin spans the City of South Perth and Town of Victoria Park. Its boundary is defined by the existing street network. *Figure 1* shows the extent of Bentley-Curtin and local government boundaries.

1.4 What is a specialised centre?

State Planning Policy 4.2 – Activity Centres for Perth and Peel identifies five Specialised Centres in metropolitan Perth. Three are based on knowledge activities (UWA/QE2; Murdoch and Bentley-Curtin) and two on aviation (Perth and Jandakot Airports). UWA/QE2 and Murdoch include hospitals. Bentley-Curtin is unique because of its combined education and technology focus.

Specialised centres focus on regionally significant economic and/or institutional activity that generate many work and visitor trips and require a high level of transport accessibility. Opportunities to develop complementary activities, particularly in knowledge-based business are encouraged. Bentley-Curtin attracts large volumes of daily visitors and workers although it has a low residential population.

The primary function of specialised centres may be reinforced through the economic and social benefits of co-locating work, living, recreational and commercial activity, reducing travel congestion, maximising infrastructure use, improving amenity and clustering education and knowledge based organisations. Specialised centres require high level transport accessibility to function well and increased residential housing to help establish a sense of community and activity outside work hours.

Isolating business, technology parks and universities from each other or from quality public spaces and amenities does not allow proximity to contribute to the sharing of ideas. Low activity environments generally lack the facilities required to support the exchange of knowledge and ideas arising from formal and informal interaction.

Bentley-Curtin has the potential to make a substantial contribution to the State's economy through highly skilled and educated people, creation of jobs and the capitalisation of innovative ideas creating enterprising value-added products and solutions.

Figure 1: Activity Centre boundary


TECHNOLOGY
PARK
An Initiative of The Western Australian Government

2. Context

2.1 Regional context

Bentley-Curtin is a major regional destination for employees and students. *Figure 2* shows that Bentley-Curtin employees travel from all over the metropolitan area.

Bentley-Curtin is located between the Mandurah and Armadale/Thornlie passenger railway lines. Bus feeder services to and from both lines and to the Victoria Park Bus Transfer Station make Curtin Bus Station one of the busiest bus stations in Perth. There is however, capacity for increased public transport patronage.

Vehicular access between Bentley-Curtin and all areas of Perth exists via Kwinana Freeway, Canning, Albany and Leach highways and Manning Road.

Cannington strategic metropolitan centre (including Carousel) provides major retail and commercial services for Bentley-Curtin five kilometres to the south-east. Victoria Park and Booragoon are the nearest secondary centres. Smaller nearby centres include Canning Bridge, Bentley, South Perth, Oats Street, and East Victoria Park. *Figure 3* shows the location of other major activity centres in central Perth and their distance from Bentley-Curtin.

Murdoch University is approximately nine kilometres south west, the University of Western Australia is eight kilometres to the north west, and Perth airport is approximately 12 kilometres north east.

Other nearby regional attractors are the Swan and Canning rivers, foreshore open spaces and the Perth Zoo. Burswood Entertainment Precinct, South Perth Precinct and Albany Highway provide entertainment and social amenity.

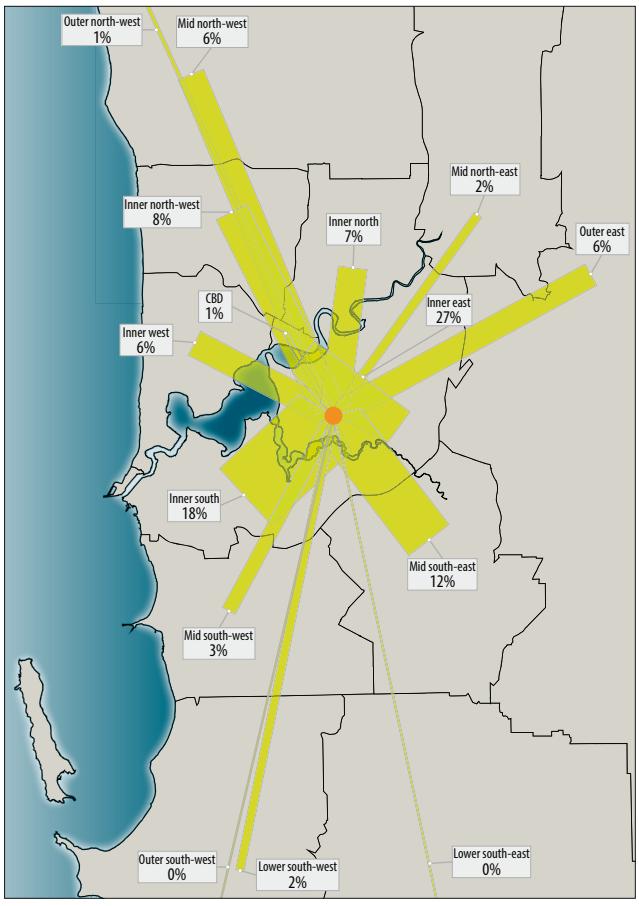

Figure 2: Origin of trips to work

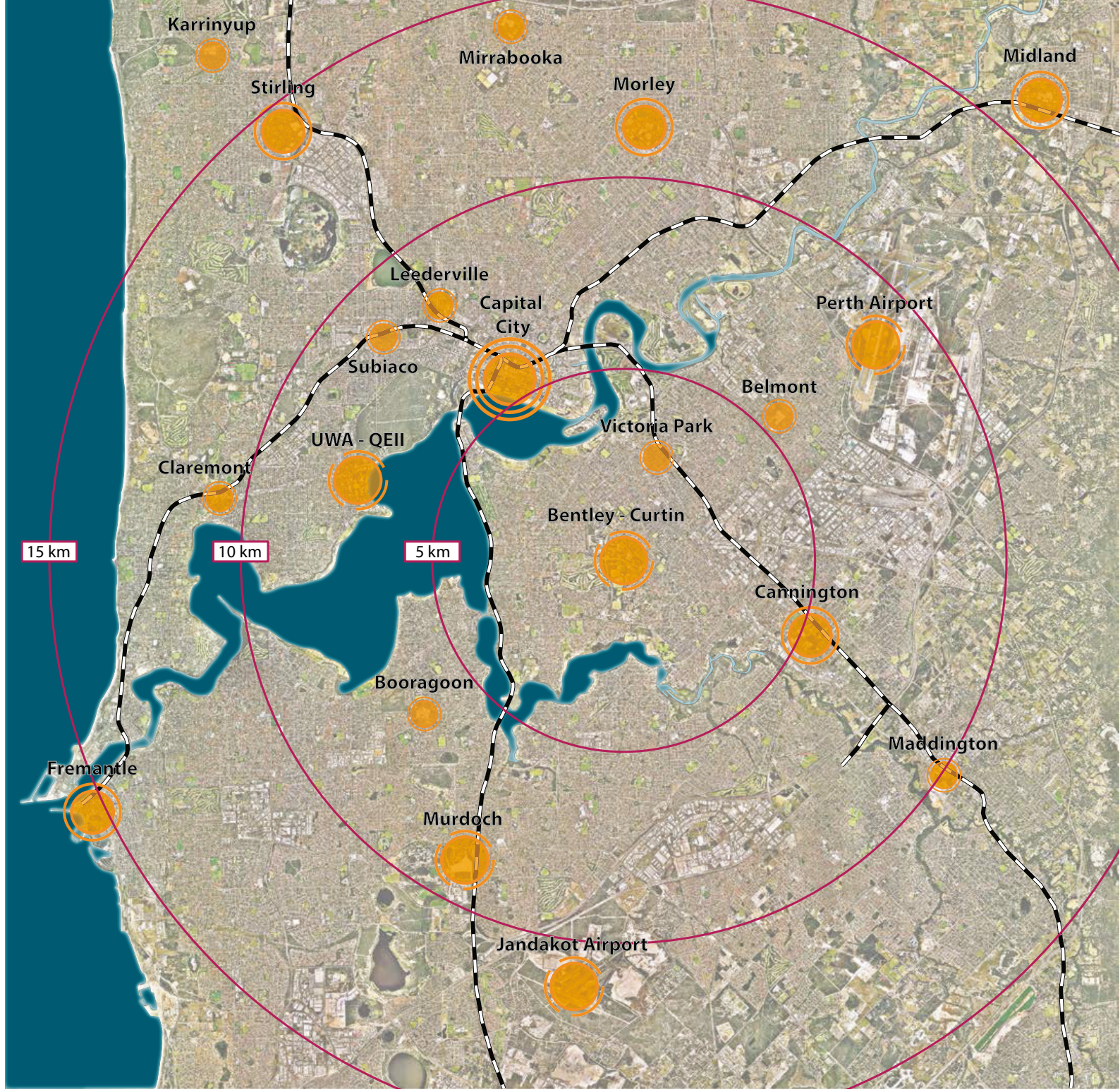

Figure 3: Relationship to other activity centres

2.2 Local context

Bentley-Curtin is surrounded by established suburban residential neighbourhoods of mainly low density, detached housing, with older traditional suburbs to the north and newer suburbs to the south. The introduction of medium density residential uses into Bentley-Curtin will provide greater diversity and choice in housing without impacting existing densities of adjoining suburbs.

The two local governments in which Bentley-Curtin is located have a combined estimated residential population of 85,000 people and contain approximately 38,000 jobs.

Figure 4 shows the location of land uses and attractions within Bentley-Curtin (orange label) and in surrounding areas (green label).

Bentley-Curtin is near primary and secondary schools including Penrhos and Clontarf colleges, Como Secondary School and Kent Street Senior High School which offer potential for close associations with Centre activities and residents.

Figure 4: Land uses and geographic relationships

(composite aerial)

Parks and reserves in adjacent suburbs contribute to Bentley-Curtin's recreation and sports facilities, and include the landscapes and wetlands of the Canning and Swan river foreshores, connected open spaces through Karawara and the George Burnett Park sporting fields.

The Swan River foreshore at South Perth and Burswood provides an active nearby attraction and combined river amenity, views and places of entertainment with multi-storey residential apartments.

The Burswood, Victoria Park (including Victoria Park Central) and East Victoria Park activity centres (including The Park Centre) are nearby entertainment, retail and employment areas north of Bentley-Curtin. The activity centres include a combined mix of uses and services including Perth's major sports stadium, major recreational facilities, retail for daily shopping needs, cafés, restaurants, hotels, small bars and a number of car sales businesses.

2.3 Recent history

The lands around Bentley-Curtin are the traditional home of the Whadjuk Nyoongar, the indigenous people of the south-west of Western Australia. From the 1830s, European settlers began using tracts of land in the area for farming and industry. By the 1890s, subdivision and the creation of reservations was evident.

In 1925 the Collier Pine Plantation was established by the Western Australian Forests Department (now Department of Primary Industries and Regional Development). It comprised approximately 900 hectares of land in Karawara, Como, Kensington and Bentley. The intention was to use the land for public purposes once the pine trees were harvested. *Figure 5* shows the plantation's extent.

The Forestry Department headquarters was established on the now the Department of Biodiversity, Conservation and Attractions site in 1954. During the 1950s the State government issued land grants for aged care facilities to Swan Cottages (now SwanCare) and Rowethorpe (now Juniper Rowethorpe) which opened in 1957 and 1961 respectively.

After a bushfire destroyed large tracts of the pine plantation in 1957 education and research institutions were established. Ngala (the not-for-profit parenting assistance service) opened in George Street, Kensington in the same year.

By 1962, the Bentley High School was established and the plantation decreased to 600 hectares. The establishment of Vose Seminary, Como High School, and Penrhos College followed.

In 1966 the West Australian Institute of Technology (now Curtin University) officially opened in its present location.

New roads were constructed through the area to service increasing traffic volumes. By the mid 1970s, Kent Street was constructed between Etwell Road and Manning Road and Hayman Road had been built. Hayman Road and Kent Street (within Bentley-Curtin) were constructed with large verges to cater for potential future dual lanes.

The Collier Park Golf Course was established in the 1980s retaining some plantation pine trees. Primary schools, high schools, and a technical college were also established.

Technology Park Bentley was formalised through gazettal in 1983. In 1985, the eastern precinct of Technology Park opened and the western precinct opened in 2001 including the Australian Resources Research Centre.

Figure 6 shows key events leading up the establishment of Bentley-Curtin and current day development.

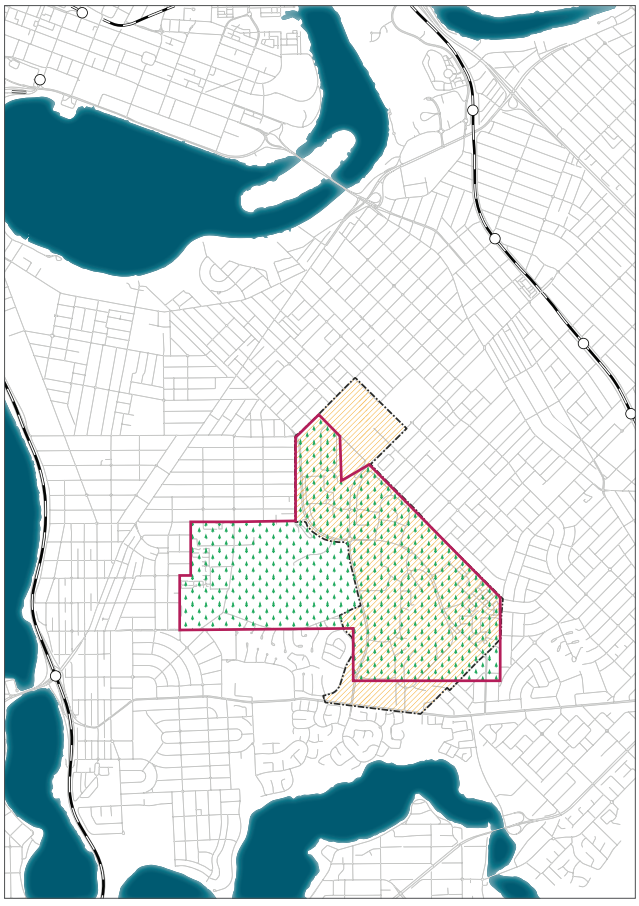

Figure 5: Collier Pine Plantation

Continual	Whadjuk Nyoongar lands.
1830s	European settlement began.
1890s	Subdivision increased.
1925	First pine trees planted.
1954	Forestry Department located to Kensington.
1955	Plan for the Metropolitan Region Report (Stephenson-Hepburn) recommended a technological institute, technical school and teacher's college in the Collier pine plantation.
1957	Fire burned a large portion of the Collier pine plantation. / Ngala was built.
1960	The Bentley High School was built to cater for surrounding population growth. / The State Government established the Western Australian Instituite of Technology (WAIT).
Late 1950s Early 1960s	Swan Cottage Homes and Rowethrope opened.
1967	Vose Seminary opened.
1970	Western Australian Herbarium was built.
1972	Village Green Shopping Centre opened (now Waterford Plaza).
Early 1970s	The Government investigated the concept of a Technology Park as a means to add value to the economy.
1980	WA Institute of Fashion and Textiles established at Bentley campus of TAFE.
1983	Funding for construction of the first stage of the Technology Park Bentley is provided.
1985	Technology Park - Bentley officially opened.
1986/7	WAIT became Curtin University of Technology.
1987	Western Precinct of Technology Park opened.
1991	Student numbers at Curtin reached18,000.
1993	A technology taskforce recommended that the Bentley Technology Precinct provide an opportunity for improved use of public assets and that a master plan be prepared.
1994	CSIRO Waterford site opened.
1999	Increased student enrolments at Curtin lead to the introduction of Circle Route buses and construction of a bus terminal on Hayman Road.
2001	Australian Resources Research Centre opened.
2003/5	A draft master plan and development framework was prepared to maximise linkages between institutions.
2005	Student enrolments at Curtin reach 37,000 across campuses.
2007/8	The 2005 development framework is reviewed and a draft structure plan prepared but not progressed.
2010	The WAPC released the spatial framework *Directions 2031 and Beyond*. It designates the precinct as a Specialised Activity Centre.
2013	Operational launch of the Pawsey Centre, illustrating the benefits of co-location and collaborative networks. / Curtin University released the *Greater Curtin Master Plan*, outlining a vision for the Bentley campus.
2018	Bentley-Curtin Specialised activity centre plan. / *Perth and Peel@3.5 million* suite of documents released to build on the vision of *Directions 2031*.

Figure 6: Key events

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Today | **1.** CSIRO - AMRC | **2.** SwanCare Bentley Park

2.4 Key characteristics

Bentley-Curtin benefits from existing features, including the following.

Education, research and technology

Bentley-Curtin is characterised by education, scientific research and technology, with major institutions anchoring more than 100 knowledge and education focused organisations. Technology Park with the Innovation Centre is a catalyst for emerging small to medium enterprises, encouraging viable and sustainable ventures.

Population and employment

Bentley-Curtin has a small residential population of 2,300 people (2011). Most live in aged care, retirement facilities or student accommodation and only a few private dwellings exist. Estimated employment at Bentley-Curtin is 8,600 jobs (2011) of which 5,000 are professional roles.

Aged and specialised services

Bentley-Curtin has extensive aged and dependent persons accommodation and care facilities. Providers share facilities and amenities and residents make up a substantial proportion of Bentley-Curtin's population. Boronia Pre-release Centre and other specialised services, including ACTIV, are nearby. Together, these facilities employ a significant workforce.

Accessible location

Curtin University Bus Station serves large numbers of public transport users and is one of the busiest stations (including train stations) in Perth. Centre bus routes allow transfer to Canning Bridge, Perth and Oats Street railway stations and the high-frequency 998 and 999 Circle Route services wider metropolitan access. Curtin University also provides bus services to staff and students.

Major roads allow direct access from the surrounding metropolitan area and key destinations via the city's regional road network.

Bentley-Curtin's major institutions

- **Curtin University** is a teaching and research tertiary institution including information and communication technology, minerals and energy, technology, health and sustainable development, with approximately 24,000 students at the Bentley Campus.
- **Commonwealth Scientific Industrial and Research Organisation (CSIRO)** contributes to research at the Australian Minerals Research Centre (AMRC) in Waterford, the Australian Resources Research Centre (ARRC) and the Pawsey Supercomputing Centre.
- **Pawsey Supercomputing Centre** provides expertise and facilities for research, education and industry using supercomputers, data storage and visualisation. It is a joint venture between the CSIRO and Western Australian universities and is supported by the State and Federal governments.
- **Department of Biodiversity, Conservation and Attractions (Parks and Wildlife)** is responsible for a range of services for Western Australia including managing and conserving wildlife and natural assets, incorporating research into the Western Australia's ecological communities.
- **Department of Primary Industries and Regional Development (Agriculture and Food)** provides a broad range of services including economic development of Western Australian agriculture, food and research including land and water management and climate.
- **South Metropolitan TAFE** provides tertiary education at the Bentley campus in the fields of hospitality and food preparation, fashion and textiles and veterinary nursing and care.
- **Secondary Education** at Kensington Secondary School and Canning College provide specialised education and assist student entry to higher education.

Open space and recreation

In Bentley-Curtin's north are the open space and recreation assets of George Reserve, Harold Rossiter Park and Kensington Bushland (Bush Forever site No.48). Perth Hockey Stadium, Western Australia's premier hockey facility is within Curtin University campus, along with campus open spaces and playing fields. Green reserves, generous road verges, remnant vegetation on vacant land and portions of developed sites contribute to open space.

Retail and commercial

Waterford Plaza in Bentley-Curtin's south-west offers the main retail component incorporating a contemporary main street. Curtin University caters for staff and students at various retail and food outlets across the campus.

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High level research | **1.** ARRC CSIRO Kensington | **2.** Chem Centre | **3.** Pawsey Supercomputing Centre

2.5 Planning challenges

This plan is intended to guide development and on-going planning to transform Bentley-Curtin into an activity centre. Better utilisation of inner metropolitan land dedicated to technology and knowledge, long-established institutions and Technology Park, proximity to central Perth, shared infrastructure and public transport accessibility all promote opportunities to intensify Bentley-Curtin. They also present challenges.

Urban fabric

Bentley-Curtin's current physical layout, including the road network, is car-oriented. Hayman Road and Kent Street link to the wider network and provide effective vehicle access; however, 70 kilometre per hour speed limits and wide reserves divide and isolate uses. The connectivity of local streets can be improved to better serve walking, cycling and vehicle access.

The park-like setting makes it difficult to identify nodes of activity. The broad open spaces contribute to visual and ecological amenity; however some areas require intensive use of water and energy resources.

Pedestrian routes are often isolated from activity and lack passive surveillance. The cycle network has increased however remains incomplete. Large car parks dominate many streetscapes and considerable informal verge parking occurs in some areas. Footpaths exist on main roads yet are limited or absent along many local streets.

Planning

Current planning requirements do not encourage redevelopment, requiring low site coverage, low plot ratio and low buildings with large setbacks. The low, dispersed, inwardly facing buildings impede vibrancy and discourage access and integration with surrounding areas. Large land parcels and substantially setback buildings present few identifiable landmarks, impeding the sense of arrival or place.

Mixed-use and residential development is restricted within Bentley-Curtin. A low residential population has resulted in the precinct being largely unoccupied on weekends, evenings and in non-teaching periods. The current student accommodation capacity is exceeded by demand and there is limited suitable short-term accommodation in close proximity for visiting scientists, academics and professionals. The residential population does not compliment Bentley-Curtin's high employment. Contemporary planning is necessary for metropolitan Perth as the population increases, the city evolves and centrally located and accessible land becomes scarce and valued for infill opportunities.

Vibrant destination

The promotion of science, technology and research within the Technology Park is legislated; however, a lively technology precinct has been slow to evolve. Twenty-first-century technology and infrastructure along with contemporary economic, social and environmental drivers will influence change. These drivers and Bentley-Curtin's existing features provide an opportunity for renewal and intensification.

Current spatial structure | Isolated bus stop and wide verges

2.6 Planning instruments

Planning, land use and development within Bentley-Curtin is regulated by several statutory planning instruments, as applied across the metropolitan area. Particular locations are subject to additional site specific controls. Several key planning and governance controls have been implemented for Bentley-Curtin.

The *Metropolitan Region Scheme* (MRS) guides regional land uses in the Perth metropolitan areas. It provides the context for local planning schemes and other planning decisions established by the *Planning and Development Act 2005.* Much of Bentley-Curtin is reserved under the MRS for *Public Purposes* for University, Technical School or Special Uses. In addition, there are areas reserved for Parks and Recreation and Bush Forever.

Development of reserved land is assessed by the Western Australian Planning Commission, unless exempted from approval.

Freehold land within Bentley-Curtin is zoned Urban, allowing a range of uses including residential, commercial, recreational and light industry. Development of freehold land is assessed and approved under either the City of South Perth or Town of Victoria Park local planning scheme.

The university is subject to the *Curtin University Act 1966,* which includes assigning management power to the university council and outlining arrangements for activities that occur on university land.

Technology Park–Bentley functions under the *Industry and Technology Development Act 1998* (ITD Act). The Act guides the management and types of uses that can occur on land declared 'technology park'. The ITD Act was established to encourage and assist the development of industry, trade, science, technology, and research and to promote an environment that supports the emergence of internationally competitive industries.

Other Crown reserves within Bentley-Curtin are currently subject to management orders, which apply certain conditions including designating how parcels of land may be utilised.

Planning approval does not circumvent requirements of legislation and management orders, which will require review and amendment should certain land uses or development be proposed.

Further information regarding governance and legislation is in *Appendix 2*.

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3. Locations with specific governance | **1.** Department of Primary Industries site | **2.** Curtin University | **3.** Technology Park Bentley


Curtin University
Service Entrance
Fuels and Energy
Technology Institute
Curtin Aquatic
Research Laboratory
Curtin Horticulture
Research Laboratory

3. Planning Framework

3.1 Vision and principles

This strategic plan is based on a vision for Bentley-Curtin, prepared by a working group of key stakeholders.

Vision

An innovative, creative and collaborative centre of excellence in science, technology, education and research supporting the State's economic growth through the development and commercialisation of ideas into viable and sustainable enterprises. A vibrant place that is accessible, safe, sustainable, affordable and attractive for people to study, work, live and enjoy life.

Overarching principles

The following broad principles are intended to inform plans and achieve the vision:

- Plan for vibrant places with a diversity of uses, increased activity and well-located attractions so people can meet, exchange ideas and establish cooperative networks.
- To make more efficient and effective use of underutilised land.
- Encourage residential and mixed-use development to increase the permanent population, increase 'activity' and provide housing diversity close to places of employment and education.
- Plan for future rapid transit, improve local street access to enhance the existing network, reduce separation and barriers between different parts of Bentley-Curtin, improve cycling and walking options, and slow traffic by prioritising non-car travel and modifying streetscapes.
- Plan public spaces and streetscapes with integrated and improved landscapes that encourage walking and cycling, improve legibility and cultivate a sense of place.
- Encourage the perception of enclosure (an appropriate relationship between building elevation and street width), reduce separation between precincts (to promote interconnectedness) and encourage connectivity and legibility to promote an active, urban condition.
- Encourage resource conservation within the built form and landscapes, public and private spaces.
- Encourage support for primary activities, amenity and destinations for greater activity within and outside of working hours and identity qualities to create a place where people want to be.
- Allow the human scale, streetscape presence, existing surrounding uses, climate and topography to guide building heights, overshadowing, surveillance and setbacks of new buildings.
- Consider future infrastructure requirements that might be necessary as Bentley-Curtin evolves over time.

Figure 7 shows proposed key nodes (locations of high activity, diversity of uses or key public transport stops to respond to the requirement of Bentley-Curtin's working and residential population), main gateways into Bentley-Curtin and potential landmark locations.

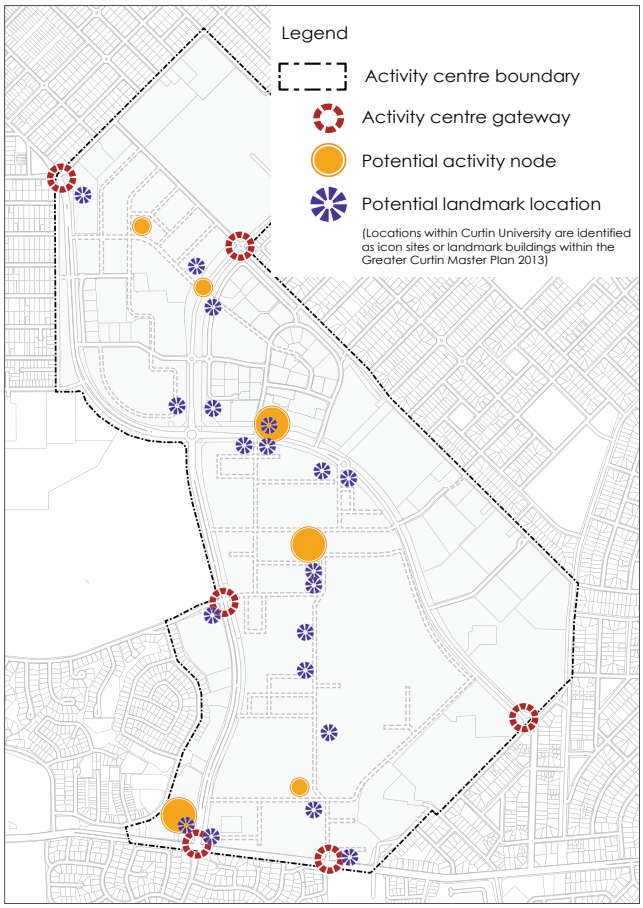


Figure 7: Nodes, landmarks and gateways

3.2 Activity and economic development

Economic development

Opportunities within Bentley-Curtin may arise as economic prospects change over time, influenced by global, regional and local factors. To advance these opportunities an increase in the number of strategic jobs (professionals working in education, scientific research, research and development and technology and related fields) and an increased residential population in and around Bentley-Curtin is anticipated.

Factors that may influence change and growth of over time include:

- land tenure arrangements
- legislative changes
- land use policy (e.g. change to local planning schemes and zoning controls)
- public infrastructure and amenity (e.g. investment in transport or community amenity)
- institutional variables (e.g. growth in student enrolments and academic staff)
- potential in the domestic and international economy (e.g. increased potential for investment in research and development related industries)
- real estate market (e.g. the market adjusting to land holdings being redeveloped)
- local economic conditions (e.g. general growth of South Perth and Victoria Park market drivers)
- increased share of residential dwellings and lifestyle attractions (e.g. cafés, shops, recreational services for those living and working in the area).

Opportunities to achieve and stimulate Bentley-Curtin's vision include:

Catalyst projects

- Commercial office projects – encouraging commercial floor space construction, allowing for a mix of types and sizes including accommodating large tenancy groups of up to 10,000m^2 of net lettable area. This may generate investment in prime floor space, increase day-time worker population and complement expanded retail and residential land uses.
- Retail catalyst project – encouraging retail uses to generate and enhance Bentley-Curtin's attractiveness as a destination and to create employment.
- Residential development – encouraging development of residential uses to provide a diverse mix of residential choice (single, mixed use and multiple dwellings). Residential development will increase the permanent population which, in turn, may encourage increased investment and provision of retail and other services.

