

7.2 Urban Elements

- Legible street network with integrated, but informal, public realm elements
- Medium scale-built form that imparts a country town feel, with built form 'civic gestures' at appropriate locations/junctions
- Defined focal point being both a town centre and a community space
- Pedestrian focussed main street, with 'accidental gaps', 'breezeways' and 'spaces for discovery'.
- The residential cells contained within the Precinct Plan will provide an 'Urban' housing option for the Town Centre. The Precinct Plan shows a lot yield of approximately 385 lots / dwellings with Terrace housing (rear laneway) predominantly located adjacent the major north-south road (Neighbourhood Connector A). The urban lot sizes range mainly from 180m² to 350m². (R40 – R60)
- Based upon the delivery of approximately 385 lots the town centre will generate a resident population of 1116.

7.3 Design Principles

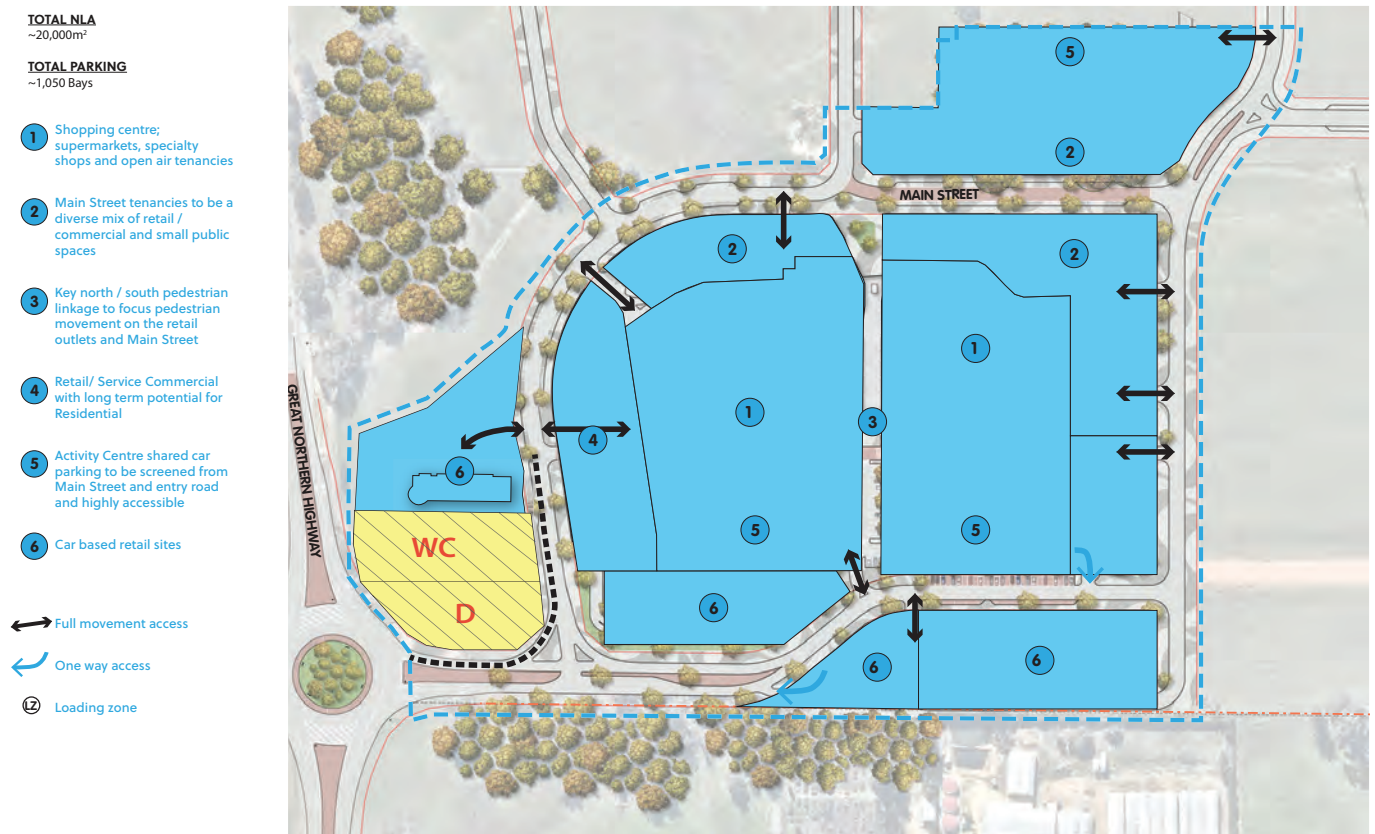
Building designs are suitable for a mix of (potentially interim) uses, with parking on street and within shady carparks.

- Streets oriented and sized for connectivity and socialisation
- High standards of built form that activate streets, 'pocket' spaces and 'breezeways'
- Quality pedestrian environment on all streets with trees + shade
- Quality 'civic gestures' / built form terminating key vistas
- Varietal but authentic 'country town' materiality and roof forms.

7.4 Landscape Principles

- Broad canopy street trees (including potential for some retained mature trees) to provide suitable pedestrian and alfresco spaces
- Shaded and textured pavements to create a comfortable and interesting street environment

Figure 15: Built Form



8.0 Movement

The surrounding road network has been designed to direct car movements towards the Town Centre. The Bullsbrook Central Structure Plan established a North-South 'Activity Corridor' (Neighbourhood Connector) to provide a central spine for activity and movement within the town centre. In addition, the existing Chittering Road has been re-aligned to access the estate north of the Town Centre. As a result, the Town Centre will benefit from an interconnected and legible road network that has been designed to accommodate the projected traffic volumes.

The road network has been designed to accommodate all required users including pedestrians and cyclists.

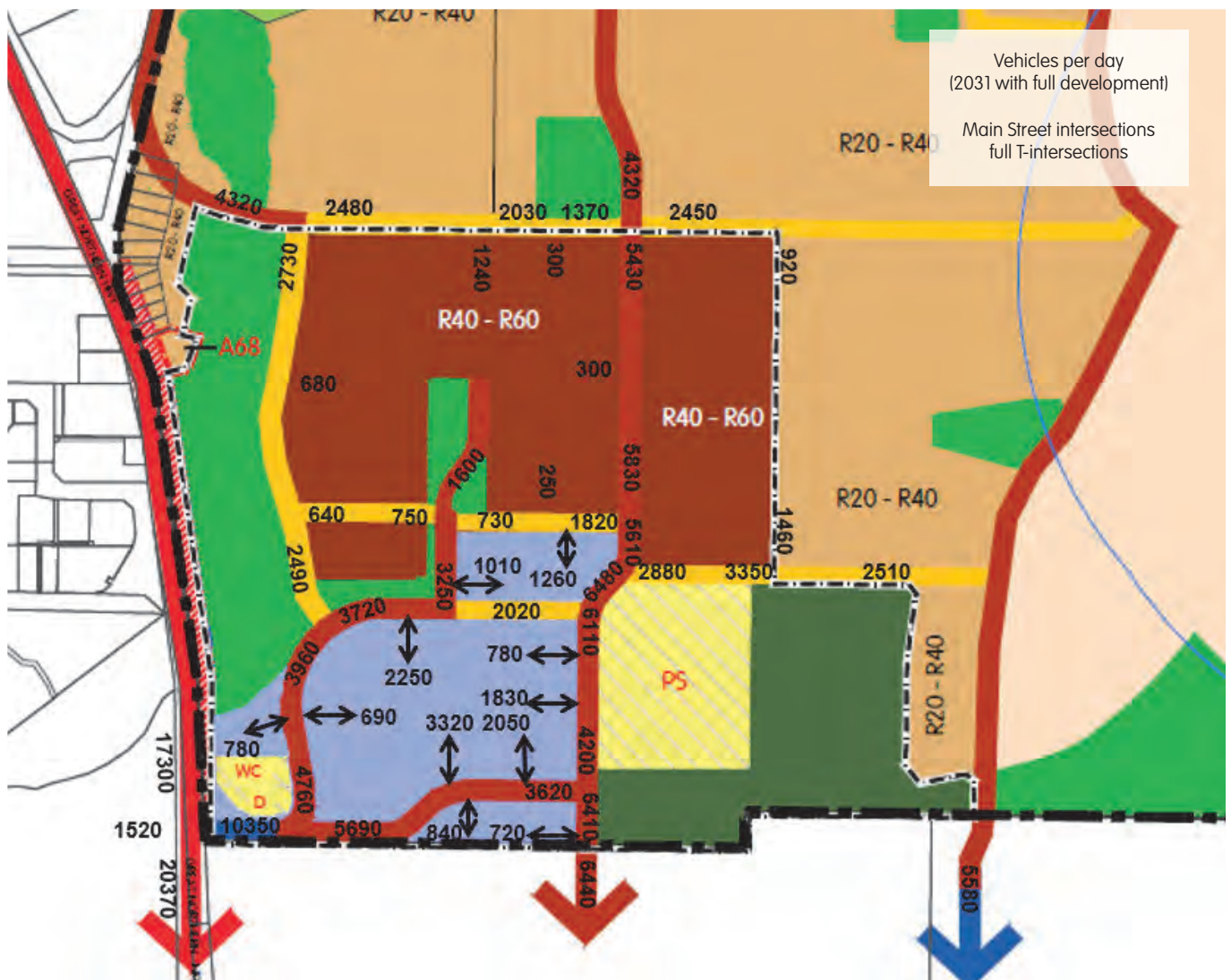
8.1 Vehicle Movement

The Town Centre will be serviced by three key roads being;

- Entry road from Great Northern Highway (Neighbourhood Connector)
- North – South Activity Corridor Road (Neighbourhood Connector)
- Main Street

A Transport Impact Assessment Addendum - Kingsford Town Centre Precinct Plan (Transcore June 2021) Appendix B assessed the operation of the road network and intersections. This traffic assessment shows the proposed PP area has been designed to accommodate the projected traffic volumes via an interconnected road network. The distribution of traffic volumes corresponds to road hierarchy and will provide for a functional town centre that can deliver a quality public realm and Main Street and commercially viable retail sites. (Refer Figure 16 projected traffic volumes).

