Department of Planning, Lands and Heritage

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

We're working for Western Australia.

Economic and Employment Land Monitor

Perth metropolitan and Peel regions

June 2020

Urban Development Program

The Western Australian Planning Commission 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.

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Executive Summary

This report provides an in-depth analysis of the employment and land use characteristics in selected, established major industrial centres in the Perth metropolitan and Peel regions. Monitoring the stock and consumption of industrial land assists Government and industry in decision making to help ensure there is an adequate supply of land for employment and to support economic development.

The *Economic and Employment Land Monitor* uses a tiered land supply assessment model developed by the Department of Planning, Lands and Heritage. The model which reports on industrial land use dynamics is one output of the Department's Integrated Regional Information System (IRIS). The industrial centre profiles examine patterns of existing industrial land use to inform planning decisions relating to future land supply.

The report assesses the stock of industrial zoned land at the latter stages of the land supply pipeline. The sites included in this study have undergone rezoning (where necessary) in the local planning scheme, are largely serviced with appropriate infrastructure and, are generally development ready.

In addition to providing an analysis of employment and land use in industrial centres, the *Economic and Employment Land Monitor* reports on industrial land consumption through subdivision and industrial property market activity.

Key findings

- After a sustained period of strong demand for industrial land in Western Australia, as indicated by high volumes of industrial lot sales and building approvals, conditions softened substantially following the end of the mining construction boom. Recent trends in population growth, employment and investment are indicative of a tentative recovery in demand for industrial land, however, the current COVID-19 19 epidemic is likely to hinder potential improvement.
- Industrial land consumption through subdivision in the Perth metropolitan and Peel regions can vary greatly from one year to the next. Annual consumption rates have varied from 50 to 550 hectares[1] per annum since 2009.
- Between 2010 and 2019, net industrial land consumption through final subdivision approvals (the area of land contained in subdivision of industrial zoned land) averaged 210 hectares per annum.
- The Department's Land Use and Employment Survey 2015/17 (LUES) identified there were 152,580 people employed across the 16 industrial centres included in this assessment. An estimated 57 per cent of workers employed in the profiled industrial centres were employed in the office/business sector.
- Across the Perth and Peel regions, particular land uses such as manufacturing, processing and fabrication recorded an increase of almost 50m^2 of additional floorspace per employee from the 2007/09 to 2015/17 LUES survey.
- Tier one of the land supply assessment model identified 7,510 hectares of land zoned for industrial purposes across the profiled industrial centres.
- The profiled industrial centres are largely developed with approximately 88 per cent of industrial zoned land identified as being developed
- At the second tier of land use classifications, light industrial/commercial uses are the predominant land use for the profiled industrial centres, comprising almost 47 per cent of zoned land across the 13 industrial centres (excluding Perth Airport and Jandakot Airport).
- The total value of industrial building approvals in the 2018-19 financial year was $926 million. Industrial building approvals peaked in 2013-14 with $1 billion worth of approvals granted within the financial year.
- Warehouses accounted for 54 per cent of the total value of industrial building approvals in 2018-19, compared to 74 per cent in 2014-13.

[1] Figure refers to net consumption.

- There is a prevalence of lots up to 1 hectare (10,000m^2) in the profiled industrial centres, with approximately 90 per cent of lots this size. In terms of total land area, lots up to 1 hectare encompass one third of land zoned as industrial in the study areas.
- The number of industrial lot sales in 2019 decreased by approximately two thirds compared to the volume of transactions in 2014, based on data from Landgate. After several years of decline, industrial land values ($ per m^2) experienced an increase of 11 per cent in 2019.

Contents

1 Introduction

The Urban Development Program

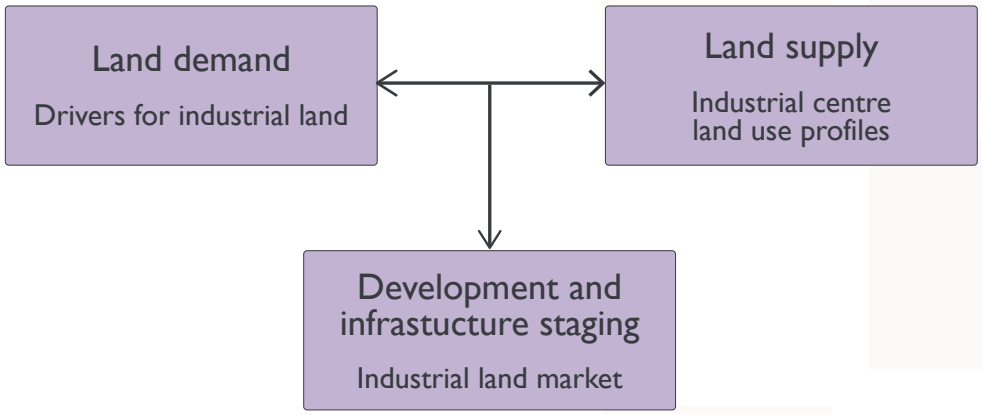
The Department of Planning, Lands and Heritage (the Department) prepares the Urban Development Program (UDP) for the Western Australian Planning Commission to support inter-agency decision-making regarding urban development and the provision of infrastructure and services.

The Urban development program (UDP) promotes the development of serviced land in a sustainable and timely manner for the guidance of State infrastructure agencies, public utilities, local government and the private sector. The UDP tracks land demand and supply in Western Australia's major urban areas to promote a more effective use of land, better staging of development and prioritisation of infrastructure investment to support growth.

It also relates to strategic planning for future land supply in Perth and Peel regions and is an implementation tool for the *Perth and Peel @ 3.5million* strategy.

The *Economic and Employment Land Monitor* forms part of the UDP's role in monitoring changes in land use. The report profiles the employment, land use and market activity of major industrial centres in the Perth metropolitan and Peel regions to assist in planning for future industrial land supply and development. It utilises outputs of the Integrated Regional Information System (IRIS) which is a State-wide spatial database that provides a systematic methodology for evaluating land supply and land use characteristics on a periodic basis.

Figure 1: Urban Development Program model – Industrial land



2 Demand for Industrial Land

Key Points:

- Economic and demographic factors drive demand for industrial land.
- After a sustained period of strong demand for industrial land in Western Australia, as indicated by high volumes or industrial lot sales and building approvals, conditions softened substantially in the wake of the mining construction boom.
- The value of industrial land per square metre decreased from 2014 to 2018.
- Prior to the COVID-19 epidemic, Western Australia showed signs of an emerging recovery in demand, with projections that mining industry investment and increasing levels of population growth will strengthen the State's economy in the medium term.

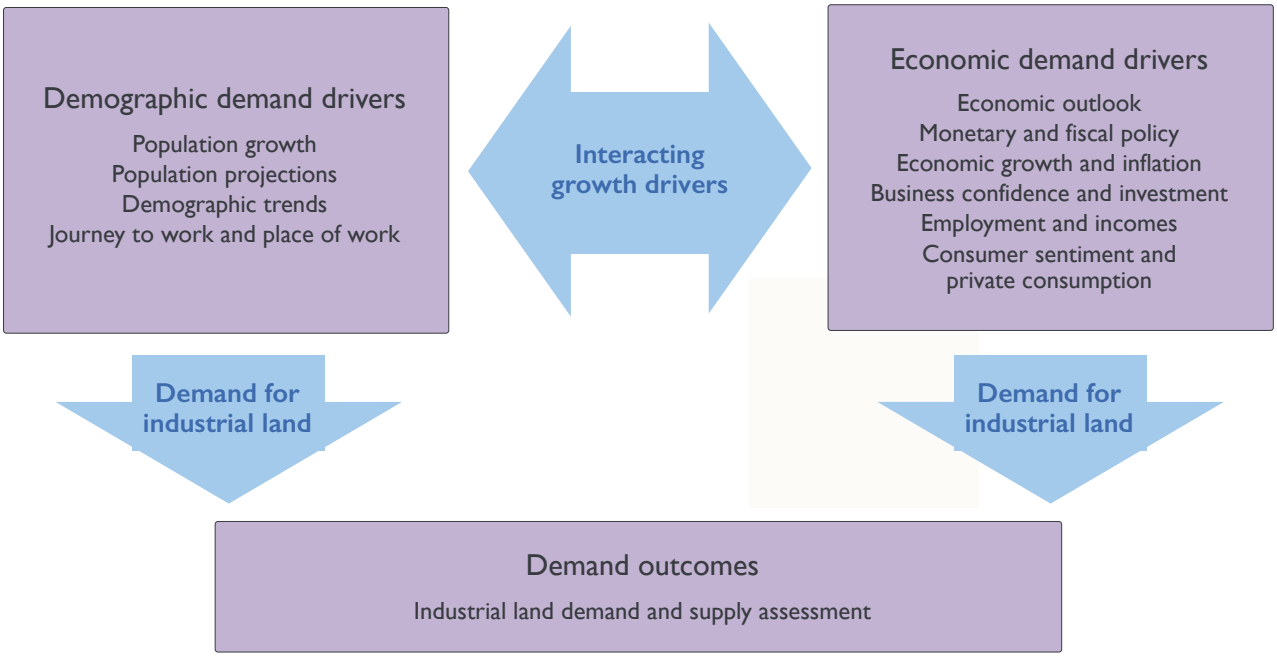
Economic conditions and population growth interact to drive demand for industrial land[2]. Figure 2 shows how the two interact in relation to industrial land.

