Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

We're working for Western Australia.

Pilbara

Karratha

Regional Land Supply Assessment

August 2020




Contents

Urban Development Program

The Department of Planning, Lands and Heritage acknowledges the traditional owners and custodians of this land. We pay our respect to Elders past and present, their descendants who are with us today, and those who will follow in their footsteps.

Published by the
Western Australian Planning Commission
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140 William Street
Perth WA 6000

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Perth WA 6001

Published August 2020

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1 Regional Land Supply Assessments and the Urban Development Program

The *Regional Land Supply Assessments* series assesses 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 in Western Australia. *Regional Land Supply Assessments* are prepared by the Department of Planning, Lands and Heritage (DPLH) on behalf of the Western Australian Planning Commission (WAPC) to fulfil the requirements for tracking and monitoring land supply as outlined in Section 14 of the *Planning and Development Act 2005*. The role of the WAPC includes developing models to better understand land supply and development as part of the land use planning process and to better align the provision of infrastructure.

The *Regional Land Supply Assessments* series is one of a suite of products produced as part of the Urban Development Program (UDP). The UDP monitors land supply and promotes the timely delivery of residential, industrial and commercial land, targeted regional centres and areas of activity. The information presented in *Regional Land Supply Assessments* assists State infrastructure agencies, public utilities, local governments and the private sector in decision making and forward planning.

The reports include key information on:

- demand drivers specific to each regional centre, 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
- existing and required physical infrastructure.

Regional Land Supply Assessments are the result of consultation with key stakeholders, including State Government agencies, local governments and servicing authorities. Recent editions of *Regional Land Supply Assessments* publications can be accessed online at the DPLH website: www.dplh.wa.gov.au

2 Key points

2.1 Population and distribution

- The Karratha urban area's estimated resident population at 30 June 2019 was 17,102.
- Over the decade to 30 June 2019, the population of the Karratha urban area has fluctuated with annual growth rates ranging from a decrease of 4 percent to an increase of 4.5 percent, which has resulted in an average annual rate of 0.90 per cent. This is marginally lower than the average annual growth rates for the Pilbara region (1 per cent) and Western Australia (1.6 per cent).
- Since 2017, the estimated resident population annual growth rate for the Karratha urban area has been stronger than the State average and the Pilbara and is trending upwards.

2.2 Occupancy

- A total of 77 per cent of occupied private dwellings in the Karratha urban area are rented. This is significantly higher than the State average (28 per cent), indicating long term tenants living in company housing and a transient population base.
- The Karratha urban area exhibits a relatively high proportion of lots zoned for residential development owned by commercial organisations equating to 1,901 lots or 30 percent of all residential lots. This highlights the pivotal role that commercial organisations play in the redevelopment and availability of dwelling stock for the rental market.

2.3 Future trends

- Band E, which represents the highest quintile of projected growth as per *WA Tomorrow Population Report No.11 (WA Tomorrow)* forecasts an average annual growth rate of 1.26 per cent and a projected population of 19,705 for the Karratha urban area by 2031. This projection has been adopted in this report considering stronger population growth is expected to emerge in response to the current investment cycle in the Pilbara.

2.4 Economic demand drivers

- The State's economy was projected to grow by 3 percent and result in an unemployment rate of approximately 5.8 per cent in 2020. As a result of COVID-19 (pandemic), the State's economy is now projected to contract.
- Western Australia's economy is likely to feel the impact of any prolonged economic weakness in China as iron ore accounts for 80% of the State's exports. Notwithstanding, feedback received from the mining industry is that export production targets for iron ore will remain largely unchanged.
- The potential investment activity in liquified natural gas (LNG) is less certain given the falling oil price. The long-term supply agreements that are in place however are likely to mitigate much of this impact.
- The current investment cycle in the Pilbara is being driven by the iron ore and LNG sectors which have a total of $18 billion of projects under construction and $87 billion under consideration.
- The current investment cycle is not expected to match the scale of the last cycle. The peak construction workforce from projects under construction is estimated to be equivalent to around a quarter of workforce requirements at the peak of the previous investment cycle.
- If all projects currently under consideration were to proceed, the construction workforce peak would reach three quarters of the previous peak.
- There are a range of projects that are currently under advanced consideration, committed or under construction in the City of Karratha (City) that could result in up to 6,700 construction jobs, 1,300 production jobs and total investment of approximately $60 billion. A substantial portion of this projected investment relates to the development of the Browse and Scarborough gas fields and associated infrastructure, both of which have been delayed by Woodside in response to the pandemic.

2.5 Future growth

- The City's Local Planning Strategy 2019 (Local Planning Strategy) sets out a plan to concentrate most of the future population within the confines of the Karratha urban area. A new urban growth area in Mulataga to the east of the city centre is proposed and extensions to the existing urban area are also identified to the west, mainly in the suburbs of Gap Ridge, Nickol and Baynton.

- The Local Planning Strategy identifies a significant amount of development investigation land in the suburbs of Gap Ridge, Karratha Industrial Estate, Mulataga and Stove Hill which require further investigation to determine viability and yield potential in the longer-term.
- The Local Planning Strategy allocates a small amount of industrial expansion land within the Karratha urban area as well as Wickham and Roebourne. Most of the industrial expansion is expected to occur outside of the Karratha urban area at Maitland, Mount Anketell and on the Burrup Peninsula.

2.6 Findings

2.6.1 Vacant lots

- Data shows there is a substantial stock of vacant lots for residential development in the City. As at November 2019, 314 vacant lots were identified on land zoned for residential purposes. Of these, there were 147 lots[1] on the market in the suburbs of Baynton and Nickol.

2.6.2 Residential land

- There are sufficient stocks of residential land in the Karratha urban area to accommodate population growth to address the current investment cycle and into the long term.
- In total, land capacity modelling has determined a potential supply of approximately 4,400 dwellings - 839 in the short term (within 0-5 years), 931 in the medium term (6-10 years) and 2,605 in the longer term (10+ years).
- The supply of land identified for residential development in keeping with the Local Planning Strategy has the capacity to support a population of approximately 28,000 people in the Karratha urban area – which represents approximately 10,900 additional people.
- A hypothetical residential temporal land supply of up to 48 years has been identified consisting of existing and planned development areas. Some of these areas (for example the development of Mulataga) will require planning initiatives to be progressed in the short to medium term to shore up supply.
- The identified dwelling supply has the capacity to not only support projected demand for dwellings to 2036, but also provide a surplus stock of 2,900 additional dwellings.
- At the end of the December 2019 quarter, there were no residential lots with conditional approval, which could lead to a shortfall in lot supply when demand starts to increase.
- To ensure continuity and no interruption to lot supply, additional stock of residential lots will be needed in the short term to address the current and future investment cycles in the City.

2.6.3 Dwelling approvals

- In the City, dwelling approvals peaked at the top of the previous investment cycle in the 11/12 financial year, with 635 dwellings approved for construction. The following two financial years resulted in similar dwelling approval figures. In the four years to June 2019, less than 10 dwelling approvals have been granted in each financial year.

2.6.4 Industrial land

- There is sufficient stock of industrial land in the City to cater for anticipated industrial expansion.
- Within the Karratha urban area, 94 hectares of industrial expansion land is available within the Gap Ridge Industrial Estate.
- Outside of the Karratha urban area, approximately 12,700 hectares of industrial land has been identified for industrial expansion in the suburbs of Maitland, Mount Anketell, Roebourne and Wickham.
- Industrial land on the Burrup Peninsula (Burrup) accounts for 3,488 hectares and is presently being utilised by the Pilbara Port Authority, Woodside, Rio Tinto, Dampier Salt and Yara Pilbara.
- Key projects that are currently underway or under advanced consideration on the Burrup are Woodside's Burrup Hub (Pluto Train 2, Scarborough Development and the North-West Shelf Refurbishment and Browse Development), as well as Project Destiny (Perdaman' s Urea Plant).
- Land on the Burrup has finite capacity due to environmental and Aboriginal heritage constraints in addition to native title and land use agreements.

[1] DevelopmentWA May 2020

2.6.5 Commercial land

- There is substantial stock of commercial land in the City to cater for anticipated commercial expansion.
- Approximately 75 hectares of land[2] is available principally within the Karratha City Centre and in the suburbs of Nickol, Gap Ridge, Stove Hill, Pegs Creek and the Karratha Industrial Estate.
- There is substantial stock of land adjacent to the Karratha Airport which may have capacity to cater for long-term service commercial use and emerging renewable energy-based industries (Karratha Eco Hub project). This is subject to further investigation, including the long-term tenure arrangements of Crown land.

2.6.6 Rural living

- Minimal rural living development has been undertaken in the Karratha urban area. Limited opportunities exist for rural living in the suburb of Stove Hill, which has 189 hectares of land zoned for this purpose that is undeveloped or unrated.

2.6.7 Real estate market

- Since 2010, the median price of homes in the City has dropped sharply. There has been a modest recovery in the residential property market since late 2016, with the median price for houses rising to $342,500 as of June 2019.
- The median price for land in the City from 2004 has fluctuated less than the price for homes and units and has maintained a constant price of approximately $200,000 but sales volumes have been exceptionally low. In the second quarter of 2019, the median price for land was approximately $150,000.
- Rental listings in the City are at a historical low, which may be an indicator of impending rental shortages.

2.6.8 Temporary workforce accommodation

- Planning is advanced for the development of temporary workforce accommodation on two sites in Baynton and Gap Ridge. The sites will house a workforce of 5,000 people to construct Perdaman's Urea Plant on the Burrup Peninsula and Woodside's Burrup Hub projects (North West Shelf and Browse, Pluto Train 2 and Scarborough Development).

[2] This includes land that is zoned Urban Development under City of Karratha Local Planning Scheme No 8 that is being used or is planned to be used for large format retail/service commercial use.

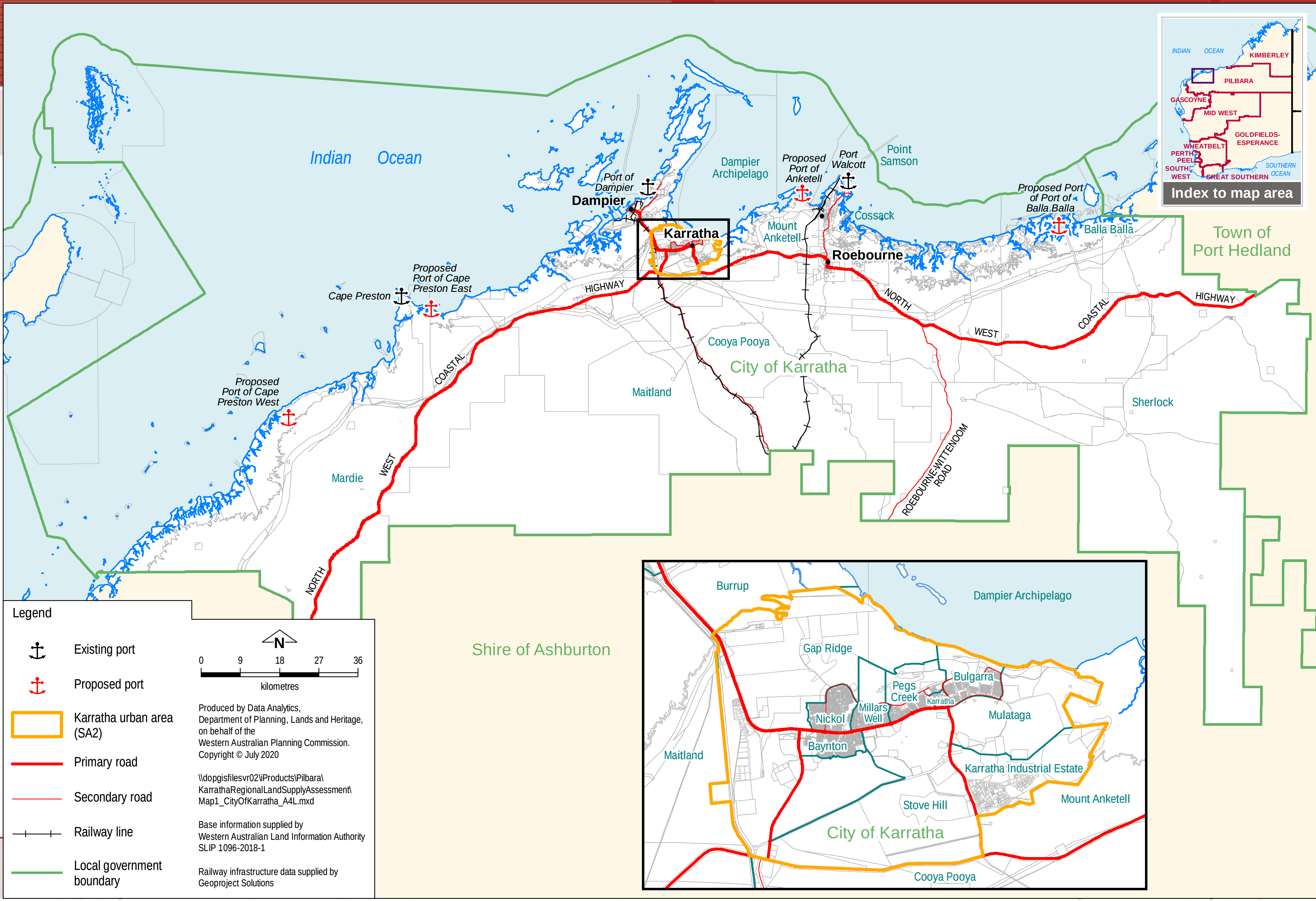
2.6.9 Aboriginal heritage

- There are two native title determinations that cover the Karratha urban area relating to the Ngarluma people (WAD165/2008) and the Ngarluma/Yindjibarndi peoples (WAD6017/1996). These determinations were made in accordance with the *Native Title Act 1993* and recognise the rights and interests of the Ngarluma and Yindjibarndi peoples in relation to rights to use the land for traditional laws and customs, among others.
- There are two key contractual agreements between the State and native title holders in the Karratha urban area that provide certainty for the State regarding the development of the Gap Ridge Industrial Estate, urban expansion in Gap Ridge Baynton, Nickol, Mulataga as well as Tambrey mixed use neighbourhood centre.
- The development outlook areas within the Karratha urban area that are currently not subject to contractual agreements between native title holders and the State are expected to be subject to assessment at various stages in the planning process to have consideration of the native title rights and interests of the Ngarluma and Yindjibarndi peoples.
- There are 70 known Aboriginal heritage places within the Karratha urban area of which, 53 are Registered Aboriginal sites and 17 relate to lodged heritage places. These sites are protected under the *Aboriginal Heritage Act 1972* which prescribes actions that need to be followed if sites or places are likely to be impacted by planning or development outcomes.
- Much of the industrial zoned land located on the Dampier Archipelago and surrounds, including the Burrup Peninsula has finite capacity for expansion as it is recognised as being of heritage value and is included as part of Australia's National Heritage List. The same land has now been earmarked for inclusion on Australia's World Heritage Tentative List.

2.6.10 Infrastructure

- There is sufficient infrastructure (existing or planned) in the Karratha urban area to accommodate projected population growth to 2031. Expansion to existing infrastructure is limited to additional water storage, additional waste-water treatment infrastructure upgrades and upgrades to the existing road network.
- Within the City, there is potential for new railway lines to link the proposed Anketell Port and existing Strategic Industrial Area and the development of new ports at Cape Preston East, Cape Preston West and Balla Balla.

Map 1: City of Karratha



3 Geography and population

3.1 Geography

The City is one of four local government areas in the Pilbara region. The City covers an area of 15,237 square kilometres, and is comprised of the following settlements:

- Karratha
- Dampier
- Roebourne
- Wickham
- Point Samson
- Cossack

Karratha is located approximately 1,520 kilometres north of Perth. It is the primary service centre and largest settlement/urban centre in the Pilbara region. Dampier is a coastal town located approximately 20 kilometres west of Karratha.

Roebourne, Wickham, Point Samson and Cossack are smaller settlements that are collectively referred to as being within the 'Roebourne District' or the 'Eastern Corridor'. Roebourne is located approximately 40 kilometres east of Karratha. Wickham, Cossack and Point Samson are located approximately 13 kilometres, 14 kilometres and 20 kilometres north of Roebourne, respectively.

This report primarily examines and refers to population and other indicator data relating to the Karratha urban area. Depending on the context and the source of data, different geographical extents are discussed relating to the City[3].

Regional and local geographical extents used to describe Karratha and its surrounds are shown in Table 1. Detailed descriptions and definitions of these geographical extents can be found in the Glossary.

Table 1: Regional and local geographical extents – ABS and non-ABS structures

Geography			Population at 2016 Census	Area (square kilometres)
Australian Bureau of Statistics (ABS)	Australia	Australia	23,401,892	7,688,126
	State/Territory (S/T)	Western Australia	2,474,410	2,526,646
	Statistical Area Level 4 (SA4)	Western Australia – Outback (North)	93,920	926,050
	Statistical Area Level 3 (SA3)	West Pilbara	34,497	116,066
	Statistical Area Level 2 (SA2)	Karratha	15,828	134
		Roebourne	5,643	15,105
	Statistical Area Level 1 (SA1)	*The SA2 of Karratha is aggregated from 47 SA1s.*	n/a	n/a
		The SA2 of Roebourne is aggregated from 18 SA1s.		
	Mesh Block (MB)	*The SA2 of Karratha is aggregated from 266 Mesh Blocks.*	n/a	n/a
		The SA2 of Roebourne is aggregated from 272 Mesh Blocks.		
	Urban Centre and Locality (UCL)	Karratha *The Karratha Urban Centre is aggregated from 46 SA1s.*	15,828	119
		Wickham	1,572	1.9
		Dampier	1,104	3.6
		Roebourne (L)	627	4.9
		Point Samson (L)	211	0.7
	Significant Urban Area (SUA) Note: Any reference to the 'Karratha urban area' in this document is synonymous with the Karratha SUA/Karratha SA2.	Karratha *The Karratha SUA concords with the SA2 of Karratha.*	15,828	134

3 For example, the Karratha urban area is referred to as the SA2 geographical extent by the Australian Bureau of Statistics. Within this boundary, there are smaller and finer grain geographies known as mesh blocks, which have been used in this report to examine a range of indicators, such as population density within suburbs.

Geography			Population at 2016 Census	Area (square kilometres)
Non-ABS structures	Local Government Area (LGA)	Karratha (C)	21,473	15,237
	State Suburbs (SSC)	Nickol	4,624	3
	Note: State suburbs shown in bold are in the Karratha SUA.	Baynton	4,306	3
		Bulgarra	2,652	5
		Pegs Creek	1,998	5
		Millars Well	1,828	3
		Karratha Industrial Estate	214	12
		Gap Ridge	81	56
		Karratha	81	1
		Stove Hill	46	33
		Mulataga	-	15
		Antonymyre	-	26
		Balla Balla	-	139
		Barrow Island	1,965	264
		Burrup	-	114
		Cleaverville	7	8
		Cooya Pooya	3	1,749
		Cossack	-	21
		Dampier	1,104	10
		Dampier Archipelago	-	186
		Gnoorea	6	14
		Maitland	7	2,536
		Mardie	970	3,772
		Mount Anketell	-	220
		Point Samson	231	23
		Roebourne	981	162
		Sherlock	-	6,051
		Whim Creek	32	30
		Wickham	2,295	23
Planning geographies	State/Territory	Western Australia	2,474,410	7,688,126
	Planning region	Pilbara *The Pilbara region is comprised of four local government areas: the City of Karratha, the Town of Port Hedland and the shires of Ashburton and East Pilbara.*	59,559	506,780
	Planning sub-region	Pilbara	59,559	506,780
	Local government area	Karratha (C)	21,473	15,237

Source: ABS (2019)

3.2 Population profile

The 2016 Census indicates that the median age for the residents of Karratha urban area was 31 years, which is considerably younger than the State (36 years) and national median averages (38 years). *Figure 1* shows the age by sex population profile of the Karratha urban area compared to Western Australia.

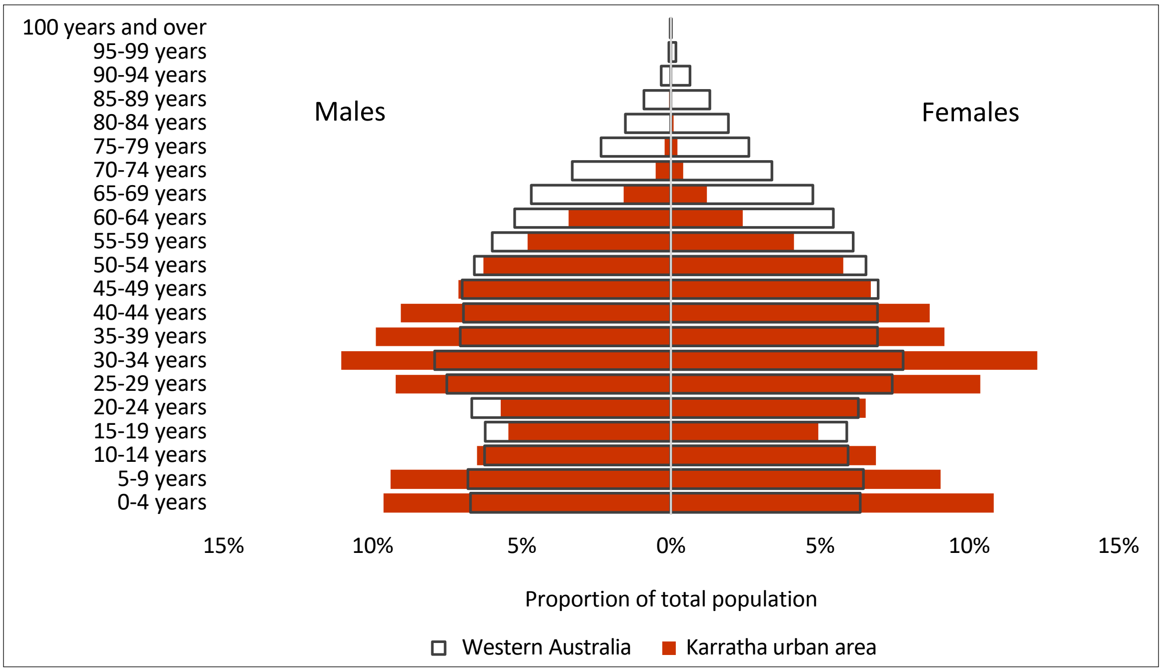
There is a greater representation of persons aged 25 to 44 years in the Karratha urban area (40 per cent) compared to Western Australia (29 per cent). This can be attributed for the most part to the resources sector, which attracts high volumes of working-aged people to the Pilbara. Added to this is the relatively young cohort of Aboriginal and Torres Strait Islander people residing and working in the City.

The City's demographic shift towards a greater proportion of young children and families[4] at the 2016 Census can be attributed to several factors. One of the main factors relates to the increase in Aboriginal and Torres Strait islander people in the Karratha urban area which resulted in an 85 per cent population growth between the 2011 and 2016 census periods equating to 733[5] additional people. A significant portion of this growth was related to young children and families.

The growth can also be attributed to housing becoming more affordable – and hence attracting more families to the Karratha urban area following the previous investment cycle in the Pilbara. Recent investment in communities and infrastructure by the City has also assisted in attracting families to the Karratha urban area.

Map 2 shows population density by Mesh Block at the 2016 Census. It shows that the most densely populated suburbs are in Baynton and Nickol, specifically areas where urban development has most recently occurred.

Figure 1: Age by sex population profile (2016 Census) – WA compared to the Karratha urban area



Source: ABS (2016) Census of Population and Housing 2016

[4] Between the 2011 and 2016 ABS Census years there was an increase of 420 family groups.

[5] ABS 2016 Time Series Profile Karratha SA2

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

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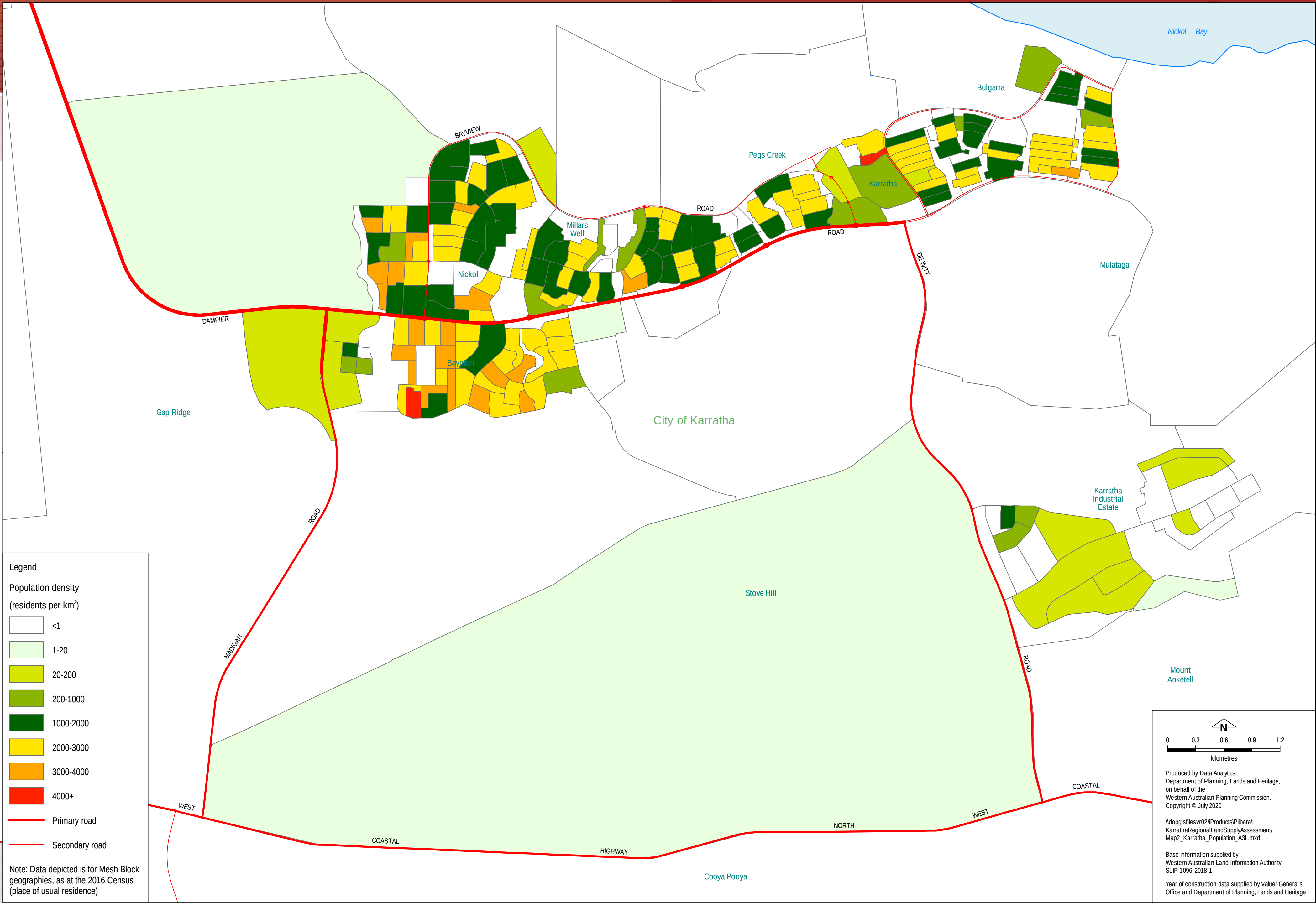


3.3 Population growth

The population data discussed in this section refers to the Australian Bureau of Statistics (ABS) estimated resident population (ERP). The ERP is the official measure of the population of Australia, 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 (SA2) and local government areas.

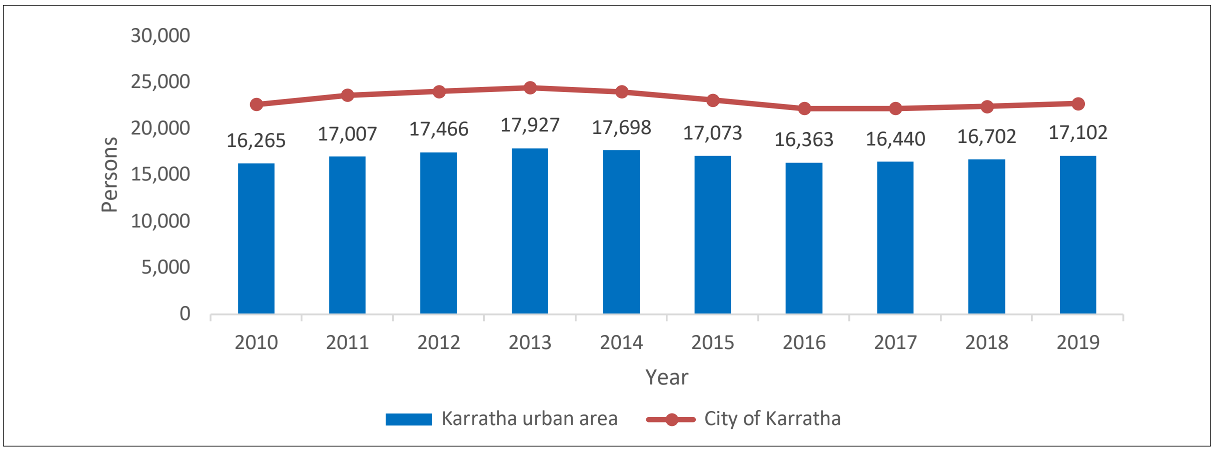
Estimates of the resident population for Census years (i.e. 2011 and 2016) are based on Census counts of usual residence (excluding short-term visitors in Australia), with an allowance for Census net undercount and Australian residents temporarily overseas at the time of the Census.

Prior to 2017, sub-state population estimates for non-Census years were previously updated using data inputs from a variety of sources. These included dwelling approvals and Medicare and Australian Electoral Commission enrolments. Since 2017, the ABS has adopted a new, component-based method to estimate resident population at sub-state level. Estimates of the resident population for 30 June 2017 and onwards are calculated by adding natural change (births minus deaths), net internal migration and net overseas migration to the base population. The component-based method provides a greater understanding of why population has changed.

Figure 2 shows the ERP of the Karratha urban area[6] and the City from 2006 to 2019. It shows population growth from 2006 to 2013, followed by a period of decline from 2013 to 2016. Modest population growth was recorded from 2017 which may be indicative of a growth recovery.

Over the decade to 30 June 2019, the Karratha urban area recorded an average annual growth rate of 0.9 per cent (Table 2). This is higher than the average annual growth rate for the City (0.4 per cent) but lower than Western Australia (1.6 per cent) and the Pilbara region (1 per cent). The City's average annual increase of 72 people over the 2010-2019 period accounted for 13 per cent of the Pilbara region's average annual increase for the same period.

Figure 2: Estimated resident population - Karratha urban area and City



Source: ABS (2020) 3218.0 – Regional Population Growth, Australia

Table 2: Estimated resident population 2009-2019

	ERP at 30 June 2010	ERP at 30 June 2019	Average annual increase 2008-2019	Average annual growth rate 2008-2019
Karratha urban area	16,265	17,102	135	0.9 per cent
City of Karratha	22,628	22,716	72	0.4 per cent
Pilbara region	58,912	62,093	552	1.0 per cent
Western Australia	2,290,845	2,621,509	38,126	1.6 per cent

Source: ABS (2020) 3218.0 – Regional Population Growth, Australia

[6] Congruent with the Karratha SA2 and Karratha SUA.

Figure 3 shows the ERP annual growth rates for the Karratha urban area, the City, the Pilbara region and Western Australia. From 2010 to 2012, the Karratha urban area, the City and the Pilbara region recorded annual growth rates higher than the State average. This is commensurate with the significant opportunities for employment generated by the resource boom. From 2013, annual growth rates dropped significantly below the State average, as major resource projects moved from a construction phase to an operational phase, which typically requires fewer workers. From 2017, the ERP annual growth rate for the Karratha urban area has been stronger than the State average and the Pilbara, and is trending upwards.

3.4 Population projections

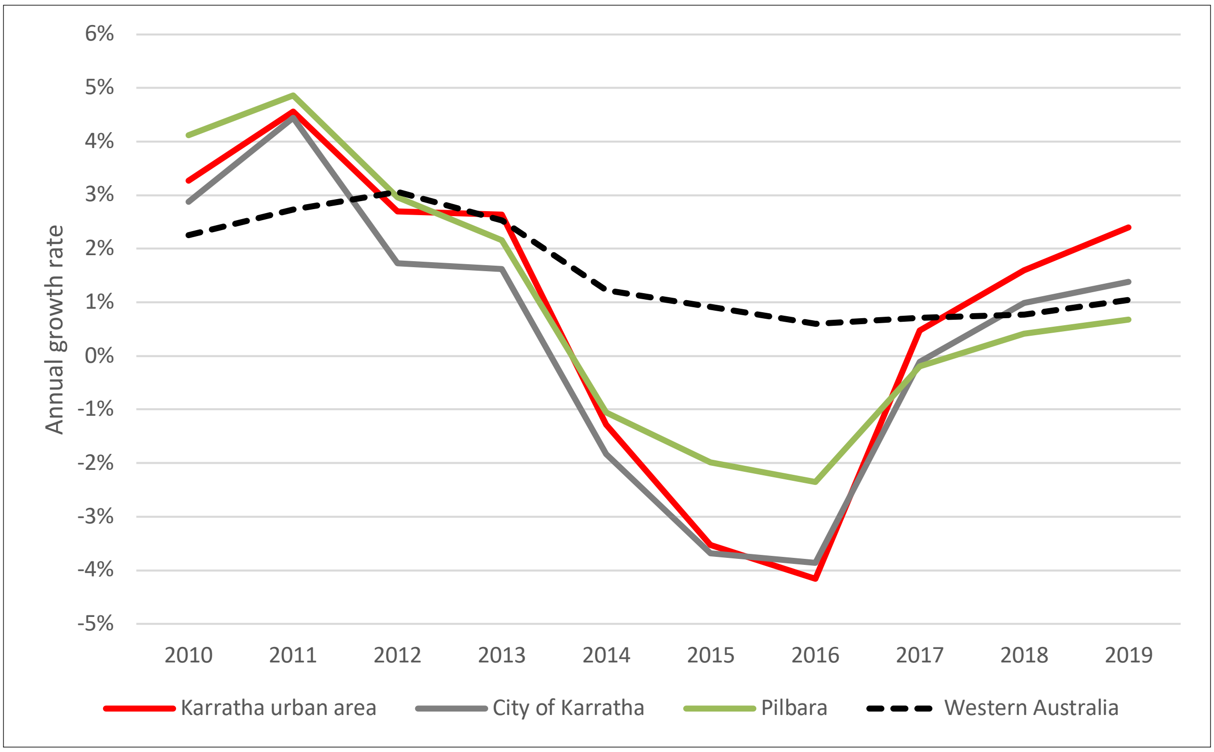
WA Tomorrow is a set of forecasts representing the best estimate of Western Australia's future population size based on current fertility, mortality and migration trends. These trend forecasts are used to identify potential preferred future scenarios that can be built upon, as well as less favourable possibilities for which mitigating action can be taken.