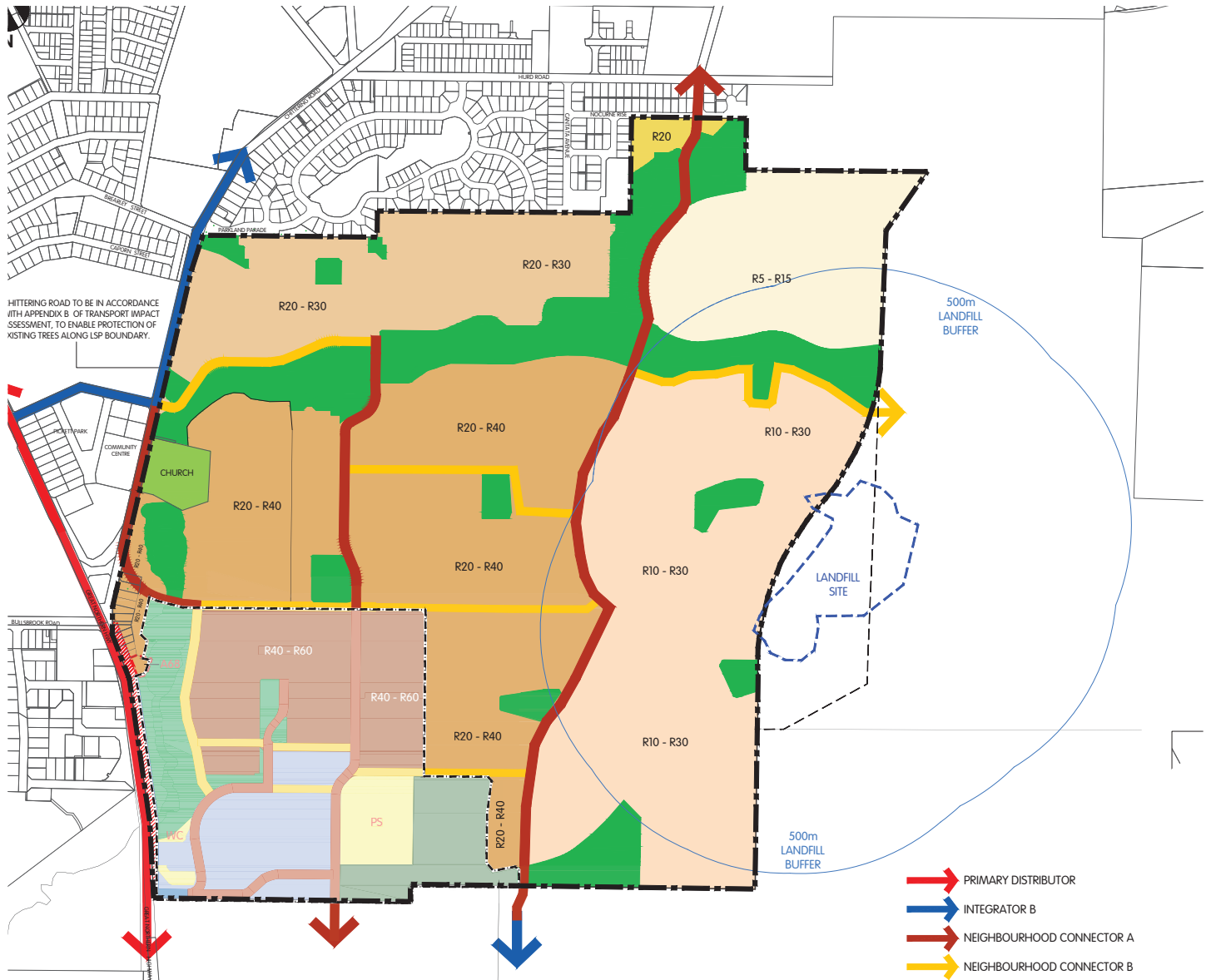
Figure 16: Projected Traffic Volumes



8.2 Road Hierarchy

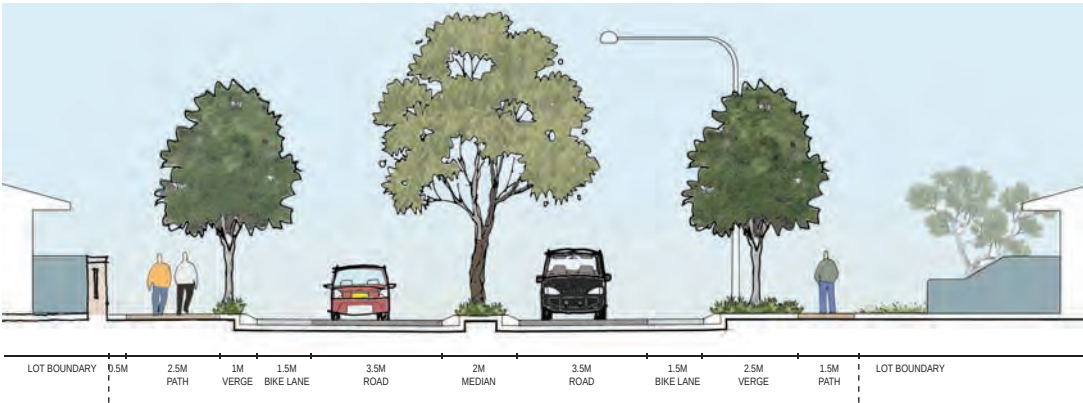
All roads and intersections have been planned in accordance with the principles of Liveable Neighbourhoods (Figure 17). A description on each of the proposed roads to service the Town Centre including a preferred cross section is provided below.

Figure 17: Road Hierarchy

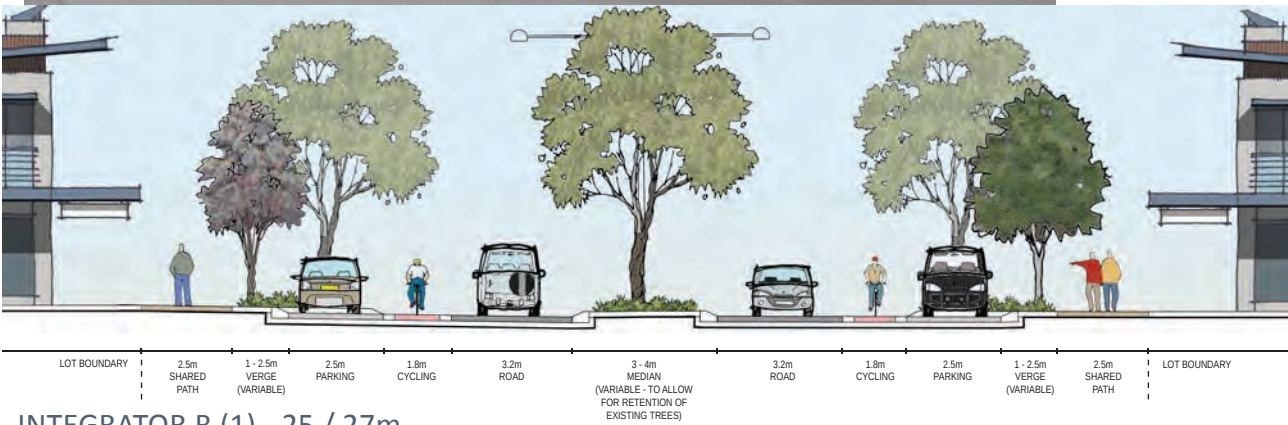


8.2.1 Integrator B

The Integrator B road will operate from the round-a-bout on Great Eastern Highway to the Town Centre, connecting to two Neighbourhood Connector roads. This road is expected to have a road design and width in accordance with Liveable Neighbourhoods. The design may consist of a cross-section between 25 -27m as shown below. The final cross-section may be reduced if parking is not provided both sides or is embayed. The final cross-section will be designed in consultation with the City of Swan.



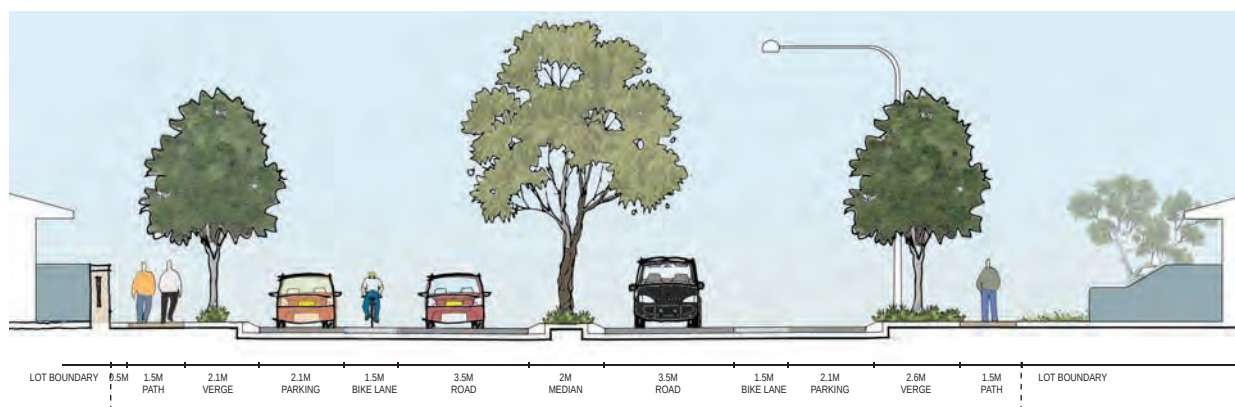
INTEGRATOR B (2) - 20m



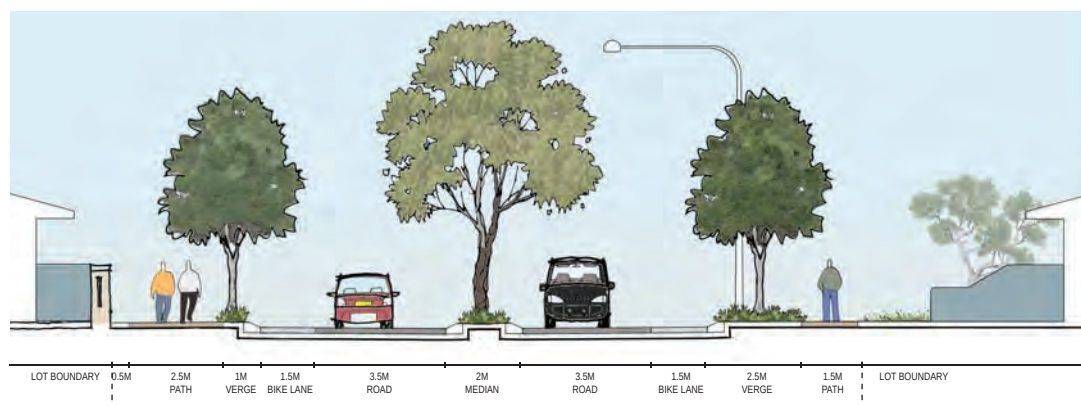
INTEGRATOR B (1) - 25 / 27m

8.2.2 Neighbourhood Connector A

The Neighbourhood Connector A roads will be located adjacent the core retail area / shopping centre and consist of a 7.1m carriageway which incorporates 2.1m on-street parking, a 1.5m cycle path and 3.5m trafficable pavement. A 4.1m verge is provided which may be reduced if parking is not provided both sides or if parking is embayed. This scenario may occur adjacent the POS on the western boundary and the north-south road located between the retail and primary school. These modifications would result in a 20m road reserve for the Neighbourhood Connector A. Both cross-sections are provided below. A final cross-section will be designed in consultation with the City of Swan.



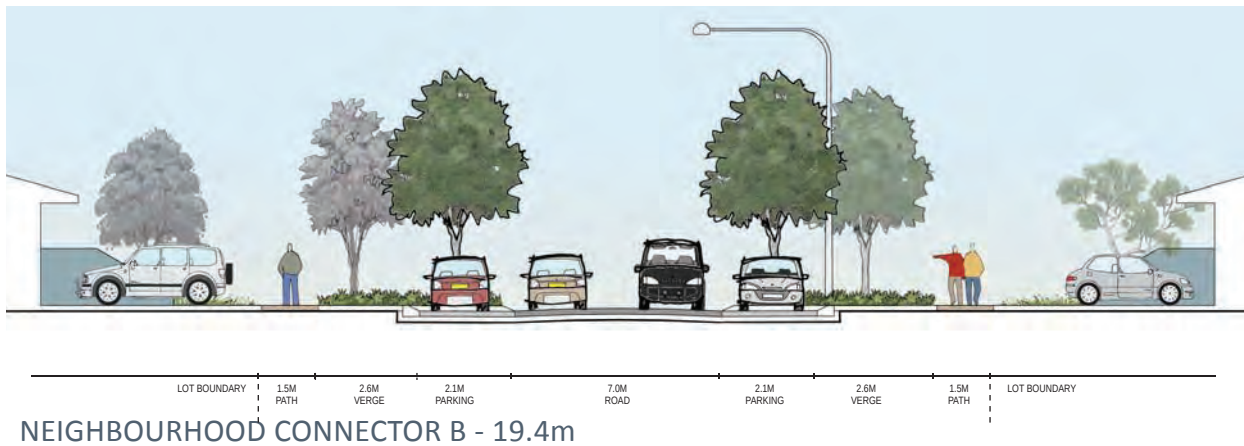
NEIGHBOURHOOD CONNECTOR A (2) - 24.4m



NEIGHBOURHOOD CONNECTOR A (1) - 20m

8.2.3 Neighbourhood Connector B

The Neighbourhood Connector B road comprises the east-west Main Street and key subdivisional roads within the residential cells in the Precinct Plan. The road design will generally incorporate a 19.4m cross-section which comprises a 7m wide trafficable pavement and 6.2m wide verges on both sides which incorporate on-street parking, footpath and landscaping. Alternatively, a reduced trafficable pavement width of 6m may be proposed and offset with a median strip and /or additional landscaping as well as footpaths on both sides of the street for the Main Street. The cross-sections is provided below. A final cross-section will be designed in consultation with the City of Swan.



9.0 Servicing

A servicing report has been prepared by the project engineers JDSI in support of the Precinct Plan and confirms all services can be provided or extended to service the proposed development. (Refer Appendix F - JDSI Servicing Report).

10.0 Public Open Space

The Kingsford Town Centre is wholly contained within the Precinct Plan boundary which comprises an area of 47.28ha. Allowing for deductions of non-residential uses the Precinct Plan has a nett area of 27.06ha. The Precinct Plan proposes a total of 4.42ha of the POS. The breakdown calculation is provided below. The POS provided in the Precinct Plan exceeds the required minimum of 10% POS.