Population Growth

Population growth is an important driver of demand for industrial land. A growing population adds to the demand for goods and services, stimulating economic growth and the need for additional industrial or employment generating land.

Western Australia experienced considerable population growth from 2010 to 2015, reaching a peak of 3.7 per cent for the 2013 calendar year. The rate of growth has since declined sharply, falling to just 0.6 per cent in 2016. Population growth has steadily improved since 2016 with ABS data indicating a 1.1 per cent increase over the 12-month period, ending September 2019. While this represents a significant improvement from recent lows, growth is still well below the national rate of 1.5 per cent per annum and the 10-year average for Western Australia (1.6 per cent).

Figure 2: Economic and demographic demand drivers



[1] Western Australian Planning Commission, 2015, Economic and Employment Land Monitor

Based on the trends observed in late 2019, overseas migration and improved economic conditions were estimated to support an increase in the population growth rate to 1.7 per cent in 2022-23 and lift Western Australia's population by nearly 700,000 people or 27 per cent by 2031[3]. However, population forecasts do not take into account the effects of unforeseen events that may change trends, such as significant shifts in government policy, natural disasters and epidemics. Therefore, this forecast is likely to change given current global uncertainty surrounding the COVID-19 epidemic.

Economic Outlook

The industrial market in the Perth metropolitan and Peel regions is closely linked to the State's significant export and export related industries such as mining, agriculture and food, manufacturing, civil engineering and construction[4]. Therefore, the export-oriented nature of key Western Australian industries mean that the State's fortunes are closely linked to global economic conditions.

Table 1: Key economic forecasts and parameters – Western Australia

	2018-19	2019-20	2019-20	2020-21	2021-22	2022-23
	Actual %	Budget Estimate %	Mid-year Estimate %	Forward Estimate %	Forward Estimate %	Forward Estimate %
Gross State Product (GSP)	1.0	3.5	3.0	2.5	2.75	2.75
State final demand growth	-1.0	-3.0	2.25	3.25	3.5	3.5
Household consumption	1.0	1.75	1.25	2.25	2.75	3.0
Business investment growth	-7.6	6.0	6.0	7.0	6.0	4.0
Dwelling investment growth	-3.6	-2.75	-7.0	4.75	7.5	4.0
Government investment growth	-2.8	10.5	10.5	2.0	7.0	3.0
Population growth	1.0	1.3	1.3	1.5	1.6	1.7
Employment growth	0.9	1.75	1.5	1.75	2.0	2.25
Unemployment rate	6.1	6.0	5.75	5.75	5.5	5.25
Consumer Price Index Growth (CPI)	1.3	1.75	1.75	2.0	2.25	2.25
Wage Price Index Growth	1.6	2.25	2.0	2.25	2.5	2.75
Median House Price	-2.3	1.1	-1.1	2.2	2.8	3.0
Crude oil Price ($US/barrel)	68.6	67.1	61.8	58.5	57.2	56.8
Exchange rate US/A (cent)	71.5	71.4	68.2	68.5	68.7	68.9
Iron Ore Price ($US/tonne) cost and freight inclusive	80.4	73.5	85.8	66.2	64.0	64.0

Source: Department of Treasury (2019) 2019-20 Government Mid-year Financial Projections Statement

[3] WA Tomorrow, 2019, Western Australian Planning Commission

[4] Western Australian Planning Commission, 2012, Perth and Peel Development Outlook 2011/12

Western Australia experienced unprecedented economic growth over the decade to 2014. In 2003-04, the mining industry accounted for less than one fifth of the State's GDP, growing to over one-third in 2010-11 at the peak of the mining boom, before moderating to 30 per cent in 2012-13[5]. This rapid growth in the mining sector saw benefits flow through to other industries within the economy, particularly construction and manufacturing.

Following the end of the mining boom, the State's economy experienced a substantial downturn, largely due to a sharp reduction in resource sector investment and associated pull of workers from inter-State and overseas. The flow-on effects of these contractions had profound implications for the industrial market.

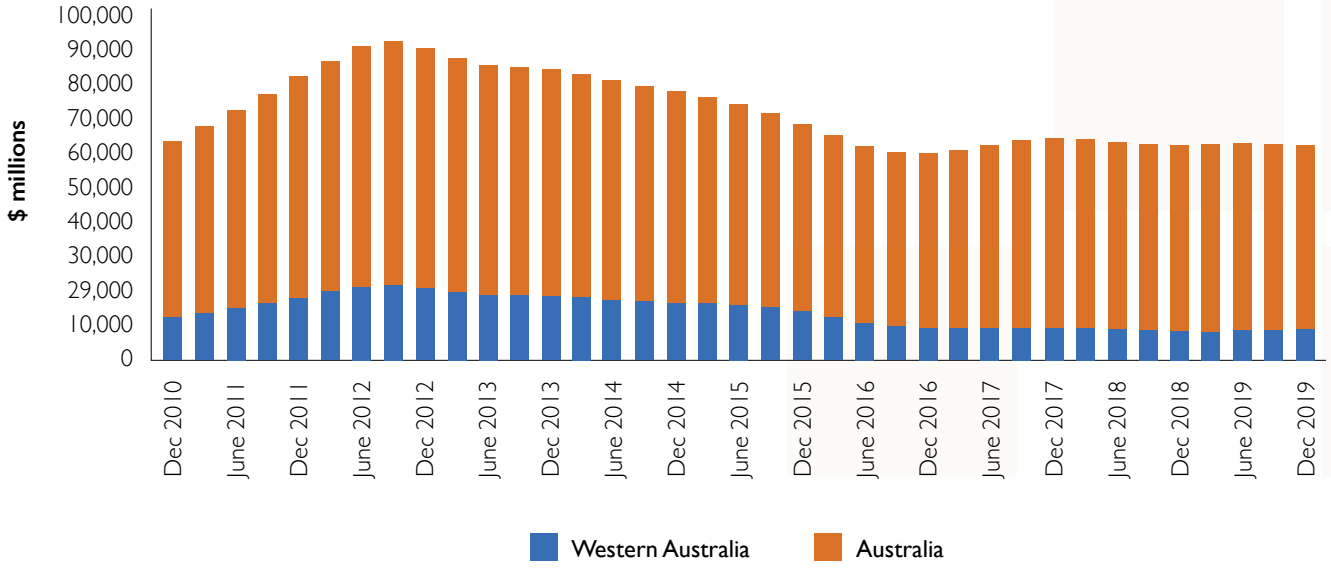
Prior to the impacts of COVID-19, recent data for consumer sentiment, employment, investment and population growth were indicative of improving economic conditions (Table 1). The implications of the current COVID-19 pandemic and measures necessary to control its spread have affected recent investment decisions and heightened uncertainty regarding the broader economic outlook.

Business Investment and Confidence

Business investment is a critical component of economic activity and a major influencing factor in industrial land demand. Investment is a key driver of the state's economic growth with increased business investment leading to growth in employment, labour force and population.

Figure 3 shows that over the past decade, business investment has varied substantially. Investment surged in the 2010-11 and 2012-13 financial years as a result of high commodity prices and heavy investment in the resource sector, particularly LNG and iron ore. At that time, business investment in Western Australia accounted for approximately 30 per cent of all business investment in Australia. In the wake of the resources boom, however, the State recorded a continuous decline in business investment and weaker economic growth. Business investment in Western Australia fell to 17 per cent of the national total In December 2019 (Figure 3).