The latest *WA Tomorrow* population forecasts, released in 2018, were 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 is available online at www.dplh.wa.gov.au/information-and-services/land-supply-and-demography/western-australia-tomorrow-population-forecasts.

Figure 3: ERP annual growth rates 2010-2019 - Karratha urban area, City, Pilbara region and Western Australia



Source: Australian Bureau of Statistics (2020) Regional Population Growth, Australia, 2010-2019. Catalogue No. 3218.0

Table 3 and Figure 4 show the *WA Tomorrow* forecasts for the Karratha urban area. The resulting projected population for the Karratha urban area under the median (Band C) forecast is 17,905 in 2031. Achieving this population from a 2016 baseline requires an average annual increase of 105 persons, or an average annual growth rate of 0.62 per cent. This is higher than the forecast average annual growth rates for the Pilbara region (0.27 per cent), but lower than Western Australia (1.61 per cent).

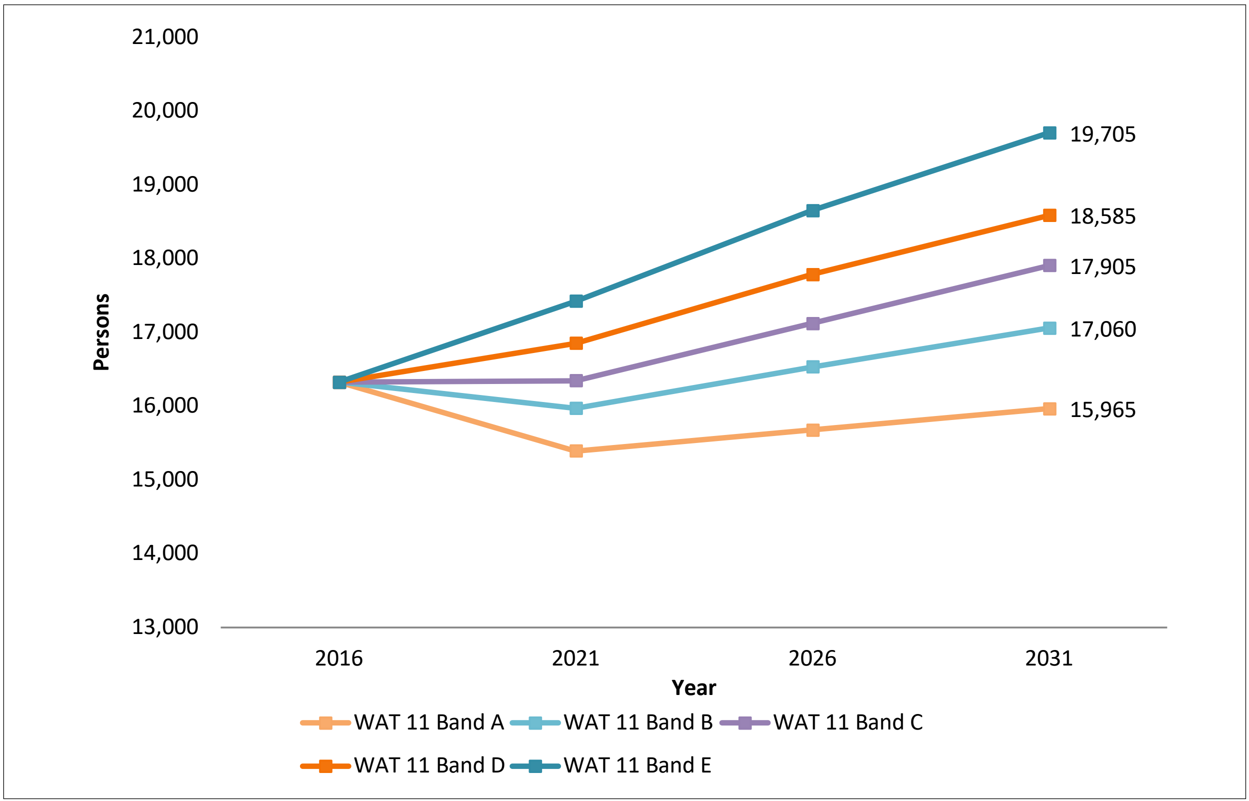
Consideration of a range of population growth scenarios for the Karratha urban area envisaged by *WA Tomorrow* is examined in section 6.5 considering the economic demand drivers outlined in section 4.

Table 3: WA Tomorrow forecast population growth 2016-2031

Karratha urban area					
	Band A	Band B	Band C	Band D	Band E
2016	16,325	16,325	**16,325**	16,325	16,325
2021	15,390	15,970	**16,345**	16,850	17,420
2026	15,675	16,530	**17,120**	17,785	18,650
2031	15,965	17,060	**17,905**	18,585	19,705
Average annual growth rate 2016-2031	-0.15%	0.29%	**0.62%**	0.87%	1.26%
Average annual change (persons) 2016-2031	-24	49	**105**	151	225
Average annual growth rate 2016-2031 (Pilbara Region)	-0.42%	0.06%	**0.27%**	0.48%	0.92%
Average annual growth rate 2016-2031 (Western Australia)	1.32%	1.49%	**1.61%**	1.73%	1.89%

Source: Western Australian Planning Commission (2019) WA Tomorrow Population Report No. 11

Figure 4: WA Tomorrow forecast population growth - Karratha urban area



Source: Western Australian Planning Commission (2019) Western Australia Tomorrow Population Report No. 11

The demographic profile of the Karratha urban area is projected to change by 2031. Figure 5 shows the age by sex population profile of the Karratha urban area at 2016 and 2031 (based on the Band C forecast). It is projected that there will be fewer residents in the 0 to 9 years and 25 to 39 years age cohorts. The change in population profile is likely due to all age groups ageing (i.e. 'travelling up the chart'), rather than being driven by the migration of specific age groups.

It must be emphasised that *WA Tomorrow* represents the best estimate of future population size if trends in fertility, mortality and migration continue. *WA Tomorrow* forecasts are distinct from government strategies, frameworks and scenarios that seek to influence existing trends to achieve more desirable future outcomes.

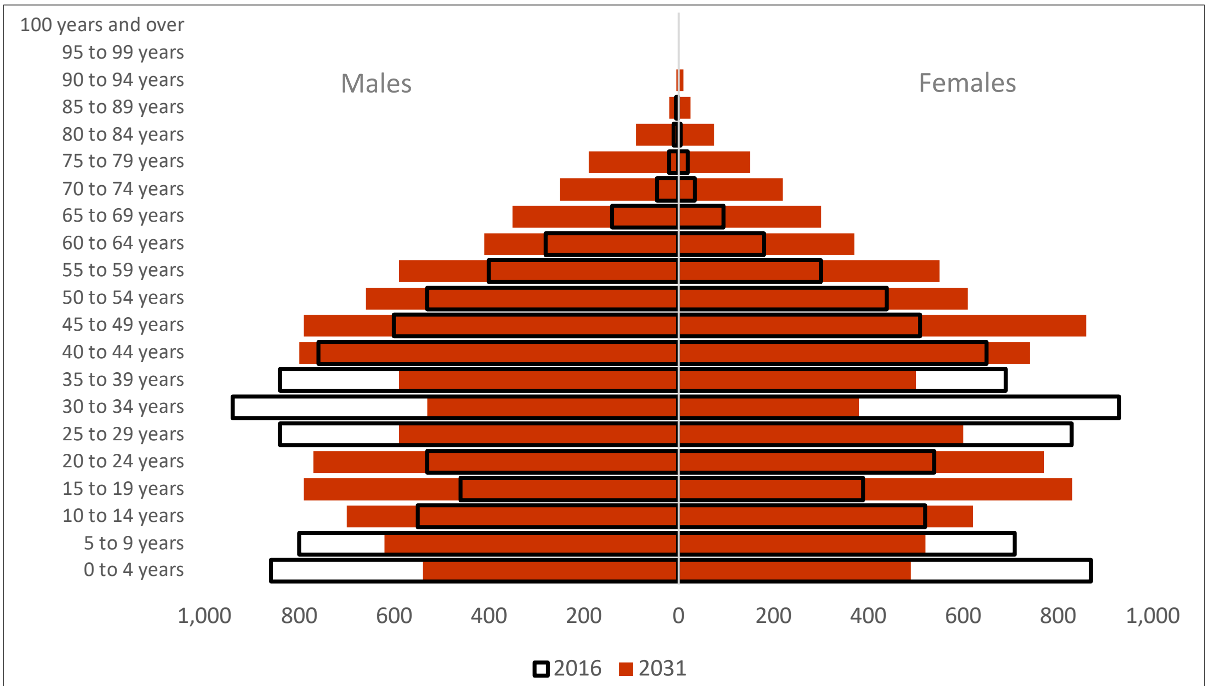
In addition, *WA Tomorrow* does not consider unforeseen events that may change trends, including significant shifts in government policy, natural disasters and epidemics. It is possible for higher (than forecasted by *WA Tomorrow*) rates of growth to eventuate, if strategic interventions are undertaken.

For the Pilbara region, *WA Tomorrow* projects a population of 63,870 at 2031 under the median (Band C) forecast. This equates to an average annual growth rate of 0.27 per cent from 2016 to 2031, which is lower than the rate of growth over the past decade (1.4 per cent).

The *Pilbara Regional Investment Blueprint* aspires to a higher rate of growth, envisaging a population of 200,000 by 2050, which includes an aspirational population of 50,000 people in Karratha and Port Hedland. This equates to an average annual growth rate of 3.7 per cent from 2018 (ERP at 30 June 2018) to 2050.

Achieving this population outcome is contingent on the success of proposed local and regional economic development initiatives, including maximising job creation and improving career opportunities, developing and broadening the economic base of the Pilbara region and identifying infrastructure services to promote economic and social development.

Figure 5: Age by sex profile 2016 and 2031 (Band C forecast) - Karratha urban area



Source: Western Australian Planning Commission (2019) *WA Tomorrow Population Report No. 11*

4 Economic demand drivers

4.1 Western Australian economy

WA Treasury and Chamber of Commerce and Industry WA (CCIWA) previously forecasted strong economic growth[7] for the State's economy in 2020, which was estimated to grow by 3 percent and result in an unemployment rate expected to average 5.8 per cent.

As a result of the pandemic, the State's economy is now projected to contract. In terms of State's reliance on exports, Western Australia's economy is likely to feel the impact of any prolonged economic weakness in China as more than half of WA's exports go to China, of which iron ore makes up more than 80 per cent. Notwithstanding, the current feedback the State has received from the mining industry is that export targets for iron ore will remain largely unchanged[8].

4.2 Pilbara economy

Current estimates show that dramatic falls in iron prices are unlikely given demand associated with China's expected stimulus response to counter the pandemic and from limited growth in supply[9] as a result of continued constraints from Vale's operation in Brazil. Less certain is the potential investment activity in LNG given the falling oil price. However, long-term agreements for LNG supply mitigate much of this impact.

4.3 Investment cycles

Economic conditions and employment opportunities are fundamental drivers of population growth and demand for land and housing in the City. One of the key determinants of such growth and demand relates to the global economy and associated investment cycles in the Pilbara region.

Economic activity in the Pilbara is dominated by iron ore and LNG and the associated construction work of these industries. Together, the resource and construction sectors account for more than 90 per cent of the region's economic output and more than half of employment in the region. These sectors have shaped the development of communities and infrastructure across the region.

The Pilbara experienced an unprecedented wave of investment into iron ore and LNG projects between 2005 and 2014, which resulted in significant job creation, export growth and the stimulus for growth in the development of land and housing. During this period, a small number of resource companies invested more than $200 billion to develop production and export capacity to take advantage of growing demand in Asia. On the back of these investments the value of the Pilbara economy grew by an estimated 18 per cent between 2011 (when measurement started) and 2018 to $37 billion[10].

4.3.1 Adaptive capacity

While the Pilbara ranks well for economic fundamentals due to iron ore and LNG activity, it is also the least diversified region in the country[11]. The focus on iron ore and LNG limits the range of employment opportunities in the Pilbara and leaves the region exposed to the volatility of commodity cycles.

While this may be the case, the Pilbara is characterised by having high human capital relating to education, employment and participation and trade skill which are all associated with high adaptive capacity. Part of this relates to improved social and community infrastructure, which is encouraging people to stay in the Pilbara, educate their children locally and plan a future in the region.

Although mining regions are exposed to commodity cycles, some have proven to be sustainable in the longer term where there are secure resources that can be mined economically, coupled with commodity and economic diversification.

The Pilbara has a comparative advantage in markets for minerals and commodities and has benefited from significant investments in new projects and expansions during the previous investment cycle. This, accompanied with new projects underway or being considered in the present investment cycle will likely provide an economic and employment base for decades to come despite commodity market cycles[12] and fluctuations in local economies.

[7] State Government of Western Australia Media Statement (2020)

[8] Department of Jobs, Tourism, Science and Innovation, 2020

[9] Deloitte Access Economics 2020

[10] Department of Jobs, Tourism, Science and Innovation (2019)

[11] Regional Australian Institute (2018)

[12] Australian Government Productivity Commission (2017)

4.3.2 The current wave of investment in the Pilbara

Similar to the investment cycle of the late 2000s, the current wave of investment in the Pilbara is driven by the iron ore and LNG sectors, which are investing heavily to maintain throughput capacity.

The iron ore industry has $12 billion worth of new projects under construction and an additional $33 billion under consideration. As at June 2020, the longer-term viability of these projects is not projected to be critically affected by the pandemic, however, they are contingent on investment decisions that are yet to be announced.

The LNG industry by way of contrast is constructing $6 billion worth of projects, yet it has now delayed projects worth a further $54 billion as result of the pandemic resulting from uncertainty in global oil prices. The medium-term goal for the LNG industry is to develop new LNG trains as well as offshore developments to maintain capacity. There are also several projects under construction or consideration in emerging industries, such as mineral processing, petrochemicals, renewables and hydrogen.

Together, projects already under construction in the Pilbara are expected to create 10,000 construction jobs and directly employ 3,000 workers during their operations. If all projects under consideration were to proceed, the total number of jobs created would reach more than 32,000 in construction, and 10,000 in operational phases.

A revision of these ultimate job figures is likely given the global economic contraction underway as well as due to availability of finance, skills shortages or technology development.

These new projects are expected to require many fly-in and fly-out (FIFO) workers, albeit less than during the previous investment cycle, because the construction phase will be less labour intensive, and a larger share of the workforce will be based locally.

4.3.3 Comparison with the previous investment cycle

The current investment cycle is not expected to match the scale of the last cycle. Prior to the pandemic, the peak construction workforce from projects under construction was estimated to be equivalent to around a quarter of workforce requirements at the peak of the previous investment cycle.

Previous estimates also indicated that if all projects currently under consideration were to proceed, the construction workforce peak would reach three quarters of the previous peak. These projections are now expected to result in a more modest workforce emerging in the current investment cycle as a result of the pandemic.

Based on resource company announcements about operational workforces that will require housing within local government areas, the resource projects under construction have the potential to increase the Pilbara's population to almost 67,000 by 2026. This is just above the Pilbara's last population peak of over 65,000 in 2013[13].

4.4 City of Karratha key economic projects

A range of projects as outlined in Table 4 and in the narrative below are currently under advanced consideration, committed or under construction in the City that will result in up to 6,700 construction jobs, 1,300 production jobs and total investment of approximately $60 billion.

4.4.1 Burrup hub (Woodside)

Two key Woodside projects are under advanced consideration as described below on the Burrup Peninsula that will collectively result in 2,500 construction and 460 production jobs, with a total investment envisaged of $52 billion. These projects are expected to be impacted by the pandemic and the subsequent economic uncertainty.

4.4.1.1 Pluto Train 2 and Scarborough development

This project relates to the expansion of the Pluto LNG facility located on the Burrup Peninsula. Specifically, it involves the addition of a second LNG train at the existing Pluto facility, which will receive feed gas from the proposed Scarborough gas field development located 375 kilometres west-northwest of the Burrup Peninsula.

Following the review of its March 2020 work plan, Woodside has decided to delay a final investment decision for the construction of the Scarborough gas field until 2021 and to push back the timing of a decision on a second processing unit at the active Pluto LNG facility to the same time.

[13] These projections are contingent on the economic effects of the current global economic situation being minimised

4.4.1.2 North West Shelf refurbishment and Browse development

This project conducted by Woodside and joint venture partners involves the refurbishment of existing trains currently operating at the Karratha Gas Plant on the Burrup Peninsula. The Karratha Gas Plant will then process gas from the newly developed Browse Gas field.

This is expected to sustain operational and maintenance employment at the Karratha Gas Plant for at least 30 years and promote construction activity and on-going offshore supply work out of Dampier (King Bay). Following the announcement of Woodside's March work plan there have been reductions in non-essential contractor roles at the Karratha Gas Plant which will delay work on the North-West Shelf refurbishment.

A final investment decision on developing the Browse gas resource will also be delayed as a result of the pandemic, but without a new target date.

4.4.2 Perdaman Urea Plant, Burrup Peninsula

Subject to further State and Commonwealth approvals, the Perdaman Urea Plant is anticipated to be operational by 2024 and operate for 25 years.

It is to be located on two sites with a total footprint of 74 hectares within the Burrup Strategic Industrial Area between Woodside's Pluto LNG train, which processes gas from the offshore Pluto and Xena gas fields and the existing Yara Pilbara Fertiliser liquid ammonia plant and its neighbouring Yara Pilbara Nitrates technical ammonium nitrate plant which is currently nearing completion.

The plant aims to produce up to two million tonnes of fertiliser grade granulated urea per year, most destined for export from the Dampier port. More than 2500 skilled contractors are expected to be employed during a three-year construction phase, then up to 200 permanent employees during operations. Total investment will be approximately $4.5 billion.

4.4.3 BBI Group Integrated Iron Ore Operation

BBI Group (BBIG) is proposing the Balla Balla Infrastructure project (BBIP) which consists of a new port at Balla Balla (east of the Anketell Strategic Industrial Area), approximately 200 kilometres of rail and overland conveyor infrastructure to the Central Pilbara.

The direct economic benefits of the project to the City will be the development of Balla Balla port and the construction of approximately 90 kilometres of rail infrastructure[14] which equates to a capital investment estimated at $3 billion, and the creation of 1,500 construction jobs and 300 production jobs.

Table 4: City of Karratha projects

Status	Total Investment (AUD $M)	New Construction Jobs	New Production Jobs
UNDER ADVANCED CONSIDERATION			
Oil and Gas			
Burrup Hub -North West Shelf Refurbishment and Browse Development -Pluto Train 2 and Scarborough Development	52,000	2,500	460
BBI Group Integrated Iron Ore Operation (City of Karratha Component)	3,000	1,500	300
Chemical Production and Processing			
Perdaman Urea Plant - Project Destiny	4,500	2,500	200
BCI Minerals - Mardie Salt and Potash	425	200	100
COMMITTED			
Other Industries			
Murujuga Living Knowledge Centre	32	-	-
The Quarter Hotel	20	50	45
UNDER CONSTRUCTION			
Other Industries			
Tambrey Village Shopping Centre	17	-	150
Chemical Production and Processing			
Yara Pilbara - Ammonia Plant Upgrades	700	-	65
Totals	**60,694**	**6,750**	**1,320**

Source: Pilbara Development Commission (2020)

[14] The balance of the rail infrastructure (110km) leading to the Flinders mine sits within the Shire of Ashburton.

4.4.4 Port development

The capacity of the Pilbara region to export goods could be significantly increased through the construction of the four proposed ports of Anketell, Cape Preston East, Cape Preston West and Balla Balla within the City. The proposed port of Anketell is approximately 30 kilometres east of the Karratha urban area. It is being planned as a deep-water port to export a range of commodities. Its export capacity when fully developed would be 350 million tonnes per annum.

The associated Anketell Strategic Industrial Area (SIA) is being planned to accommodate downstream resource processing industries to add value to export commodities, provide support for the development of the port and provide services to transport and mining operations. Once completed, the port of Anketell is anticipated to alleviate pressure on the port of Dampier, which is nearing capacity.

The proposed port of Balla Balla is being planned as an iron ore transhipping port with a capacity of 50 million tonnes per annum, with the ability to be expanded to a multi-commodity bulk export facility[15]. Planning for the proposed ports at Cape Preston East and West are in relatively early stages. Both are envisioned to be multi-user bulk commodities export ports, initially facilitating salt exports.

4.5 Gross regional product

The mining sector is the largest contributor to the City's gross regional product (GRP), with an estimated GRP of approximately $6.3 billion[16]. Karratha represents 16.64 percent of the Pilbara Region's GRP of $38 billion. The mining sector also employs the largest proportion of the City's working population.

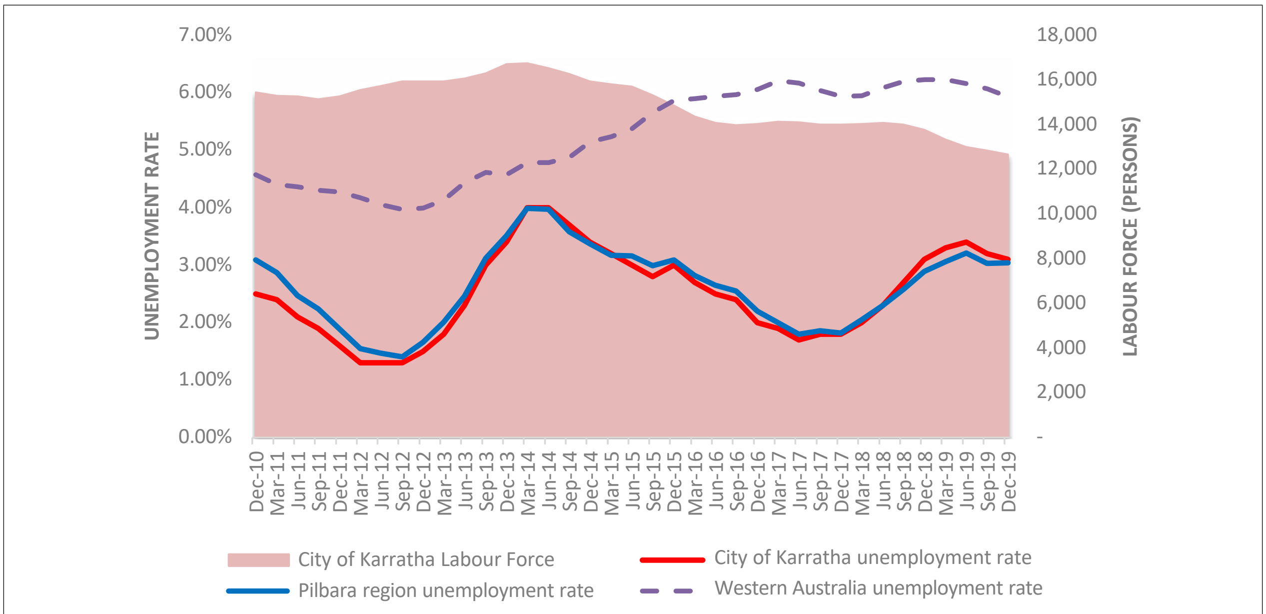
4.6 Workforce

Figure 6 shows that at the end of the December 2019 quarter, the City had a labour force of 12,662 persons. A key feature of the workforce in the Pilbara is that almost half of the people are FIFO workers which at the peak of the previous investment cycle numbered over 15,000 workers in Karratha.

One of the continuing challenges for the City is the attraction of skilled workers/service workers. This can be attributed in part to rental availability and adequate housing options, including affordable housing, particularly during periods of high demand.

Failure to attract workers to the region or to develop skills locally can translate into skill shortages. These skills shortages are likely to be more acute for emerging industries in the non-mining sectors, which struggle to compete for workers with LNG and iron ore companies hampering diversification opportunities.

Figure 6: Unemployed persons and labour force 2010 – 2019



Source: Australian Government Department of Jobs and Small Business (2019) *Small Area Labour Markets – December Quarter 2019*

[15] Pilbara Ports Authority 2020

[16] Remplan 2019

4.7 Unemployment

Figure 6 shows the unemployment rates for the City, the Pilbara region and Western Australia over a 10 year period. During the December 2019 quarter, the City had an unemployment rate of 3.10 per cent, lower than Western Australia (5.93 per cent) and marginally higher than the Pilbara region (3.05 per cent).

The data also shows that the City and the Pilbara region's unemployment rates have been consistently lower than the State average.

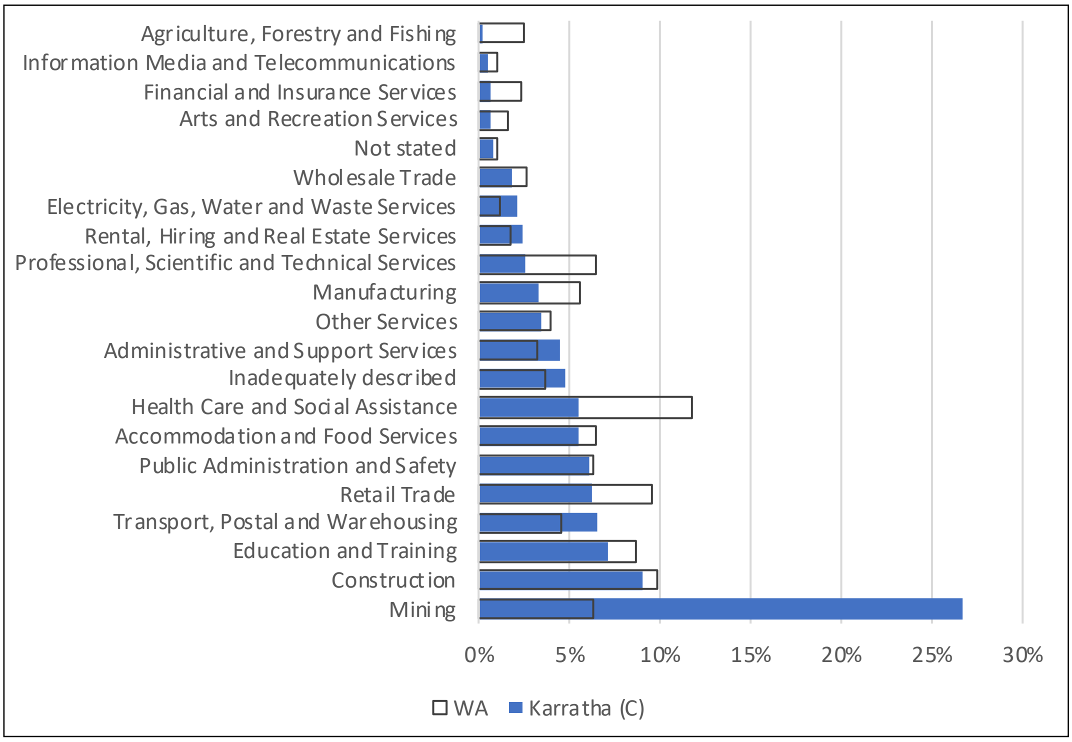
The City and the Pilbara region's unemployment rates rose in 2012 and peaked in 2014 as the mining sector transitioned from a construction to an operational phase. Following this period up to 2017, there was a marked reduction in unemployment rates for the City in response to a contraction of the labour force brought about by a scaling back of mining and associated activities. From 2018 there has been an increase in the unemployment rate in the City followed by a reduction for two quarters to a rate of 3.10 per cent as at December 2019.

4.8 Industries of employment

Figure 7 shows the industries of employment of the City's resident working population at the 2016 Census compared to that of Western Australia. The mining, oil and gas sector employed 27 per cent of the City's resident working population. At the 2016 Census, 70 per cent of the City's labour force were employed on a full-time basis; 18 per cent were employed on a part time basis; 7 per cent were away from work and 6 per cent were unemployed.

The Pilbara region's economy is underpinned by the export of iron ore and LNG, rendering it vulnerable to changes driven by the global economy and commodity prices. The mining sector will continue to be the predominant driver of economic and employment growth in the region, however, there are aspirations for a more diversified economy to ensure the region's long-term economic viability. This is to be achieved through further development of knowledge-based industries and increases in the capacity of export goods and services[17].

Figure 7: Industries of employment - Karratha (C) and Western Australia



Source: Australian Bureau of Statistics (2019) Census of Population and Housing, 2016, Table Builder

[17] Pilbara Planning and Infrastructure Framework (2012)

4.9 Income

A median weekly personal income of $1,350 was recorded for the City at the 2016 Census. This compares to $724 for Western Australia and $662 for the nation, indicating that wages in the City have remained relatively high. These are, however, offset by the high cost of living in the Pilbara region, as indicated by the Regional Price Index (Appendix C). These costs were at their peak during the last investment cycle but have since moderated.

4.10 Diversification

As noted in section 4.3.1, the Pilbara is the least diversified region in Australia[18] which has limited the range of employment opportunities in addition to the region's adaptive capacity. As such, the Pilbara Development Commission (PDC) is promoting diversified local and regional economies in the Pilbara, primarily to ensure continued economic growth despite fluctuations in the mining sector.

The City aspires for the Karratha city centre to be the major regional service centre for the Pilbara. Karratha has the greatest concentration of commercial and office activity in the Pilbara, as well as a plentiful supply of industrial land (general and strategic) to support local industry development and downstream resource processing.

The City identifies tourism as a significant component of economic diversification, but this sector is currently experiencing significant hardship and uncertainty as a result of the pandemic.

The accommodation/food services and retail trade sectors employed 11 per cent of the City's working population (at the 2016 Census). Data from Tourism Research Australia (TRA) indicates that there are approximately 125 tourism-related businesses in the City, over one-third of which are non-employing.

Most visitors to the City travel for business reasons, while leisure travellers comprise a smaller proportion of total visitors to the City. The City contains numerous advantages which it can leverage to increase visitation, including large-scale iron ore, liquid natural gas and salt exporting operations, natural attractions and heritage settlements/landmarks, which hold interest for visitors.

The availability and affordability of short-stay accommodation fluctuates with the resources sector. Short-stay accommodation is in high demand during periods of construction, which reduces availability and affordability, and is a feature of the previous investment cycle. The City plans to focus on facilitating the provision of affordable accommodation for visitors and tourism workers through statutory controls which will seek to ensure that accommodation providers retain enough supply for short-stay and visitors' use.

Recent initiatives by the City to address diversification have resulted in plans to develop an EcoHub on land adjacent to the Karratha Airport. The City's aim is to attract more diverse and sustainable business and employment opportunities in the Pilbara region.

The concept of an EcoHub is to identify a specific area of land with the potential of providing industrial synergies (such as sharing infrastructure) to make projects more commercially viable. To date, the City has provided in-principle support for the Sahara Forest, Rainstorm and EcoMag projects and is funding the development of a business case to assess the options and associated considerations available to facilitate the establishment of the EcoHub.

[18] Regional Australia Institute, 2018

5 Existing residential land and housing

5.1 History

The City's lands have been occupied by ancestors of the Ngarluma, Yindjibarndi, Martuthunia, Yaburara and Wong-goo-tt-oo peoples for more than 30,000 years. With the beginning of the iron ore industry in the early 1960s, Dampier was chosen as the port for Hamersley Iron's operations and this signalled the beginning of major development in the City.

With the introduction of jet aircraft, regular passenger flights to the unsealed Roebourne airport were discontinued. In 1966, Hamersley Iron constructed a sealed airport and the Dampier Airport thereafter. Planning for the construction of Karratha began in 1968 when the State excised land from the Karratha Station pastoral lease to develop a town to support Hamersley Iron.

The City was planned utilising Radburn design planning principles which were first adopted in Australia in 1963[19]. This planning approach attempts to separate vehicular and pedestrian traffic with feature loop roads accessed from minimal ring-roads and through roads with a focus of providing a more socially connected population. Evidence of the Radburn design in the City is most pronounced in the eastern portion of the City in Bulgarra but also the localities of Pegs Creek and, to a lesser extent, Millars Well.

5.2 Overview

At the 2016 Census, over half of the Karratha urban area's population lived in Nickol (26 per cent) and Baynton (23 per cent). Most recent residential development has occurred at the western edge of the Karratha urban area. The City plans to continue the westward expansion of the Karratha urban area, with growth areas identified in Baynton, Nickol and Gap Ridge. An eastward expansion of the Karratha urban area is planned for the short, medium term and long term with the identification of a growth area in Mulataga.

A total of 7,493 private dwellings were recorded in the Karratha urban area at the 2016 Census as shown in Table 5. Approximately 74 per cent of private dwellings in the Karratha urban area were occupied; this is lower compared to the State average of 87 per cent.

The Karratha urban area's dwelling occupancy rate at the 2011 Census was 87 per cent. It is possible that the fall in the dwelling occupancy rate between 2011 and 2016 may be related to the decline in resident population during this period.

A total of 77 per cent of occupied private dwellings in the Karratha urban area are rented. This is significantly higher than the State average (28 per cent), indicating a transient population base and long-term tenants living in company housing. 30 per cent of rented dwellings were rented from non-government employers.

Separate houses account for 85 per cent of the Karratha urban area's total occupied private dwellings. Semi-detached dwellings and flats/apartments account for 10 per cent and 4 per cent, respectively. A total of 82 per cent of occupied private dwellings contained three or more bedrooms.