Gross Precinct Area					47.28ha	
Deductions						
District Open Space					6.06ha	
Primary School					3.50ha	
Commercial / Retail					8.40ha	
Conservation / Wetland					2.26ha	
Total					20.22ha	
Net Precinct Area					27.06ha	
10% POS					2.71ha	
POS Area	1:1 year drainage	1:5 drainage	Restricted POS	Unrestricted POS	Total	%
A	1,331m ²	1,331m ²	-	0.3969ha	0.53ha	
B	-	-	-	0.15ha	0.15ha	
C	240m ²	260m ²	20m ²	0.346ha	0.37ha	
D	753m ²	753m ²	-	2.8647ha	2.94ha	
Total	0.2324ha	0.2344ha	20m ²	3.7576ha	3.99ha	14.7%

Figure 18: POS Plan



APPENDIX A

Retail Demand Analysis

MACROPLAN (SEP 2019)

Kingsford Town Centre, Bullsbrook

Retail demand analysis – Summary report

PREPARED FOR **Okeland Communities**

September 2019

macroplan

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Executive summary

Context

Okeland Communities is developing the Kingsford residential estate, a masterplanned community located within Perth's north-east growth corridor at Bullsbrook, 35 km from of the CBD. As part of the estate, which is expected to yield 2,500 dwellings at capacity, the Kingsford Town Centre is planned be developed, the scale and timing of which is the subject of this report.

Trade area population

A trade area has been defined for the Kingsford Town Centre, which includes Bullsbrook and the surrounding area. The main trade area population is estimated at 8,680 residents at 2019, and is forecast to reach almost 22,000 residents at 2041, reflecting an average annual growth rate of 4.3% over the forecast period.

Retail expenditure

Retail spending within the trade area is expected to increase from an estimated \$127 million currently to some \$498 million by 2041, reflecting average annual growth of 6.4%.

Spending on food, liquor and groceries (FLG), the main expenditure category for supermarkets, is projected to increase from \$59 million in 2019 to \$237 million at 2041, reflecting an average annual growth rate of 6.5%.

Competition

There is a limited provision of retail facilities currently within in the surrounding area, which is commensurate with the generally outer metropolitan/rural population levels in the area. Bullsbrook SC, located opposite the Kingsford Town Centre site on the western side of the Great Northern Highway, is anchored by a small IGA supermarket of around 500 sq.m and contains a number of shops.

Ellenbrook Central is the closest sub-regional shopping centre to the Kingsford residential estate, located approximately 18 km to the south west. The centre is comprised of around 35,000 sq.m of retail floorspace and is anchored by a Big W discount department store as well as Woolworths, Coles and Aldi supermarkets. The centre would currently be serving the weekly food and grocery, as well as higher-order, shopping needs of trade area residents. The centre is currently being expanded to add a Kmart discount department store and 20 new shops.

Retail floorspace demand and centre potential

Our analysis indicates that as early as 2023, a neighbourhood centre type offer is supportable at the subject site, including a full-line supermarket (of at least 3,000 sq.m), as well as a small provision of supporting fresh food specialties and non-food convenience-oriented specialty stores. The supermarket would be well placed to serve future residents of the Kingsford residential estate as well as residents currently living in Bullsbrook. Consequently, our analysis suggests that there does not need to be significant development at the Kingsford estate before a neighbourhood centre type offer is supportable at the Kingsford Town Centre site. Rather, there is near sufficient demand from the existing residents in the area to support a full-line supermarket. It is likely that the development of the Kingsford Town Centre early on in the development timeline of the estate would act as an attractor of future residents.

The amount of supportable floorspace will substantially increase as the main trade area continues to be developed. The retail floorspace demand analysis indicates that the Kingsford Town Centre could support an expansion of around 1,500 sq.m – 2,000 sq.m in floorspace, at around 2028/29, some 5-6 years after a potential Stage 1 development. The supportable FLG floorspace at this date is estimated at around 5,500 sq.m, which is considered adequate to support a full-line supermarket, a large fresh food produce store and a range of supporting FLG specialty shops.

Overall, the subject site presents an excellent opportunity for a neighbourhood centre anchored by a full-line supermarket by 2023, supported by a range of retail shops and non-retail uses. As the population of the area continues to grow over the forecast period, the centre would be able to be expanded to serve the growing needs of the community.

Ultimate capacity and site requirements

Once the growth areas around Bullsbrook are well established in around 20-30 years, the Kingsford Town Centre could potentially accommodate an estimated 21,800 sq.m of total floorspace, including retail, non-retail, large format and external uses. At this scale, an estimated 5.5 - 6 hectares of land would be required to meet the requirements for centre floorspace, carparking and circulation spaces to create a modern, inviting and convenient shopping destination.

Introduction

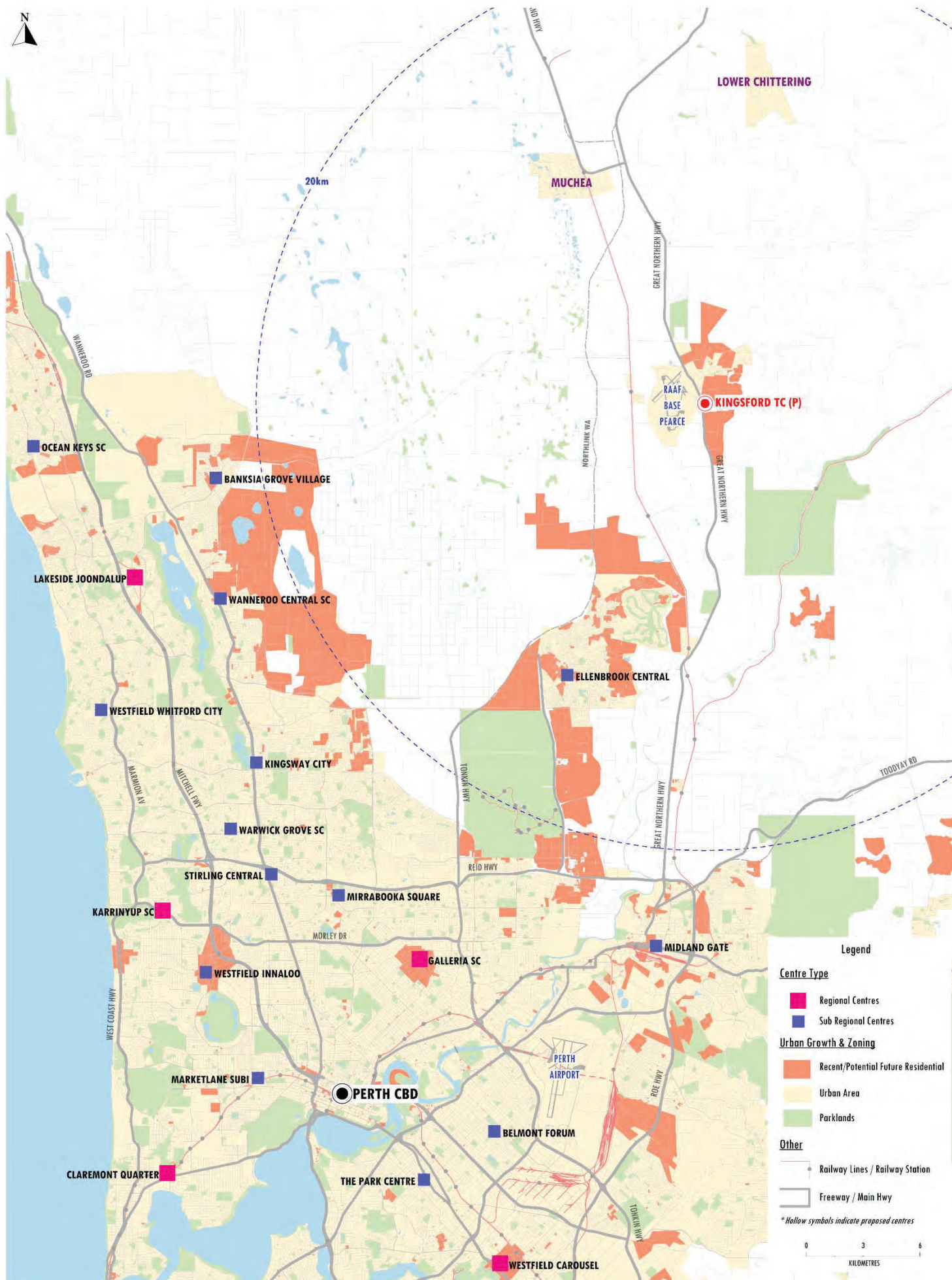
This is a summary report of a retail needs assessment prepared by this office for a future town centre development at the Kingsford residential estate, a masterplanned community located within Perth's north-east growth corridor, 35 km from of the CBD. The purpose of this assessment is to examine the potential scale and timing of a future Town Centre at the subject site.

The report has been prepared under instructions from Okeland Communities and presents an overview of the Kingsford Town Centre site, including its planning context, location and accessibility, and summarises the key facets of the Kingsford development.

Site location

Okeland Communities is developing the Kingsford residential estate, a masterplanned community located within Perth's north-east growth corridor at Bullsbrook, 35 km from of the CBD (refer Map 1.1). As part of the estate, which is expected to yield 2,500 dwellings at capacity (refer Figure 1.1), the Kingsford Town Centre is planned to be developed. The site is designated as a District Centre in the City of Swan Commercial and Local Activity Centres Strategy, and the Town Centre is expected to serve as the main food, groceries and convenience-oriented needs of residents in the surrounding area, as well as potentially contain some higher-order shopping facilities in the longer term. The scale and development timing of the future Kingsford Town Centre is the subject of this report.

The Kingsford Town Centre site is located on the eastern side of the Great Northern Highway (refer Map 1.2), opposite an existing provision of retail in Bullsbrook on the western side of the highway, which is anchored by a small IGA store. The Great Northern Highway provides access to the Perth CBD to the south-west (via the Great Eastern Freeway at Midland and Guildford Road) and the rural and remote areas of northern Western Australia to the north. Regional access to the Kingsford Town Centre site will be further improved by the completion of the northern section of NorthLink WA, which will connect Bullsbrook to Muchea to the north and to Ellenbrook to the south. The road has been in construction since early 2017 and is expected to be completed in late 2019, with an interchange provided at Bullsbrook on Neaves Road.



Map 1.1: Kingsford Town Centre, Bullsbrook Regional context



Masterplan

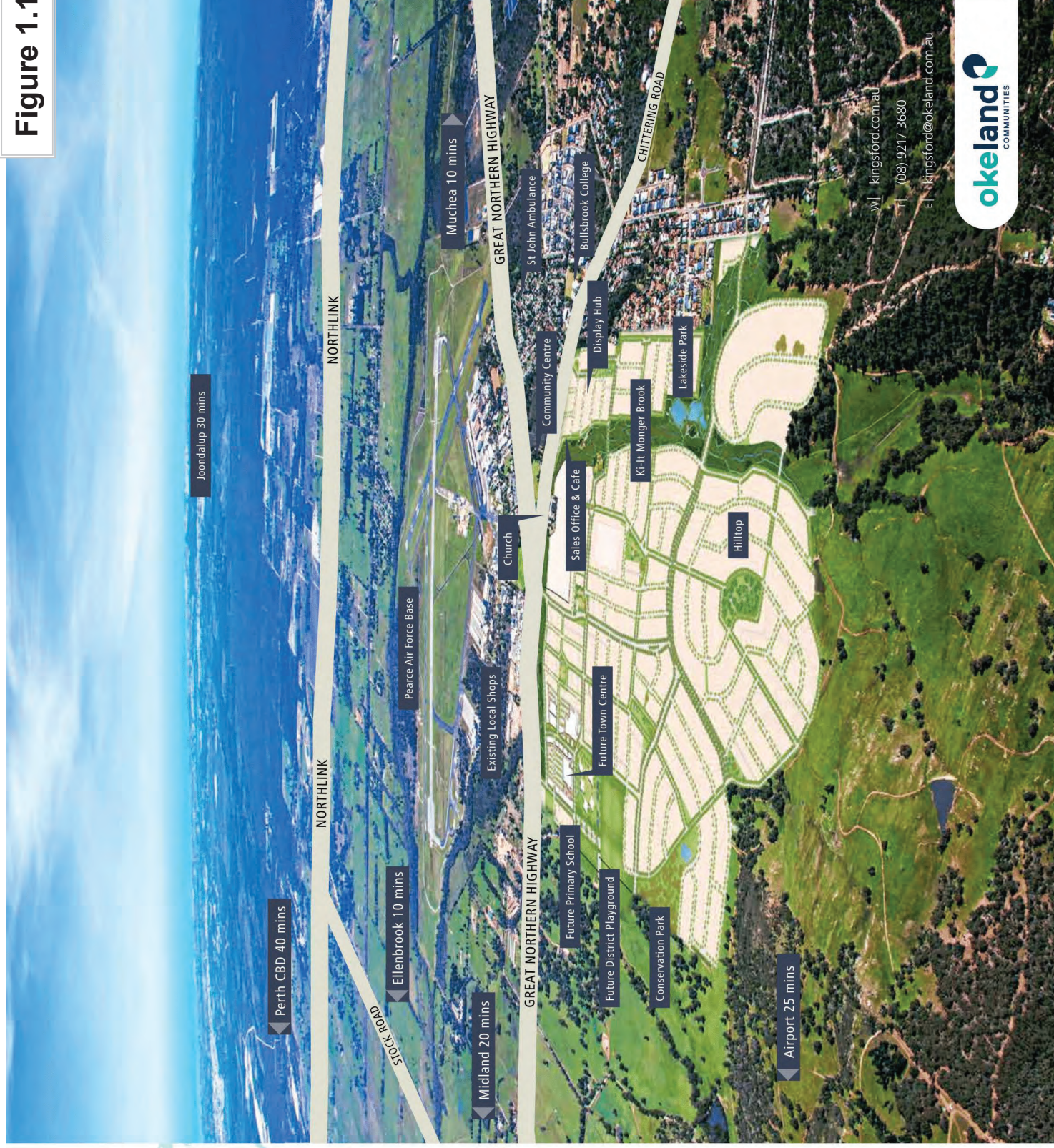
Kingsford at Bullsbrook was planned from the ground up to be a great place to live.

