

## June 2018



# Chittering

## Regional Land Supply Assessment



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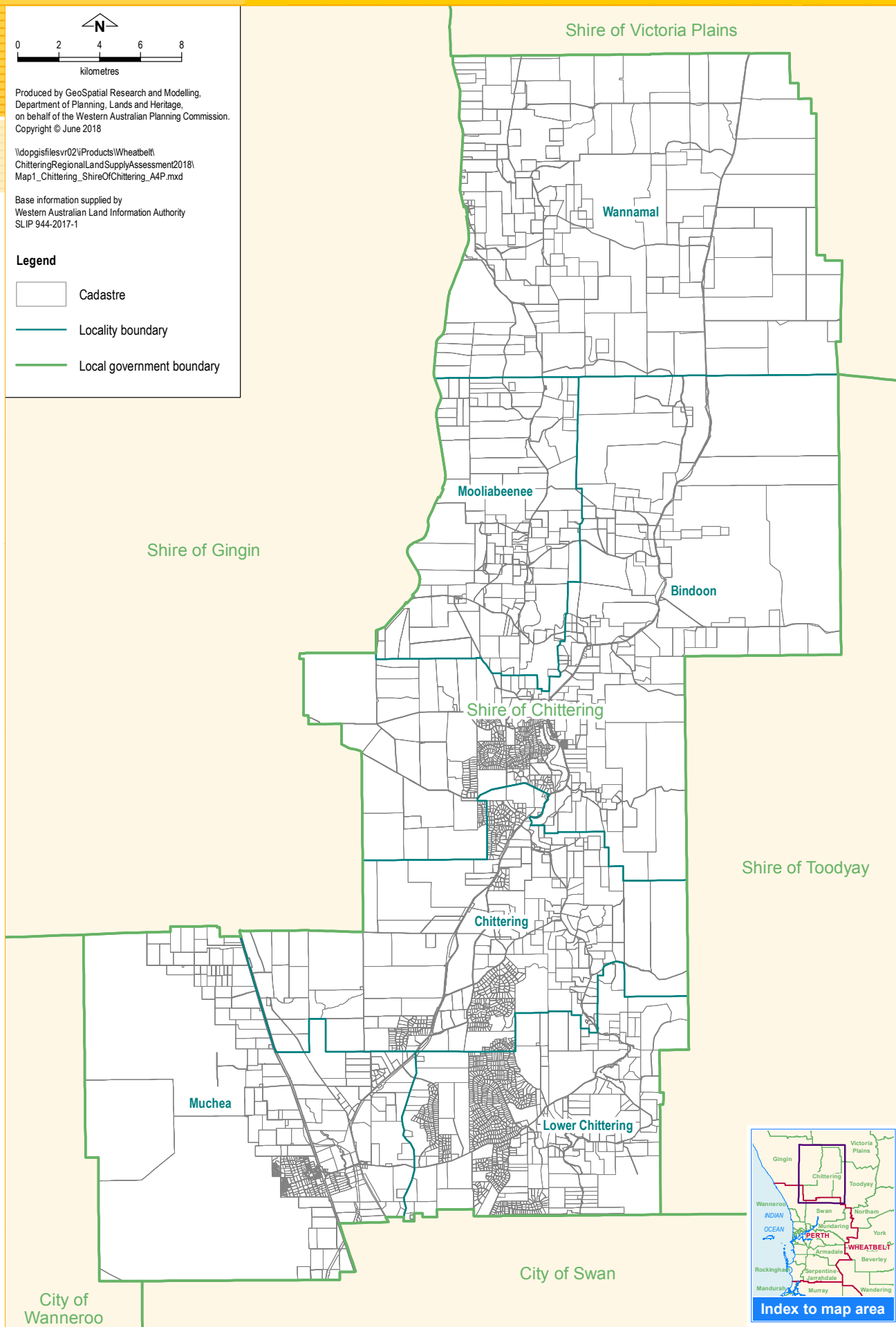


# 1 Regional Land Supply Assessments and the Urban Development Program

Regional Land Supply Assessments are prepared as a component of the Western Australian Planning Commission's (WAPC) Urban Development Program (UDP), which tracks and models land supply as per the requirements outlined in the *Planning and Development Act 2005*. The role of the WAPC includes developing models to better understand land supply and development, as well as to promote this understanding as part of the land use planning and development process and better align the provision of infrastructure.

Regional Land Supply Assessments assess land for future residential, industrial and commercial uses, providing context for the land use planning and infrastructure provision required to meet demand across selected regional centres. This report provides information on:

- demand drivers specific to Chittering, including the major economic factors that influence employment and population growth, and therefore, the demand for land and housing;
- zoned land supply for residential, industrial and commercial uses;
- development constraints;
- recent and future land development activity; and
- existing and required physical infrastructure.



Map 1: Shire of Chittering

## 2 Key points

### Population

- The Shire of Chittering covers an area of 1,220 square kilometres in Western Australia's Wheatbelt region. It is the Wheatbelt's second most populous local government area, with an estimated resident population (ERP) of 5,535 at June 2016. This accounted for 7.4 per cent of the Wheatbelt's total ERP at June 2016.
- The Bindoon town centre is located approximately 85 kilometres north of Perth and forms the Shire's commercial and administrative centre. The suburb of Bindoon recorded a population of 1,183 at the 2016 Census.
- Over the decade to 2016, the Shire recorded an average annual growth rate of 4.2 per cent. Comparatively, Western Australia and the Wheatbelt recorded average annual growth rates of 2.2 per cent and 0.4 per cent respectively. The Shire's annual growth rate fell to below 1 per cent in 2015/16, after a decade-long period of high growth.

### Distribution, occupancy and future trends

- The majority (39 per cent) of the Shire's residents lived in the suburb of Lower Chittering at the 2016 Census. A further 22 per cent, 18 per cent and 17 per cent of residents lived in the suburbs of Bindoon, Muchea and Chittering respectively.
- At the 2016 Census, the Shire recorded a dwelling occupancy rate of 86 per cent. This is comparable to the dwelling occupancy rate recorded for Western Australia (86.7 per cent).
- For the Shire, the latest *WA Tomorrow* population forecasts (published in 2015) project an average annual growth rate of 3.2 per cent from 2011 to 2026 based on the median (Band C) forecast.
- The draft Shire of Chittering Local Planning Strategy (2018) sets out a plan to concentrate growth in Bindoon, and to a lesser extent, Chittering and Lower

Chittering. Development outlook analysis (section 5.5) indicates that the majority of growth is expected to occur in Bindoon, Chittering and Lower Chittering.

### Key findings

- There is a sufficient stock of land identified to meet population growth into the long term. A hypothetical temporal land supply of 22 years (27 years if the stock of vacant lots is included in the supply capacity) has been identified. This supply has the capacity to support a total population of nearly 10,500.
- Rural living developments have been popular in recent years within the Shire, with approximately 7,420 hectares of land zoned for rural living purposes.
- The majority of subdivision activity within the Shire has occurred on land zoned for rural living purposes. Over the decade to June 2017, 367 rural living lots were created, compared to just 76 residential lots.
- Opportunities exist for the development of additional land for rural living purposes, with the draft Local Planning Strategy identifying areas for future rural living developments around Bindoon, Chittering and Lower Chittering.
- In the Shire, land zoned for industrial purposes covers approximately 170 hectares. The majority of this stock (150 hectares) forms part of the Muchea Employment Node.
- The Muchea Employment Node will cover approximately 1,396 hectares of land. It is envisaged that the site will accommodate large-scale freight/logistics and agribusiness operations, as well as service-based uses such as transport, livestock, fabrication, warehousing, wholesaling and general commercial use.
- Commercial activity in the Shire is centred on the Bindoon townsite.
- The draft Local Planning Strategy proposes a minor centre for recreation, community and retail purposes at Maryville Estate, within the locality of Lower Chittering.

- The draft Local Planning Strategy provides for the protection of areas of high conservation value, and proposes to limit future development to existing cleared areas in order to maximise the retention of native vegetation.
- Access to potable scheme water is limited to the Bindoon townsite. In addition, there is no reticulated wastewater scheme in the Shire, which may limit the development potential of several areas within the Shire.

### 3 Population

The Shire of Chittering covers approximately 1,220 square kilometres of Western Australia's Wheatbelt region.<sup>1</sup> Bindoon, the Shire's primary settlement, is located 85 kilometres north-east of Perth.<sup>2</sup>

This report refers to population and other indicator data relating to Chittering. Depending on the context and the source of data, different geographical extents are discussed. A list of the various geographical extents used to describe and compare Chittering and its surrounds is shown in Table 1.

At the 2016 Census, the median age for the Shire's population was 43 years, which is considerably older than the median age for Western Australia (36 years) and the nation (38 years). There is a significant under-representation of persons aged 20 to 29 years in the Shire (8 per cent) compared to Western Australia (14 per cent) (Figure 1 and Figure 2). This is characteristic of many regional areas in Western Australia, and can be attributed to young adults leaving the area to move to larger population centres for tertiary education or employment.

**Table 1: Local and regional geographic extents**

Geography	Description	Population at the 2016 Census	Area (square kilometres)
<b>Planning geographies</b>			
Wheatbelt region	The Wheatbelt region is comprised of five sub-regions and 42 local government areas, including the Shire of Chittering.	73,614 <sup>3</sup>	155,256 <sup>4</sup>
Central Midlands sub-region	The Central Midlands sub-region is the third most populous sub-region in the Wheatbelt. It is comprised of the shires of Chittering, Dalwallinu, Moora, Victoria Plains and Wongan-Ballidu.	11,570 <sup>5</sup>	18,126 <sup>6</sup>
Local government area	The Shire of Chittering is the second most populous local government area in the Wheatbelt region and the most populous in the Central Midlands sub-region.	5,472	1,220
Locality/suburb	The Shire of Chittering is comprised of six localities: Bindoon, Chittering, Lower Chittering, Mooliabeenee, Muchea and Wannamal.	-	-
<b>Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS) geographies</b>			
Statistical Area Level 1 (SA1)	SA1s are geographical areas built from whole Mesh Blocks. SA1s have generally been designed as the smallest unit for the release of Census data. The Shire of Chittering is comprised of 12 SA1s.	-	-
Mesh Block (MB)	Mesh Blocks are the smallest geographical area defined by the ABS and form the building blocks of the larger regions of the ASGS. The Shire of Chittering is comprised of 83 Mesh Blocks.	-	-

Source: Australian Bureau of Statistics (2016) *Australian Bureau of Statistics (2016) Australian Statistical Geography Standard (ASGS): Volume 1 – Main Structure and Greater Capital City Statistical Areas, July 2016. Catalogue No. 1270.0.55.001*

<sup>1</sup> Shire of Chittering (2018) Draft Local Planning Strategy

<sup>2</sup> Shire of Chittering (2009) *Local Planning Strategy 2001-2015*

<sup>3</sup> Denotes the combined population for all local government areas in the Wheatbelt region at the 2016 Census

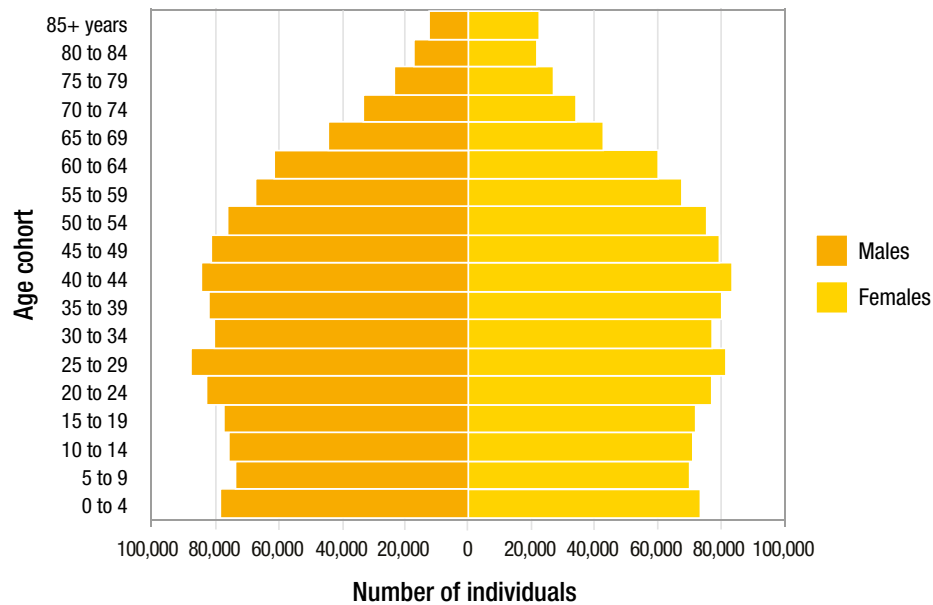
<sup>4</sup> Wheatbelt Development Commission (2017) *The Wheatbelt*. Available online at <http://www.wheatbelt.wa.gov.au/our-region>

<sup>5</sup> Denotes the combined population for the shires of Chittering, Dalwallinu, Moora, Victoria Plains and Wongan-Ballidu at the 2016 Census.

<sup>6</sup> Denotes the combined area for the shires of Chittering, Dalwallinu, Moora, Victoria Plains and Wongan-Ballidu