Table 5: Dwelling structure by dwelling type – Karratha urban area

	Occupied private dwellings	Unoccupied private dwellings	Total
Separate houses	4671	1077	5,748
Semi-detached dwellings	595	341	936
Flats/apartments	312	240	552
Total	**5,816**	**1,677**	**7,493**

Source: Australian Bureau of Statistics (2016) Census of Population and Housing, 2016, Table Builder

Note: Totals shown for dwelling structures include a range of other structures such as caravans, cabins/houseboats, improvised homes/tents/sleepers out, which are not shown in this table

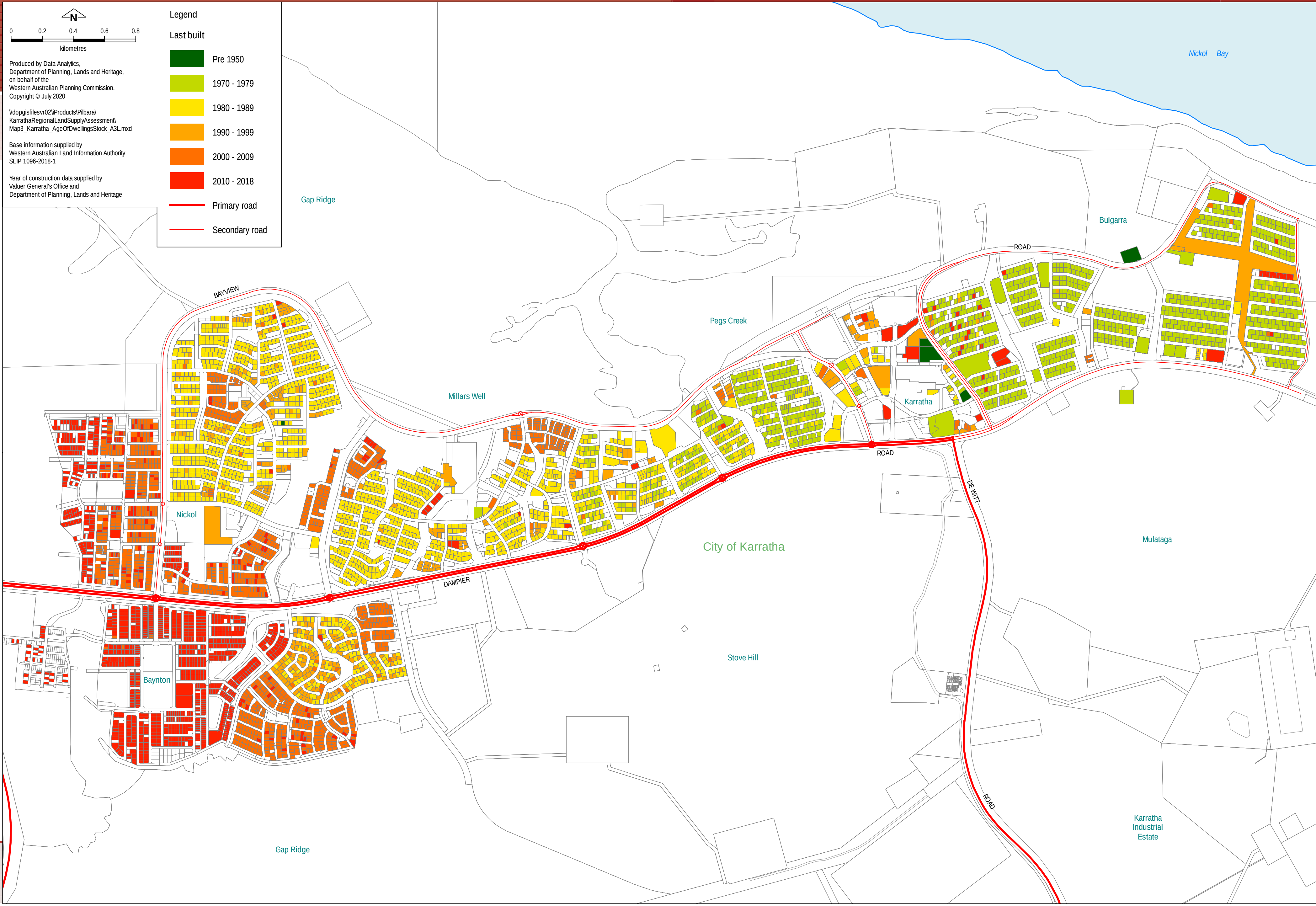
The age of Karratha's residential dwelling stock is quite varied as shown on Map 3 and Figure 8 with 45 per cent of residential dwellings constructed between 1970 and 1989.

A total of 41 per cent of the town's residential dwellings were constructed between 2000 and 2017. The need to update older dwellings mainly in the suburbs of Bulgarra, Millars Well, Nickol and Pegs Creek has been recognised by Woodside. A four-year $55 million refurbishment program is presently underway which will modernise 400 properties relating to North-West Shelf project homes. It is expected that this program will conclude in 2020.

The Department of Communities (Communities) currently has a total of 963 dwellings in the Karratha urban area made up of 485 Government Regional Officers Housing (GROH) dwellings, 475 public housing and three community housing dwellings. The distribution of this dwelling stock is shown in Figure 9. This reveals that most of the dwelling stock is in the suburbs of Baynton and Nickol and the greatest representation being GROH dwellings in Baynton.

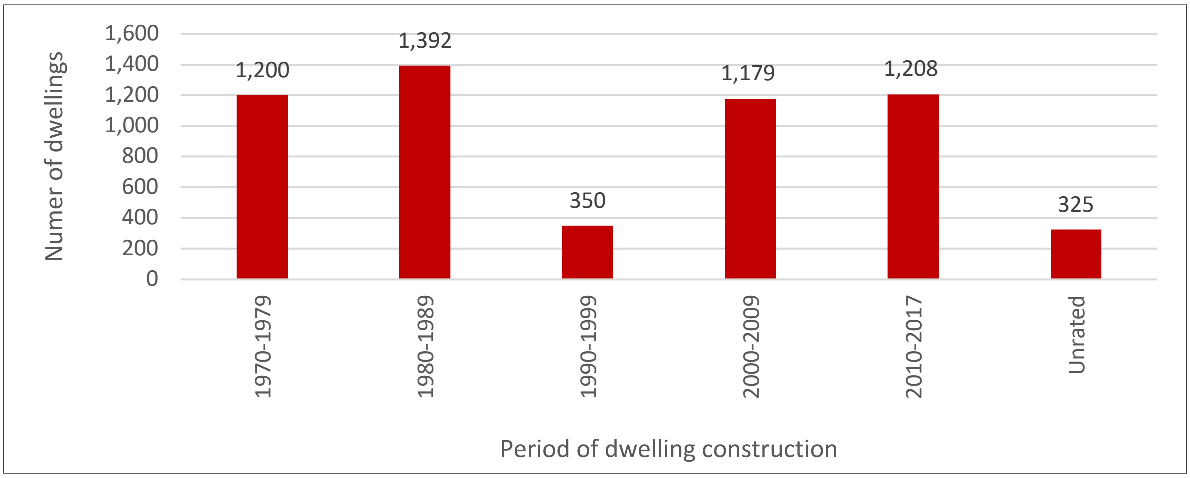
[19] Designing "Community" The significance of place and urban design in public housing renewal, 2015

Map 3: Age of dwelling stock – Karratha urban area



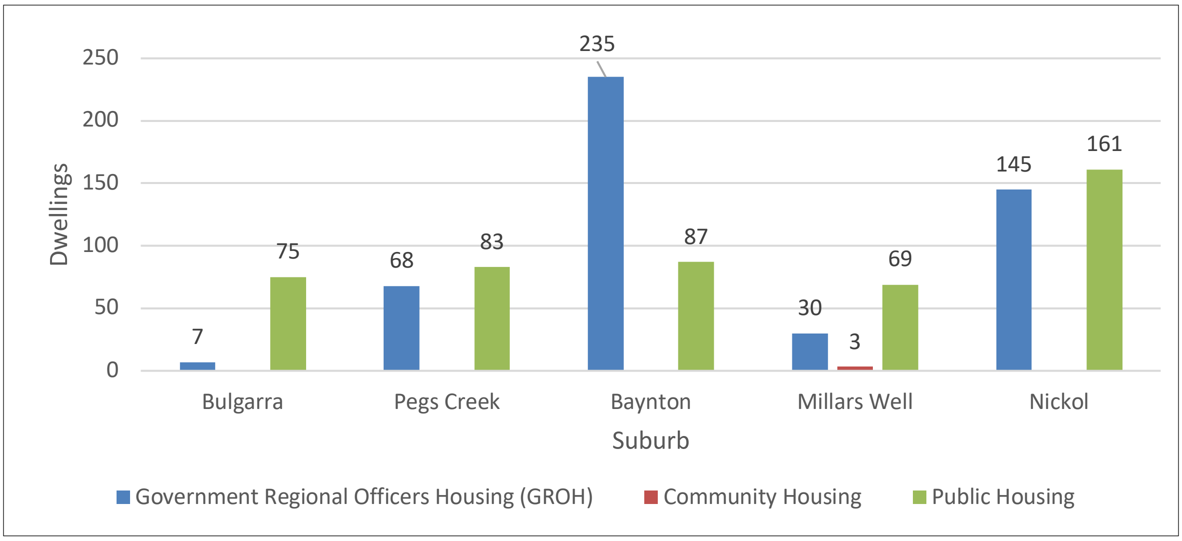
Communities has recently secured State Government funding through the Housing and Homelessness Investment Package which will enable further public housing construction and refurbishment. A total of 10 properties mostly located in Pegs Creek and Bulgarra have been identified at this stage to benefit from this program. Construction completion is expected by mid-2022.

Figure 8: Age of dwelling stock – Karratha urban area



Source: Department of Planning, Lands and Heritage (2019) *Integrated Regional Information System*

Figure 9: Department of Communities housing stock – Karratha urban area



Source: Department of Communities (2020)

[20] Land zoned "Residential" and "Urban Development"

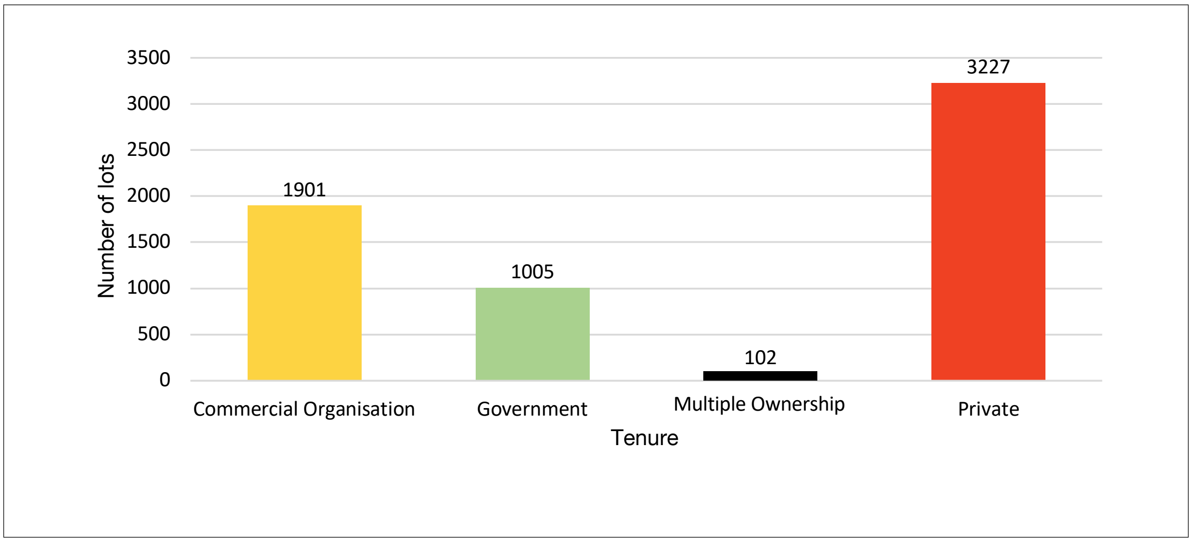
5.3 Tenure

One unique feature of land ownership within the Karratha urban area is the relatively high proportion of lots zoned for residential development[20] owned by commercial organisations. This is shown in Figure 10 and in Map 4 and equates to 30 per cent (or 1,901 lots). This highlights the pivotal role that commercial organisations play in the redevelopment and availability of dwelling stock, which in turn has a corresponding effect on the rental market.

5.4 Housing suitability

The ABS has captured data on housing suitability for the first time as part of the 2016 Census as shown in Table 6. Housing suitability presents a comparison between the number of bedrooms required and the actual number of bedrooms in a dwelling. Housing suitability data can be used to analyse the over or under-utilisation of dwellings, as well as dwellings' suitability for the resident household. Data for the Karratha urban area indicates that 50 per cent of occupied private dwellings (approximately 3,700) are under-utilised with one or more extra bedrooms than required.

Figure 10: Residential land tenure - Karratha urban area



Source: Department of Planning, Lands and Heritage (2020)

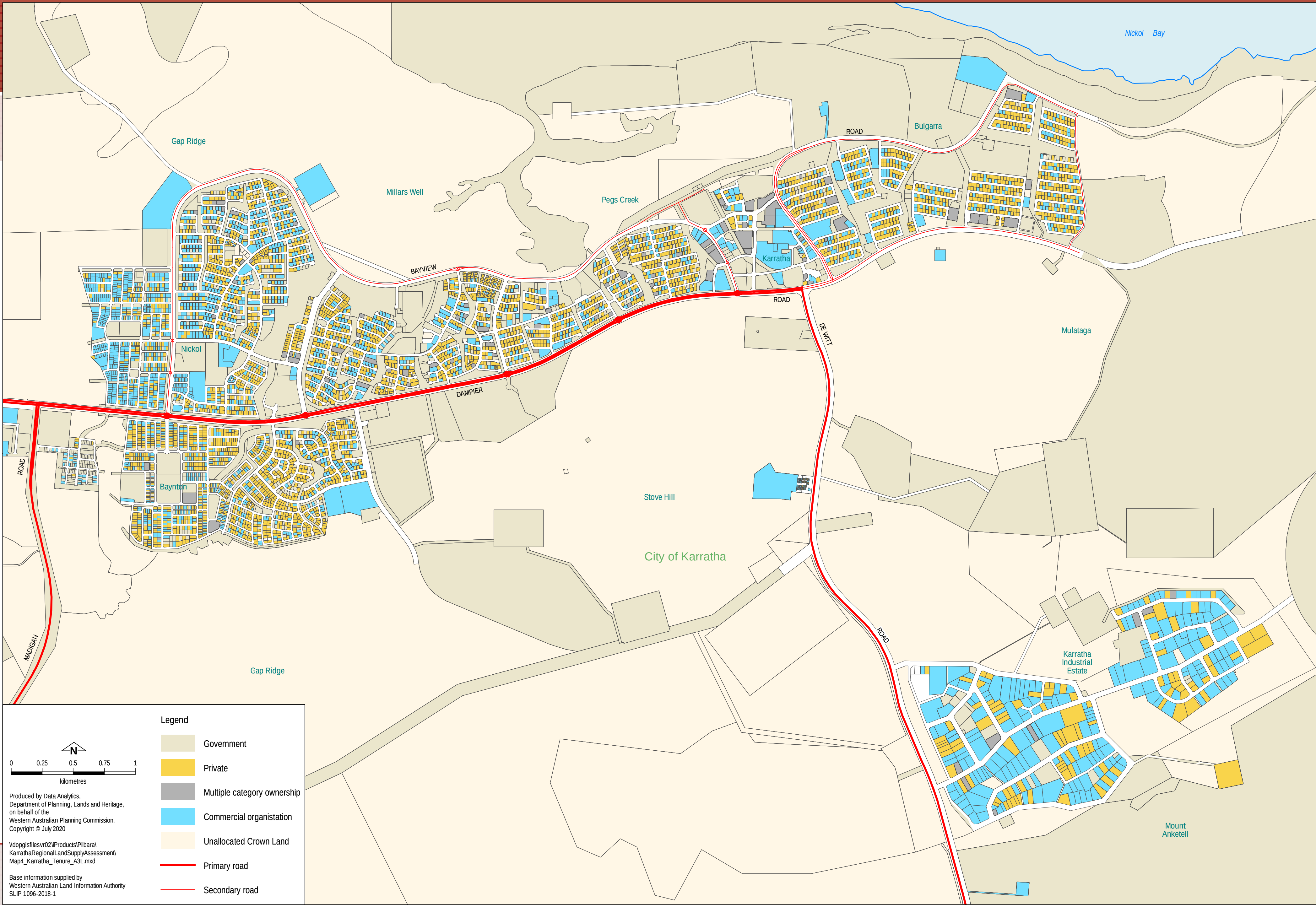
Table 6: Housing suitability Karratha urban area

	Extra bedroom(s) needed	No bedrooms needed or spare	Bedroom(s) spare	Unable to determine	Not stated	Not applicable	Total
Karratha SA2	124	702	3,752	166	88	2,674	7,516
Western Australia	20,600	111,968	683,028	33,221	17,961	206,945	1,073,723

Source: Australian Bureau of Statistics (2016) Census of Population and Housing, 2016, Table Builder.

Note: The 'not applicable' category comprises of unoccupied private dwellings, non-private dwellings, dwellings in migratory, offshore.

Map 4: Land ownership – Karratha urban area



This under-utilisation can be attributed to a mismatch in the type of housing assigned to skilled workers based on family needs, the ageing of households which results in children leaving home; tenants choosing to stay in a home due to their connection to a suburb as well, lack of suitable alternatives and due to the typology of public housing stock which provides a high proportion of dwellings with three or more bedrooms.

5.5 Local property market

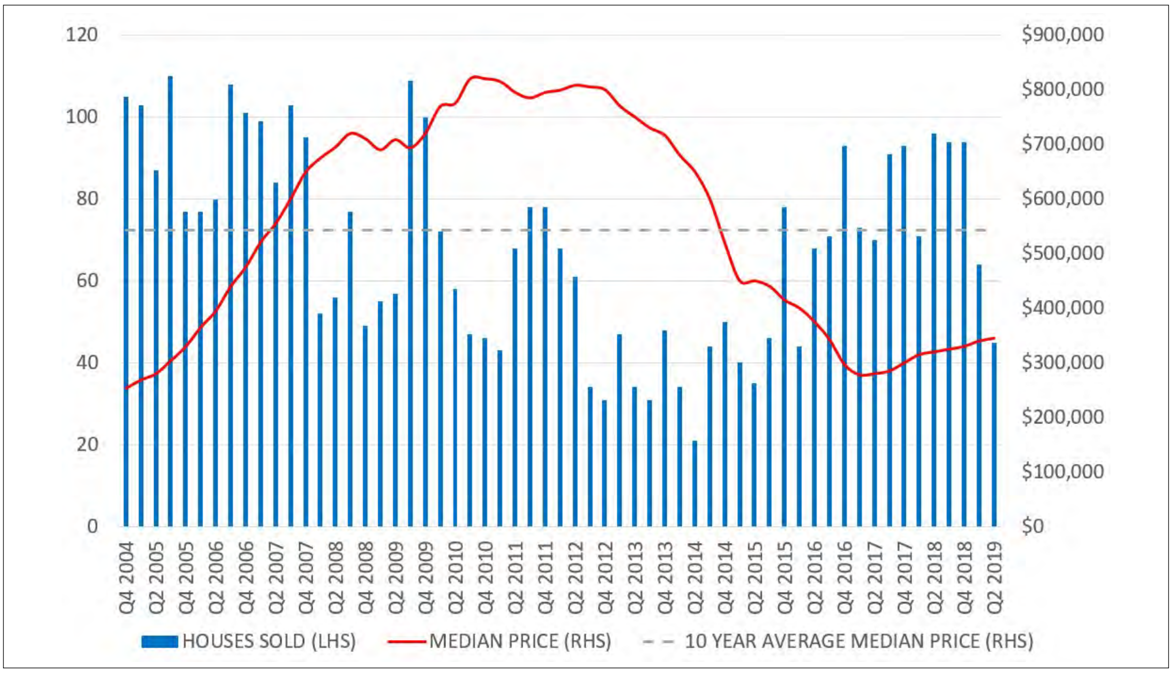
Data sourced from the PDC[21] is shown at Figures 11 – 13. These depict house, unit and land sales volume and median prices for the City. This data is underpinned by fluctuations in the resources sector. Between 2008 and the peak of the last investment cycle in 2013, resource and construction employment increased by 136 per cent in the Pilbara. This increase drove growth in the residential population in the City which put significant pressure on the local residential market. This housing demand translated into increased housing and rental costs, which in turn put inflationary pressure on the cost of living in the Pilbara region. In 2011, median housing costs in the City were double those of Perth. Since the end of the last investment cycle, housing costs and property prices have dropped significantly.

5.5.1 House prices

In 2010, the Karratha property market was at its peak and had a median house price of approximately $800,000 and sales volumes approaching 200 dwellings.

Since 2010, the median price has dropped sharply to a low of approximately $280,000 in 2017 and sales volumes of 150 dwellings. Many investors and some homeowners were forced to sell as the level of equity in their properties dropped below their mortgages. There has since been a modest recovery in the residential property market since late 2016, with the median price for houses rising to $342,500 as of June 2019.

Figure 11: Dwellings sales volume – City



Source: Pilbara Development Commission (2019) *Pilbara Half Yearly Housing and Land Snapshot*

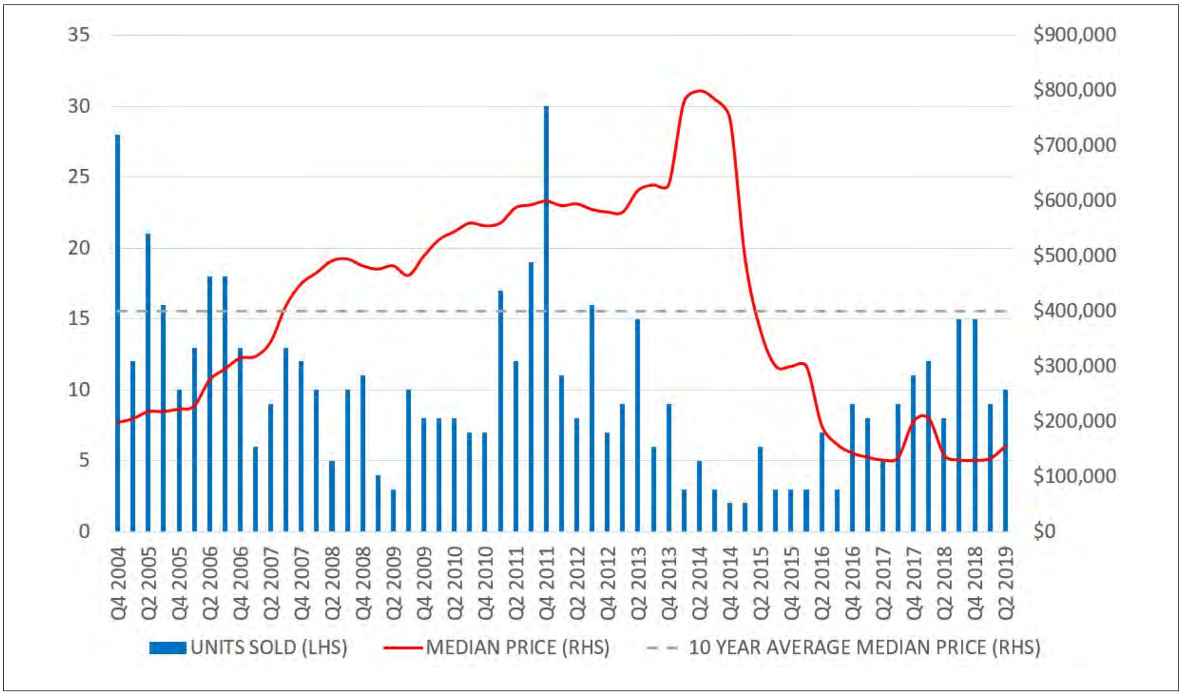
[21] Pilbara Development Commission - *Pilbara Half Yearly Housing and Land Snapshot*, June 2019

5.5.2 Unit prices

The median price for units in the City peaked in 2014 with a median of approximately $805,000. From 2015 to 2017, there was a pronounced drop in the median price for units, far more sharply than the house market to a median price just over approximately $110,000. Sales volumes during this period were modest (approximately 20-50 units per year).

The median price for units since 2017 rose to $200,000 in 2018 and as of June 2019 has dropped back down to $143,750. This median price drop excludes the median sale prices that are currently being achieved for desirable multiple dwelling units such as in the Pelago apartment development in the City Centre. These are being sold for approximately $350,000[22].

Figure 12: Unit sales volume – City



Source: Pilbara Development Commission (2019) *Pilbara Half Yearly Housing and Land Snapshot*

[22] Pilbara Development Commission (2020)

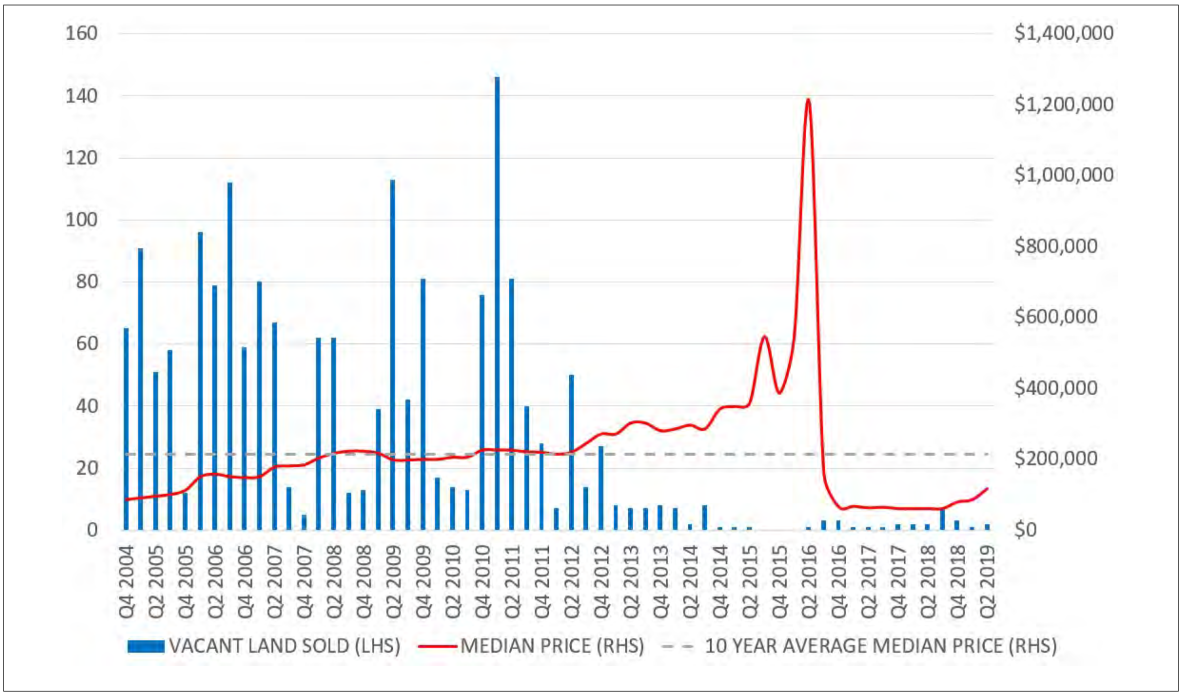
5.5.3 Land prices

The median price for land in the City since 2004 has fluctuated less than the price for homes and units and has maintained a constant price of approximately $200,000. Since 2012, prices have fluctuated significantly. The sales volumes of land have been exceptionally low since 2013. As at June 2016, the median price was $100,000. In the second quarter of 2019, the median price has improved to approximately $150,000.

5.5.4 Current lots on the market

As at May 2020, there were 147 lots on the market in the suburbs of Baynton and Nickol as part of the Madigan at Baynton West and Baynton West estates and the Jingarri Residential Estate in Nickol.

Figure 13: Vacant land sales volume – City



Source: Pilbara Development Commission (2019) *Pilbara Half Yearly Housing and Land Snapshot*

5.5.5 Rental market

A key feature of the Karratha housing market is that 77 per cent of occupied private dwellings tenure is comprised of rental properties according to the 2016 ABS Census. The supply of rental properties to the market is an important consideration. Figure 14 shows that rental listings by suburb in the City are at an all-time low, which may be an indicator of impending rental shortages.

Rental listings in Karratha are at their lowest since the peak of the previous investment cycle. The second quarter of 2019 showed that 50 properties were listed as available in the rental market which may not be enough to meet expected demand. It is likely that service workers may be entering the mainstream rental market once purpose-built service workers accommodation reaches it's capacity at Warmabie Estate in the City's town centre.

ABS data[23] indicates that approximately 13.5 per cent and 25 per cent of the private dwellings in Karratha urban area were unoccupied in the 2011 and 2016 census years.

Rental supply shortages might be influenced by property owners keeping rentals out of the market in the expectation that prices will increase strongly in the short term corresponding with the outcome of the previous investment cycle. Upgrading older dwelling stock in the City by Woodside will influence what properties are available for the rental market.

5.6 Land zoned for residential purposes

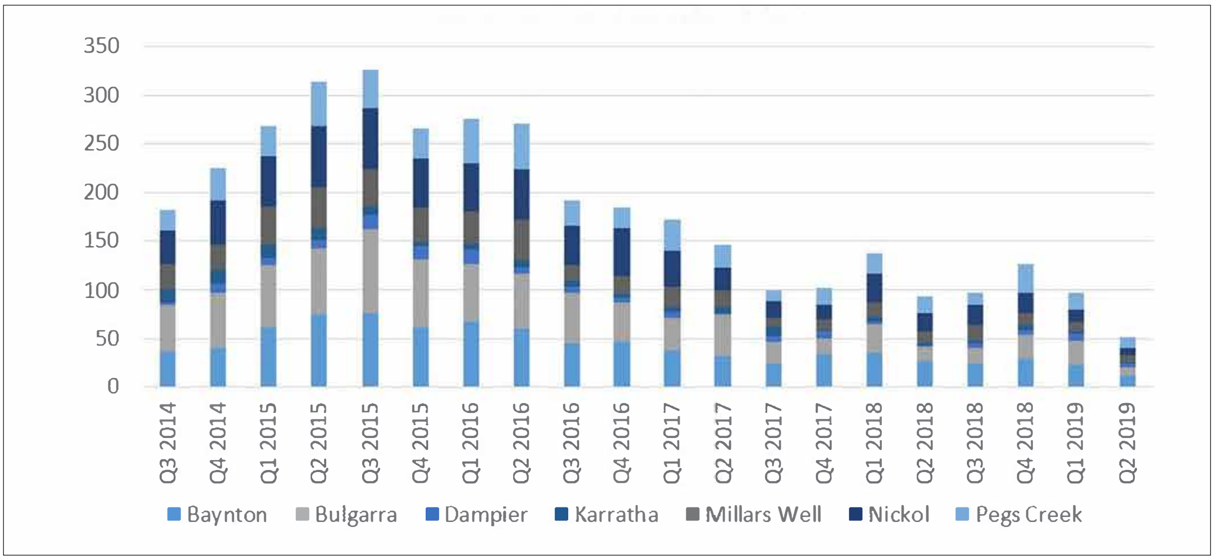
The predominant local planning scheme zones under the *Local Planning Scheme No. 8 (LPS 8)* provide for residential development as shown in Map 5.

- Residential
- Urban Development.

In addition, there is scope for limited residential development on land zoned Town Centre, Commercial, Tourism and Rural Residential. Several residential uses classes including Aged and Dependent Persons Dwelling, Grouped Dwelling, Multiple Dwelling and Single House are listed as discretionary uses under *LPS 8* and provide for additional residential development opportunities within the Karratha urban area.

Using the Integrated Regional Information System (IRIS) land supply model, areas of land zoned Residential and Urban Development are grouped together and assessed to provide a snapshot of existing residential land stocks. Appendix B provides a more in-depth description of the IRIS land supply model and the methodology for its use.

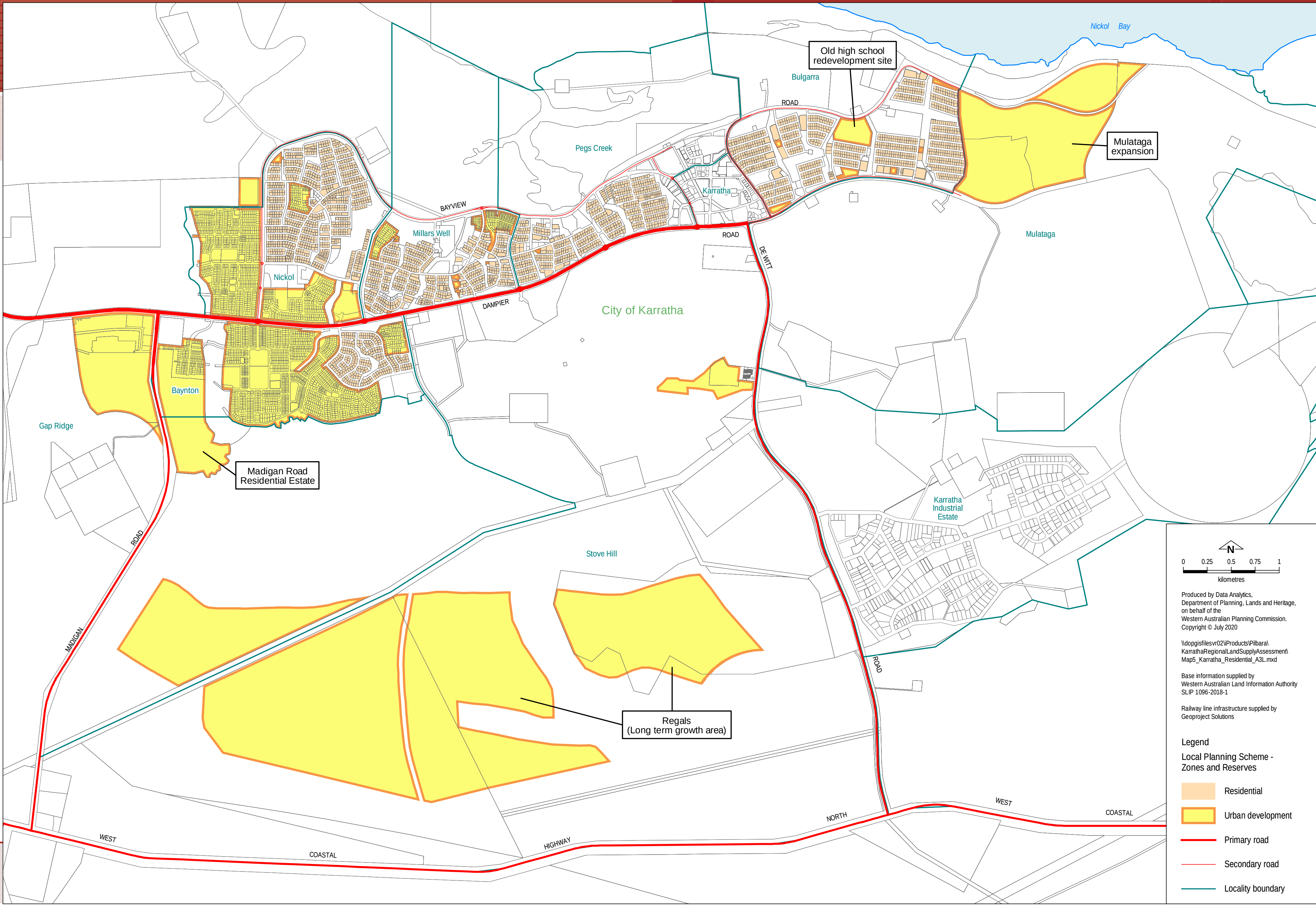
Figure 14: Rental listing by suburb - City



Source: Pilbara Development Commission (2019) *Pilbara Half Yearly Housing and Land Snapshot*

[23] ABS 2016 Census Data

Map 5: Residential zoning - Karratha urban area



The IRIS land supply model showed that, as at November 2019, approximately 270 hectares of land zoned Residential under *LPS 8* within the Karratha urban area geographical area. The locality of Bulgarra has the greatest stock of land zoned Residential (85 hectares), followed by the locality of Nickol (69 hectares) (Figure 15). Most of the stock (98 per cent) in these suburbs has been developed and the balance deemed as either undeveloped or unrated.