Nestled within the awe-inspiring beauty of the Darling Scarp foothills, Kingsford offers an idyllic life. The larger than average blocks, parklands and leafy streets create a real feeling of space. The established township of Bullsbrook already provides existing shops, school and services, plus the new town centre will bring a fresh 'urban village' vibrancy to the region. Kingsford is very well connected with the Swan Valley and Chittering Valley nearby, plus new roads connecting to Ellenbrook, Midland and Joondalup. Great Northern Highway and the new Northlink will also make trips to the city and airport hassle-free.

Features

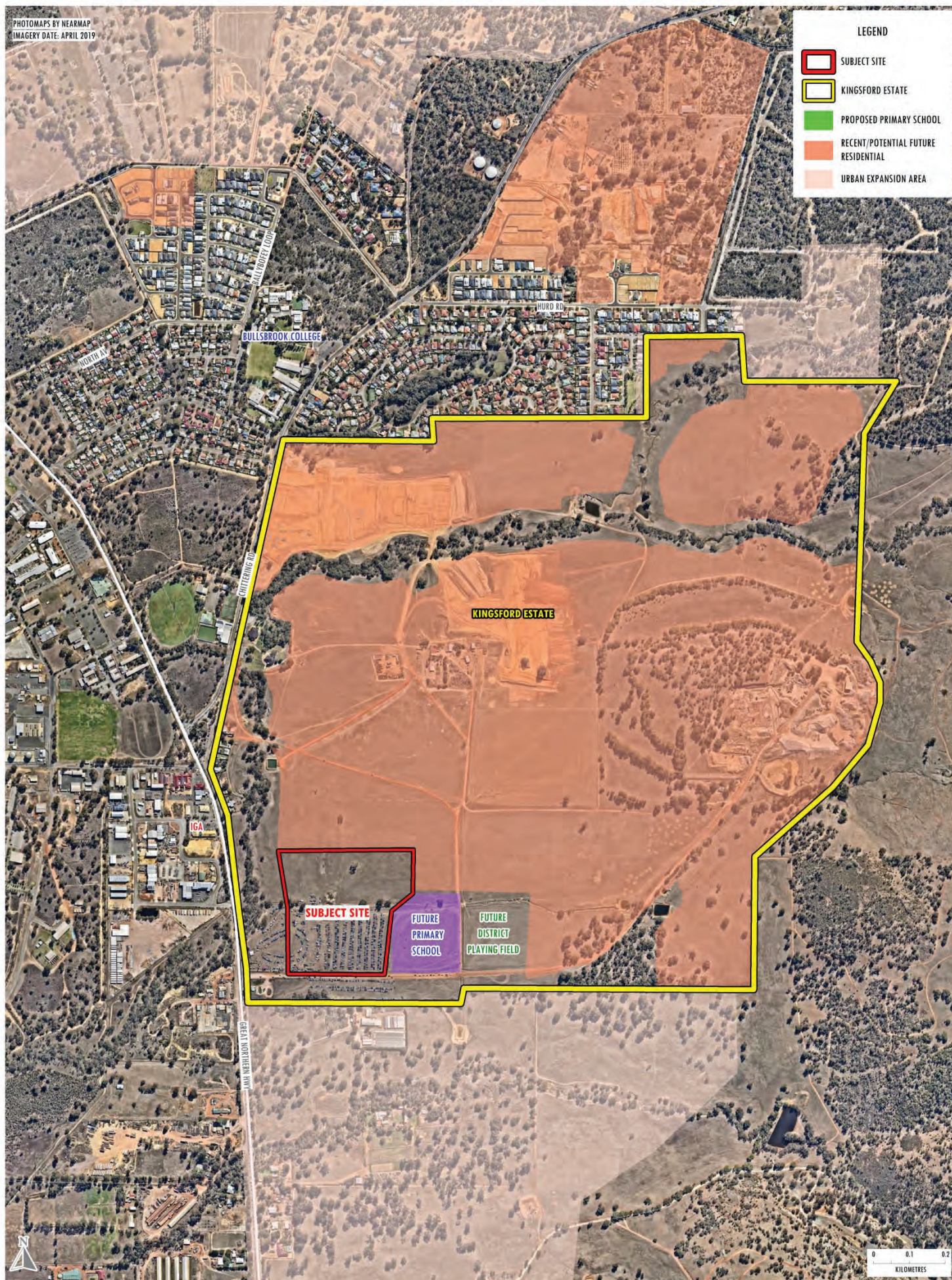
- 2,500 homesites upon completion
- Average lot size in excess of 500sqm
- Over 41ha retained public open space, creek lines, and manicured parklands
- Future Town Centre including a major supermarket, specialty stores, cafes and medical centre
- New school planned to complement existing primary and secondary schools
- New district level playing fields

Figure 1.1



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Map 1.2: Kingsford Town Centre, Bullsbrook
Site location

Planning context

This sub-section reviews the relevant planning documents for the future Kingsford Town Centre, which are briefly discussed below.

Activity Centres Policy for Perth and Peel

The *Activity Centres Policy for Perth and Peel* (the Policy) is a state planning policy (SPP 4.2), released in August 2010, for the planning and development of activity centres throughout Perth and Peel, and supersedes the previous Metropolitan Centres Policy.

The purpose of the Policy is to provide broad policy guidance to local governments, state agencies and other stakeholders on matters such as:

- The preferred spatial distribution for retail and commercial use;
- The planning and development of new activity centres;
- The redevelopment and renewal of existing centres in Perth and Peel; and
- The urban design considerations for new activity centres, and the associated transport and infrastructure provision.

In order to achieve its objectives, the Policy provides for a hierarchy of activity centres, which differentiates such centres and their planning principles in terms of their roles and functions within the overall network; their indicative retail catchments; and their housing density and mix of land uses. The key activity centre designations are summarised as follows:

- The Perth Capital City is the largest and highest ranking of the activity centres, providing the largest concentration of development in the region, with the greatest range of services and employment facilities.
- Strategic Metropolitan Centres – 10 such centres are designated, at Yanchep, Joondalup, Stirling, Morley, Midland, Fremantle, Cannington, Armadale, Rockingham and Mandurah. The Strategic Metropolitan Centres are the main regional activity centres, providing a diverse mix of economic and community uses for their extensive catchments. The inner north-eastern Perth region is serviced by one Strategic Metropolitan Centre, at Morley; while the north-western Strategic Metropolitan Centre is located at Stirling. Strategic Metropolitan Centres typically contain department stores, discount department stores, supermarkets and a full range of specialty shops.
- Secondary Centres – The Policy identifies 19 Secondary Centres, which are generally evenly distributed across the Perth urban area. Secondary Centres, similar to Strategic Metropolitan Centres, also offer a diverse range of services and facilities, including community and employment opportunities. Like Strategic Metropolitan Centres, Secondary Centres should encompass the capacity to contain department stores, discount department stores, supermarkets and specialty shops, however to a lesser scale than Strategic Metropolitan Centres.

- District Centres – A network of District Centres is designated throughout the Perth urban area. These centres are expected to focus on servicing the daily and weekly needs of residents within their local respective catchments. District Centres typically contain discount department stores, supermarkets, convenience goods, small scale comparison shopping, personal services and some specialty shops and should possess the scale and retail composition to serve between 20,000 – 50,000 residents.
- Neighbourhood Centres – Such centres are expected to provide local community hubs to service the day-to-day and weekly shopping needs of the residents in the surrounding area. The Policy does not provide the locations of the neighbourhood centres, but emphasises their important roles, which should be recognised in local planning strategies and structure plans. This is the likely designation of the subject centre, given the expected population levels and typically contain supermarkets, convenience shops and personal services.



Figure 1.2

Source: State Planning Policy 4.2 – Activity Centre for Perth and Peel

City of Swan Commercial and Activity Centre Strategy

The *City of Swan Local Commercial and Activity Centres Strategy*, (adopted in September 2017), which was completed by Essential Economics, outlines the roles and functions of existing activity centres within the municipality, and also guides the planning of future activity centres. The strategy notes that *'development of urban growth areas between Caversham in the south and Bullsbrook to the north has been underway over the past decade. Rapid urban development is expected to continue over the next 20 years or so. A network of activity centres will be required to meet the needs of existing and future residents in these areas'*.

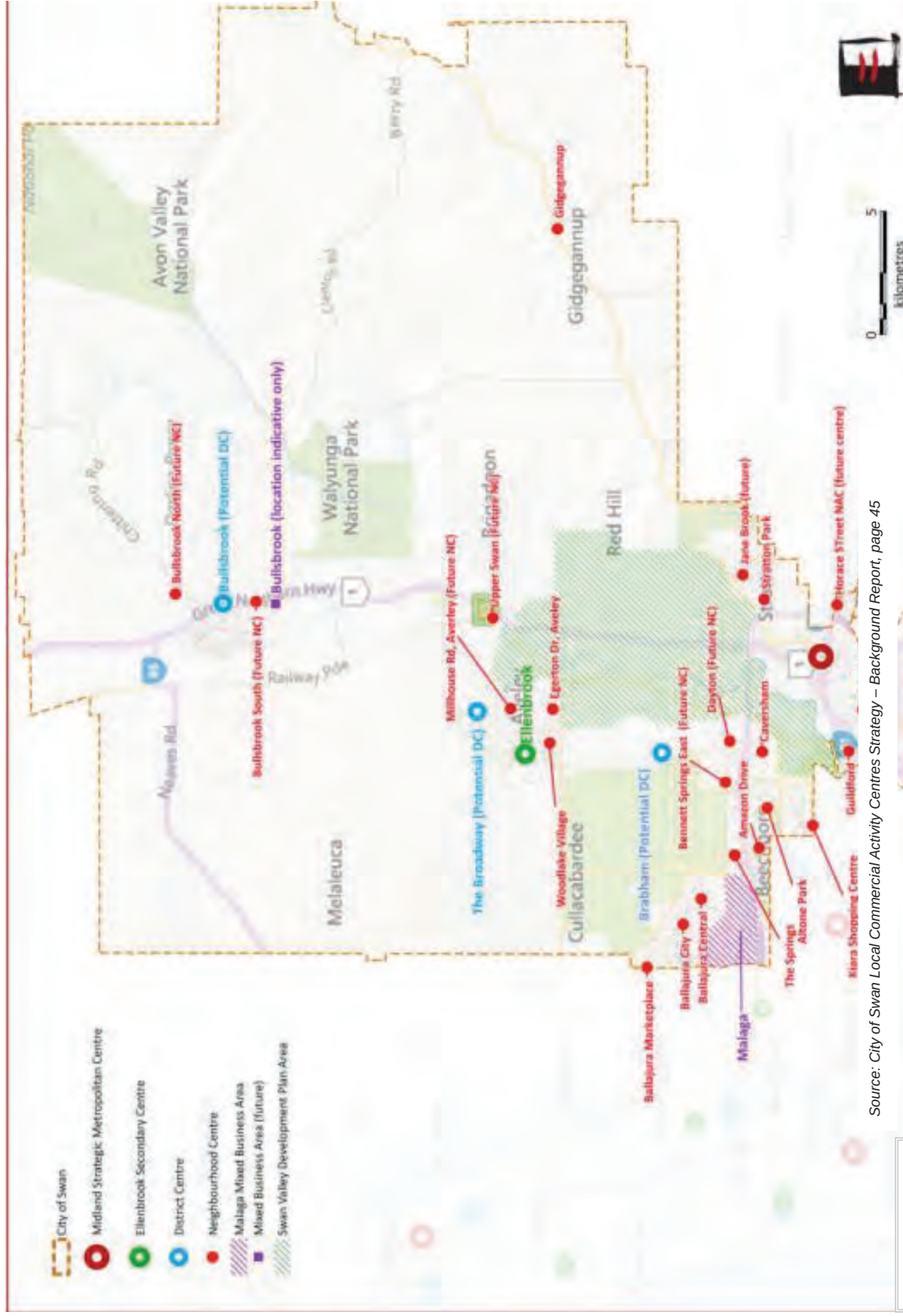
Figure 1.3 illustrates the existing and planned network of activity centres within the City of Swan. The subject Kingsford Town Centre site is designated as an 'emerging District Centre', and would therefore has the relevant planning authority to contain a discount department store, supermarket, convenience goods, small scale comparison shopping, personal services and specialty shops. The Activity Centres strategy tentatively notes that at 2031, the Bullsbrook emerging District Centre could support around 10,000 sq.m of retail floorspace,

Bullsbrook Townsite District Structure Plan

The Bullsbrook Townsite District Structure Plan (2018), is a strategy guiding the future development of Bullsbrook. The Bullsbrook local area is forecast to grow from a population of just over 6,000 in 2018 to over 16,000 at 2031 and 20,500 at 2036. The District Structure Plan therefore provides a framework to guide development to serve the growing community.