Value enhancing projects

- Expansion or redevelopment of existing function and event facilities, to provide for larger groups and to offer enhanced facilities for use by a range of organisations seeking access to non-CBD conferencing facilities. This may be accompanied by hotel or short-term serviced accommodation.
- Health services facilities to cater for an increased resident and day-time working population.
- Activities that support the primary (e.g. knowledge, research and development) and residential uses, for example business and personal services.

Catalyst infrastructure

- Catalyst infrastructure projects such as increased provision of public transport. This may act as an incentive for redevelopment including diversity in scale and form, land values and contribute to economic multipliers, such as improved activity and desirability as a place to live or work.

Encouraging strategic jobs

Encouraging employment diversity and skills to align with the Activity Centre's current and future functions can reinforce the vision and contribute to the potential of Bentley-Curtin. There is a range of actions and strategy options, including improved amenity for encouraging strategic jobs (employment in knowledge intensive industries) and attracting people with specific skills and focus, including for example:

- Incentives for research and development and knowledge focused businesses (e.g. office accommodation incentives), and market calls for investment from strategically targeted global and local businesses with a science, technology, research and development focus to encourage employment density and diversity.
- Formal and informal industry partnerships (e.g. partnerships between universities and businesses to generate learning and knowledge transfer opportunities).
- Advocacy and investment strategies to attract research organisations with a particular or required focus (e.g. the application of governance systems and processes and a coordinated approach to guide and promote Bentley-Curtin).

Activity drivers and place activation

Bentley-Curtin has many of the elements to achieve the vision of a place of intensified collaboration and interaction.

The benefits of existing agglomeration and close proximity can be supported by improved aspects of spatial planning and by strategies for network activation, programs for building social and organisational relationships.

Economic and employment scenarios

Three scenarios examining the economic and employment future of Bentley-Curtin were utilised to test the preferred economic basis for this plan.

'No change' Scenario

Unchanged policy, legislative and market drivers and variables used to establish and reflect trend and baseline activity levels. This is a 'business as usual' scenario with no changes to existing circumstances.

'Policy change' Scenario

Changes to land use policy, legislative and market drivers and variables within Bentley-Curtin and in the wider area. Local 'investment-led' projects stimulate development leading to above-trend activity levels. This scenario facilitates opportunities for landholders to explore a wider variety of development and land use options within Bentley-Curtin.

'Step change' Scenario

Significant changes to policy, legislative and market drivers and variables with international 'investment-led' projects to stimulate development. This scenario addresses the potential for Bentley-Curtin to evolve into a global regional knowledge and technology cluster, requiring major aspirational change and international investment to lead growth and redevelopment.

The 'Policy Change' Scenario is acknowledged as the most reasonable basis to inform the plan's preparation.

Policy change scenario

The 'Policy Change' scenario has been used to guide growth up until 2031 in this plan. It is informed by and set within the local, regional and global context.

The scenario has been used to inform the utilities infrastructure and transport planning and may assist in staging development.

The scenario does not exclude greater levels of development before or after 2031 if significant or unexpected changes in markets or demand occurs. The scenario is not intended to limit change.

The capacity for growth in long-term employment, residential population, dwelling density, non-residential floor space and civic places may be influenced by population growth and economic conditions as Bentley-Curtin matures over time.

Short, medium and long term development potential is provided opposite as an indication of potential scale of development to 2031.

Table 1 shows the approximate change in jobs, dwellings and residents from the Census year of 2011 to 2031.

	2011	2031
Dwellings	1,345	5,000*
Residents	2,311	9,500**
Employment	8,622	20,600
* 'Dwellings' includes aged care and student accommodation. ** 'Residents' includes provision for 2,500 future potential students living on campus at Curtin University.		

Table 1: Policy change scenario

Potential development

The Policy change scenario is suggested for the economic and employment growth of Bentley-Curtin over time.

Short-term – In addition to existing development

- Retail uses – up to 5,000m^2 gross floor area.
- Commercial office development - up to 25,000m^2 to 35,000m^2 net lettable area, subject to market requirements.
- Residential uses – 500 to 600 dwellings including medium-density and multi-storey private residential dwellings.
- Complementary infrastructure and public realm upgrades including parks, transport network and communications infrastructure.

Medium-term – In addition to short term

- Retail uses – up to 5,000m^2 gross floor area.
- Commercial office development – up to 40,000m^2 to 50,000m^2 net lettable area, subject to market requirements.
- Residential uses – up to 900 to 1000 dwellings including medium-density and multi-storey private residential dwellings.
- Potential for complementary uses such as hotel accommodation, health facilities and conference and event facilities.

Long-term – In addition to short and medium term

- Commercial office development – up to 40,000m^2 to 50,000m^2 net lettable area, subject to market requirements.
- Residential uses – up to 900 to 1,000 dwellings.
- Additional public transport infrastructure such as bus network or light rail for increased residential, worker and student population.

Note: Scenario – subject to future conditions and precinct planning.

3.3 Housing and population

Approximately 2,311 people lived in Bentley-Curtin in 2011, mostly residents of retirement and aged care facilities and student accommodation. Only a small percentage of the population lived in private dwellings.

Directions 2031 and Beyond sets a target of 47 per cent population growth within Perth's existing urban areas. The *Central Sub-regional Planning Framework* proposes the City of South Perth and Town of Victoria Park will have a combined total of 27,600 new dwellings as part of a city of 3.5 million people. One of the main ways of achieving this will be targeted infill residential development in areas like Bentley-Curtin. With its existing low population and unrealised residential development potential, there is significant capacity to increase the number of dwellings.

Proximity to central Perth and other centres, growth in employment, and transport and public realm improvements afford Bentley-Curtin excellent potential as an appealing location to live.

The 'Policy Change' Scenario suggests an addition of approximately 2,600 dwellings, plus up to an additional 2,500 student beds on the university campus to the year 2031, leading to an approximate residential population of 9,500 people. Curtin University reports it has an accommodation demand for 7,000 students who cannot currently be housed on campus.

Additional residential development will contribute significantly to Bentley-Curtin's activity and economic development. Medium to higher density residential development is anticipated to occur in various locations to align with Bentley-Curtin's specialised function. Residential development may be encouraged as part of mixed-use development in some locations.

1.

2.

3. **Housing within Bentley-Curtin | 1-3.** Student and retirement accommodation

3.4 Employment

Approximately 59 per cent of existing jobs within Bentley-Curtin are professional positions. Sometimes termed 'white collar' jobs, these professional roles are mainly in the specialist fields of scientific research, research and development, academia, education and knowledge. The economic strategy to 2031 identifies Bentley-Curtin as a location for additional employment in the above professions, increasing as a proportion of overall employment growth and enhancing Bentley-Curtin's appeal for events and functions and attracting specialised organisations.

Encouraging growth of these professions, along with service based employment is key to facilitating a prosperous Centre. Bentley-Curtin offers significant opportunities for knowledge based commercial industries to take advantage of the proximity of specialised and highly skilled workers. Employment in jobs associated with urban growth and services, such as retail, hospitality and personal services, is likely to increase as new dwellings are built, population increases and additional commercial floor space becomes available.

Overall employment has the potential to more than double to 20,600 jobs by 2031. Within this, professional employment is anticipated to increase by 10 per cent to around 69 per cent or approximately 14,300 jobs. *Table 2* indicates scenario forecast employment in 2031.

About half of the entire future projected employment is expected to be within Curtin University, predominantly in university research, teaching and administration.

Technology Park is anticipated to have a significant increase in employment, substantially in highly skilled professional roles. Other locations are expected to also see an increase in professional jobs and employment related to urban growth.

Employment		2011	2031	Change per annum (%)
Total employment				
Local government areas (Town of Victoria Park and City of South Perth combined)		34,907	67,700	3.4
Bentley-Curtin		8,622	20,600	4.5
	Percent of total employment within local government areas	24.7	30.4	
Professional 'white collar' employment				
Local government areas (Town of Victoria Park and City of South Perth combined)		13,963	30,200	3.9
Bentley-Curtin		5,061	14,300	5.3
	Percent of white collar employment within local government areas	36.2	47.3	
Percentage of 'white collar' employment				
White collar employment as a percent of total employment within Bentley-Curtin		59	69	

Table 2: Employment scenario

3.5 Landscape and public realm concept

A current major feature of Bentley-Curtin is the broad grassed landscapes which contribute to a 'campus style' setting. Large playing fields, wide verges and Kensington bushland contribute a sense of space, however in some locations the extensive distances do not improved amenity, instead creating areas of isolation and safety risk.

The strategic aim for the future landscape and public realm network within Bentley-Curtin is to utilise the landscape to provide for sustainable human activities, biodiversity and urban ecologies for water management and favourable micro-climates.

Key elements are:

- links for human activity through varied destinations connected by attractive and safe journey routes offering multi-faceted experiences and encouraging walking and cycling
- recognition of the biodiversity network and links to enhance the existing habitat
- creation of a multi-functional open space and street network integrating green infrastructure as an essential component of the urban structure.

Destinations

A part of the landscape and public realm network is the connection of destinations with attractive links. Destinations may be places such as parks, main streets and shopping centres. Strategies to create a network of destinations to promote outdoor activity and enrich urban life include:

- identifying local community needs
- create a network of destinations with unique features
- enhancing the broad north-south corridor between the two rivers
- implementing place-making approaches to enrich visitor experiences.

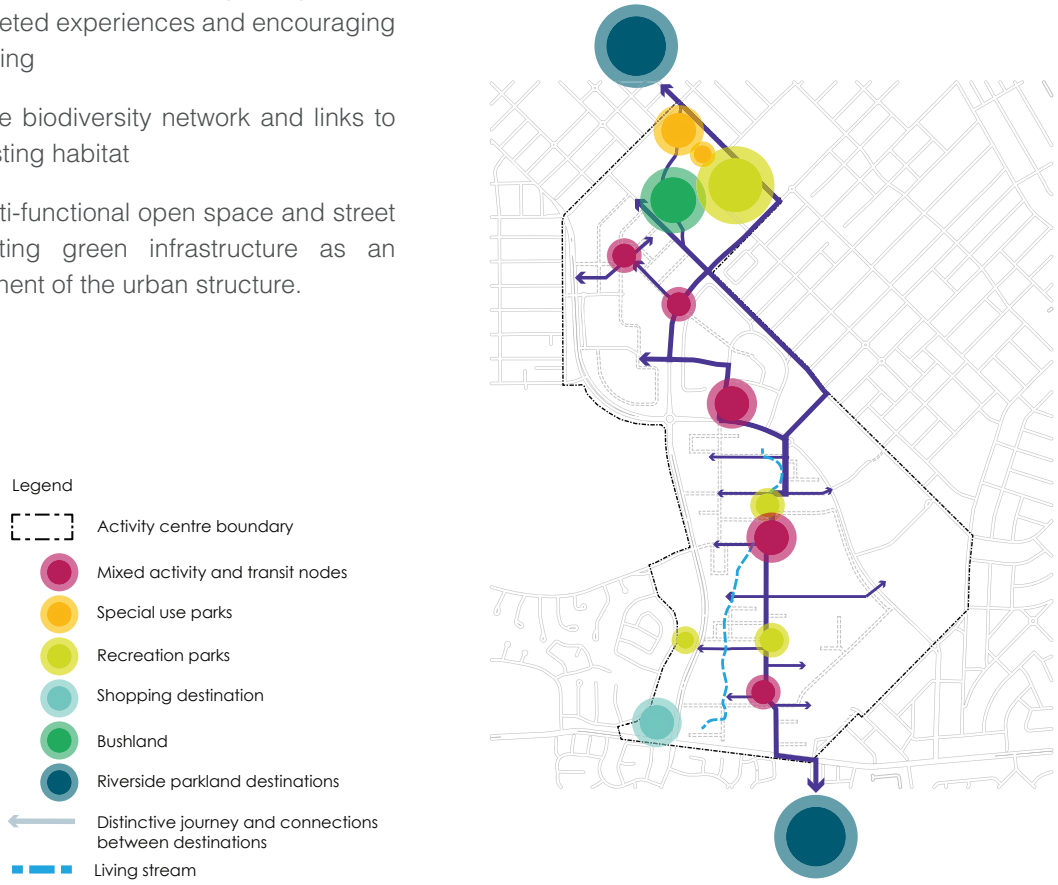


Figure 8: Potential destinations and journeys

Journeys

A journey is important as it provides the link to key destinations and can provide its own enhancing experience and sense of place for users. Strategies for the creation and enhancement of journey routes include:

- balancing coherence and distinctiveness of landscape character
- creating a range of visual cues, such as enhanced existing vistas, emphasising sight-lines, locating landmarks and urban artwork at strategic locations
- employing a consistent graphic style for way-finding and information signage, telling stories of place along the journey
- providing premium pedestrian and cycle connections throughout the journey and ensuring good connection to the wider circulation network.

Figure 8 shows potential destinations and journeys within Bentley-Curtin.

1.

2.

3. Destinations | **1.** Kensington Bushland | **2.** Waterford Plaza | **3.** Curtin University

4. Structure Plan

4.1 Structure plan

This is a strategic plan that provides a basis for further detailed planning over time. Implementation is subject to further consideration. Additional and upgraded transport and services infrastructure is indicative and are recommended to preserve future options.

Elements such as further planning and population change will inform timing and government decisions. Land acquisition, road construction and associated facilities are not committed through this document.

Figure 9 shows a variety of land uses across Bentley-Curtin but does not reflect detailed 'zones'. It reflects prominent activities and provides the context and rationale for planning and development:

- *Bush Forever* – Kensington Bushland, Bush Forever Site No. 48.
- *Car park (options)* – potential indicative locations for public parking facilities.
- *Civic / community* – uses by government agencies for administrative, recreational or other purposes and / or facilities or services by organisations for community benefits.
- *Education* – institutions with an educational purpose and activities associated with education.
- *Mixed use* – a concentration of diverse non-retail activities and uses complimentary or contributing to the amenity of Bentley-Curtin's residents, workers and visitors. Commercial, service and knowledge based uses at street level for activation, extending to similar and/or residential uses on upper levels.
- *Mixed use (centre)* – a concentration of diverse activities and uses complimentary and contributing to the amenity of Bentley-Curtin's residents, workers and visitors. Retail and convenience uses at street level to promote a 'main street' atmosphere with flexibility for residential, commercial and knowledge-based uses on upper levels.
- *Open space (recreation, sport, plaza)* – places and spaces for recreation, sport, nature, social interaction and exchange in addition to those reserved for parks and recreation.
- *Parks and recreation reserve* – reserved for Parks and Recreation in the Metropolitan Region Scheme or local planning scheme.
- *Pre-release centre* – Boronia Pre-release Centre.
- *Public transport station* – bus interchange station.
- *Rapid transit stop* – potential key public transport stop.
- *Research and development* – research and development activities, enterprises that specialise in science, technology, education and research and the commercialisation of ideas. Additional uses and activities complimentary and compatible to these activities.
- *Residential* – a range of housing types, sizes and densities to increase the residential population of Bentley-Curtin. Additional uses complimentary to residential development.
- *Residential (aged/dependant persons)* – areas that have special residential functions for aged and dependant people with ancillary and complimentary uses.
- *Utilities / infrastructure* – existing structures and equipment that contribute to the provision of utilities and services to Bentley-Curtin.

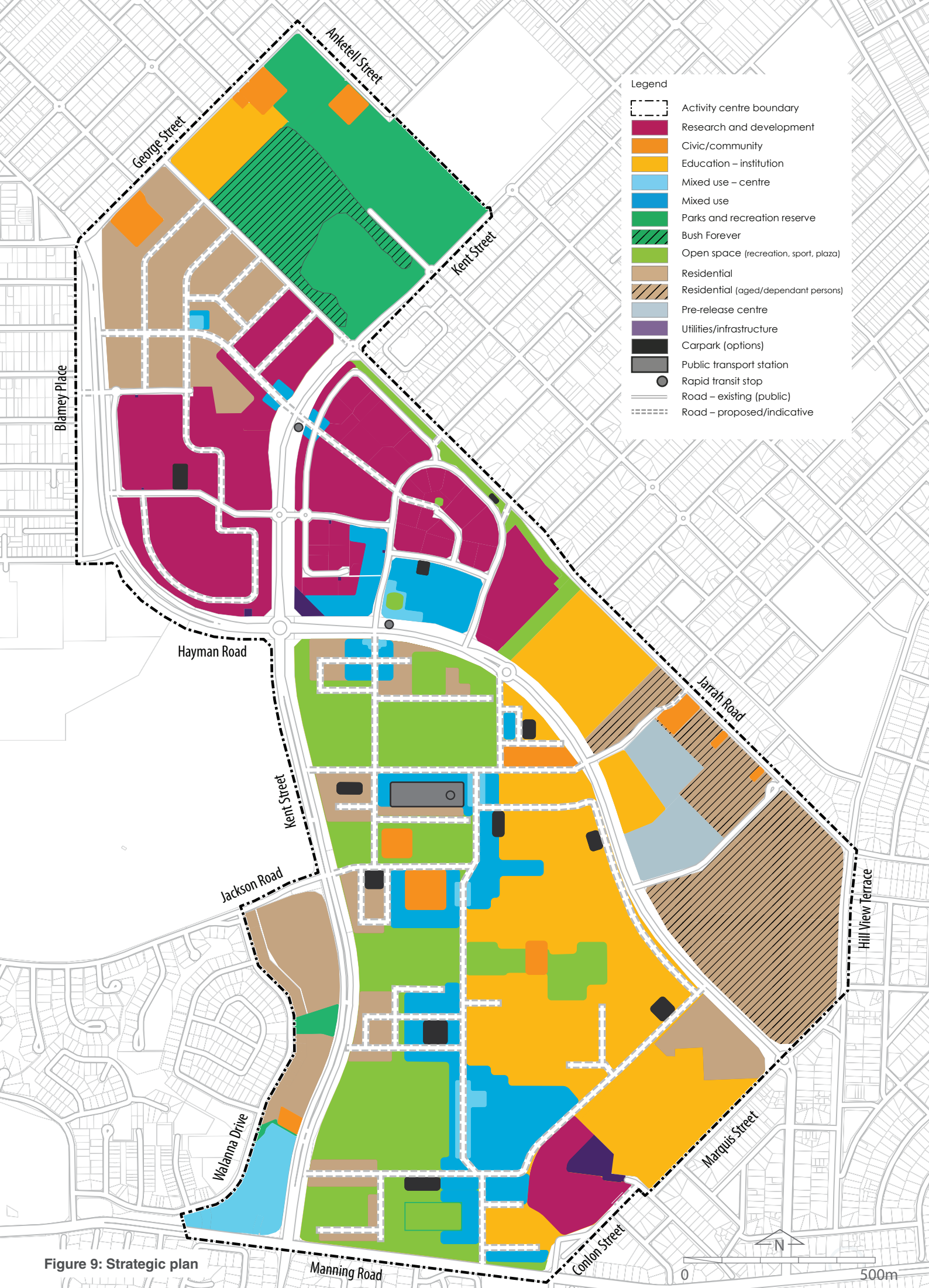


Figure 9: Strategic plan

4.2 Landscape and public realm

Landscape character zones

The public realm is a key factor in creating a 'sense of place' within Bentley-Curtin. Sense of place is not about functionality but about the essence of a good place. It is the unique characteristics that connect people to a place.

To assist in defining and creating this, the landscape is categorised into three broad character zones. These zones provide an overarching strategy for design principles for the visual quality and materials of the public realm. They are based on the existing landscape qualities, existing iconic features, existing land uses and user groups:

- *Bushland* – the landscape surrounding and including the Kensington Bushland.
- *Urban forest* – consolidating and defining the academic and research areas, utilising existing landscape and vegetation.
- *Urban village* – open spaces for social interaction and activity with special consideration for aged people.

The character zones are detailed in *Table 3*, explaining attributes of each zone and shown in *Figure 10*.

Bushland	Urban forest	Urban village
Drivers		
• Kensington Bushland provides the defining character. • A balance between human activities and natural habitat. • Enhance the Banksia woodland character in streets and public spaces.	• A mix of native and introduced species with an extensive tree canopy. • Enhance the link between the Kensington Bushland and the Swan and Canning rivers. • An attractive and functional public realm to support urban activity.	• Encourage open space to function as living rooms for physical activity and community interaction in communal spaces. • Take special consideration for the needs of aged people.
Key landscape attributes		
• Street and park trees correspond to the Banksia Woodland community of the Kensington Bushland. • Transitional landscape areas surrounding core natural habitat. • Generous vegetated verge spaces that function as biodiversity corridors at the precinct scale and storm-water conveyance and infiltration along Avenue streets. • Encourage informality in planting design in public spaces. • Water sensitive urban design integrated with landscape features. • Encourage native roof-top gardens. • Selection of materials and furniture to strengthen the bushland landscape ambience.	• A mix of native and introduced species. Appropriate replacement of senescent pine trees with the same, to continue as an iconic feature. Otherwise, replace with Black Cockatoo-friendly species in quantities that match the pine food production. • Continuous biodiversity corridor on Kent Street with a fine grain open space network serving as stepping stone green links. • Living Stream as a unifying feature across the area. • A combination of planting formality, spatial organisation, construction material and urban furniture selection. • Water sensitive urban design integrated with landscape features. • Encourage roof-top gardens. • Contemporary public realm style.	• Locally native species define the structure of open space with complimentary exotic species used in relatively enclosed gardens. • Range of intimate garden spaces that embody therapeutic landscape principles located in close proximity to residential buildings. • A variety of seating choices to meet the needs of people with different requirements. • Raised garden areas to allow the possibility for some aged residents to be able to engage with gardening. • Contemporary design emphasising an atmosphere of relaxation and intimacy.

Table 3: Key attributes of landscape character zones

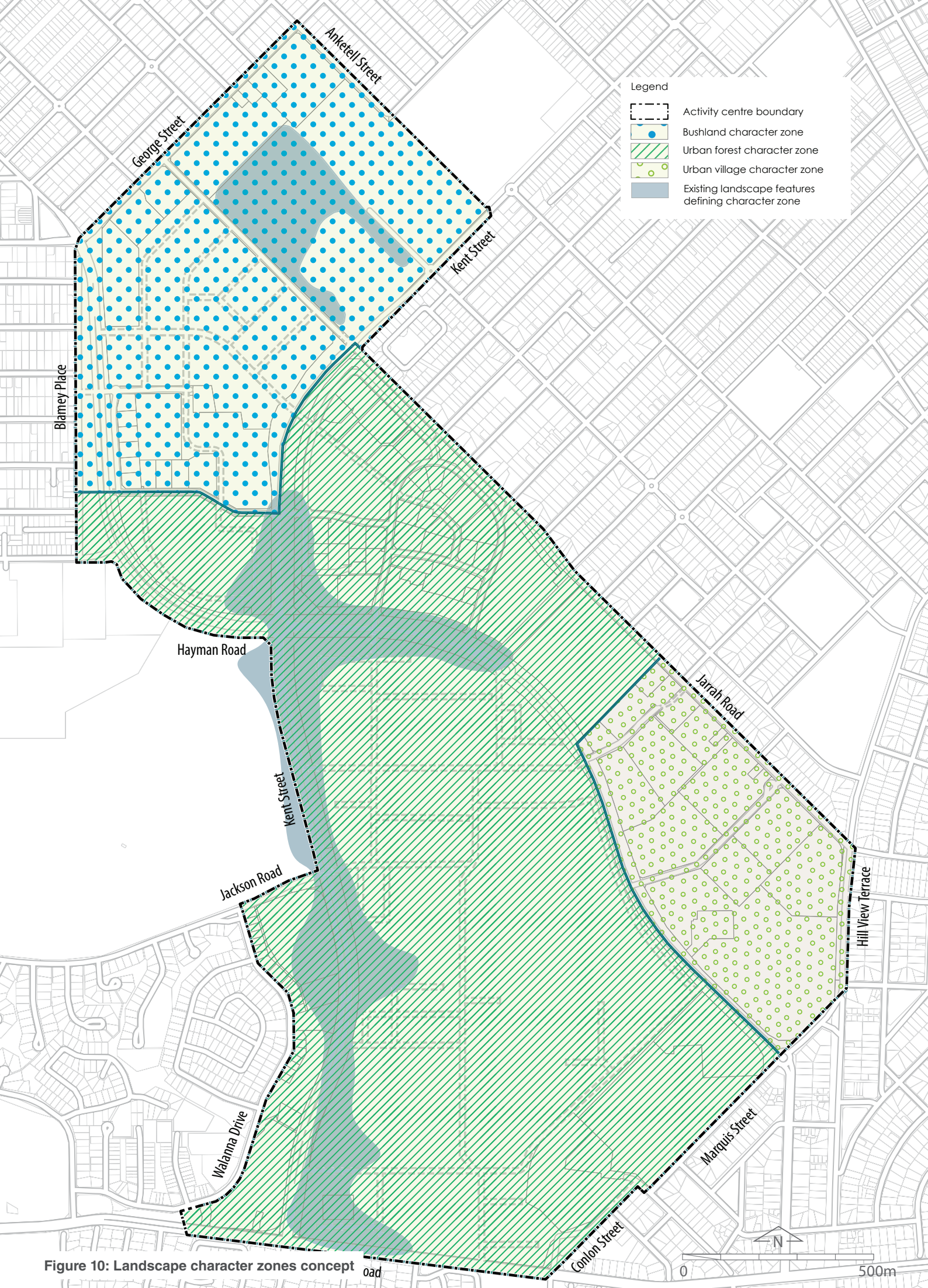


Figure 10: Landscape character zones concept

4.3 Open space concept

Open space should allow and cater for a variety of functions and purposes across Bentley-Curtin. The following table clarifies the purpose and amenity of each type of open space and is intended to inform future planning of the open space network.

The provision of public amenities should be customised to address specific conditions and community needs, as guided by *Table 4* and shown in *Figure 11*.

Park/open space	Purpose	Potential amenity
District space	• Serves several neighbourhoods and visitors from surrounding districts. • Intended to support organised sport and includes recreation space and some nature space. • Considers biodiversity principles.	• Space for organised sport, kick about, gatherings and events. • Shade through trees and structures. • Tables, general seating, shelter, barbecues, drinking fountains, shared paths, bicycle facilities, toilets, dog exercise facilities.
Neighbourhood and Local space	• Serves a recreational and social focus for the community. • Used for recreation, informal sport, may include nature space for conservation.	• Shade through trees and structures. • Kick about spaces, shared paths and general seating and tables. • Bicycle facilities and toilets for larger areas.
Bush Forever site	• Conservation of bushland on the Swan Coastal Plain and to provide wildlife habitat. • Secure long-term protection of biodiversity and environmental values.	• Informal trail and general seating. • Public communication and educational signage.
Boulevard park	• Supports a range of activities associated with adjacent land uses and rapid transit. • Considers biodiversity principles and environmental management goals. • Primary pedestrian and cycle connection. • Component of green infrastructure.	• Cycle and pedestrian path, shelter and general seating. • Tree boulevard and water sensitive urban design components. • Public communication and educational signage, way-finding. • Transit facilities and group gathering space.
Main street and plaza	• A focal point and outdoor living room for a mix of surrounding uses, supporting a wide range of activities and transit users. • Plaza areas developed by private owners.	• Shade through trees and structures. • Alfresco and general seating. Gathering and flexible event space. • Artwork, way-finding, water sensitive urban design components.
Biodiversity links	• Regional biodiversity corridor and component of green infrastructure. • Primary pedestrian and cycle connection.	• Shared path, general seating, water sensitive urban design components and entrance way-finding.
Communal open space	• Open space within private development that may be accessible by surrounding users and may serve recreational needs. • Contributes to biodiversity links, streetscape, pedestrian and cycle links at the local level. • On-site storm water management using water sensitive urban design principles.	• Shade through trees and structures. • General seating, footpaths, gathering space, water sensitive urban design components, barbecues and tables.
* Description of district, neighbourhood and local space consistent with the ***Classification Framework for Public Open Space*** (DSR 2012).		