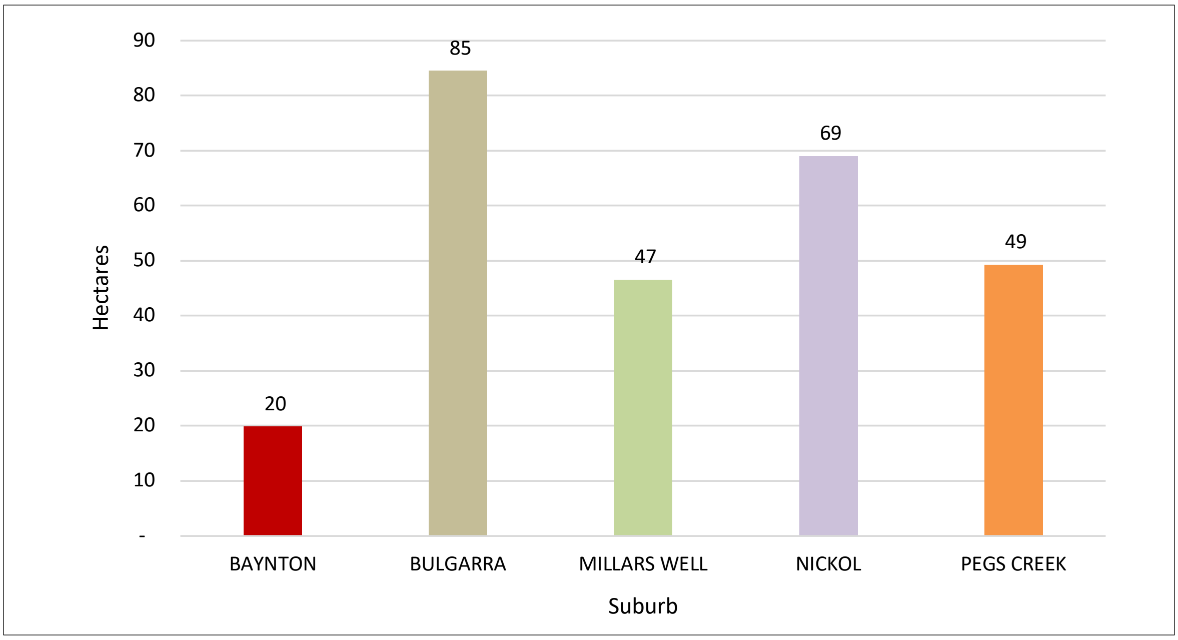
Lots identified as unrated are those that are zoned for development and for which no vacant land or premises valuation information has been captured in Landgate's property valuation database.

The IRIS land supply model also identified 660 dwellings across 228 lots on land zoned Commercial, Mixed Business and Tourism under *LPS 8*, covering an area of 108 hectares (data not included in Figure 15).

In addition to land zoned for residential purposes, this report examines land that has been earmarked for urban expansion and development investigation in section 6.1. These two additional potential sources of residential land supply have the capacity over time to increase the quantum of land zoned Residential under *LPS 8* to cater for the City's future population growth.

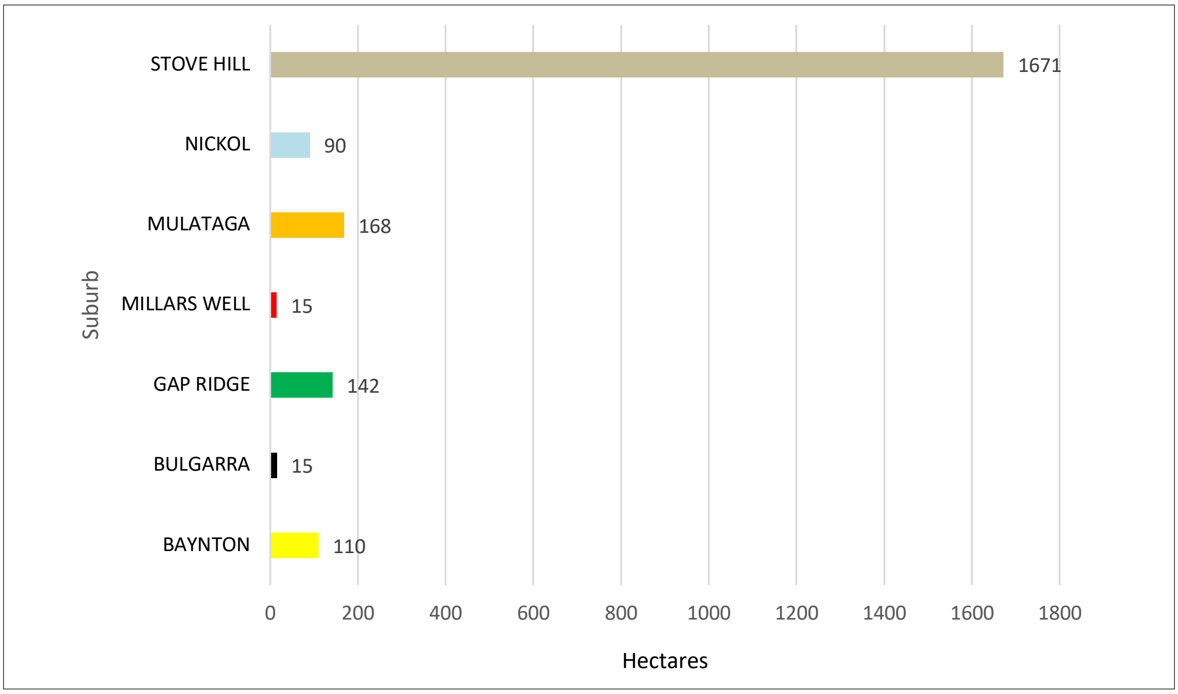
There are 2,211 hectares of land zoned Urban Development under the City's *LPS 8* within the SA2 geographical area. The locality of Stove Hill has the greatest stock of land zoned Urban Development (1671 hectares), followed by the locality of Mulataga (168 hectares) (Figure 16). Land zoned Rural Residential under the City's *LPS 8* covers 190 hectares and is in the locality of Stove Hill.

Figure 15: Stock of land zoned residential by suburb – Karratha urban area



Source: Department of Planning, Lands and Heritage (2019) Integrated Regional Information System

Figure 16: Stock of land zoned urban development – Karratha urban area



Source: Department of Planning, Lands and Heritage (2019) Integrated Regional Information System

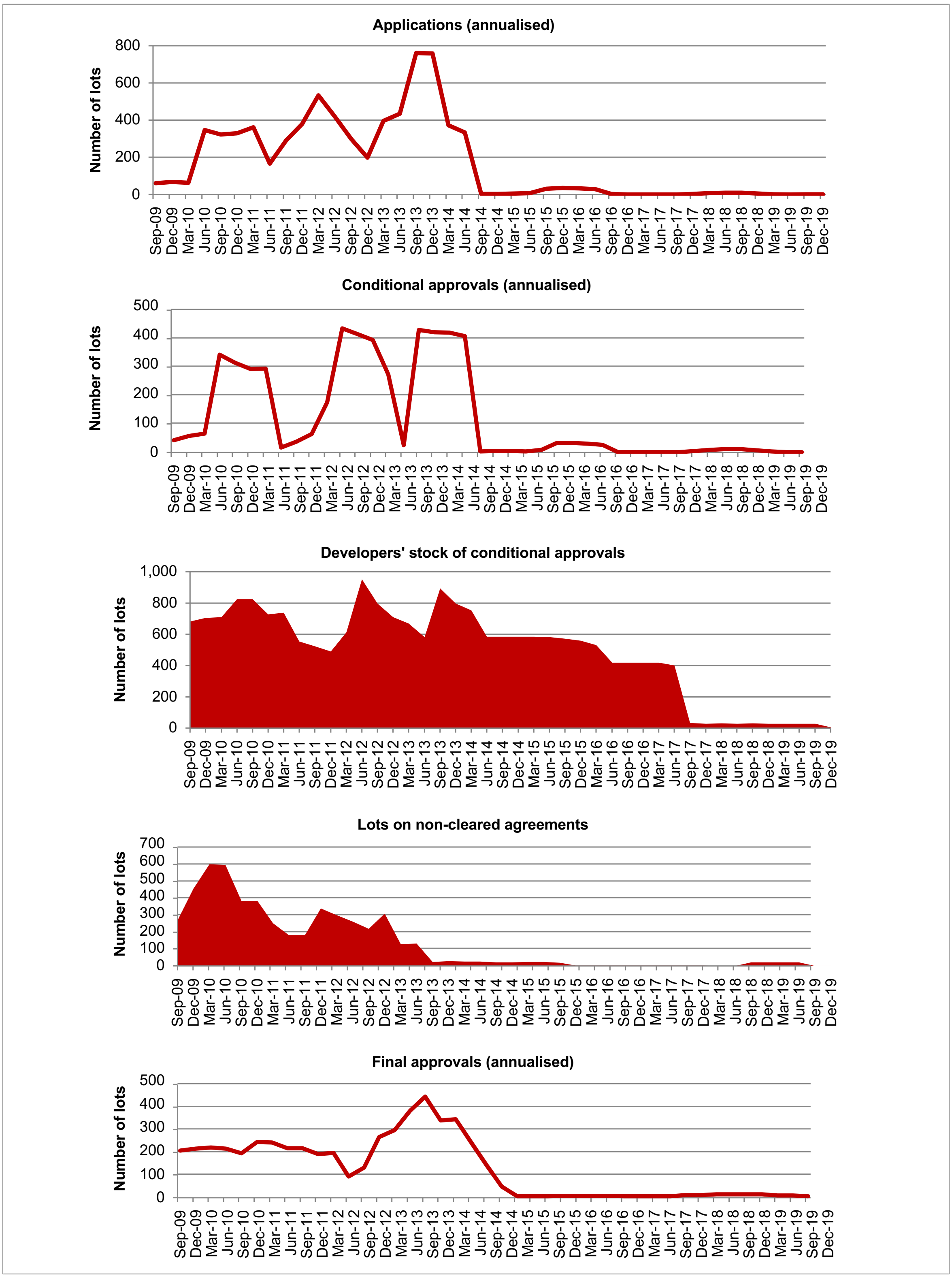
5.7 Lot pipeline

Over the decade to December 2019, applications were lodged to create a total of 1,748 residential lots (average of 43 lots per quarter). Residential subdivision activity peaked in 2013, with 758 lots lodged for subdivision approval. This high number resulted in a decade-high record of 331 lots with conditional approval at the end of the September 2013 quarter.

At the end of the December 2019 quarter, there were no residential lots with conditional approval, which indicates a lack of lot supply in the pipeline and only one subdivision application was received for assessment. To ensure continuity and no interruption to lot supply, additional stock of residential lots will be needed in the short term to address the current and future investment cycles in the City. Potential land capable of subdivision is outlined in detail in section 6.1, which when developed, will ensure a continuation of lot supply in the short to medium term.

More than 1,200 residential lots were granted conditional approval over the decade to December 2019. The graph shown in Figure 17, titled ‘lots on non-cleared agreements’ shows the stock of conditionally approved lots for which a service provision agreement has been signed by the developer and the Water Corporation. This indicator provides a measure of the number of lots which are likely to be developed in the short term. At the end of the December 2019 quarter, there were no agreements in place to service residential lots in the City.

Figure 17: Residential subdivision activity and lot supply pipeline – City



Source: Western Australian Planning Commission (2019) State Lot Activity and Water Corporation (2019)

5.8 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.

During the previous investment cycle, the Pilbara experienced significant growth between 2008 and 2014. This resulted in a significant increase in the value and number of dwelling approvals from 2008 to 2012, which was mirrored in the City. Over the last eight financial years to June 2019, approvals were issued for the construction of 1,101 houses and 596 dwelling units and other residential buildings[24]. This equates to a total of 1,697 dwellings of which, 65 percent were single houses as shown in Figure 18.

Dwelling approvals peaked in the 2011/12 financial year at the top of the previous investment cycle driven by the high number of approvals for dwelling units in other residential buildings (635 dwelling units approved). House approvals peaked in the 2012/13 financial year, with 379 houses approved for construction. In the four years to June 2019, less than 10 dwelling approvals have been granted in each financial year.

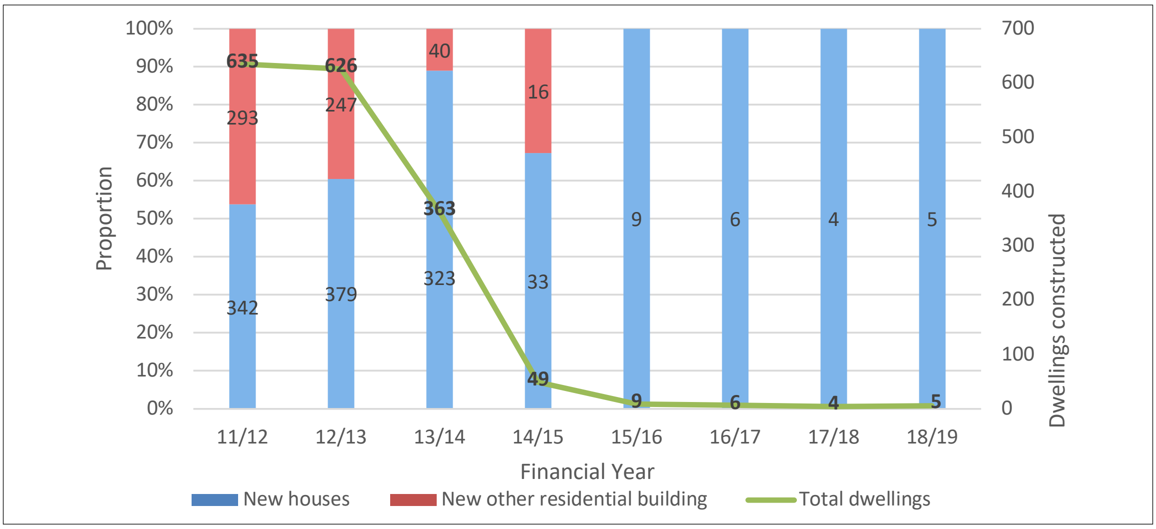
There are many factors that relate to limited dwelling approvals in the City. The first of these relates to the Pilbara building industry, which currently is experiencing labour and material shortages. This raises construction and maintenance costs and limits the pace of development. Builders and tradespeople are in short supply, as many were attracted to the region during the previous investment cycle and have since left following the sharp decline in activity.

Secondly, the cost of developing new dwelling stock is prohibitive when compared to the sales prices achieved for new homes. As at December 2019, building costs in the City are estimated at $550,000-$600,000 but the end market value of these dwellings is only between $420,000 and $450,000.

Thirdly, insurance and financing costs appear to be a barrier to property development in the City. Financial institutions now are more prudent given the decline in property values since the last investment cycle and the number of investors and owner-occupiers who were impacted by this decline.

In the short to medium term, it is expected that the cost of building new homes in the City will become financially viable. The involvement of DevelopmentWA and other developers in the City in partnership with a renewed Pilbara building industry, better access to finance and enhanced property values will provide the impetus future new housing growth. There appears to be opportunity for this growth to be guided by suitable initiatives to ensure a sustainable pipeline of residential development, however this is yet to be determined.

Figure 18: Total dwelling approvals – City



Source: Australian Bureau of Statistics (2019) Building Approvals, Australia. Catalogue No. 8731.0

[24] 'Other residential building' includes buildings other than houses which are primarily used for long-term residential purposes. Other residential buildings include semi-detached, row or terrace houses or townhouses, and flats, units or apartments.

6 Development outlook

Maps 6 to 9 and Tables 7 to 12 show possible development projects in the Karratha urban area. 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:

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

6.1 Residential development

Building on the *Pilbara Planning and Infrastructure Framework*, a strategic framework has been identified in the *Local Planning Strategy*. This sets out a preferred growth pattern to accommodate a population of 38,121 people by 2031. This anticipated population growth exceeds *WA Tomorrow* forecasts as outlined in section 3.3.

The strategic framework anticipates that future population growth will occur within the Karratha urban area and minor growth occurring in Dampier, Wickham, Roebourne and Point Samson[25]. New urban growth is planned in Mulataga to the east of the City Centre to connect the City to the coast.

Extensions to the existing urban area are also identified to the west, mainly in the suburbs of Gap Ridge, Nickol and Baynton. The *Local Planning Strategy* also promotes infill development of existing vacant sites and investigating surplus drainage reserve/open space land (referred to as Lazy Lands) to facilitate additional housing diversity.

The *Local Planning Strategy* seeks to encourage development within existing residential areas by facilitating timely infrastructure and residential land supply. This is to be achieved through infill, urban expansion and the longer-term consideration of development investigation areas.

Growth areas in the *Local Planning Strategy* are mirrored in Maps 6-9 and Tables 7-12 which consider a range of environmental constraints, for example, storm surge and flooding as well as landscape values of the Karratha Hills which predominantly restricts urban expansion east and west of the Karratha urban area.

Within the Karratha urban area, the *Local Planning Strategy* allocates approximately 330 hectares of land for urban expansion principally. This is principally comprised of land zoned under *LPS 8* as Urban Development (304 hectares) and to a lesser extent land zoned Parks, Recreation and Drainage known as “Lazy Lands” relating to surplus drainage reserves (28 hectares).

Of the urban expansion land, the eastern corridor expansion site in Mulataga (KA15) adjacent to the suburb of Bulgarra is the most significant and is expected to yield approximately 180 dwellings in the short term (0-5 years), 180 dwellings in the medium term (6-10 years) and 1,000 dwellings in the long term (10+ years). The finalisation of a revised version of the Mulataga District Structure Plan currently underway (2020) will provide a better indication of the development opportunity available in this location.

The site KA138 in the suburb of Gap Ridge also has substantial capacity. With appropriate structure planning, it has the potential to yield 775 dwellings in the long term. Land identified as Lazy Lands in the *Local Planning Strategy* has the notional capacity of accommodating 580 dwellings, subject to these sites being rezoned for residential use.

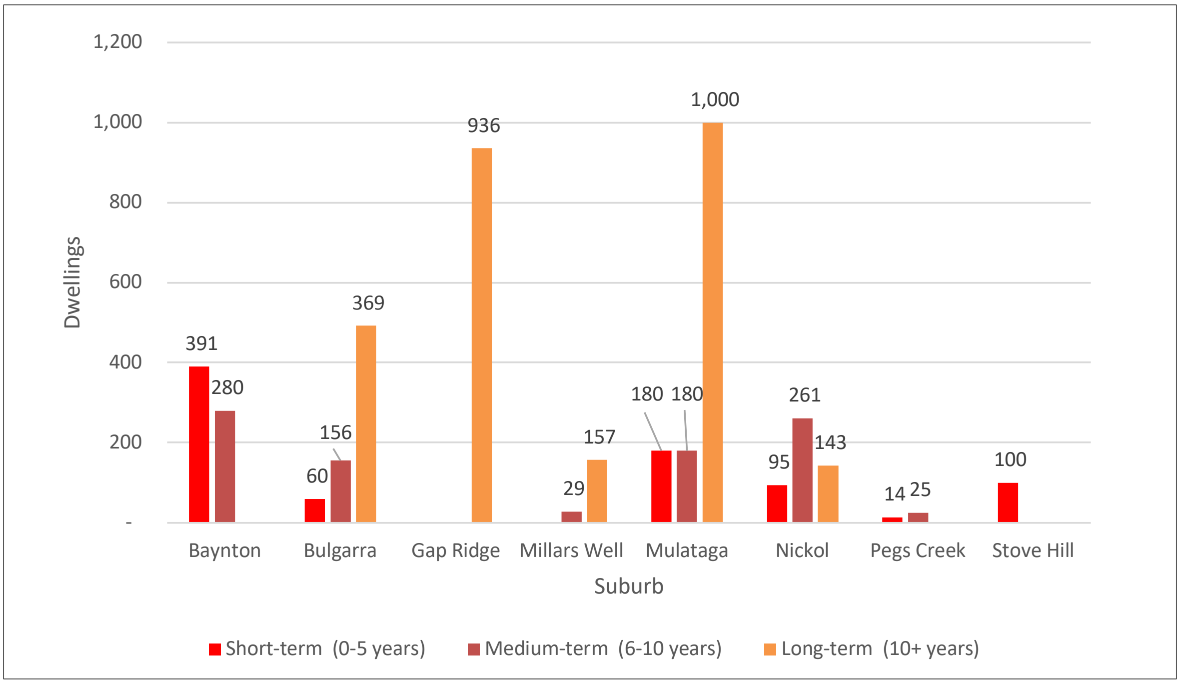
In total, approximately 839 dwellings have been identified in Maps 6 to 9 and Tables 7 to 12 for short-term development (0-5 years) as well as 931 dwellings for the medium term (6-10 years) and 2,605 dwellings in the long term (10+ years) in the Karratha urban area[26]. Figure 19 shows that most of the projected dwelling yields are to be realised from the suburbs of Mulataga, Gap Ridge, Baynton and Bulgarra. Advice from DevelopmentWA in preparing this report indicates that the some of the identified medium-term yields that relate to their sites as shown in Tables 7 to 12 are likely to be brought forward to provide for additional supply in the short term, subject to market demand.

In addition to the projected dwelling yields shown in Figure 19, there is capacity for residential development to occur in the City Centre as part of future mixed-use development proposals. This represents additional dwelling capacity for land within the Karratha urban area and theoretically would result in a higher population carrying capacity of existing land as detailed in section 6.5. Given that the additional dwelling supply is difficult to quantify, residential yields in the City Centre have not been included in Tables 7 to 12.

[25] These minor growth areas are outside of the study area of this report

[26] The yields shown in Tables 7 to 11 generally capture future residential development of five dwellings or more

Figure 19: Projected dwelling yields by suburb



Source: Department of Planning, Lands and Heritage (2019)

6.2 Development investigation areas

To cater for long-term growth, the *Local Planning Strategy* identifies approximately 3,000 hectares of land for development investigation in the suburbs of Gap Ridge; the Karratha Industrial Estate; Mulataga; and Stove Hill as shown in Map 6. Despite some of these areas being zoned as Urban Development under *LPS 8*, all require further investigation to determine yield potential and appropriate land use designations as part of future investigation feasibility studies. Yield projections for these areas therefore are excluded from Tables 7-12.

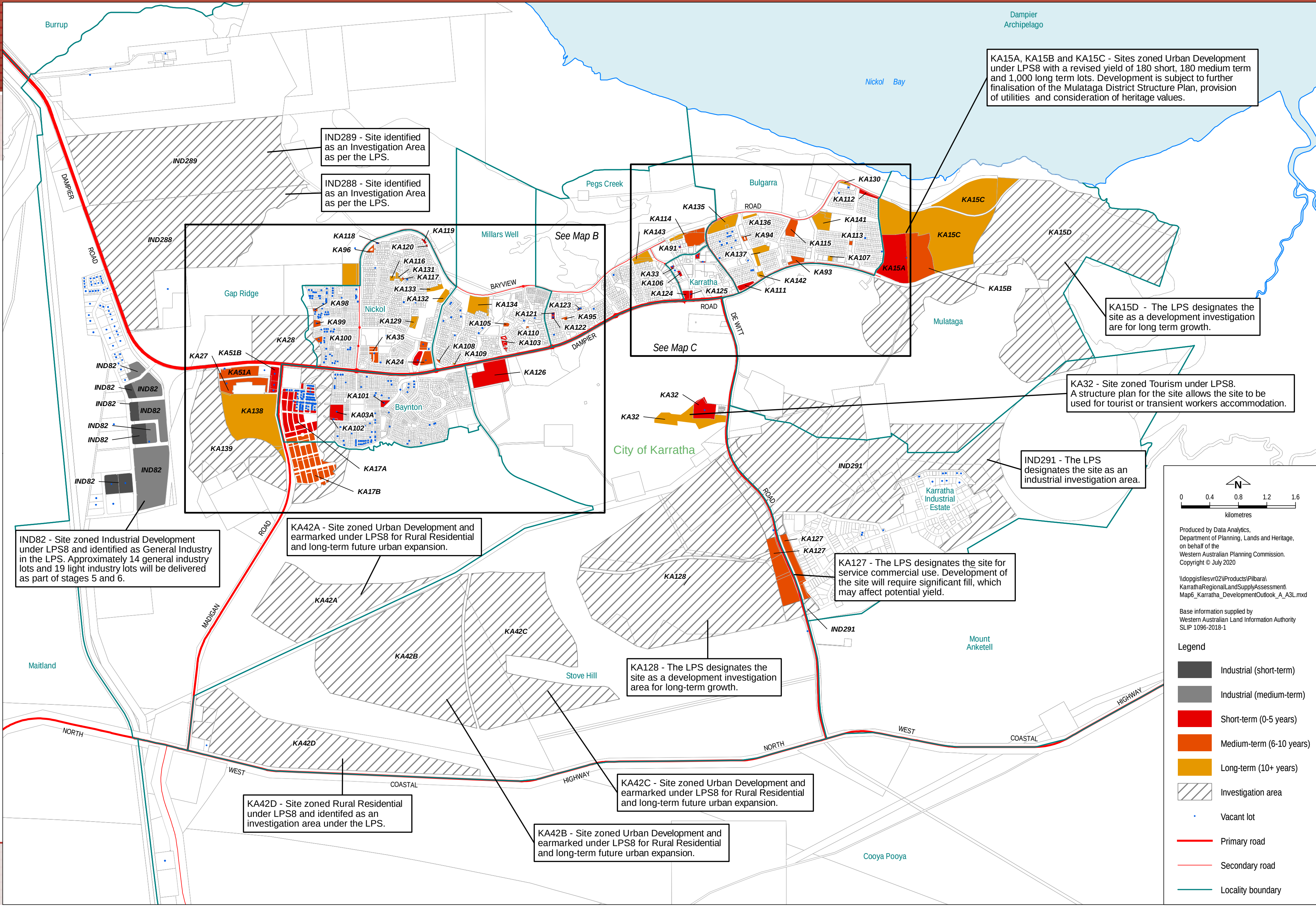
6.3 Industrial development

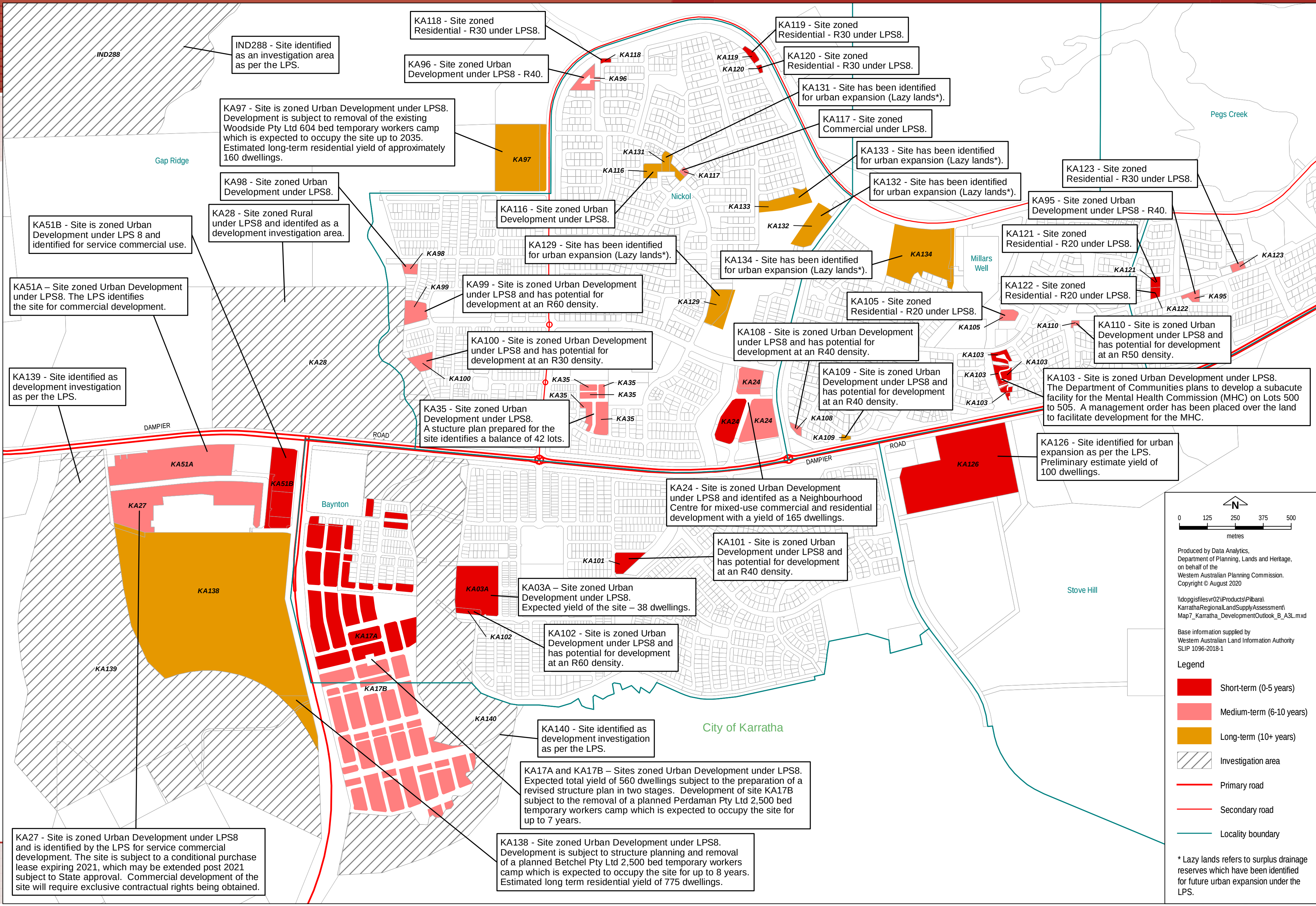
One of the objectives identified in the Local Planning Strategy is to facilitate the development of a variety of industrial uses in the City, including Strategic Industry, General Industry and Light Industry.

Maps 6-9 and Tables 7-12 show that within the Karratha urban area, there is a total of 94 hectares of land zoned for industrial expansion in the Gap Ridge Industrial Estate as well as approximately 12,500 hectares of industrial expansion land outside the Karratha urban area in the suburbs of Maitland, Mount Anketell, Roebourne and Wickham.

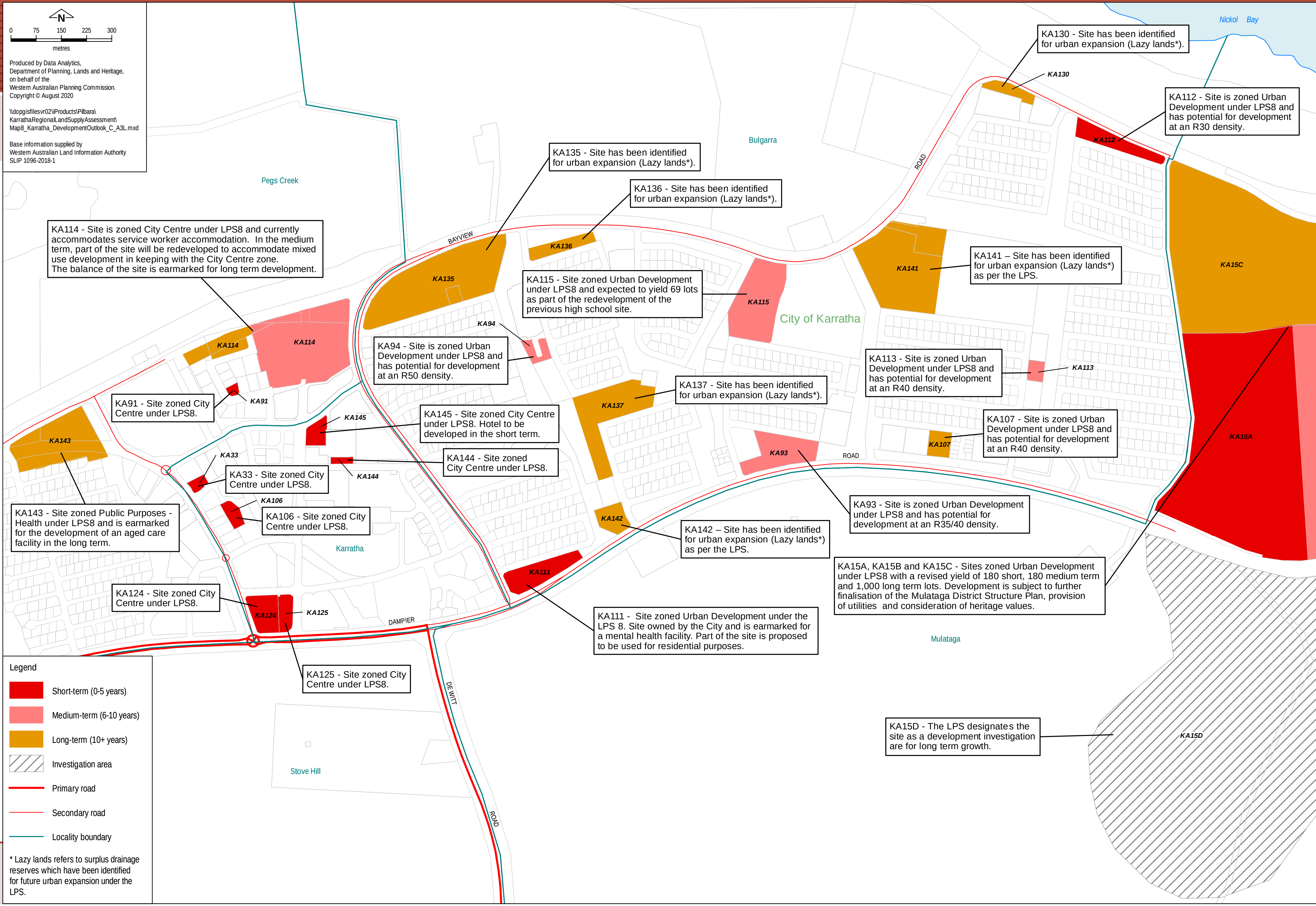
The two largest sites (IND293 and IND292) outside of the Karratha urban area are part of the Maitland Strategic Industrial Area and the Anketell Strategic Industrial Area, respectively. They are to accommodate large-scale industries such as gas or petroleum processing and downstream processing, mineral resource processing as well as industrial activity.