Figure 3: Business Investment – Chain Volume, seasonally adjusted – Australia and Western Australia



Source: Australian Bureau of Statistics Catalogue 5206.0 - Australian National Accounts: National Income, Expenditure and Product, Sep 2019

[5] Department of Treasury, 2014, The Structure of the Western Australian Economy

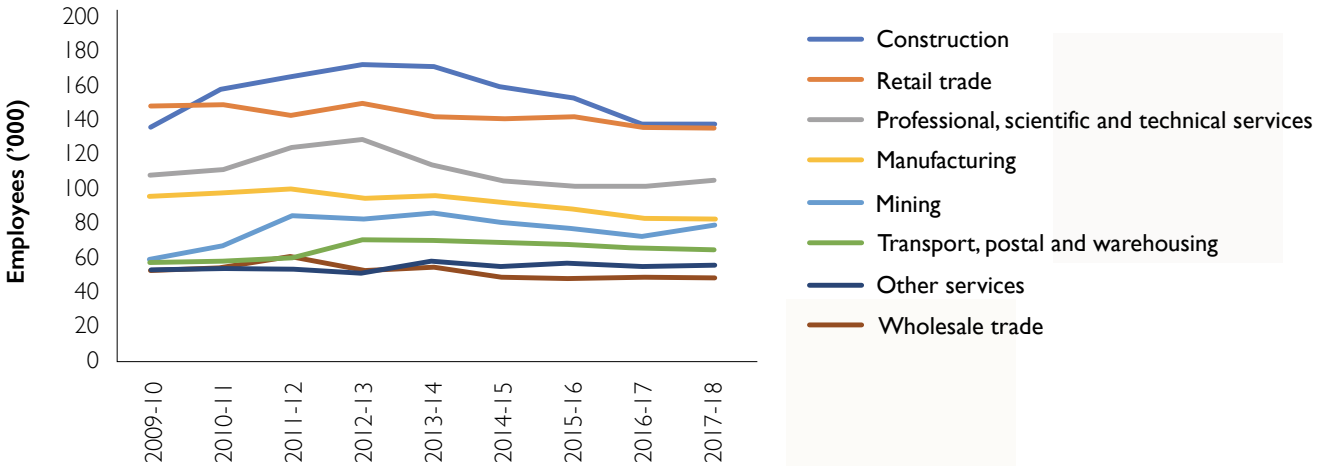
Business investment in 2019-20 had been forecast to return to growth for the first time in seven years, due to construction work on major iron ore projects, large investments proposed for LNG developments and stronger iron ore and LNG export volumes[6]. While Western Australia's economic fundamentals remain positive, the uncertainty arising from the current COVID-19 pandemic and recent slump in oil prices are likely to impede the anticipated growth. As Western Australia emerges from the current challenges, an uplift in business investment may lead to a higher demand for labour, ultimately stimulating the domestic economy and increasing demand for industrial land[7,8].

Employment

In many cases, demand for goods and services in Western Australia can result in additional demand for labour and industrial land. Figure 4 shows the changes in employment levels of major industries of employment from 2009-10 to 2017-18 for Western Australia. From 2009-10 to 2017-18, the State recorded employment growth in the mining, construction, transport, postal and warehousing and other services. Mining recorded the biggest growth in employment, increasing by 34 per cent from the 2009-10 to 2017-18 financial year. Manufacturing, retail trade and professional, scientific and technical service experienced decline within the same timeframe, while wholesale trade remained relatively steady.[9]

Employment in Western Australia grew by 0.9 per cent in the 2018-19 financial year, compared to 2.3 per cent in 2017-18. Australia's employment rate also increased in the 2018-19 financial year, growing by two per cent. Employment growth in the state is forecast to increase to 1.5 per cent in 2019-20 and two per cent for 2020-21[10].
The unemployment rate in Western Australia has been steadily improving, last recorded at 5.6 per cent in December 2019, down from 6.3 per cent in December 2018.

Figure 4: Change of employment by industry - Western Australia



Source: Australian Bureau of Statistics Catalogue 8155.0 – Australian Industry 2017-18 (2019)

[6] Department of Treasury, 2019, 2019-20 Government Mid-year Financial Projections Statement

[7] Western Australian Planning Commission, 2012, Perth and Peel Development Outlook 2011/12

[8] Chamber of Commerce and Industry of Western Australia, 2019, Outlook

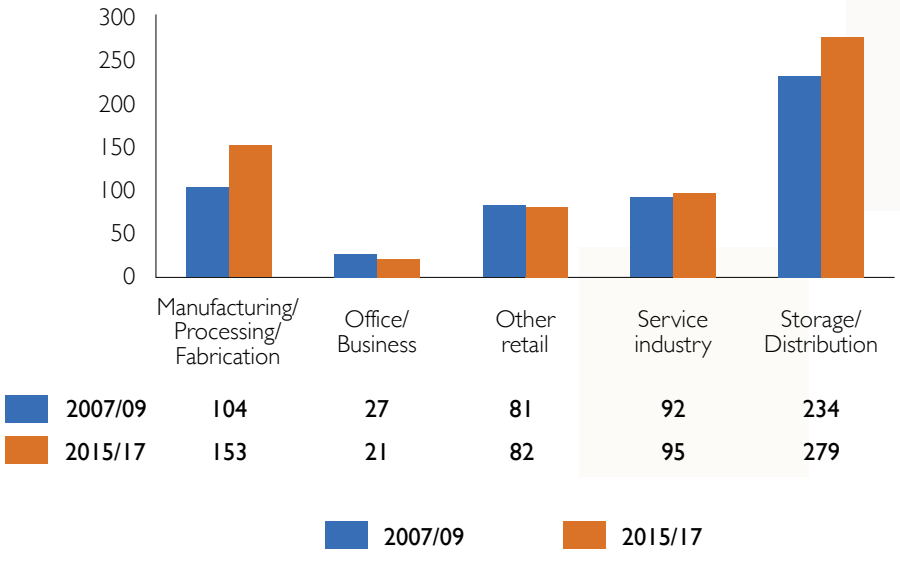
[9] Department of Jobs, Tourism, Science and Innovation, 2019, WA Economic Profile

[10] Department of Treasury (2018), 2018-19 Government Mid-year Financial Projections Statement

The increased scale of manufacturing and fabrication operations and technological advancements can both be considered drivers of industrial land demand in Western Australia. Figure 5 shows the theoretical floorspace per employee captured during the 2007/09 and 2015/17 Land Use Employment Survey (LUES). The results indicate the amount of floorspace per employee increased substantially by almost 50 square metres from 2007/09 to 2015/17 for industrial land uses such as manufacturing, processing, and fabrication.

An increase in the volume of floorspace allocated per employee may be indicative of a greater use of machinery and increasing levels of automation within the industrial sector in recent years. This is particularly prevalent in the mining sector, where it is anticipated 77 per cent of jobs will be altered by technological innovations in the next five years[11]. For example, the use of autonomous vehicles allows operators to work offsite. Future mining related occupations are also expected to change to combine traditional mining skills with modern scientific, technical and trade skills', essentially creating a new generation of skilled workers.

Figure 5: Floorspace per employee, Perth and Peel



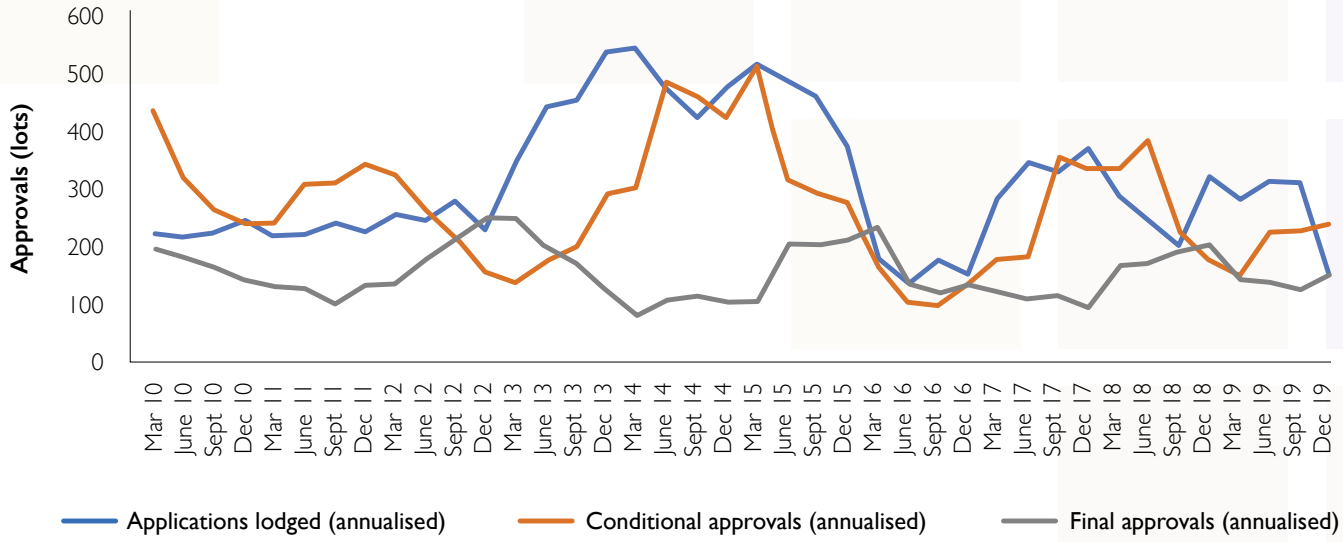
Source: 2007/09 and 2015/17 Perth and Peel Land Use and Employment Survey

[11] Minerals Council of Australia, 2019, The Future of Work

Land pipeline

Figure 6 shows the number of industrial applications for subdivision which were lodged, as well as conditional and final approvals granted for Perth and Peel over ten years. Throughout the time series, the number of lots granted final approval remain lower than the number of lots lodged for approval. Within some quarters, final approvals exceeded or corresponded to the number of conditional approvals granted, however from 2010 to 2019, conditional approvals were generally higher than final approvals Analysis indicates that roughly half of conditional industrial approvals in the Perth and Peel regions progress to final approval, compared to approximately two thirds for residential developments. This variation between conditional and final approvals being granted may be indicative of volatility in the industrial land subdivision market as well as a lower degree of certainty regarding demand for industrial land within Perth and Peel.