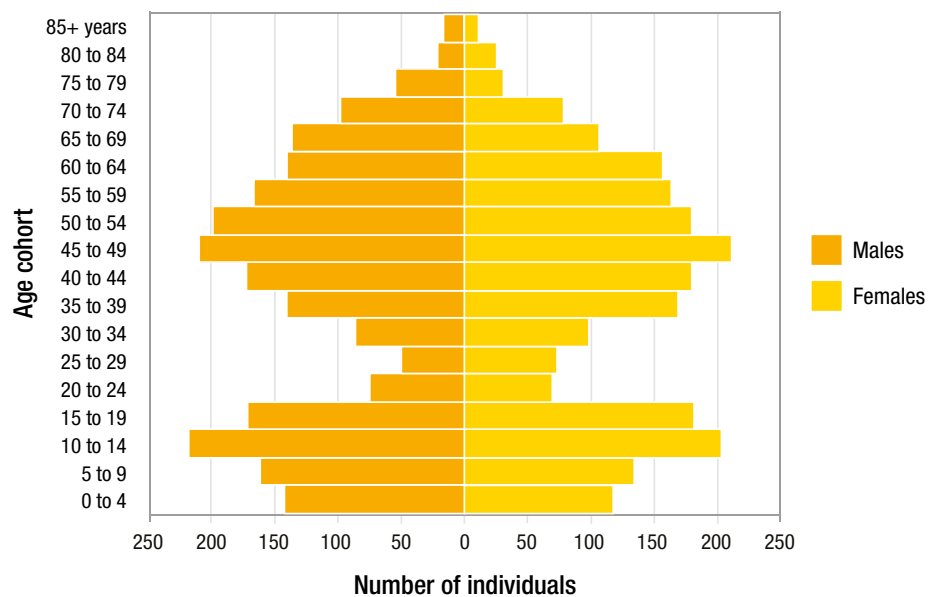


Figure 1: Census 2016 Western Australia population profile

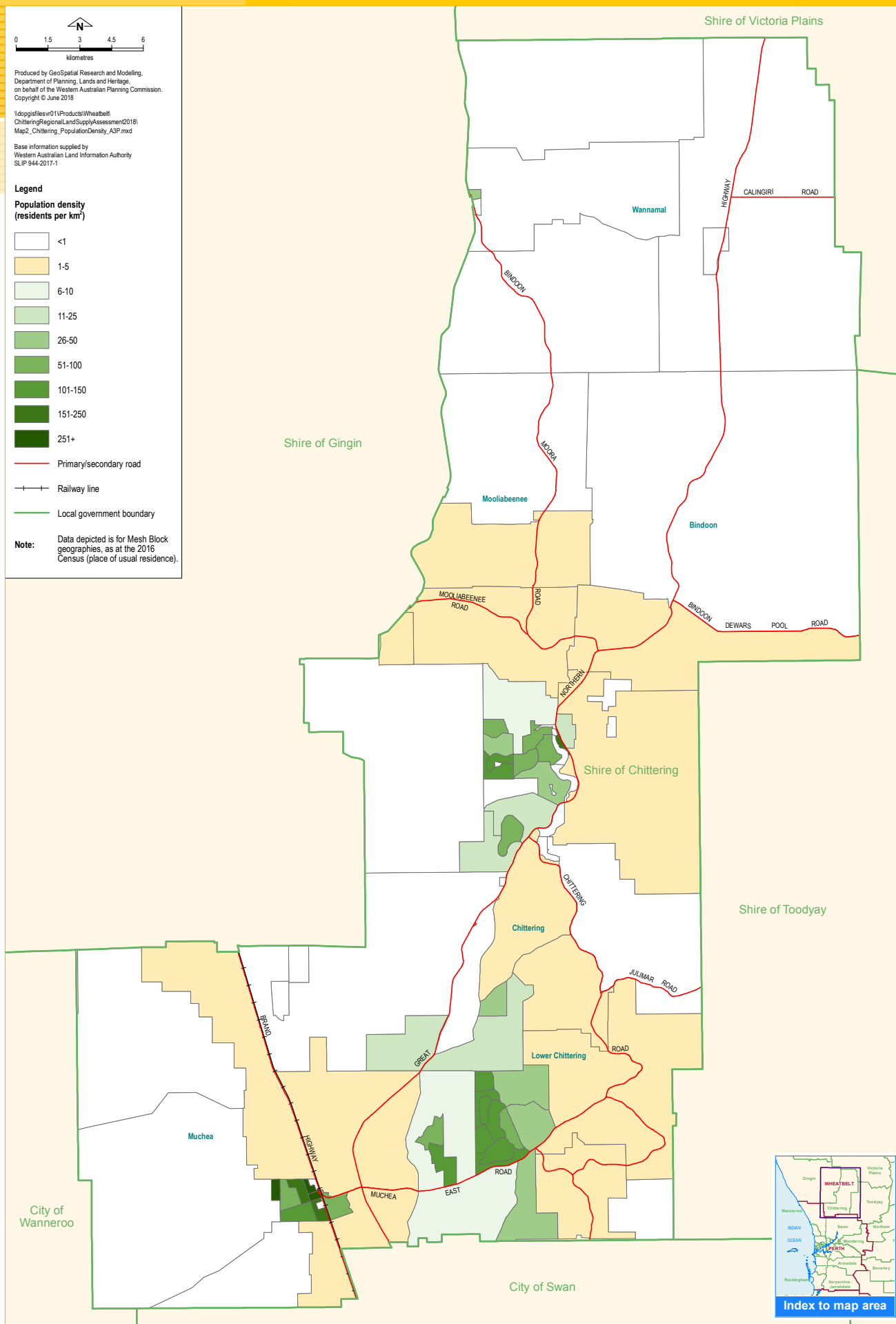


Source: Australian Bureau of Statistics (2017) *Census of Population and Housing: General Community Profile, Australia, 2016. Catalogue No. 2001.0*

Figure 2: Census 2016 Shire of Chittering population profile



Source: Australian Bureau of Statistics (2017) *Census of Population and Housing: General Community Profile, Australia, 2016. Catalogue No. 2001.0*



Map 2: Population density - 2016 Census (Mesh Block)

### 3.1 Population growth

The population data discussed in this section refers to the Australian Bureau of Statistics (ABS) estimated resident population (ERP). The ERP is the official estimate of the Australian population based on place of usual residence. Estimates of the resident population are calculated as at 30 June of each year for selected Australian Statistical Geography Standard (ASGS) geographies, including sub-state areas such as Statistical Areas Level 2 (SA2s) and Local Government Areas (LGAs).

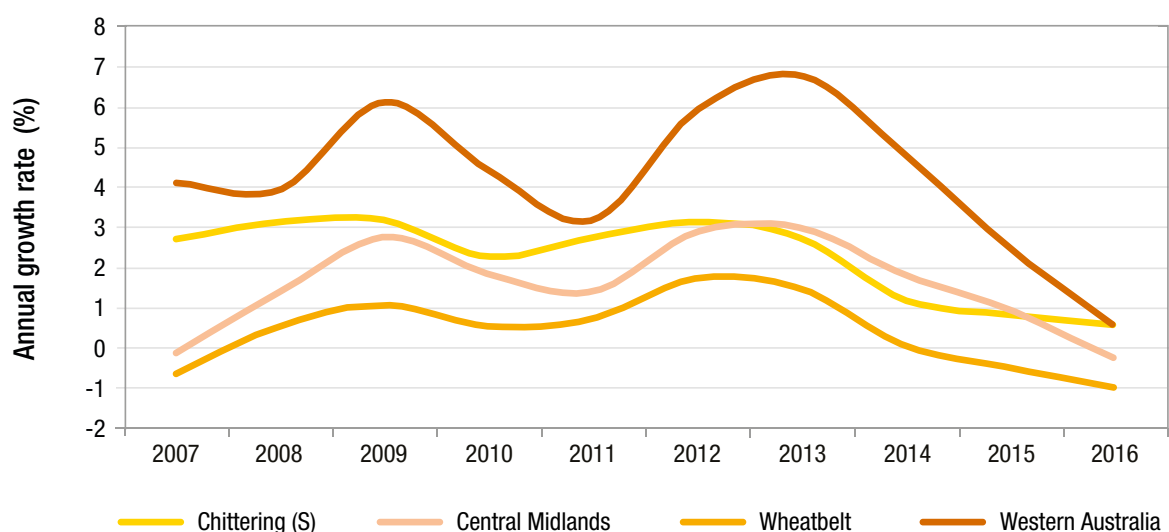
Estimates of the resident population for Census years (i.e. 2011 and 2016) are based on Census counts of usual residence (excluding short-term overseas visitors in Australia), with an allowance for Census net undercount and Australian residents temporarily overseas at the time of the Census.

Sub-state population estimates for non-Census years were previously updated using data inputs from a variety of sources, such as dwelling approvals, Medicare and Australian Electoral Commission enrolments. The ABS has adopted a new,

component-based method to estimate resident population at the sub-state level. Estimates of the resident population for 30 June 2017 and onward will be calculated by adding natural increase (births minus deaths), net internal migration and net overseas migration to the base population. It is expected that the new component-based method will provide a greater understanding of why population has changed.

Over the decade to June 2016, the Shire recorded an average annual growth rate of 4.2 per cent (average annual increase of 187 residents). This is considerably higher than the average annual growth rates recorded for Western Australia (2.2 per cent), Wheatbelt region (0.4 per cent) and Central Midlands sub-region (1.6 per cent). The Shire accounted for 62.6 per cent of the Wheatbelt's total population growth over the 2006-2016 period. Figure 3 shows the ERP annual growth rates. It shows that, for the most part, the Shire has recorded higher annual growth rates than Western Australia, Wheatbelt and Central Midlands over the decade to 2016. The Shire's annual growth rate fell to below 1 per cent in 2015/16, after a decade-long period of high growth.

Figure 3: Estimated resident population growth by year



Source: Australian Bureau of Statistics (2017) *Regional Population Growth, Australia, 2015-16*. Catalogue No. 3218.0

### 3.2 Population projections

WA *Tomorrow* forecasts, released in 2015, are prepared using 10,000 forecast permutations that emulate the variability in population change shown in historical data. Each permutation shows possible growth or decline in population, based on five variables (birth rate, death rate, net interstate migration, net intrastate migration and net overseas migration) that occur to varying degrees in each simulation.

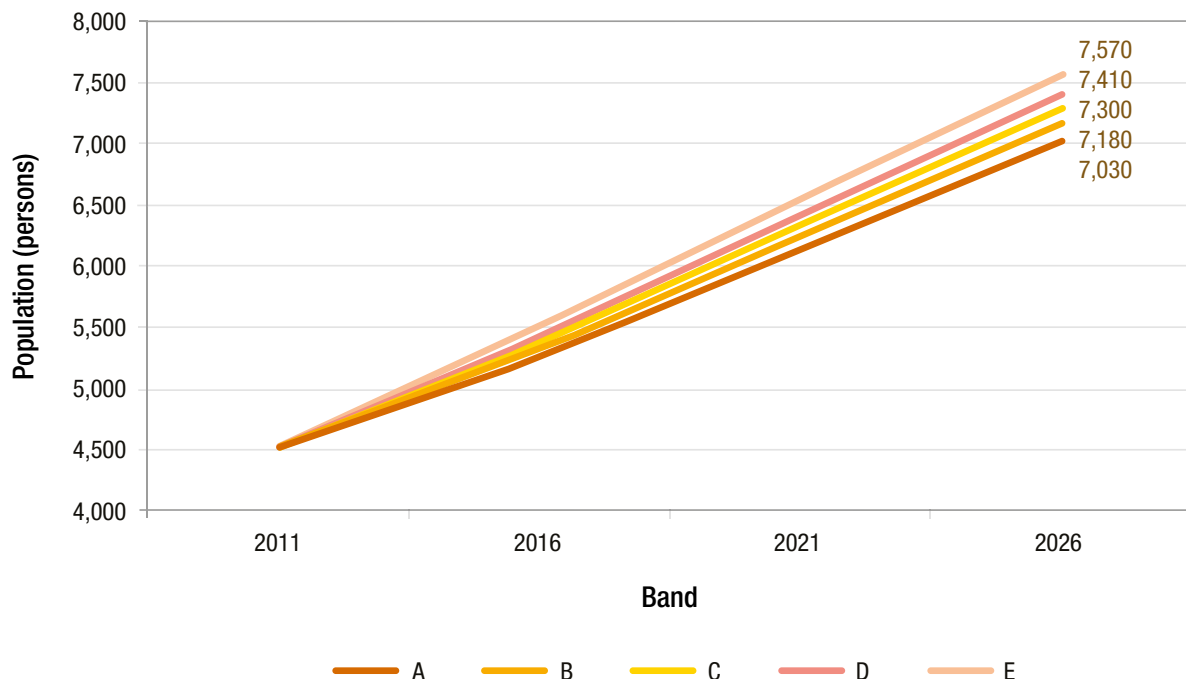
The range of WA *Tomorrow* forecasts are grouped into five 'bands', based on the projected rate of population change produced by each simulation. Each band includes one fifth of the permutations, with Band A representing the lowest quintile of projected population growth; Band C the median; and Band E the highest. The WA *Tomorrow* documents publish the median value of each quintile to give five forecasts for each SA2 and local government area in Western Australia.

A more detailed description of the methods and outputs of the WA *Tomorrow* research are available online at <https://www.planning.wa.gov.au/publications/6194.aspx>.

Figure 4 shows the WA *Tomorrow* forecasts for the Shire of Chittering for Bands A to E. The resulting projected population for the Shire under the median (Band C) forecast is 7,300 persons in 2026. Achieving this population from a 2011 baseline will require an average annual population increase of 187 people, or an average annual growth rate of 3.2 per cent.

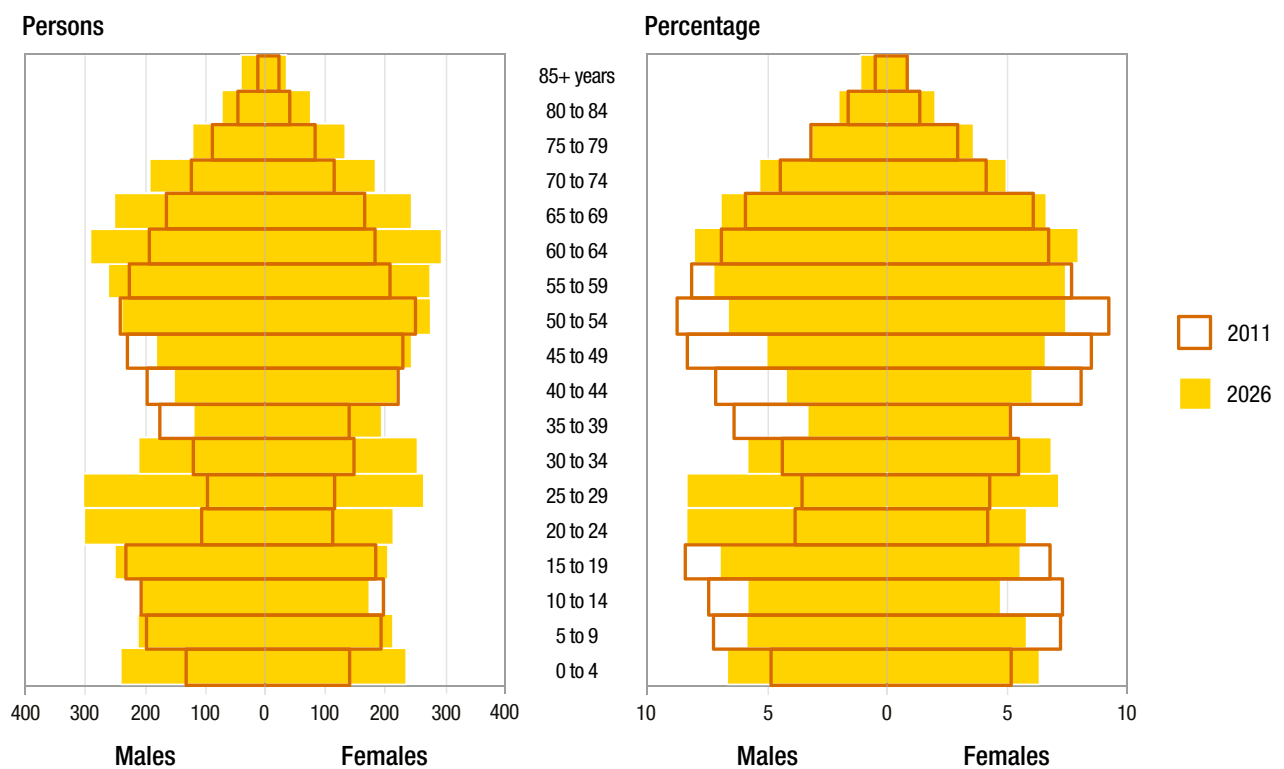
The demographic profile of the Shire is anticipated to change significantly by 2026. Figure 5 shows the population profile of the Shire at the 2016 Census and the WA *Tomorrow* median (Band C) forecast for the Shire's population at 2026. The age cohorts that show the greatest change under this growth scenario are persons aged 20 to 24 years, 25 to 29 years and 80 to 84 years.

Figure 4: Forecast population growth - Shire of Chittering



Source: Western Australian Planning Commission (2015) *Western Australia Tomorrow Population Report No. 10*

Figure 5: Shire of Chittering demographic profile 2016 and 2026 forecast (Band C)



Source: Western Australian Planning Commission (2015) *Western Australia Tomorrow Population Report No. 10*



For the Wheatbelt region, the *WA Tomorrow* median (Band C) forecast projects a population of 77,590 at 2026. This would require an average annual growth rate of 0.4 per cent from 2011 to 2026, which is in line with the rate of growth over the past decade.