Figure 1.4 illustrates the areas of Bullsbrook designated for residential development, which combined are expected to yield around 6,600 new dwellings, accommodating an estimated 18,480 new residents over the long term.

A district centre and two supporting neighbourhood centres are planned to serve the population growth of Bullsbrook. The District Centre, the scale, composition and timing of which is the subject of this report, is expected to commence development within 'the western edge' to take advantage of exposure to the Great Northern Highway and provide a connection to the existing hub on the western side of the Great Northern Highway.



Source: City of Swan Local Commercial Activity Centres Strategy – Background Report, page 45

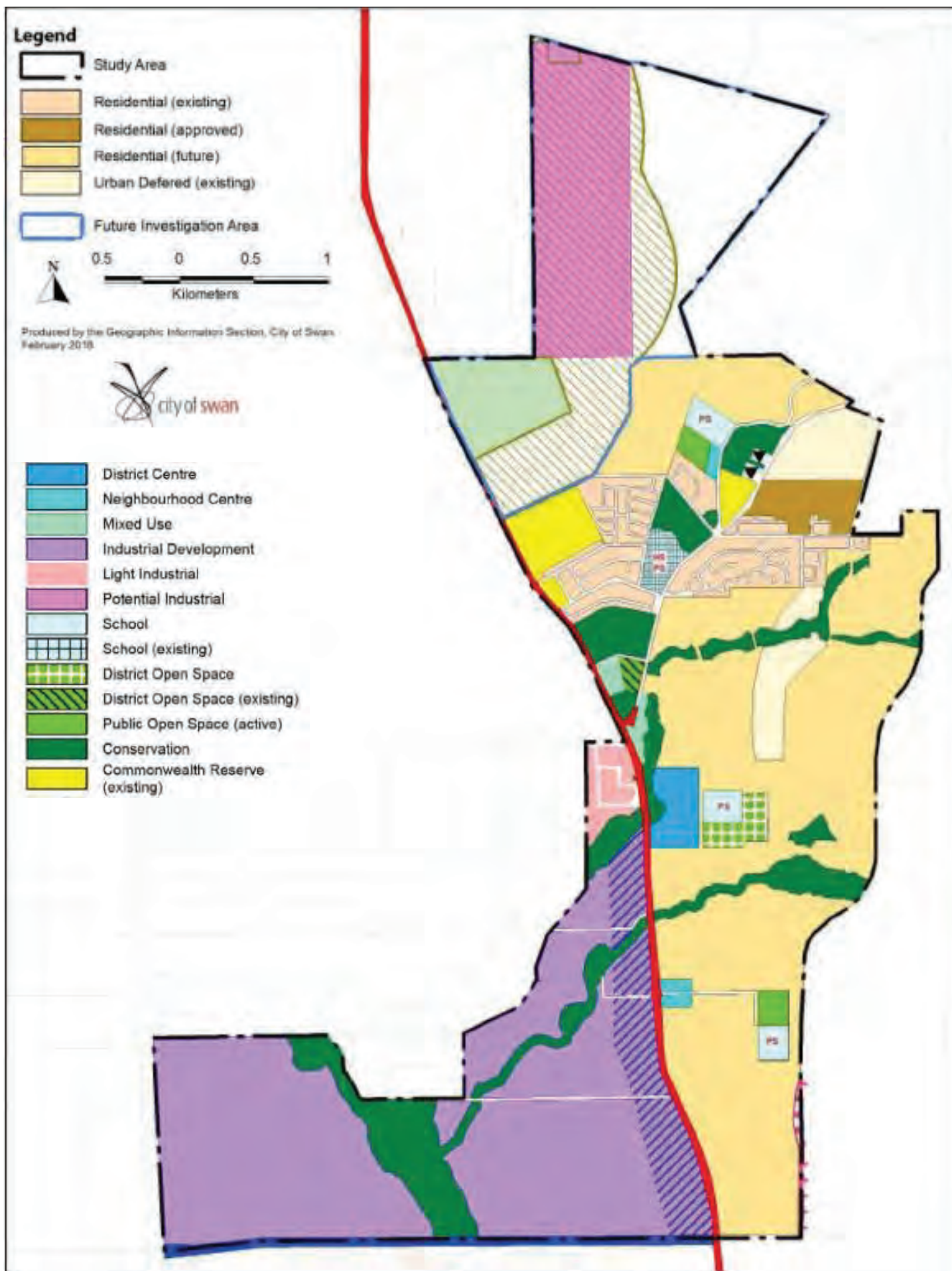


Figure 1.4 Bullsbrook Townsite District Structure Plan

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APPENDIX B

Traffic Impact Assessment

TRANSCORE (JULY 2022)



Bullsbrook Local Structure Plan

Transport Impact Assessment Addendum – Kingsford Town Centre Precinct Plan

PREPARED FOR:
Okeland Communities

July 2022

Document history and status

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1.0 Introduction

This Transport Impact Assessment Addendum has been prepared by Transcore on behalf of Okeland Communities with regard to the proposed Kingsford Town Centre Precinct Plan (PP) at Bullsbrook.

The proposed Kingsford Town Centre is located within a larger Kingsford Local Structure Plan (LSP) area at Bullsbrook in the City of Swan. Transcore prepared the Transport Impact Assessment (TIA) report for that LSP, which was last revised in February 2019. Therefore, this TIA Addendum provides revised and updated information for the overall LSP area in general and more detail in relation to the proposed Kingsford Town Centre PP.

The LSP area and PP area are located on the southeast side of the existing Bullsbrook townsite, as shown in Figure 1 in the context of existing Zones and Reservations in the Metropolitan Region Scheme.

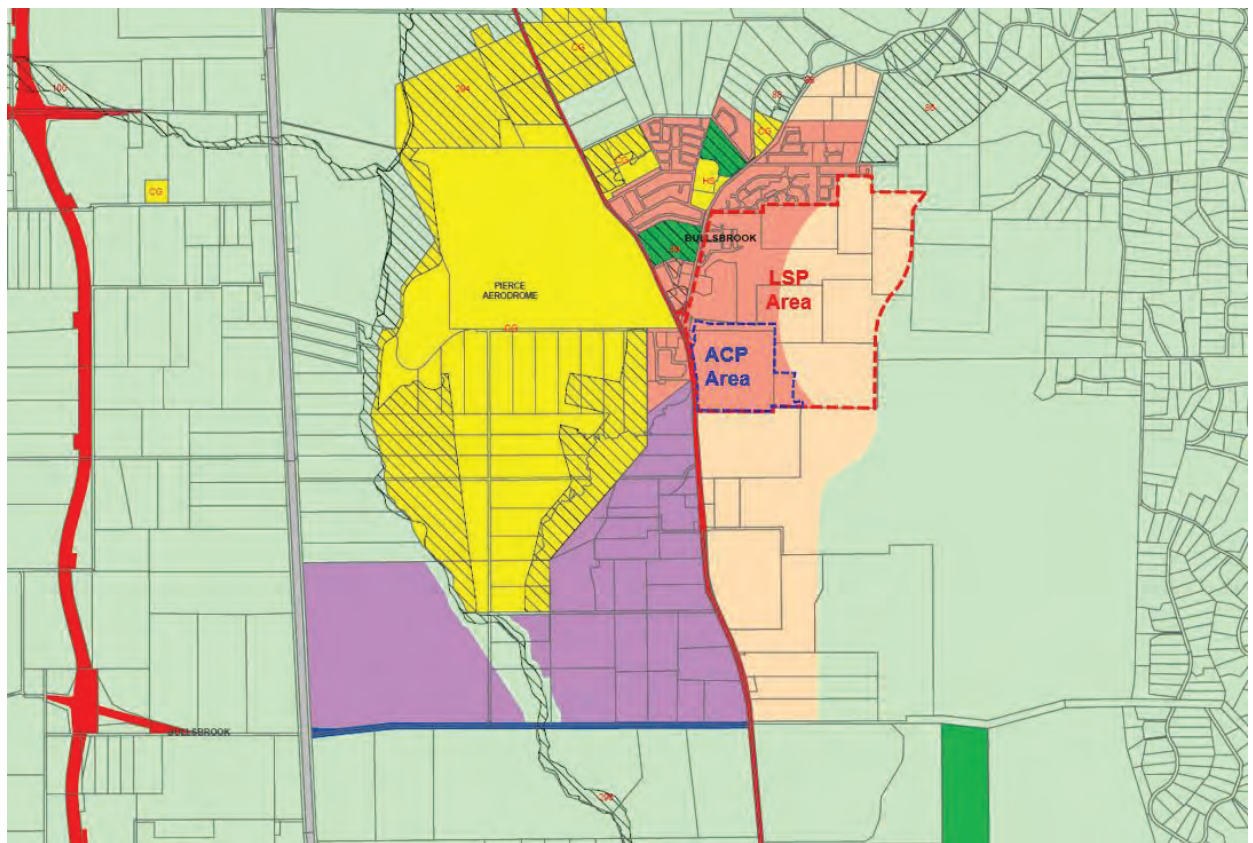


Figure 1: Site location

This report has been amended in July 2022 in accordance with the WAPC Schedule of Modifications for the Kingsford Town Centre Precinct Structure Plan dated 6 July 2022.

2.0 Proposed Precinct Plan

The proposed Kingsford Town Centre Precinct Plan (PP) and Kingsford Town Centre Conceptual Masterplan are included at Appendix A. The PP is also shown in Figure 2.

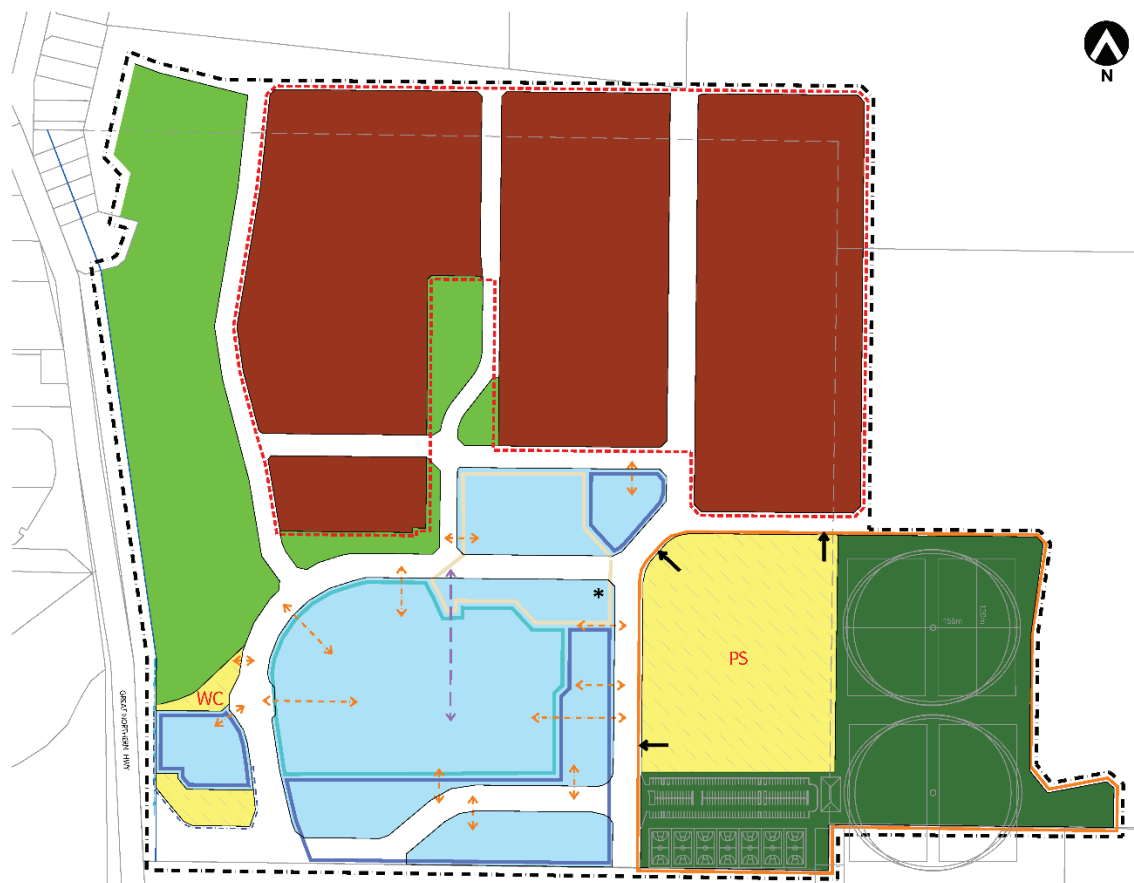


Figure 2: Kingsford Town Centre Precinct Plan

The PP incorporates the Kingsford Town Centre (blue), primary school site (yellow) and R40-R60 medium density residential land, as shown in Figure 2.