Table 4: Open space description

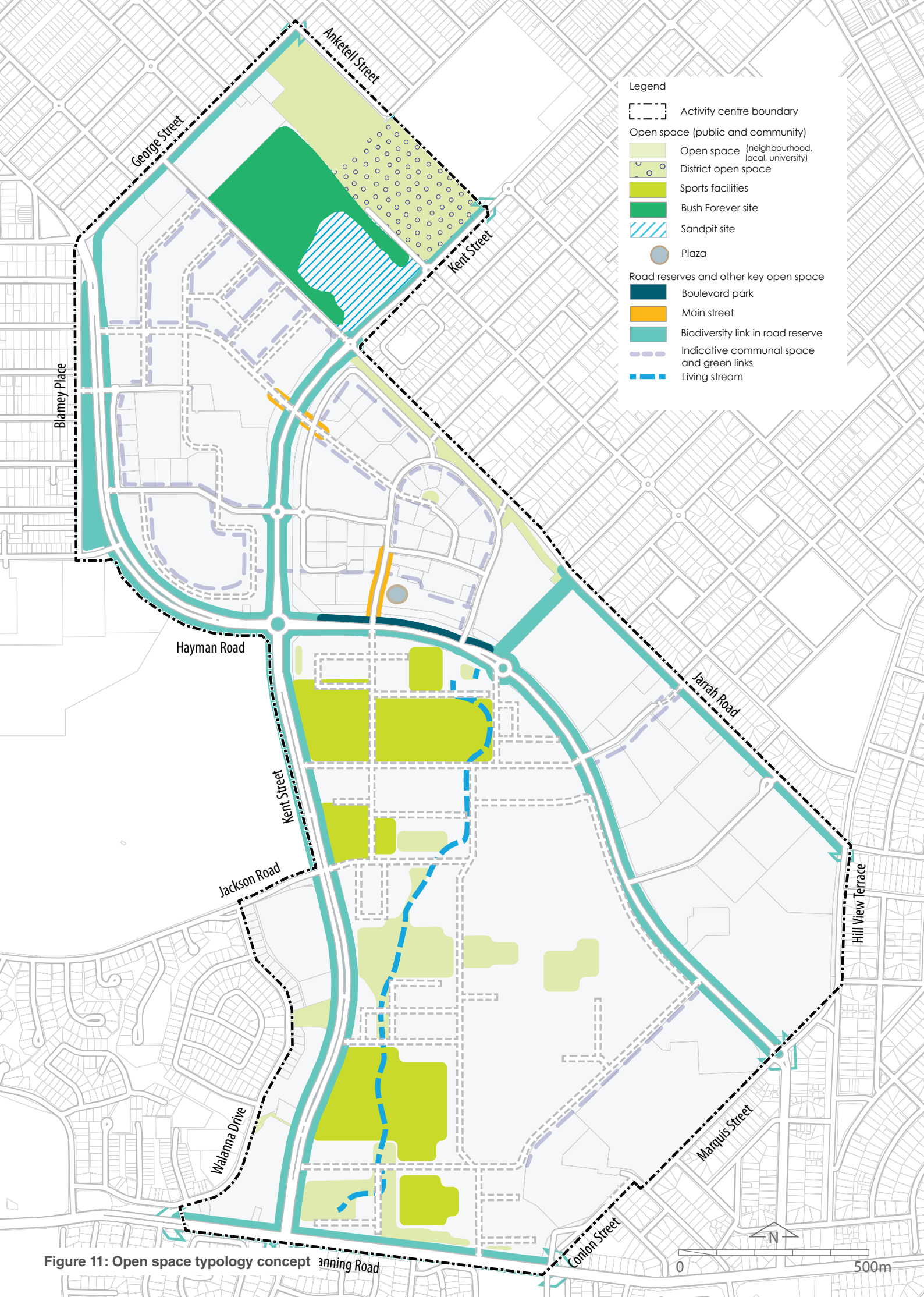


Figure 11: Open space typology concept

4.4 Street network

A movement network offering a high level of connectivity between precincts and the surrounding regional network is at the core a highly functional and accessible Bentley-Curtin. Movement and access is informed by a Bentley-Curtin Transport Assessment. The assessment tested future development scenarios and investigated existing and proposed movement network characteristics, changes and measures to accommodate growth to 2031.

Parts of the regional road network surrounding Bentley-Curtin including Canning Highway, Shepperton Road, Kwinana Freeway and Manning Road; and parts of the local road network will have traffic volume constraints in 2031 irrespective of the scale of future development within Bentley-Curtin.

The following locations are identified as potentially constrained in the local road network by 2031:

- Manning Road between Lawson and Kent streets
- Lawson Street into Hayman Road
- Townsing Avenue into Curtin University
- The intersection of Kent Street and Hayman Road
- Kent Street eastbound near Hayman Road
- George Street
- Manning Road eastbound
- Intersection of South Terrace, Douglas Avenue, George Street and Hayman Road
- Jarrah Road, Hillview Terrace and Boundary Road;
- Manning Road and Kent Street
- Lawson Street and Centenary Avenue intersections with Manning Road.

Improved intersection and network performance would likely facilitate more efficient vehicle movement. The following intersections and corridors require review to optimise functioning and give public transport priority:

- Manning Road – Leach Highway to Kent Street
- Berwick Street – Hillview Terrace to Canning Highway
- Lawson Street, Hayman Road and Douglas Avenue from Manning Road to Canning Highway
- Oats Street and Hillview Terrace – Oats Street Station to Boundary Road.

Changes to the street network within Bentley-Curtin and further improvements to the wider road network (beyond Bentley-Curtin) may significantly increase the capacity of the road and street network and focus on public transport movement.

Streets shown are desired connections, further detailed planning will to determine suitability. These include the:

- introduction of a Boulevard on Hayman Road between Kent Street and Dumas Road
- improved entry into Bentley-Curtin and into the University campus with additional points of access
- introduction of a main east-west connection from Brodie-Hall Drive to Hayman Road
- introduction of a finer grained local street network in the North West Science and Technology Park precincts to facilitate access and land development opportunities, to be resolved with further detailed planning
- introduction of main pedestrian paths to reduce walking distances between precincts and destinations.

Figure 12 illustrates indicative routes and proposed connections within Bentley-Curtin, subject to detailed study. *Table 5* describes proposed street typologies.

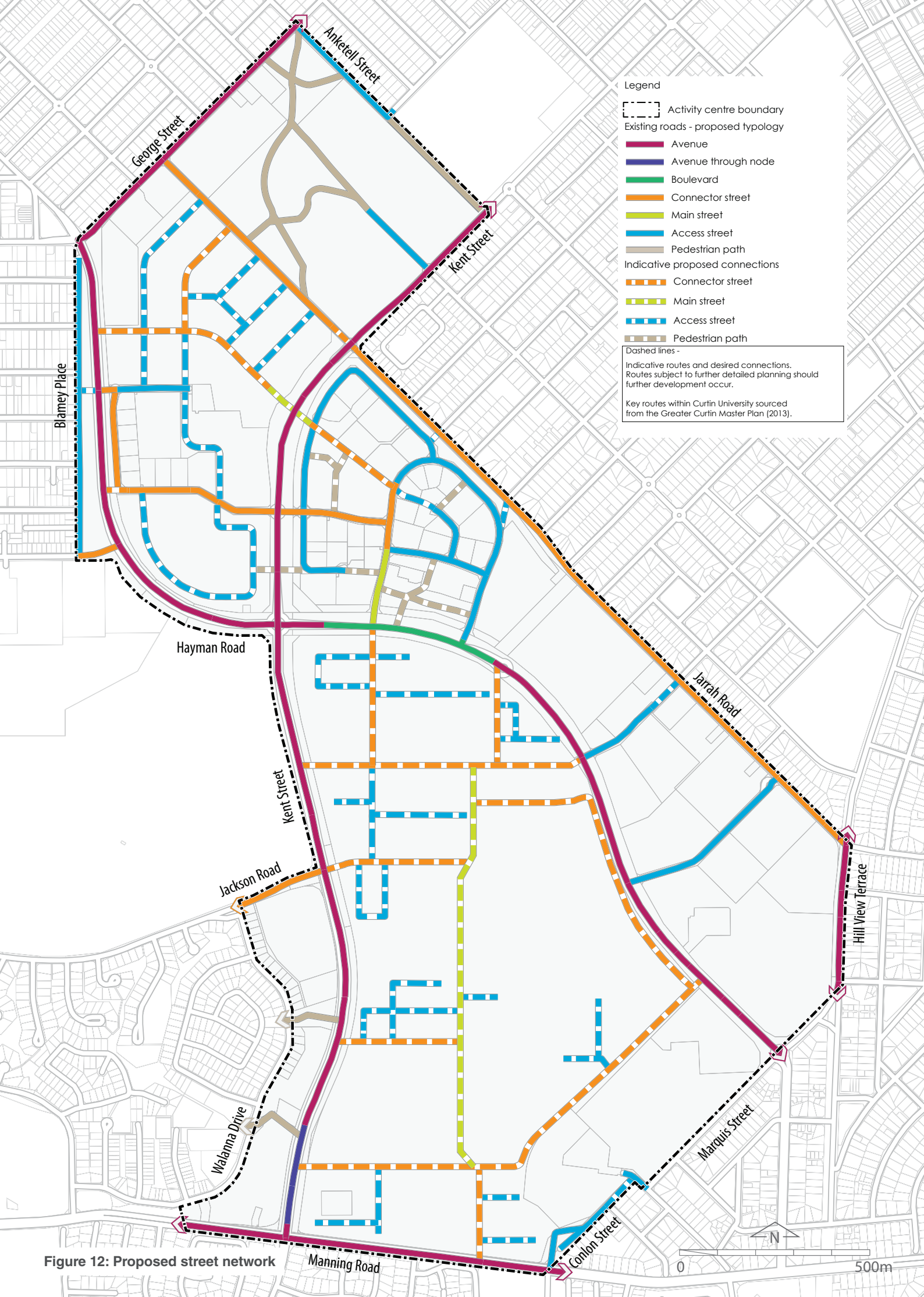


Figure 12: Proposed street network

4.5 Managing car-parking

The management of car-parking, as part of a package of travel management strategies, can encourage people to consider their travel choices and contribute to broad changes in travel patterns. A coordinated approach will influence the volume of vehicle trips to Bentley-Curtin, ensuring that traffic movement operates within the capacity of the road network as Bentley-Curtin grows and attracts residents, workers, students and visitors.

Assessment of parking and transport strategies, the capacity of the surrounding road network and options for addressing parking supply and management were undertaken by the Department of Transport in-order to develop parking strategies for implementation as the transport network evolves in anticipation of increased activity to 2031. Objectives for parking management to benefit Bentley-Curtin include:

- equity and the promotion of efficient access the for all users
- coordinated management of parking
- ensuring that supply of parking does not exceed limits
- minimise the volume of exclusive use parking (parking in the private realm) and maximise the volume of public parking (parking in the public realm)
- ensure parking prices are reflective of current market rates and are used as part of the total transport demand management package
- use revenue generated through parking for improvements to public transport and other modes.

A consistent application of non-residential parking management across Bentley-Curtin is recommended to achieve effective and reasonable outcomes and to reduce the likelihood of inconsistent parking arrangements leading to drivers exploiting potential parking discrepancies. A co-ordinated approach to parking management requires the involvement of landowners and local government in combination with guidance from the State Government.

A model for non-residential parking bay numbers within each precinct is shown in *Table 6*. A map of the precincts is on page 60. Informed by the investigations referred to above, the car-parking strategies should include:

- an allowance for growth in non-residential parking to a capped level across Bentley-Curtin, incorporating non-transferable parking within each precinct
- further detailed planning of the Northwest Science and Residential precinct to determine the proposed parking level across this and the Technology Park precincts, based on the combined parking figure shown in *Table 6*
- consistent application of standard parking management practices across Bentley-Curtin, as per the Town of Victoria Park's Parking Management Plan, which incorporates time restrictions, permits and a user pays system
- implementation of parking requirements via local government planning policy to guide and control future development within precincts
- investigation the application of a parking levy, with revenue directed towards facilities for pedestrians, cycling and public transport.

The overflow of informal parking from Curtin University and Technology Park may increase in the future, potentially reducing amenity for residents and visitors in the areas surrounding Bentley-Curtin. To limit and control the impact of this potential car parking spill-over from Bentley-Curtin, the preparation of a strategic approach between all local governments for the coordinated management of on-street parking in the vicinity may be considered an appropriate response.

When measures are considered to be required, their planning, design and enforcement would give priority to local residents and visitors in the surrounding areas and provide consistency where the potential for parking overflow and disruption is considered to be a high probability. Examples of such measures include the provision of time bays or limits to support residents, residential permits, parking management during certain hours to remove any potential commuter or student parking and shorter parking limits near bus stops to reduce commuter and informal park and ride activities.

Residential parking within Bentley-Curtin is expected to increase and is guided by State Planning Policy 3.1 – Residential Design Codes (SPP3.1), a local development plan or other detailed planning process at the discretion of local government.

Street	Characteristics
Avenue	• Provides connection to city-wide street and road network. • Part of regional pedestrian and cycle network. • Key public transport route. • Defines the urban structure, landscape character and part of regional biodiversity corridor. • No parking, priority use of road space for public transport and vehicle movement.
Avenue – through node	• Where 'Avenue' traverses areas of higher street-side and pedestrian activity. • Slowed road environment and additional pedestrian amenity and treatment may be applied. • Generally no on-street parking, priority for public transport stops and infrastructure. Consideration for embayed taxi pickup points.
Boulevard	• Supports a high level of street-side activity, including mixed use and a range of street activities. • Safe pedestrian and cycle connections and crossing, high quality pedestrian focused elements. • Part of regional biodiversity corridor, including key landscape elements. • Location to incorporate key public transport stop (rapid transit / light rail). • A slowed traffic environment to improve street-side amenity. • Parallel parking and on-street taxi pickup where practical and space not required for public transport infrastructure or pedestrian crossing. One ACROD bays on either side of each block.
Connector	• Link between larger regional and smaller local roads. Provides neighbourhood access. • Moderate levels of street-side and pedestrian activity. • Pedestrian and cyclist friendly streetscape, allowance for potential future public transport use. • On-street parallel parking, either embayed or on street, mix of short and longer time bays. Universal or service bay locations to allow for business use. One ACROD bays on either side of each block.
Main street	• Location of high street-side activity, active frontages and high level of pedestrian activity and crossing. • Urban character, regular street trees and urban furniture. • Shared street characteristics • On-street parallel parking either embayed or on-street, mix of short and longer timed bays. Universal or service bays for business use. Motorcycle parking bays.
Access	• Neighbourhood and local access to residences and employment locations. • Pedestrian and cycling friendly streetscapes. • Low speed and low traffic volume shared travel lanes. • On-street parallel parking either embayed or on-street depending on design response. Appropriately timed parking to accommodate visitor parking for residents.
Pedestrian	• Designated pedestrian path or shared path. Used to connect precincts, streets or through plazas. • Accessible by service or emergency vehicles intermittently. • No parking.

Table 5: Proposed street type and characteristics

Precinct	Existing parking bays (approx.)	Proposed parking bays in 2031
Technology Park Centre	1,360	4,025
Technology Park West	789	
Northwest Science and Residential	1,034	
Civic, Conservation and Recreation	92	98
Curtin University	6,751	7,000
Karawara	842	969
South East Knowledge	492	812
Special Use and Education	1,296	1,342
Total	**12,401**	**14,248**

Table 6: Proposed non-residential carparking

4.6 Pedestrian movement

The proposed pedestrian network supplements existing facilities and enhances connectivity for pedestrians. The pedestrian network will evolve with the street network and future redevelopment within Bentley-Curtin.

Proposed connections and priorities include:

- pedestrian phases for signalised intersections when installed
- footpaths on both sides of existing and future streets within Technology Park and the north west part of Bentley-Curtin, with appropriate facilities such as lighting and street furniture
- improved pedestrian access between Curtin University and Technology Park through dedicated pedestrian crossings, vehicle speed reduction on Hayman Road and a pedestrian friendly streetscape
- high-amenity pedestrian environments at transit stops and mixed use areas
- speeds limited to 30km/h on internal non-distributor roads with appropriate traffic management for safe pedestrian movement
- examination of a potential signalised pedestrian crossing at Kent Street in the vicinity of Waterford Plaza to improve access with Curtin University
- examination of a potential pedestrian crossing at Hayman Road near Adie Court for improved priority and safety
- development of a way-finding strategy setting out clear routes and distances between key locations and transit stops on main corridors.

Figure 13 shows the proposed pedestrian network within Bentley-Curtin. Route types are shown in *Table 7.*

Route type	Characteristics
Shared path – regional	• Provides direct and legible linkages at a regional scale and allow for comfortable shared use with cyclists. Used primarily by public transport users, people visiting the area and people exercising. Entrances leading to the neighbourhood path network should be highly legible and way-finding strategies used at logical locations.
Shared path	• Primary pedestrian access at a neighbourhood level linking key destinations and locations. The path may be marked with centre lines and way-finding signage depending on the urban context.
Main Street shared environment	• Streetscape consists of a combination of shared path and plaza, integrated with a landscape design that prioritises pedestrian movement within a shared environment by all modes of travel. Supports a high level of street activities and active street frontage. Provides key access to public transport stops
Dedicated pedestrian path	• Streetscape should incorporate pedestrian paths including on both sides of streets in busy and active locations.
Bushland or park path	• Existing paths and trails surrounded by a bushland or park setting.

Table 7: Pedestrian routes

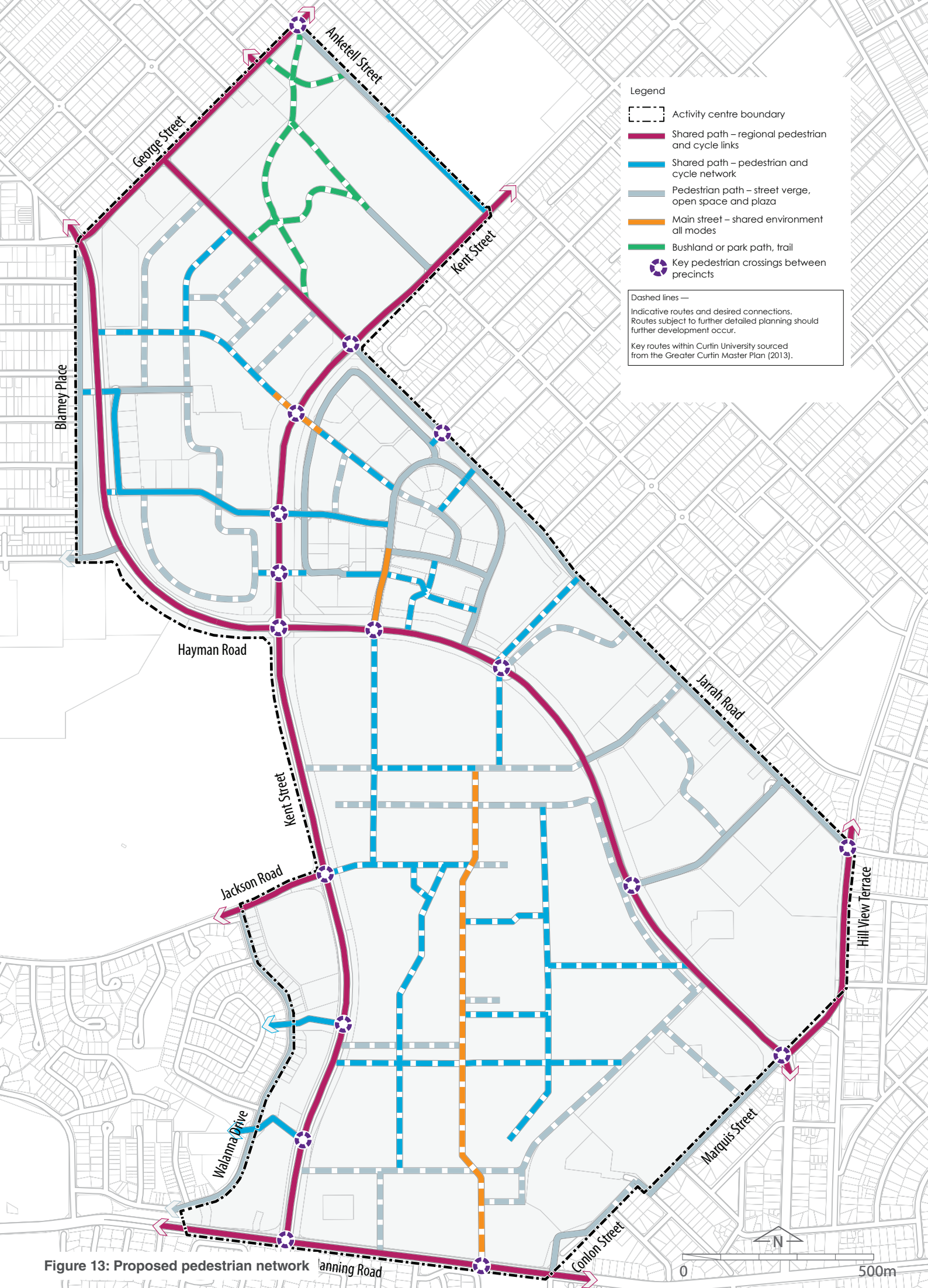


Figure 13: Proposed pedestrian network

4.7 Cycling

The proposed cycling network promotes cycling as an effective travel method, further integrating cycling through connection with the regional and local cycling network. Like the pedestrian network, the cycling network will evolve over time along with redevelopment. Improved and additional cycling facilities, particularly for the University, are essential in achieving a level of cycling trips that reduces dependence on private vehicle trips.

Curtin University proposes a network of strong cycling connections between key origins and destinations linked to the external network and end-of-trip facilities. Cycle friendly design features maximise convenience and accessibility.

Proposed improvements to cycling infrastructure include:

- end of trip facilities throughout Bentley-Curtin, initially in Technology Park, to support commercial and mixed use development
- completion of the shared path around the boundary of Curtin University
- dedicated cycle infrastructure on Baron Hay Court between George Street and Kent Street such as a segregated shared path or on-street cycle lanes
- new east-west connections through Technology Park.
- Examination of potential regional connections to and from Bentley-Curtin including:
  - » to Canning Bridge
  - » to recreational paths along the Swan River to the north
  - » to East Victoria Park, depending on local road configuration
  - » connections to the east through the City of Canning.

Figure 14 shows the proposed cycling network. Route types are described in *Table 8*.

Route type	Characteristics
On-road cycle lane	• Direct and legible cycle connections on main transport routes allowing for links to the larger regional cycling network and through Bentley-Curtin for longer trips and direct access to key locations.
Shared path — regional	• Shared with pedestrians, improves on existing regional cycle infrastructure. Wide, direct paths for longer trips to connect to regional links and provide direct access to key locations.
Shared path	• Shared with pedestrians to provide primary cycle links to neighbourhood locations. Smaller scale than regional shared paths.
Main street shared environment	• Shared space by pedestrians, cyclists and vehicles in low speed, high activity locations. End-of-trip cycle facilities provided such as bike racks and infrastructure.
Cycle friendly street	• Route on low speed and lower traffic streets to directly access employment, education or residential sites, where vehicles are not prioritised over bicycles.

Table 8: Cycling routes

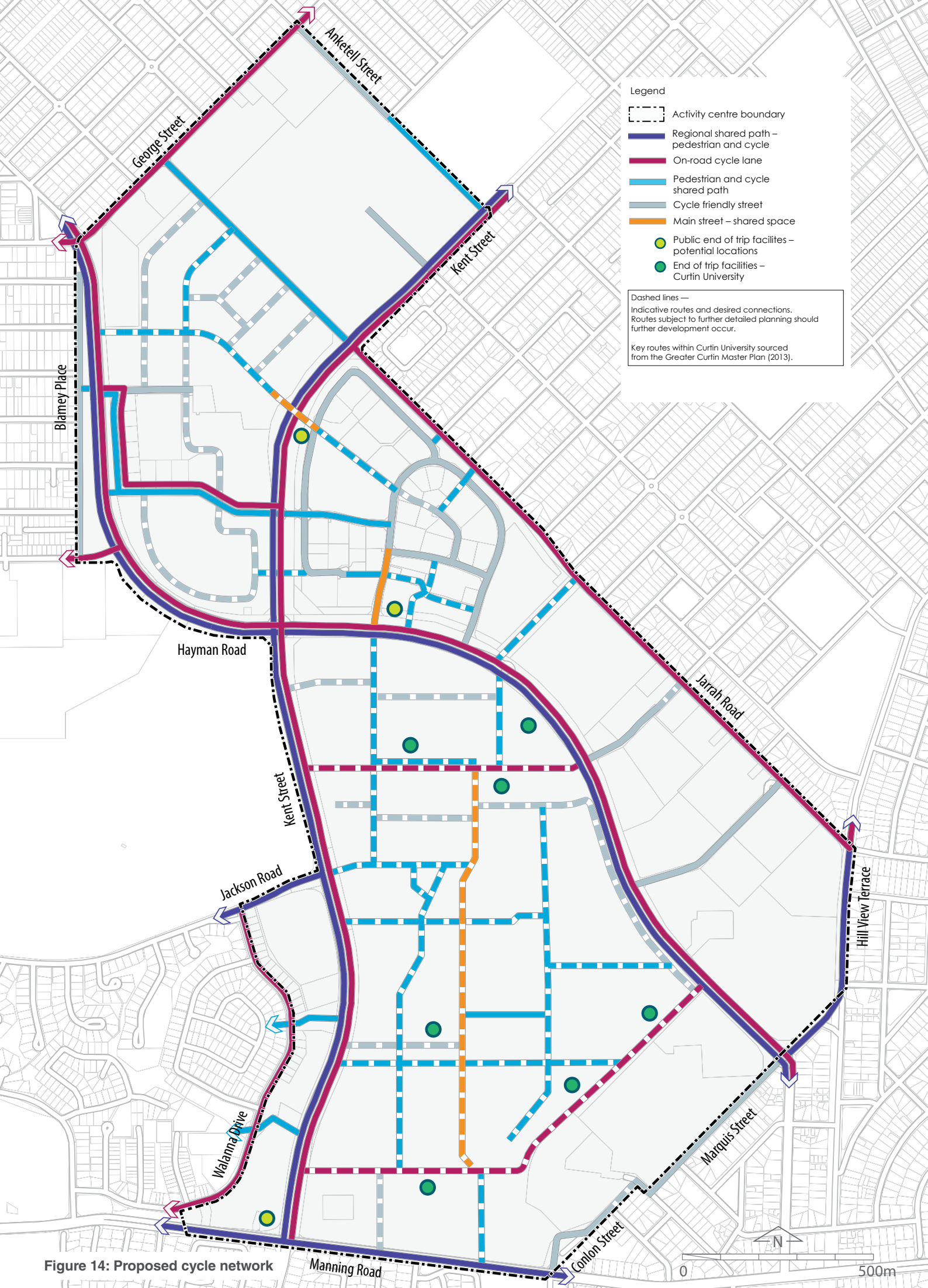


Figure 14: Proposed cycle network

4.8 Public transport

Public transport has supported the growth in trips to Curtin University over the past 10 years to an extent that bus patronage at the Curtin University Bus Station surpasses most urban rail stations patronage during weekday semester use. The future redevelopment and enhancement of activity intensity within Bentley-Curtin can only occur with the support of increased public transport. Correspondingly, trips are anticipated to increase by 123 per cent between 2014 and 2031.

Future public transport recommendations for Bentley-Curtin are based on a bus network to 2031 with light rail through central Perth terminating at the Causeway, facilitating transfers between light rail and bus passengers at the Victoria Park Transfer Station.

The Public Transport Authority proposes an expanded bus service to and from Bentley-Curtin as growth occurs, including higher-frequency services during peak periods and above what currently exists, additional routes to the Causeway East Interchange and Bull Creek Train Station. *Figure 15* shows expanded services to Bentley-Curtin (sourced from Public Transport Authority proposal).

To facilitate the provision of high-quality public transport services and to cater for expected growth, there are a number of main bus corridors connecting Bentley-Curtin where higher order public transport priority measures, in the form of dedicated facilities or signal prioritisation, should be considered. These corridors are:

- Canning Highway – Canning Bridge to Henley Street
- Henley Street and Jackson Avenue
- Manning Road – Canavan Crescent to Kent Street
- Centenary Avenue
- Manning Road – Lawson Street to Townsing Drive
- Manning Road – Leach Highway to Lawson Street
- Kent Street – Albany Highway to Berwick Street
- Lawson Street and the southern section of Hayman Road
- Oats Street – Oats Street Train Station to Shepperton Road.

An overall increase in higher frequency and additional routes and services to and from Bentley-Curtin will be sufficient to accommodate broad future demand. There is however some particular routes where capacity will certainly need to be increased. These routes are primarily those that provide bus connection to railway stations. Analysis indicates that a direct rail based public transport connection (such as light rail) would provide the required capacity on these routes. Light rail also provides the opportunity to support future development and assist in promoting a shift in travel behaviour.

Further assessment will need to be undertaken to investigate the opportunities for the connection of Bentley-Curtin by rapid transit to central Perth, Canning Bridge bus and train station to other key destinations such as the UWA-QEII Activity Centre and Cannington Activity Centre.