The *Wheatbelt Regional Investment Blueprint* aspires to a higher rate of population growth, envisaging a population of 180,000 by 2050. This would represent an average annual growth rate of 2.6 per cent from 2016<sup>7</sup> to 2050. Achieving this population outcome is contingent on the success of proposed local and regional economic development initiatives, including the delivery of key infrastructure, industry development and workforce attraction.

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<sup>7</sup> Based on the ERP for the Wheatbelt region at June 2016

## 4 Economic demand drivers

Economic conditions and employment opportunities are fundamental drivers of population growth and demand for land and housing. The agricultural industry has been the backbone of the Shire of Chittering's economy for a number of years, making significant contributions to the Shire's wealth, as well as employing a large proportion of the Shire's working population. Other significant contributors to the Shire's economy include the industries of construction, manufacturing and mining.

The Shire is the Wheatbelt region's second most populous local government, accounting for 7.4 per cent of the Wheatbelt's total population at the 2016 Census. At the end of the March 2017 quarter, the Shire had a labour force of 2,546 persons and an unemployment rate of 3.5 per cent.<sup>8</sup>

The draft Shire of Chittering Local Planning Strategy identifies tourism as an emerging generator of investment and employment within the Shire. The Shire's proximity to the Perth metropolitan region and access to major transport linkages presents an opportunity for growth of the tourism industry, through increasing the available options for accommodation and recreational activities, and protecting the long-term opportunities for the development of tourism products.

A loss of employment on larger agricultural properties is expected, as the industry becomes less labour-intensive. More intense perennial agriculture is expected to have a marginal and seasonal impact on employment due to the trend towards higher levels of mechanisation.

The Muchea Employment Node (MEN) is planned to grow into a major employment hub for the north-east corridor, with key employing industries within the Shire and surrounds expected to locate in the MEN once it is established. Suitable uses for the MEN include transport depots, agriculture-related industries (complementary to the Western Australian Meat Industry Authority (WAMIA) saleyards), fabrication, warehousing and other general commercial uses. It is estimated that the MEN will provide for approximately 800 to 1,000 jobs once fully developed.<sup>9</sup>

Increasing employment opportunities and expanding local industry will be reliant on measures such as capitalising on the expansion of irrigated horticulture, appropriately zoned land for industry, existing mineral resources and boosting the construction, retail and other service-based industries.

Construction of a multi-purpose medical and health centre in the Bindoon townsite was completed in 2015. The facility comprises of eight consulting rooms, two treatment rooms, a physio room, offices, an ambulance pick-up area and parking for 35 vehicles. The draft Local Planning Strategy also proposes for the development of a regional sports/community centre facility in Lower Chittering. Consolidation of development around townsites, as well as investments in new industrial areas and social infrastructure will provide for the creation of additional jobs within the Shire.

<sup>8</sup> Australian Department of Employment (2017) *Small Area Labour Markets*

<sup>9</sup> Western Australian Planning Commission (2011) *Muchea Employment Node Structure Plan*

## 5 Residential land and housing

### 5.1 Overview

At the 2016 Census, 39 per cent of the Shire of Chittering's population lived in the suburb of Lower Chittering (Map 1), most of which is zoned rural residential. A further 22 per cent, 18 per cent and 17 per cent of residents lived in the suburbs of Bindoon, Muchea and Chittering respectively. The draft Shire of Chittering Local Planning Strategy sets out a plan to concentrate future growth in Bindoon, and to a lesser extent, Chittering and Lower Chittering, which will be reliant on the provision of service infrastructure to the area.

Wheatbelt local government areas located adjacent to the coastline and/or in close proximity to the Perth metropolitan region are experiencing population growth due to an increase in lifestyle migration, such as sea change and/or tree change. Based on increasing recognition of liveability, the Shire, among others in the Wheatbelt, has recorded significant population increases and is likely to continue to experience growth in the future.

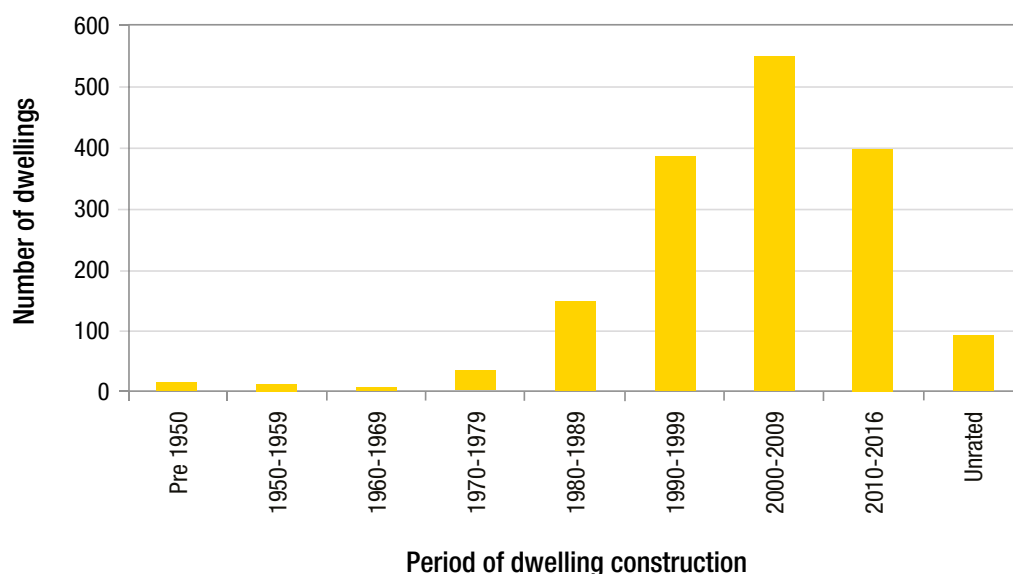
At the 2016 Census, a stock of 2,206 private dwellings was recorded in the Shire. Of these, 86 per cent were occupied, which is comparable to the dwelling occupancy rate for

Western Australia (86.7 per cent). Higher occupancy rates were recorded in the southern half of the Shire area, with the suburbs of Chittering, Lower Chittering and Muchea recording occupancy rates of 80.2 per cent, 91.4 per cent and 91.5 per cent respectively at the 2016 Census. Areas with higher dwelling occupancy rates are predominantly zoned rural residential. Lower occupancy rates were recorded in the northern half of the Shire area, with the suburbs of Bindoon, Mooliabeenee and Wannamal recording occupancy rates of 79.9 per cent, 74.7 per cent and 76.6 per cent at the 2016 Census.

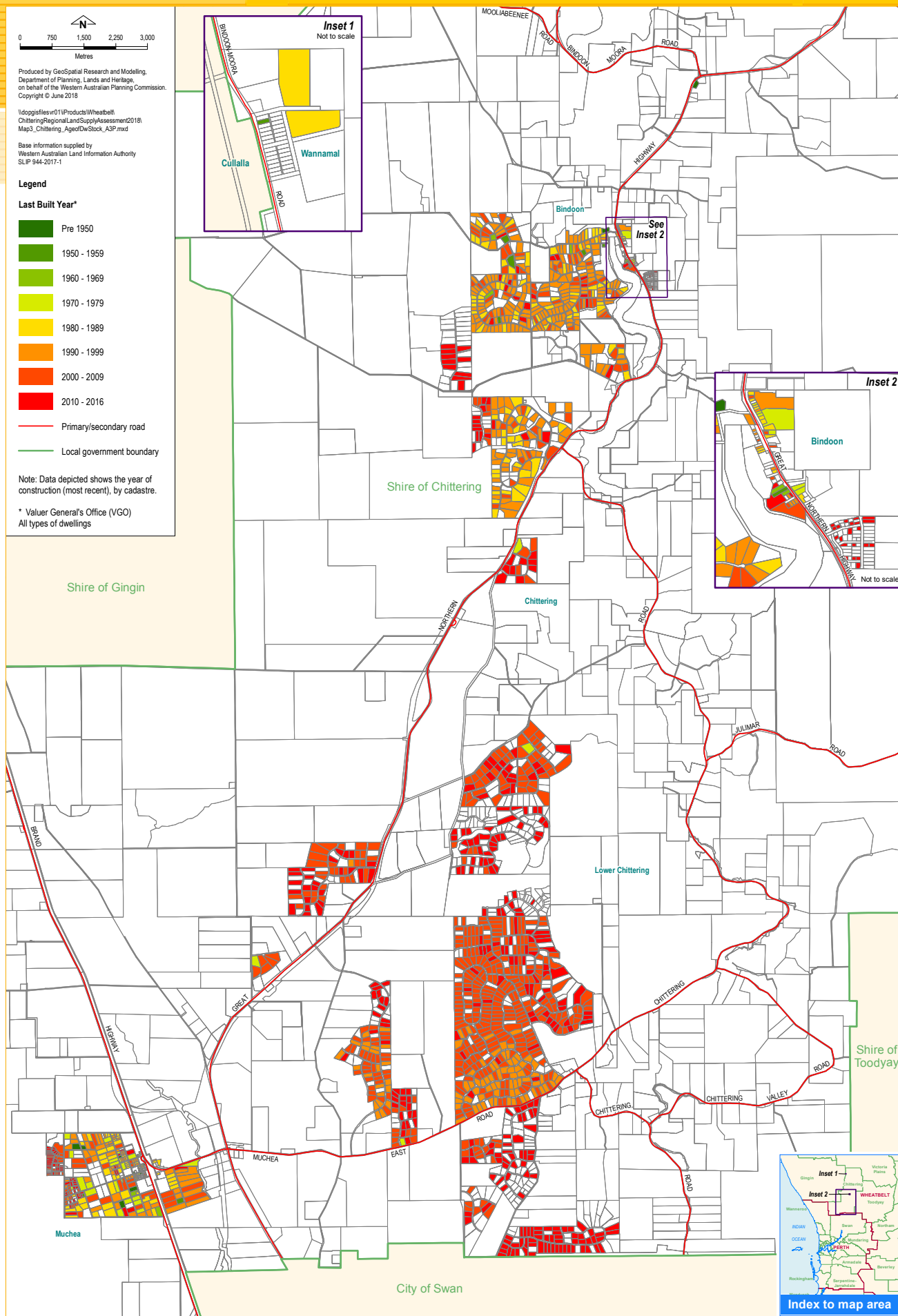
The dwelling stock in the Shire is generally quite 'new', with 82 per cent of homes constructed since 1990 (Figure 6). Map 3, which shows the distribution of dwellings by year of construction, indicates that most of the older dwelling stocks are located in Bindoon and Muchea. Many of the newer dwellings are located in the suburb of Lower Chittering, reflective of growth occurring in recently developed rural residential areas.

At the 2016 Census, the majority of dwellings in the Shire were detached houses (96.8 per cent, compared to 79.1 per cent for Western Australia), with three and four-bedroom dwellings being the most common.

Figure 6: Age of dwelling stock - Shire of Chittering



Source: Department of Planning, Lands and Heritage (2017) *Integrated Regional Information System*



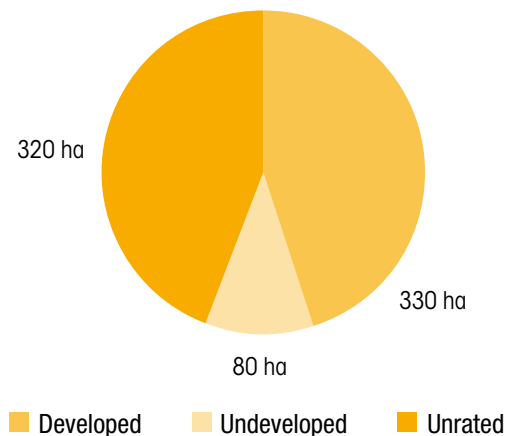
Map 3: Age of Dwelling Stock

### 5.2 Land zoned for residential purposes

There are several land use zones under the *Shire of Chittering Local Planning Scheme No. 6* that permit residential development (rural living is discussed in section 6). Of the Shire's stocks of land zoned for residential development, the majority is comprised of rural residential zoned land. Residential land use zones included in this analysis are 'Residential' and 'Townsite', which make up a small share of the Shire's residential land supply.

Using the Integrated Regional Information System (IRIS) land supply model, major residential land use zones are grouped together to provide a snapshot of existing residential land stocks. Appendix 2 provides a more in-depth description of the IRIS model and the methodology for its use. The model showed that, as at December 2016, approximately 730 hectares of land in the Shire was zoned for residential purposes. Approximately 330 hectares (45 per cent) of this stock was considered to be developed. A further 80 hectares (11 per cent) and 320 hectares (44 per cent) were considered to be undeveloped and unrated respectively (Figure 7). Lots identified as unrated are those that are zoned for development for the purpose of the specified primary land use category for which no vacant land or premises valuation information has been captured in Landgate's property valuation database. Almost all stocks of land zoned for residential purposes within the Shire are located in Bindoon, Muchea and Wannamal townsites.

Figure 7: Stock of land zoned for residential purposes - Shire of Chittering



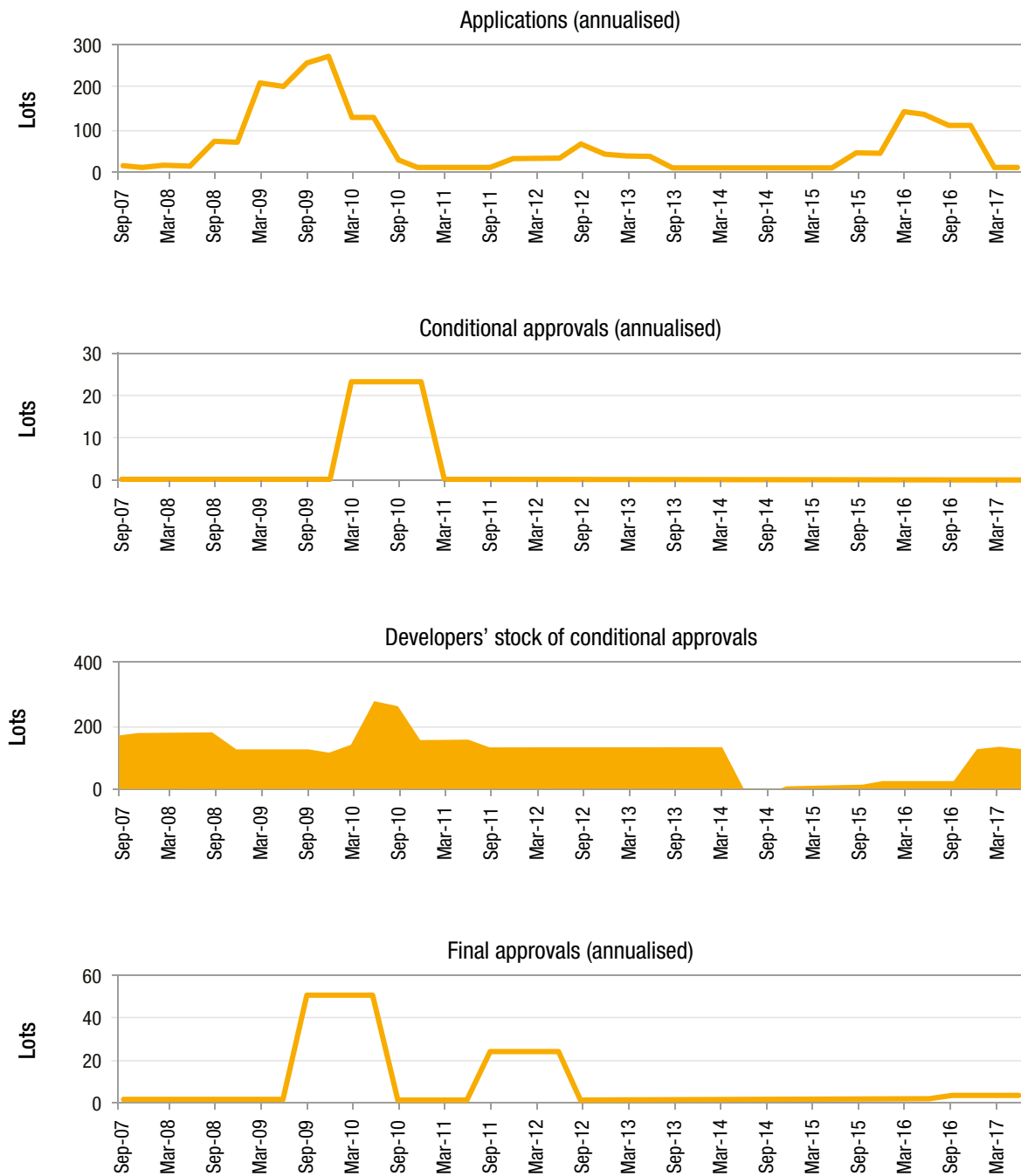
Source: Department of Planning, Lands and Heritage (2017) *Integrated Regional Information System*

### 5.3 Lot supply pipeline

Over the decade to June 2017, applications were lodged to create a total of 566 residential lots (average of 14 lots per quarter). 2008/09 marked the peak period of subdivision, with 52 lots per quarter lodged for subdivision approval. The high number of lots lodged for subdivision approval in 2008/09 (206 lots) led to a decade-high record in the number of lots with conditional approvals in June 2010 (286 lots). At the end of the June 2017 quarter, there were 134 residential lots with conditional approval, the majority of which form part of the residential development on Reserve Road, Chittering (site CH02).