The Town Centre Masterplan allows for a centre of up to 20,000m² net lettable area of commercial floor space by 2031. The primary school has been modelled as up to 600 students and the R40-R60 residential zone is anticipated to accommodate 385 dwellings.

There are two north south spine road corridors proposed through the LSP area parallel to Great Northern Highway. One is an activity corridor on the eastern side of the Kingsford Town Centre, which would connect from Chittering Road in the north to Great Northern Highway at Lage Road. The other spine road is further east outside of the PP.

The PP includes an east west road connection through the proposed Kingston Town Centre from Great Northern Highway to the activity corridor on the eastern side of the Kingsford Town Centre. The intersection on Great Northern Highway is planned as a two-lane, 4-way roundabout, as detailed in the LSP TIA report.

3.0 Existing Situation

3.1 Existing Land Use

Existing land uses within the subject site are predominantly rural, plus a quarry on Lot 2792 accessed from Great Northern Highway, as shown in Figure 3. Residential subdivision development has commenced in the northwest corner of the LSP area with access from a new roundabout on Chittering Road.

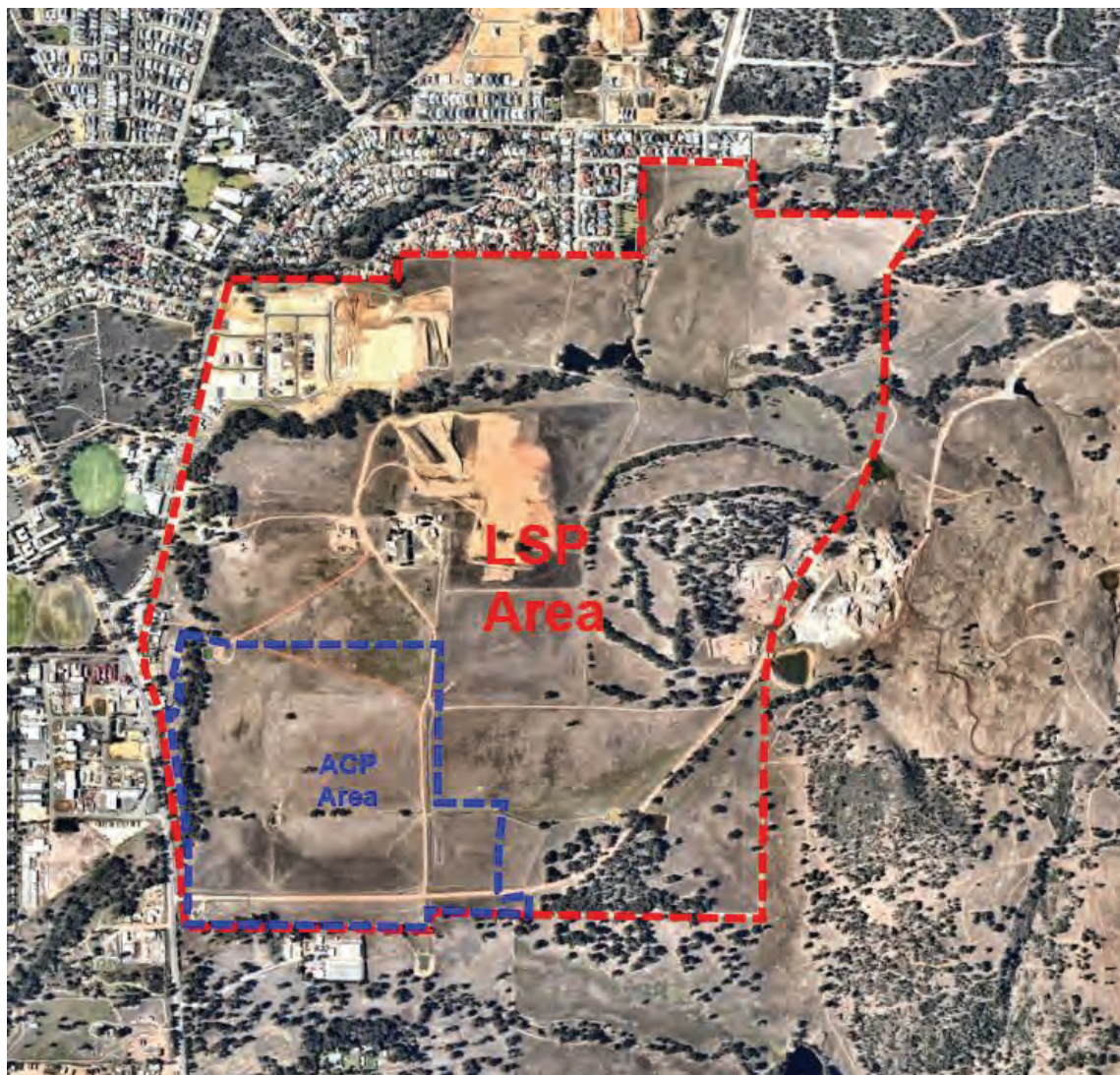


Figure 3: Existing land use

3.2 Existing Road Network

The existing road network and its classification in the Main Roads WA functional road hierarchy is illustrated in Figure 4.

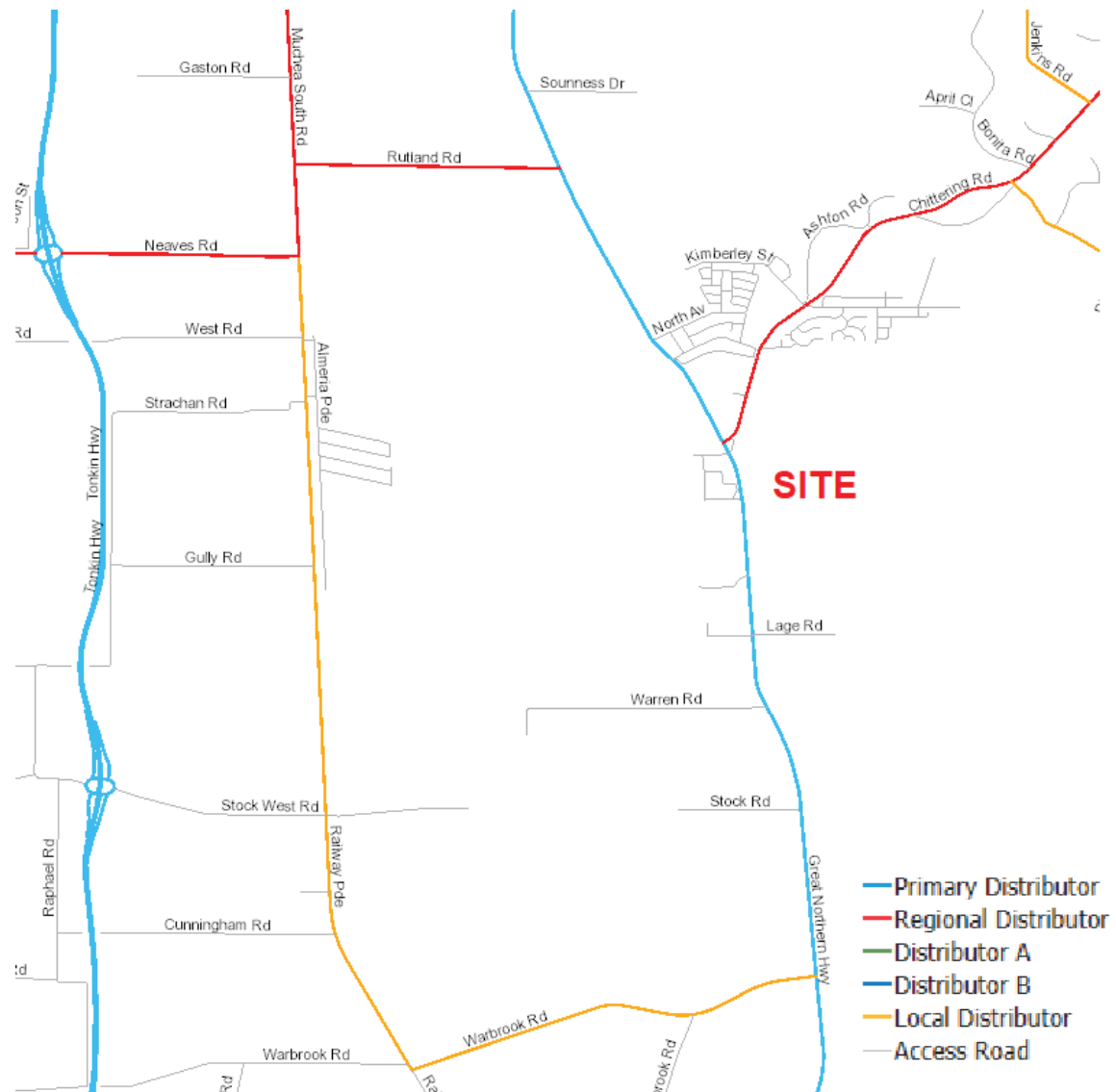


Figure 4: Existing road hierarchy

Great Northern Highway is constructed as a two-lane rural highway (without median) adjacent to the subject site. A painted median is added through the Bullsbrook town centre with traffic islands and right turn lanes at key intersections.

The posted speed limit on Great Northern Hwy is 60km/h through the Bullsbrook townsite and adjacent to the subject site but increases to 80km/h south of Butternab Road and 100km/h south of Lager Road, as shown in Figure 5.

Great Northern Highway is classified as a Primary Distributor in the Main Roads WA functional road hierarchy and is covered by a Primary Regional Roads reservation (a red road) in the MRS, as shown in Figure 1. It is a State road under the care and control of Main Roads WA.