Map 6: Development outlook (staging) - Karratha




IND288 - Site identified as an investigation area as per the LPS.
KA118 - Site zoned Residential - R30 under LPS8.
KA96 - Site zoned Urban Development under LPS8 - R40.
KA119 - Site zoned Residential - R30 under LPS8.
KA120 - Site zoned Residential - R30 under LPS8.
KA131 - Site has been identified for urban expansion (Lazy lands*).
KA117 - Site zoned Commercial under LPS8.
KA133 - Site has been identified for urban expansion (Lazy lands*).
KA132 - Site has been identified for urban expansion (Lazy lands*).
KA97 - Site is zoned Urban Development under LPS8. Development is subject to removal of the existing Woodside Pty Ltd 604 bed temporary workers camp which is expected to occupy the site up to 2035. Estimated long-term residential yield of approximately 160 dwellings.
KA98 - Site zoned Urban Development under LPS8.
KA28 - Site zoned Rural under LPS8 and identified as a development investigation area.
KA116 - Site zoned Urban Development under LPS8.
KA51B - Site is zoned Urban Development under LPS 8 and identified for service commercial use.
KA129 - Site has been identified for urban expansion (Lazy lands*).
KA134 - Site has been identified for urban expansion (Lazy lands*).
KA51A – Site zoned Urban Development under LPS8. The LPS identifies the site for commercial development.
KA99 - Site is zoned Urban Development under LPS8 and has potential for development at an R60 density.
KA100 - Site is zoned Urban Development under LPS8 and has potential for development at an R30 density.
KA105 - Site zoned Residential - R20 under LPS8.
KA108 - Site is zoned Urban Development under LPS8 and has potential for development at an R40 density.
KA123 - Site zoned Residential - R30 under LPS8.
KA95 - Site zoned Urban Development under LPS8 - R40.
KA121 - Site zoned Residential - R20 under LPS8.
KA122 - Site zoned Residential - R20 under LPS8.
KA110 - Site is zoned Urban Development under LPS8 and has potential for development at an R50 density.
KA139 - Site identified as development investigation as per the LPS.
KA35 - Site zoned Urban Development under LPS8. A stucture plan prepared for the site identifies a balance of 42 lots.
KA109 - Site is zoned Urban Development under LPS8 and has potential for development at an R40 density.
KA103 - Site is zoned Urban Development under LPS8. The Department of Communities plans to develop a subacute facility for the Mental Health Commission (MHC) on Lots 500 to 505. A management order has been placed over the land to facilitate development for the MHC.
KA126 - Site identified for urban expansion as per the LPS. Preliminary estimate yield of 100 dwellings.
KA24 - Site is zoned Urban Development under LPS8 and identifed as a Neighbourhood Centre for mixed-use commercial and residential development with a yield of 165 dwellings.
KA101 - Site is zoned Urban Development under LPS8 and has potential for development at an R40 density.
KA03A – Site zoned Urban Development under LPS8. Expected yield of the site – 38 dwellings.
KA102 - Site is zoned Urban Development under LPS8 and has potential for development at an R60 density.
KA140 - Site identified as development investigation as per the LPS.
KA17A and KA17B – Sites zoned Urban Development under LPS8. Expected total yield of 560 dwellings subject to the preparation of a revised structure plan in two stages. Development of site KA17B subject to the removal of a planned Perdaman Pty Ltd 2,500 bed temporary workers camp which is expected to occupy the site for up to 7 years.
KA27 - Site is zoned Urban Development under LPS8 and is identified by the LPS for service commercial development. The site is subject to a conditional purchase lease expiring 2021, which may be extended post 2021 subject to State approval. Commercial development of the site will require exclusive contractual rights being obtained.
KA138 - Site zoned Urban Development under LPS8. Development is subject to structure planning and removal of a planned Betchel Pty Ltd 2,500 bed temporary workers camp which is expected to occupy the site for up to 8 years. Estimated long term residential yield of 775 dwellings.
Gap Ridge
Nickol
Millars Well
Pegs Creek
Baynton
Stove Hill
City of Karratha
DAMPIER ROAD
N
0 125 250 375 500
metres
Produced by Data Analytics, Department of Planning, Lands and Heritage, on behalf of the Western Australian Planning Commission. Copyright © August 2020
\\dopgisfilesvr02\iProducts\Pilbara\KarrathaRegionalLandSupplyAssessment\Map7_Karratha_DevelopmentOutlook_8_A3L.mxd
Base information supplied by Western Australian Land Information Authority SLIP 1096-2018-1
Legend
Short-term (0-5 years)
Medium-term (6-10 years)
Long-term (10+ years)
Investigation area
Primary road
Secondary road
Locality boundary
* Lazy lands refers to surplus drainage reserves which have been identified for future urban expansion under the LPS.

Map 8: Development outlook (staging) - Karratha



Map 9: Development outlook (staging) - Karratha

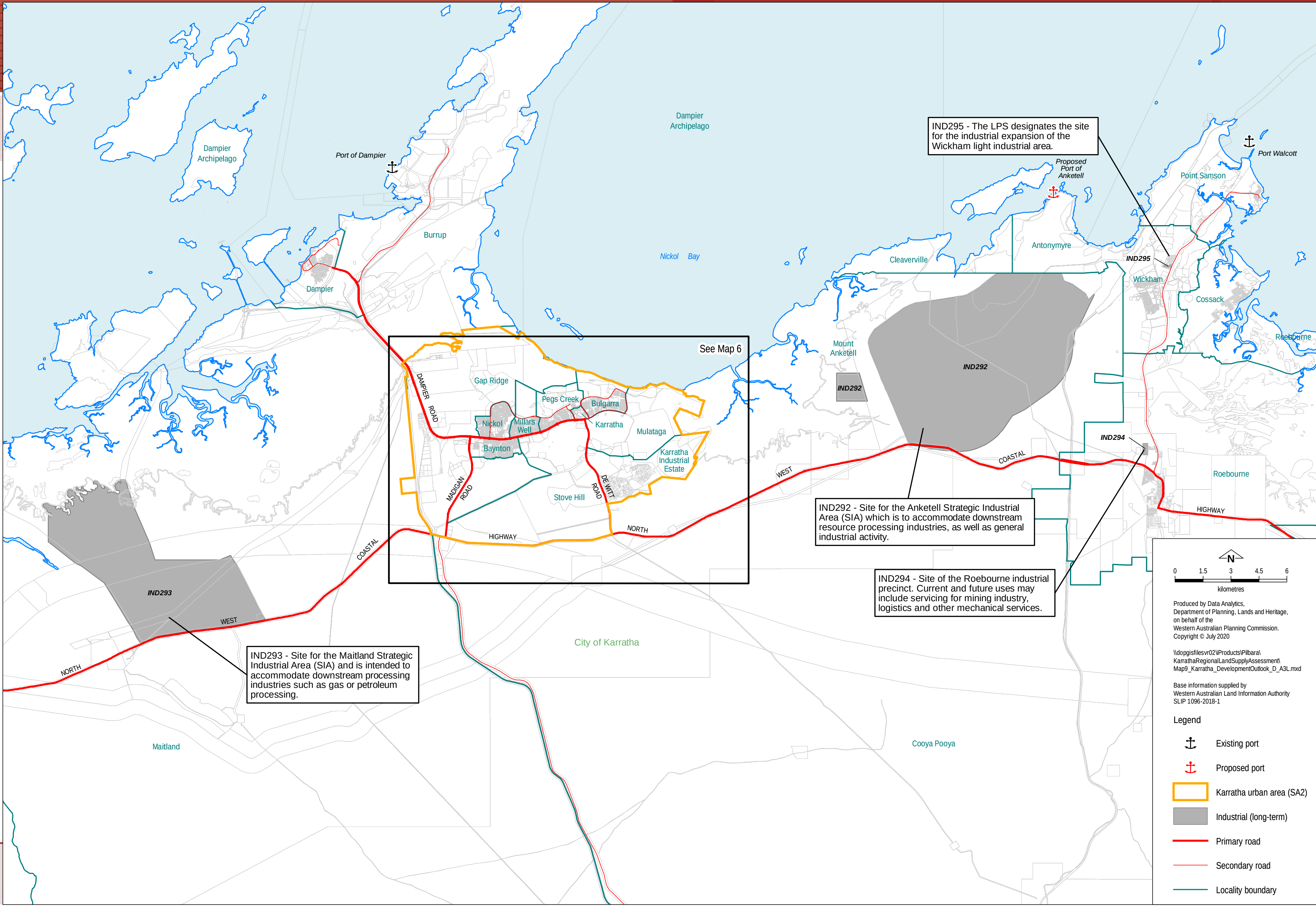


Table 7: Development outlook - project summaries

							Zoning/planning			Area/yield[2]			Subdivision approvals[3]		Anticipated dwelling release[4]			Constraints[5]			
Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Current local planning scheme zone/reserve	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	Comments
KA03A	Short	Lot 9001 Winyama Rd	Baynton	7	WA Land Authority	Special Use (R60)	Urban Development	No	Baynton West Structure Plan	3.9	-	38	0	0	38	-	-	BP	H	-	Previously identified in the *Karratha Regional HotSpots Land Supply Update (2010)* (KRH 2010). The site is zoned Urban Development and part of DA9 under the *City of Karratha Local Planning Scheme No. 8* (LPS 8). A structure plan prepared for the site designates it for special use development at an R60 density. A local development plan is required to be prepared prior to development. Medium term development expected. Site is expected to be developed below R60 density, hence revised yield being shown.
KA15A	Short	Lot 501 Millstream Road	Mulataga	6	WA Land Authority	Urban Expansion Area	Urban Development		Mulataga District Structure Plan	22.6	180	180	0	0	180	-	-	S,W, BP, MC,Pw,P,T, E, MC,	H	n/a	Previously identified in the KRH 2010. The site is zoned Urban Development under LPS 8. *The City's Local Planning Strategy (2019)* (LPS). designates the site as Urban Expansion Area. A revised district structure plan (DSP) for Mulataga. The DSP is being assessed by the WAPC prior to lodgement. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA. Site contains Aboriginal heritage values managed by the *Aboriginal Heritage Act, 1972* (AHA).
KA15B	Medium	Lot 501 Millstream Road	Mulataga	6	WA Land Authority	Urban Expansion Area	Urban Development		Mulataga District Structure Plan	22.3	180	180	0	0	-	180	-	S,W, BP, MC,Pw,P,T, E, MC,	H	n/a	Previously identified in the KRH 2010. The site is zoned Urban Development under LPS 8. The LPS designates the site as Urban Expansion Area. A revised district structure plan (DSP) for Mulataga. The DSP is being assessed by the WAPC prior to lodgement. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA. Site contains Aboriginal heritage values managed by the AHA.
KA15C	Long	Lot 4638 Mystery Rd, Lot 4661 Mystery Rd, Lot 501, Lot 502	Mulataga	6	State of WA	Urban Expansion Area	Urban Development	No	Mulataga District Structure Plan	117.7	1,000	1,000	0	0	-	-	1,000	F,S,W, BP, MC,Pw,P,T, E, MC, L	H	F	Previously identified in the KRH 2010. The site is zoned Urban Development under LPS 8. The LPS designates the site as Urban Expansion Area. A revised district structure plan (DSP) is being prepared for Mulataga which shows an indicative dwelling yield of 1,400 lots and 1265 lots. The DSP is being assessed by the WAPC prior to lodgement. Land assembly as well as further detailed flood study mapping is required to realise the full potential of site. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA. Site contains Aboriginal heritage values managed by the AHA.
KA15D	No Timing	Lot 4218 Millstream Road, Lot 502, Lot 322	Mulataga	6	State of WA	Development Investigation Area	Conservation Recreation and Natural Landscapes, Rural	Yes	-	491.6	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Previously identified in the KRH 2010. The site is zoned Conservation Recreation and Natural Landscapes and Rural under LPS 8. The LPS identifies the site as a development investigation areas for long term urban growth. The northern half of the site forms part of a registered Aboriginal Heritage Site as per the *Aboriginal Heritage Act 1972*, which may affect development plans. The extinguishment of reserve is required prior to development. Site contains Aboriginal heritage values managed by the AHA.
KA17A	Short	Lot 150, Lot 158, Part Lot 9501, Lot 9503	Baynton	7	WA Land Authority, State of WA	Residential, Mixed Use-Ground Floor Retail Commercial	Urban Development	No	Lot 500 Madigan Road Development Plan	17.6	280	280	0	0	280	-	-	S, W, BP, Pw, MC, T, P	H	-	Previously identified in the KRH 2010. The site is zoned Urban Development and part of DA12 under LPS8. Expected yield of this site and KA17B is 560 dwellings subject to the preparation of a revised structure plan. As at October 2019, 120 lots have been developed, while an additional 99 lots remain vacant. The short term delivery of lots will be subject to demand and DevelopmentWA preparing a business case. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA.
KA17B	Medium	Part Lot 9501	Baynton	7	State of WA	Residential, Mixed Use-Ground Floor Retail Commercial	Urban Development	No	Lot 500 Madigan Road Development Plan	18.4	280	280	0	0	-	280	-	S, W, BP, Pw, MC, T, P	H	-	Previously identified in the KRH 2010. The site is zoned Urban Development and part of DA12 under LPS8. There are plans to develop this site for a 2,500 bed temporary workforce accommodation camp linked to the construction of a urea production plan on the Burrup Peninsula by Perdaman. The workers camp will be subject to a lease of up to seven years and therefore is not expected to effect the development plans of the site in the medium term. Expected yield of the site 280 dwellings subject to the preparation of a revised structure plan. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA.
KA24	Short and Medium	Lot 1302, Lot 1500 Bathgate Rd, Lot 3860 Tambrey Dr	Nickol	6	WA Land Authority	Centre	Urban Development	No	Tambrey Neighbourhood Centre Structure Plan	5.2	-	165	0	0	76	76	-	S,W	H	-	Previously identified in KRH 2010. The site is zoned Urban Development and part of DA7 under LPS 8 and identified as Neighbour Centre as per the LPS. A structure plan prepared for the site aims to facilitate the development of the site into a mixed use neighbourhood centre with commercial and residential components. The structure plan proposes development of 40 single residential dwellings, 45 grouped dwellings and 80 multiple dwellings. A shopping centre was approved for development on the site in June 2019. A 1.76Ha lot fronting Dampier has been developed and sold for commercial purposes. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA.
KA27	Medium	Lot 555	Gap Ridge	7	State of WA	Service Commercial	Urban Development	No	-	7.5	-	-	0	0	-	-	-	BP	H	-	Previously identified in KRH 2010. The site is zoned Urban Development under LPS 8. The LPS designates the site for service commercial development. Most of the site is likely to be used for the expansion of the adjacent Civeo service workers accommodation development, which is subject to a conditional purchase lease expiring in 2021. The extension of this interest post 2021 will require State approval. Commercial development of the site will require exclusive contractual rights being obtained. Site contains Aboriginal heritage values managed by the AHA.

[1] Organisation or individual(s).

[2] In some cases, the yield for the project is indicative only. Final lot/dwelling 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: bushfire prone (BP), drainage (D), environmental (E), flooding (F), heritage (H), land assembly (L), market conditions (MC), native title (NT), planning (P), power (Pw), sewer (S), water (W), topography and geology (TG), mining lease (M), zoning (Z) and transport (T).

Table 8: Development outlook - project summaries

							Zoning/planning			Area/yield[2]			Subdivision approvals[3]		Anticipated dwelling release[4]			Constraints[5]			
Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Current local planning scheme zone/reserve	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	Comments
KA28	No Timing	Lot 521	Gap Ridge	7	State of WA	Development Investigation Area	Rural	Yes	-	60.9	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Previously identified in KRH 2010. The site is zoned Rural under the City's LPS 8. The LPS designates the site as Development Investigation Area (Gap Ridge/7 Mile).
KA32	Short and Long Term	Lot 77	Stove Hill	6	Greenvalley Asset Pty Ltd	Tourism	Urban Development	No	The Ranges Development Plan	7.6	-	-	0	0	-	-	-	BP, T	H	-	The site is zoned Urban Development under the City's LPS 8. A development plan prepared for the site specifies a maximum yield of 270 residential strata modules, which can be used as tourist or transient workers' accommodation. An accommodation resort development application was lodged in June 2019 for the eastern part of the site.
KA33	Short	Lot 7033 Balmoral Rd	Karratha	8	Pilbara Community Legal Service Inc	City Centre - Commercial	City Centre	No	Karratha City Centre Master Plan	0.19	-	-	0	0	-	-	-	-	H	-	The site is zoned City Centre under the City's LPS 8. It is within the commercial precinct of the Karratha city centre. Commercial development has been approved on the site.
KA35	Medium	Lot on Survey - 9000	Nickol	7	Chenin Grove Pty Ltd	Residential	Urban Development	No	Lot 504, Nickol - Development Plan	1.9	42	42	0	0	-	42	-	S, P	H	-	The site is zoned Urban Development under LPS 8. A structure plan prepared for the site identifies a balance yield of 18 residential (R30) lots and 24 residential (R20) lots. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA).
KA42A	No Timing	Unallocated Crown Land - Parcel Identification Number 12060747	Stove Hill	6	State of WA	Development Investigation Area (Long Term Growth Area)	Urban Development	No	-	123.3	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Designated as Development Area 14 (Regals West) under LPS 8. LPS 8 states that the objective of the development area is to provide for short to medium term rural residential living opportunities and long term future urban expansion. An approved structure plan is required to be prepared in order to guide subdivision and development. In addition, rural residential lot sizes shall be determined based on land capability, proposed use and availability of services.
KA42B	No Timing	Unallocated Crown Land - Parcel Identification Number 11436661	Stove Hill	6	State of WA	Development Investigation Area (Long Term Growth Area)	Urban Development	No	-	294.6	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Designated as Development Area 15 (Regals Central - West) under the City's LPS 8. LPS 8 states that the objective of the development area is to provide for short to medium term rural residential living opportunities and long term future urban expansion. An approved structure plan is required to be prepared in order to guide subdivision and development. In addition, rural residential lot sizes shall be determined based on land capability, proposed use and availability of services.
KA42C	No Timing	3	Stove Hill	6	State of WA	Development Investigation Area (Long Term Growth Area)	Urban Development	No	-	274.9	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Designated as Development Area 16 (Regals Central - East) under the City's LPS 8. LPS 8 states that the objective of the development area is to provide for short to medium term rural residential living opportunities and long term future urban expansion. An approved structure plan is required to be prepared in order to guide subdivision and development. In addition, rural residential lot sizes shall be determined based on land capability, proposed use and availability of services.
KA42D	No Timing	Lot 331 North West Coastal Hwy, Lot 501 Madigan Rd	Stove Hill	6	State of WA	Development Investigation Area (Long Term Growth Area)	Rural Residential	Yes	-	191.7	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	The site is zoned Rural Residential under LPS 8. It is part of Development Investigation Area 1: Regals (Long Term Growth Area) under the LPS.
KA51A	Medium	Lot 9001 Dampier Road	Gap Ridge	7	WA Land Authority	Service Commercial	Urban Development	No	Lot 522 & 521 Madigan Road, Gap Ridge - Development Plan	7.6	-	-	0	0	-	-	-	BP	H	-	The site is zoned Urban Development and part of DA13 under LPS 8 and identified for service commercial use as per the LPS. A structure plan indicates that Lot 9001 will be subdivided into three lots.
KA51B	Short	Lots 8, 9 and 10 Madigan Road,	Gap Ridge	7	WA Land Authority	Service Commercial	Urban Development	No		4.17	0	0	0	0	-	-	-		H		The site is zoned Urban Development and part of DA13 under LPS 8 and identified for service commercial use as per the LPS. Lots have been created as per structure plan and available for sale.
KA91	Short	Lot 4516 Crane Cir	Pegs Creek	8	Ngurra Pty Ltd	City Centre - Commercial	City Centre	No	-	0.1	-	-	0	0	-	-	-	BP	H	F	Vacant lot zoned City Centre under the City's LPS 8. Development approval for a multi-level hotel on the site has expired. Short term development anticipated.
KA93	Medium	Lot 644 Samson Way	Bulgarra	8	State of Western Australia	Residential (R35/40)	Urban Development	No	Lot 644 Samson Way, Bulgarra - Development Plan	1.7	-	69			-	46	-	BP,S, MC	H	-	The site is zoned Urban Development and part of DA44 under the City's LPS 8. The site is identified as "Lazy Lands" for residential development under the LPS.
KA94	Medium	Lot 636 Nairn St	Bulgarra	8	State of Western Australia	Residential (R50)	Urban Development	No	Lot 636 Nairn St, Bulgarra - Development Plan	0.4		32			-	32	-	S, MC	H		The site is zoned Urban Development under the City's LPS 8. A structure plan prepared for the site designates it for residential development at the R50 density. The site is identified as "Lazy Lands" for residential development under the LPS.
KA95	Medium	Lot 1680 Galbraith Rd	Pegs Creek	7	State of Western Australia	Residential (R40)	Urban Development	No	Lot 1680 Galbraith Rd, Pegs Creek - Development Plan	0.3		20			-	20	-	S, MC	H	-	The site is zoned Urban Development under the City's LPS 8. A structure plan prepared for the site designates it for residential development at the R40 density. The site is identified as "Lazy Lands" for residential development under the LPS.

Table 9: Development outlook - project summaries

Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Zoning/planning			Area/yield[2]			Subdivision approvals[3]		Anticipated dwelling release[4]			Constraints[5]			Comments
							Current local planning scheme zone/reserve	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	
KA96	Medium	Lot 601 Di Carlo Way	Nickol	7	State of Western Australia	Residential (R40)	Urban Development	No	Lot 601 Di Carlo Way, Nickol - Development Plan	0.7		46	0	0	-	46	-	S, BP, MC	H	-	The site is zoned Urban Development and part of DA53 under the City's LPS 8. A structure plan prepared for the site designates it for residential development at the R40 density. Falls within airport obstacle height limitation area. The Department of Communities was previously offered this site for development and has expressed interest in reactivating this proposal subject to market conditions and further assessment.
KA97	Long	Lot 3799 Rankin Rd	Gap Ridge	7	State of WA	Residential (R20)	Urban Development	No	-	6.89	-	161	n/a	n/a	-	-	161	BP, MC, P	H	-	The site is zoned Urban Development under the City's LPS 8. The site currently accommodates a 604 bed temporary workers camp (Bay Village) relating to Woodside's Browse and Scarborough projects and is subject to a fifteen year lease expiring in 2035. The workers camp is not expected to effect development plans of the site in the long term for residential use.
KA98	Medium	Lot 625 Nankeen Elb	Nickol	7	Otan Karratha Pty Ltd	Residential (R30)	Urban Development	No	Nickol West Revised Development Plan	0.3		15	0	0	-	15	-	BP	H	-	The site is zoned Urban Development and forms part of DA5 under the City's LPS 8. The Nickol West Revised Development Plan designates the site for grouped housing at a density code of R30. An Urban Water Management Plan is to be prepared prior to subdivision or development of the land.
KA99	Medium	Lot 633 Butcherbird Dr	Nickol	7	Otan Karratha Pty Ltd	Residential (R60)	Urban Development	No	Nickol West Revised Development Plan	0.9		50	0	0	-	50	-	BP	H	-	The site is zoned Urban Development and forms part of DA5 under the City's LPS 8. The Nickol West Revised Development Plan designates the site for grouped housing at a density code of R60 in a semi-detached or semi-detached configuration up to two stories in height. An Urban Water Management Plan is to be prepared prior to subdivision or development of the land as per the City's LPS 8.
KA101	Short	Lot 481 Bajamalu Dr	Baynton	7	WA Land Authority	Residential (R40)	Urban Development	No	Baynton West Development Plan	0.9	-	58	0	0	58	-	-	MC	H	-	The site is zoned Urban Development and part of DA9 under the City's LPS 8. The Baynton West Development Plan designates the site for grouped housing at a density code of R40.
KA102	Short	Lot 1 Wagari Dr	Baynton	7	Auzcorp Developments Pty Ltd	Residential	Urban Development	No	Baynton West Development Plan	0.29	-	15	0	0	15	-	-	BP	H	-	The site is zoned Urban Development and part of DA9 under the City's LPS 8. The Baynton West Development Plan designates the site as Special Use with a density coding of R60. A Local Development Plan as per LPS 8 may be required prior to subdivision or development of the land. An Urban Water Management Plan is to be prepared to prior to subdivision or development of the land. The site previously had development approval for 15 dwellings.
KA103	Short	Lot 500, Lot 501, Lot 502, Lot 503, Lot 504, Lot 505	Millars Well	7	State of WA	Residential (R40)	Urban Development	No	Lot 623 Gawthorne Drive, Millars Well - Amended Development Plan	1.1	-	0	0	0	-	-	-	BP	H	-	The site is zoned Urban Development and is part of DA54 under the City's LPS 8. A development plan prepared for the site designates the site for residential development at a density coding of R40. The Department of Communities has been offered this site in order to facilitate the delivery of a subacute facility for the Mental Health Commission (MHC). A management order has been put over the land to facilitate development for the MHC.
KA105	Medium	Lot 2364 Petries Ct	Millars Well	7	State of Western Australia	Residential	Residential (R20)	No	-	0.4		13	0	0	-	8	-	-	H	-	The site is zoned Residential with a density coding of R20 under the City's LPS 8.
KA106	Short	Lot 2 Morse Ct	Karratha	8	Pilbara Trading Co Pty Ltd	City Centre - Commercial	City Centre	No	-	0.3	-		0	0	-	-	-	-	H	-	The site is zoned City Centre under the City's LPS 8. It is within the Commercial Precinct of the Karratha City Centre.
KA107	Long	Lot 1926 Ridley St	Bulgarra	8	State of WA	Residential (R40)	Urban Development	No	-	0.5		14	0	0	-	-	14	BP	H	-	The site is zoned Urban Development and R40 as per DA47 under the City's LPS 8 and Urban Expansion as per the LPS. Development as per DA47 anticipates 14 two storey dwellings on the site. Reserve is to be extinguished prior to development. Identified as Urban Expansion as per the LPS.
KA108	Medium	Lot 613 Wotherspoon Rd	Millars Well	7	State of WA	Residential (R40)	Urban Development	No	-	0.2		12	0	0	-	12		-	H	-	The site is zoned Urban Development under the City's LPS 8. Identified as DA45 area (and R40) on City's website, but is not in TPS 8.
KA109	Long	Lot 617 Shadwick Dr	Millars Well	7	State of WA	Residential	Urban Development	No	-	0.1		7	0	0	-	-	7	-	H	-	The site is zoned Urban Development and DA40 under the City's LPS 8. A structure plan is required to guide development of the site at an R40 density.
KA110	Medium	Lot 628 Burnside Cl	Millars Well	7	State of WA	Residential (R50)	Urban Development	No	Lot 628 Burnside Close, Millars Well - Development Plan	0.1		8	0	0	-	8	-	S	H	-	The site is zoned Urban Development under the City's LPS 8. A structure plan prepared for the site designates it for residential development at the R50 density.
KA111	Short	Lot 502	Bulgarra	8	City of Karratha	Residential (R30), Residential (R40)	Urban Development	No	Lot 683 Gregory Way, Bulgarra - Development Plan	1.36		20	0	0	20	-	-	BP, S	H	-	The site is zoned Urban Development under the City's LPS 8. A structure plan prepared for the site designates it for residential development at the R30 and R40 densities (DA51). Advice from the City indicates that the majority of this site will be utilised for a mental health facility. Residential yield shown assumes 30 per cent of site to used for residential purposes.
KA112	Short	Lot 651	Bulgarra	8	City of Karratha	Residential (R30)	Urban Development	No	Lot 651 Hancock Way, Bulgarra - Development Plan	1.1	35	39	0	0	39	-	-	BP, S	H	-	The site is zoned Urban Development and part of DA52 under the City's LPS 8. A structure plan prepared for the site designates it for residential development at an R30 density.

Table 10: Development outlook - project summaries

Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Zoning/planning: Current local planning scheme zone/ reserve	Amendment required	Other planning under way	Area/yield[2]: Area (ha)	Yield (lots)	Yield (units)	Subdivision approvals[3]: Approvals pending	Current approvals	Anticipated dwelling release[4]: Short-term (0-5 years)	Medium-term (6-10 years)	Long-term (10+ years)	Constraints[5]: Concern but resolution anticipated	Critical but resolution anticipated	Critical and resolution not definite	Comments
KA113	Medium	Lot 655	Bulgarra	8	State of WA	Residential (R40)	Urban Development	No	Lot 655 Warrier Street, Bulgarra - Development Plan	0.3	-	9	0	0	-	9	-	-	H	-	The site is zoned Urban Development and part of DA41 under LPS 8. A structure plan prepared for the site designates for residential development (9 two storey dwellings) at the R40 density.
KA114	Medium and Long	Lot 9006 Crane Cir, Lot 560, Lot 9003, Lot 9004	Pegs Creek	8	WA Land Authority, State of WA	City Centre - Commercial	City Centre	No	-	6.88	-		0	0	-	-	-	-	H	F	The site is zoned City Centre under LPS 8. It is within the Commercial Precinct and Accommodation Precinct of the Karratha City Centre. Part of site identified as "Urban Expansion in per the LPS. Portion of the site currently accommodates the Warambie service worker accommodation which is expected to operate for a further 5- 10 years depending on demand and facility lifespan. In the medium term, the complete site is to be redeveloped for commercial and residential uses as per advice from DevWA.
KA115	Medium	Lot 4615 Turner Way	Bulgarra	8	State of WA	Residential (R25), Residential (R30)	Urban Development	No	Lot 4615 Turner Way, Bulgarra - Local Structure Plan	3.8	-	69	0	0	-	69	-	F	H	F	The site is zoned Urban Development and part of DA27 under the City's LPS 8. A local structure plan prepared for the site identifies a yield of 47 dwellings on single residential lots (R25) and 22 dwellings across two grouped dwelling lots (R30) - as part of the redevelopment of the old high school site. The LPS identifies the site for urban expansion.
KA116	Long	Lot 1692 Harriet Way	Nickol	7	State of WA	Residential	Urban Development	No	-	0.5		17	0	0	-	-	17	-	H	-	The site is zoned Urban Development under the City's LPS 8. Extinguishment of Reserve 47019 will be required prior to development.
KA117	Medium	Lot 3263 Legendre Rd	Nicko	7	State of WA	Commercial	Commercial	No	-	0.1			0	0	-	-	17	-	H	-	The site is zoned Commercial under the City's LPS 8.
KA118	Short	Lot 602	Nickol	7	City of Karratha	Residential	Residential (R30)	No	-	0.1		5	0	0	5	-	-	-	H	-	The site is zoned Residential with a density coding of R30 under the City's LPS 8. City advice is that site is to be developed in the short term.
KA119	Short	Lot 611	Nickol	7	City of Karratha	Residential	Residential (R30)	No	-	0.2		10	0	0	10	-	-	BP	H	-	The site is zoned Residential with a density coding of R30 under the City's LPS 8. City advice is that site is to be developed in the short term.
KA120	Short	Lot 612	Nickol	7	City of Karratha	Residential	Residential (R30)	No	-	0.1		4	0	0	4	-	-	-	H	-	The site is zoned Residential with a density coding of R30 under the City's LPS 8. City advice is that site is to be developed in the short term.
KA121	Short	Lot 23 Mirfin Way	Pegs Creek	7	O'Leary R J, Grose J A	Residential	Residential (R20)	No	-	0.2		7	0	0	7	-	-	-	H	-	The site is zoned Residential with a density coding of R20 under the City's LPS 8. City advice is that site is likely to be developed in the short term.
KA122	Short	Lot 24 Galbraith Rd	Pegs Creek	7	Jarajjal Pty Ltd	Residential	Residential (R20)	No	-	0.2		7	0	0	7	-	-	-	H	-	The site is zoned Residential with a density coding of R20 under the City's LPS 8. City advice is that site is likely to be developed in the short term.
KA123	Medium	Lot 3843 Galbraith Rd, Lot 3844 Galbraith Rd	Pegs Creek	7	State Housing Commission	Residential	Residential (R30)	No	-	0.23		5	0	0	-	5	-	-	H	-	The site is zoned Residential with a density coding of R30 under the City's LPS 8.
KA124	Short	Lot 7018 Welcome Rd	Pegs Creek	8	WA Land Authority	City Centre - Commercial	City Centre	No	-	0.9	-	-	0	0	-	-	-	BP	H	-	The site is zoned City Centre under the City's LPS 8. It is within the Commercial Precinct of the Karratha City Centre. Is currently on the market for sale.
KA125	Short	Lot 7020	Pegs Creek	8	WA Land Authority	City Centre - Commercial	City Centre	No	-	0.5	-	-	0	0	-	-	-	BP	H	-	The site is zoned City Centre under the City's LPS 8. It is within the Commercial Precinct of the Karratha city centre. The lot is currently under an EWP with the City of Karratha.
KA126	Short	Lot 2898 Dampier Rd	Stove Hill	7	State of Western Australia	Urban Development	Public Purposes - Health	Yes	Amendment No. 51 to the City of Karratha LPS 8 initiated by Council	14.14	100	100	0	0	100	-	-	BP, P	H	-	Identified for urban expansion as per the LPS. Relates to Old Nickol Bay Hospital site. Registered with the Land Asset Sales Program as surplus land to be made available for disposal. Rezoning of the site to urban development under LPS8 is underway. Preliminary estimate yield of 100 dwellings.
KA127	Medium	Lot 4935 De Witt Rd, Lot 4936 De Witt Rd, Lot 4937 De Witt Rd, Lot 4946 De Witt Rd, Lot 1136 Stovehill Rd	Karratha Industrial Estate, Stove Hill	6	State of WA	Service Commercial	Conservation Recreation and Natural Landscapes, Parks, Recreation and Drainage	Yes	-	34.31	n/a	n/a	0	0	-	-	-	BP, P, TG	H	-	The site is adjacent to the existing Karratha industrial area. The LPS designates the site for service commercial use. Falls with the buffer of the Power Station. Development of the site will require significant fill, which may affect potential yield.
KA128	No Timing	Lot 1136 Stovehill Road, Lot 970 Venn Rd	Stove Hill	6	State of WA	Development Investigation Area (Long Term Growth Area)	Urban Development, Conservation, Recreation and Natural Landscapes, Parks, Recreation and Drainage	Yes	-	496.5	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	H	Previously identified in the KRH 2010 for general and light industry uses. The site is partly zoned Urban Development and partly reserved for Conservation, Recreation and Natural Landscapes and Parks, Recreation and Drainage as well as being partially included as part of DA17 under the City's LPS 8. The LPS designates the site as an industrial investigation area for long term growth. Modification to LPS8 will be required to reconcile zoning of land and structure plan provisions, which currently identify land to be used for long term urban expansion. Site contains Aboriginal heritage values managed by the AHA.