Figure 8: Residential subdivision activity and lot supply pipeline



Source: Western Australian Planning Commission (2017) *State Lot Activity* and Water Corporation (2017).

Note: No data is available on lots on non-cleared agreements prior to 2008.

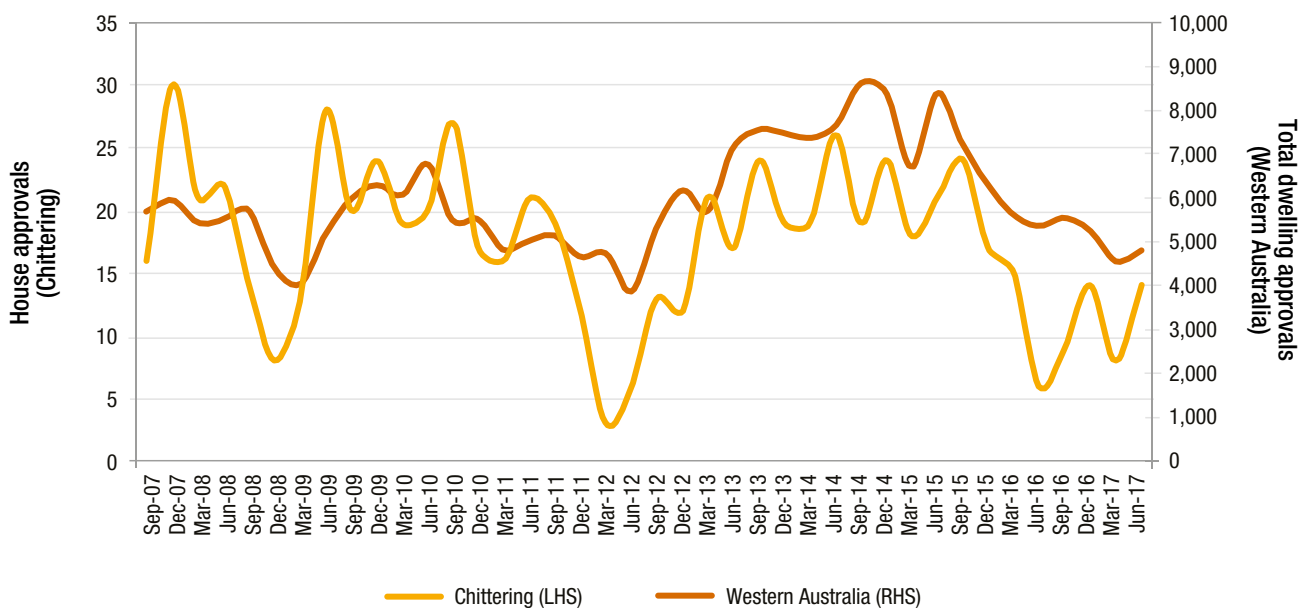
### 5.4 Dwelling approvals

Dwelling approvals are a key demand indicator, representing either owner-occupier demand or investor confidence. As most dwelling approvals proceed to construction and eventually completion, they also provide a leading indicator of dwelling supply.

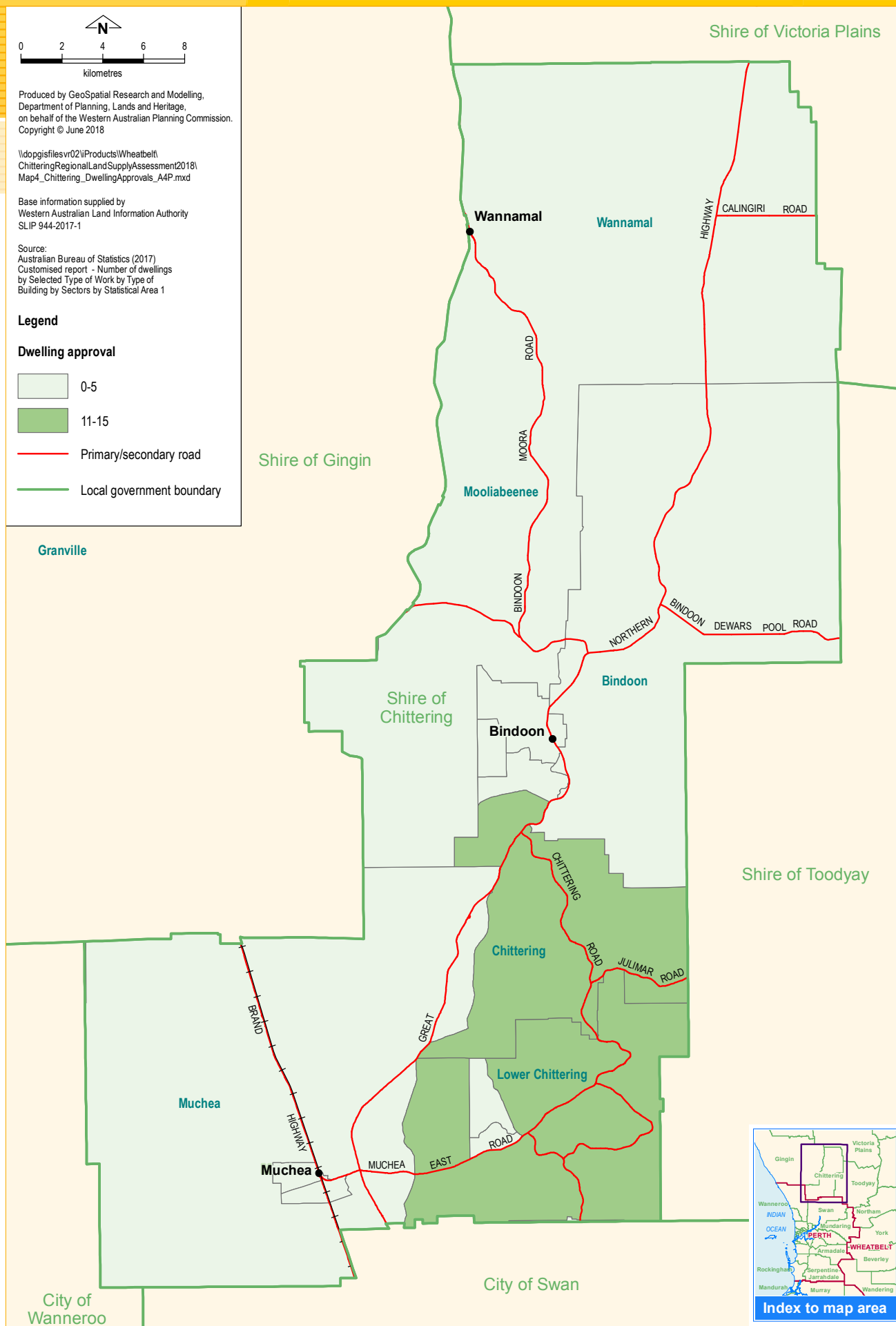
Over the decade to June 2017, 2007/08 and 2013/14 recorded the highest number of dwelling approvals in the Shire of Chittering, with 89 and 88 houses approved for construction during these periods. These figures are slightly high when compared to the annual average of 70 house approvals over the decade to June 2017 (Figure 9).

Map 4 shows the distribution of dwelling approvals in the Shire for the year 2016/17, based on the most recent ABS data. The suburbs of Chittering and Lower Chittering recorded the highest number of house approvals during this time.

Figure 9: Dwelling approvals – Shire of Chittering



Source: Australian Bureau of Statistics (2017) 8731.0 Building Approvals, Australia



Map 4: Dwelling approvals 2016/17 (SA1)

### 5.5 Development outlook

Table 3 and Map 5 show possible development projects in the Shire of Chittering. Projects are included where intent has been demonstrated (by government or the development industry) to develop the site at some point in the future. Projects are identified through a variety of means including:

- local planning scheme zonings and amendments;
- developer intentions;
- consultation with local stakeholders;
- subdivision applications/approvals
- local government development applications/approvals;
- structure planning; and
- strategic planning.

Most of the identified growth areas are located in the suburbs of Bindoon, Chittering and Lower Chittering. Bindoon accounts for 69 per cent of the entire stock of proposed dwellings in identified areas (Table 2), while Chittering and Lower Chittering account for a further 22 per cent and 7.3 per cent respectively. There is limited capacity for residential expansion and/or intensification of the Muchea townsite, due to environmental and servicing constraints.

**Table 2: Estimated dwelling yield from identified future development areas - Shire of Chittering**

Locality	Short-term (0-5 years)	Medium-term (6-10 years)	Long-term (10+ years)	Total
Bindoon	162	554	461	1,177
Chittering	194	148	27	369
Lower Chittering	35	13	76	124
Mooliabeenee	0	0	0	0
Muchea	0	0	36	36
Wannamal	0	0	0	0
<b>Total</b>	<b>391</b>	<b>715</b>	<b>600</b>	<b>1,706</b>

Source: Department of Planning, Lands and Heritage (2017)





Table 3: Development outlook - project summaries

Identifier	Location	Suburb	Map number in this document	Existing tenure <sup>1</sup>	Purpose	Zoning/planning			Area/yard <sup>2</sup>			Subdivision approvals <sup>3</sup>		Anticipated dwelling release <sup>4</sup> (commencing late 2017)			Constraints <sup>5</sup>			Comments
						Current zoning	Amendment required	Other planning under way	Area (ha)	Yield (lots)	Yield (units)	Approvals pending	Current approvals	Short-term (0-5 years)	Medium-term (6-10 years)	Long-term (10+ years)	Concern but resolution anticipated	Critical but resolution anticipated	Critical and resolution not definite	
BD01	Lot 20 Gray Rd	Bindoon	Map 5	Illinois Pty Ltd	Rural Residential, Agricultural/Tourism Landscape	Rural Conservation	No	Lot 20 Gray Rd, Bindoon - Structure Plan	326.9	141	141	0	0	0	0	141	E, MC	T, W		The site is comprised of a lot zoned Rural Conservation under the Shire of Chittering Local Planning Scheme No. 6 (LPS 6). A structure plan prepared for the site identifies a total yield of 138 rural residential lots and three agricultural/tourism landscape lots. The site abuts the proposed alignment for the Great Northern Highway Bindoon Bypass. Lots developed within the site will be required to connect to reticulated water supply. The Shire of Chittering draft Local Planning Strategy (2018) (draft LPS) identifies the site as containing native vegetation of high conservation value. Development of the site will need to provide for the protection of existing native vegetation.
BD02	Lots 12 & 13 Gray Rd	Bindoon	Map 5	Temple Bar Pty Ltd	Rural Residential	Rural Residential	No	Lot 11 Gray Rd, Bindoon - Structure Plan	47.5	19	19	0	0	0	19	0	E, MC			The site is comprised of two lots zoned Rural Residential under LPS 6. A structure plan prepared for the site identifies a total yield of 19 rural residential lots.
BD03	Lots 23 & 9029 Cammeray Cl	Bindoon	Map 5	B H White, J White & THJG Pty Ltd	Rural Residential	Rural Residential, Agricultural Resource	Yes	Lot 10 Gray Rd, Bindoon - Structure Plan	6.7	9	9	0	0	0	3	6	E, MC			The site is comprised of two lots zoned Rural Residential and Agricultural Resource under LPS 6. A structure plan prepared for Lot 23 Cammeray Close identifies a total yield of three rural residential lots. The draft LPS identifies Lot 9029 Cammeray Close as future rural residential.
BD04	Lot 300 Great Northern Hwy	Bindoon	Map 5	Elegant Resources Pty Ltd	Townsite	Townsite	No	N/A	16.4	321	321	0	0	0	321	0	E, MC, P, S, W			The site is comprised of a lot zoned Townsite under LPS 6, with an R-Code of R10/30.
BD05	Lot 83 Bottlebrush Pl	Bindoon	Map 5	J & L Holdings Pty Ltd	Townsite	Townsite	No	N/A	3.9	76	76	0	0	0	76	0	E, MC, P, S			The site is comprised of a lot zoned Townsite under LPS 6, with an R-Code of R10/30.
BD06	Lots 9503 & 9504 Teatree Rd, Lots 519 & 549 Woodbridge St	Bindoon	Map 5	Parkwood Properties Pty Ltd	Rural Residential	Rural Residential	No	Lot 19 Teatree Rd, Bindoon - Structure Plan	124.6	102	102	0	102	102	0	0	E, MC	T, W		The site is comprised of four lots zoned Rural Residential under LPS 6. Conditional subdivision approval has been granted to create 96 rural residential lots on Lots 9503 & 9504 Teatree Road, as well as three lots each on Lots 519 & 549 Woodbridge Street. The site abuts the proposed alignment for the Great Northern Highway Bindoon Bypass. In addition, lots developed within the site would be required to connect to reticulated water supply; these constraints may affect the anticipated dwelling release.
BD07	Lots 332, 409, 9500 & 9501 Teatree Rd, Lots 401, 402, 407, 416, 417 & 9502 Endeavour Dr	Bindoon	Map 5	Melvista Park Pty Ltd & Sovereign Investment Group Pty Ltd	Residential, Rural Residential	Residential, Rural Residential	No	Lots 332, 409, 9500 & 9501 Teatree Rd, Lots 401, 402, 407, 416, 417 & 9502 Endeavour Dr, Bindoon - Structure Plan	81.6	64	64	0	28	28	36	0	E, MC			The site is comprised of seven lots zoned Residential R2 and four lots zoned Rural Residential under LPS 6. Conditional subdivision approval has been granted to create 28 lots for residential purposes on Lots 332 & 9500 Teatree Road and Lot 407 Endeavour Drive. A structure plan prepared for the site identifies a total yield of 64 residential and rural residential lots.
BD08	Lot 101 Teatree Rd	Bindoon	Map 5	Montbrook Pty Ltd	Rural Conservation	Rural Conservation	No	Lot 101 Teatree Rd, Bindoon - Structure Plan	474.7	46	46	0	0	0	46	0	E, MC			The site is comprised of a lot zoned Rural Conservation under LPS 6. A structure plan prepared for the site identifies a total yield of 46 rural conservation lots.
BD09	Pt Lot 26 Spice Rd	Bindoon	Map 5	F E Weller, G B Weller & E E Withnell	Rural Residential	Rural Residential	No	Pt Lot 26 Spice Rd, Bindoon - Structure Plan	56.2	23	23	0	0	0	23	0	E, MC, P			The site is comprised of a lot zoned Rural Residential under LPS 6. A structure plan prepared for the site identifies a total yield of 23 rural residential lots.
BD10	Lot 103 Gray Rd	Bindoon	Map 5	A C Foulkes-Taylor & N F Foulkes-Taylor	Rural Residential, Rural Retreat	Rural Residential, Rural Retreat	No	Lot 103 Gray Rd, Bindoon - Structure Plan	164.2	32	32	0	32	32	0	0	E, MC			The site is comprised of a lot zoned Rural Residential and Rural Retreat under LPS 6. Conditional subdivision approval has been granted to create 27 rural residential lots and five rural retreat lots.
BD11	Lot 7 Gray Rd	Bindoon	Map 5	A L Deetman, J M Evans & Hete Pty Ltd	Residential, Rural Residential	Residential, Rural Residential	No	Lot 7 Gray Rd, Bindoon - Structure Plan	44.1	30	30	0	0	0	30	0	E, MC, P, W			The site is comprised of a lot zoned Residential R2 and Rural Residential under LPS 6. A structure plan prepared for the site identifies a total yield of 18 residential lots and 12 rural residential lots.
BD12	Lot 484 Crest Hill Rd	Bindoon	Map 5	B M Kay & D F Kay	Rural Residential	Rural Residential	No	N/A	47.0	11	11	0	0	0	0	11	E, MC,			The site is comprised of a lot zoned Rural Residential under LPS 6.
BD13	Lot 3 Gray Rd	Bindoon	Map 5	A G Manning, B M Manning & H J Manning	Rural Residential	Agricultural Resource	Yes	N/A	38.0	12	12	0	0	0	0	12	E, P, Z			The site is comprised of a lot zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural residential.
BD14	Lot 76 Teatree Rd	Bindoon	Map 5	G M Donaldson	Rural Conservation	Agricultural Resource	Yes	N/A	143.9	15	15	0	0	0	0	15	E			The site is comprised of a lot zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural conservation and containing native vegetation of high conservation value. Structure planning may be required to determine the subdivision layout and final lot yield, which will be required to accommodate existing vegetation. It is likely that development of the site will be limited to the eastern and southern parts of the site.