Figure 6: Perth and Peel conditional and final subdivision approval (twelve month rolling total)

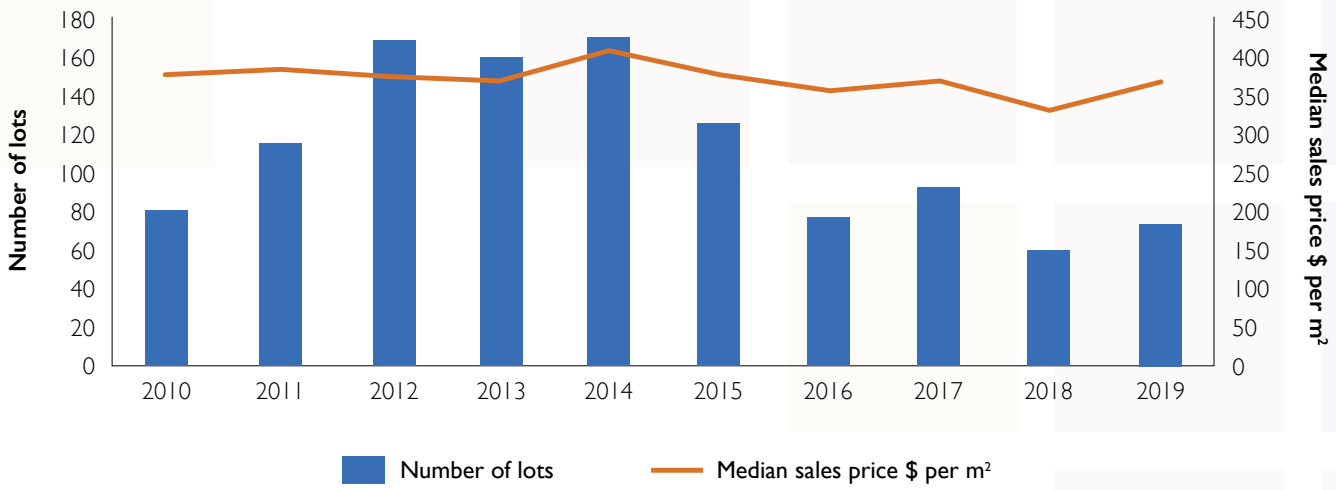


Source: Department of Planning, internal database (2019)
Note: Data has been annualised.

Land Values

Figure 7 shows the median value per square metre of industrial lots in Perth and Peel. The median price per square metre is a useful indicator of the value and therefore the demand of industrial land. Both the number of industrial lot sales as well as the value of industrial land per square metre has mostly declined from 2014 onwards. In 2019 Perth and Peel recorded a median sales price of $360 per square metre.

Figure 7: Value of industrial lots per m², Perth and Peel, 2010 to 2019



Source: Landgate (2019)

3 Industrial land consumption

Key Points:

- Industrial land consumption in the Perth metropolitan and Peel region has fluctuated between 50 and 550 hectares per annum since 2009 (net figure, based on subdivision).
- On average, approximately 210 hectares of industrial land was consumed over the same period (net figure, based on subdivision).
- At times, there can be a mismatch between development ready industrial land supply and the preferences of potential buyers and tenants.

The term 'land supply' is often used in different contexts with different meanings. In its broadest sense it can refer to land identified for future development, regardless of whether that land is suitably zoned or available for development. It can also be used to refer to the amount of land that is zoned for industrial development or the quantity of serviced industrial lots that are available for purchase.[12]

Industrial land supply in the context of this section refers to 'development ready' land, namely where industrial development is permitted (industrial zoned lots or where an appropriate structure plan is in place) within developed or developing industrial estates that have generally been serviced with appropriate infrastructure. Measuring industrial land supply at this point in the planning process provides an indication of land that is, in theory, ready to be occupied by an end user.

Supply challenges

The supply of development ready industrial land can at times be misaligned with the requirements of potential buyers and tenants. Issues include difficulties in securing appropriately sized lots or inadequate infrastructure and servicing. Proximity to major transport infrastructure including the airport, rail and major arterial roads with heavy vehicle access is an essential requirement for many prospective industrial land buyers and tenants. The availability of electrical, water, gas and telecommunications infrastructure (access to a high-speed broadband network in particular) are also sought after.

Consumption rates

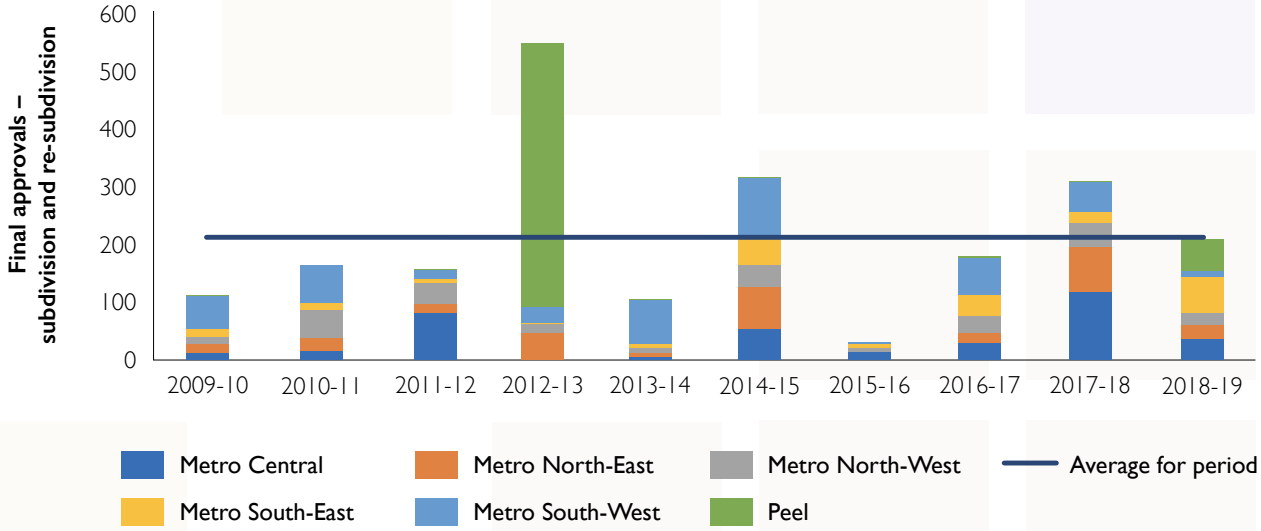
Due to the highly cyclically and at times volatile nature of industrial land development, historical consumption rates are only one indicator of potential future demand for industrial land. The consumption rate for industrial land in the Perth metropolitan and Peel regions indicates a generally cyclical trend, with consumption through subdivision fluctuating from 50 to 550 hectares per annum. Industrial land consumption through subdivision averaged approximately 210 hectares per annum between 2009-10 and 2018-19 (Figure 8). It should be noted however, that assessing land consumption through subdivision provides a net consumption figure. The gross consumption of industrial land is approximately 15 to 30 per cent higher, after taking into account land set aside for roads and infrastructure services.

Industrial subdivision approvals

Final subdivision approvals represent lot creation and broadly correspond to zoned land consumption. The type and form of industrial development that arises from subdivision, however, can be difficult to accurately monitor as the subdivision of industrial land provides limited information on the type and intensity of industrial development proposed for the land.