Table 11: Development outlook - project summaries

							Zoning/planning			Area/yield[2]			Subdivision approvals[3]		Anticipated dwelling release[4]			Constraints[5]			
Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Current local planning scheme zone/reserve	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	Comments
KA129	Long	Lot 500 - Crown Reserve 40041	Nickol	7	State of WA	Residential	Parks, Recreation and Drainage	Yes	-	1.58	-	36.8667			-	-	37	-	H		The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of reserve is required prior to development.
KA130	Long	Crown Reserve 32335	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes	-	0.49		16.3333			-	-	16	BP	H		The site is comprised of a lot zoned Parks Recreation and Drainage as per LPS 8. The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of reserve is required prior to development.
KA131	Long	Lot 4622 Hazell Court	Nickol	7	State of WA	Residential	Parks, Recreation and Drainage	Yes	-	0.56		18.6667			-	-	19	-	H		The site is comprised of a lot zoned Parks Recreation and Drainage as per LPS 8. The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion.
KA132	Long	Lot 511	Nickol	7	State of WA	Residential	Parks, Recreation and Drainage	Yes		1.66		38.7333			-	-	39		H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA133	Long	Lot 511 - Crown Reserve 40041	Nickol	7	State of WA	Residential	Parks, Recreation and Drainage	Yes		1.39		32.41			-	-	32		H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA134	Long	Part of Lot 614 - Crown Reserve 40041	Millars Well	7	State of WA	Residential	Parks, Recreation and Drainage	Yes		6.43		150.033			-	-	150	BP	H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA135	Long	Lot 635 Richardson Way - Crown Reserve 32335	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes		6.07		141.633			-	-	142	BP	H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA136	Long	Lot 635 Richardson Way - Crown Reserve 32335	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes		6.07		141.633			-	-	17	BP	H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA137	Long	Lot 681 Dugald Way - Part of Crown Reserve 32335	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes		0.72		24			-	-	24		H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazy lands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA138	Long	Lot 525, 557, 559 Madigan Road	Gap Ridge	7	State of WA	Residential	Urban Development	No	-	49.83	-	775	-	-	-	-	775	BP, P	H	-	The site is zoned Urban Development under LPS 8. A structure plan is to be prepared for the site. The site is identified for urban expansion as per the LPS. There are plans for the site to be developed for a 2,500 bed temporary workforce accommodation camp linked to the construction of Pluto Train 2 by Betchel Pty Ltd. The workers camp will be subject to a lease of up to eight years and therefore is not expected to effect the development plans of the site in the medium term. Site is identified within the Burrup and Maitland Industrial Estates Agreement (BMIEA) which provides development certainty for DevelopmentWA. Site contains Aboriginal heritage values managed by the AHA.
KA139	No Timing	Lot 599 , 557	Gap Ridge	7	State of WA	Development Investigation Area	Rural	Yes	-	109.3	n/a	n/a	n/a	n/a	-	-	-	BP, P	n/a	H	The site is zoned Urban Development under LPS 8. A structure plan is to be prepared for the site. The site is identified for urban expansion as per the LPS. Site contains Aboriginal heritage values managed by the AHA.
KA140	No Timing	Lots 923, 927 and 931	Baynton	7	State of WA	Development Investigation Area	Conservation Recreation and Natural Landscapes, Parks, Recreation and Drainage	Yes	-	53.3	n/a	n/a	n/a	n/a	-	-	-	BP, P	F	H	The site is identified as Development Investigation as per the LPS. Preliminary assessment is that the site is unlikely to be developed as it functions as a floodway. Site contains Aboriginal heritage values managed by the AHA.
KA141	Long	Lot 489 Searipple Road - Part of Crown Reserve 32320	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes		5.66		132.067			-	-	132		H	F	The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazylands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.
KA142	Long	Lot 637 - Part of Crown Reserve 32335	Bulgarra	8	State of WA	Residential	Parks, Recreation and Drainage	Yes		0.69		23			-	-	23		H		The site is comprised of a lot zoned Parks Recreation and Drainage as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The LPS identifies the site as Lazylands (Crown Land) suitable for urban expansion. The extinguishment of part of a reserve is required prior to development.

Table 12: Development outlook - project summaries

							Zoning/planning			Area/yield2			Subdivision approvals3		Anticipated dwelling release4			Constraints5			
Identifier	Timing	Location	Suburb	Map number in this document	Existing tenure1	Purpose	Current local planning scheme zone/reserve	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	Comments
KA143	Long	Lot 9001 Bayview Road	Pegs Creek	8	State of WA	Aged Care	Public Purposes - Community	No		3.26	0	0	0	0	-	-	-		H	F	The site is comprised of a lot zoned Public Purposes - Health as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). The site is earmarked for the development of an aged care facility in the long term. The extinguishment of part of a reserve 36458 is required prior to development.
KA144	Short	Lot 7081 Karratha Terrace	Karratha	8	WTC Holdings Pty Ltd	Commercial	City Centre	No		0.14	0	0	0	0	-	-	-		H		The site is comprised of a lot zoned City Centre as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). Short term development anticipated. The City has advised that as per the Quarter development approval, approval was obtained for this site to accommodate three levels of commercial development. A mixed use development could be approved on this site allowing for dwellings on upper levels.
KA145	Short	Lot 7078 Sharpe Avenue	Karratha	8	City of Karratha	Commercial	City Centre	No		0.44	0	0	0	0	-	-	-		H		The site is comprised of a lot zoned City Centre as per *City of Karratha Local Planning Scheme No. 8* (LPS 8). Hotel to be developed in the short term.
IND82	Short and Medium	Lot 113 Bedrock Turn, Lot 114 Bedrock Turn, Lot 9006	Gap Ridge	6	WA Land Authority	General Industry, Light Industry	Industrial Development	No	Gap Ridge Industrial Estate Structure Plan	94.2	33	33	0	8	n/a	n/a	n/a	B, D, F, PW, TG	H	-	The site is zoned Industrial Development and is par of DA24 under LPS8 and identified as "General Industry" in the LPS. Previously identified in the KHS 2010. Site of the Gap Ridge Industrial Estate. The estate is comprised of a general industry precinct and a light industry precinct. Development is being delivered over six stages. Stages one to four have been completed. Approximately 14 general industry lots and 19 light industry lots will be delivered as part of stages five and six. Site is identified within the Karratha Land Use Agreement which provides development certainty for DevelopmentWA. Site contains Aboriginal heritage values managed by the AHA.
IND288	No Timing	Lot 302 Bayly Av	Gap Ridge	6	State of WA	Airport Related Industry/ Service Commercial	Other Public Purpose	Yes	-	296.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Previously identified in the Karratha Regional HotSpots Land Supply Update (2010). The site is adjacent to the Karratha airport. The LPS designates the site as a development investigation area for airport related industry/ service commercial.
IND289	No Timing	Unallocated Crown Land - Parcel Identification Number 705490	Gap Ridge	6	State of WA	Development Investigation Area (General Industry)	Rural	Yes	-	281.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	H	Previously identified in the Karratha Regional HotSpots Land Supply Update (2010). The site is in proximity to Karratha airport and the Gap Ridge Industrial Estate. The LPS designates the site as a development investigation area for general industry. Site contains Aboriginal heritage values managed by the AHA.
IND291	No Timing	Numerous lots north and east of the existing Karratha industrial as well as Lot 4935 De Witt Rd, Lot 4936 De Witt Rd, Lot 4937 De Witt Rd, Lot 4946 De Witt Rd, Lot 1136 Stovehill Rd	Karratha Industrial Estate	6	State of WA	Industrial Expansion Area (General Industry, Light Industry)	Rural, Conservation, Recreation and Natural Landscapes, Parks, Recreation and Drainage	Yes	-	490.0	n/a	n/a	0	0	n/a	n/a	n/a	n/a	n/a	n/a	Previously identified in the Karratha Regional HotSpots Land Supply Update (2010). The site is comprised of numerous lots to the north and east of the existing Karratha industrial area. The LPS designates the site as an industrial investigation area. Site contains Aboriginal heritage values managed by the AHA.
IND293	No Timing	Lot 647, Lot 1502	Maitland	9	State of WA	Strategic Industrial Area	Strategic Industry	Yes	Improvement Scheme under preparation	4,698.3	-	-	0	0	n/a	n/a	n/a				Site of the Maitland Strategic Industrial Area (SIA). The Maitland SIA Improvement Plan was gazetted in 2016. An Improvement Scheme is currently being prepared. It is intended that the Maitland SIA will accommodate industries such as gas or petroleum processing, power production and other associated downstream processing industries including urea, ammonia and ammonium nitrate.
IND294	No Timing	Lot 4 Jager St	Roebourne	9	Eleven Pty Ltd	Light Industry	Industry	No	Roebourne Structure Plan	16.3	n/a	n/a	0	0	n/a	n/a	n/a	n/a	n/a		Site of the Roebourne industrial precinct. Current and future uses may include servicing for mining industry, logistics and other mechanical. Sensitive uses to be kept away from the wastewater treatment plant buffer area. Industries inside the buffer area could include those that could potentially use wastewater in processing or agribusiness.
IND295	No Timing	Lot 300, Lot 301	Wickham	9	State of WA	Light Industry	Industry	No	-	6.2	n/a	n/a	0	0	n/a	n/a	n/a	n/a	n/a		The LPS designates the site for the industrial expansion of the Wickham light industrial area.
IND292	No Timing	Lot 265, Lot 567, Lot 568	Mount Anketell	9	WA Land Authority, State of WA	Strategic Industrial Area	Not zoned under LPS 8	No	Subject to Anketell Strategic Industrial Area Improvement Scheme	7,777	-	-	0	0	n/a	n/a	n/a	-	-	-	Site of the Anketell Strategic Industrial Area (SIA). In proximity to the proposed Anketell Port and infrastructure corridor. Development of the Anketell SIA to accommodate downstream resource processing industries, as well as general industrial activity.

6.4 Vacant lots and infill

Data from Landgate's property valuation database show that there is a substantial stock of vacant lots for residential development in the City. As at November 2019, 314 vacant lots were identified on land zoned for residential purposes. This accounts for 5.2 per cent of the total stock of existing residential lots which is higher than the percentage of vacant lots recorded for the Perth metropolitan region (4.4 per cent).

Table 13 shows the stock of total vacant lots on land zoned for residential and other purposes in the City. The distribution of all vacant lots in the City is shown on Map 10.

DPLH's Integrated Land Information Database (ILID) model compares density outcomes with those set out by density codes (R-Codes) under local planning schemes. Appendix A provides a detailed 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 applicable density codes.

Map 10 also shows the spatial distribution of lots with additional dwelling potential based on the provisions of the City's *LPS 8* as at November 2019. Based on this, there is additional capacity for residential consolidation through subdivision of approximately 1,000 dwellings as some lots have not been fully developed to densities available as per current R Code designations shown in the City's *LPS 8*. It must be noted that data depicted on Map 10 is indicative only and should not be used as a guide to development potential on a site-by-site basis.

The ILID model does not consider factors such as heritage, environmental and/or infrastructure constraints or other provisions of the local planning scheme. This may mean that the additional potential shown on Map 10 cannot always be fully realised and hence the yield achievable from additional capacity through residential consolidation in the City is notional and not subject to inclusion in models developed to assess future land supply needs for the City. This allows for additional dwelling yields to be realised in the City over time, over and above Tables 7-12.

Table 13: Stock of vacant lots – Karratha urban area

Suburb	Number of vacant lots		
	Commercial	Industrial	Residential
Baynton			173
Bulgarra			23
Gap Ridge		55	8
Karratha	10		
Karratha Industrial Estate		25	
Millars Well			12
Mulataga			1
Nickol	2		87
Pegs Creek	1		9
Stove Hill	1		1
Total	**14**	**80**	**314**

Source: Department of Planning, Lands and Heritage (2019) and Landgate (2019)

Note: Data includes lots on land zoned for residential, commercial and industrial purposes. Data shown in Table 14 has been filtered to exclude lots already included as part of development outlook projects.

6.5 Adequacy of supply

Between 2006 and 2013, the Karratha urban area recorded a net population increase of 3,487 people which is reflective of high economic growth experienced in the Pilbara during this period. By way of contrast, from 2013 to 2016 (see Figure 20), the Karratha urban area experienced a population decrease of 1,564 persons which can be attributed to a marked contraction in resource projects and associated economic activity and most significantly, a decline in net overseas migration.

WA Tomorrow population forecasts for the Karratha urban area between 2016 and 2031 under all bands are shown in Table 14. ERP between 2006 and 2016 and the forecasts to 2031 are shown in Figure 21. *WA Tomorrow* forecasts an improvement in growth to 2021 and then a return to long-term average levels of growth. It also presents a forecast range comprising five bands of probable growth. For the purposes of measuring adequacy of supply, the Band E projection has been used in this document to account for the strong population growth expected in the Karratha urban area resulting from the current investment cycle.

Map 10: Vacant lots and indicative dwelling potential – Karratha

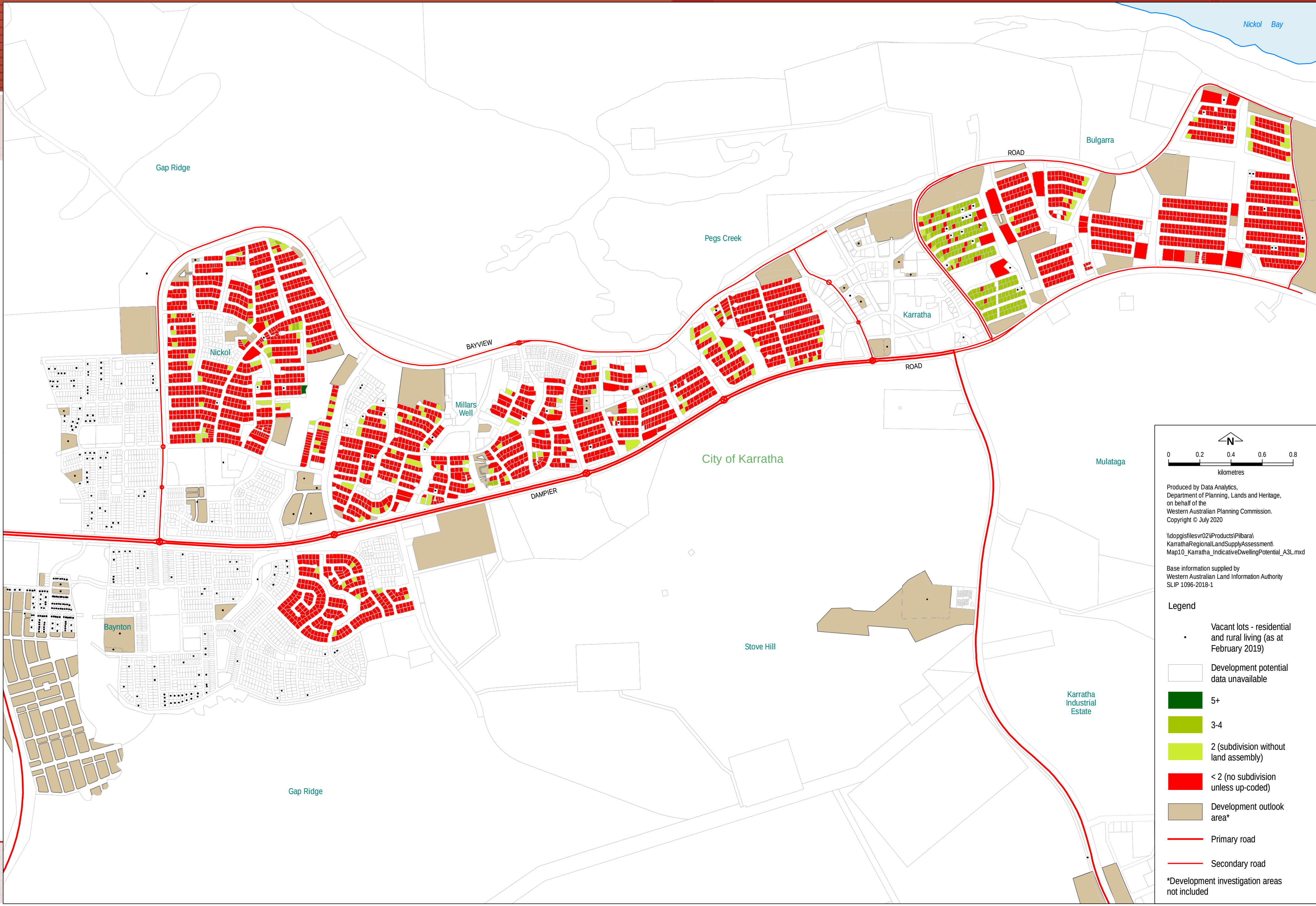
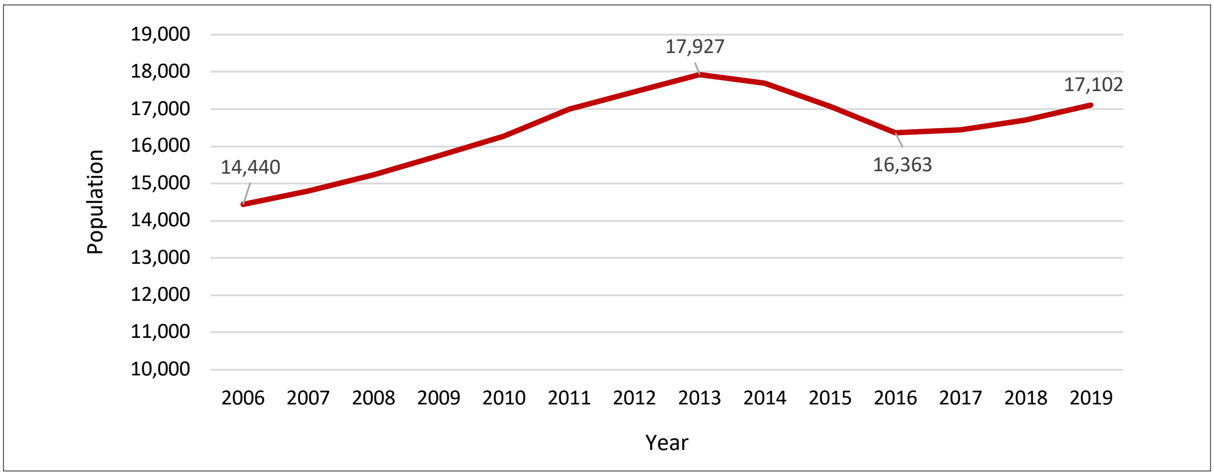
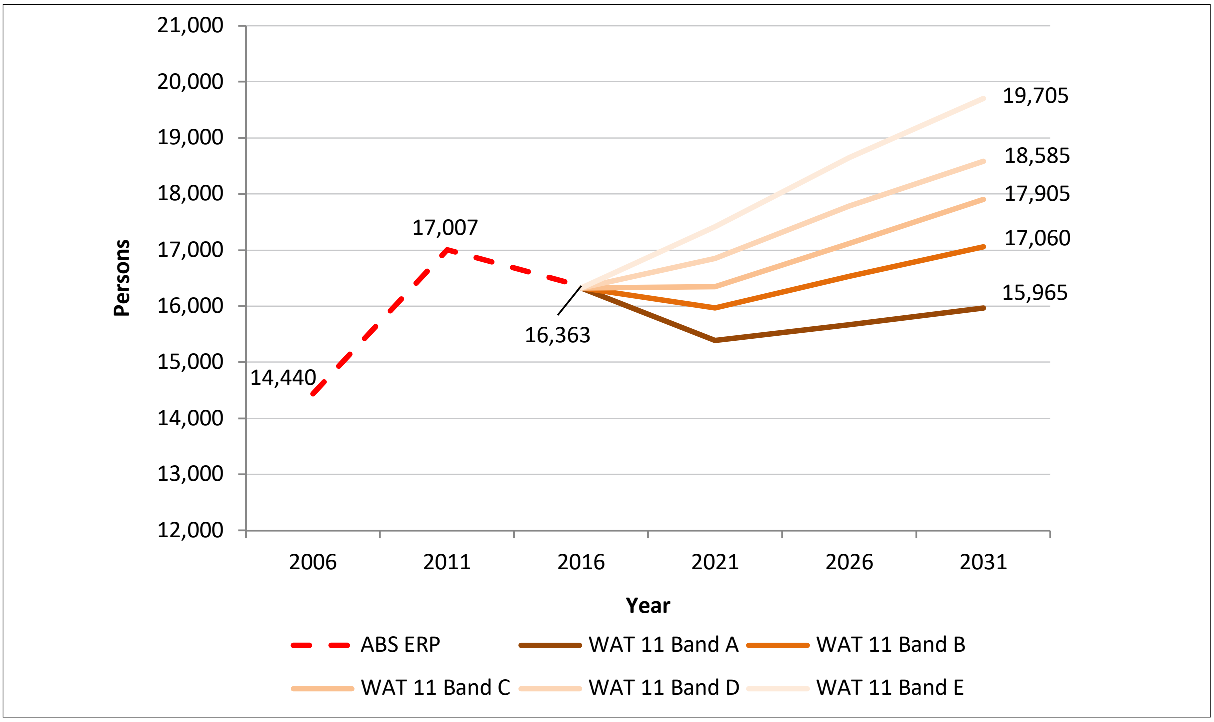


Figure 20: Estimated resident population - Karratha urban area



Source: Australian Bureau of Statistics (2019) Regional Population Growth, Australia. Catalogue No. 3218.0 (2020)

Figure 21: Actual population change (ABS ERP 2016-2031) and forecast population change (WA Tomorrow 2016-2031) – Karratha SUA



Source: Australian Bureau of Statistics (2019) Regional Population Growth, Australia. Catalogue No. 3218.0 and Western Australian Planning Commission (2019) Western Australia Tomorrow (WAT) Population Report No. 11

Table 14: Projected population change between 2016 and 2031 – Karratha urban area

Year	WAT 11 Band A	WAT 11 Band B	WAT 11 Band C	WAT 11 Band D	WAT 11 Band E
2016	16,325	16,325	16,325	16,325	16,325
2031	15,965	17,070	17,905	18,585	19,705
Difference	-360	735	1,580	2,260	3,380
Average annual growth rate 2016-2031	-0.15%	0.29%	0.62%	0.87%	1.26%

Source: Australian Bureau of Statistics (2019) Regional Population Growth, Australia. Catalogue No. 3218.0 and Western Australian Planning Commission (2019) Western Australia Tomorrow Population Report No. 11

6.5.1 Average household size and rate of dwelling occupancy

Analysis on the adequacy of residential land supply for a given area considers the most likely scenario of projected population growth, the average household size and the rate of dwelling occupancy for that area. At the 2016 Census, the average household size for the Karratha significant urban area (SUA) was 2.8 persons per dwelling. This is comparable to the average household size for Western Australia (2.6 persons per dwelling).

The rate of dwelling occupancy for the Karratha urban area at the 2016 Census was 74.3 per cent. This is down from the Karratha SUA's rate of dwelling occupancy at the 2011 Census (86.5 per cent) and is significantly lower than the rate of dwelling occupancy for Western Australia (86.7 per cent at the 2016 Census).

The significant decline in the Karratha SUA's dwelling occupancy rate between 2011 and 2016 can be attributed to the outmigration of people during this period, because of a reduced demand for labour within the resources sector and a substantial increase in stock.

6.5.2 Band C assessment

Band C of the latest *WA Tomorrow* population forecast (published in 2018) for the Karratha SUA projects an average annual growth rate of 0.62 per cent between 2016 and 2031 (average annual increase of 105 residents).

Assuming an average household size of 2.8 persons per dwelling and dwelling occupancy rate of 86.7 per cent, an average of 49 additional dwellings per annum would be required to accommodate projected growth.

Analysis on the adequacy of residential land supply for Karratha assumes a higher rate of dwelling occupancy[27] than the rate recorded at the 2016 Census, as the lower rate of dwelling occupancy reflects a lack of demand for dwellings at the time. Based on the above growth scenario, a hypothetical temporal land supply of over 90 years has been identified.

This supply of land identified for residential development has the capacity to support a population of approximately 28,000 people.

The dynamics of historical population change for Karratha and the Pilbara region typically reflect economic conditions, with growth recorded during periods of economic boom and losses recorded during periods of recession.

It is therefore important to consider what the temporal land supply may be if the rate of population growth were to increase. This is particularly relevant as Karratha's population has the capacity to grow beyond historical rates of population change.

As at June 2020, up to $60 billion in projects have been identified for Karratha that are under advanced consideration, committed or under construction presently.

If these projects are undertaken following the pandemic, there is an expectation that a substantial operational workforce will remain in Karratha, which if realised, will result in population growth in Karratha beyond *WA Tomorrow* Band C forecasts by 2031.

6.5.3 Band E assessment

To give due regard to the potential for stronger population growth as outlined, this report assumes population growth in Karratha to 2031 is likely to be more aligned to Band E estimates of *WA Tomorrow* for the Karratha SUA which project an average annual growth rate of 1.26 per cent between 2016 and 2031 (average annual increase of 225 residents).

[27] In keeping with the Western Australian State occupancy rate as at the 2016 Census

Assuming an average household size of 2.8 persons per dwelling and a dwelling occupancy rate of 86.7 per cent, an average of 91 additional dwellings per annum would be required to accommodate projected growth.

Under this growth scenario, a hypothetical temporal land supply of 48 years (51 years if the stock of vacant lots is included in the supply capacity) has been identified.

6.5.4 Sensitivity assessment – Bands A – E

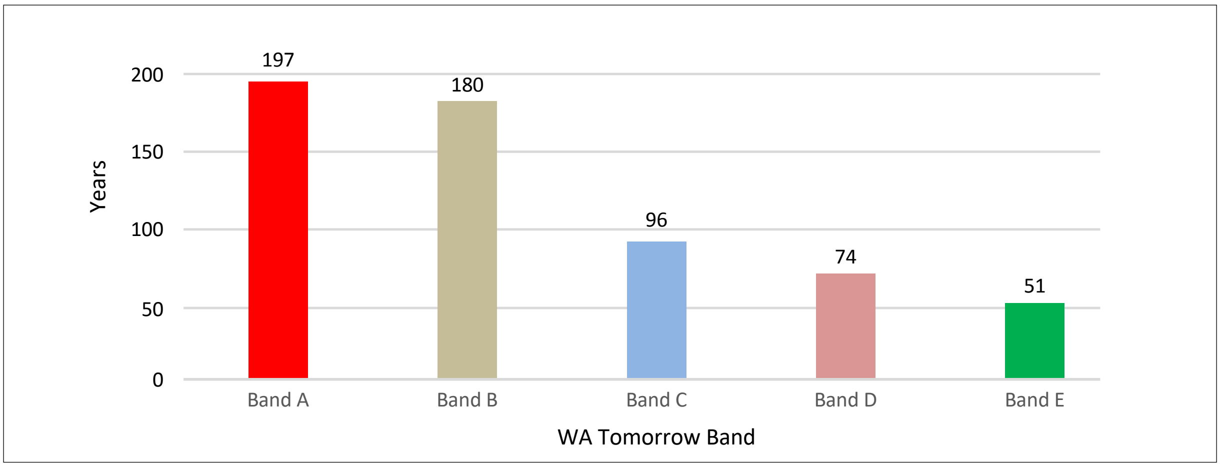
As assessment of temporal land supply under all *WA Tomorrow* Bands A – E growth scenarios is shown in Figure 22. This reveals a significant wide variance of available supply in years based on varying demand for dwellings from projected population growth up to 2036 under different scenarios.

Table 15 shows the estimated dwelling demand requirement for the short, medium and long term under the *WA Tomorrow* Bands C, D and E growth scenarios. When this demand is compared to the identified dwelling yield (supply) between 2016 to 2036, this shows that the supply of dwellings exceeds the demand for the bands shown. This indicates there is enough stock of residential land identified to meet population growth into the long term, even if the rate of population growth increases to the highest rate (Band E).

Under this scenario, Table 15 shows that there will be a surplus of dwellings available for each five-year timeframe between 2016 to 2036 totalling approximately 2,500 dwellings and up to approximately 2,900 dwellings if existing vacant lots are accounted for.

The estimated dwelling requirement for Bands A and B are not shown in Table 15, as Bands A and B forecast net population loss/ no net population change between 2016 and 2021.

Figure 22: Temporal land supply based on WA Tomorrow Bands A – E – Karratha SUA



Source: Department of Planning, Lands and Heritage (2020)

Table 15: Adequacy of supply – Karratha

Timeframe	Estimated dwelling requirement (DEMAND)			Identified dwelling yield (SUPPLY)	SURPLUS
	Band C	Band D	Band E		
2016-2021	8	216	451	839	388
2021-2026	319	385	507	931	424
2026-2031	323	330	435	1,303	868
2031-2036	323	330	435	1,303	868
Total	**974**	**1,261**	**1,827**	**4,375**	**2,548**
Stock of vacant lots	**314**				
				Total surplus accounting for vacant lots	**2,862**

Source: Department of Planning, Lands and Heritage (2020)

Note: Estimated dwelling requirement for Bands C, D and E have been predicated upon an average household size of 2.8 persons per dwelling and a dwelling occupancy rate of 86 per cent.

In addition to the identified dwelling yield shown in Tables 7-12, Maps 6-9 identify several investigation areas. Dwelling yields are not 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.

6.5.5 Factors that may affect supply

6.5.5.1 Coastal hazards and risks

The Karratha townsite is exposed to erosion hazards, with low-lying areas subject to tidal influences and storm surge. The modelling work undertaken by the City has examined 100-year annual recurrence interval (ARI) Stormwater Flood Extent and the 500-year ARI Storm Surge Extent, which is based on providing worst-case scenario modelling to determine impacts from coastal processes in accordance with *State Planning Policy 2.6 State Coastal Planning Policy* (SPP 2.6).

Results indicate that a storm surge from a 500-year ARI event will affect the existing Karratha townsites particularly those suburbs situated adjacent to Nickol Bay. Similarly, stormwater flooding following a 100-year ARI event will affect the townsite.

The City has prepared Development Policy 19 which establishes procedures for the assessment of development applications that relate to land that has been identified, as being vulnerable to a 500-year ARI event. Where a site is either fully or partially identified, as being within a 500 year-ARI storm surge area, the City may consider imposing a range of mitigating measures, such as requiring a storm surge protection wall or barrier and requiring development to be located on the least hazardous portion of a site.

Examination of storm surge mapping in Development Policy 19 shows that, of the urban expansion sites identified in Tables 7-12, 10 sites in the suburbs of Bulgarra, Millars Well and Pegs Creek are at risk of being affected by a 500-year ARI event to a depth of 0.5m of inundation. The need for remediation measures for these sites is therefore considered important to ensure the yield of approximately 630 dwellings and other uses can be realised.

6.5.5.2 Temporary workforce accommodation

There are plans currently underway to develop a temporary workforce accommodation site KA17B in Baynton (Madigan at Baynton West Estate) which is expected to yield 280 accommodation units in the medium term in accordance with the provisions of the Madigan Estate Structure Plan.

The proposal involves the creation of a 17 hectares Crown land lot in the southern portion of the Madigan Estate Structure Plan area for lease to Perdaman for up to seven years. The site will be used for a 2,500-bed temporary workers' camp to support the construction of a gas stream urea production plant on the Burrup Peninsula, called Project Destiny.

The short-term lease of a portion of Madigan Estate Structure Plan area does not impede the development of KA17 in the medium term as the workforce accommodation development would be removed once Project Destiny is completed. Consideration needs to be given to the continued occupation of the workers camp beyond what is being envisaged. This may may influence how the Madigan Estate Structure Plan residential land use aspirations are realised, which will need to be managed by the State and the City.

7 Aboriginal heritage

The Kimberley/Pilbara/Gascoyne Joint Development Assessment Panel approved a temporary workforce accommodation development proposal on 13 December 2019 on site KA138 in Gap Ridge which is expected to yield 775 dwellings in the longer term. This site was previously leased by the State to Woodside for workforce accommodation for the construction of its Pluto Gas Plant. Betchel Australia is now planning to lease the site for up to eight years to build a 2,500-room workforce accommodation facility required to construct Pluto Train 2.