Table 3: Development outlook - project summaries

Identifier	Location	Suburb	Map number in this document	Existing tenure <sup>1</sup>	Purpose	Zoning/planning			Area/yard <sup>2</sup>			Subdivision approvals <sup>3</sup>		Anticipated dwelling release <sup>4</sup> (commencing late 2017)			Constraints <sup>5</sup>			Comments
						Current zoning	Amendment required	Other planning under way	Area (ha)	Yield (lots)	Yield (units)	Approvals pending	Current approvals	Short-term (0-5 years)	Medium-term (6-10 years)	Long-term (10+ years)	Concern but resolution anticipated	Critical but resolution anticipated	Critical and resolution not definite	
BD15	Numerous lots	Bindoon	Map 5	Numerous landowners	Townsite	Townsite, Agricultural Resource	Yes	N/A	55.0	184	184	0	0	0	0	184	E, L, P, S, W, Z			The site is comprised of numerous lots zoned Townsite and Agricultural Resource under LPS 6. The site is located east of the Great Northern Highway. The draft LPS identifies the site as future townsite/residential development, with residential densities to range from R2 to R30.
BD16	Pt Lot 900 Brennan Rd	Bindoon	Map 5	Odelon Pty Ltd	Rural Residential	Rural Residential	No	N/A	242.0	60	60	0	0	0	0	60		E		The site is comprised of a part of lot zoned Rural Residential under LPS 6.
BD17	Lots 209, 900 & 901 Crest Hill Rd	Bindoon	Map 5	A N Kay, S A Kay, N A Kay, B J Kay & S D Kay	Rural Residential	Rural Retreat	Yes	N/A	48.2	32	32	0	0	0	0	32	E, MC, P, Z	W		The site is comprised of three lots zoned Rural Retreat under LPS 6. The draft LPS identifies the site as future rural residential.
CH01	Lot 51 Great Northern Hwy	Chittering	Map 5	P E Booth	Rural Residential	Rural Residential	No	Lot 51 Great Northern Hwy, Chittering - Structure Plan	16.5	4	4	0	0	0	4	0	E, MC, P			The site is comprised of a lot zoned Rural Residential under LPS 6. A structure plan prepared for the site identifies a total yield of four rural residential lots.
CH02	Lots 2, 9000 & 9001 Reserve Rd	Chittering	Map 5	C P Young, J L Young & Riverside Investments WA No. 2 Pty Ltd	Residential, Rural Conservation, Rural Residential	Residential, Rural Conservation, Rural Residential	No	Lot 2 Reserve Road & Lot 9002 Rosewood Dr, Chittering - Structure Plan	235.1	243	243	0	105	105	138	10	E, MC, P	W		The site is comprised of three lots, each zoned Residential R2, Rural Conservation and Rural Residential under LPS 6. Conditional subdivision approval has been granted to create 105 lots for residential purposes on part of Lot 2 Reserve Road. A structure plan prepared for Lots 2 & 9001 Reserve Road identifies a total yield of 207 residential lots and 36 rural conservation lots. Lots proposed for development on parent Lot 2 Reserve Road would be required to connect to reticulated water supply; this may affect the anticipated dwelling release.
CH03	Lot 650 McGlew Rd & Lot 9011 Santa Gertrudis Dr	Lower Chittering	Map 5	Bernville Pty Ltd & Maryville Wines Pty Ltd	Rural Residential, Commercial	Rural Residential, Special Use	No	Maryville Downs Structure Plan	306.3	38	38	0	1	35	0	0	E, MC, P			The site is comprised of a lot zoned Rural Residential and a lot zoned Rural Residential and Special Use under LPS 6. Conditional subdivision approval has been granted to create 50 lots for rural residential purposes on Lot 650 McGlew Road. Conditional subdivision approval has also been granted to secede the part of Lot 9011 Santa Gertrudis Drive zoned Special Use from the part of lot zoned Rural Residential, as well as to create one lot for general store purposes. A structure plan prepared for Lot 9011 Santa Gertrudis Drive identifies a total yield of 35 rural residential lots, two lots for retail purposes and one lot for general store purposes.
CH05	Lots 72 & 9602 Guernsey Rise	Chittering	Map 5	J Bright, P A Bright & G A Cugley	Rural Residential	Rural Residential	No	Lots 3 & 4 Madder Road, Chittering - Structure Plan	166.0	89	89	0	89	89	0	0	E, MC			The site is comprised of two lots zoned Rural Residential under LPS 6. Conditional subdivision approval has been granted to create 89 lots for rural residential purposes.
CH07	Lot 1 Julimar Rd	Chittering	Map 5	Numerous landowners	Rural Retreat	Rural Retreat	No	Lot 1 Julimar Rd, Chittering - Structure Plan	652.7	6	6	0	0	0	6	0	E, MC			The site is comprised of a lot zoned Rural Retreat under LPS 6.
CH10	Lots 1 & 4 Morley Rd, Lot 2 Muchea East Rd	Lower Chittering	Map 5	E M Venn & H M Venn	Rural Residential	Rural Residential	No	Lots 600 & 601 Muchea East Rd, Chittering - Structure Plan	66.5	13	13	0	0	0	13	0	E, MC			The site is comprised of three lots zoned Rural Residential under LPS 6. A structure plan prepared for the site identifies a total yield of 13 rural residential lots.
CH11	Lot 8 Buckthorn Dr	Lower Chittering	Map 5	M R Braidwood & R J Braidwood	Rural Residential	Agricultural Resource	Yes	N/A	40.0	6	6	0	0	0	0	6	E, MC, P, Z			The site is comprised of a lot zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural residential. Development of the site is required to accommodate and protect existing native vegetation.
CH12	Lot 6 Great Northern Hwy	Chittering	Map 5	Chittering Valley WA Pty Ltd	Rural Residential	Rural Residential	No	N/A	158.2	17	17	0	0	0	0	17	E			The site is comprised of a lot zoned Rural Residential under LPS 6. The presence of native vegetation may be a constraint to development.
CH13	Lots M2051 & M2052 Muchea East Rd	Lower Chittering	Map 5	J E Horsley	Rural Conservation	Agricultural Resource	Yes	N/A	329.6	14	14	0	0	0	0	14	E, Z			The site is comprised of two lots zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural conservation and containing native vegetation of high conservation value. Structure planning may be required to determine the subdivision layout and final lot yield, which will be required to accommodate existing native vegetation.
CH14	Lot 10 Muchea East Rd	Lower Chittering	Map 5	K J Mutimer	Rural Residential	Agricultural Resource	Yes	N/A	59.1	10	10	0	0	0	0	10	E, P, Z			The site is comprised of a lot zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural residential.
CH15	Lot 6 Morley Rd	Lower Chittering	Map 5	J R Easton	Rural Conservation	Agricultural Resource	Yes	N/A	73.8	10	10	0	0	0	0	10	E, P, Z			The site is comprised of a lot zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural conservation and containing native vegetation of high conservation value. Structure planning may be required to determine the subdivision layout and final lot yield, which will be required to accommodate existing native vegetation.

Table 3: Development outlook - project summaries

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CH16	Lots 5, 13 & M1942 Morley Rd	Lower Chittering	Map 5	R D Quinn, M J Hounsfield & M L Brown	Rural Residential	Agricultural Resource	Yes	N/A	101.0	24	24	0	0	0	0	24	E, P, Z			The site is comprised of three lots zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural residential.
CH17	Lots 2, 3, 4 & M1839 Morley Rd	Lower Chittering	Map 5	J Hollick, F R Savage & R W Morley	Rural Conservation	Agricultural Resource	Yes	N/A	146.2	12	12	0	0	0	0	12	E, P, Z			The site is comprised of four lots zoned Agricultural Resource under LPS 6. The draft LPS identifies the site as future rural conservation and containing native vegetation of high conservation value. Structure planning may be required to determine the subdivision layout and final lot yield, which will be required to accommodate existing native vegetation.
CH18	Lots 2, 9500 & M1909 Great Northern Hwy & Lot 5 Reserve Rd	Chittering	Map 5	A G Don, M Don, R S Pearce, Hampton Bay Pty Ltd, V M Bricknell, J L Johnson & M R King	Residential/Rural Residential	Agricultural Resource	Yes	N/A	923.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The site is comprised of a lot and part of three lots zoned Agricultural Resource under LPS 6. There is a possibility that the site may be developed in the future, in the event that the locality is serviced with reticulated water supply and sewerage.
CH19	Lot 612 Great Northern Hwy & Lot 8 Maddern South Rd	Chittering	Map 5	F L Fewster, M R Fewster, P M Fletcher & P R Fletcher	Residential/Rural Residential	Agricultural Resource	Yes	N/A	196.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The site is comprised of two lots zoned Agricultural Resource under LPS 6. There is a possibility that the site may be developed in the future, in the event that the locality is serviced with reticulated water supply and sewerage.
CH20	Lot 611 Great Northern Hwy & Lots 4 & 9000 Wandena Rd	Lower Chittering	Map 5	K A Nesci, N Elliott, L E Page, F L Fewster & M R Fewster	Residential/Rural Residential	Agricultural Resource	Yes	N/A	380.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The site is comprised of three lots zoned Agricultural Resource under LPS 6. There is a possibility that the site may be developed in the future, in the event that the locality is serviced with reticulated water supply and sewerage.
MCH02	Lot 501 Archibald St, Lot 48 Bagley St, Lots 77, 78 & 142 Faull St, Lots 81, 82, 83, 84, 85 & 100 Payne St	Mucnea	Map 5	Numerous landowners	Residential	Townsite	No	N/A	21.9	36	36	0	0	0	0	36	E, L, MC, P			The site is comprised of 11 lots zoned Residential R2.5 under LPS 6.
IND196	Numerous lots	Mucnea	Map 5	Numerous landowners	Industrial	Industrial Development, Agricultural Resource	Yes	Mucnea Employment Node Local Structure Plan (DRAFT)	1196.2	20-30	20-30	0	0	-	-	-	E, H, P, S, W			The site is comprised of numerous lots. Lot 809 Great Northern Highway is zoned Industrial Development under LPS 6. The remainder of the site is zoned Agricultural Resource. Lot 809 Great Northern Highway forms the first stage of development and has an estimated yield of 20 to 30 lots, based on the expected market demand for larger industrial lots. This is subject to change depending on market demand. The majority of the site is identified as general industrial. Development staging will be dependent on access to the regional road network and availability of service infrastructure. It is envisaged that the site will largely serve a freight/logistics distribution function. A Special Control Area has been established to accommodate impacts from industrial uses within the boundaries of the Mucnea Employment Node, as well as to limit the development of land uses that might compromise the intended purpose of the area as an industrial estate.
IND197	Lot 101 Bindoon-Dewars Pool Rd	Bindoon	Map 5	B Haydon, F G Haydon, L T Haydon & P J T Haydon	Industrial	Light Industrial	No	N/A	17.2	0	0	0	0	-	-	-	E, P			The site is comprised of a part of lot zoned Light Industrial under LPS 6.

1 Organisation or individual/s

2 In some cases the yield for the project is indicative only. Final lot/dwellings yields will be determined by further detailed planning.

3 Refers to the number of lots/units with current subdivision or strata approval, and the number of lots/units for which a subdivision/strata application has been lodged but which is yet to be determined (pending). Does not include local government development approvals.

4 Estimate only. In most cases the precise timing of lot release is uncertain. This could be for reasons such as market conditions, demand/supply of services or a requirement to resolve issues and constraints.

5 Constraints and issues codes: Drainage (D), environmental (E), heritage (H), land assembly (L), market conditions (MC), planning (P), power (Pw), sewer (S), water (W), topography and geology (TG), mining lease (M), zoning (Z) and transport (T).

### 5.6 Vacant lots and infill

Data from Landgate's property valuation database shows that there is a substantial stock of vacant lots on land zoned for residential and rural living purposes in the Shire of Chittering. As at December 2016, 364 vacant lots were identified on land zoned for residential and rural living purposes, accounting for 16 per cent of the total stock of existing residential and rural living lots.

Table 4 shows the stock of vacant lots on land zoned for residential and rural living purposes in the Shire. The distribution of vacant lots in the Shire's main settlements is shown on Map 6.

The Department of Planning, Lands and Heritage's Integrated Land Information Database (ILID) compares density outcomes with those set out by the R-Codes under local planning schemes. Appendix 1 provides a more in-depth description of the ILID model and the methodology for its use. Using the ILID model, the latent development capacity of residential land stocks can be measured based on existing lot sizes and R-Code zonings. The spatial distribution of lots with additional dwelling potential is also shown on Map 6.