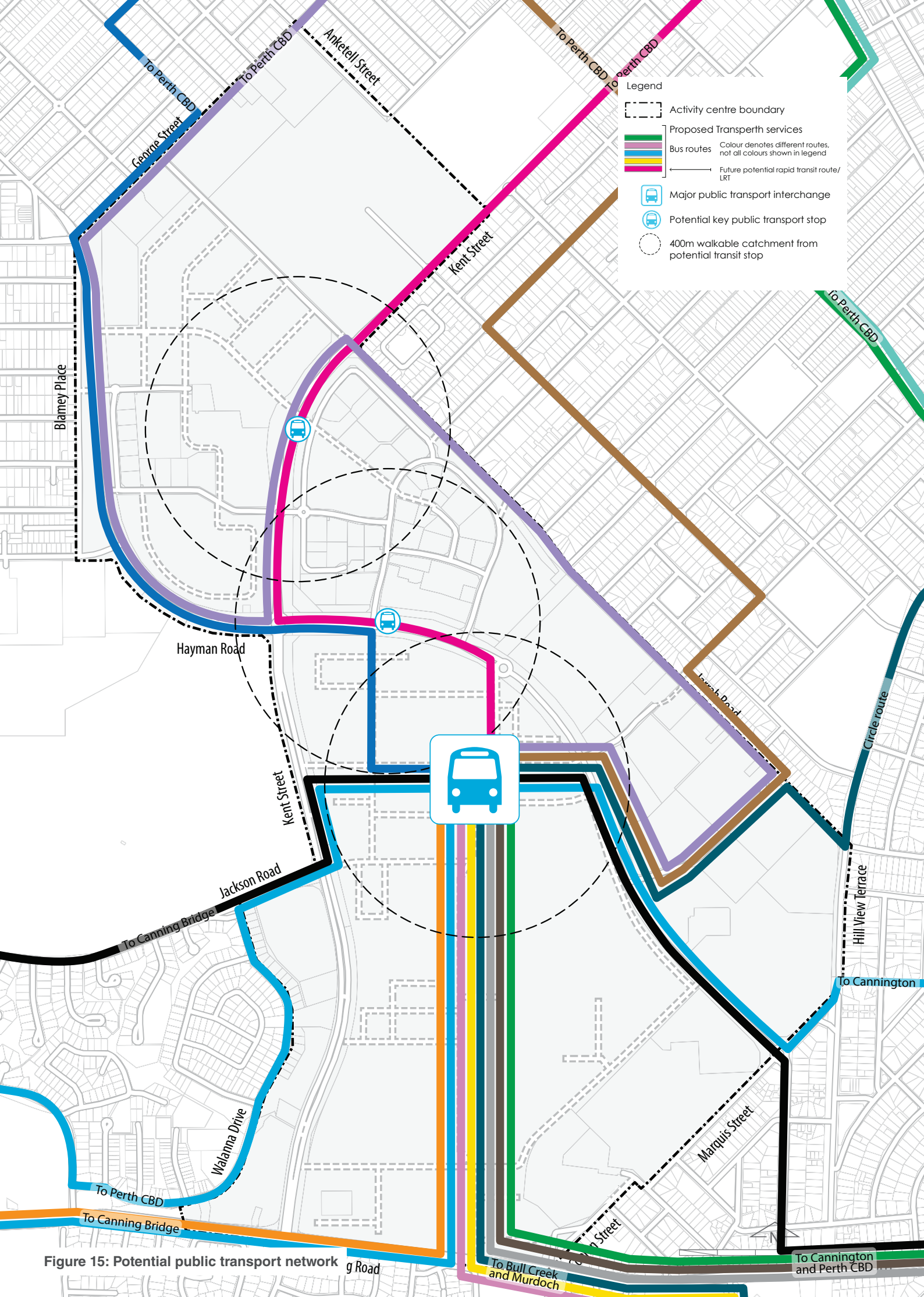


Figure 15: Potential public transport network

4.9 Servicing infrastructure

An infrastructure capacity and servicing assessment identified potential infrastructure upgrades. Indicative time frames (which vary depending on size and timing of development) for improvements to existing and proposed infrastructure are provided in *Table 9*.

Additional detailed planning for telecommunications, power transformers, power supply, gas and water infrastructure will be required in the future.

Transport-related infrastructure changes

This Plan acknowledges and accommodates potential for a new rapid transit service for Bentley-Curtin. It also identifies potential new road connections to improve vehicular access and circulation.

If a light rail service to Bentley-Curtin is constructed, existing infrastructure along Kent Street and Hayman Road may require relocation.

Extending Parker Place to the west across Brodie Hall Drive and Kent Street is suggested to improve connectivity within Centre. If implemented, the new road may necessitate relocation of existing transformer infrastructure on Brodie Hall Drive.

Telecommunications

Several telecommunications networks and commercial providers operate independently within Bentley-Curtin, including a Curtin University connection with off-campus research units. The National Broadband Network is anticipated in the future.

Telecommunications providers do not usually forecast beyond five years, therefore it is not possible to estimate 2031 infrastructure requirements. Telecommunications upgrades are usually implemented on a needs basis.

Electricity

Western Power Corporation provides electricity to Bentley-Curtin via overhead and underground lines from substations in Bentley and Collier. The uptake of alternative energy sources for electricity has been gradual and may be promoted as part of its science and innovation focus.

Electricity infrastructure upgrades are unlikely until after 2031 based on the development scenario in this Plan. Local substations may require earlier assessment.

Infrastructure assessment should inform future local development plans or structure plans.

Term	Infrastructure		
	Sewer	Power	Gas
Near-term	Hayman Road pump station		
		1 high voltage feeder	
		4 transformers	
Short-term			High pressure gas (possible)
Medium term	Manning Road pump station		
		2 high voltage feeders	
		7 transformers	
Long term	Dumas Road sewer		
	Collier main sewer		
		11 transformers	

Note: High voltage feeders and transformers are cumulative. Only major utilities infrastructure is shown. Potential relocations or communication upgrades may also be required.

Table 9: Scenario infrastructure requirements

Gas

Multiple gas mains exist in the vicinity of Bentley-Curtin. Forecasts on network capacity utilise a five-year planning horizon. Based on the level of redevelopment identified in this Plan, sufficient capacity to supply gas exists until 2019. Infrastructure capacity modelling will be necessary as future development proposals are considered.

Water

Drinking water

The current water supply system includes reticulation mains (less than 300mm diameter) and distribution mains (more than 300mm diameter). These larger reticulation mains were designed to supply ample water for uses in the area and there is sufficient capacity for the proposed level of commercial and residential land use from these large mains. While the large diameter trunk mains are considered adequate to service Bentley-Curtin's anticipated growth, the smaller mains may need to be reviewed for capacity in the future depending on the level of demand.

Implementing water efficiency measures in ongoing planning may reduce demand, and the need for upgrades.

Stormwater / drainage

Much of Bentley-Curtin's drainage infrastructure is owned and maintained by local government. Curtin University maintains drainage within its campus.

Three compensation basins are maintained by the Water Corporation, two on Curtin University campus and one at the corner of Hayman Road and Kent Street. Water Corporation policy does not permit drainage increases into basins, therefore upgrades are unlikely.

Future planning should be informed by the Department of Water and Environmental Regulation, Water Corporation and relevant local government requirements for storm-water.

Wastewater

The majority of Bentley-Curtin is serviced by the Collier Wastewater Scheme, with some parts in the South Perth Wastewater Scheme area and the Cannington Wastewater District.

Manning Road Pump Station No. 1 and the Hayman Road Pump Station are near capacity therefore will require upgrading to service increased development. Based on the anticipated level of development, this may be after 2021. If redevelopment potential is greater than discussed in this Plan, further examination of water conservation and catchment yields will be necessary. Calculations suggest upgrades may be needed beyond 2026.

A capacity review of local gravity piping should inform future planning. Land developers are responsible for pipes less than 300 millimetres.

4.10 Community facilities

Recreational facilities

Bentley-Curtin is well-served by existing passive and active recreational facilities in the north, within Curtin University and along Manning Road.

As the residential population and number of organisations and attractions increases improvements to community infrastructure will be necessary.

Curtin University indoor and outdoor sporting stadiums are open to students, staff and the wider community. Further, the university is proposing an arts hub with community facilities at the southern end of the campus. The hub may attract surrounding residents and employees and assist with integration of the university into the wider community.

Hockey WA has been located at Curtin University for almost 40 years and is home to Australia's High Performance Unit. It is central to Perth's metropolitan club competition and engaged with regional clubs, communities and school initiatives. The strategic partnership with Curtin University to identify research and improve competitiveness is expected to continue through existing and additional hockey facilities at the university. *Figure 16* shows existing and possible Hockey WA pitch locations.

Extensive open space and playing fields exist in the north of Bentley-Curtin, including community halls and sporting clubs. Enhancements to these facilities including improvements to bushland trails, are likely with increased usage and new residents.

Potential for a major civic facility is identified for one of Bentley-Curtin's main gateways. A science and technology theme is encouraged to reflect the primary functions of Bentley-Curtin. A community needs assessment and community consultation of adjoining residential areas should inform future planning for community facilities.

Emergency services

Emergency services located within Bentley-Curtin (Police, Fire and Ambulance) will likely expand capacity and operational requirements to cater for an increasing population. This may include redevelopment, alterations and additions to existing facilities and modernisation of emergency and response infrastructure.

Specialised facilities

The Boronia Pre-Release Centre on Hayman Road provides female prisoners with the opportunity to gain skills to assist them re-entering the community. There are no plans to relocate the service within the time-frame of this Plan.

The ACTIV Foundation is located within Bentley-Curtin. It supports and assists people living with a disability find suitable employment, places to live, and assists people with special needs consider travel and recreation options. It is expected to remain within the time frame of this Plan. In the event the land use is relocated, redevelopment into a similar land use that provides support and living assistance to people with special needs is encouraged.

1.

2.

3.

Community | 1. Hockey facilities at Curtin | **2.** ACTIV | **3.** Harold Rossiter Park sports facilities

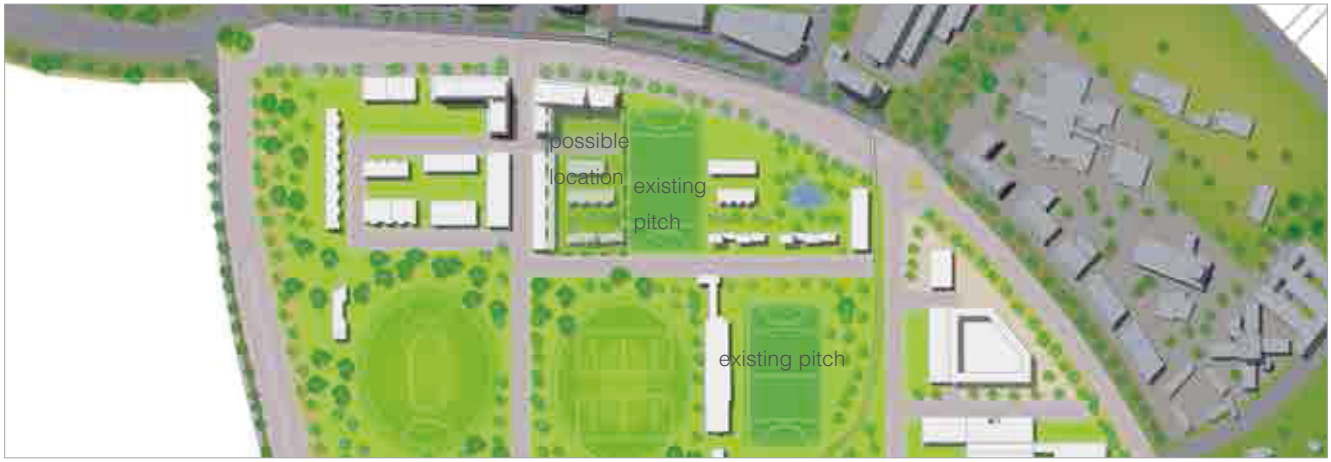


Figure 16: Hockey WA pitch locations

4.11 Resource conservation

Resource conservation is increasingly relevant as monetary and environmental costs of resource use rise. Sustainable resource use may be achieved through innovation; best practice in environmental protection; energy conservation and generation; water use, conservation and disposal; and waste management and recycling. It is relevant to all stages of planning and development.

Materials and waste management

The *Environmental Protection Act 1986* requires all reasonable and practicable measures to minimise generation of waste and environmental impacts.

The *Waste Avoidance and Resource Recovery Act 2007* enables local governments to prepare waste strategies to manage, reduce and efficiently dispose of waste. This may include the provision of centrally located, shared recycling facilities for improved efficiency.

Significant redevelopment or new development is encouraged to incorporate a Materials and Waste Management Plan that demonstrates:

- sustainable design and construction technology, built elements that minimise waste, and use of recycled and renewable building materials
- how buildings may be adapted for different uses over time
- use of locally sourced building materials
- storm and rainwater use in landscaping
- sustainable procurement policy.

Energy generation and conservation

As Bentley-Curtin is focused on technology and research, innovative energy generation and use is encouraged. Resource conservation and alternative energy generation measures are already underway.

For example, the CSIRO operates a geo-thermal on-site cooling system for the Pawsey Supercomputer. It is estimated to reduce water consumption by 38 million litres per year.

Further energy opportunities and initiatives may include:

- solar thermal and photovoltaic energy generation measures
- climate and energy responsive built form design and materials
- additional geothermal sources and energy conservation measures
- street layout and lot configuration to facilitate energy efficient building orientation, passive surveillance and reduced need for car journeys
- vegetation and green infrastructure to facilitate tree canopy shade, opportunities for urban agriculture and sustainable water management in public places, the streetscape and private open space.

Local planning is encouraged to demonstrate energy efficiency and actions to reduce carbon emissions.

Water

Water resources are increasingly sensitive to Western Australia's lower rainfall. Water conservation in all Centre development and use is encouraged.

Wastewater recycling

Water recycling systems are encouraged for significant development and large sites.

Curtin University proposes to decentralise wastewater treatment to provide a supplementary water source. This may be used for internal non-potable demand, irrigation of open space, landscaping and water features.

Stormwater

Stormwater must be retained on site as part of any development. This offers the potential for innovative rainwater capture systems such as collecting run-off from new buildings for non-drinking purposes (subject to compliance with Department of Health guidelines).

Drainage and landscaping

In Western Australia on-site stormwater drainage must be retained on-site for rain events up to one year Average Recurrence Interval (ARI); retain, detain and convey up to five year ARI; and convey and protect from flooding for up to 100 year ARI.

Drainage design that captures and recycles rainwater and grey water on-site for use on landscaped areas is encouraged.

Within the public realm, green infrastructure should be integrated throughout as a feature of the landscape and form part of the urban biodiversity network.

Water-wise landscaping should be applied to public and private spaces, including:

- use of water-wise plants
- irrigation sourced by rainwater in winter and air-conditioner condensation in summer
- limiting irrigation of open space based on ecological and recreational values
- limiting the amount of installed or retained lawn in new development and redevelopment and considering replacing lawn with drought tolerant species
- organic soil conditioning to optimise water and nutrient retention
- use of Smart Approved Watermark accredited products and services in landscape design and maintenance.

4.12 Biodiversity conservation

Due to its former use as a plantation, mature vegetation throughout Bentley-Curtin is predominately introduced (e.g. pines) however a variety of indigenous plant species are present on Kensington Bushland and Curtin University campus. Retention of the open, spacious park-like setting is promoted by existing planning requirements and setbacks. Increasing biodiversity within is encouraged.

The *Capital City Planning Framework* (WAPC 2013) identifies a regional biodiversity corridor to connect Bush Forever Site 48 to Bush Forever Site 333 (Canning River foreshore). A biodiversity corridor connecting Kensington Bushland, Collier Park Golf Course, remnant vegetation and the Canning River foreshore via Kent Street is also identified.

A resilient biodiversity structure should inform proposed intensification of Bentley-Curtin. Increasing native habitat links across may be achieved by:

- providing access paths and public views of native habitat corridors
- increasing the amount and diversity of local tree, shrub and ground cover species in road reserves
- promoting or requiring native vegetation coverage in private and public open spaces
- providing green space links and paths between habitats
- encouraging landscaped roof areas in new development.

A continuous biodiversity corridor is a good way to retain cross region biodiversity links. Where this is not possible, pockets of native vegetation may be identified, retained or enhanced to act as a biodiversity 'stepping stone'.

Legend

- Activity centre boundary
- Existing bushland
- Restored bushland
- Existing corridor to be enhanced
- Area for potential roof and vertical gardens
- Open space — sports and parks
- Key zone for biodiversity
- Living stream and biodiversity links
- Green links (notional)

Local planning should include biodiversity links in the context of open spaces, widened streetscapes and/or green links. *Figure 17* provides a biodiversity concept.

Suggested biodiversity measures include:

- mature tree retention and planting to provide extensive canopies on at least one side of each street and both sides of Kent Street and Hayman Road
- ensuring proposed development of land opposite and adjacent to Kensington Bushland is appropriately located
- encouraging roof and wall space plantings/gardens/ landscaping/vertical gardens in new development to compensate for reduced ground level landscapes
- setting a minimum landscaping requirement provision for new non-residential development to a minimum of 20 per cent of lot area

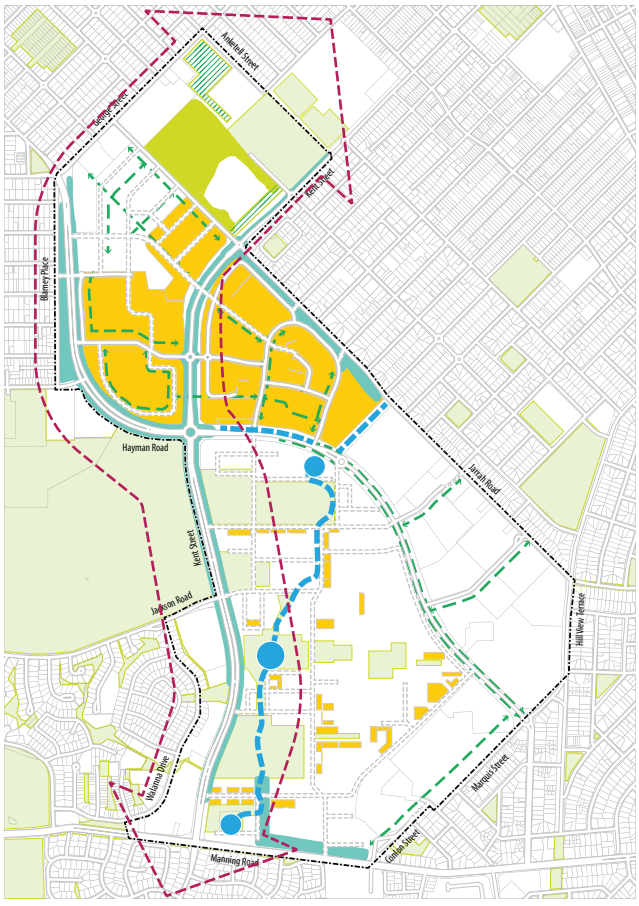


Figure 17: Biodiversity concept

- preparing a suitable native species planting list reflecting the biodiversity of Bentley-Curtin and require new development include native species
- promoting and educating about the benefits of biodiversity as part of the character of Bentley-Curtin, particularly in the context of endangered species (e.g. the historical food source for Carnaby's Black Cockatoo).

Section 4.2 outlines identified landscape character zones and attributes. The plant species reflect the Bassendean Dunes (Central and South) soil complexes.

The proposed Bushland Character Zone reflects the banksia woodland community. The Urban Forest Zone is a combination of introduced and local species including Banksia, Hakea, Eucalyptus and Marri; and the Urban Village Zone includes local species which help define open spaces while introduced species are prominent as part of entrances, car parks and utility areas of private development.

The *Greater Curtin Master Plan* (Curtin 2013) proposes a water sensitive green corridor through the university. This is consistent with a regional biodiversity corridor and includes retention/protection of existing mature remnant vegetation and trees across the university with links to surrounding areas and water sensitive design.

Green redevelopment

Many different certifications exist for sustainable development of buildings including Green Star, LEED and BREEAM certifications.

As technology related to innovative green building design is likely to improve over time, best practice principles should be part of ongoing planning for Bentley-Curtin with new development encouraged to consider a green rating certification.

As a Centre focused on innovation and technology, all future development should be encouraged to go beyond minimum performance standards of the National Construction Code to potentially showcase innovative sustainable building design.

Future development may benefit by utilising building-integrated renewable energy generation; life cycle impact assessment (ISO 14044:2006); compliance with ISO 14001 by builders and contractors; and Liveable Homes Essential Universal design features.

Green roof example | 140 William Street Perth

5. Development and Precincts

5.1 Built form

The built form — scale, orientation and location of buildings in relation to other urban elements — can help define the future character of Bentley-Curtin.

The tallest and largest buildings in Perth are in the Perth central area and concentrated locations in South Perth and Burswood. Development in much of the city is suburban, low in height and scale, with single detached buildings, such as those surrounding Bentley-Curtin. The future built form of Bentley-Curtin is expected to be diverse and respond to various conditions and sites across Bentley-Curtin. The proposed urban character will be higher in intensity and scale than currently exists yet with medium building heights, particularly in the education, technology and research areas to result in greater floor space and activity in a more compact urban form.

New development should:

- be designed to consider a variety of uses and functions including adaptability to accommodate change over time
- contribute to the amenity of public spaces and considers the desirable and logical movement of pedestrians
- contribute to human scale, comfort and safety at street level
- consider existing and proposed infrastructure capacity
- provide high quality design and materials
- demonstrate best practice environmental and resource conservation measures
- consider and enhance the existing and proposed character of the surrounding area.

Building characteristics

Proposed activity nodes associated with transit stops are suited to development intensification and diversity. Here, taller building elements may frame locations of arrival and activity as landmarks.

Generally, in central areas of higher intensity and mix of uses, it is proposed that buildings have increased site coverage, are built close to the lot boundaries to align with streets, improve pedestrian amenity and reinforce areas of active and urban character.

In areas of moderate activity and confined uses, buildings with minimal setbacks (e.g. two metres), varied frontages and moderate site coverage is envisaged.

In lower density and intensity areas, particularly where development adjoins existing residential areas, buildings with larger setbacks (up to six metres) and medium site coverage is anticipated.

Building heights

The topography of Bentley-Curtin provides a context for future development height. The highest ground level in Bentley-Curtin is approximately 30 metres Australian Height Datum (AHD) near its northern boundary and increases to 37 metres AHD outside Bentley-Curtin. Mature trees on these natural high point generally have a maximum height of 20 metres or 57 metres AHD. This natural horizon line may provide guidance for the height of new development and redevelopment in locations of the ground level.

In areas of higher activity and intensity and near key transit stops, heights of four to eight storeys with additional height (up to 12 to 15 storeys) in landmark and key sites is anticipated.

In the moderately active area, fringing nodes of activity, heights of three to six storey with potential for additional height (up to 10 storeys) on landmark sites may occur.

At the edge of Bentley-Curtin near existing residential development, heights of one to three storeys are acceptable. Additional height in suitable locations that integrate with existing development may be considered.

Overshadowing is an important consideration in any new development. As increases to existing density and floor space is encouraged, especially for residential development near public transport, consideration of integration and impacts on adjacent sites (that may be redeveloped to a similar scale in the future) is necessary.

This should include the location and orientation of upper storeys and potential impacts on pedestrian amenity and public spaces, including during winter.

Activation

In proposed areas of increased activity, the quality, character and safety of streets and public spaces may be enhanced by development that encourages interaction and activity. Ground level uses and design elements such as views, windows and openings may contribute to streetscape activation and should be incorporated into façades. Pedestrian protection from weather elements, such as awnings or colonnades should be included in buildings built to a street boundary.

Vehicle access

The location and design of vehicle crossings for new development should minimise disruption to pedestrian movement and the physical and visual amenity of streetscapes and public realm.

Access from side or rear streets to parking incorporated into buildings or screened from the public realm view should occur in the most active and compact areas of Bentley-Curtin. Access from side or frontage streets may be appropriate in less dense or active areas.

5.2 Precinct development concept

The context, framework and principles detailed in Sections 2, 3 and 4 inform the intensity of development proposed for Bentley-Curtin to 2031. Changing local and global factors as well as potential amendments to existing legislation should inform future reviews of this Plan. Changes to the Plan may evolve in response to economic and market conditions over time as well as any major development proposals.

Eight precincts are identified in terms of conceptual redevelopment to achieve a desired character. A broad overview of the development potential and relevant features for each precinct are discussed below. This includes existing character, proposed opportunities and character for the public realm, built form, landscape and movement and access. Local planning may refine these precinct concepts as ultimate guidance is included in relevant local planning schemes.

Precincts were identified based on existing character and features, land tenure, existing and proposed uses and to encourage a diverse Centre. Precincts are shown in *Figure 19.*

Figure 18 shows an indicative concept of Bentley-Curtin's long-term development potential, a possible future scenario for Bentley-Curtin.

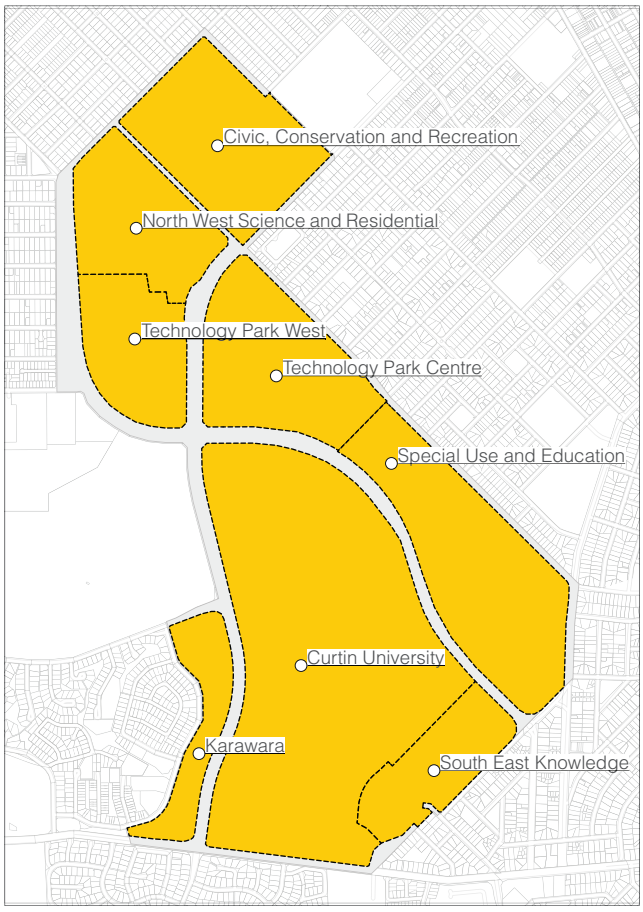


Figure 19: Bentley-Curtin precincts

Indicative concept only

Figure 18: Development concept

Figure 20: Activity centre – development concept (indicative concept)

5.2.1 Civic, conservation and recreation

Existing character

Kensington Bushland, along with sports and playing fields and recreational spaces, make up the majority of the precinct. Community and civic functions, including Kensington Secondary School, fire, police and ambulance services, fringe the precinct's western and northern boundaries. The emergency response services benefit from relatively unconstrained vehicle movement and access. The precinct's recreation, sport and natural spaces contribute a substantial proportion of Bentley-Curtin's overall public open space. Kent Street Senior High School is just outside the precinct, to the east. The precinct is shown in *Figure 21*.

Specialised centre opportunities

The precinct will retain its multi-purpose public open space function, including biodiversity conservation, and specialised civic, secondary education and community functions. Access and connectivity between the precinct and adjacent areas should be enhanced and improved wherever possible, especially in the provision of clearly delineated, safe pedestrian routes.

Minimal changes to the precinct are anticipated. The protection and enhancement of public open space will continue as the main focus. Future development limited to potential improvements of existing civic, education and community uses.

The Kensington Bushland (Bush Forever 48) and sandpit sites are reserved *Public Purposes — Parks and Recreation* (shown hatched in *Figure 21*).

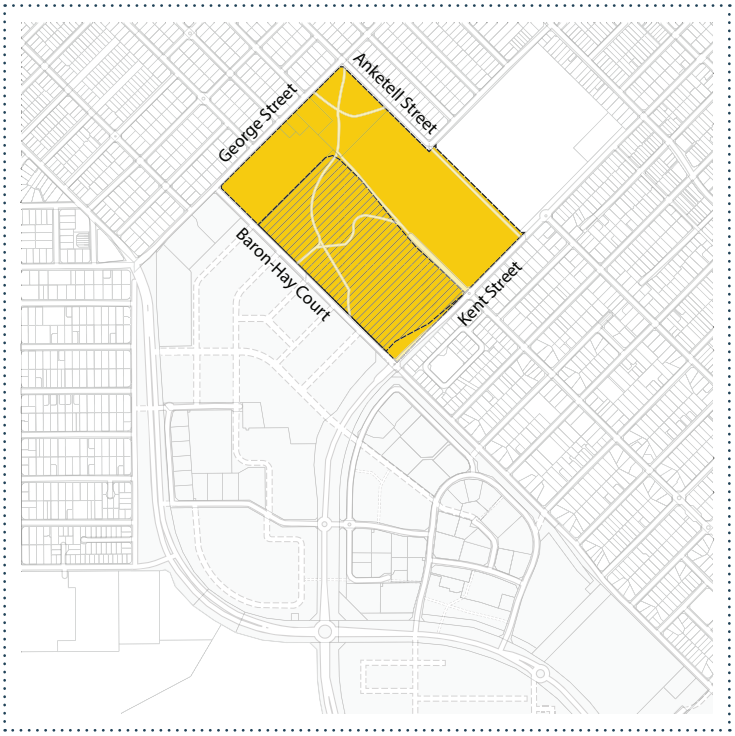


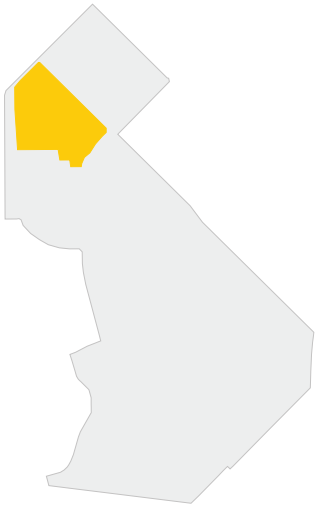
Figure 21: Civic, conservation and recreation precinct

Figure 22: Indicative concept – Civic, conservation and recreation

Key elements

1. Kensington Bushland has important ecological functions and amenity that benefit adjacent residential areas. It is identified as the basis of the proposed Bushland Character Zone for the northern part of Bentley-Curtin.
2. Development is limited to replacement or enhancement of existing uses and buildings, of a scale relevant to each specialised function. Larger setbacks, and three storey height limit are envisaged in the precinct.
3. Future expansion option for the fire station may be improved through transfer of land from the neighbouring school if agreement occurs.
4. Recognised as part of the surrounding bushland, the former sandpit site has been identified as a potential infrastructure location for a future rapid transit, light rail network. Department of Transport liaison with local government will inform future decisions about the site.
5. Pedestrian and cycle paths enhanced to improve safe movement and access through and within the precinct.