[12] Western Australian Planning Commission, 2020, *Urban Growth Monitor!*

Figure 8: Historical industrial land consumption – Final subdivision approvals



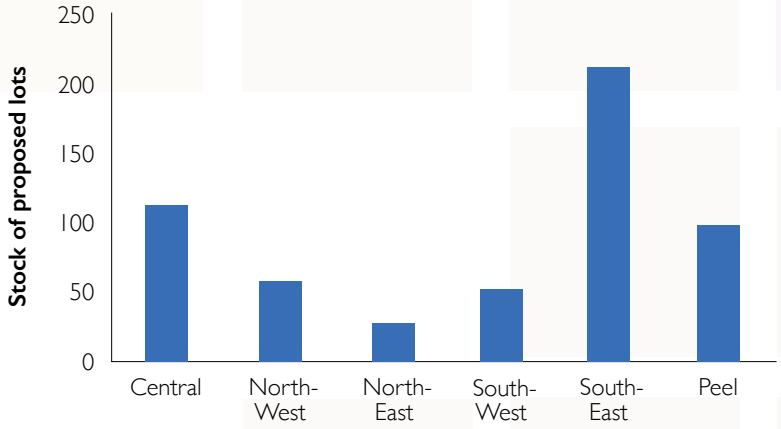
Source: Department of Planning, Lands and Heritage, internal database (2019)

Table 2: Industrial subdivision activity 2019

Sub-region	Applications lodged	Applications under assessment	Conditional approvals granted	Stock of current conditional approvals	Final approvals issued
	1 January 2019 - 31 December 2019	As at 31 December 2019	1 January 2019 - 31 December 2019	As at 31 December 2019	1 January 2019 - 31 December 2019
	Proposed lots	Proposed lots	Proposed lots	Proposed lots	Lots
Central	15	5	25	113	49
North-west	6	0	10	59	19
North-east	15	53	8	28	20
South-west	60	39	30	53	46
South-east	49	2	49	213	10
Perth metropolitan region sub-total	**145**	**99**	**122**	**466**	**144**
Peel	4	0	113	99	5
Total	**149**	**99**	**235**	**565**	**149**

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

Figure 9: Stock of proposed lots with current conditional approval – December 2019



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

As at the end of December 2019, there were 565 lots with conditional approvals for industrial subdivision across Perth and Peel (Table 2). The highest stock of proposed lots with conditional approval was in the South-east sub-region (Figure 9). From 1 January 2019 to 31 December 2019, 235 lots were granted conditional approval across Perth and Peel.

The Peel sub-region accounted for 48 per cent of conditional approvals granted. Final approvals were issued for 149 lots in the same 2019 period. The Central and South-west sub-region accounted for 33 and 31 per cent, respectively, of final approvals granted. It is important to note that due to a number of factors such as landowner intentions, market conditions and servicing conditions, not all conditional approvals reach final approval stage.[13]

[13] Western Australian Planning Commission, 2012, *Economic and Employment Lands Strategy*

4 Industrial land use in industrial centres

Section 3 of this report is based on the tiered land supply assessment model, the central output of the Integrated Regional Information System (IRIS). See the Glossary for an explanation of the model.

Due to the nature of local planning scheme and land tenure information, Perth Airport, Jandakot Airport and the Pinjarra industrial centres are excluded from the majority of this assessment. Figure 10 is a graphical representation of the tiered land supply assessment model used for this report.

4.1 Tier one – Stock of land potentially available for development

Using the Integrated Regional Information System model, land zone characteristics of the 13 industrial centres, across Perth and Peel are profiled in this section. The industrial centres in this report are defined using the Metropolitan and Peel region schemes. The Perth and Jandakot airports have been omitted from this analysis as they are not subject to local planning scheme zoning and do not have premises information in Landgate's property valuation database. The Pinjarra industrial centre, which is profiled in later sections of this report has been omitted from this section as no vacant land or premises valuation have been recorded in Landgate's property valuation database.

The 13 industrial centres analysed within the report do not cover every portion of industrial zoned land within the Perth Metropolitan and Peel region. Under the Metropolitan and Peel region schemes, there is a total of 15,680 hectares of industrial zoned land. Excluding the airports and Pinjarra industrial centre, the 13 remaining centres analysed in this report cover a total of 8,320 hectares[14] which constitutes approximately 50 per cent of industrial zoned land under the Metropolitan and Peel region schemes.

The industrial centre boundaries used in this report are defined using the extent of zones in the Metropolitan and Peel region schemes. In comparison, the 2015 *Economic and Employment Land Monitor* (EELM) used the Australian Bureau of Statistics 2011 Destination Zones (DZN) to recreate each centre using a best fit approach. As such caution should be applied in comparisons between the two reports.

The IRIS uses a hierarchical classification system to allocate over several thousand individual local planning scheme zone categories across Western Australia into one of seven simplified primary land use categories. The seven primary land-use categories are;

- industrial,
- commercial/business,
- residential,
- recreation/conservation,
- rural,
- special and
- infrastructure and public purpose.

Using the IRIS model, tier one provides information on the stock of zoned land potentially available for development for each of the primary land use categories in the 13 industrial centres.

According to IRIS, there is approximately 7,510 hectares of industrial zoned land under the Perth Metropolitan and Peel region schemes (all primary land use categories) in total for the 13 industrial centres (Table 3). Figure 11 displays the stock of zoned land (all primary land use categories) in each industrial centre. Of the 7,510 hectares, over 90 per cent (7,000 hectares) is categorised as industrial for its primary land use (Figure 12).

[14] Note: This figure includes roads where IRIS figures do not.

Figure 10 Integrated Regional Information System (IRIS) tiered land supply assessment model – Industrial centres

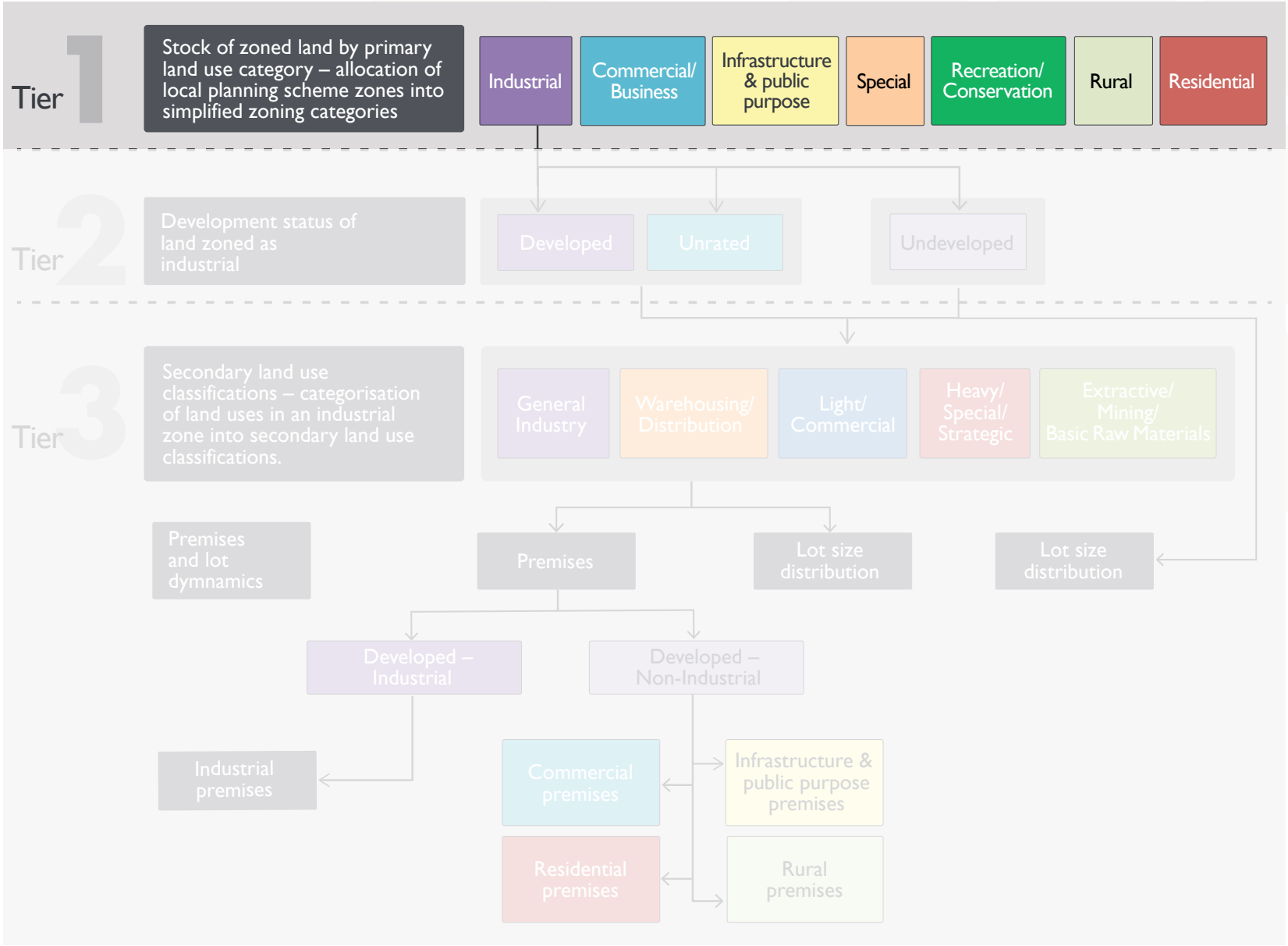
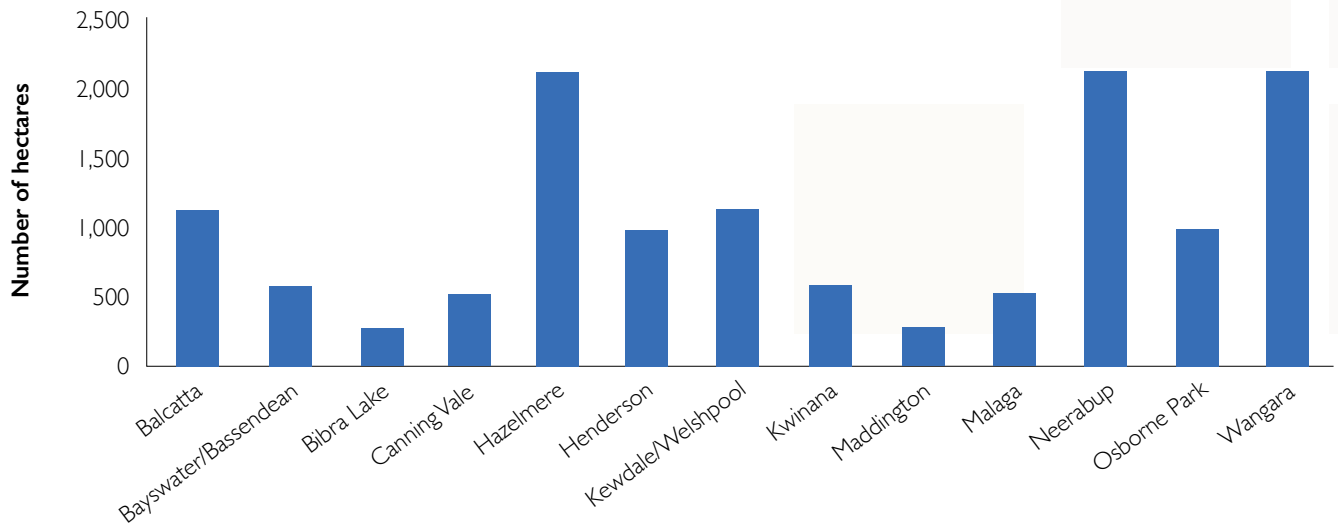