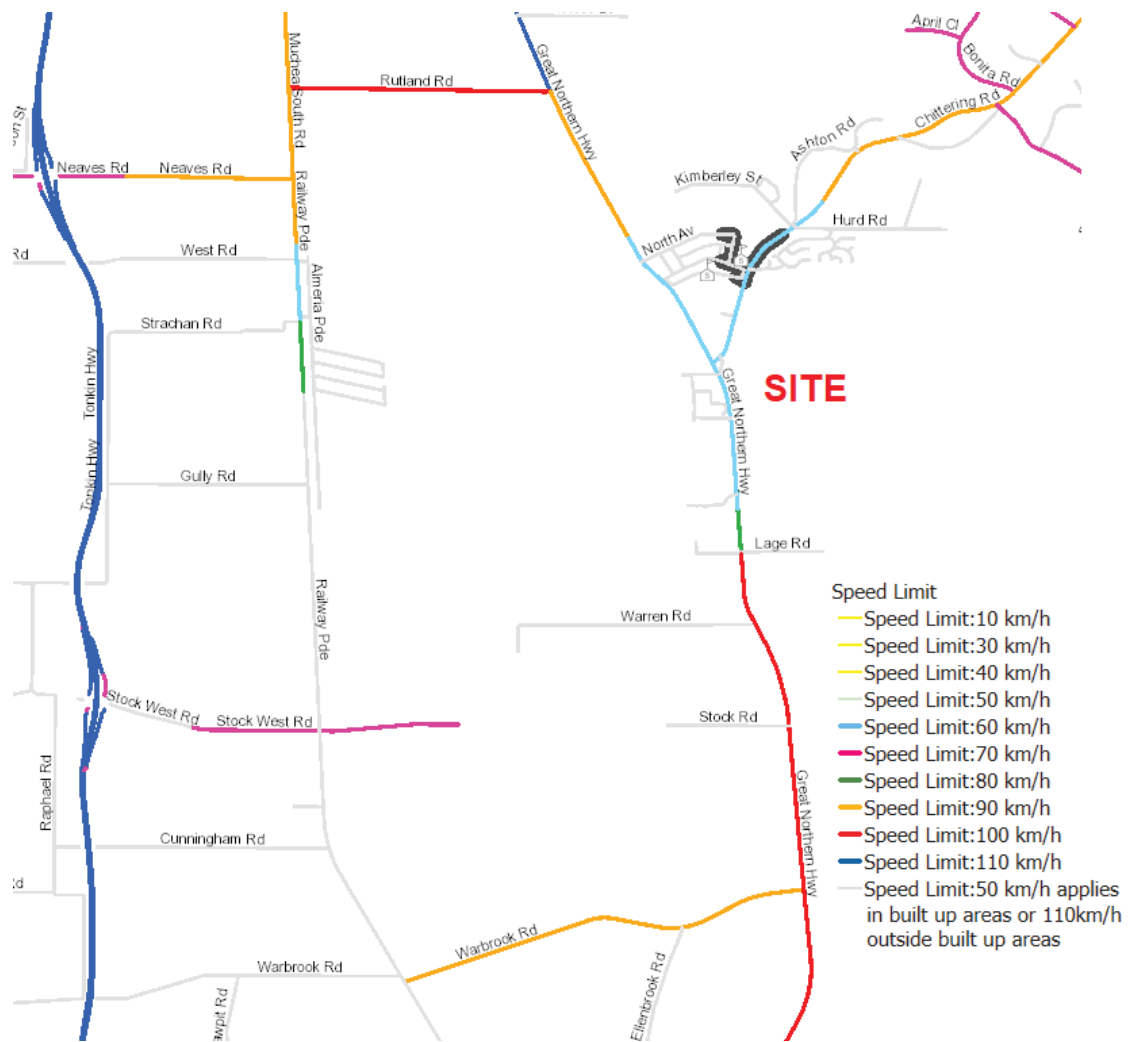


Figure 5: Existing speed limits

Chittering Road is constructed as a two-lane road 7.4m wide between kerbs within the Bullsbrook townsite and reverts to two-lane rural road standard northeast of Hurd Road.

It has a posted speed limit of 60km/h within the townsite and increases to 90km/h northeast of Hurd Road. A 40km/h school zone applies in the vicinity of the high school and primary school site before and after school hours on school days.

Chittering Road is classified as a Regional Distributor in the Main Roads WA functional road hierarchy. It is a local authority road under the care and control of the City of Swan.

A new 4-way roundabout has been constructed on Chittering Road to provide access to the new residential subdivision development within the LSP area. All other intersections along Great Northern Highway and Chittering Road in this area operate under priority control (i.e. Stop or Give Way control).

3.3 Existing Traffic Volumes

Existing average weekday traffic (AWT) volumes on the study area road network have been obtained from Main Roads WA and are summarised in Table 1. Traffic volumes on Great Northern Highway through Bullsbrook reduced significantly as a result of completion of the Tonkin Highway extension (NorthLink WA project) in April 2020.

Table 1: Existing Traffic Volumes

Road Name	Location	AWT (HV)	AM Peak	PM Peak	Date
Great Northern Hwy	North of Warbrook Rd	8,231 (15.2%)	636vph 0745-0845	760vph 1515-1615	2020/21
Great Northern Hwy	North of Rutland Rd	4,190 (20.9%)	329vph 0815-0915	405vph 1515-1615	2020/21
Chittering Rd	700m east of Great Northern Hwy	5,990 (13.6%)	522vph 0800-0900	585vph 1515-1615	2020/21

3.4 Heavy Vehicle Routes

Restricted Access Vehicle (RAV) Network routes are designated for access by large heavy vehicle combinations that require special permits for each trip. Main Roads WA manages the RAV Networks and the permits for trucks to use them. Figure 6 shows the roads that are permitted for use by RAV Networks 3, (light blue), 4 (dark blue), 5 (light green), 6 (dark green) and 7 (light purple) vehicles. RAV Networks 2, 3 and 4 permit access by a number of vehicle combinations up to 27.5m long and RAV Networks 5, 6 and 7 (which includes Great Northern Highway) extend this to vehicles up to 36.5m long including double road trains.

It should be noted that RAV Networks 2 to 7 on this section of Great Northern Highway now have the following condition imposed, since the Tonkin Highway extension (NorthLinkWA project) was opened in April 2020 and took over as the primary freight route in this corridor:

“This section of road must not be used as a through route. This section of road may be used as access to pick-up goods, deliver goods, or garage vehicles to properties located on this section of road, or on roads only accessible via this section of road. Drivers must carry documentation as proof of local delivery, pickup or garaging address.”

However, Great Northern Highway is still the high wide load route in this corridor, so even wider or higher vehicles and loads can be permitted.



Figure 6: Restricted Access Vehicles Network

3.5 Public Transport

The closest existing bus route to the subject site is Bus Route 311 (Midland Station – Bullsbrook), as shown in Figure 7.

Route 311 runs on Great Northern Highway adjacent to the subject site. It provides six bus services each way on weekdays and two on Saturdays, Sundays and public holidays.

Existing bus service times are primarily designed for journeys to and from work, school and other trips to and from Midland during business hours such as shopping or personal business trips.

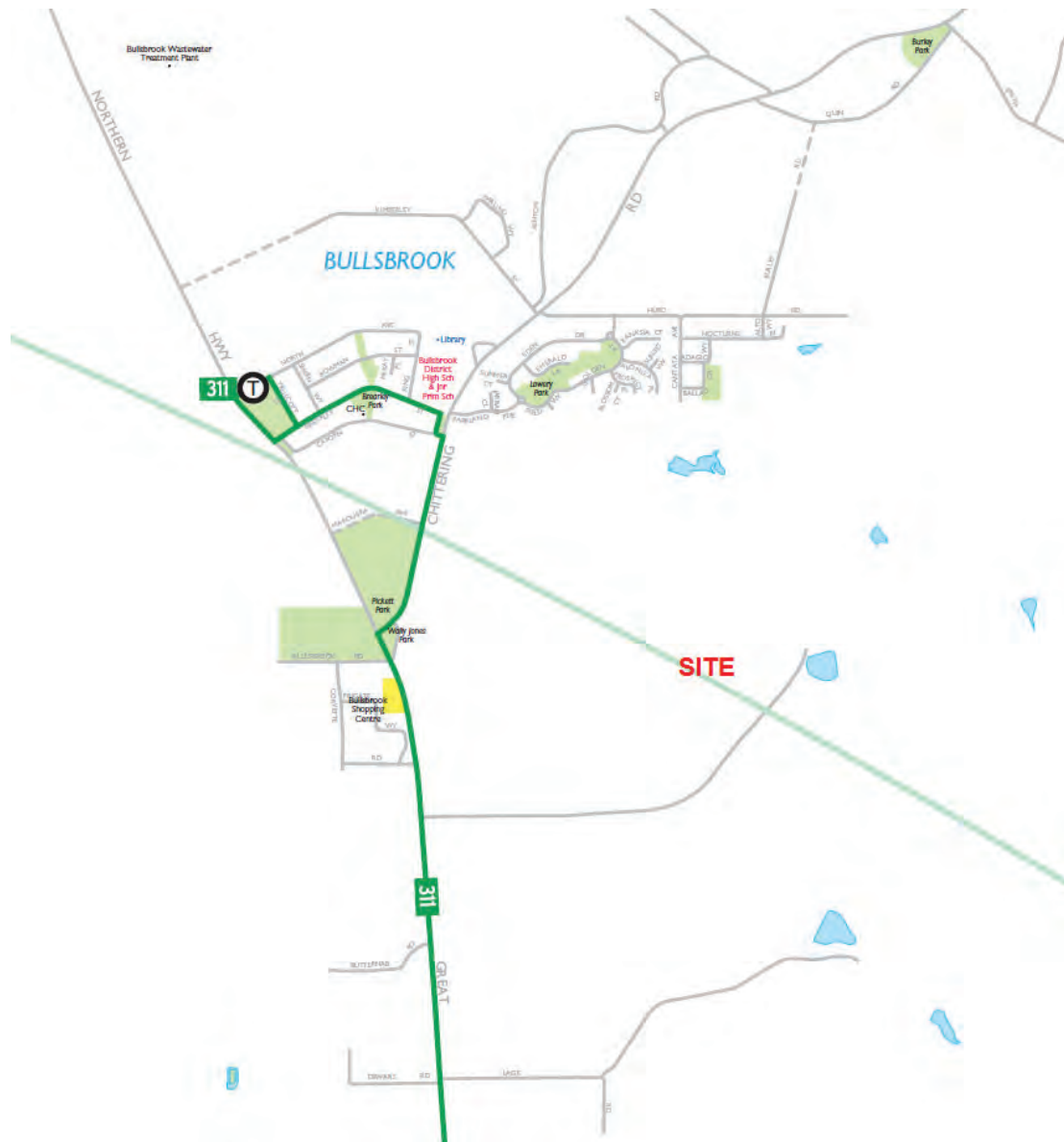


Figure 7: Existing bus routes

3.6 Pedestrian and Cyclist Facilities

A comprehensive path network is progressively being constructed as part of each stage of subdivision development within the LSP area.

There are no formal pedestrian or cyclist facilities on Great Northern Highway adjacent to the subject site although footpaths are provided through the existing Bullsbrook town centre.

Chittering Road has a 2m shared path on one side within the Bullsbrook townsite and on both sides in the vicinity of the existing high school and primary school site.

High-level future planning for cycling facilities is now set out in Western Australia's Long Term Cycle Network (LTCN), which identifies an aspirational blueprint to ensure State and local governments continue to work together towards the delivery of a continuous cycling network providing additional transport options, recreational

opportunities and support for tourism and commercial activity. The LTCN identifies the function of a route - primary, secondary or local - rather than the form it should take. Function considers the type of activities that take place along a route, and the level of demand (existing and potential). A route's built form is based on the characteristics of the environment, including space availability, topography, traffic conditions (speed, volumes), primary users, and so on.

The LTCN in the Bullsbrook area is illustrated in **Figure 8**, which shows a secondary route along Great Northern Highway and a local route parallel to the Highway through the LSP area, connecting from Lage Road (south of the LSP area) to Chittering Road (northern side of the LSP area)

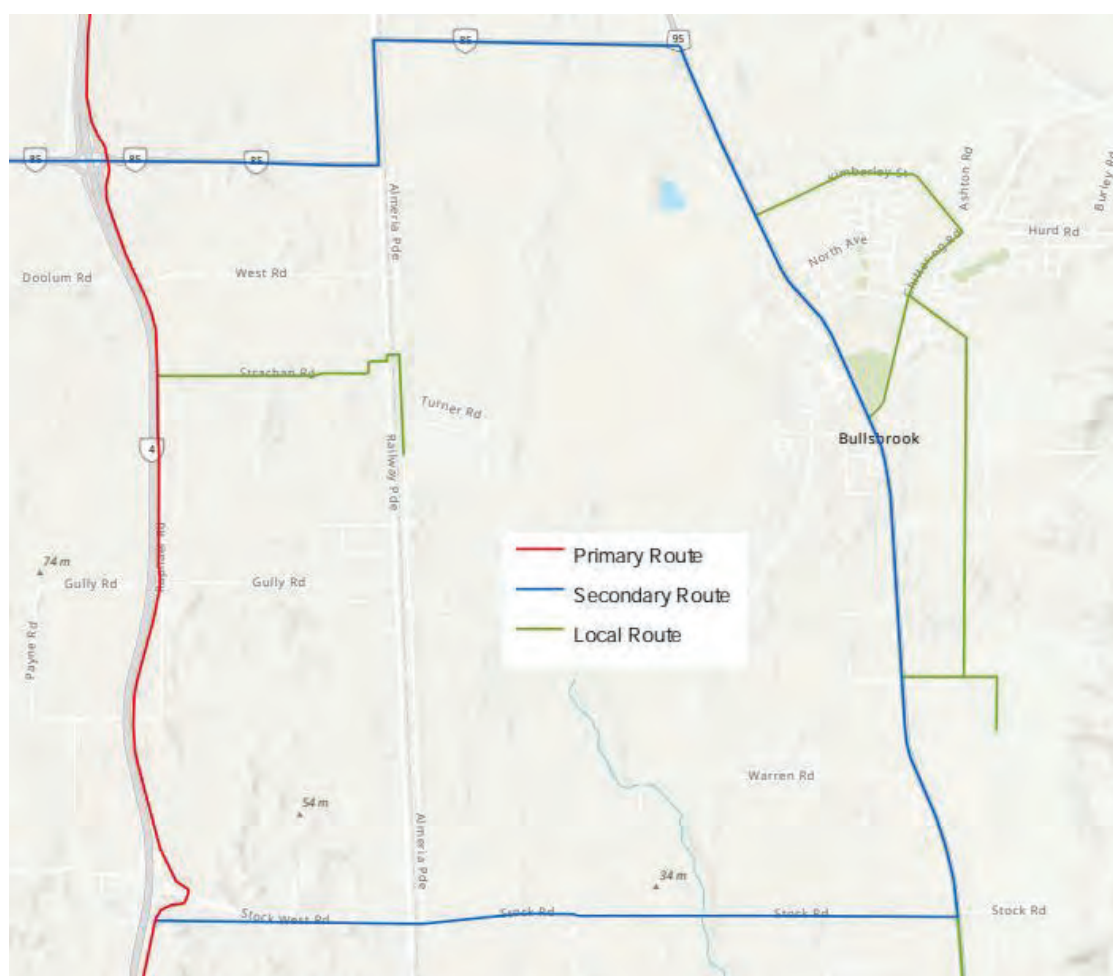


Figure 8: Long Term Cycle Network

3.7 Changes to Surrounding Road Network

The Tonkin Highway extension (NorthLink WA project) was completed in April 2020. Traffic volumes on Great Northern Highway through Bullsbrook and the proportion of heavy vehicles have both reduced significantly as a result of completion of that project.