5.2.2 Northwest science and residential



Existing character

The majority of the precinct is sparsely utilised by the Department of Primary Industries and Regional Development. This includes older, low buildings, agricultural test plots, the Forest Products Commissions and former herbarium spread across the large site. Remaining pockets of former plantation and community and residential uses fringe the north-west boundary of Bentley-Curtin. The precinct is shown in *Figure 23*.

Specialised centre opportunities

The precinct, is a northern gateway to Bentley-Curtin. Department of Primary Industries and Regional Development functions may migrate to the east of the precinct (or other locations in Bentley-Curtin), enabling improved integration with Technology Park uses. Optimising Bentley-Curtin's location and this large accessible site, a variety of medium to high-density residential uses is proposed to maximise the amenity of Kensington Bushland and views to Perth city. Depending on the amount of residential infill, redevelopment may support a small local centre, not large scale retail. Community uses on the precinct's north west fringe are anticipated to continue to operate (with possible expansion) along with potential mixed uses adding to precinct character and vitality.

Future planning and subdivision for residential use of existing Department of Primary Industries and Regional Development land should incorporate vehicular and pedestrian access between Baron Hay Court, Burvill Court and a proposed new public road connecting Hayman Road and Kent Street and enabling development of larger scale buildings.

A potential landmark building opportunity is identified for the western edge. Residential development may include apartments, maisonettes, grouped dwellings, compact terraces and townhouses as well as mixed-use development including a residential component. Building heights and setbacks are anticipated to provide for a variety of housing choice, with up to eight storeys along Kent Street with lower heights at the highest part of the site (unless as part of a landmark feature development).

Well-designed open spaces with links to the adjacent bushland along tree-lined streets with footpaths on each side may enhance the precinct. Residential development may address the street, and incorporate landscaped frontages/entries, street front courtyards and gardens that contribute to the public realm, pedestrian comfort and passive surveillance.

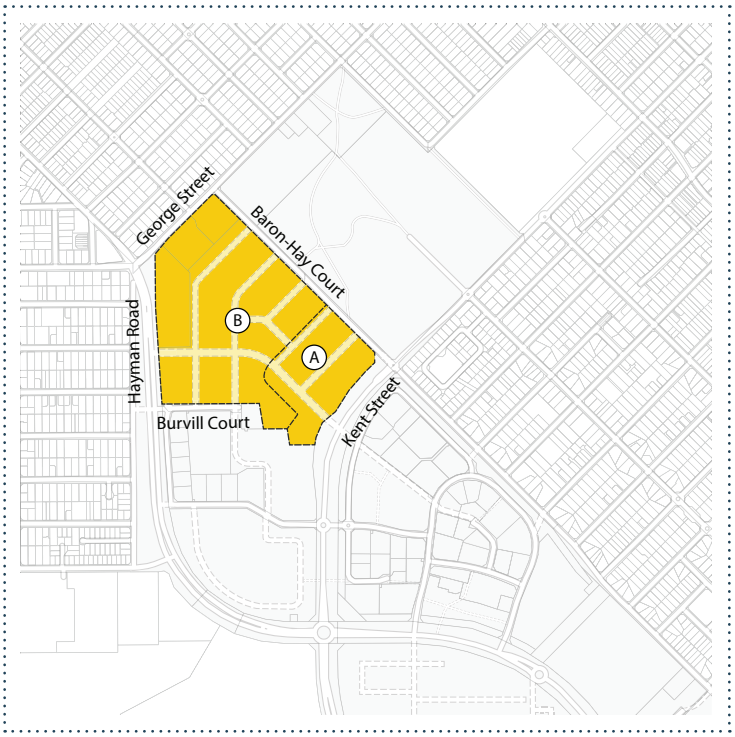


Figure 23: Northwest science and residential precinct

Figure 24: Indicative concept – Northwest science and residential

Key elements

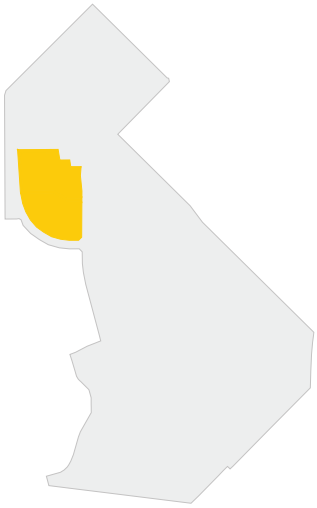
Area A — Science

1. Kent Street is identified as a northern gateway to Bentley-Curtin. It is suited to greater building height and scale and orientation to signal arrival, potentially for a landmark development.
2. A new east-west road access between Kent Street and Hayman Road through the precinct is necessary.

Area B — Residential and civic

3. Suitable location for a range of medium to high density housing to utilise views and access to surrounding open space and proximity to employment and transport.
4. Investigation of a limited local centre to support new residential uses is encouraged.
5. A walkable street layout across the site for full connectivity to adjoining areas is envisaged.
6. Residential and/or mixed-use with an opportunity for a prominent building as a landmark for Bentley-Curtin's north west gateway.
7. Public open spaces to contribute to local community amenity, biodiversity links and public views.
8. Existing residential and community uses remain and potentially enhanced over time.

5.2.3 Technology Park west



Existing character

The Department of Parks and Wildlife and the CSIRO are long established occupants of the precinct, which along with the Pawsey Supercomputing Centre, promote and encourage advanced technology, research and education. These significant institutional buildings and uses characterise the precinct along with large open landscaped spaces with remnant pockets of former pine plantation. The precinct also includes nine vacant lots. Existing development is significantly setback from the streets contributing to a sense of isolation. The precinct is shown in *Figure 25.*

Specialised centre opportunities

Knowledge, research and innovation will remain the dominant land uses. If other uses or development are introduced, expansion near Kent Street is encouraged to add to the urban fabric, improved connectivity between Technology Park east and west. Activity and maximised access to potential rapid public transport along Kent Street is encouraged.

Pedestrian access through the precinct should be improved for safety. The potential opening of Dick Perry Avenue to Hayman Road and extension of Burvill Court for vehicles, pedestrians and cyclists is identified as an opportunity to improve connectivity, accessibility and traffic movement. A potential location for a public parking facility north of Dick Perry Drive is identified.

Research and technology specialised development and uses that may be adapted to other uses over time is encouraged on the vacant lots in the north west of the precinct.

A significant proportion of open space should be retained and, with street trees and footpaths, may form part of the green network and improved pedestrian amenity.

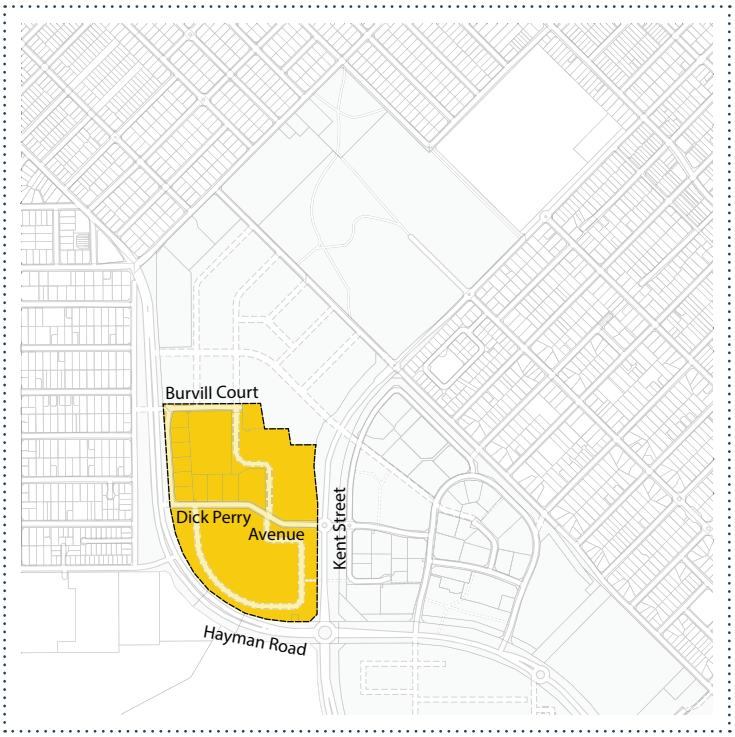


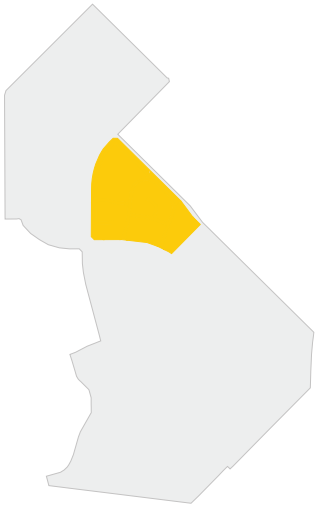
Figure 25: Technology Park West

Figure 26: Indicative concept – Technology Park West

Key elements

1. Reduced setbacks and increased height limits (four to eight storeys) for development adjacent to Kent Street.
2. Additional road and path access for improved connectivity with surrounding areas and precincts.
3. Biodiversity link between Kensington Bushland and Collier Park Golf Course retained.
4. Potential location for a future public parking facility to serve the north of Bentley-Curtin.
5. Development to allow for specialised uses, up to six storeys.
6. Existing buildings, including the Department of Biodiversity, Conservation and Attractions (Parks and Wildlife) development, continues to contribute to precinct character.

5.2.4 Technology Park centre



Existing character

The central location is defined by numerous organisations focused on knowledge, research and innovation, including the Innovation Centre of WA. The Technology Park Function Centre provides venue and facilities, while others provide business services. The landscape is characterised by clusters of pine trees and lawn fringing car parks, interweaving between low, dispersed buildings. Little amenity exists for pedestrians or cyclists. The precinct is shown in *Figure 27.*

Specialised centre opportunities

Greater development potential will encourage redevelopment and facilitate an increase in floor space available for Bentley-Curtin's primary functions of knowledge and research. An additional mix of uses and services that complement the primary functions will add to the vitality, activity and urban character of the precinct.

New and redeveloped uses may include cafés, a small bar, restaurant, a hotel, increased small retail and local centre uses and services. A substantial redevelopment of the Technology Park Function Centre offers the ability to bring vibrancy and activity, quality design and sustainability. The precinct will evolve into an expanded technology employment hub and a vibrant active area serving workers and visitors.

The introduction of dwellings to the precinct will bring a permanent local community. Suitably located residential uses are initially intended to be restricted to upper levels of mixed use buildings while ground levels are retained for active and Technology Park uses. Enabling short-term accommodation uses may also stimulate activity whilst catering for students, visiting academics and conferences.

The precinct will function as a central link for Bentley-Curtin. The most suitable route for rapid public transport borders the precinct. Conceptual locations for public transport stops have been identified to inform planning and ensure access to the local street network and pedestrian and cycle paths. Public and private car parking should not visually dominate the public realm.

The scale of buildings should be responsive to the existing landscape, mature trees, views, solar orientation, and pedestrian and transport routes. New development will have reduced street setbacks and increased building heights.

Oversized verges (subdivided into State-owned individual lots) along Hayman Road and Kent Street should be incorporated into development of abutting lots via subdivision where possible. A closer built environment will assist in establishing a legible urban structure.

Hayman Road could evolve as a boulevard, with landscaping, trees and wide footpaths, buildings that address the street and a plaza contributing to the precinct's urban and active character.

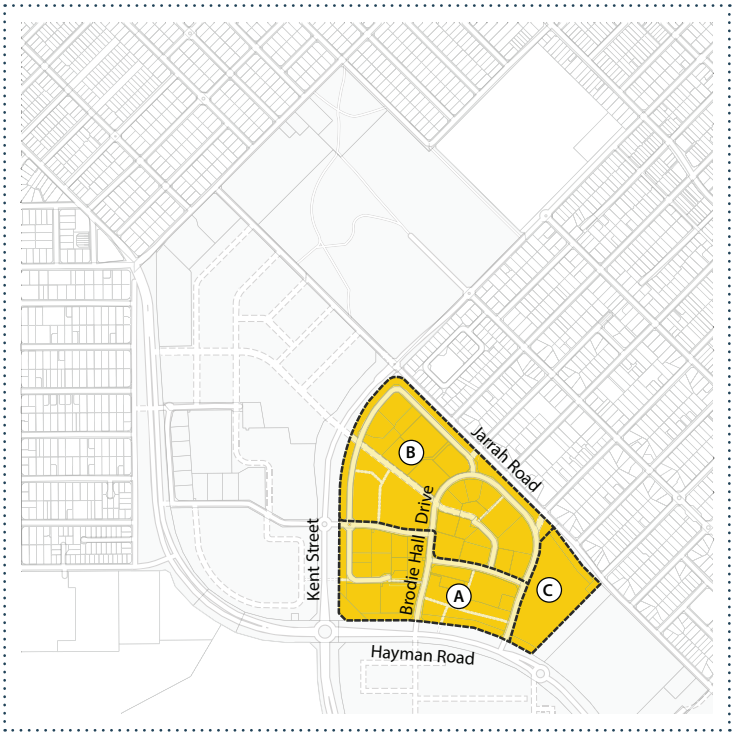


Figure 27: Technology Park centre

Figure 28: Indicative concept – Technology Park centre

Key elements

Area A — Central

1. The southern area is intended to be most active. It is suited to larger buildings, minimal primary street setbacks, and increased floor space. New development should define streets and spaces. A plaza, pedestrian links, main public transport stop and boulevard streetscape are envisaged.

2. Building heights of four to eight storeys along main streets with additional height at landmark locations. A mix of uses is envisaged (*Figure 32*).

3. Pedestrian links with other precincts are prominent.

Area B — Research and development

4. Area B is suitable for medium intensity redevelopment focused on research and innovation. It will benefit from increased redevelopment provisions (up to six storeys), although not to the scale proposed for Area A.

5. Additional street connections may improve connectivity and access. A potential rapid public transport stop is also identified.

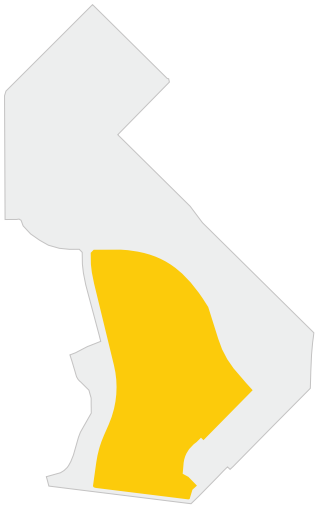
6. Retain existing landscaped area to buffer existing residential areas and for passive recreation.

Area C — Large landholding

7. A large single use site. Subdivision is discouraged to enable the existing use or other appropriate large scale use to be accommodated within Bentley-Curtin. Redevelopment to six storeys may be suitable. Retention of existing open space along Jarrah Road as a landscaped buffer to East Victoria Park's residences is encouraged.

Figure 29: Northern precincts – development concept (indicative concept)

5.2.5 Curtin University



Existing character

The Bentley location of Curtin University is the University's main campus. It contains a wide variety of tertiary education functions including academic buildings, research locations, student residences, sports and recreation spaces and civic and community uses. It is also home to the Perth Hockey Stadium, Western Australia's main hockey facility and function centre. The Curtin University location is shown in *Figure 30.*

Specialised centre opportunities

The campus is anticipated to become more urban in character, compact, efficient with a distinct form. An improved mix of uses and activities are proposed in a more dense, compact setting. The university aspires to become home to a diverse and integrated community, a place that supports innovation, exchange and sharing of ideas and partnerships for knowledge and innovation.

The university proposes to maintain and grow its mix of knowledge based functions, research institutions, cultural and recreational activities. It also has aspirations to expand and increase supporting services and facilities for campus residents, employees and students. The major tertiary institution proposes to lead by example with sustainable design and innovation.

Relocation of Bentley-Curtin's main bus interchange station towards the north of the campus will enable an improved spread of bus routes through Bentley-Curtin and improve walking access to activities and destinations. The introduction of new land uses proposed by the university may require the support of the Minister for Education.

The Greater Curtin suite of documents, prepared by Curtin University, establishes a vision for the University campus and determines strategies, initiatives and guidance to deliver this vision. The Greater Curtin Master Plan guides future development and aspirations for the campus site and shares the strategic intent of this Plan.

The precinct is reserved *Public Purposes — University* in the MRS (shown hatched in *Figure 30*).

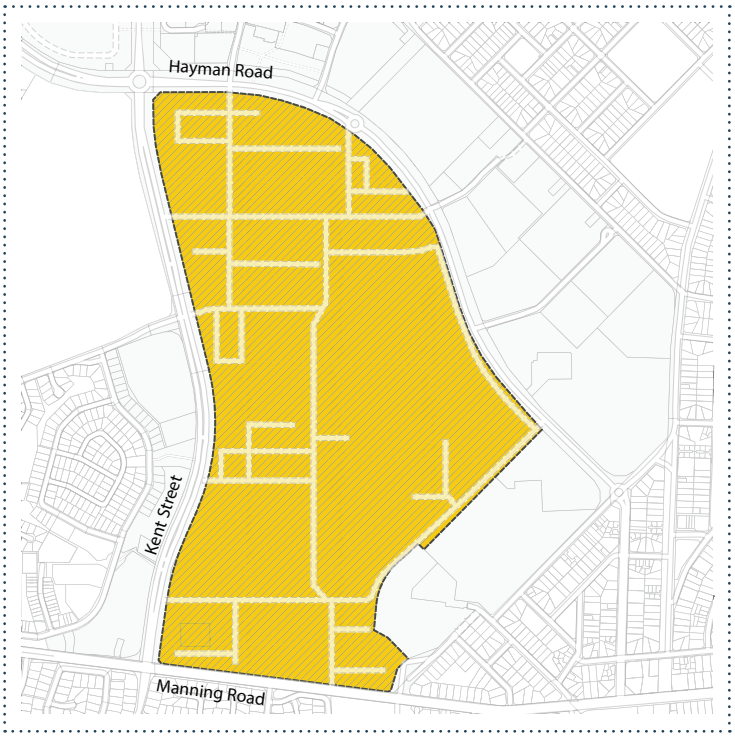


Figure 30: Curtin University

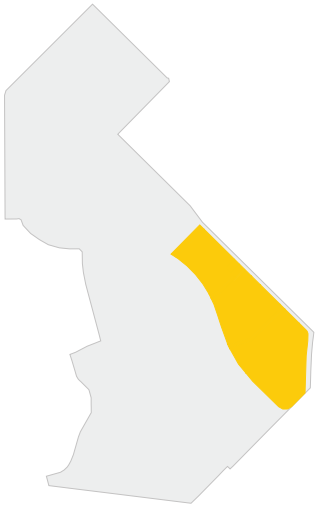
Figure 31: Indicative concept – Curtin University

Key elements

1. Major node of arrival and activity for regional public transport and the university's main bus interchange.
2. Activation of campus streets including a main street and transit spine with diverse uses and activity.
3. One of a number of increased access points to the external network to increase permeability.
4. A range of appropriate residential uses to support academic and commercial activities are proposed by Curtin University.
5. A public realm including an open space network for active and passive recreation, pedestrian links and a proposed living stream concept.
6. One of several landmark building opportunities identified on campus to incorporate ground and street level activity and improve legibility and access for pedestrians.
7. The scale, orientation and use of new built form along Hayman Road may contribute to the surrounding streetscape, decrease separation caused by the wide road reserve and improve access and connection to Technology Park (*Figure 32)*.

Figure 32: Hayman Road boulevard concept (Indicative concept only)
(Inset: existing Hayman Road streetscape)

5.2.6 Special use and education



Existing character

Diverse and specialised land uses occur across this active precinct, including South Metropolitan TAFE, one of Western Australia's largest training providers. A variety of retirement, aged care and dependent persons living accommodation are in the precinct, along with community focused uses such as support services for people with disabilities, the Boronia Pre-release Centre for re-entry into the community and the Vose Seminary of religious education. The precinct is shown in *Figure 33.*

Specialised centre opportunities

Existing uses are anticipated to remain and may redevelop and grow in scale and intensity over time. Retirement, aged care and dependent person's facilities are likely to be renewed as residential care evolves and as building stock is changed. Planning should provide an opportunity to increase density and intensity across existing locations. Any future additions to South Metropolitan TAFE are encouraged to incorporate a stronger street presence along Hayman Road with increased building height and improved pedestrian access/entry and passive surveillance, to attain a more coherent urban structure and improve utilisation of land and infrastructure.

In the longer-term, introducing vehicular access between Hayman and Jarrah roads, along with improved cycling and pedestrian access, may enhance connectivity between Bentley-Curtin and wider regional network. A Water Corporation reserve between the two roads contains essential water supply infrastructure and requires prompt access. No permanent structures may be built over the reserve, presently leased by South Metropolitan TAFE for car parking, the reserve has the potential to become a biodiversity link.

All redevelopment should enhance the public realm, address street frontages and incorporate measures that improve pedestrian comfort such as awnings and clearly identifiable pedestrian access. Street trees and footpaths on each side of public roads are encouraged as well as retention of on-road cycle lanes along Hayman and Jarrah roads.

The South Metropolitan TAFE and water infrastructure sites are reserved *Public Purposes - Technical School* (shown hatched in *Figure 33*).

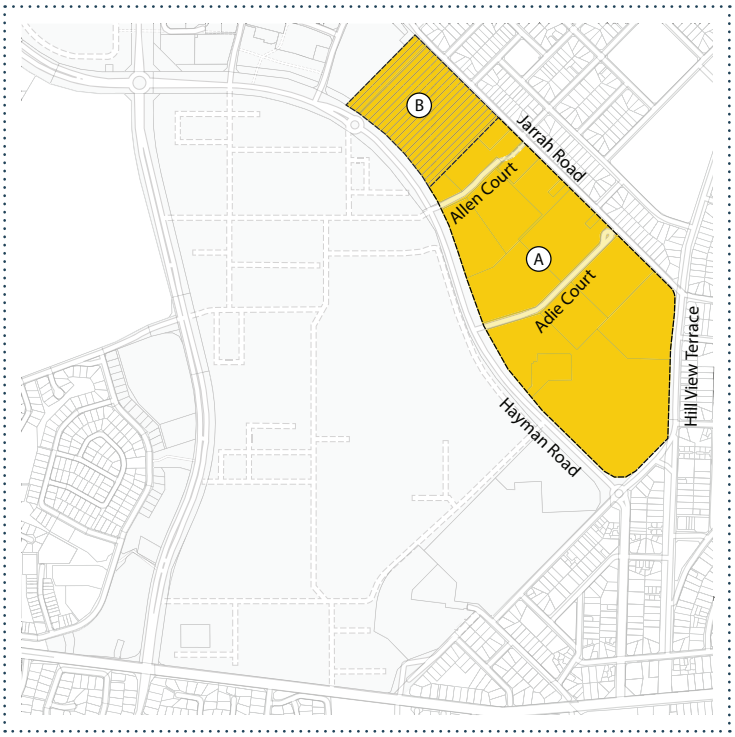


Figure 33: Special use and eduction precinct

Figure 34: Indicative concept – Special use and education

Key elements

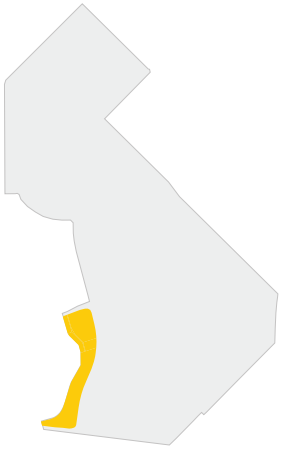
Area A — Special uses and aged care

1. Retirement, aged care and dependent persons facilities will continue to provide a variety of accommodation choices. Increased medium density and intensity may occur with existing building stock replaced over time, with building heights up to six storeys. Additional height may be appropriate in landmark locations.
2. Boronia Pre-release Centre to remain as a land use.
3. Low speed vehicular access between Hayman and Jarrah roads to improve regional access should be considered in further planning.

Area B — Education

4. Potential redevelopment addressing Hayman Road to incorporate building heights up to six storeys is encouraged.
5. If any future redevelopment does not utilise the entire site, the location has potential for medium density dwelling development (setback from Jarrah Road) of up to three storeys.
6. If the Water Corporation reserve ceases use as a car-park, it may be rehabilitated as a pedestrian and biodiversity open space link.

5.2.7 Karawara



Existing character

Karawara is home to Waterford Plaza Shopping Centre – the largest retail facility in Bentley-Curtin. To its north are existing Curtin University student accommodation (Erica Underwood and Guild houses), 23 residential lots developed as mainly single detached dwellings on the east side of Walanna Drive and a place of worship. Renovated so that shops face outwards, Waterford Plaza contributes to street activity with a main street atmosphere. The precinct is shown in *Figure 35.*

Specialised centre opportunities

The existing land uses (retail, residential and community) are anticipated to remain. Waterford Plaza and surrounding land may evolve over time including additional permitted uses. If student accommodation in Karawara is relocated to the Curtin University campus, the sites have potential to be redeveloped as medium density residential housing.

Medium density (multiple or grouped dwelling) residential redevelopment of existing single dwelling lots is also encouraged. Redevelopment should address Walanna Drive whilst integrating with existing single residential development on the west side of Walanna Drive (which is not within Bentley-Curtin).

No change to road layout or public transport access is proposed for the Karawara precinct. Its public open spaces are to be retained and enhanced for efficient, safe pedestrian access to Curtin University and other parts of Bentley-Curtin and biodiversity conservation.

Figure 35: Karawara precinct

Figure 36: Indicative concept – Karawara

Key elements

Area A — Retail

1. Waterford Plaza has potential to expand within its site.
2. The southern gateway to Bentley-Curtin, (Kent Street/ Manning Road) is identified as having potential for a landmark development.
3. Maintain and improve pedestrian access and connectivity with the wider Centre and across Kent Street.

Area B — Residential

4. Potential for medium density dwellings up to two storeys facing Walanna Drive.
5. Potential for medium density residential development. A mix of residential building types up to six storeys is encouraged.
6. Retained or enhanced public open space and pedestrian links through to Karawara.

5.2.8 Southeast knowledge

Existing character

The precinct is south east of Curtin University. It has three main land uses – the Australian Minerals Research Centre (AMRC), a CSIRO managed mining research facility with a workforce of approximately 120; Canning College, a specialised secondary education facility for a large number of students re-entering education or seeking a pathway to tertiary study; and Vickery House, accommodation for college and university students. A significant electricity substation is located in the middle of the precinct, accessed via McKay Street. The precinct is shown in *Figure 37.*

Specialised centre opportunities

An opportunity to improve access and better delineate the precinct from the adjacent Waterford residential suburb is available by connecting the north ends of Conlon and McKay streets. Additionally, access to and from Bentley-Curtin may be enhanced by enabling vehicular access between Brand Drive and Hayman Road.

If the Vickery House site is no longer required for student accommodation, redevelopment into a diverse range of grouped and multiple residential dwellings including apartments, maisonettes, terrace housing and narrow lot dwellings, is encouraged. Due to its close proximity to the Curtin University campus, redevelopment is encouraged to integrate with and enhance the campus setting.

The public realm consisting of landscaped areas and private gardens, tree lined streets and footpaths should continue to provide safe pedestrian access. Increased landscaping across the precinct is encouraged.

The entire precinct is reserved for *Public Purposes - Special Use* (shown hatched in *Figure 37*) apart from lots 24 and 25 (Urban zone).