As the use of site KA138 for temporary workers' accommodation appears to be an on-going arrangement between the State and resource/project delivery companies, the short to medium term development of the site for urban development is unlikely.

The 604-bed workforce accommodation development at Bay Village (site KA97) adjacent to the suburb of Nickol is expected to be fully operational by mid-2020 for Woodside's Browse and Scarborough projects. This site is subject to a 15 year lease[28] which expires in 2035. The development of this site for urban expansion in the longer term will be dependent on whether this lease is extended and the decommissioning of Bay Village.

7.1 Native Title and Indigenous Land Use Agreements

The future development outlook areas as proposed in this document and as shown on Maps 6 to 9 need to be examined and have due regard to Native Title rights and interests and relevant contractual agreements and Indigenous Land Use Agreements (ILUA) within the Karratha urban area. Development viability and timeframes are subject to Native Title and case-specific processes and considerations.

To date, there have been two native title determinations that cover the Karratha urban area, being Ngarluma people (WAD165/2008) and Ngarluma/Yindjibarndi people (WAD6017/1996). These determinations were made in accordance with the *Native Title Act 1993* and recognise the rights and interests of the Ngarluma and Yindjibarndi peoples in relation to rights to use the land for traditional laws and customs.

There are several contractual agreements that relate to the Karratha urban area, including:

- Karratha Land Use Agreement (KLUA)[29]
- Burrup and Maitland Industrial Estates Agreement (BMIEA)[30]

Both have implications for the development of the Gap Ridge Industrial Estate (IND82), urban expansion in Gap Ridge (KA138), Baynton (KA17A and KA17B), Nickol (KA35), Mulataga (KA15A, KA15B and KA15C) as well as Tambrey mixed use neighbourhood centre (KA24) as they deal with a wide range of Native Title matters, such as consent to future acts, compensation, protection of significant sites and culture and how Native Title rights and interests can be exercised along with other interests. These agreements have been instrumental in providing DevelopmentWA with certainty to develop residential and industrial land in these locations following relevant compensation and on-going negotiations with traditional landowners.

The development outlook areas identified in Maps 6-9 and Tables 7-12 that are currently not listed within contractual agreements between Native Title holders and the State are expected to be subject to assessment at various stages in the planning process to have consideration of the Native Title rights and interests of the Ngarluma and Yindjibarndi peoples.

[28] In keeping with the Kimberley Pilbara Gascoyne Joint Development Assessment Panel approval (DR 279 of 2018)

[29] Registered between the State and Ngarluma people

[30] Registered between the State and the Ngarluma/Yindjibarndi and the Yaburara/Mardhudhunera and the Wong-goo-tt-oo peoples and administered by the Murujuga Aboriginal Corporation

7.2 Registered and Known Aboriginal Heritage Sites

The development outlook areas identified in Maps 6 to 9 will need to consider potential impacts to Aboriginal heritage sites that are managed by the Department of Planning, Lands and Heritage. Several Registered Aboriginal sites are protected under the *Aboriginal Heritage Act 1972* (AHA) as well as several other known Aboriginal heritage places, yet to be formally assessed. The AHA protects all Aboriginal sites that meet the requirements of section 5 of the AHA whether they have been previously recorded or assessed. There are a total of 70 known Aboriginal heritage places within the Karratha urban area of which, 53 are Registered Aboriginal sites and 17 relate to lodged heritage places. The known Aboriginal heritage within these sites includes a variety of types including rock art. These provide evidence of the on-going traditional occupation of the area and continue to be important to the local Aboriginal community.

While administrative processes such as changes in tenure will not impact on Aboriginal sites, ground disturbance works will need to determine the location of Aboriginal sites to ensure these are not impacted in keeping with the Department of Planning Lands and Heritage guidelines detailed at www.dplh.wa.gov.au/information-and-services/aboriginal-heritage/protection-under-the-aboriginal-heritage-act-1972.

The adherence to these guidelines allows Traditional Owners to be engaged at the earliest opportunity when land use proposals are being considered, to mitigate impact to Aboriginal cultural heritage and to seek input into how existing Aboriginal cultural heritage may be incorporated into the land use proposals.

7.3 National Heritage List and World Heritage Tentative List

A significant portion of industrial zoned land on the Burrup Peninsula[31] has finite capacity due to environmental and Aboriginal heritage constraints in addition to the Native Title and land use agreements outlined in section 6:

- In 2007, Murujuga[32] was recognised as being of heritage value to the nation, when an area encompassing 36,857 hectares was included on Australia's National Heritage List (NHL) under the Dampier Archipelago (including Burrup Peninsula) listing. The NHL is a list of natural, historic and Indigenous places of outstanding significance to the nation managed under Commonwealth legislation[33] by the Department of Agriculture, Water and the Environment.
- In January 2020, the Australian Government transmitted the Murujuga Cultural Landscape Tentative List submission to the UNESCO World Heritage Centre, so that Murujuga can be added to Australia's World Heritage Tentative List. Such a listing will be accompanied by greater scrutiny of Murujuga given that a successful nomination and acceptance to the World Heritage List will result in international acknowledgement of its importance.

[31] Detailed examination of industrial expansion on the Burrup Peninsula is beyond the scope of this document

[32] The traditional Aboriginal name for the Dampier Archipelago and surrounds, including the Burrup Peninsula and the Murujuga National Park

[33] *Environment Protection and Biodiversity Conservation Act 1999*

8 Rural living

State Planning Policy 2.5 – Rural Planning (SPP 2.5) defines rural living as local planning scheme zones that provide low density residential uses in an estate or precinct, generally characterised by a grouping of lots from one to 40 hectares. Rural living zones include, but are not limited to, Rural Living, Rural Retreat, Rural Residential, Special Rural, Rural Smallholdings, Rural Conservation and Landscape Protection.

Land zoned for rural living development is in the suburb of Stove Hill. The Local Planning Strategy acknowledges the importance of providing for rural lifestyle opportunities and has identified rural living development within the Regals Long Term Growth area on the periphery of the Karratha urban area adjacent to North West Coastal Highway. The City's *LPS 8* provides for rural living development within the Rural Residential zone in keeping with *LPS 8* provisions and SPP2.5.

The IRIS land supply model identified three lots on land zoned for rural living development, covering approximately 196 hectares. Approximately six hectares (3 per cent) is developed and 189 hectares (97 per cent) is unrated.

[34] Under WAPC Anketell Improvement Scheme No. 1

9 Industrial

Land zoned for industrial development is divided into several areas within the City. Within the Karratha urban area, industrial land is located at the Karratha Industrial Estate and the Gap Ridge Industrial Estate. Within the eastern corridor of the City, industrial zoned land is in Wickham and Roebourne. To the west and north of the Karratha urban area, industrial zoned land is in Maitland and Mount Anketell[34] and on the Burrup Peninsula and the Dampier Archipelago.

The City's *LPS 8* provides for industrial development through the following zones:

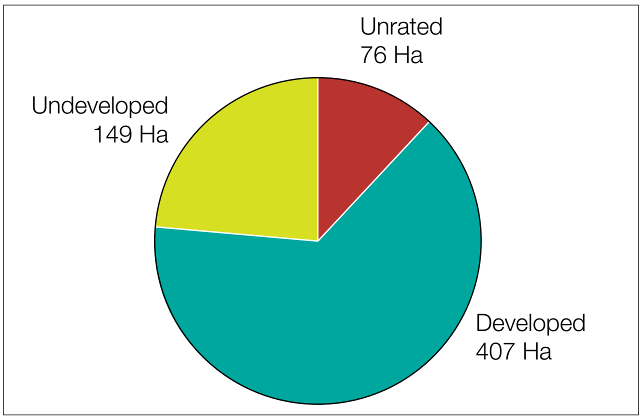
- Strategic Industry
- Industry
- Industrial Development.

9.1 Karratha urban area

Within the Karratha urban area, the IRIS land supply model identified 401 lots on land zoned for industrial development as at November 2019 covering approximately 631 hectares. 407 hectares; (64 per cent) is developed; 149 hectares (24 per cent) is undeveloped; and 76 hectares (12 per cent) is unrated (Figure 23).

With respect to General Industry and Light Industry land, the *Local Planning Strategy* allocates 94 hectares of industrial expansion (site IND82) on land zoned Industrial Development under *LPS 8* and earmarks additional land to the north of the Karratha Industrial Estate for development investigation totalling 490 hectares with the potential potential to accommodate further expansion, currently identified as 400 net hectares by 2031 as per the *Local Planning Strategy*.

Figure 23: Stock of land zoned for industrial development – SUA



Source: Department of Planning, Lands and Heritage (2019) *Integrated Regional Information System*

9.2 City of Karratha

In total land zoned for industrial development in the City amounts to 15,327 hectares. The Strategic Industry zone accounts for 94 per cent (14,427 hectares), followed by the Industrial Development zone (4 per cent, 688 hectares) and the Industry zone (1 per cent, 212 hectares). Figure 24 shows the stocks of land zoned for industrial development by locality.

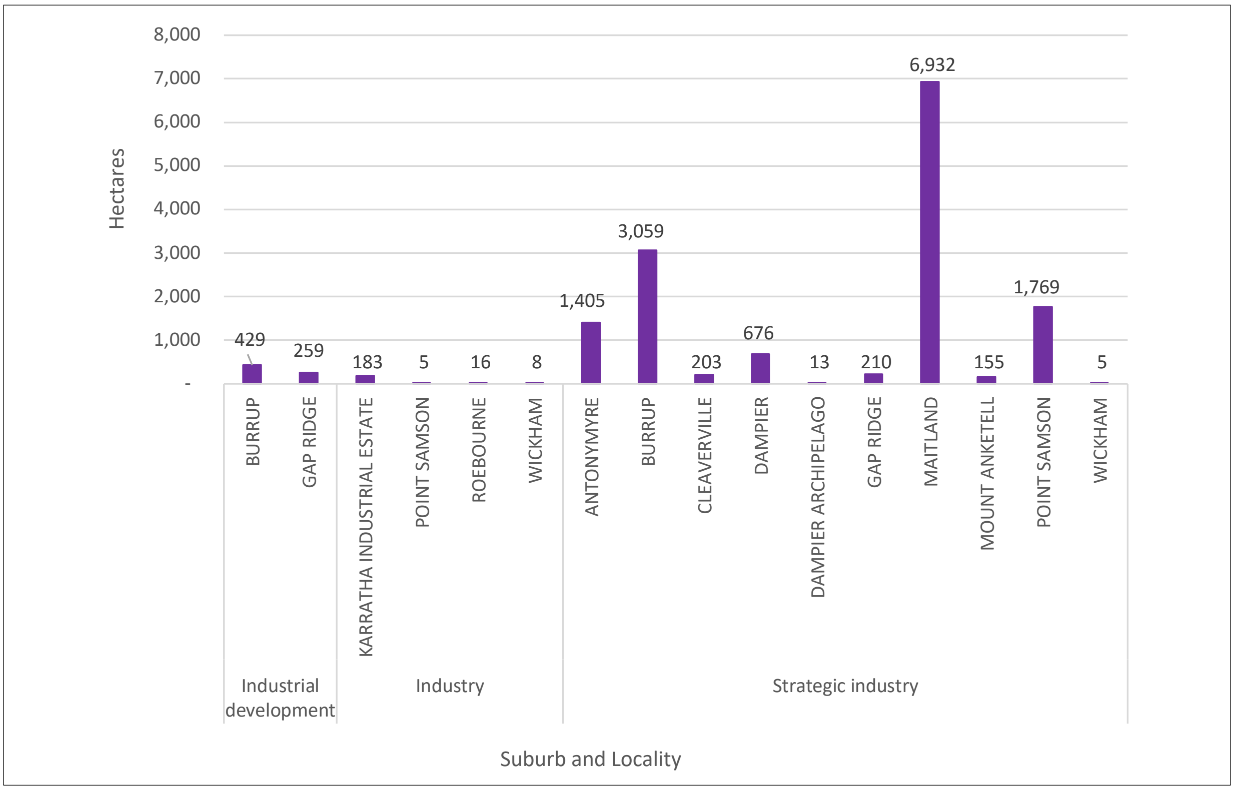
The *Local Planning Strategy* recognises that the demand for strategic and heavy industrial land is highly variable and subject to external influences and that there is sufficient strategic industry zoned land up to 2031.

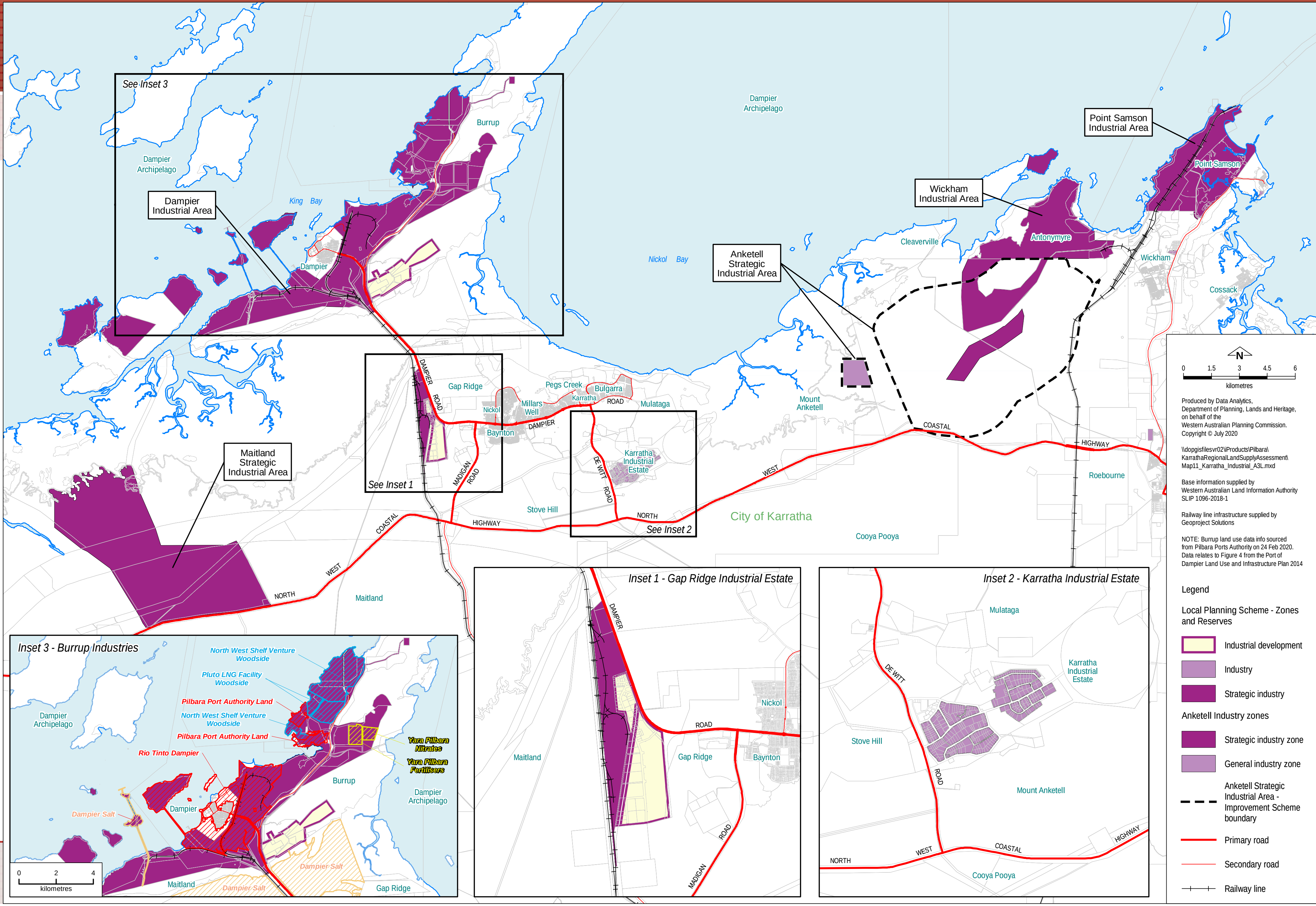
In addition to the stocks of land zoned Strategic Industry, Industry and Industrial Development under the City's *LPS 8*, a further 7,994 hectares of land in the locality of Mount Anketell is subject to an Improvement Scheme. The Anketell Strategic Industrial Area Improvement Scheme No. 1 was gazetted in November 2017, at which point it replaced *LPS 8* as the land use planning instrument for the area. The Improvement Scheme identifies two heavy strategic industrial areas and a general industrial area, as well as an industry protection area which accommodates the required buffers to protect the strategic industrial area from sensitive land uses.

As at June 2020, an Improvement Scheme is being prepared for the Maitland Strategic Industrial Area, which is 4,698 hectares. Upon the gazettal of the Improvement Scheme for the Maitland Strategic Industrial Area, the land will no longer be administered under *LPS 8*.

As shown on Map 11, a significant amount of land zoned for industrial use (3,488 hectares) on the Burrup Peninsula is presently being utilised by the Pilbara Port Authority, Woodside, Rio Tinto, Dampier Salt and Yara Pilbara. Key projects currently underway or under advanced consideration on the Burrup Peninsula are Woodside's Burrup Hub (Pluto Train 2, Scarborough Development and the North-West Shelf Refurbishment and Browse Development) as well Project Destiny (Perdaman' s Urea Plant). This land has finite capacity due to environmental and Aboriginal heritage constraints in addition to the Native Title and land use agreements outlined in section 7.

Figure 24: Stock of land zoned for industrial development by locality - City of Karratha

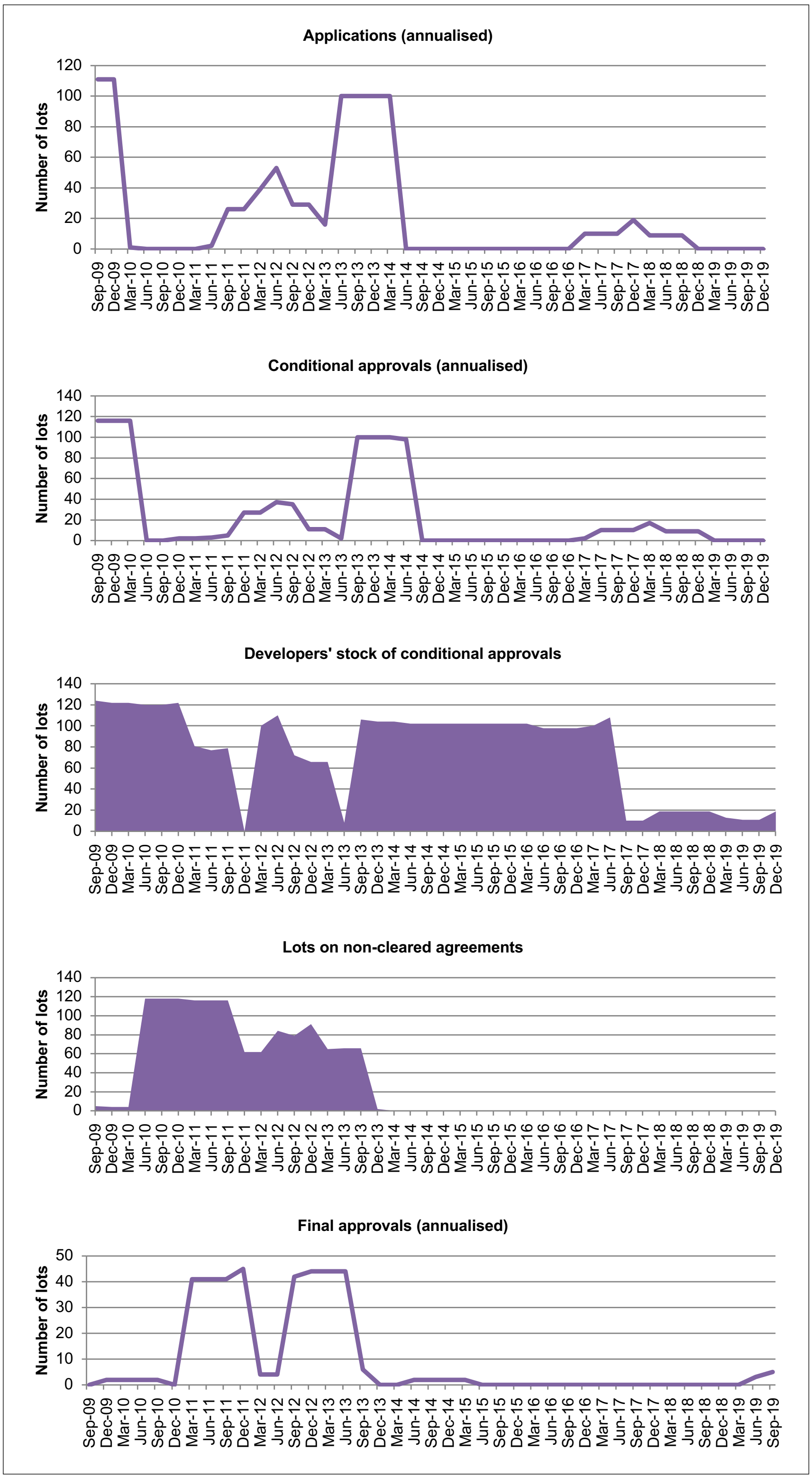



See Inset 3
Dampier Archipelago
King Bay
Dampier Industrial Area
Burrup
Dampier
Nickol Bay
Anketell Strategic Industrial Area
Wickham Industrial Area
Point Samson Industrial Area
Point Samson
Antonymyre
Cleaverville
Wickham
Cossack
Mount Anketell
Gap Ridge
Pegs Creek
Bulgarra
Karratha
Millars Well
Nickol
Baynton
Mulataga
DAMPIER ROAD
MADIGAN ROAD
DE WITT ROAD
See Inset 1
See Inset 2
Karratha Industrial Estate
Stove Hill
Maitland Strategic Industrial Area
NORTH WEST COASTAL HIGHWAY
City of Karratha
Cooya Pooya
Roebourne
Maitland
Inset 3 - Burrup Industries
North West Shelf Venture Woodside
Pluto LNG Facility Woodside
Pilbara Port Authority Land
North West Shelf Venture Woodside
Pilbara Port Authority Land
Rio Tinto Dampier
Yara Pilbara Nitrates
Yara Pilbara Fertilisers
Dampier Salt
Gap Ridge
0 2 4 kilometres
Inset 1 - Gap Ridge Industrial Estate
Inset 2 - Karratha Industrial Estate
N
0 1.5 3 4.5 6
kilometres
Produced by Data Analytics, Department of Planning, Lands and Heritage, on behalf of the Western Australian Planning Commission.
Copyright © July 2020
\\dopgisfilesvr02\iProducts\Pilbara\KarrathaRegionalLandSupplyAssessment\Map11_Karratha_Industrial_A3L.mxd
Base information supplied by Western Australian Land Information Authority SLIP 1096-2018-1
Railway line infrastructure supplied by Geoproject Solutions
NOTE: Burrup land use data info sourced from Pilbara Ports Authority on 24 Feb 2020. Data relates to Figure 4 from the Port of Dampier Land Use and Infrastructure Plan 2014
Legend
Local Planning Scheme - Zones and Reserves
Industrial development
Industry
Strategic industry
Anketell Industry zones
Strategic industry zone
General industry zone
Anketell Strategic Industrial Area - Improvement Scheme boundary
Primary road
Secondary road
Railway line

9.3 Industrial lot supply

Over the decade to December 2019, applications were lodged to create a total of 174 lots for industrial purposes (Figure 25) in the City. A total of 159 lots were granted conditional approval during this period. As at November 2019, there are currently 80 vacant lots in total the Karratha Industrial and Gap Ridge Industrial Estates. A further 33 lots are to be delivered in the Gap Ridge Industrial Estate as part of development stages 5 and 6 to meet the needs of the current investment cycle.

Figure 25: Industrial subdivision activity and lot supply pipeline – City of Karratha



Source: Department of Planning, Lands and Heritage (2019) *State Lot Activity*

10 Commercial

Land zoned for commercial development is located predominantly in the Karratha City Centre and in the towns of Dampier, Point Samson and Roebourne. As at November 2019, there was 272 hectares of land zoned for commercial development. *LPS 8* provides for commercial development through the following zones:

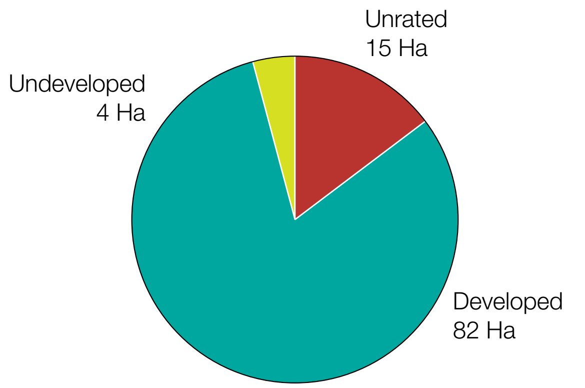
- City Centre
- Commercial
- Mixed Business
- Tourism
- Town Centre

10.1 Karratha urban area lot supply

The IRIS land supply model identified a total of 108 lots on land zoned Commercial, Mixed Business, Tourism and City Centre as at November 2019, covering 101 hectares. A total of 82 hectares (81 per cent) is developed; four hectares (4 per cent) is undeveloped; and 15 hectares (15 per cent) is unrated (Figure 26).

Within the Karratha urban area, the Karratha city centre is the focal point for commercial development. Planning in this location is addressed by the Local Planning Strategy through the progression of the Karratha City Centre Master Plan (KCCMP) to deliver the Pilbara Cities vision to create a vibrant, active and diverse city centre for the City of Karratha and broader region. The KCCMP seeks to provide for expanded retail and hospitality land uses, supported by high density accommodation and employment functions.

Figure 26: Stock of land zoned for commercial development – Karratha urban area



Source: Department of Planning, Lands and Heritage (2019) *Integrated Regional Information System*

Recent examples of development within the City Centre include the new Health Campus and the Quarter and Pelago mixed-use developments projects as well as the Red Earth Arts Precinct which have added residential dwelling stock and/or commercial floor space. The construction of the Hilton Garden Inn at the Quarter will also contribute commercial floor space in the City Centre.

Tables 7–12 identify approximately 75 hectares of land available for commercial expansion[35] principally within the Karratha City Centre and in the suburbs of Nickol, Gap Ridge. Stove Hill, Pegs Creek and the Karratha Industrial Estate. Tables 7-12 also identify significant land adjacent to the airport (IND288 and IND 289) which may have capacity to cater for long-term service commercial use subject to further investigation. Part of this land has been earmarked for emerging renewable energy-based industries as part of the Karratha EcoHub project. This is subject to further investigation and will need to consider long-term tenure arrangements of Crown land.

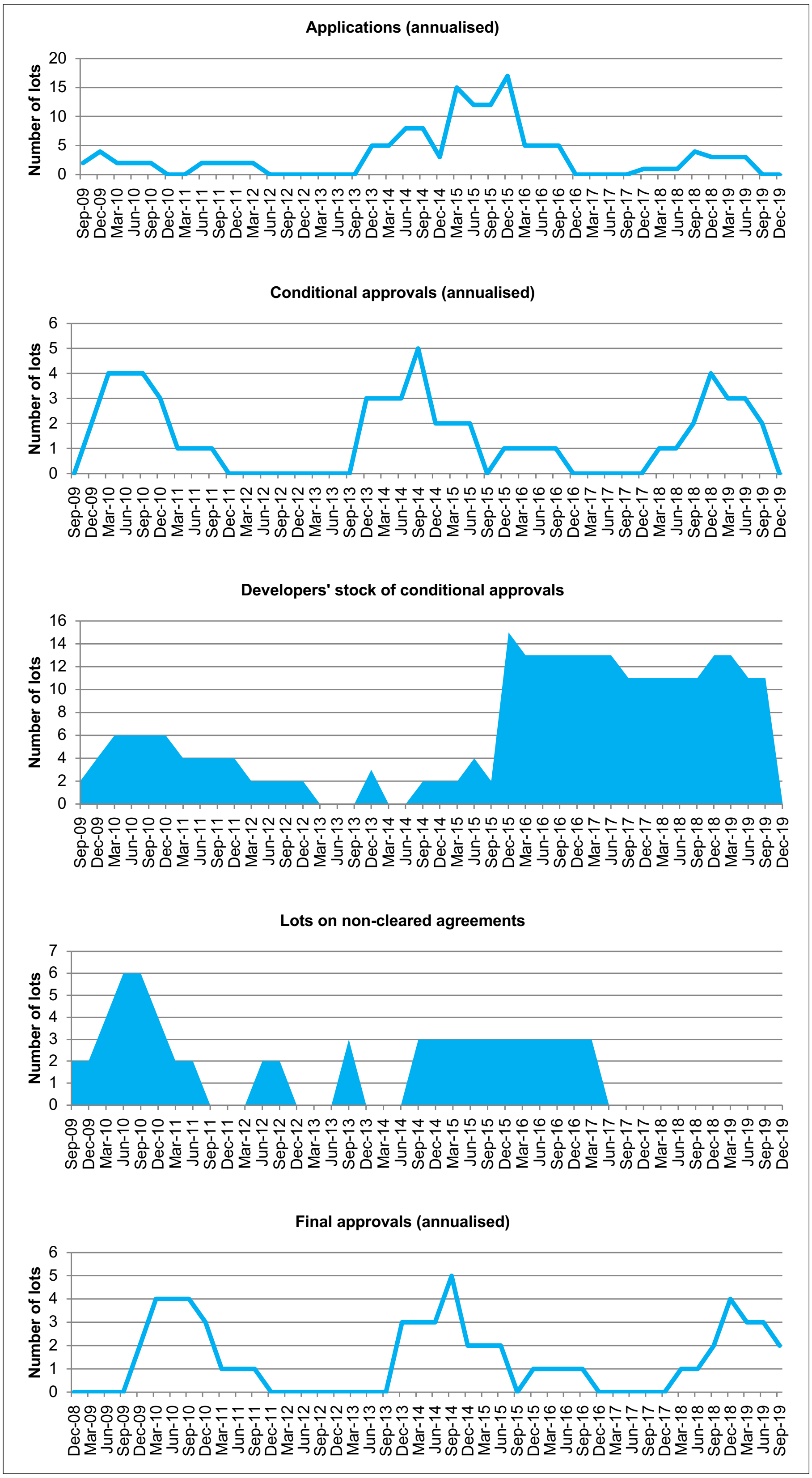
Based on the assumption of strong population growth to 2031 of approximately 38,000 people in the in the City of Karratha, the Local Planning Strategy assumes a total additional demand requirement of 16,900m^2 of additional office space to 2031. Some of this floorspace has already been provided through the development of the Quarter and Pelago projects. It is noted however that the projected population growth for the City of Karratha in this report is less than that envisaged by the Local Planning Strategy, which may reduce the demand for additional commercial floorspace. Based on the current supply of zoned land and the allocation of commercial expansion sites in Tables 7-12, it is expected that the current supply of land zoned for Commercial use will be capable of meeting demand in the short to medium term.

10.2 Commercial lot supply

Over the decade to December 2019, applications were lodged to create a total of 33 lots for commercial purposes (Figure 27). A total of 15 lots were granted conditional approval during the same period.

[35] This includes land that is zoned Urban Development under TPS8 that is being used or is planned to be used for large format retail/service commercial use.

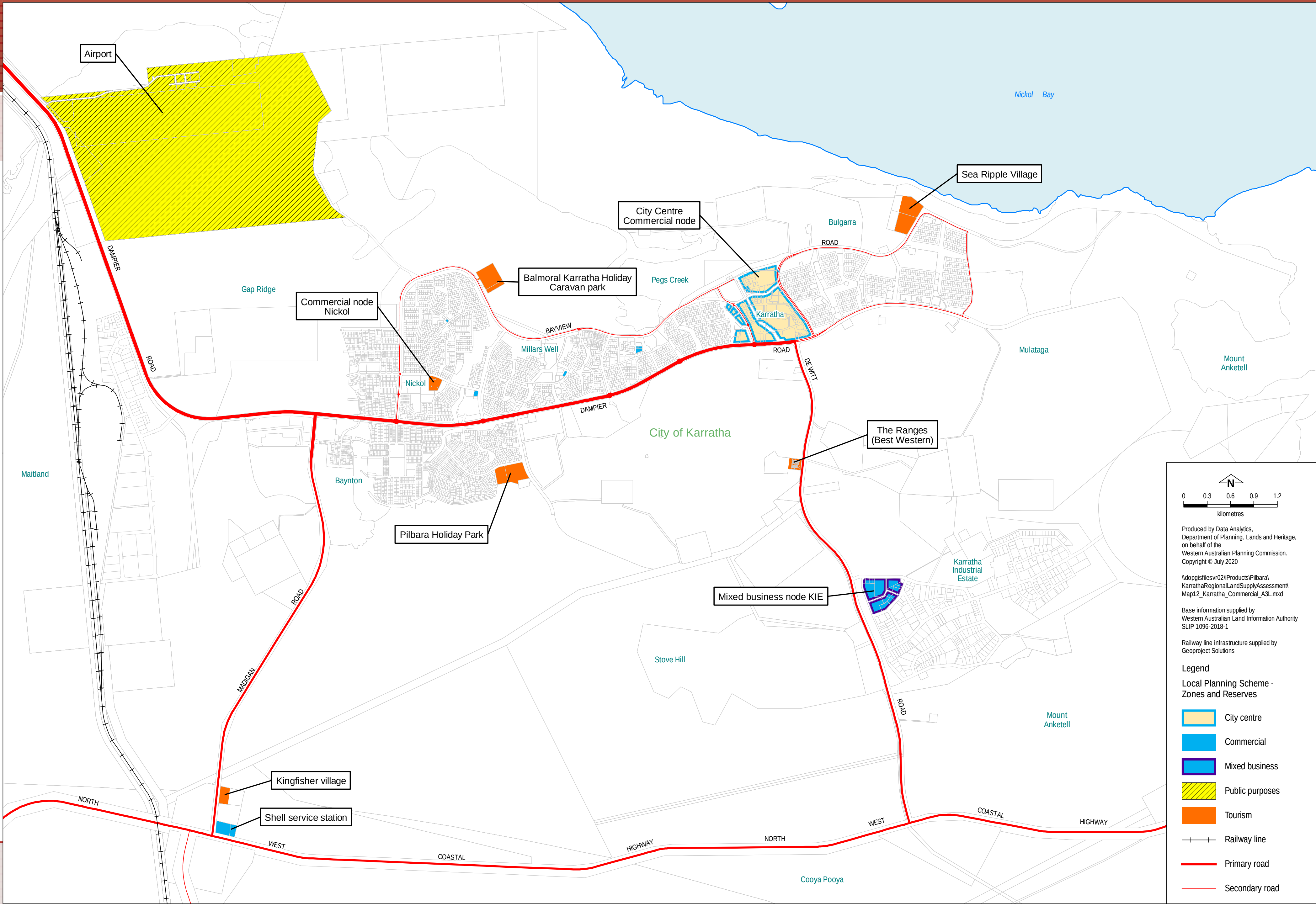
Figure 27: Commercial subdivision activity and lot supply pipeline – City of Karratha



Source: Department of Planning, Lands and Heritage (2018) *State Lot Activity*

Note: Data has not been included for the subdivision of land for purposes other than those not directly related to commercial.