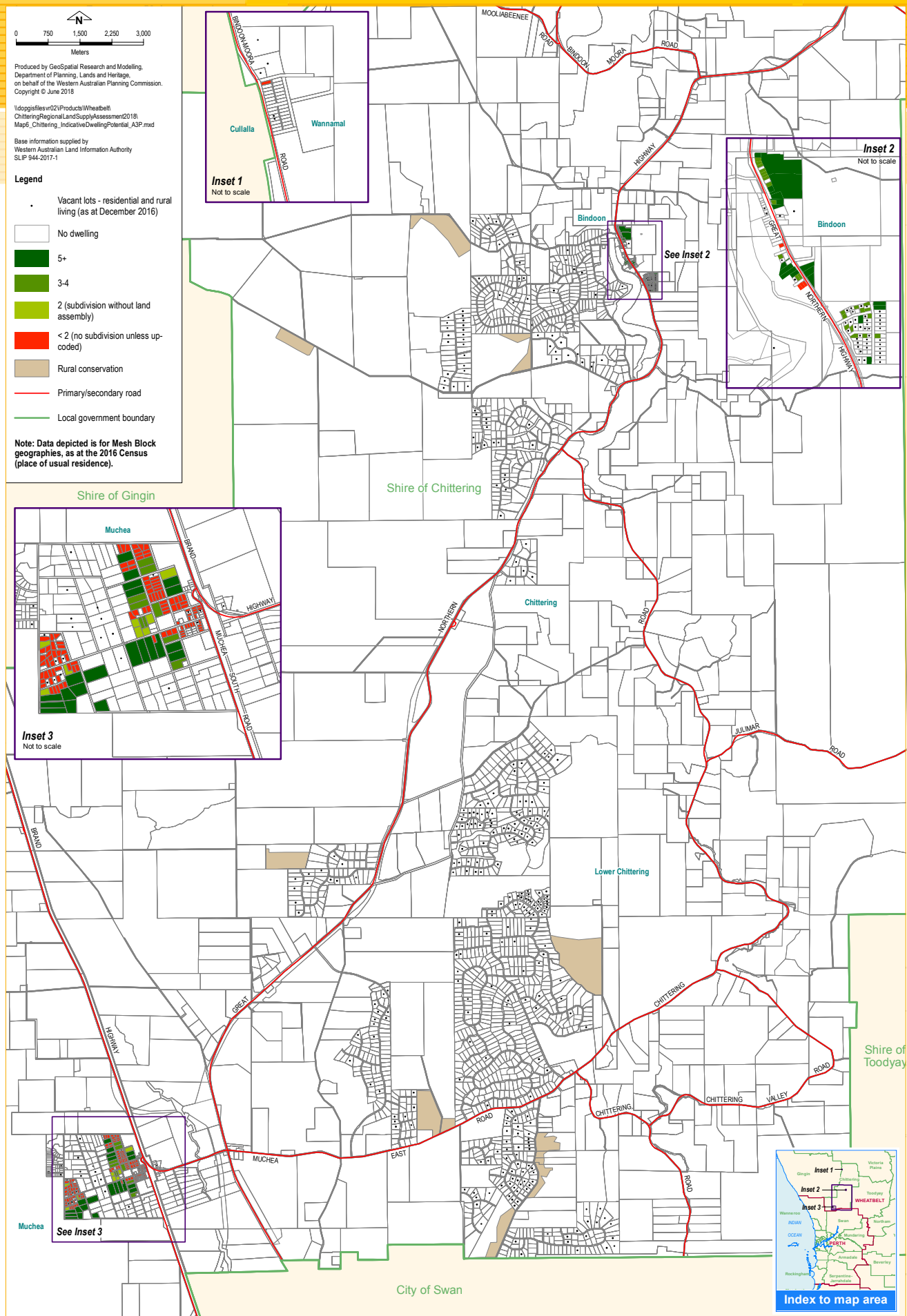
It must be noted that data depicted on Map 6 is indicative only and should not be used as a guide to development potential on a site-by-site basis. The model does not take into account factors such as heritage, environmental and/or infrastructure constraints or other provisions of the local planning scheme, which may mean that the additional potential shown on Map 6 cannot be fully realised.

**Table 4: Stock of vacant lots – Shire of Chittering**

Locality	Number of vacant lots
Bindoon	97
Chittering	121
Lower Chittering	118
Mooliabeenee	0
Muchea	24
Wannamal	4
<b>Total</b>	<b>364</b>

Source: Landgate (2017) and Department of Planning, Lands and Heritage (2017).

Note: Data includes lots on land zoned for residential and rural living purposes. Data shown in Table 4 has been filtered to exclude lots already included as part of development outlook projects.



Map 6: Vacant lots and Indicative dwelling potential (high)

### 5.7 Adequacy of supply

Analysis on the adequacy of residential and rural living land supply in the Shire of Chittering is predicated upon an average household size of 2.8 persons per dwelling, and that existing rates of dwelling occupancy (at the 2016 Census) will be maintained.

The median (Band C) *WA Tomorrow* population forecast for the Shire shows an average annual population increase of 187 residents from 2011 to 2026. Population growth of this nature will require the construction of an additional 77 dwellings per annum (based on an average household size of 2.8 persons per dwelling and an occupancy rate of 86 per cent) in order to accommodate growth.

Under this growth scenario, there are sufficient stocks of residential and rural living land identified to meet population growth into the long term (Table 5). A hypothetical temporal land supply of 22 years (27 years if the stock of vacant lots is included in the supply capacity) has been identified. This supply has the capacity to support a population of approximately 10,500.

In addition to the identified lot yield shown in Table 2 and Table 5, development outlook analysis identifies three 'investigation areas'. These areas have not been identified in the draft Local Planning Strategy. Lot and dwelling yields have not been identified for investigation areas, as further assessment is required to determine the suitability of the sites for residential land use. Once substantial planning has been undertaken for investigation areas, and if such areas have been determined as suitable for residential land use, the temporal land supply may be extended beyond the 22 years (27 years including the stock of vacant lots) identified.

**Table 5: Adequacy of supply – Shire of Chittering**

Timeframe	Estimated dwelling requirement	Identified dwelling yield
2016 - 2021	338	391
2021 - 2026	395	715
2026 - 2031	383	300
2031 - 2036	383	300
<b>Total</b>	<b>1,500</b>	<b>1,706</b>
<b>Stock of vacant lots</b>	<b>364</b>	

Source: Department of Planning, Lands and Heritage (2017).



## 6 Rural living

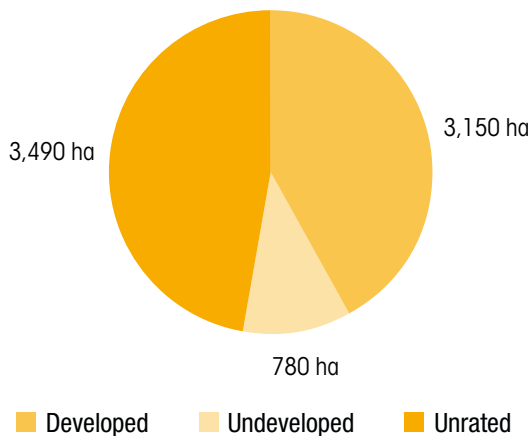
Within the Shire of Chittering, land zoned for rural living purposes covers approximately 7,420 hectares. The Shire's stocks of rural living land are located across the localities of Bindoon, Chittering, Lower Chittering and Muchea.

Using the IRIS land supply model, areas of land zoned for rural living purposes are assessed to provide a snapshot of rural living stocks within the Shire as at December 2016. Land zoned 'Rural Smallholdings', 'Rural Retreat', 'Rural Residential' and 'Rural Conservation' is included in this analysis.

IRIS analysis identified 1,778 lots on land zoned for rural living purposes in the Shire, covering approximately 7,420 hectares. Forty-two per cent of this stock (3,150 hectares) is considered to be developed, with a further 11 per cent (780 hectares) and 47 per cent (3,490 hectares) deemed undeveloped and unrated respectively (Figure 10).

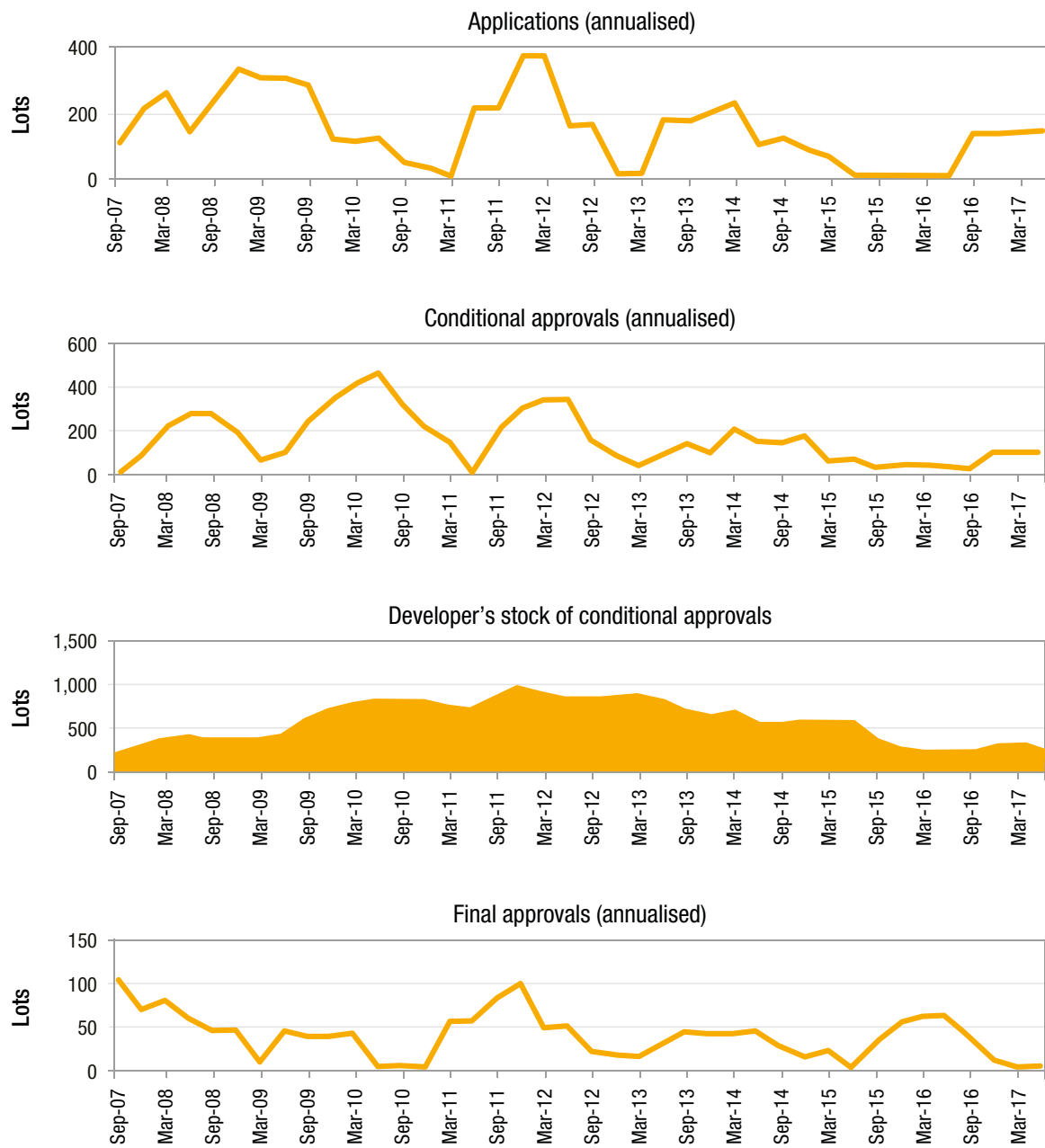
Over the decade to June 2017, applications were lodged to create a total of 1,427 rural living lots (an average of 36 lots per quarter. 2008/09 and 2010/11 marked the peak periods of subdivision, with over 50 lots per quarter lodged for subdivision approval. The high number of lots lodged for subdivision approval in 2010/11 (220 lots) led to a decade-high record in the number of lots with conditional approvals at the end of the December 2011 quarter (1,015 lots). At the end of the June 2017 quarter, there were 290 rural living lots with conditional approval.

**Figure 10: Stock of land zoned for rural living purposes - Shire of Chittering**



Source: Department of Planning, Lands and Heritage (2017) *Integrated Regional Information System*

Figure 11: Rural living subdivision activity and lot supply pipeline



Source: Western Australian Planning Commission (2017) *State Lot Activity and Water Corporation* (2017).



## 7 Industrial

Within the Shire of Chittering, land zoned for industrial purposes covers approximately 170 hectares. The Shire's stock of industrial land is comprised of just three lots, located across the localities of Bindoon and Muchea.

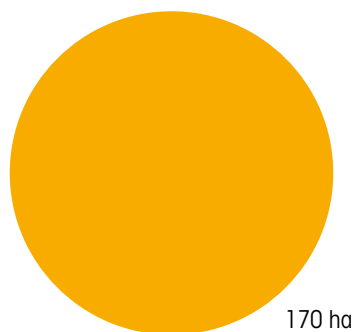
Using the IRIS land supply model, areas of land zoned for industrial purposes are assessed to provide a snapshot of the stock of industrial land within the Shire as at December 2016. Land zoned 'Industrial Development' and 'Light Industrial' is included in this analysis.

IRIS analysis identified three lots on land zoned for industrial purposes in the Shire, covering approximately 170 hectares (Figure 12). The entirety of this stock is considered to be unrated. Current industrial operations within the Shire is limited to the

Tronox mineral sands processing plant, located north of the Muchea townsite on land zoned 'Agriculture Resource'.

Plans for a new industrial area for the Shire are being progressed. Located at the intersection of Brand and Great Northern Highways, the future Muchea Employment Node covers an area of approximately 1,396 hectares (site IND196). It is envisaged that the site will accommodate large-scale freight/logistics and agribusiness operations, as well as service-based uses such as transport, livestock, fabrication, warehousing, wholesaling and general commercial use. The Shire of Chittering has rezoned approximately 150 hectares of land on Great Northern Highway from 'Agricultural Resource' to 'Industrial Development'.

**Figure 12: Stock of land zoned for industrial purposes - Shire of Chittering**



■ Unrated

Source: Department of Planning, Lands and Heritage (2017) *Integrated Regional Information System*

## 8 Commercial

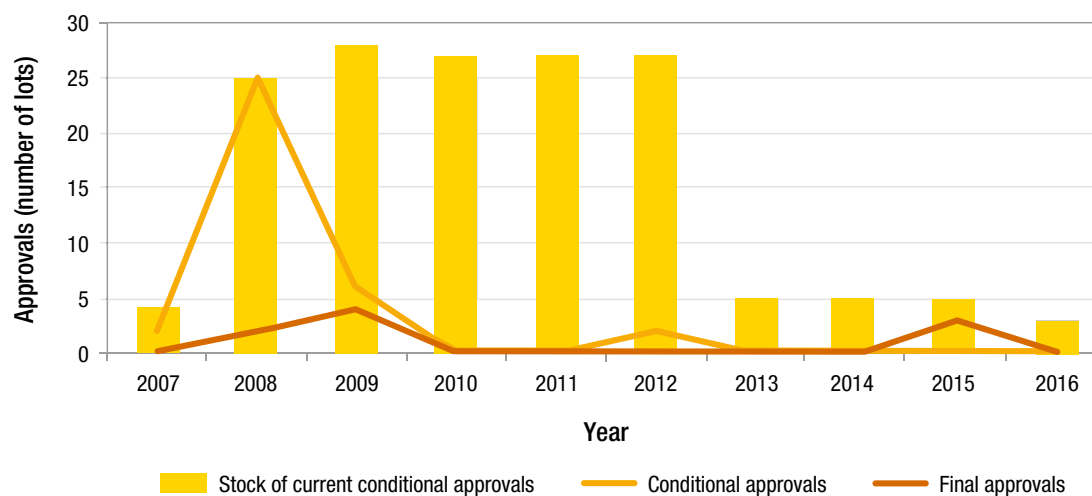
The *Shire of Chittering Local Planning Strategy* (last updated May 2009) sets out a strategic framework to ensure that the Bindoon townsite continues to be the focal point for commercial and retail activity within the Shire. The draft *Shire of Chittering Local Planning Strategy* (2018) proposes for the establishment of a minor centre for recreation, community and retail purposes at Maryville Estate, within the suburb of Lower Chittering.