Table 3: Tier one – Stock of zoned land by industrial centre

Industrial Centre	Stock of zoned land (ha)	Proportion of total industrial zoned land (Perth and Peel)
Balcatta	180	1%
Bayswater/Bassendean	300	2%
Bibra Lake	440	3%
Canning Vale	550	4%
Hazelmere	220	1%
Henderson	300	2%
Kewdale/Welshpool	1,020	6%
Kwinana	2,100	13%
Maddington	310	2%
Malaga	430	3%
Neerabup	980	6%
Osborne Park	90	1%
Wangara	570	4%
Grand Total	**7,510**	**48%**

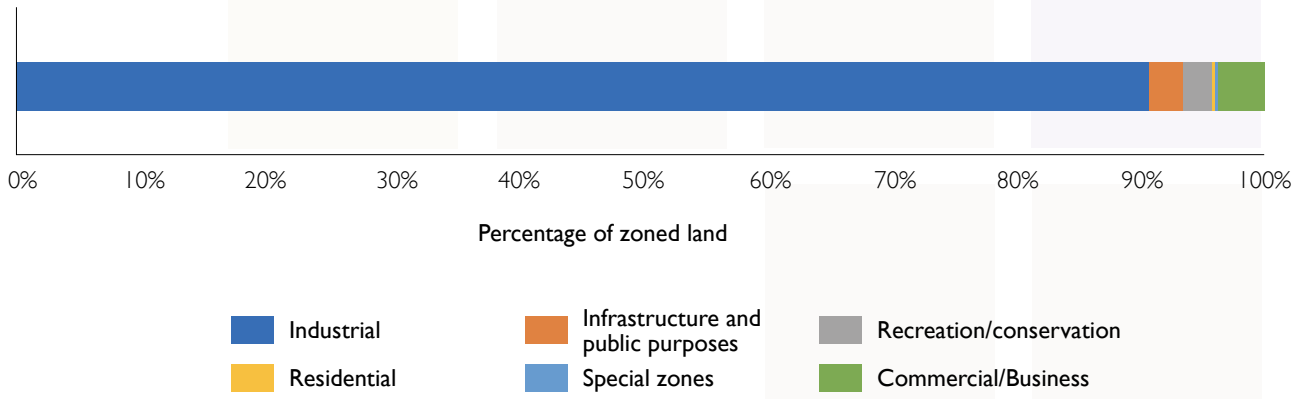
Source: IRIS, Department of Planning, Lands and Heritage (2019).
Note: Stock of zoned land excludes roads.
Note: Numbers may not sum due to rounding

Figure 11: Stock of zoned land by industrial centre



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

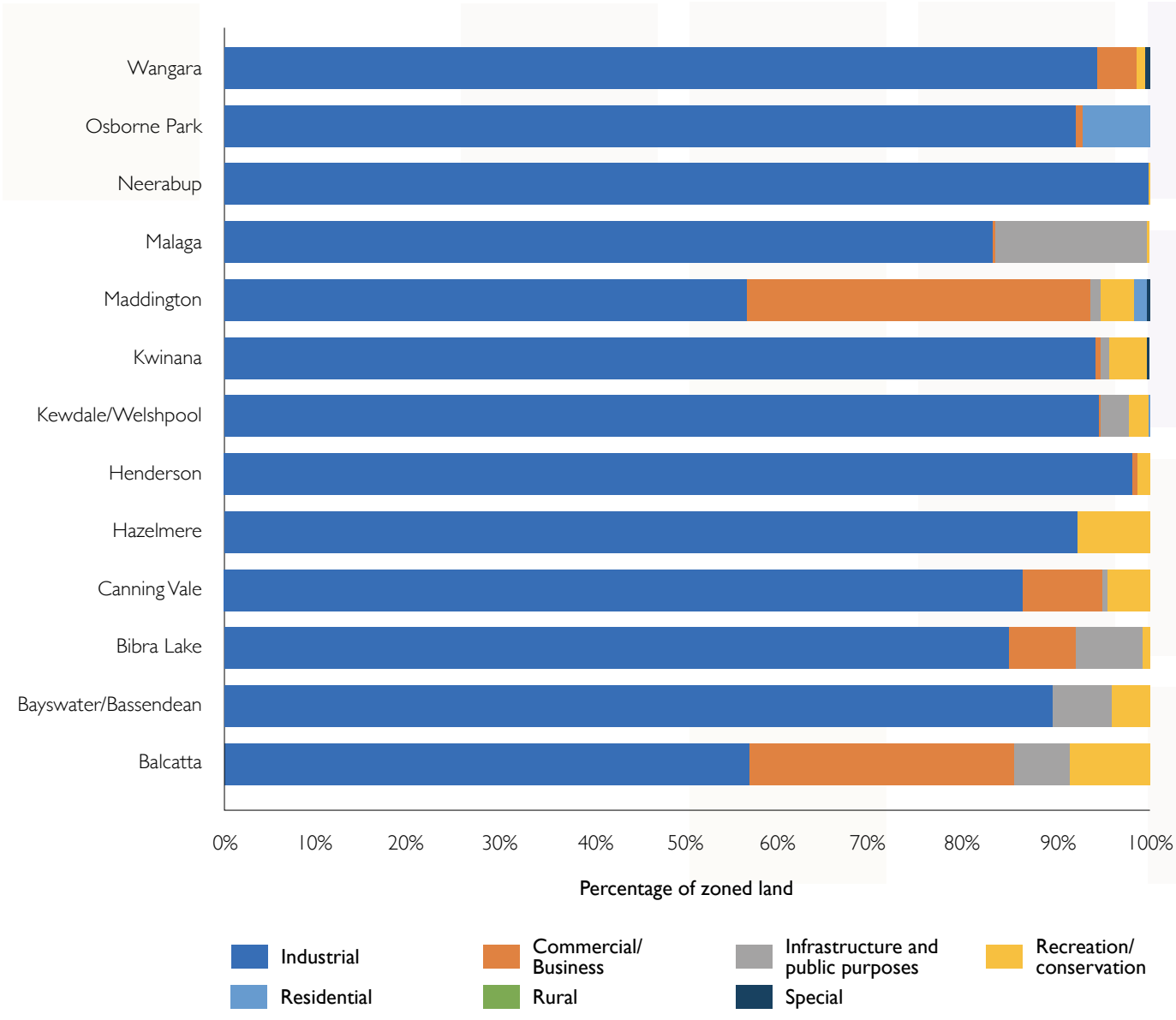
Figure 12: Primary land-use categories as a share of zoned land (all industrial centres)



Source: IRIS, Department of Planning, Lands and Heritage (2019)
Note: Stock of zoned land excludes 'No Zone' and 'No LPS' primary land use categories.