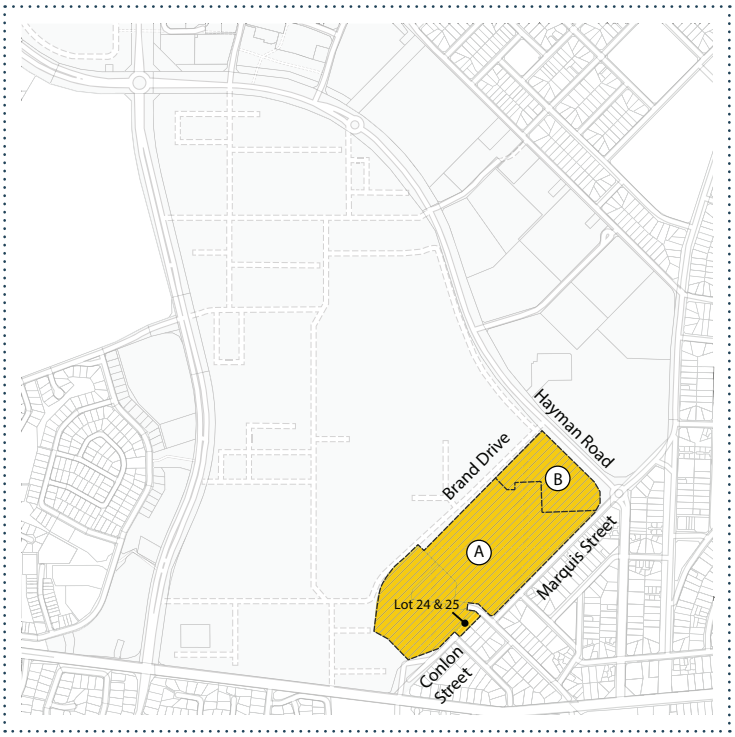


Figure 37: Southeast knowledge precinct

Figure 38: Indicative concept – Southeast knowledge

Key elements

Area A — Knowledge

1. Expansion or redevelopment of AMRC should integrate with the design of abutting proposed academic and commercial buildings on the Curtin University campus. New development of up to six storeys along Brand Drive and two to three storeys on Conlon Street is encouraged.

2. Improved access by connecting the northern ends of Conlon and McKay streets subject to liaison and agreement between any affected landowner is encouraged.

Area B — Residential

3. If an opportunity arises, realign the irregular reserve boundary between Vickery House and Canning College to facilitate better planning of either site.

4. Potential for medium density residential up to six storeys depending on adjacent streetscape. A two storey height limit should be retained adjacent to Marquis Street with setbacks reflecting surrounding residential development.

6. Implementation

6.1 Implementation

This Plan is intended to:

- provide a broad overarching vision and framework to further secure Bentley-Curtin as Perth's specialised centre for education and technology
- identify themed precincts within Bentley-Curtin, which reflect existing and anticipated long-term use, character and opportunities
- identify features and opportunities in a planning context
- provide consistent information and encourage more detailed and localised planning by local government, landholders and service/infrastructure providers
- cater for improvements to transport and movement to, from and within Bentley-Curtin through to 2031.

This Plan is long-term and does not include time frames for development or infrastructure improvements as progress is largely reliant on aspirations of landholders, market conditions, funding opportunities, availability of land for redevelopment, changes to local planning scheme provisions and in some areas, changes to existing legislation.

Where this Plan discusses proposals that are currently not permissible under current local planning schemes, the Metropolitan Region Scheme, legislation or policies, the requirement to comply with or amend existing statutory or legislative conditions remains. It does however provide a context for informed consideration of changes to law or local planning provisions.

Implementation must be effected by amendments to the City of South Perth and Town of Victoria Park local planning schemes. The amendments are necessary to enable councils to assess development consistent with this Plan (or varied based on detailed research and investigation).

Given the scale and diversity of Bentley-Curtin, landowner objectives and prevailing economic and market conditions, it is likely that development will occur over an extended period. Some precincts will evolve over the longer term as renewal occurs incrementally, as buildings and infrastructure are redeveloped or introduced over time. In the shorter term planning and/or development in other precincts has the potential to deliver formative changes to Bentley-Curtin.

Curtin University has begun to deliver the Greater Curtin vision in the northern section of the campus, including the introduction of key streets and the near-term development of a public transport interchange and sites for additional land uses. Development within the Curtin Precinct is likely to see significant changes to Bentley-Curtin's population and activity.

Land within the Northwest Science and Residential precinct has been identified under the Government's program of land asset sales. Potential redevelopment within this precinct can contribute significantly to the utilisation of land and the population within Bentley-Curtin.

The preparation of structure plans and/or local development plans will be required to facilitate the objectives within this Plan. This includes in areas of proposed major development, where development is proposed to occur in stages, proposed re-zoning or sub-division, at the discretion of local government and as per the *Planning and Development (Local Planning Scheme) Regulations 2015*. In designated bushfire prone areas, this planning will need to consider the measures of State *Planning Policy 3.7: Planning in Bushfire Prone Areas* and associated guidelines.

Coordination between State and (or between) local governments will likely provide an effective planning approach for the combined provision of key infrastructure and services for Bentley-Curtin, particularly where these elements span local government boundaries. The implementation of transport and movement elements can be supported in this regarding, including parking management across Bentley-Curtin and in areas around the activity centre boundary and the planning for road, walking and cycling networks that traverse boundaries.

Table 10 indicates primary features of implementation of the plan.

Item	Description	Responsibility
Governance and planning		
Planning and legislation	• Preparation of structure plans, local development plans or amendments to local planning schemes necessary to support proposals.	Local government and/or landholder/developer
	• Review (non-planning) legislation and where appropriate, advance amendments to permit land use and development proposals.	Minister/Department responsible
	• Review and consider government agency crown land requirements / tenure and possible amalgamation / subdivision.	Department of Planning, Lands, Heritage/relevant reserve/land manager
Public consultation	• Stakeholder and public consultation for statutory and non-statutory processes.	Local government, landholder/ developer
Development costs and contributions	• Consider State Planning Policy 3.6: Developer Contributions for Infrastructure for future community and servicing needs.	Local government/utility providers
	• Secure finance for costs including jointly funded elements of projects.	All landholders
Transport		
Car-parking	• Bentley-Curtin parking management and coordination.	Local government with Curtin University and State Government
Roads	• Construction and maintenance of road network, new roads and extension to existing roads.	Department of Transport/Main Roads WA/local government/ Department of Planning, Lands, Heritage
Pedestrian and cycling	• Provision and maintenance of pedestrian and cycling infrastructure.	Local government and/or Department of Transport/ developer
Public transport	• Coordinate public transport changes (services and frequency) in sequence with development and parking supply.	Public Transport Authority/ developer
	• Public transport infrastructure necessary to support proposals.	Department of Transport/Public Transport Authority
	• Investigate and promote opportunities for high frequency rapid transit through Bentley-Curtin.	Department of Transport/ Public Transport Authority/local government
Land use and landscape		
Subdivision/land amalgamation	• Investigate opportunities to better utilise surplus undeveloped land via boundary realignment, amalgamation and or subdivision.	Local government/landholder
Landscaping	• Landscaping and maintenance of private land, reserve, roads and public open space.	Local government/landholder
Infrastructure		
Water and sewer	• Infrastructure construction, relocation or upgrades to accommodate new development.	Developer/landholder
Power, gas and communications	• Infrastructure construction, relocation or upgrades when required, necessary to support proposals.	Developer/landholder
Investigation and modelling		
Urban water management and bushfire planning	• Prepare urban/local water management plans for new development where required by Department of Water and Environmental Regulation and/or local government. • Preparation of bushfire management plans were appropriate	Developer/landholder
Site investigations	• Ensure appropriate cultural, environmental and geotechnical site investigations are undertaken to support proposal.	Developer/landholder
Local access and movement	• Assess the impact of proposed development and land use on local movement and access network.	Developer/landholder

Table 10: Implementation


DEPARTMENT OF PARKS AND WILDLIFE

Appendix 1. Technical

A1.1 Topography

The topography of Bentley-Curtin generally ranges from low elevations in the south, close to Canning River, to rising heights and a north-south ridge line across Baron-Hay Court to the north.

Elevations range from around 5m Australian Height Datum (AHD) near Manning Road to 31 metres AHD at the Kensington CSIRO site and 27 metres AHD north of Baron-Hay Court in the Bush Forever site, as shown in *Figure 39*.

The ridges provide vistas to the CBD. The low points are mostly natural depressions that, together with the wide road reserves have historically been used for drainage.

The highest points are the telecommunications site, the existing Department of Primary Industries and Regional Development buildings and the Australia Post Distribution Centre. Ongoing planning provides an opportunity to respond to the topography to maximise views of the surrounding locality and central Perth.

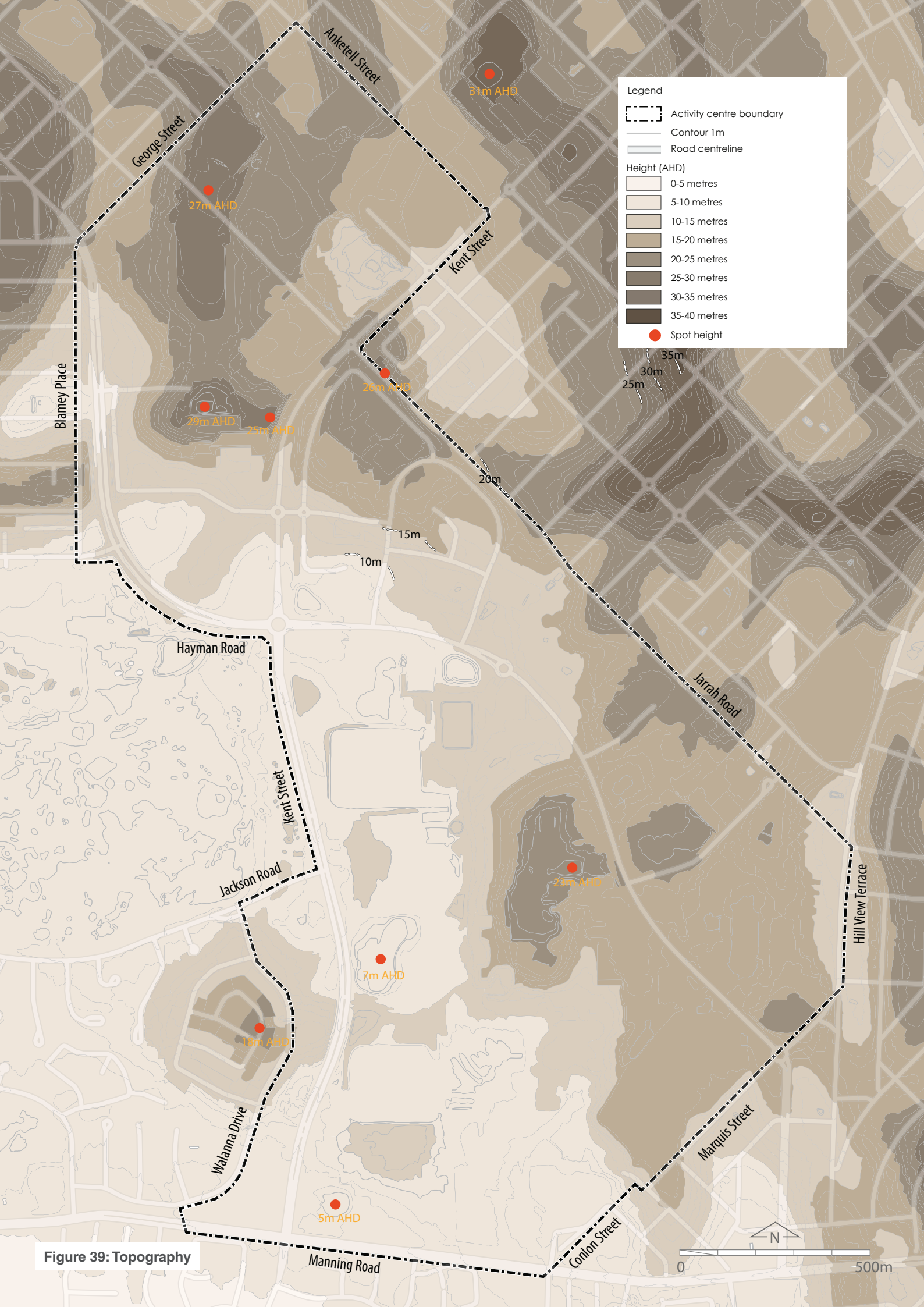


Figure 39: Topography

A1.2 Geology and soils

Bentley-Curtin is predominantly quartz sands known as Bassendean Sands. Geological units in the vicinity are:

- LIMESTONE (LS7) – light yellowish brown, fine to coarse grained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin with abundant karstic phenomena including caves, swallows and Landslides.
- SAND (S7) – pale and olive yellow, medium to coarse grained, sub-angular to sub rounded quartz, trace of feldspar, moderately sorted or residual origin.
- SAND (S8) – very light grey at surface, yellow at depth, fine to medium grained, sub rounded quartz, moderately well sorted of eolian origin.
- SAND (S10) – as per S8 and is described as thin Bassendean Sand over Guildford formation.

The sands are approximately 20 to 25 metres deep. A layer of sandy clay and clayey sand underlie the upper sand and extend to a depth of approximately 40 metres or more. Areas of surface and shallow limestone also exist.

Accurate geotechnical classification should be informed by site investigations and laboratory testing. Site specific geotechnical assessment that determines the appropriate classification should inform future proposals.

A1.3 Acid sulphate soils

Almost all of Bentley-Curtin is classed as Class 2 – Moderate to low risk of acid sulphate soils occurring within three metres of natural soil surface that could be disturbed by most land development activities (acid sulphate soils most likely occurs at depths below three metres). Acid sulphate soil risk is shown in *Figure 40.* It is particularly relevant to parts that are below five metres AHD.

Any development requiring dewatering will require a preliminary acid sulphate soils investigation to ascertain the presence of acid sulphate soils.

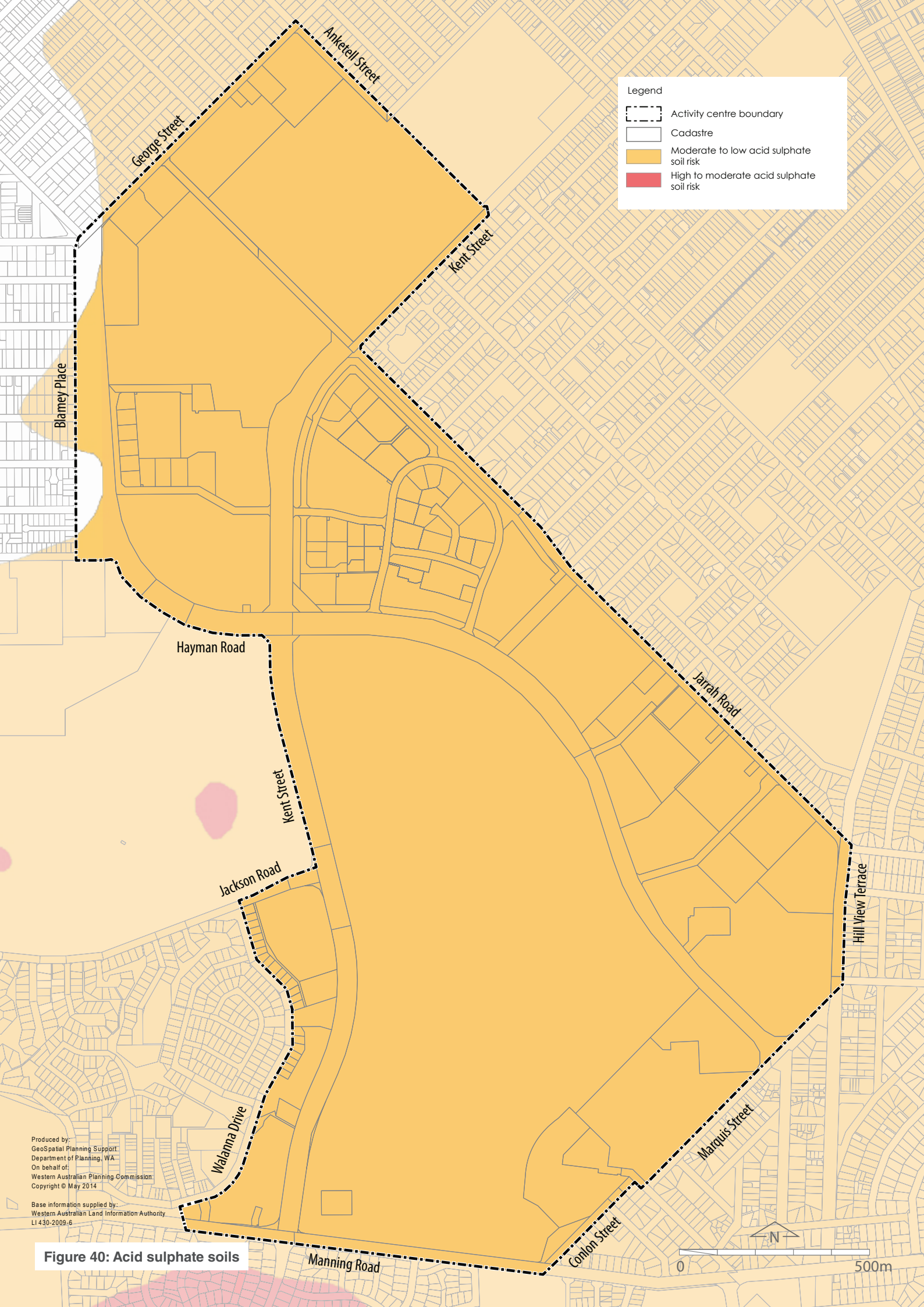


Figure 40: Acid sulphate soils

A1.4 Groundwater

Levels

The *Perth Groundwater Atlas* suggests groundwater levels within Bentley-Curtin vary between five metres and six metres AHD. The site has a historical maximum ground water level of approximately eight metres AHD, shown in *Figure 41*. Groundwater levels are likely to exhibit some degree of variation on a seasonal basis.

The combination of a groundwater level average of approximately five metres AHD (two metres to 15 metres below the existing ground level) and the potential for shallow zones of loose sands has implications for liquefaction (where soil loses strength and become liquid). This will need to be considered during detailed design stages.

Where the groundwater table is high, development costs for basement car parking may occur. Development in these areas will need to follow Department of Water and Environmental Regulation's guidelines. Design requirements include in the *Storm-water Management Manual for Western Australia* (Department of Water, 2004).

Allocations

The combined groundwater allocation for the entire Activity Centre is currently over one million kilolitres (kl) per annum. With the current pressure on groundwater resources and the increasing price of water, alternative water sources for irrigation of parkland and landscaping should be investigated.

The Greater Curtin Master Plan proposes implementing several alternative water sources and methods to supplement groundwater irrigation. Similar initiatives may be applied in other precincts where large landholdings may be redeveloped and retained in single ownership.

Where new residential areas are proposed, an opportunity exists at subdivision to implement fit-for-purpose water saving initiatives such as rainwater tanks plumbed into toilets and dual reticulation irrigation systems for domestic gardens and public open space, including road reserves. This will require proponents to work closely with Department of Water and Environmental Regulation, Department of Health and local government.

The Department of Water and Environmental Regulation should be consulted in the preparation of Urban Water Management Plans.

Surface water

The only surface water within Bentley-Curtin is Jack Finney Lake in Curtin University adjacent to Kent Street. Originally an ephemeral natural depression in the landscape, it is highly modified with two islands and a drainage basin function for run-off from car parks, roofs and paved areas of the university and Kent Street.

The lake has no flushing mechanisms nor does it interact with other surface water bodies in close proximity. The *Greater Curtin Master Plan* provides a proposal for the lake to be re-established as a seasonally inundated wetland and restored as a biodiversity asset.

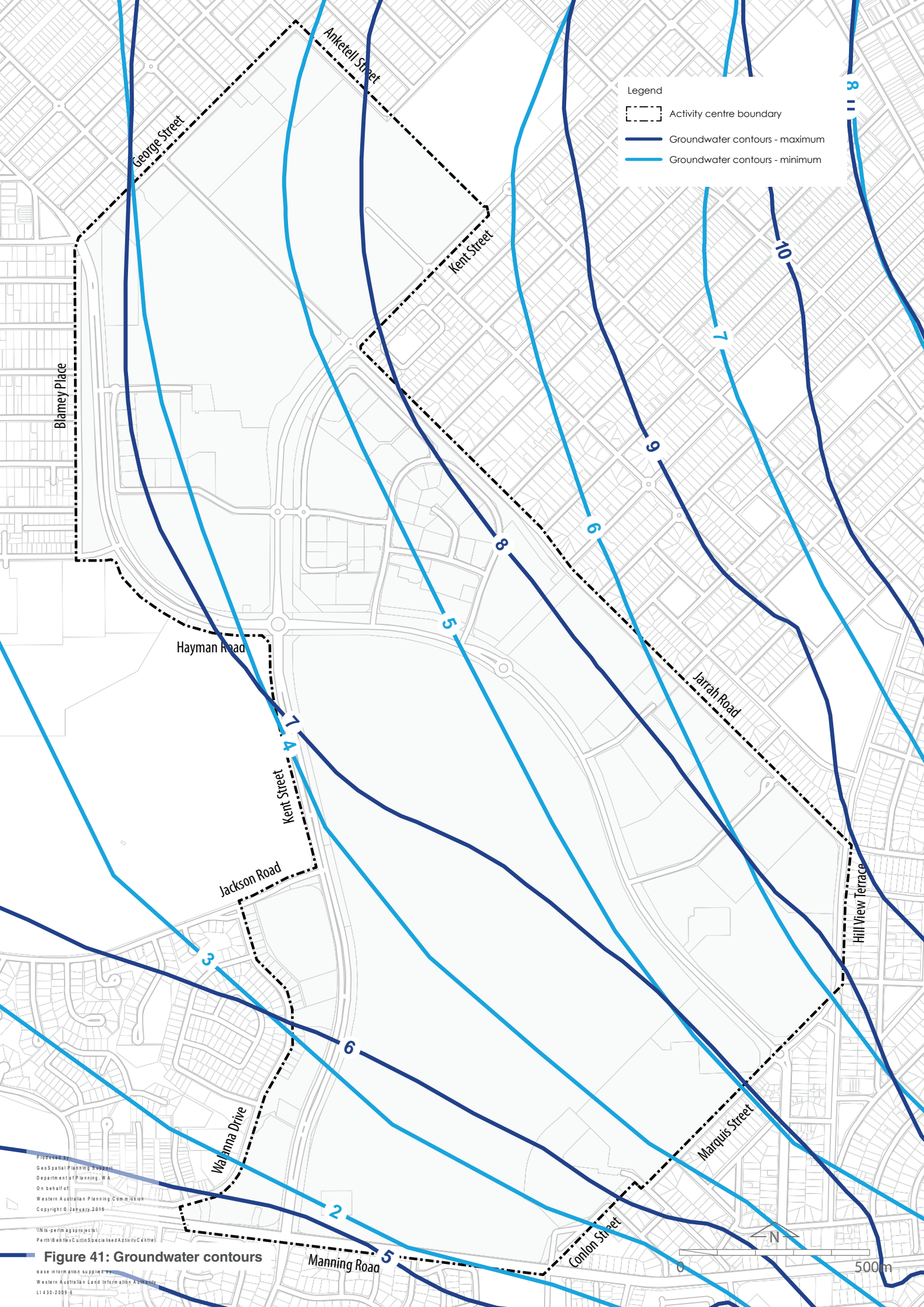


Figure 41: Groundwater contours

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Perth\Bentley Curtin Specialised Activity Centre\

Base information supplied by
Western Australian Land Information Authority
LI 430-2009-6

A1.5 Contaminated sites

There is one registered contaminated site within Bentley-Curtin and three sites that may be contaminated, as shown in *Figure 42*.

1. ***George Street Reserve.*** The reserve is classified as 'Contaminated – Restricted Use'. Historically used for night-soil disposal and landfill, the presence of heavy metals in the soil exceeds Ecological Investigation Levels and levels for parks, recreational open space and playing fields. Asbestos has also been found at the site. Continued public open space and recreational use is based on groundwater for irrigation purposes being regularly testing and soil not being disturbed 0.5 metres below ground level.

The three sites that require investigation if a more sensitive land use is proposed are:

2. ***25 Walanna Drive, Karawara.*** The site is currently a petrol station. This type of use typically has underground storage. A risk of hydrocarbons contaminating soils and groundwater both on and off site exists.
3. ***Department of Primary Industries and Regional Development site – 3 Baron Hay Court, Kensington***. A preliminary site investigation indicates that more sensitive land uses require further assessment for potential contamination.
4. ***63 Kent Street, Kensington***. The entire site is classed as possibly contaminated. Most of the site is Bush Forever and playing fields. Any proposed development may require further assessment for contamination.

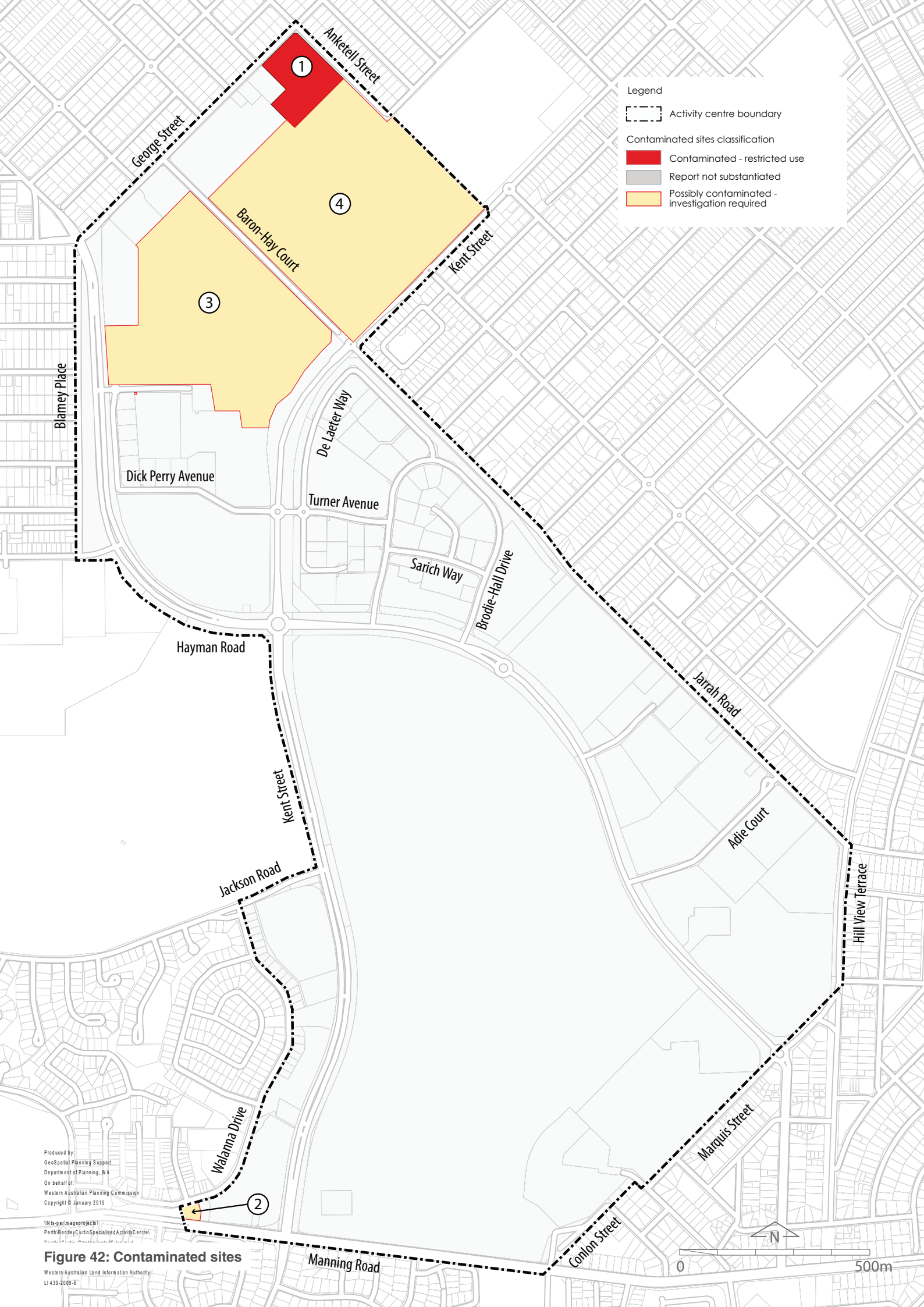

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Figure 42: Contaminated sites

Western Australian Land Information Authority
LI 430-2009-6

A1.6 Heritage

Aboriginal heritage is protected via the *Aboriginal Heritage Act 1972*. A 2007 desktop assessment of the Aboriginal heritage values identified one registered site within the activity centre area.

Wadjup (Site No. 24319) for Male Ceremonial purposes is confidential, therefore the area shown on the Aboriginal Heritage Enquiry system has a four kilometres radius, as shown in *Figure 43*. It is unlikely the site falls within Bentley-Curtin however contact with the Department of Aboriginal Affairs may provide further details.

Jack Finney Lake (Site ID 3304 WAIT Swamp) in the *WA Register of Aboriginal Sites* is listed as 'stored data only' and not covered by the *Aboriginal Heritage Act 1972.*

The 2007 report noted that areas of Spearwood Sands are likely to offer more research potential than areas of Bassendean sands. Most of Bentley-Curtin is comprised of Bassendean sands.

The *Greater Curtin Master Plan* notes, due to the university's proximity to the Canning River, some archaeological material may be present. Monitoring earthworks for new archaeological material is encouraged.

Most of the area was cleared for the Collier Pine Plantation in the early 1900s, so there are few native trees and none likely more than 100 years old. Such trees searched for scars made by Nyoongar people. Kensington Bushland may be the exception. There is a possibility that unregistered sites exist, land owners or developers are encouraged to prepare contingency plans to allow for culturally appropriate management of discoveries.

State heritage

State heritage is legislated through the *Heritage Act of Western Australia 1990*. There are no places listed on the State Heritage Register within the activity centre area.