The draft Local Planning Strategy does not identify any areas for future commercial purposes. The Shire of Chittering deems the existing supply of townsite zoned land sufficient to address the need for commercial land in the short to medium term, indicating a low demand for additional commercial land within the Shire.

The Shire's close proximity to the Perth metropolitan region enables residents to access higher order commercial and retail services with relative ease. Growth of the Joondalup and Midland strategic metropolitan centres has also contributed to increased accessibility to commercial and retail services.

Figure 13 shows commercial subdivision activity in the Shire from 2007 to 2016. During this period, a total of 35 lots were granted conditional approval, with nine lots progressed to final approval.

**Figure 13: Commercial subdivision activity - Shire of Chittering (2007- 2016)**



Source: Western Australian Planning Commission (2017) *State Lot Activity*

## 9 Service infrastructure

The following section outlines the broad service infrastructure capacity for the Shire of Chittering and identifies capacity constraints and/or upgrades that may be required to facilitate future residential, industrial and commercial growth in the Shire.

### 9.1 Water

Within the Shire of Chittering, access to reticulated water supply is currently limited to the Bindoon townsite. Residents living in the Muchea townsite rely on private bores for water supply, while those in rural residential areas rely on self-sustaining roof catchments or shallow bores.

The Water Corporation manages water supply to the Bindoon townsite. Water is sourced from a borefield located just outside of the Bindoon townsite. Water is then transported to, and filtered at, the Bindoon water treatment plant to remove high levels of naturally-occurring minerals before it is supplied to customers. In 2014, a new water filter was installed at the water treatment plant. There is currently no planned capital investment for Muchea water supply.

Water demand within local government areas located adjacent to the coastline and/or in close proximity to the Perth metropolitan region is expected to increase, as a result of peri-urban residential and rural living growth, as well as industrial expansion and horticultural and agri-industry development.<sup>10</sup>

Water resource availability within the Shire is highly constrained. Most rural residential properties within the Shire utilise rainwater tanks to manage water supply; however, rainfall is not considered to be a reliable source of water, given the continued declining rainfall across the southwest of Australia.

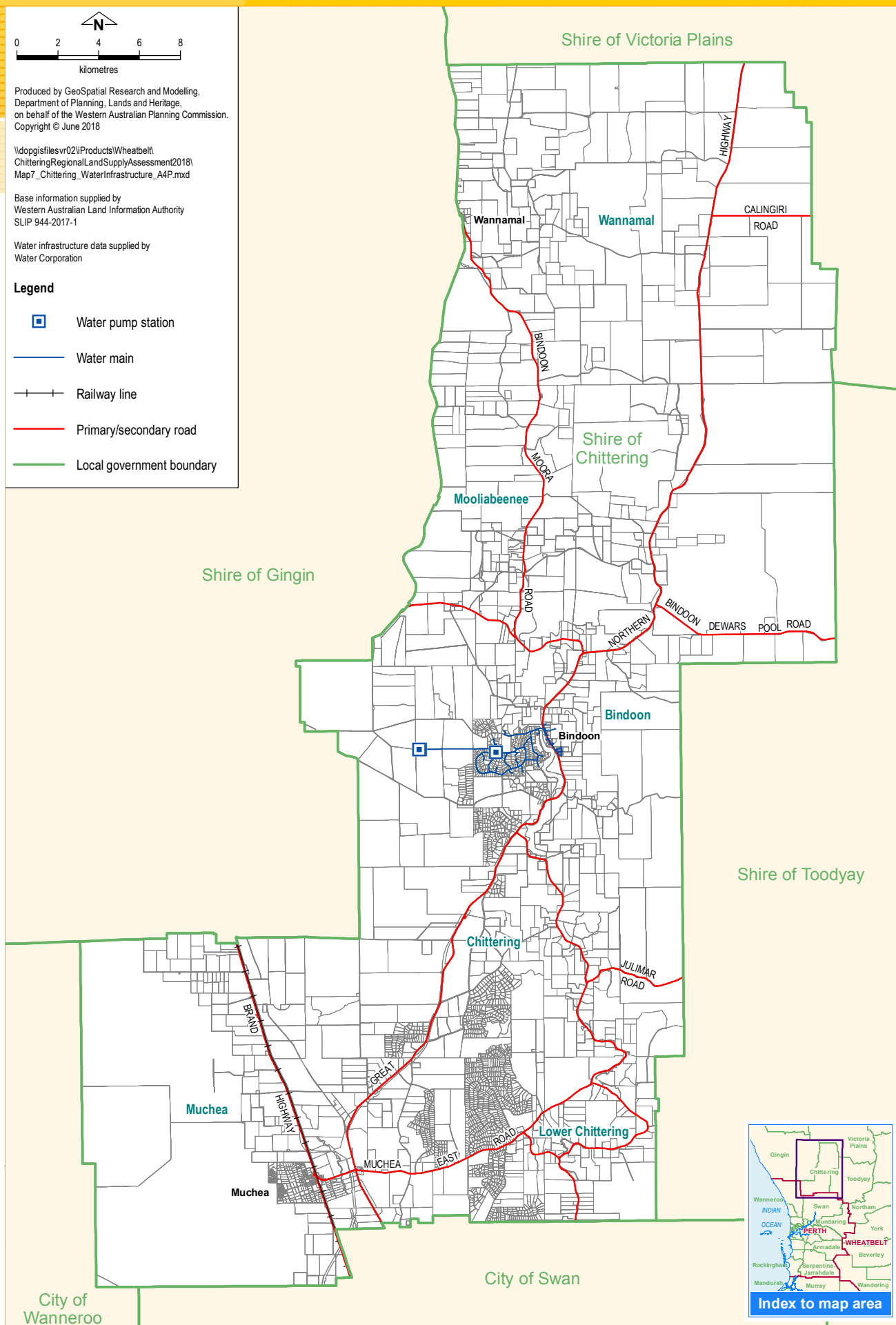
In addition, groundwater resources within the Shire are also constrained, with all major aquifers being fully allocated. There is some current availability in the Surficial and Fractured Rock aquifers; however, the quality and yield of the groundwater is highly variable. The viability of the groundwater as a potable and non-potable water source will need to be verified by on-site investigations. Therefore, it is likely that alternative water

sources and viable supply solutions for the Shire will need to be investigated, given the Shire's anticipated population growth and the need to accommodate most of this growth in areas connected to essential infrastructure and services.

Plans are progressing to establish a new residential area on Reserve Road, Chittering, northeast of the Muchea townsite (site CH02). The development will comprise of 207 lots within the Residential R2 zone and 36 lots within the Rural Conservation zone. Lots within the Residential R2 zone will be connected to a potable water source, with water supply to be provided by a private licensed water supply provider. Planning is underway to construct a water pipeline to service the Reserve Road residential area and stage one of the Muchea Employment Node. The capacity of the pipeline could potentially be scaled up to ultimately service the remainder of the Muchea Employment Node.<sup>11</sup>

<sup>10</sup> Western Australian Planning Commission (2015) *Wheatbelt Regional Planning and Infrastructure Framework*

<sup>11</sup> Shire of Chittering (2017) and Wheatbelt Development Commission (2017)



Map 7: Water infrastructure

### 9.2 Wastewater

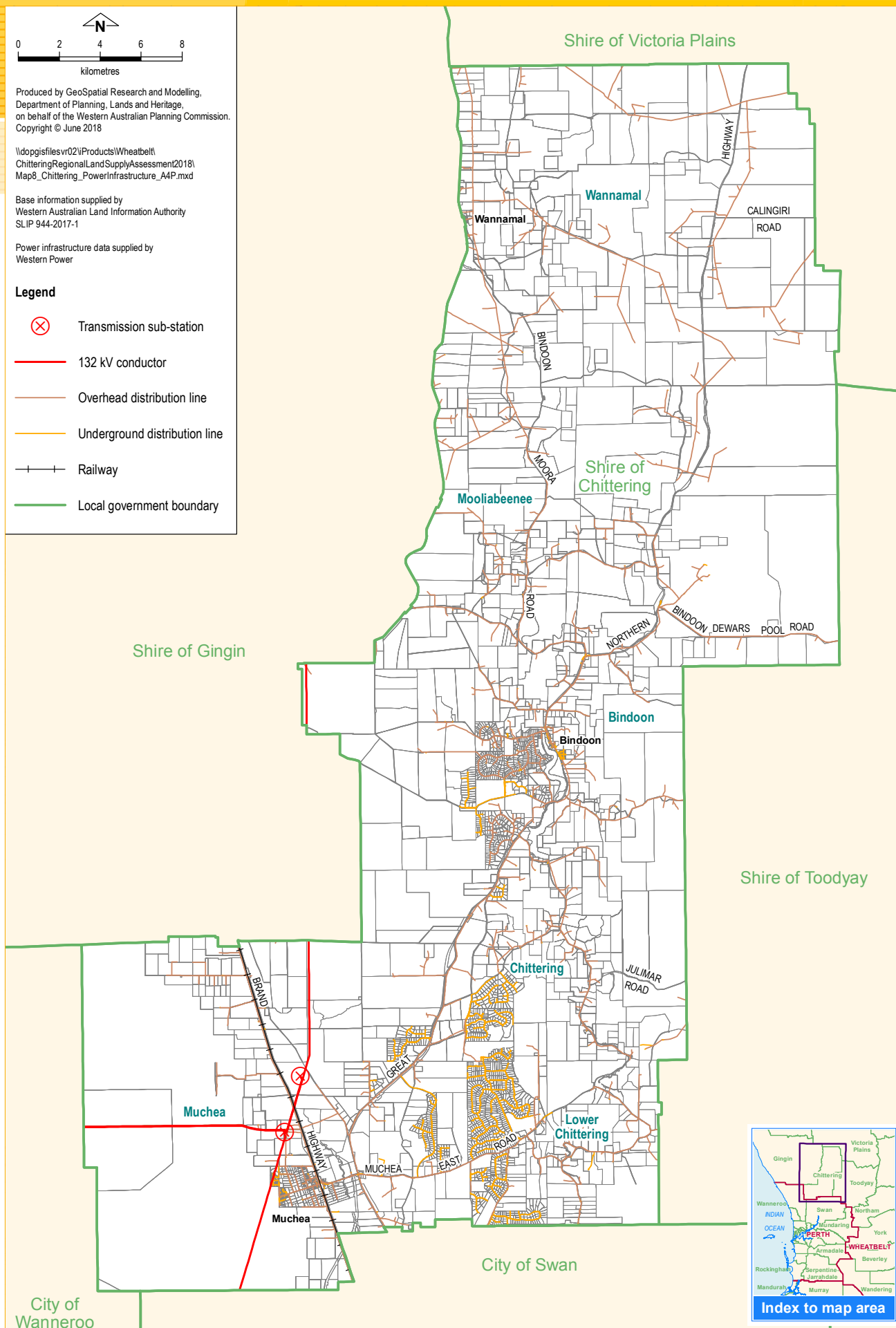
There is currently no reticulated wastewater scheme in the Shire of Chittering and residents within the Shire, including the Bindoon and Muchea townsites, are required to manage their own wastewater services through on-site effluent disposal. Most of the Shire area has been identified as sewage sensitive by the draft Government Sewerage Policy, due to its location within the Ellen Brook and Brockman catchment areas and the Gngangara Underground Water Pollution Control Area, as well as the presence of a number of significant wetlands.

This limits the capacity for residential expansion and/or intensification of the Muchea townsite, where development is constrained by site conditions that do not support on-site effluent disposal. These include a high water table, a high risk of inundation, poor soil permeability and poor phosphorous retention. Modelling also indicates that on-site wastewater disposal in the Muchea townsite is a significant source of nutrients in the Ellen Brook.

To protect the environment, the State's water and land resources, public health and amenity, the draft Government Sewerage Policy recommends new lots and development be provided with a reticulated sewerage service, unless exempt under the policy. However, it may not be possible to provide such a service to all areas identified as suitable for more residential development. Where this is the case, the policy provides for the consideration of on-site sewage disposal on the condition that it does not compromise public health or the environment; and where minimum site requirements can be met. There may be a need to investigate alternative fit-for-purpose wastewater disposal systems to accommodate existing and future growth of the Shire.

### 9.3 Energy

Western Power provides electrical supply to the Shire of Chittering. The majority of the Shire's area is covered by the Metro North 22 kV (b) planning cluster, with the northern third of the Shire's area covered by the North Country load area. Electricity is supplied to the southern portion of the Shire via overhead distribution lines which extend from Muchea substation. The northern third of the Shire is supplied from Regans substation, also via overhead distribution lines. Western Power's Network Capacity Mapping Tool shows that the majority of the Shire's area (including the localities of Bindoon, Chittering, Lower Chittering, Mooliabeenee and Muchea) will have a forecast remaining capacity of 25 to 30 megavolt amperes (MVA) in 2020. For the northern part of the Shire, the forecast remaining capacity at 2020 is slightly lower, at 10 to 15 MVA. Remaining capacity cannot be reserved and is provided to customers on a first come, first served basis. As the distances are relatively large within the Shire of Chittering, the location of the load connection may lead to voltage constraints on the distribution network, restricting the amount of capacity that can be provided to the customer without reinforcing the distribution network. To determine customers' connection requirements, network studies will need to be completed, in line with the standard process for new connections.