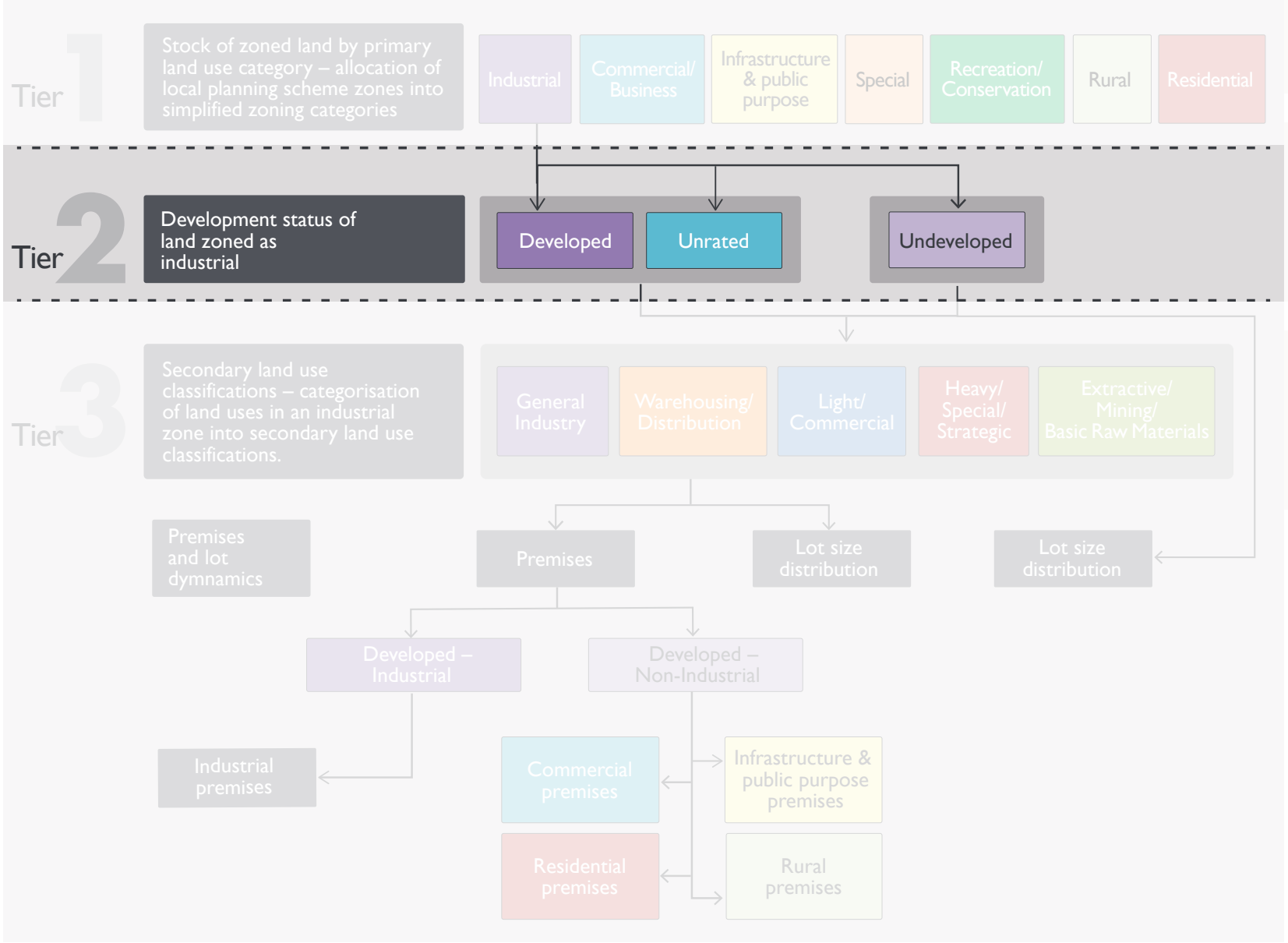
Figure 13 below shows the proportions of zoned land by primary land use category for each of the 13 industrial centres (excluding Perth Airport and Jandakot Airport). Primary land use categories are allocated into one of seven simplified primary land use categories from several thousand individual local planning scheme zone categories. As shown in Figure 11, the highest stock of zoned land exists in the Kwinana industrial centre, of which 94 per cent is categorised industrial (Figure 13).

Figure 13: Primary land use categories as a share of zoned land for each industrial centre



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

Figure 14 Integrated Regional Information System (IRIS) tiered land supply assessment model – Tier two



4.2 Tier two – Development status of land zoned as industrial

While Tier one looks at the total stock of zoned land and all primary land use categories, information provided at the tier two and tier three levels only relates to land zoned as industrial for its primary purpose. It should be noted that Table 4 and Figure 16 include the Perth and Jandakot Airports for comparison purposes only. Due to the nature of local planning scheme and land tenure information, aerial imagery, rather than Landgate data has been used to determine the stock of developed and undeveloped land for these sites.

Tier two takes a closer look at industrial zoned land to determine the stock of developed and undeveloped land. Using the IRIS model, the stock of undeveloped land is a measure of future land supply. Within the IRIS methodology, lots which contain a premises record are considered to be developed. There are cases, however, where the lot retains future development potential under the current industrial zoning. Examples include lots with a rural premises record that have the potential to be redeveloped with industrial premises.

At the tier one level, it was shown that there is approximately 7,510 hectares of total zoned industrial land, under the Perth Metropolitan and Peel region schemes within the study areas. Of this, approximately 7,000 hectares is zoned as industrial under the primary land use categories. Figure 15 shows the development status of the 7,510 hectares of land zoned. Development status refers to the status of land zoned industrial, whether the lot is classified as developed, undeveloped or unrated.

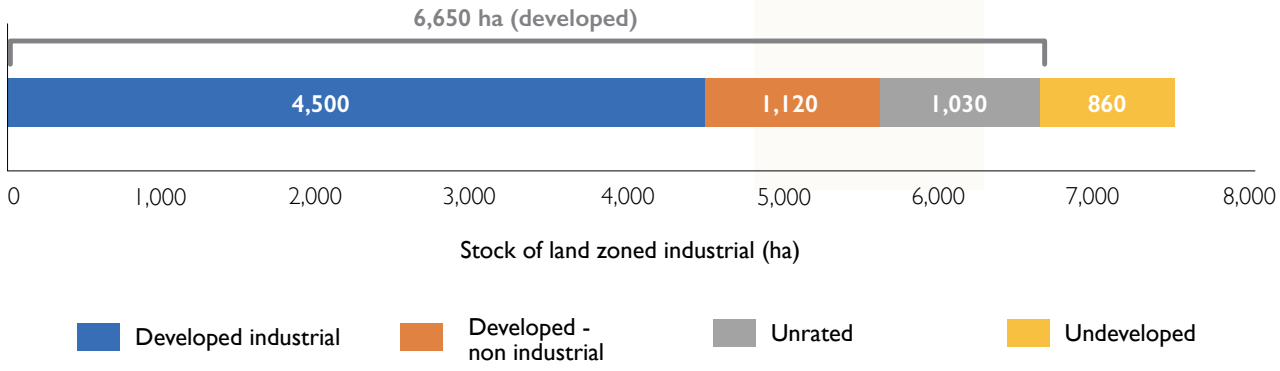
Developed

Developed refers to lots for which premises information has been captured in Landgate's property valuation database. Of the 7,510 hectares of land zoned as industrial, approximately 6,650 hectares (88 per cent) is categorised as developed.

Out of the 6,650 hectares of developed land, 4,500 hectares (60 per cent) can be further classified as developed – industrial use, and 1,120 hectares (15 per cent) as developed – non-industrial use. Non-industrial development refers to development (premises) which differ in type from the principle land use objective of land zoned as industrial. Examples of non-industrial development include commercial premises or residential or rural development (premises) on land zoned as industrial in the IRIS model.

If in the future, lots which were originally developed with residential or rural premises were redeveloped for industrial uses, the lot would notionally contribute to land supply. Lots which are developed with commercial premises are not considered to have future redevelopment potential and do not notionally contribute to future land supply. Further details on premises information are provided in Tier three.