The Kensington Fire Station is on the Fire and Rescue Service Heritage Inventory. It is not considered cultural heritage to the extent that it should be placed on other registers, however reassessment is suggested if changes to the physical infrastructure are proposed.

Local heritage

Local heritage is enacted by the *Planning and Development Act 2005* and administered by local government.

There are three local heritage listed places in Bentley-Curtin:

City of South Perth:

- Department of Biodiversity, Conservation and Attractions complex (includes old Western Australian Herbarium and Herbarium Garden – Place 04800).

A new herbarium building has been built with the old herbarium currently unused.

Town of Victoria Park:

- Technology Park – Bentley (Place 02021).
- Curtin University (Place 14873).

Aboriginal heritage

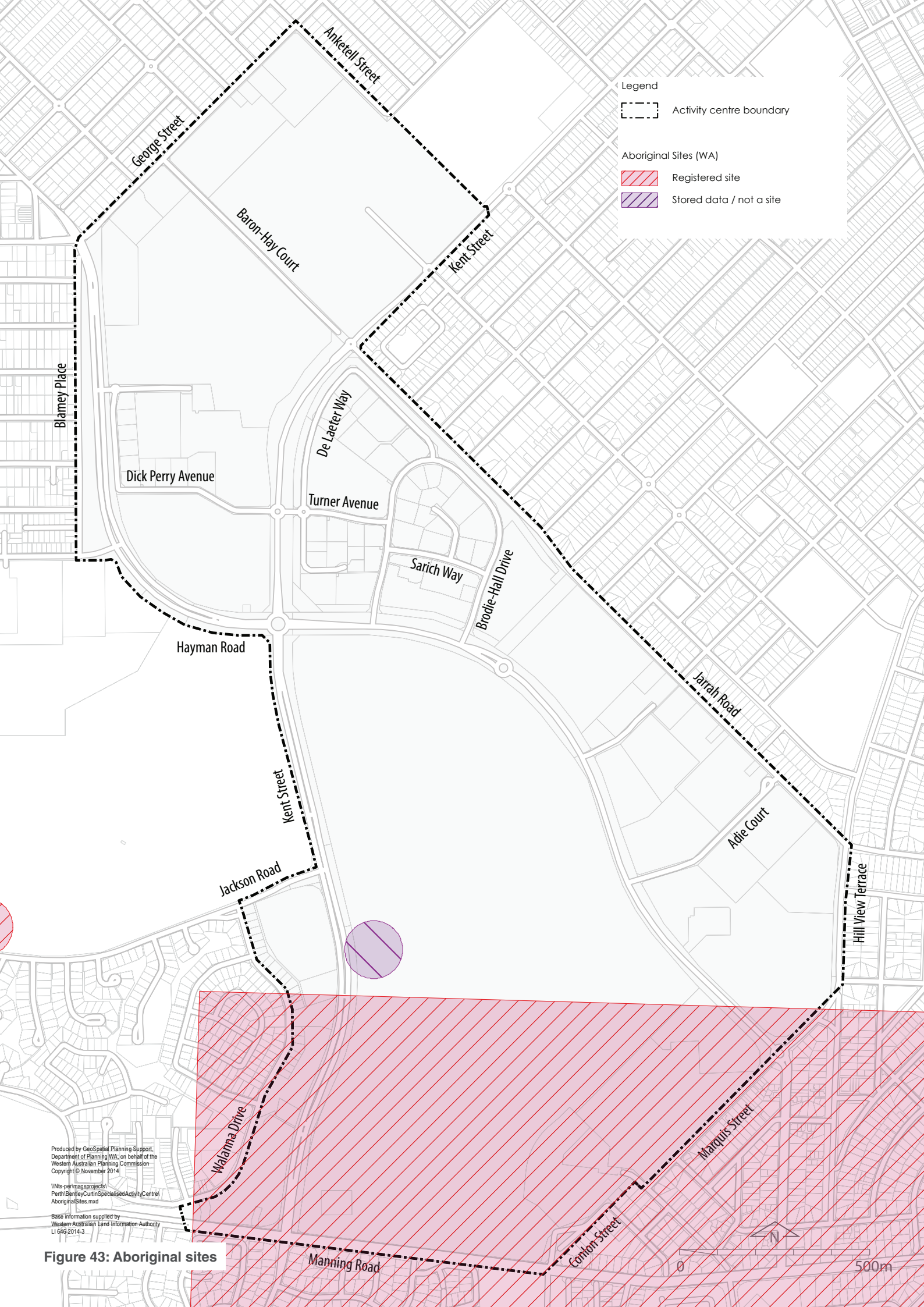


Figure 43: Aboriginal sites

A1.7 Existing movement and access

Existing public transport

There are several direct bus services from Perth CBD and the heavy rail stations of Canning Bridge and Oats Street that link to Curtin Bus Station. In addition, the Circle route offers a single journey option to and from Bentley-Curtin previously requiring two or three transfers. A weekday service operates from Belmont to Curtin Bus Station and is mainly used as a 'shopper', not a commuter service.

Figure 44 shows the current bus network services Bentley-Curtin.

Functional road hierarchy

Figure 45 shows the Main Roads Western Australia Functional Road Hierarchy, which is intended to designate the role of roads and encourage uniform road traffic management.

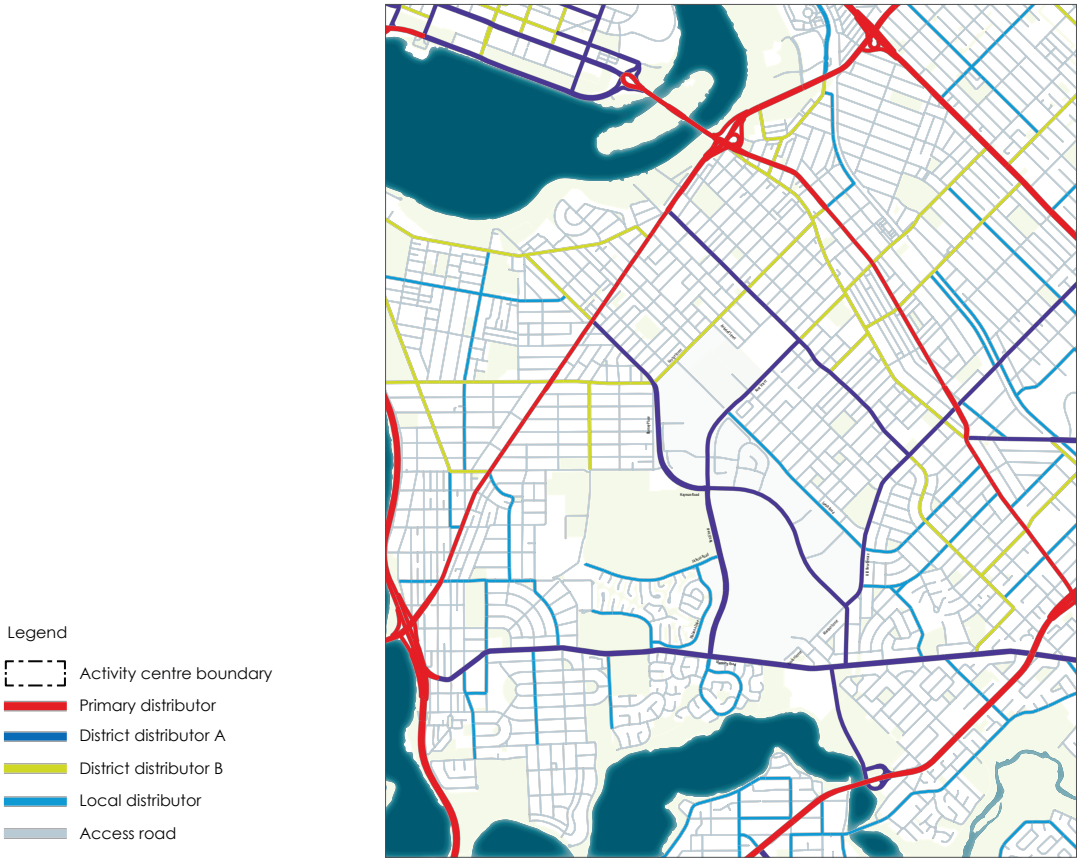


Figure 45: Functional road hierarchy

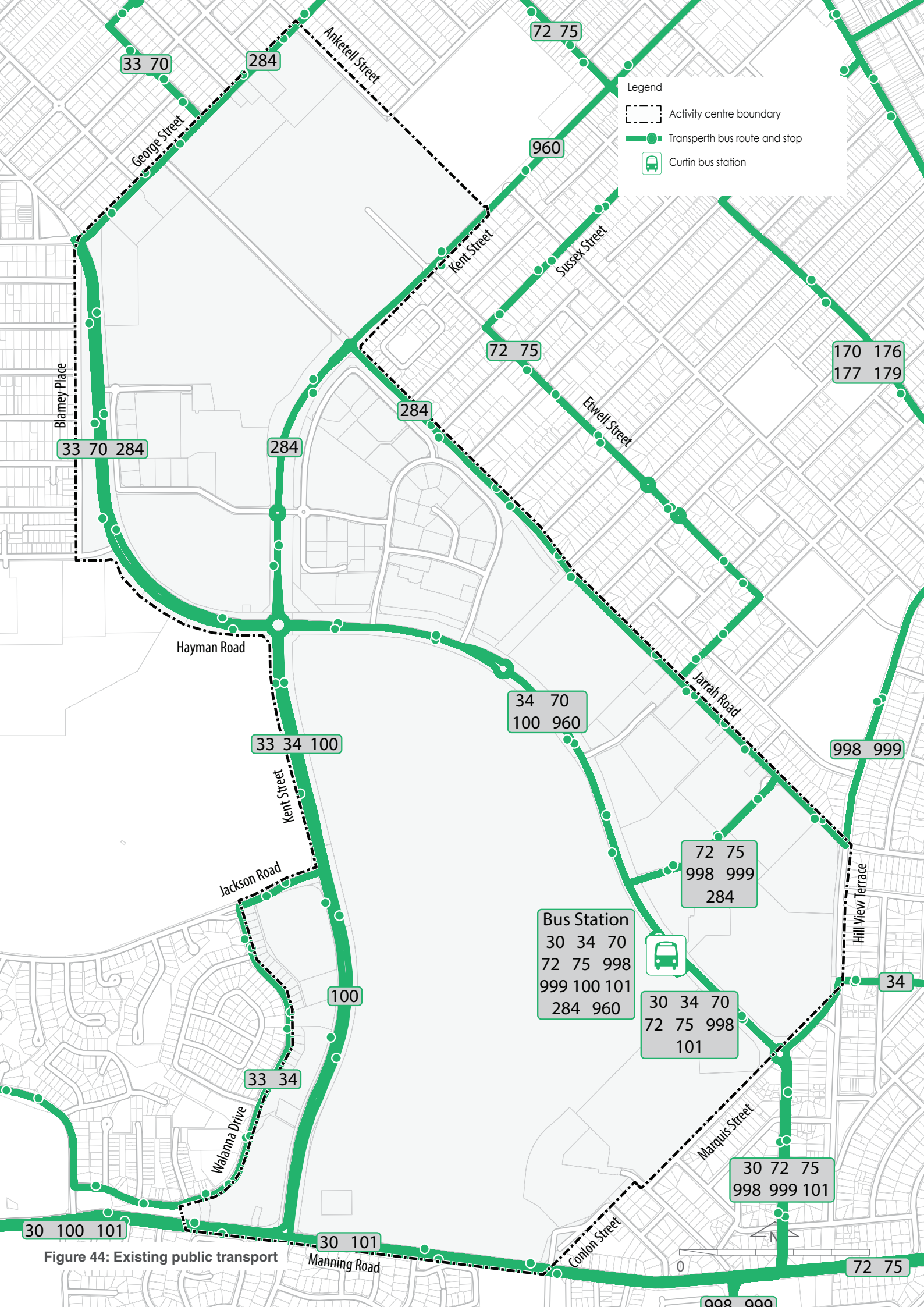


Figure 44: Existing public transport

A1.8 Vegetation

Prior to European settlement, the area was mostly vegetated with Banksia woodlands and mixed low shrublands. A government decision in the 1920s to site a pine plantation in South Perth resulted in the clearing of the area of Bentley-Curtin apart from the Kensington Bushland.

There are very few locally indigenous species remaining, predominantly within and surrounding the Kensington Bushland or sparsely dispersed throughout Bentley-Curtin.

A survey of the Department of Primary Industries and Regional Development site did not identify any threatened ecological communities, declared rare flora or conservation significant species. A biodiversity study of Curtin University campus, student housing and its Kent Street lot found three specimens of Priority Two taxa with a total of 80 taxa of native flora and one natural vegetation community considered to be in 'good condition'. These Banksia remnants have 'high' conservation and rehabilitation values.

Kensington Bushland

Kensington Bushland is the most isolated remnant bushland in the Perth Metropolitan area. Comprising 9.1 hectares, 75 per cent of its vegetation is classified as very good. The site includes over 200 species representative of plant communities of the Bassendean Dune system. There are three vegetation communities; *Eucalyptus marginata*, *B. menziesii* and B. *attenuata* Forest to Woodland; *Banksia menziesii* and *B. attenuata* Woodland; and mixed Low Shrubland.

There are 146 identified native taxa, with two significant flora – *Dodonaea hackettiana* and *Conostylis aculeata subsp. Cygnorum and a* substantial population of *Banksia ilicifolia.*

Bushfire hazard

As Kensington Bushland is regionally significant bushland in an urban area, development in proximity may need to comply with *State Planning Policy 3.7 – Planning in Bushfire Prone Area*.

Pine tree remnant stands

Although the pine plantation is decommissioned, remnant pines are scattered throughout and form part of Bentley-Curtin's identity.

The Collier Golf Course is part of the Coastal Plain's largest roosting and foraging sites for the protected black cockatoo. Removal of foraging and roosting trees is recognised as a major factor in the decline of both the Carnaby's and Forest Red Tailed Cockatoos. Many pine trees in Bentley-Curtin are nearly 90 years old and are in danger of dropping dead branches.

In 2014, the fifth consecutive *Great Cocky Count* confirmed the continuing presence of roosting Cockatoos on or near Curtin University, Technology Park and the Department of Biodiversity, Conservation and Attractions land. An analysis of roost counts found bird numbers between 2010-2014 remained static. The count found 94 roosting sites. Under the *Environmental Protection and Biodiversity Conservation Act 1999* referral to the federal Department of Environment occurs where there are known roosting sites and clearing of more than one hectare of foraging habitat is proposed.

A Test for Matters of National Environmental Significance on remnant pine stands for the Department of Primary Industries and Regional Development and former Herbarium sites (Lots 4407 and 4408) was conducted in 2013. It found that the stands within the Department of Primary Industries and Regional Development site were 'Completely Degraded'. An area in the south western corner of the site was considered 'Good Foraging' habitat with the rest 'Poor Foraging' habitat for Black Cockatoo species. A mitigation strategy for retaining as much of the foraging habitat trees as possible if development of the site occurs was recommended.

Threatened and priority flora

A flora survey has not been undertaken for the entire centre. Information on flora is informed by surveys of Department of Primary Industries and Regional Development, Curtin University and Kensington Bushland sites. There are no species identified as threatened flora in these locations.

1.

2.

3. **Activity centre vegetation** | **1.** Kensington Bushland | **2.** Pines and other introduced species | **3.** Remnant pine trees

A1.9 Fauna

A fauna survey of Bentley-Curtin has not been carried out, however a large portion of the site has been assessed through three individual surveys.

Surveys in 1990 and 1991 indicated that there were 20 bird species, 14 reptile species and one amphibian species present at Kensington Bushland. It is one of two known localities south of the Swan River for the gecko *Diplodactylus alboguttatus* and a nesting site for migratory Rainbow Bee-eaters.

The *Kensington Bushland Protection Study* (Town of Victoria Park, 2005) identified six bird species and two reptile species classed as significant fauna.

A survey of the Department of Primary Industries and Regional Development site did not find any threatened ecological communities, specially protected fauna or conservation significant species.

A biodiversity study of Curtin University found there is a poor representation of native fauna species within the campus and student housing areas because of habitat loss, fragmentation and isolation. There are extensive grassed open spaces and a lack of native vegetation. Three conservation significant fauna were found as either present, or having the potential to be present within the study area. These are the Black-Cockatoo (endangered), Red-tailed Black-Cockatoo (vulnerable) and the Rainbow Bee-eater (migratory).

The Black Cockatoo species utilise remnant pine trees as a food source. Development may impact pine trees resulting in a loss of cockatoo habitat.

Threatened ecological communities

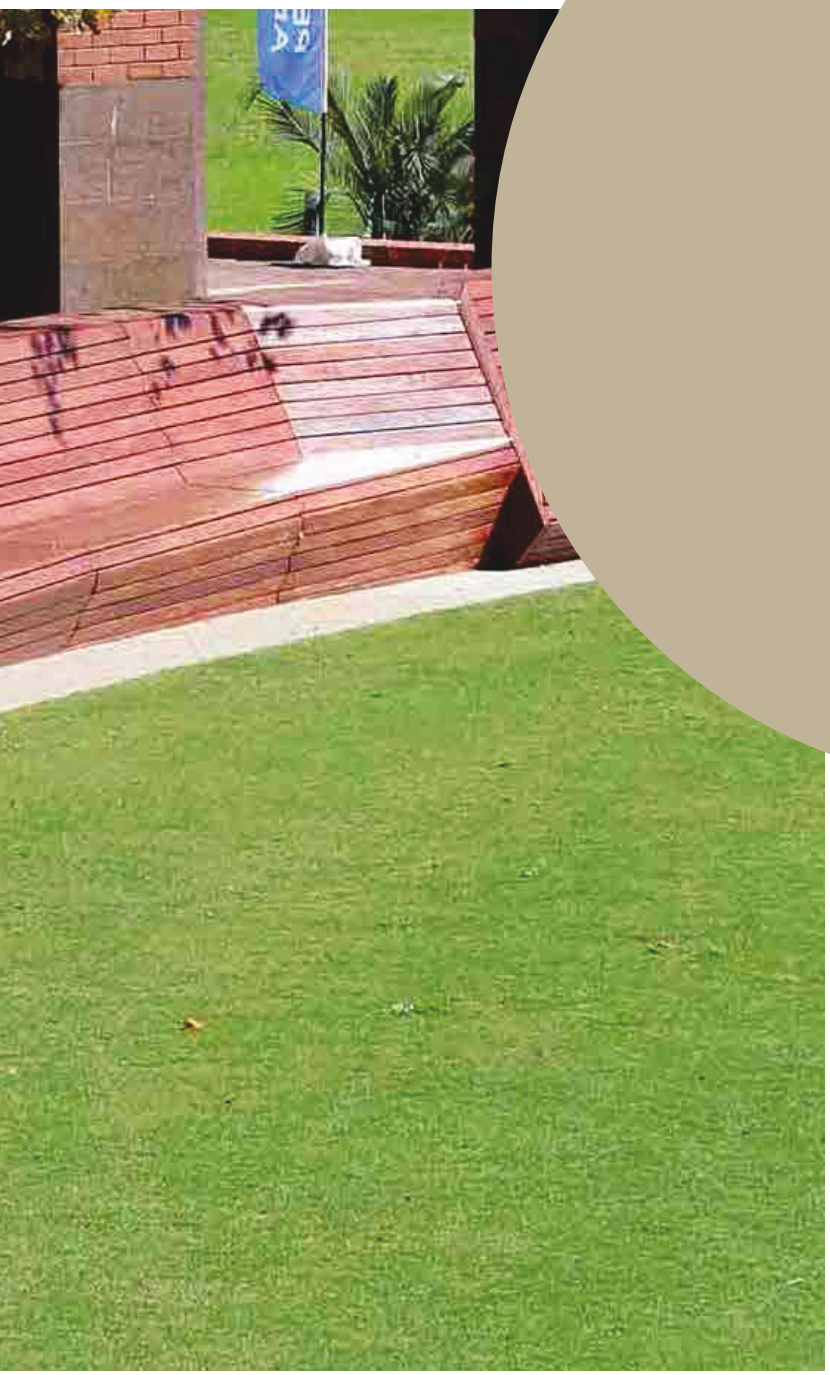
There are no identified threatened ecological communities within any of the three survey areas.

Protected Matters of Environmental Significance

Matters of Environmental Significance (MNES) which may occur within Bentley-Curtin show that there are 12 threatened species and 7 migratory species.

Three Black Cockatoo species (*Calyptorhynchus baudinii, Calyptorhynchus latirostris* and *Calyptorhynchus banksii naso*) are known to utilise remnant pine trees as a food source. Development may impact on these pine trees resulting in loss of cockatoo habitat.

Iconic fauna | Carnaby's Cockatoo



Appendix 2. Governance

A2.1 Land ownership and tenure

The State Government is a major landholder within Bentley-Curtin. Several not-for-profit commercial organisations utilise Crown land for specific purposes. State Government departments with requirements beyond usual office spaces utilise Crown land. The Commonwealth Government owns land occupied by the CSIRO and Australia Post.

Figure 46 shows commercial and private ownership is less than government (by area) and is mostly grouped together.

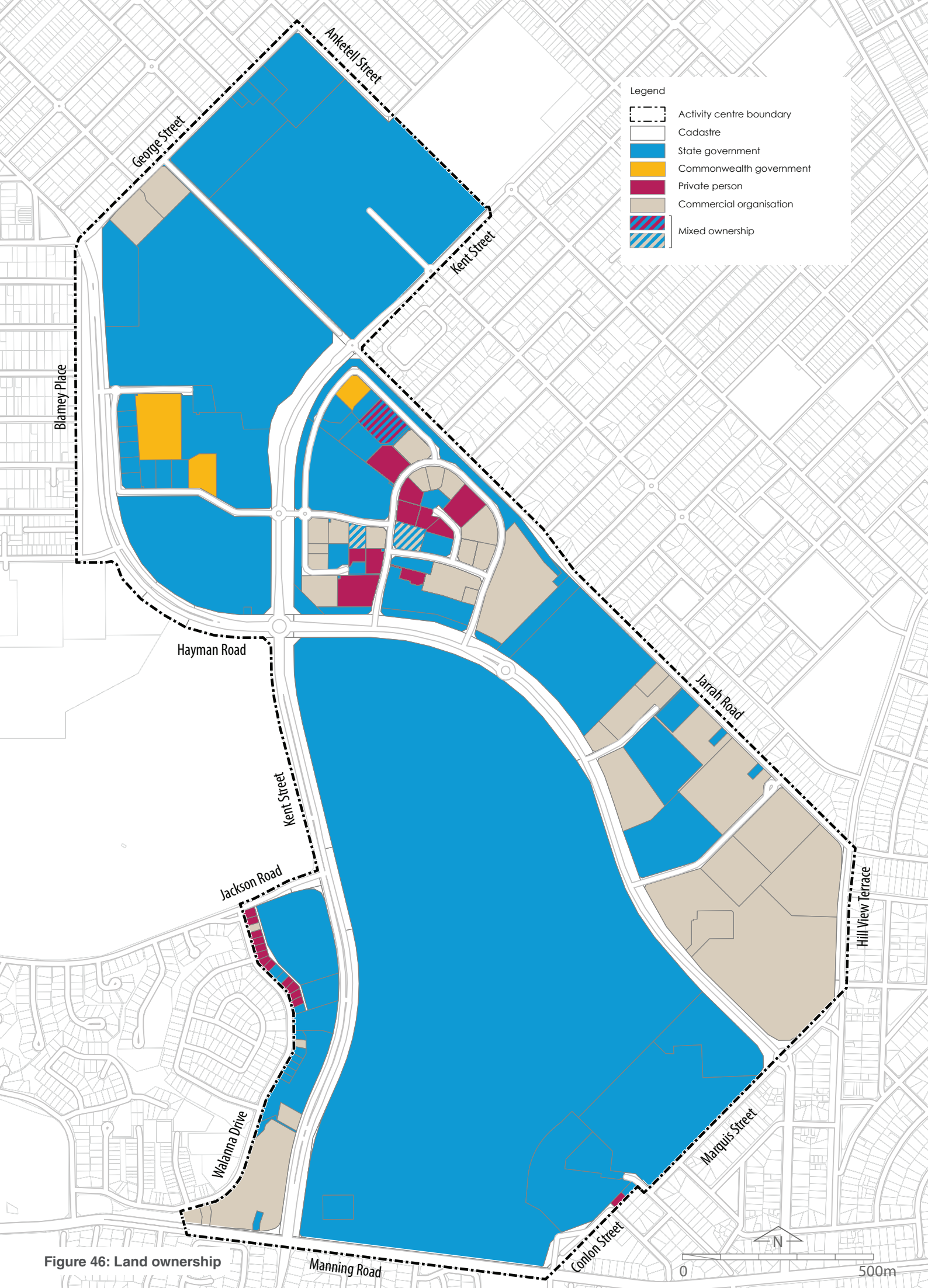


Figure 46: Land ownership

A2.2 Planning schemes

Metropolitan Region Scheme

The Metropolitan Region Scheme (MRS) is the Perth metropolitan area's statutory document governing land use and development. It provides context for local planning schemes, planning decisions and is the instrument for reservation and acquisition of land for regional purposes.

The land contained within the Activity Centre is classified under the MRS as:

- Urban zone: areas in which a range of activities are undertaken including residential, commercial, recreational and light industry.
- Public Purposes Reserve (in Bentley-Curtin are Special Purpose: University, Technical School, Special Use): land for public facilities such as hospitals, high schools, universities, prisons, utilities for electricity, water and treatment of wastewater, commonwealth government and other special uses.
- Parks and Recreation Reserve, with a partial Bush Forever overlay: land of regional significance for ecological, recreation or landscape purposes.
- Other Regional Roads Reserve: these are roads of regional significance in the planned road network for which the planning responsibilities are shared by the WAPC and local governments.

Development on MRS reserves is determined by the WAPC unless a 'notice of delegation' allows local government determination powers. Subdivision is assessed by the WAPC under the MRS.

Amendments to the MRS will be necessary to enable implementation of some proposals of this Plan relating to reserves.

Figure 47 shows the Metropolitan Region Scheme zones and reserves.

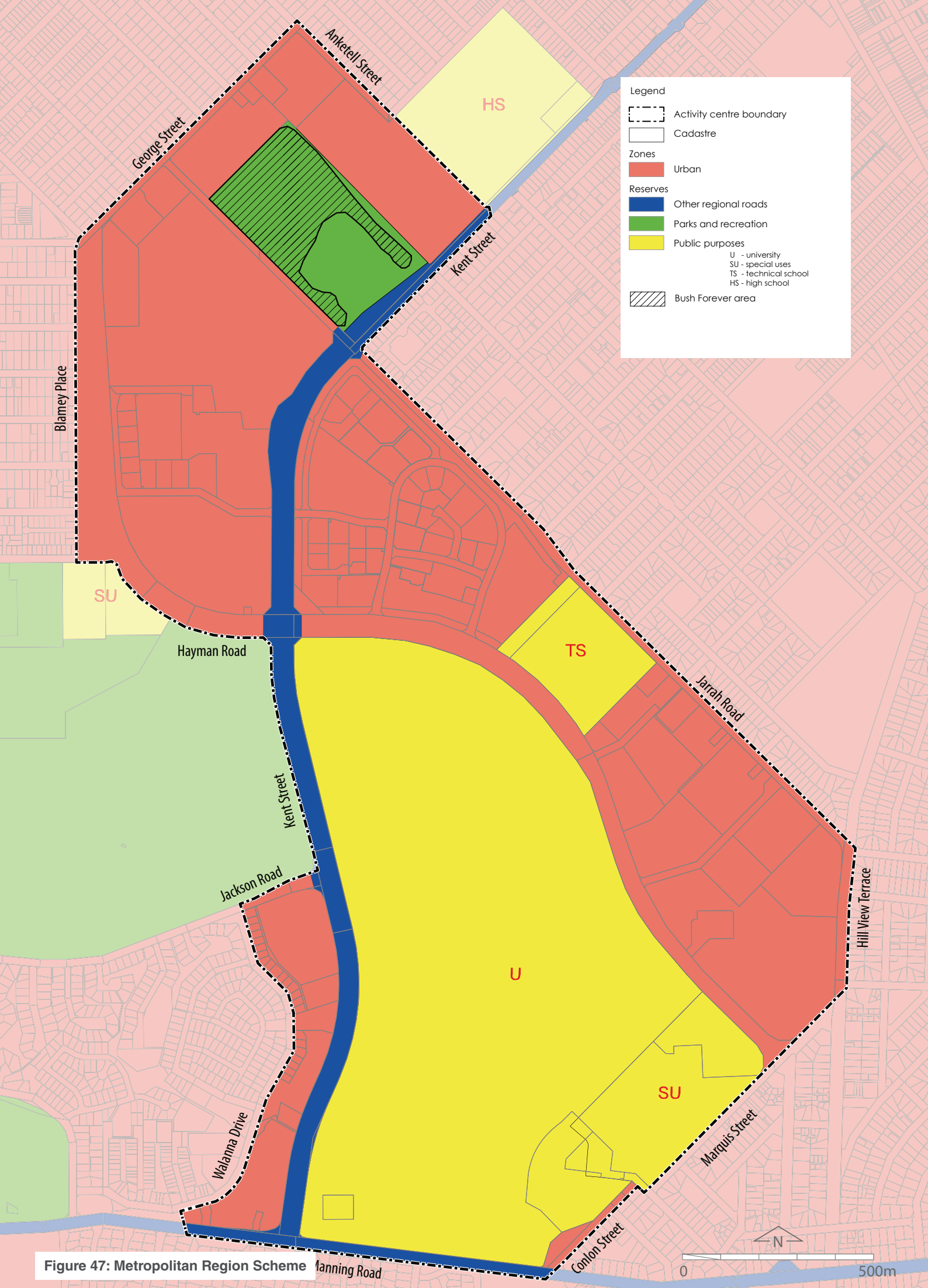


Figure 47: Metropolitan Region Scheme

Local planning schemes

Local planning schemes form part of the planning framework and are administered by local government. The local planning schemes are statutory tools used to achieve local government objectives for the local area and are mainly concerned with land use, development control and infrastructure coordination. The City of South Perth and Town of Victoria Park have local planning strategies and a range of local planning policies to guide development and provide the strategic framework for their respective local planning schemes.