For further discussion of future changes to the surrounding road network refer to the LSP TIA report.

4.0 Proposed Transport Network

4.1 Road Hierarchy

The proposed hierarchy of roads in and around the subject site is illustrated in Figure 9 using the road hierarchy defined in the Western Australian Planning Commission *Liveable Neighbourhoods* (LN) policy.



Figure 9: Road Hierarchy

The classification of roads in Figure 9 is based on preliminary analysis of future traffic flows at section 6.3 of this report. All of the roads identified on the LSP form sufficiently long and continuous routes to be classified as integrator arterials or neighbourhood connectors.

Integrator B roads are suitable for traffic flows up to 15,000vpd and can accommodate traffic flows up to 20,000vpd with suitable intersection treatments.

Neighbourhood Connector A roads are suitable for up to 7000vpd but some degree of flexibility with this upper limit may be appropriate in localised situations to avoid overdesigning some lengths of road. The main difference between Integrator B and Neighbourhood Connector A cross-sections is only the width of the median (6m versus 2m) and Liveable Neighbourhoods policy does allow for the median of an Integrator B to be reduced in width on sections that do not require right turn lanes in the median.

Neighbourhood Connector B roads are suitable for traffic flows up to 3000vpd but again some degree of flexibility with this upper limit should be considered appropriate in localised situations.

Typical cross-sections for these Integrator and Neighbourhood Connector roads are shown in Appendix B of the LSP TIA report.

One variation required is that the section of north south Neighbourhood Connector A spine road on the eastern side of the district activity centre, with the primary school site on its eastern side, is to have parking bays increased to 2.5m wide.

4.2 *Public Transport*

The existing bus service along Great Northern Hwy and Chittering Road adjacent to the site is noted in section 3.5 and the potential future rapid transit route along the north south activity corridor identified in the BTLUMP is noted in section 2.0 of the LSP TIA report.

All of the proposed neighbourhood connectors and integrator B roads shown on Figure 9 would be of suitable standard to accommodate bus services through this area, providing suitable options for one, two or three bus routes to service this area. This allows suitable flexibility for the Public Transport Authority to plan future bus routes within this area.

4.3 *Pedestrian and Cyclist Facilities*

All of the proposed neighbourhood connectors and integrator B roads shown on Figure 9 would have paths on both sides in accordance with Liveable Neighbourhoods guidelines, including a shared path on one side (or in the median amongst trees on one section of the eastern Neighbourhood Connector A spine road).

Paths would be required on at least one side of all roads in accordance with Liveable Neighbourhoods guidelines.

On-street cycle lanes are normally included only on Neighbourhood Connector A roads and above, due to traffic flows above 3000vpd on these categories of roads.

The resultant path network within the PP area is indicated in Figure 10 (refer LSP TIA report for the remainder of the LSP area). This also includes indicative location of

additional shared path (or dual use path) links on the local road network and along foreshore reserves (as previously advised by Emerge Associates). The standard and location of all paths would be subject to agreement with the City of Swan at subdivision stage.

The potential for provision of cycle lanes physically separated from motorised traffic will be investigated at subdivision stage in proximity to the primary school.

The western Neighbourhood Connector A spine road (east side of the Kingsford town centre / west of the primary school site) corresponds to the future Local Route shown on the Long Term Cycle Network plan for this area (refer section 3.6).



Figure 10: Pedestrian / Cycle Network

5.0 Integration with Surrounding Area

The Bullsbrook Townsite District Structure Plan (BTDSP, previously known as the Bullsbrook Townsite Land Use Master Plan, BTLUMP) provides an overall plan to ensure coordination of future development of the subject site and the surrounding area. The Kingsford local structure plan respects the principles and external connections of the BTDSP to ensure that good connectivity and integration with the surrounding area are achieved. The Kingsford Town Centre Precinct Plan fits within that LSP and is designed to integrate fully within that LSP area.

6.0 Analysis of the Transport Network

6.1 Assessment Period

The traffic assessment undertaken for the subject site is based on the 2031 ROM modelling undertaken for the BTLUMP, with full development of all land uses within the subject site taken into consideration, including ultimate full development of the Kingsford Town Centre.

6.2 Traffic generation

This Transport Impact Assessment Addendum utilises the traffic model developed for the Kingsford LSP area and the wider BTDSP / BTLUMP area for the LSP TIA report and for the BTDSP / BTLUMP TIA report for the City of Swan.

The daily traffic generation rate used in the LSP area is 8 vehicle trips per day (vpd) per dwelling, which corresponds to peak hour trip generation rates recommended in the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines* (2016). The anticipated yield of approximately 2,500 dwellings of the LSP area will therefore generate approximately 20,000vpd, inclusive of 3,080vpd generated by the 385 dwellings anticipated in the PP area.

The current standard pattern primary school of 540 students would generate approximately 1080vpd but based on previous advice from City of Swan officers it has been modelled as 600 students (1200vpd) to reflect potential student numbers with the numbers of young families likely when the area is first established.

Trip rates published in the NSW *Guide to Traffic Generating Developments* indicate a 20,000m² shopping centre would generate traffic flows of approximately 15,600vpd on a busy weekday.

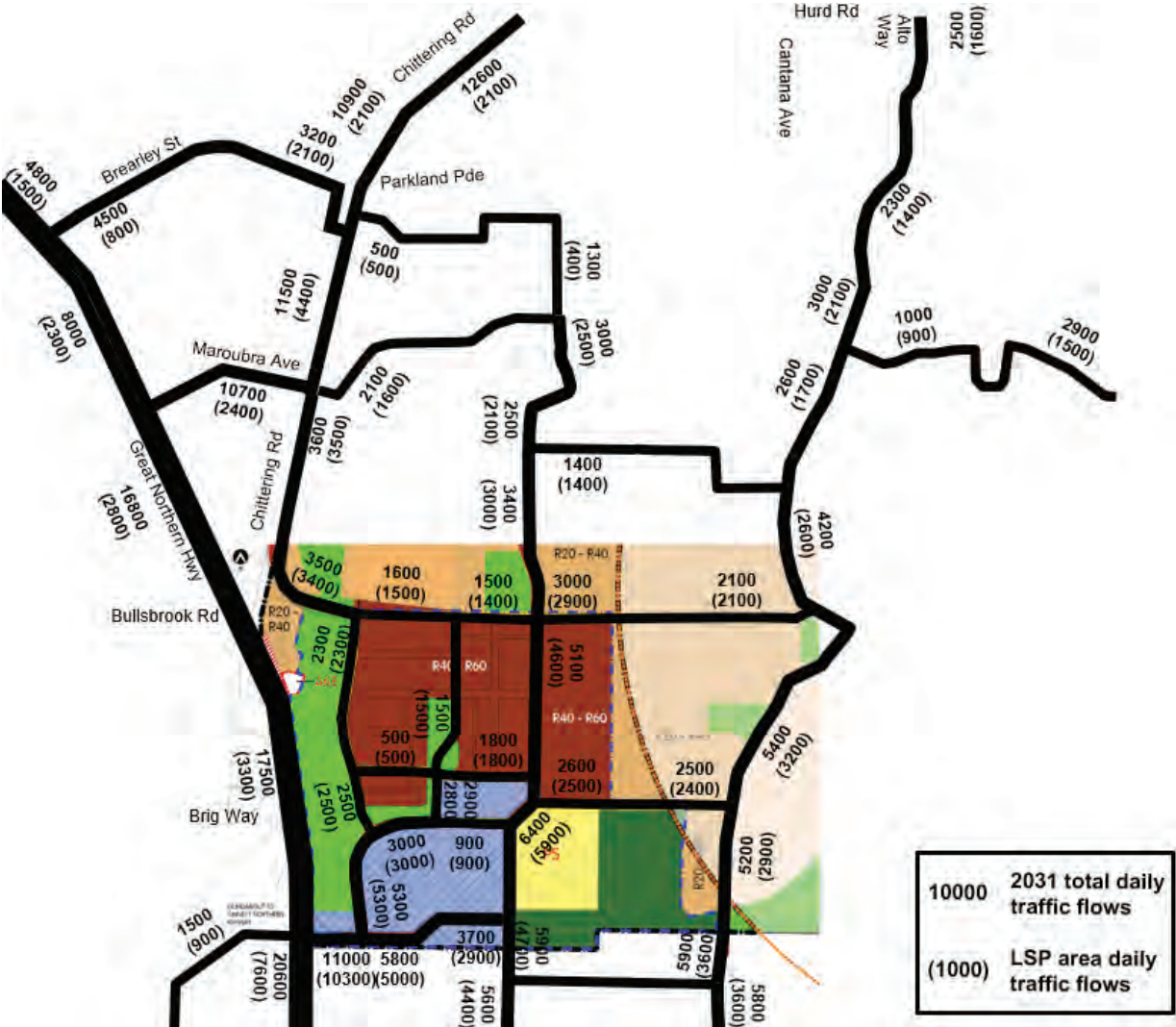
The traffic generation listed above for the LSP area is consistent with the LSP TIA report.

6.3 Traffic Flow Forecasts

Transcore's traffic model for the Bullsbrook townsite was revised for the *Bullsbrook Townsite Land Use Master Plan Precinct Traffic Contributions* (BTLUMP PTC) report (revised October 2019) on behalf of the City of Swan. The October 2019 revision of the BTLUMP PTC report takes into consideration the refusal of Metropolitan Region Scheme Amendment 1325/41 which would have rezoned land from Rural to Urban Deferred in the North Bullsbrook Precinct. The traffic model has now also been revised to reflect the localised changes in road network within the PP area and access arrangements proposed for the Kingsford Town Centre. Accordingly, there

will be some changes in the modelled traffic volumes compared to the LSP TIA report.

The revised total daily traffic flows on the modelled road network are shown in the EMME traffic volume diagram at Appendix B. (A more detailed, localised plot of modelled daily traffic in the PP area is also provided in Appendix B, including traffic flows on modelled connector links that each represent one or more driveways or local road connections within each traffic zone of the model.) A “selected links” plot is also included which only shows those traffic flows that are generated by or attracted to the land uses in the LSP area. Traffic flows in and adjacent to the LSP area are also shown in Figure 11.



6.4 Roads and Intersections

The anticipated future road network around the subject site has been detailed in section 4, including discussion of the proposed road hierarchy in section 4.1.

The key intersection for the proposed LSP area is the proposed 4-way intersection on Great Northern Highway near the district activity centre, which is planned as a dual lane roundabout, as currently advised by MRWA. A roundabout would need to be large enough to accommodate the largest size vehicle permitted on Great Northern Highway (36.5m B-double and dog trailer configuration and high wide load vehicles). It is understood this will require a central island diameter of 40m. This will require further detailed investigation to establish the land requirements at subdivision stage.

Another important intersection for the LSP area is the intersection of Chittering Road and Maroubra Avenue, which has been constructed as a 4-way roundabout for access into the first stages of subdivision development in the LSP area.

The intersection where the neighbourhood connector B road connects on the eastern side of Chittering Road in the vicinity of the existing Brearley Street intersection will be restricted to left in / left out only. The existing full-movement T-intersections at Parkland Pde and Brearley St on Chittering Road will be retained. A right turn lane on Chittering Road at the Brearley St intersection has recently been constructed.

The location of these key intersections roundabouts are shown on Figure 12.



Figure 12: Key intersections