Map 12: Commercial



11 Service infrastructure

The following section outlines the broad infrastructure capacity for Karratha and identifies upgrades that may be required to accommodate the growth of the Karratha urban area.

11.1 Water

The City of Karratha relies on the West Pilbara Water Supply Scheme (WPWSS) which covers Karratha, Dampier, Roebourne, Wickham, Point Samson, Cape Lambert and the Burrup Peninsula. The Harding River Dam, located inland near the southern boundary of the City, makes up the surface water component of the WPWSS. Water from these sources is pumped via large transfer mains to supply treated drinking water to Karratha and Dampier and industrial development on the Burrup Peninsula, as well as Roebourne, Wickham and Point Sampson in the east and port-related industries near Cape Lambert.

Industrial use accounts for approximately one third of total water consumption from the WPWSS. The investigation of water retention initiatives (i.e. non-potable replacements) is to be examined by the City of Karratha as part of its District Water Management Strategy which is aimed at guiding future water use and water management practices.

The primary water storage sources for the Karratha urban area are in the hills south of the urban area (Tank No. 3) with a capacity of 25 megalitres and one 9 megalitre tank (Tank 1) at Stove Hill. There are two smaller capacity tanks at the Karratha Industrial Estate which are to remain.

11.1.1 Implications for future development

The Water Corporation has longer-term plans in place to provide additional water supply and major water storage infrastructure up to 2035 to cater for future growth in the Karratha urban area. The likely addition to water storage will occur at the Tank No. 3 site (additional 25 megalitre of capacity) and at the Tank No. 1 site to ultimately provide for 50 megalitres of capacity.

The expansion of Water Corporation's infrastructure will also be influenced by the amount of industrial growth requiring a water supply service and the capacity of the Harding Dam and Millstream groundwater sources.

11.2 Wastewater

There are three wastewater treatment plants within the Karratha urban area. The first of these is in the Karratha Industrial Estate (KIE) which accepts and treats wastewater from the KIE area separately from other parts of the town. This is necessary to protect the operating integrity of the other treatment plants from any potential polluting waste stream from the KIE area. This plant has a nominal 500m radius odour buffer around it, which is measured from the boundaries of the WWTP landholding (Crown Reserve 35098, Lot 1935).

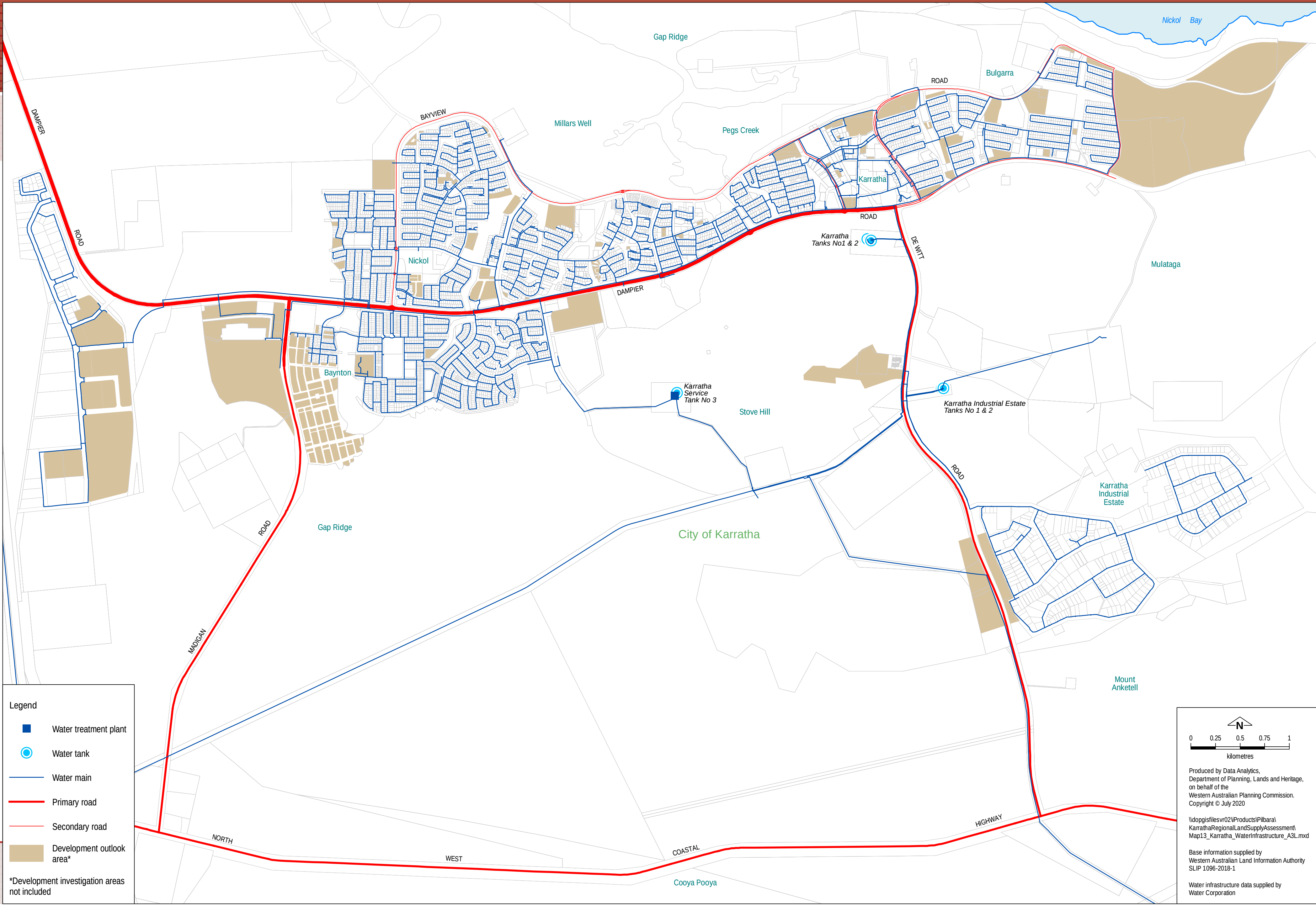
The second plant is the Karratha Wastewater Treatment Plant No. 1 located immediately north of the LIA WWTP which accepts and treats the bulk of the wastewater from the townsite. The wastewater treatment and treated wastewater management and disposal capacity of WWTP No.1 was substantially upgraded in 2012 to a 10ML/day plant to account for significant housing and population growth. WWTP No.1 has a nominal 500m radius odour buffer measured from the boundaries of the WWTP landholding (Crown Reserve 35053, Lot 1933).

The third plant is the Karratha Wastewater Treatment Plant No. 2 located to the west of the Karratha urban area and is currently still in operation, although it only treats wastewater from a small western portion of the Karratha urban area. The long-term plan is to eventually divert (pump) inflows from WWTP No.2 to the expanded WWTP No.1. This will allow WWTP No.2 to be decommissioned or assigned to the sole treatment of light industrial wastewater. WWTP No.2 has a nominal odour buffer of 500m radius measured from the boundary of the WWTP landholding (Crown Reserve 36633, Lot 122).

11.2.1 Implications for future development

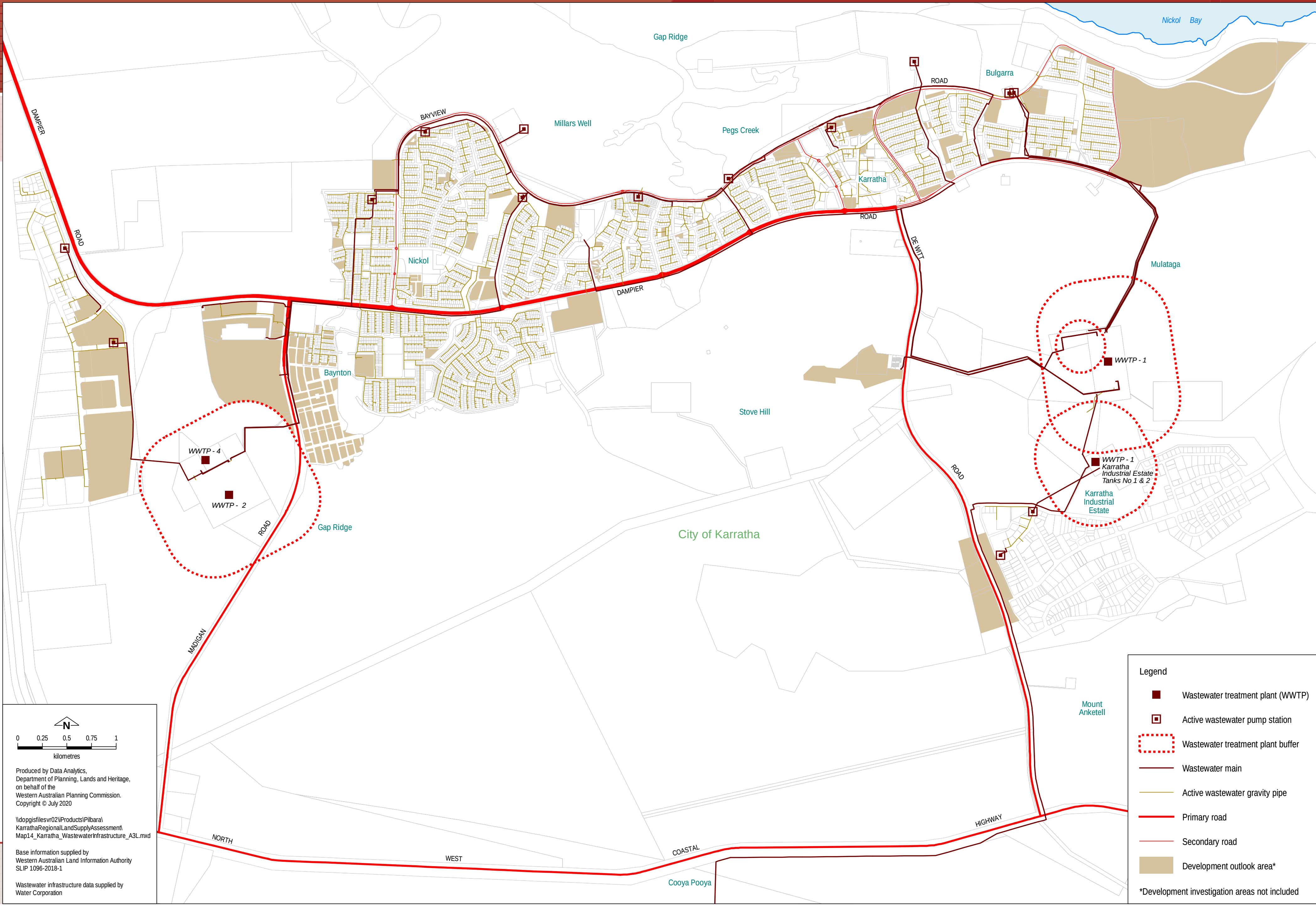
The Water Corporation's long-term conceptual wastewater system planning for the Karratha urban area includes the need for significant capital expenditure to install additional wastewater pumping stations and to upgrade as needed some of the existing pumping stations to cater for increasing demand into the future. The location and planned size of these future WWTPs will follow the spatial arrangement of the Karratha urban area including expansion areas of the Karratha urban area identified in the *Local Planning Strategy*.

Map 13: Water infrastructure - Karratha



Map 14: Wastewater infrastructure - Karratha

Contents



11.3 Power

The source of power for the City is from the North West Interconnected System which is a network of transmission lines, power stations and associated infrastructure. Key facilities are the ATCO Karratha power station at Stove Hill, commissioned in 2010 to supply residential and business consumers in the Karratha urban area under a long-term arrangement with Horizon Power and the new TransAlta power station in Port Hedland that is connected to Karratha via Horizon Power's 220kV transmission line.

Horizon Power is expected to complete the upgrade of the transmission line by the end of 2020 connecting the Karratha terminal sub-station to the Dampier sub-station, which is critical to the security of supply on the North West Interconnected System. This will also help support the growing demand for energy for the Burrup Strategic Industrial Area.

In addition, Rio Tinto's Gap Ridge and Cape Lambert Power Stations to cater for port and mine operations. To manage electrical supply, underground power has been provided throughout the Karratha urban area along with the upgrade of Karratha distribution to 22kV.

The City of Karratha supports a reduction in the duplication of power supplies and seeks greater integration and cooperation from industry partners and suppliers.

Encouraging the private sector to invest in infrastructure or to provide more open access to existing infrastructure will help to spread the investment cost and reduce duplication and redundancy. An example of this is the investment in solar energy by the City which has resulted in an innovative 1MW solar project being delivered for the Karratha Airport to provide a reliable, long-term energy solution for the Airport's increasing electricity demands.

11.3.1 Implications for future development

Considering the current power generation capacity and demand for electricity from the planned expansion of the Karratha urban area and demands from industrial uses, Horizon Power does not anticipate any additional upgrade to existing power infrastructure is likely to be required until 2029.

11.4 Transport

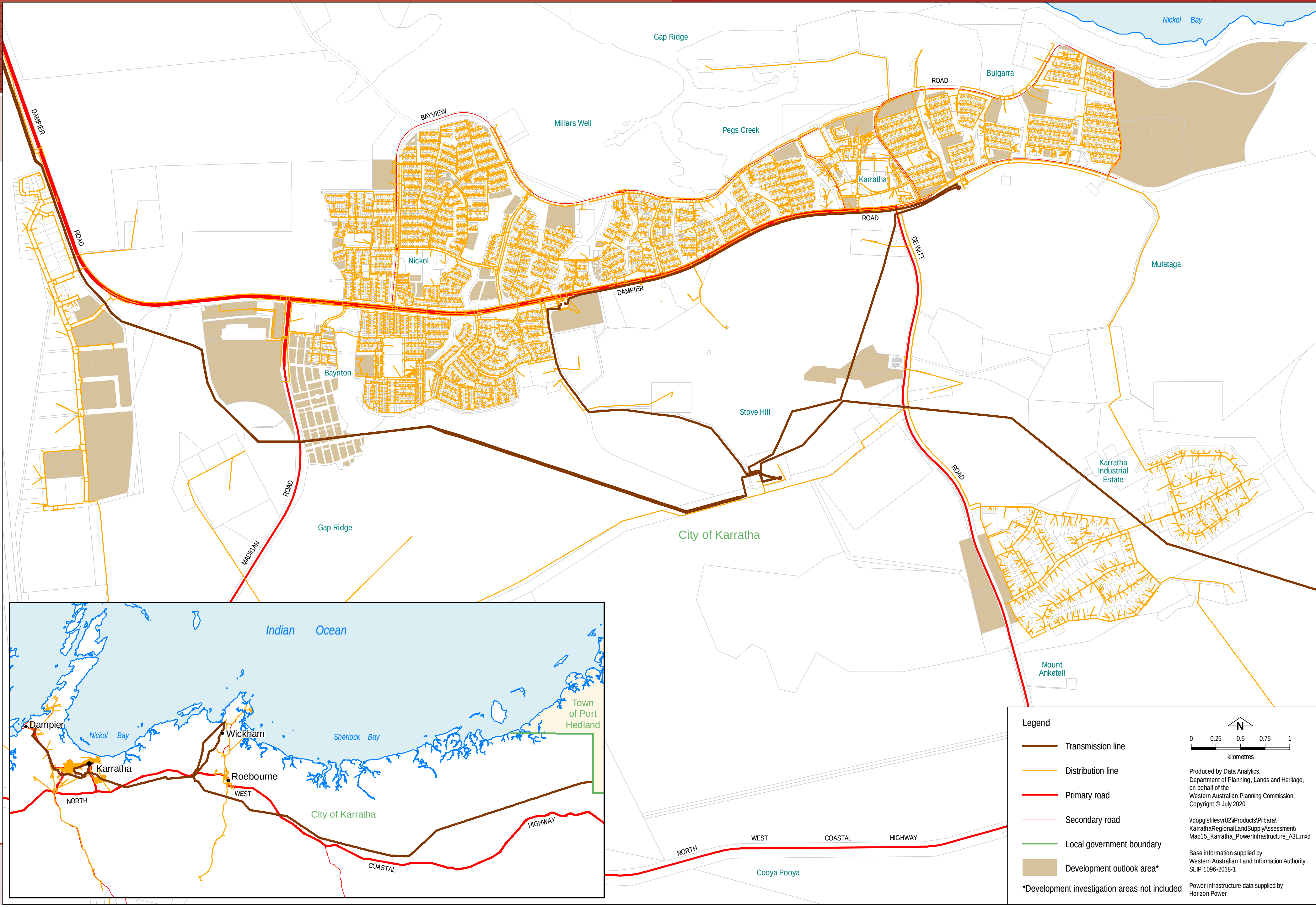
11.4.1 Roads

The Karratha urban area is served by a primary and regional distributor road network that includes North West Coastal Highway, Karratha - Tom Price Road, Dampier Highway, Burrup Road and Madigan Road managed by Main Roads WA as well as a local road network managed by the City of Karratha.

A range of pressures that affect traffic movements, primarily population expansion as well increased freight movements to service the needs of the resource sector. Future traffic flows of up to 12,000 vehicles per day (vpd) on Dampier Highway are expected. In addition, the current road network system in the Karratha urban area lacks connectively and permeability for all modes of transport.

In response to these pressures, several key road upgrades or construction projects by 2031 are outlined in the *Local Planning Strategy* such as:

- Dampier Hwy/Millstream Rd (Searipple Rd to Maitland Rd) – dual carriageway (4 lanes).
- Balmoral Rd (Millars Rd to Warambie Rd) – dual carriageway (4 lanes).
- Point Samson-Roebourne Rd (Roebourne to Wickham) – dual carriageway (4 lanes).
- Roebourne Northern Highway realignment (Point Samson-Roebourne Rd to North West Coastal Hwy) – construct as 2-lane road (to reduce traffic volumes including heavy vehicles on the corresponding section of Point Samson-Roebourne Rd in Roebourne townsite).
- Roebourne Southern Bypass (North West Coastal Hwy to North West Coastal Hwy) – construct as 2-lane road (to reduce traffic volumes including heavy vehicles on the corresponding section of North West Coastal Hwy in Roebourne townsite).
- Karratha Western Bypass (Dampier Hwy to Madigan Rd) – construct as 2- lane road (to reduce heavy vehicle traffic on the corresponding section of Madigan Rd in Karratha townsite).
- New road link from Millstream Rd southward though the Mulataga area to the Karratha Industrial Area and Karratha Rd – construct as 2-lane road (to keep traffic volumes on the northern section of Karratha Rd below 10,000vpd as the Mulataga area continues to develop).
- Millars Rd (Balmoral Rd to Karratha Airport) – upgrade to sealed road standard (2 lanes).


Nickol Bay
Gap Ridge
ROAD
Bulgarra
BAYVIEW
Millars Well
Pegs Creek
DAMPIER
ROAD
Karratha
ROAD
Nickol
DE WITT
DAMPIER
Mulataga
Baynton
Stove Hill
ROAD
Karratha Industrial Estate
ROAD
Gap Ridge
MADIGAN
City of Karratha
Mount Anketell
NORTH
WEST
COASTAL
HIGHWAY
Cooya Pooya
Indian Ocean
Dampier
Nickol Bay
Wickham
Sherlock Bay
Town of Port Hedland
Karratha
Roebourne
WEST
NORTH
City of Karratha
HIGHWAY
COASTAL
Legend
Transmission line
Distribution line
Primary road
Secondary road
Local government boundary
Development outlook area*
*Development investigation areas not included
N
0 0.25 0.5 0.75 1
kilometres
Produced by Data Analytics, Department of Planning, Lands and Heritage, on behalf of the Western Australian Planning Commission. Copyright © July 2020
\\dopgisfilesvr02\iProducts\Pilbara\KarrathaRegionalLandSupplyAssessment\Map15_Karratha_PowerInfrastructure_A3L.mxd
Base information supplied by Western Australian Land Information Authority SLIP 1096-2018-1
Power infrastructure data supplied by Horizon Power

11.4.2 Implications for future development

These road upgrades assume a population of over 35,000 people in the City of Karratha by 2031, which is significantly higher than outlined in this report.

To improve connectivity within the Karratha urban area, the *Local Planning Strategy* advocates a new green spine road to improve connections between the suburbs of Bulgarra, Millars Well, and Pegs Creek. The new road will provide connectivity between existing residential areas and reduce reliance upon the Distributor Roads for local traffic movements.

One key road project within the City of Karratha is sealing the Karratha to Tom Price Road by Main Roads WA. Sealing this road will provide benefits to the region, including connecting Karratha to the greater Pilbara, providing accessibility to Karijini National Park from Karratha and enabling drive-in, drive-out (DIDO) opportunities for isolated mine sites. Stage 3 of this project commenced in October 2019 and will continue to late 2020.

11.4.3 Rail

Within the City of Karratha there are several private heavy haulage rail lines that transport iron ore to the ports of Dampier and Port Walcott (Cape Lambert). These rail lines carry most of the iron ore volumes exported from the City and are privately owned and operated.

There is the potential for new railway lines to link the planned new Anketell Port and Strategic Industrial Area. Existing rail lines require protection inclusive of sufficient buffers from encroaching development in accordance with *State Planning Policy 5.4 – Road and Rail Transport Noise* and Freight Considerations in Land Use Planning.

At-grade rail crossings on the regional road network can cause significant delays for traffic as iron ore trains can be more than 1.4 kilometres and require several minutes to pass over the road. Main Roads WA[36] and the City support grade separated rail crossings as exemplified through the recently constructed overpass on the North West Coastal Highway. This crossing allows increasing numbers of trains to access Cape Lambert without disrupting traffic on the Highway.

[36] Main Roads WA requires grade separated rail crossings on all Main Roads WA managed roads

[37] Pilbara Ports Authority 2020

11.4.4 Ports

The ports within the City of Karratha play an important role in the economy of the City. The *Local Planning Strategy* recognises the importance of protecting the ports and their associated transport corridors to ensure continued operation.

The Pilbara Ports Authority operates as a corporate entity under the *Port Authorities Act 1999*. Port Walcott (Cape Lambert) was established under the *Shipping and Pilotage Act 1967*. Most ports within the City are Pilbara Ports Authority ports. An exception is Port Walcott which is a non-port authority ports operated by Rio Tinto. In general, non-port authority ports comprise single-user export facilities operated by private resource companies. These ports and related facilities are operated with limited guidance from the State Government.

It is important to note the tonnages for some of these ports are substantial and further add to the State's existing and future port throughput. Port Walcott located at Cape Lambert is of significance, having an export capacity of 200 million tonnes per annum[37]. Recent expansion at Port Walcott was part of a plan to raise Rio Tinto's annual production in the Pilbara to more than 350 million tonnes per annum.

As outlined in section 4.3.4, there are several existing and proposed ports within the City including the well-established Port of Dampier and proposed ports at Balla Balla, Anketell and Cape Preston East and Cape Preston West.

The recent gazettal of a Regional Improvement Plan and preparation of a Regional Improvement Scheme for the Anketell Port and Strategic Industrial Area secure the opportunity for further port-related Strategic Industry to establish on the City's coast.

Future construction of the Anketell Port and Strategic Industrial Area will enhance the resource exportation potential of the City. The proposed Port of Anketell has been planned as a multi-user bulk commodities export port with capacity for general cargo, fuel and supply base activities. Total capacity is expected to exceed 350 million tonnes per annum.

There exists limited provision of common user and general cargo ports within the City which places limitations on non-resource-based port activity. The City encourages the creation of common user and general cargo port(s) / berth(s) which would facilitate diversification of the economy. This could extend to direct freight services from Asian ports, container shipping and the accommodation of cruise ships.

11.4.5 Aviation

Karratha Airport is currently Western Australia's second busiest airport for passenger movements and is managed by the City of Karratha. The *Karratha Airport Master Plan and Land Use Plan 2013-2033* plans for its expansion to 1.8 million passengers per year and capacity to accommodate international flights. Upgrades to boarding and processing facilities to facilitate this expansion have now been completed.

The importance of air services to regional liveability and job attraction has been addressed in the draft *WA Aviation Strategy 2020* [38]. This promotes affordable airfares, connected communities, a fit-for-purpose airport and future-ready infrastructure.

The airport land also provides the opportunity for future commercial and industrial development to be undertaken as future demand requires. Revision of the existing Special Control Area based on the N70 and ANEF contours will ensure compatible uses develop adjacent to the airport and enabling long term continued operation and future expansion.

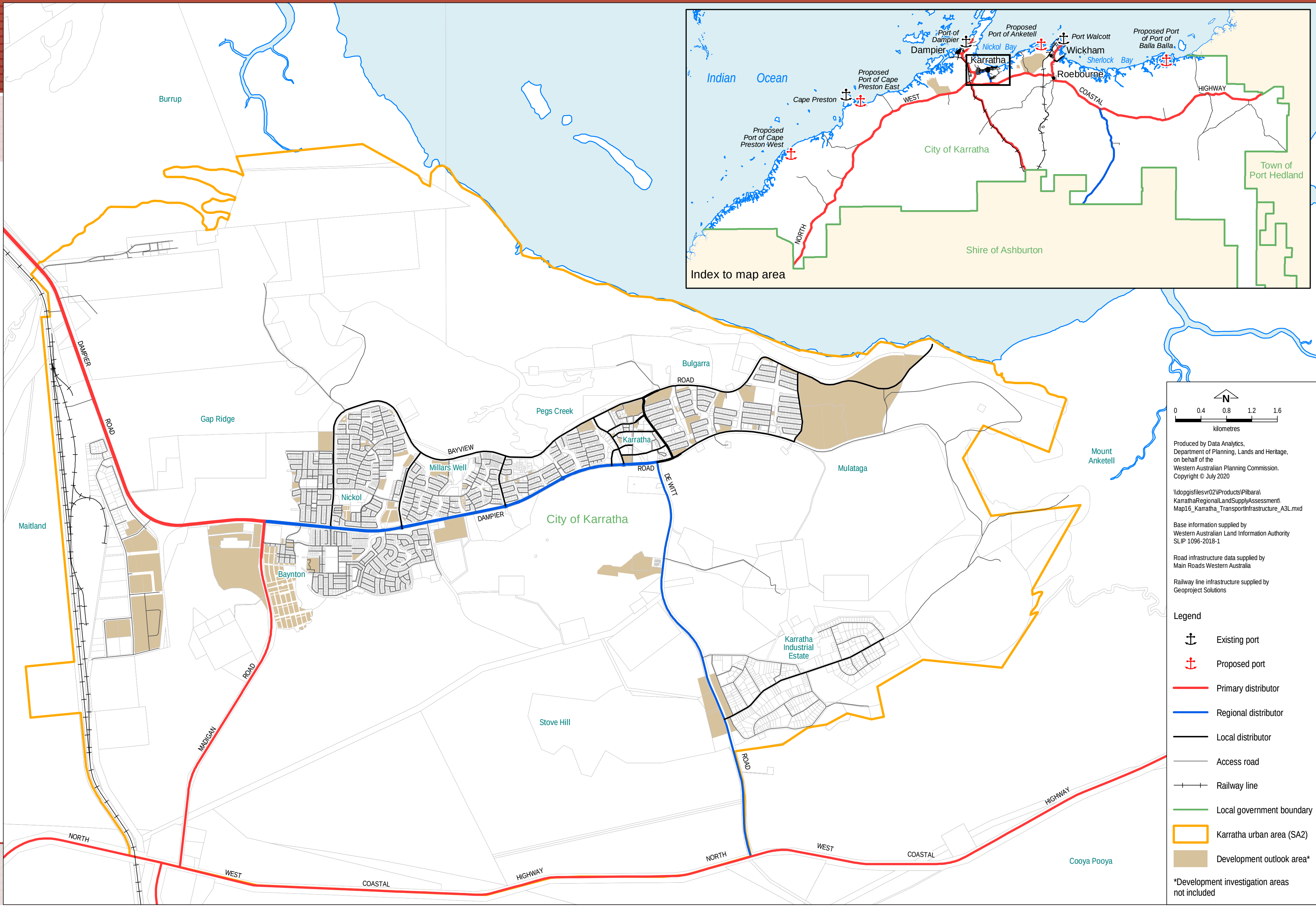
11.4.6 Public transport

The lack of effective and viable public transport and bus services in Karratha has contributed to the total dominance of motor vehicles. A high frequency bus service is being considered to connect the east and west of the Karratha urban area and pass through the city centre. This new bus service aims to connect the newer emerging residential areas.

Public transport is a critical component of successful and vibrant activity centres and communities and is central to the long-term vision of the City. Improved bus services between towns in the City are also considered important, particularly in facilitating non-car-based access from the other towns to the regional facilities available in Karratha.

[38] Released on 10 February 2020 to 27 March 2020 for public comment.

Map 16: Transport infrastructure – Karratha



Abbreviations and acronyms

ABS	Australian Bureau of Statistics
ASGS	Australian Statistical Geography Standard
CHRMAP	Coastal Hazard Risk Management and Adaptation Plan
DPLH	Department of Planning, Lands and Heritage
EPA	Environmental Protection Authority
ERP	Estimated Resident Population
The Framework	Pilbara Regional Planning and Infrastructure Framework
kV	kilovolt
MB	Mesh Block
MW	megawatt
NWIS	North West Interconnected System
PTA	Public Transport Authority
SA1	Statistical Area Level 1
SA2	Statistical Area Level 2
SA3	Statistical Area Level 3
SIA	Strategic Industrial Area
SUA	Significant Urban Area
The City	City of Karratha
UCL	Urban Centre and Locality
UDP	Urban Development Program
WA Tomorrow	Western Australia Tomorrow Medium-Term Population Forecasts
WAPC	Western Australian Planning Commission
WWTP	Wastewater Treatment Plant

Glossary

Building approvals	
Building	A building is a rigid, fixed and permanent structure which has a roof. Its intended purpose is primarily to house people, plant, machinery, vehicles, goods or livestock. An integral feature of a building's design is the provision for regular access by persons to satisfy its intended use.
Dwelling	A dwelling is a self-contained suite of rooms, including cooking and bathing facilities, intended for long-term residential use. A dwelling may comprise part of a building or the whole of a building. Regardless of whether they are self-contained or not, rooms within buildings offering institutional care (e.g. hospitals) or temporary accommodation (e.g. motels, hostels and holiday apartments) are not defined as dwellings. Such rooms are included in the appropriate category of non-residential building approvals. Dwellings can be created in one of four ways: through new work to create a residential building; through alteration/addition work to an existing residential building; through either new or alteration/addition work on non-residential building; or through conversion of a non-residential building to a residential building.
Dwellings excluding houses	Dwellings in other residential buildings and dwellings created in non-residential buildings.
Flats, units or apartments	Dwellings not having their own private grounds and usually sharing a common entrance, foyer or stairwell.
House	A detached building primarily used for long-term residential purposes consisting of one dwelling unit. Includes detached residences associated with a non-residential building, and kit and transportable homes.
Non-residential building	Buildings primarily intended for purposes other than long-term residence.
Other residential building	Buildings other than houses which are primarily used for long-term residential purposes. Other residential buildings include semi-detached, row or terrace houses or townhouses, and flats, units or apartments.
Residential building	Buildings primarily used for long-term residential purposes. Residential buildings are categorised as houses or other residential buildings.
Semi-detached, row or terrace houses, townhouses	Dwellings having their own private grounds with no other dwellings above or below.
Total residential building	Total residential building is comprised of houses and other residential building. It does not include dwellings in non-residential buildings.

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Appendices

Appendix A: Integrated Land Information Database (ILID)

ILID 2016 – 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 several 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 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 the individual inputs have been identified, they can all be joined 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 *City of Karratha F*. 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 number of dwellings a single lot can add on (disregarding the location of the current dwelling footprint and has a hundred 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 B: 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 tiered land supply assessment model is the central output of the Integrated Regional Information System (IRIS). The IRIS land supply model is a geographic information system (GIS) based tool that is used to assess key measures of land use dynamics across Western Australia.

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

Tier one of the IRIS land supply model groups local planning scheme zones into primary categories for analysis. The table below shows the groupings of local planning scheme zones under the *City of Karratha LPS 8*.

IRIS primary category	Local planning scheme zone
Residential	Residential
	Urban Development
Rural living	Rural Residential
Industrial	Industry
	Strategic Industry
	Industrial Development
	Industry
Commercial	City Centre
	Commercial
	Service Commercial
	Mixed Business
	Tourism

Tier two of the IRIS land supply 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 valuation 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 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 land supply 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 land supply model has not been included in analysis for this report as sites with identified development potential are described in Tables 7-12 of this document.

Appendix C: Regional Price Index

The Regional Price Index (RPI) is produced by the Department of Primary Industries and Regional Development. The RPI provides a comparison of location-based prices for a common basket of goods, with the Perth metropolitan region as the basis for comparison with each regional location. The following table provides a comparison between 2015 and 2017 RPI numbers for the Pilbara region.

	2015	2017
Overall	**117.5**	**110.7**
Basket		
Food	117.6	110.3
Cigarettes, tobacco, alcoholic drinks	104.3	101.6
Clothing	99.0	103.7
Housing	132.2	120.6
Household equipment and operation	115.4	106.1
Health and personal care	116.9	111.6
Transport	115.6	101.9
Recreation and education	97.9	108.0