Bentley-Curtin is covered by two local planning schemes:

- The Town of Victoria Park – Town Planning Scheme No. 1
- The City of South Perth – Town Planning Scheme No. 6.

Town of Victoria Park Town Planning Scheme No.1.

Part of Bentley-Curtin, east of Kent Street and north of Baron Hay Court, is within the Town of Victoria Park.

Local Scheme Zones within Victoria Park are:

- Special Use zone
- Parks and Recreation reserve
- Public Purpose reserve.

MRS reserves within the Town of Victoria Park negate the need for a local zone or reserve.

The Town of Victoria Park determines development proposals on zoned land that is within its municipal area.

Figure 48 shows the Town of Victoria Park Town Planning Scheme No. 1 zones and reserves.

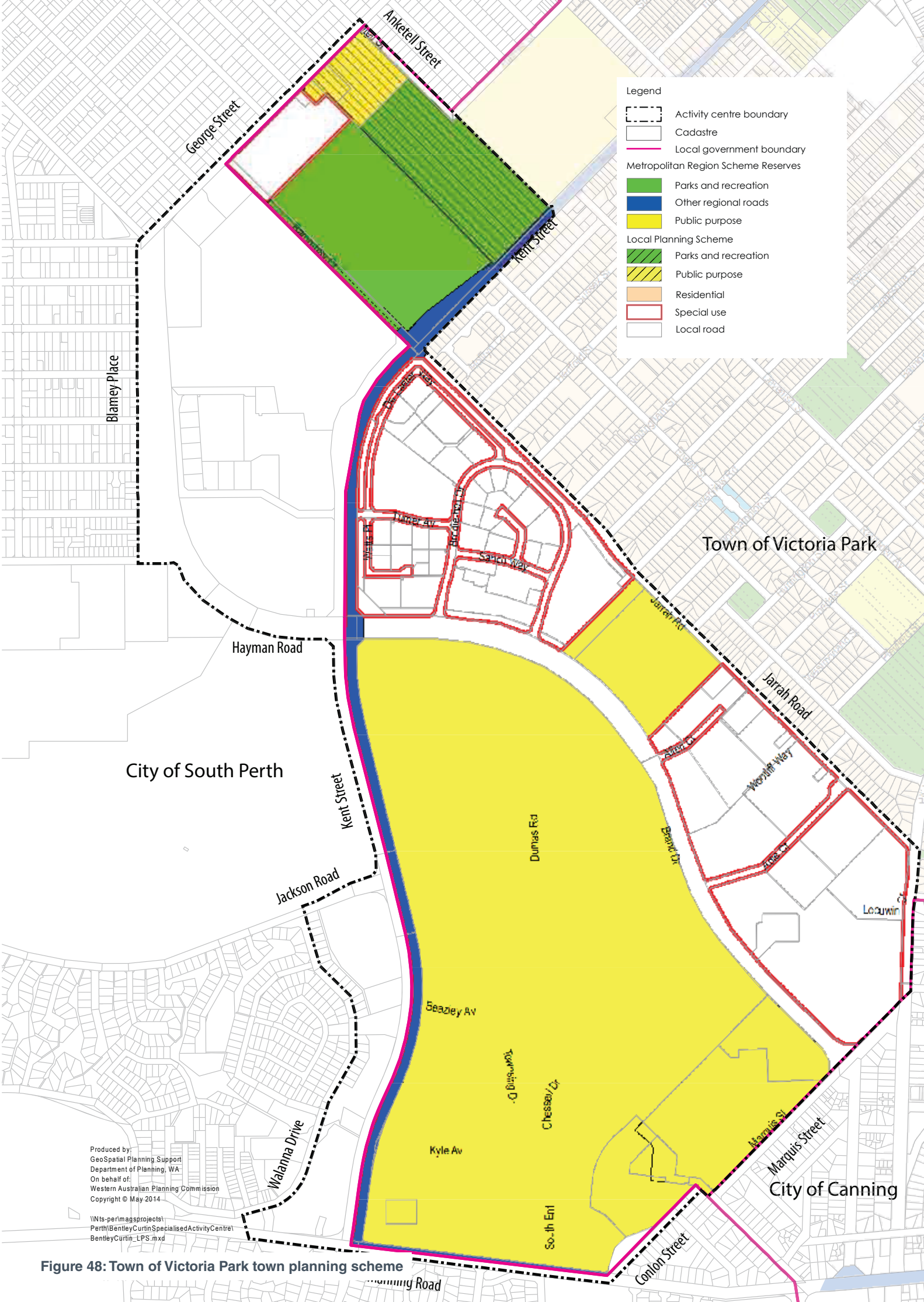


Figure 48: Town of Victoria Park town planning scheme

City of South Perth Town Planning Scheme No. 6.

Land west of Kent Street and south of Baron-Hay Court is within the City of South Perth. Local Scheme zonings within the area are:

- Residential (R20, R30 & R40) zone
- Public Assembly zone
- Parks and Recreation reserve
- District Centre-Commercial (R30) zone
- Technology Park zone.

The Department of Primary Industries and Regional Development site, Department of Biodiversity, Conservation and Attractions site (including the old Herbarium and telecommunications site), the western side of Technology Park and Waterford Plaza are in the City of South Perth.

The City of South Perth determines development proposals of zoned land within its municipal area.

Figure 49 shows the City of South Perth Town Planning Scheme No. 6 zones and reserves.

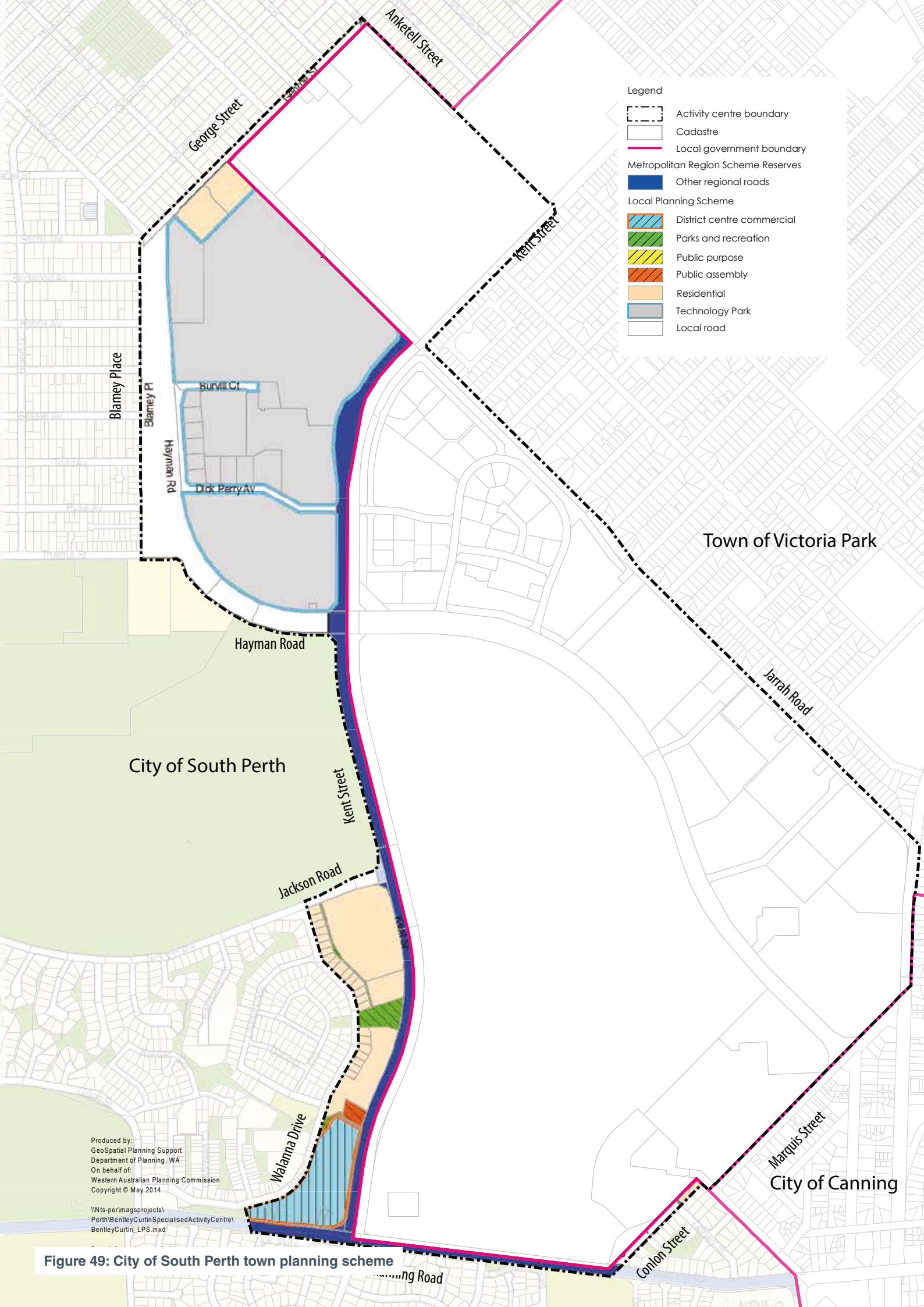


Figure 49: City of South Perth town planning scheme

A2.3 State planning policies

State planning

A number of State planning documents, including the State Planning Strategy and State policies relate to the development of Bentley-Curtin and the preparation of region and local planning schemes.

State Planning Strategy 2050 (2014)

The State Planning Strategy provides a state wide context and basis for the integration and coordination of land use planning and development across the state, regional and local jurisdictions. Elements of direct relevance to Bentley-Curtin include identification of science, technology, innovation and research as important contributors to the State becoming globally competitive in a knowledge based economy.

Directions 2031 and Beyond (2010)

Directions 2031 and Beyond establishes a vision for future growth of metropolitan Perth and Peel regions. It is a framework to guide planning for housing, infrastructure and services needed for growth. It promotes the concept of activity centres to encourage clustering of uses, connected by high quality public transport that support residential populations close to places of employment in an efficient urban form.

Perth and Peel@ 3.5 Million (2018)

The *Perth and Peel@3.5 Million* document sets out an overarching framework for the City with a population of 3.5 million people by making best use of infrastructure and resources including protection of the natural environment. This is supported by a suite of sub-regional planning framework documents.

Central Sub-regional Planning Framework – Towards Perth and Peel @ 3.5 million (2018)

The *Perth and Peel @ 3.5 million Sub-regional Framework* focuses on achieving higher infill and densities for residential development and employment within the existing built environment. It advocates greater use of activity centres to support a diversity of residential uses near employment and amenity.

Perth and Peel Green Growth Plan for 3.5 million (Draft 2015)

The draft *Perth and Peel Green Growth Plan for 3.5 million* has been prepared to deliver a comprehensive environmental program for the protection of Commonwealth matters of national environmental significance and State environmental values as the region grows to a population of 3.5 million people.

Capital City Planning Framework (2013)

The *Capital City Planning Framework* sets out a vision and spatial framework for Central Perth, anticipating potential changes and challenges and identifying future opportunities. It identifies Bentley-Curtin as being of strategic importance, a key knowledge and cultural centre and a suitable location for development with urban characteristics.

Western Australian Bicycle Network Plan 2014-2031 (2014)

The Western Australian Bicycle Network Plan 2014–2031 guides delivery of cycling infrastructure to better meet the growing need for convenient, safe cycling routes and end of trip facilities.

In the context of this Plan, a link between Canning Bridge train station and Bentley-Curtin is identified as a key cycling connection and a high priority.

State Planning Policy 2.8 – Bushland Policy for the Perth Metropolitan Region

Kensington Bushland is gazetted as a Bush Forever site (No. 48) for the purpose of parks and recreation and is managed by the Town of Victoria Park as a bushland reserve. It is one of the most isolated regionally significant pieces of bushland, in excellent to very good condition.

SPP 3.7 – Planning in Bushfire Prone Areas

SPP3.7 is intended to reduce risk of bushfire to people, property and infrastructure.

Kensington Bushland, being nine hectares of regionally significant bushland will need to be considered as part of future development of adjacent land.

SPP 4.2 – Activity Centres for Perth and Peel

A range of land uses that complement Bentley-Curtin's primary activities are encouraged as long as they do not detract from other centres in the hierarchy. Bentley-Curtin has the potential for development of complementary commercial activities, particularly knowledge based businesses, increased residential population and services such as retail and convenience facilities.

Liveable Neighbourhoods – (Draft 2015)

The policy promotes activity centres achieving a strong and unique sense of place and local identity which is derived from the local natural and cultural context. This includes a high quality public realm and street environment. Centres should also support public transport use.

Institutions such as universities should be in or adjoining Activity Centres and designed in an efficient urban layout rather than a sparse layout. State and local government offices, civic and community facilities located in centres and where appropriate, detailed as landmark buildings are encouraged.

Other Guidance

Other State Government strategies may be relevant to development of Bentley-Curtin including:

- Affordable Housing Strategy – Opening Doors 2010-2020 (2012)
- *Better urban Water Management* (2008)
- *Designing Out Crime Guidelines* (2006)
- *Liveable Homes Initiative* (2011)
- *Public Parkland and Design Guide* (2014)
- *Visual Landscape Planning in Western Australia* (2007)

A2.4 Legislation

Western Australian legislation

Aboriginal Heritage Act 1972

The *Aboriginal Heritage Act 1972* is the State's principal legislation enabling the protection of Aboriginal cultural heritage.

Any development proposed on a site that has been assessed as a 'registered site' under Section 5 of the Act, any site awaiting assessment, or where there is insufficient information as to whether the Act applies, must be referred to the Registrar of Aboriginal Sites.

Biosecurity and Agriculture Management Act 2007

The purpose of the *Biosecurity and Agriculture Management Act 2007* is to provide effective biosecurity and agriculture management for the State. Crown Reserve 24727, the Department of Primary Industries and Regional Development site, was established for the purposes of the *Act*. A management order over Reserve 24727 imposes a condition that the land be utilised for the purpose of the *Biosecurity and Agriculture Management Act 2007*.

Under the *Land Administration Act 1997,* introduction of new land uses is at the discretion of the Minister.

Curtin University Act 1966

The *Curtin University Act 1966* establishes the university and gives the university council powers to control and manage the affairs, concerns and property of the university and matters related to the use of university land. Recent amendments to the *Act* have expanded the university's commercial ability, including to, with Ministerial approval, lease land for purposes not otherwise authorised by the *Act*. *Figure 50* shows current landholdings either owned, or vested in Curtin University.

Heritage of Western Australia Act 1990

The *Heritage of Western Australia Act 1990* provides for the conservation of places of cultural heritage to the State. Significant Places are entered in the Western Australian Register of Heritage Places. Any development (including demolition) proposed must be referred to the Heritage Council of Western Australia.

Industry and Technology Development Act 1998

Technology Park Bentley falls under the control of the *Industry and Technology Development Act 1998* (ITD Act). The ITD Act was established to encourage, promote, facilitate and assist the development of industry, trade, science, technology, and research in the State and to promote an environment that supports the emergence of internationally competitive industries. The ITD Act covers the area shown in *Figure 51*.

The Plan proposes changes in land use that may be dealt with through the ITD Regulations. The Minister for Commerce is responsible for the management of Technology Parks in Western Australia, including approval of businesses which may locate into the Park, approval of such an action is a decision of the Minister for Commerce. This may include modifying of the Technology Park boundaries and residential provisions.

Industry and Technology Development Regulations 1998

The *Industry and Technology Development Regulations 1998* provides for regulations to be made relating to buildings, the use of land and prohibiting certain activities on the land within the gazetted area of the ITD Act.

There are currently no regulations prescribed, however the administering department, assesses all development applications to ensure they are a use complementary to the purpose of the ITD Act.

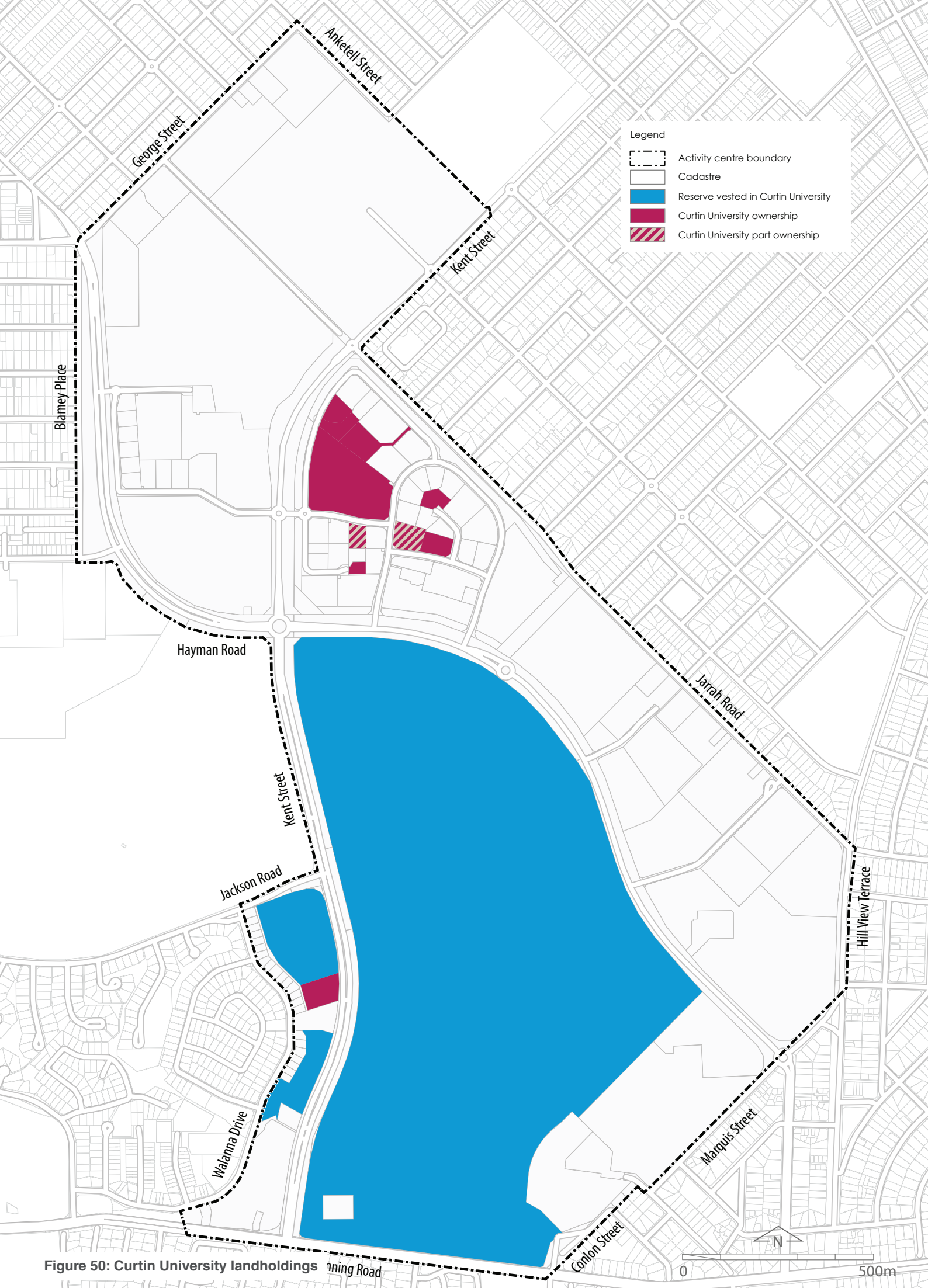


Figure 50: Curtin University landholdings

Land Administration Act 1997

A large proportion of Bentley-Curtin is Crown land. A significant portion is reserved under the *Land Administration Act 1997* and Metropolitan Region Scheme for parks and recreation, education, government requirements and special uses. These reserves are vested as follows:

- Reserve 27142 – Curtin University of Technology
- Reserve 29736 – VET (WA) Ministerial Corporation
- Reserves 29682 and 34031 – Water Corporation
- Reserves 25149 and 40478 – Minister for Education
- Reserve 31685 – Minister for Minerals and Petroleum
- Reserve 3694 – Town of Victoria Park.

Other crown reserves are vested in various Ministers and subject to management orders; usually by the administering government department.

Although this Plan identifies areas that may be suitable for other uses should government deem them surplus to requirements, any changes proposed for state land requires approval by the Minister for Lands.

Retirement Villages Act 1992

The *Retirement Villages Act 1992* covers the operation of retirement villages and is designed to protect the interests of residents and operators. The land is owned by the retirement village operator (whether by Freehold purchase or Crown Grant) and residents have long-term leases.

Vocational Education and Training Act 1996

The *Vocational Education and Training Act 1966* (VET Act) provides for vocational training in the State. Reserve 29376, South Metropolitan TAFE, is held for the purposes of this Act and vested to the Minister for Education.

School Education Act 1999

The *School Education Act 1999* provides for education, training and employment alternatives at the senior secondary level. Reserve 40478, Canning College is held for the purposes of this Act and is vested to the Minister for Education.

Should part of the site be considered surplus to requirements in the future, land may be excised from this Reserve and converted to freehold title along with Reserve 40478 (vested for purposes of student accommodation), if supported by the Minister for Education.

Environmental Protection Act 1986

The *Environmental Protection Act 1986* provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and incidental or connected matters.

Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* provides for the protection of the environment on Matters of National Environmental Significance (MNES). MNES may occur within the plan area including three Black Cockatoo species (*Calyptorhynchus latirostris, Calyptorhynchus baudinii and Calyptorhynchus banksii naso)*. Two of these species are known to forage remnant pine trees as a food source. Development may impact pine trees resulting in loss of cockatoo habitat.

Any proposal within the area where habitat for any listed species is proposed to be removed over one hectare must be referred to the Department of Environment for approval.

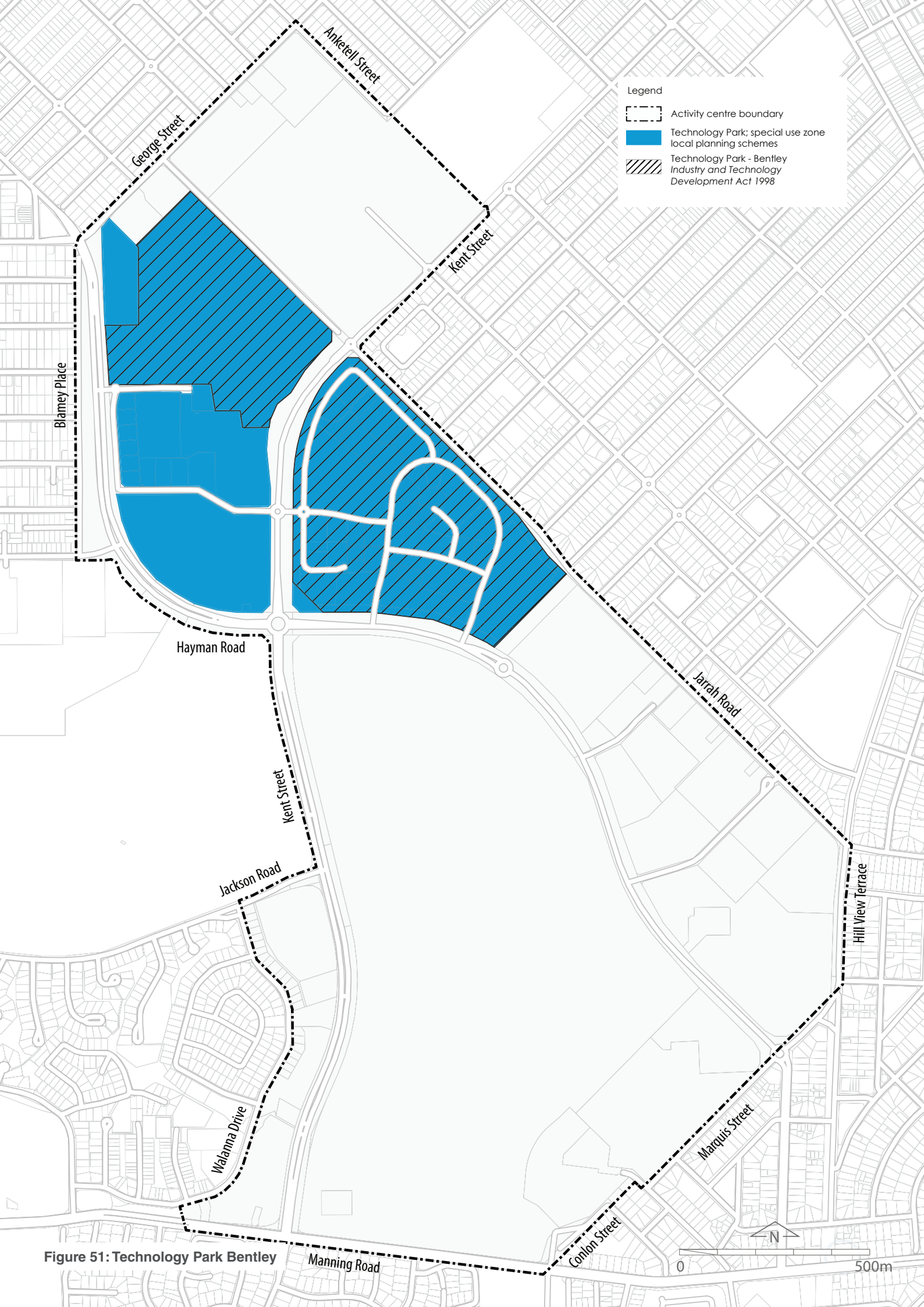


Figure 51: Technology Park Bentley

Appendix 3. Resources and References

A3.1 Resources and references

Consultation

In 2008 and 2009, the then Department of Commerce (formerly Department of Industry and Resources) prepared a draft structure plan for the Bentley Technology Precinct, an area larger than Bentley-Curtin. Extensive consultation undertaken with landowners, tenants and the wider community provided information utilised in this plan. This included modifying Bentley-Curtin's boundary.

During this Plan's preparation, Department of Planning, Lands and Heritage consulted with State and Commonwealth government agencies with landholdings within Bentley-Curtin. There are 14 State government and two Commonwealth agencies in Bentley-Curtin. Other organisations including Department of Water and Environment Regulation, Department of Lands (formally) and infrastructure servicing authorities were also consulted.

The project working group included officers from the Department of Planning, Lands and Heritage, Department of Transport, Public Transport Authority, City of South Perth, Town of Victoria Park, Department of Agriculture and Food (Now Department of Primary Industries and Regional Development) , LandCorp and Curtin University.

A 2014 survey of landowners and tenants of Technology Park-Bentley (east) conducted in conjunction with the Department of Commerce (formally) assisted in identifying future expansion aspirations and improvements to Bentley-Curtin.

Residents and landowners within Bentley-Curtin were advised that planning was underway; inviting those interested to contact the Department of Planning, Lands and Heritage. Meetings some private stakeholders occurred upon request. Issues arising out of consultation were:

- public transport
- parking
- footpaths
- no easily identifiable central area for social interaction within Technology Park
- lack of knowledge of other organisations that may provide synergistic business opportunities
- safety and security
- telecommunications
- lack of suitable accommodation, including residential, short-stay and hotel.

A web-page on the Department of Planning, Lands and Heritage's website informed the wider public of the project with an email address for queries.

Acronyms

AHD – Australian Height Datum
ASS – Acid Sulphate Soils
BREEAM – Building Research Establishment Environmental Assessment Method
CBD – Central Business District
CoSP – City of South Perth
CSIRO – Commonwealth Scientific and Industrial Research Organisation
DCS – Department of Corrective Services
DoC – Department of Commerce
DoE – Department of Environment
DoIR – Department of Industry and Resources
DoL – Department of Lands
DoP – Department of Planning
DoT – Department of Transport
DSR – Department of Sport and Recreation
EOT – End of Trip
GFA – gross floor area
LEED – Leadership in Energy and Environmental Design
MRS – Metropolitan Region Scheme
PTA – Public Transport Authority
R-Codes – *State Planning Policy 3.1 - Residential Design Codes*
SPP – State Planning Policy
STEM – Strategic Transport Evaluation Model
TEC – Threatened Ecological Community
ToVP – Town of Victoria Park

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