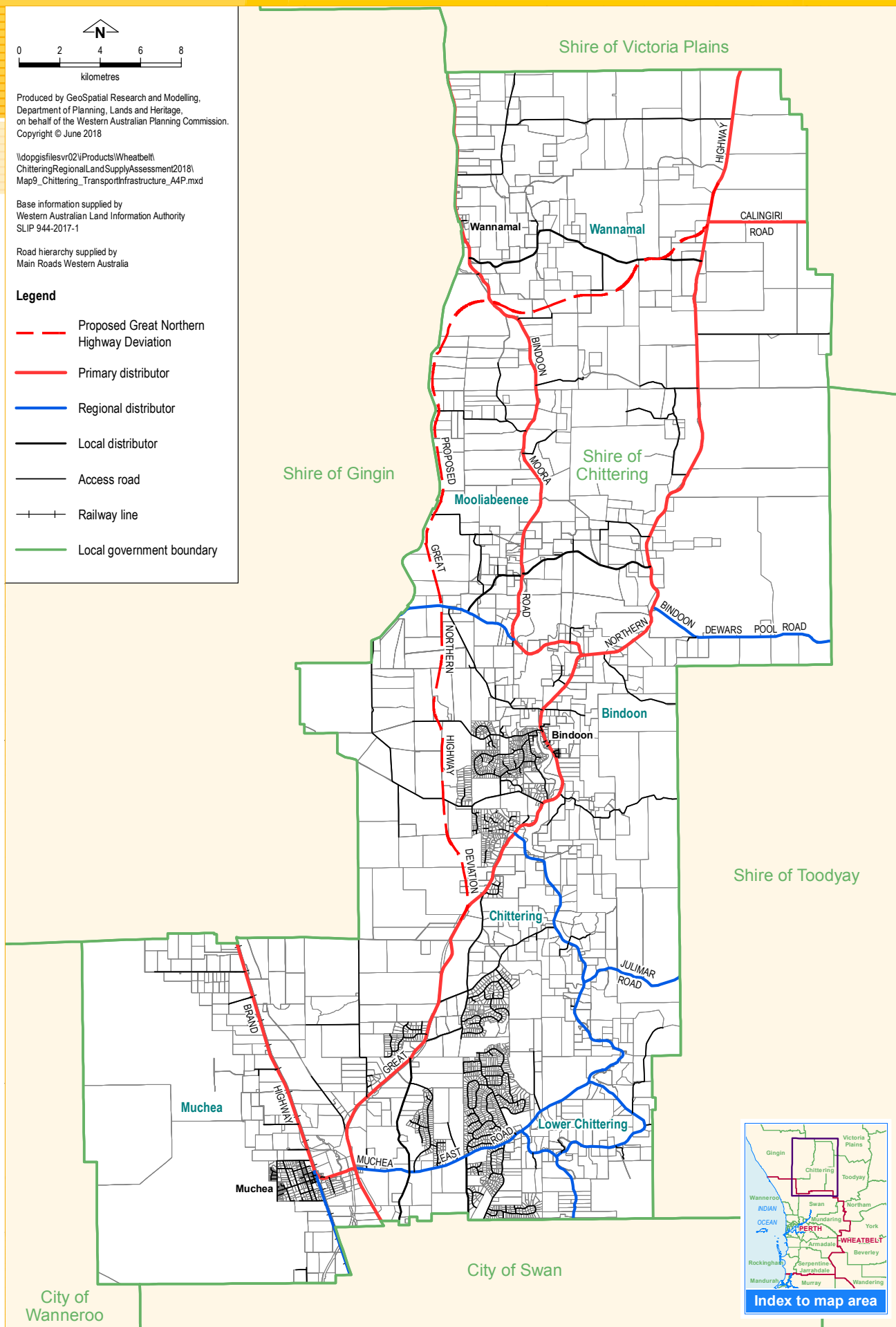
Map 8: Power infrastructure

### 9.4 Transport

The Shire of Chittering is serviced by a primary distributor road network consisting of Bindoon-Moora Road, Brand Highway, Great Northern Highway and Wongan Hills-Calingiri Road. The Great Northern Highway serves as the Bindoon townsite's main thoroughfare and provides connections to the Perth metropolitan region to the south and Mount Magnet, Meekatharra, Newman and Port Hedland to the north. Brand Highway provides a connection to Gingin, Eneabba, Dongara/Port Denison and Geraldton. The Shire is also served by a regional distributor road network, which provides connections to Gingin and Toodyay.

Plans for the proposed Great Northern Highway Bindoon Bypass are being progressed. Three bypass corridor options were identified and presented for public and stakeholder comment in mid-2016. The 'Western Bypass Corridor A' has been endorsed as the preferred option for further planning and development. This option comprises of 48 kilometres of new highway between Chittering Roadhouse and Calingiri West Road. Funding of \$20 million has been allocated towards the project.

The Bypass is part of the broader NorthLinkWA project, which will provide a transport link between Morley and Muchea. The aim of the project is to reduce travel times and congestion, and provide significant productivity benefits to the economy, industry, motorists and local communities. The \$1.12 billion NorthLinkWA will link to the GatewayWA, servicing regional traffic movements to commercial and industrial areas such as Malaga, Kewdale, Perth Airport and the Perth CBD.



Map 9: Transport infrastructure



## Glossary

### Building approvals

A **house** is a detached building primarily used for long-term residential purposes. It consists of one dwelling unit. For instance, detached 'granny flats' and detached dwelling units (for example, caretaker's residences) associated with a non-residential building are defined as houses. Also includes 'cottages', 'bungalows' and 'rectories'.

**Other dwellings** include all dwellings other than houses. They can be created by the creation of new other residential buildings (for example, flats); additions/alteration work to an existing residential building; either new or alteration/addition work on a non-residential building; and conversion of a non-residential building to a residential one, creating more than one dwelling unit.

### Population

**Estimated resident population (ERP)** - The official estimate of the Australian population based on place of usual residence. Estimates of the resident population are calculated as at 30 June of each year for selected Australian Statistical Geography Standard (ASGS) geographies, including sub-state areas such as Statistical Areas Level 2 (SA2s) and Local Government Areas (LGAs).

Estimates of the resident population for Census years (i.e. 2011 and 2016) are based on Census counts of usual residence (excluding short-term overseas visitors in Australia), with an allowance for Census net undercount and Australian residents temporarily overseas at the time of the Census.

Sub-state population estimates for non-Census years were previously updated using data inputs from a variety of sources, such as dwelling approvals, Medicare and Australian Electoral Commission enrolments. In 2017, the ABS adopted a new, component-based method to estimate resident population at the sub-state level. Estimates of the resident population for 30 June 2017 and onward will be calculated by adding natural increase (births minus deaths), net internal migration and net overseas migration to the base population. This method is consistent with that used to calculate ERP at national and state/territory level, and will provide a greater understanding of why population has changed.

As the official measure of the population of Australia, ERPs are widely used as a basis for Government decision-making. ERPs play an important part in the allocation of federal government funding to local government authorities, and assist in decisions regarding development, infrastructure and policy formulation, monitoring and reporting.

### Geography

The **Wheatbelt region** is one of the nine regions of Western Australia, as defined by the *Regional Development Commissions Act 1993*. The region is comprised of 42 local government areas, including the Shire of Chittering.

The **Central Midlands sub-region** is one of the five sub-regions of the Wheatbelt region. The sub-region is comprised of five local government areas, including the shires of Chittering, Dalwallinu, Moora, Victoria Plains and Wongan-Ballidu.

**Significant Urban Areas (SUAs)** has been designed as the smallest unit for the release of Census data. SA1s generally have a population of 200 to 800 persons, and an average population of about 400 persons. They are built from whole Mesh Blocks and there are approximately 55,000 SA1s covering the whole of Australia.

**Statistical Area Level 2 (SA2)** is a general-purpose medium sized area built from whole SA1s. Their aim is to represent a community that interacts together socially and economically. SA2s generally have a population range of 3,000 to 25,000 persons, and have an average population of about 10,000 persons. The SA2 is the lowest level of the ASGS structure for which Estimated Resident Population (ERP), Health and Vitals and other non-Census ABS data are generally available. There are 2,196 SA2s covering the whole of Australia.

**Statistical Area Level 3 (SA3)** provides a standardised regional breakup of Australia. The aim of SA3s is to create a standard framework for the analysis of ABS data at the regional level through clustering groups of SA2s that have similar regional characteristics. SA3s are built from whole SA2s and in general have populations between 30,000 and 130,000 persons. They are often the functional areas of regional cities and large urban transport and service hubs.

**Mesh Blocks** are the smallest geographic region in the Australian Statistical Geography Standard (ASGS), and the smallest geographical unit for which Census data are available. Most residential Mesh Blocks contain approximately 30 to 60 dwellings. Mesh Blocks have been designed to be small enough to aggregate accurately to a wide range of spatial units and thus enable a ready comparison of statistics between geographical areas, and large enough to protect against accidental disclosure. Due to the small size of Mesh Blocks, data are confidentialised and are only released for Basic Person Counts and Dwelling Counts.

### Subdivision approvals

**Conditional approval** is granted by the Western Australian Planning Commission (WAPC) for subdivision to begin subject to certain conditions being met. The approval is preceded by an assessment of the proposed subdivision plan by statutory referral agencies, including servicing authorities. On receipt of conditional approval, the proponent may commence subdivision development in accordance with the conditions of approval. A conditional approval remains valid for three years where five lots or less are approved and for four years where six lots or more are approved.

**Current valid conditional approvals** refer to those conditional approvals that are still valid but have not yet been issued with final approval. In general, these are approvals for which construction/servicing has not yet commenced or is currently under way (see active conditional approvals).

**Active conditional approvals** refer to conditionally approved lots where a servicing agreement (agreement to construct) has been signed between the Water Corporation and the developer. These are termed lots on non-cleared agreements.

**Inactive conditional approvals** are where conditional approval has been granted and the approval is still valid, but where a servicing agreement (agreement to construct) has not been signed between the Water Corporation and the developer.

**Lapsed conditional approvals** are those where the approval has expired and the conditions have not been met.

**Final approval** is the WAPC endorsement of the proponent's submitted plan/diagram(s) of survey describing the now complete subdivision; constructed in accordance with the conditions set down in the conditional approval. Final approvals are then registered with the Office of Titles where certificates of titles for the newly created lots can be issued.

**Developers lodged application** – subdivision application and its accompanying lots received by the WAPC for subdivision approval.

**Application under assessment** – is the number of applications and accompanying lots awaiting decision for subdivision. Statistics include deferred applications.

### Planning

**Local planning schemes** are detailed planning schemes developed by local governments to identify the range of permitted land uses within specified locations. Within the Metropolitan, Peel and Greater Bunbury Region Schemes areas, local planning schemes must be consistent with the provisions identified within the relevant region scheme.

**Local planning strategies** contain the strategic plan and policy context of a local planning scheme. The strategy sets out the general aims, intentions and desired outcomes for long-term growth and change, having regard to social, economic and environmental factors. An assessment of the capacity of infrastructure such as water, sewerage, electricity and roads is also usually considered in a local planning strategy. Residential densities and commercial centres may also be identified.

A **scheme amendment** is any amendment to a local planning scheme as set out within Part 5 of the *Planning and Development (Local Planning Schemes) Regulations 2015*. The amendment process requires proposed amendments to be advertised for wider community and government comment. The amendment process is regulated by the *Planning and Development Act 2005*, allowing for extensive community consultation to review the proposal before a final decision is made.

**Structure plan** refers to a document including spatial plans that details the proposed layout of a future development area. The preparation of a structure plan is one of the first steps in progressing proposals for the development of new areas. In addition to illustrating details such as road configuration and the location of retail and community facilities such as shops, schools and public open space, a structure plan can also show details such as housing density, land use classifications and buffer zones. Structure plans highlight opportunities and constraints in an area, and can provide the basis for amendments to local planning schemes. Structure plans can generally be categorised as region, district or local structure plans.

**Temporal land supply** is an estimate of the number of years it will take to completely consume land that is currently zoned for urban development. Temporal land supply can vary based on different development scenarios, particularly where different rates of density and infill are applied.

**Underlying housing demand** refers to the need for additional dwellings that will satisfy the requirements of a population (and population growth), irrespective of the demand actually expressed by the market.

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## Appendix 1

### Integrated Land Information Database (ILID)

#### ILID 2015 – Background:

The Integrated Land Information Database (ILID) is a net land-use assessment and capability model that is generated at a cadastral level for the whole of Western Australia. The database can be used to identify the current range of land uses within a number of predefined boundaries. It can also model future capability based on what is known about the current (or proposed) planning policies and statutory instruments.

The model is produced within a Geographic Information System by overlaying a variety of layers to compute the coincidence of two or more parameters. For example, if a dataset containing the locations of school sites is overlayed with another dataset that shows the areas that are within two kilometres of the coast, it is possible to generate a single dataset with schools that are within two kilometres of the coast. This process can be repeated with a variety of datasets in endless combinations to help with multi-criteria decision analysis through the process of elimination.

The ILID works by linking the spatial extent of many different input layers with all the unique cadastral identifiers that exists at a particular point in time. The result of this overlay process creates many versions of the cadastre attributed with discrete pieces of information i.e. cadastre version of the local planning scheme zones, region schemes, R-Codes and so on. The 'integrated' component of the database means that once all of the individual inputs have been identified, they can all be joined together using a tabular join through the common PIN number field across all datasets.

For this document, the ILID has been used to identify the lot potential and additional dwelling potential of all residential lots (with an R-Code identified in the *Shire of Chittering Local Planning Scheme No. 6*) in the Shire of Chittering. Vacant lots were not included in this analysis.

ILID analysis in this document includes three key inputs: lot size, R-Code value and dwelling count/location. Constraints to subdivision such as heritage, infrastructure supply and environment are not variables included in this analysis, and as such, a significant proportion of the development potential may not be realised.

#### Definitions:

**Lot potential** is used to determine how many potential lots the R-Code intends to yield as a maximum. For example, a lot that has an R-Code of R20 has a planned density of a single 450 square metre lot. Or a 900 square metre lot has the potential to create two 450 square metre lots. In any case the lot potential can only be calculated if there is an existing R-Code present.

**Net dwellings**, also known as additional dwelling potential, identifies the extra amount of dwellings a single lot can add on (disregarding the location of the current dwelling footprint and has a 100 per cent take-up rate). This is determined by the size of the lot and the current lot potential based on the R-Code planning and any existing dwellings.

## Appendix 2

### Integrated Regional Information System (IRIS)

The sections of this report discussing the development status of land zoned for residential, rural living, industrial and commercial purposes draw heavily on the tiered land supply assessment model; the central output of the Integrated Regional Information System (IRIS). The model is a geographic information system (GIS)-based tool used to assess key measures of land use dynamics across Western Australia.

The IRIS model groups zones under all local planning schemes into primary, secondary and tertiary categories. This grouping of local planning scheme zones forms the zone 'catchment' for each category.

Tier one of the IRIS model groups local planning scheme zones into primary categories for analysis. The table below shows the groupings of the *Shire of Chittering Local Planning Scheme No. 6*.

Primary category (IRIS analysis)	Local planning scheme category
Residential	<ul style="list-style-type: none"> <li>Residential (R2)</li> <li>Townsite</li> </ul>
Rural living	<ul style="list-style-type: none"> <li>Rural residential</li> <li>Rural retreat</li> <li>Rural smallholdings</li> </ul>
Industrial	<ul style="list-style-type: none"> <li>Industrial development</li> <li>Light industrial</li> </ul>
Commercial	N/A

Tier two of the IRIS model addresses the development status of each lot within the specified primary land use category. Each cadastre (lot) within each primary land use category is attributed one of three values (developed, undeveloped or unrated), based on information from Landgate's property valuation database.

**Developed** refers to lots that are zoned for development for the purposes of the specified primary land use category for which premises information is captured in Landgate's property valuation database.

**Undeveloped** refers to lots that are zoned for development for the purposes of the specified primary land use category that are recorded as vacant in Landgate's property valuation database.

**Unrated** refers to lots that are zoned for development for the purpose of the specified primary land use category for which no vacant land or premises valuation information has been captured in Landgate's property valuation database. This may include State or local government owned lots or premises exempt from rates, Crown allotments, common property within lots on survey, newly created lots on survey, land otherwise exempt from rates and some public roads which are zoned for the primary land use under the local planning scheme.

Tier three of the IRIS model refers to the nature of development by assessing the premises type against the land use as indicated by the local planning scheme. Tier three of the IRIS model has not been included in analysis for this report as sites with identified development potential are described in Table 3 and Map 5 of this document.