Figure 15: Development status of land categorised as industrial (all industrial centres)



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

There is approximately 1030 hectares of land zoned as industrial which is categorised as unrated. As unrated lots may include State or local government owned lots or premises exempt from rates, for the purposes of measuring future land supply, in this analysis, unrated lots are considered to be developed.

Undeveloped

Undeveloped lots refers to lots which have been recorded as vacant in Landgate's property valuation database. There is approximately 860 hectares (12 per cent) of land zoned as industrial classified as undeveloped.

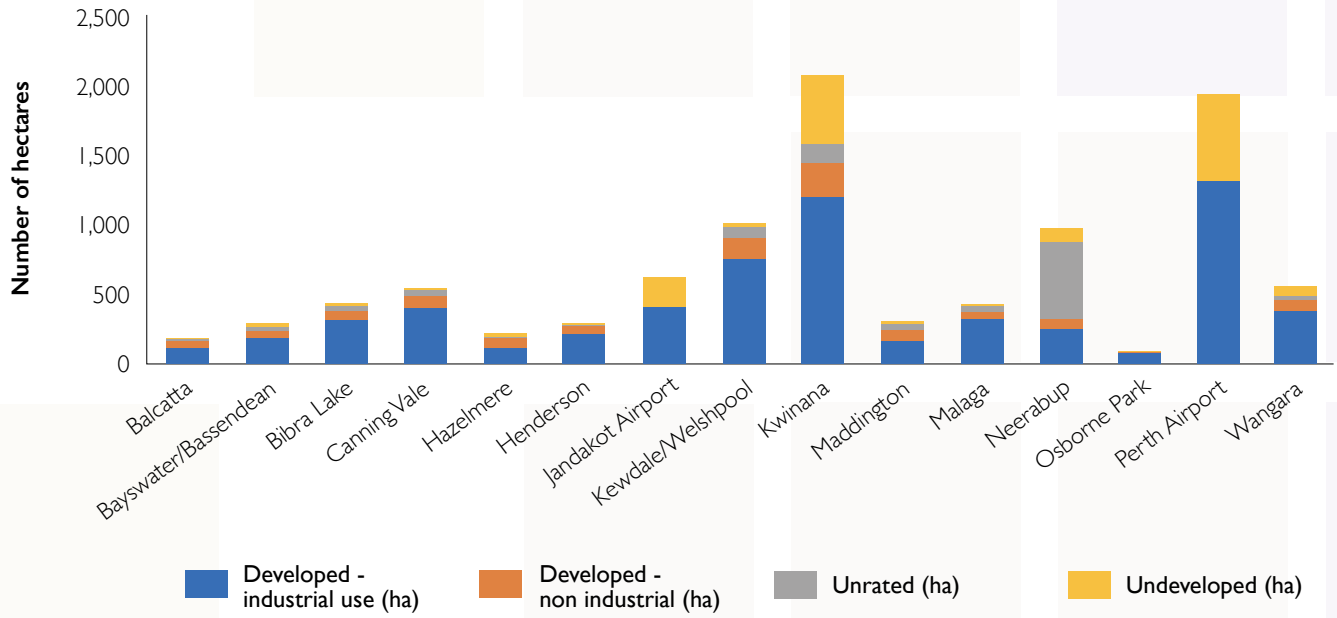
Table 4 shows the stocks of developed, undeveloped and unrated land zoned as industrial by industrial centre. For comparison, the Perth and Jandakot Airports have been included in Table 4,

Table 4: Developed and undeveloped land zoned as industrial by industrial centre

	Lots with a property record		Lots with no property record	Lots with a vacant property record	Total
Industrial Centre	Developed - Industrial Use (ha)	Developed - non industrial (ha)	Unrated (ha)	Undeveloped (ha)	
Balcatta	110	60	8	1	180
Bayswater/Bassendean	190	50	30	40	300
Bibra Lake	320	60	40	20	440
Canning Vale	400	90	40	20	550
Hazelmere	110	70	10	30	220
Henderson	210	60	8	20	300
Kewdale/Welshpool	760	160	80	20	1,020
Kwinana	1,210	250	140	500	2,100
Maddington	160	80	50	20	310
Malaga	330	50	40	20	430
Neerabup	250	80	560	100	980
Osborne Park	70	10	3	1	90
Perth Airport		1,329	n/a	636	1,970
Jandakot Airport		406	n/a	223	630
Wangara	380	83	29	75	570
Total	**4,500**	**1,120**	**1,030**	**860**	**7,510**

Source: IRIS, Department of Planning, Lands and Heritage (2019)
Note: Data for Perth and Jandakot Airports are estimates only and are based on aerial imagery.
Note: Figures have been rounded.

Figure 16: Stock of developed and undeveloped land zoned as industrial by industrial centre

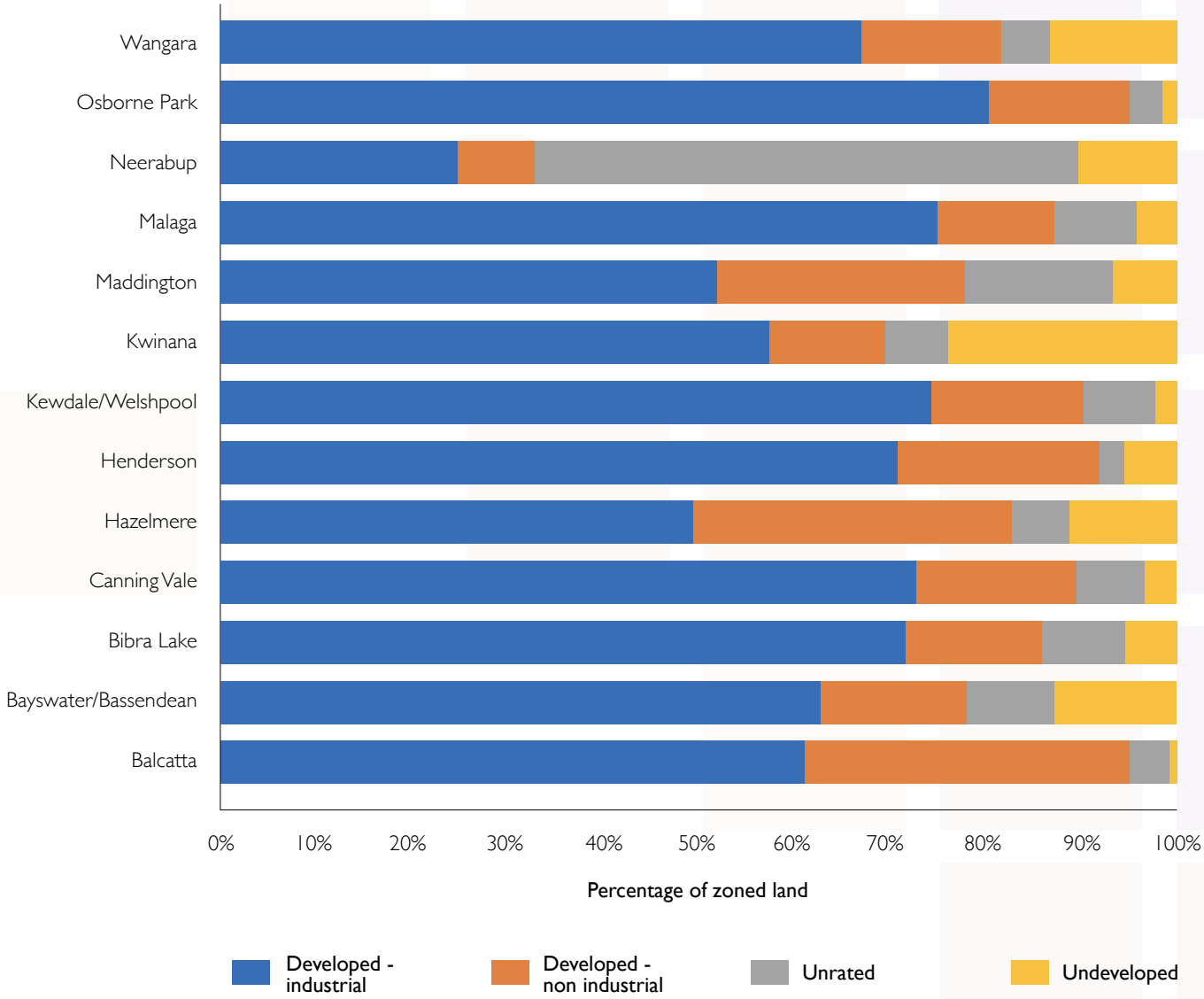


Source: IRIS, Department of Planning, Lands and Heritage (2019)

however, due to the nature of local planning scheme and land tenure information, aerial imagery has been used to determine the stock of developed and undeveloped land for these sites. Table 4 combines "developed – industrial use" and "developed – non industrial" for the airports.

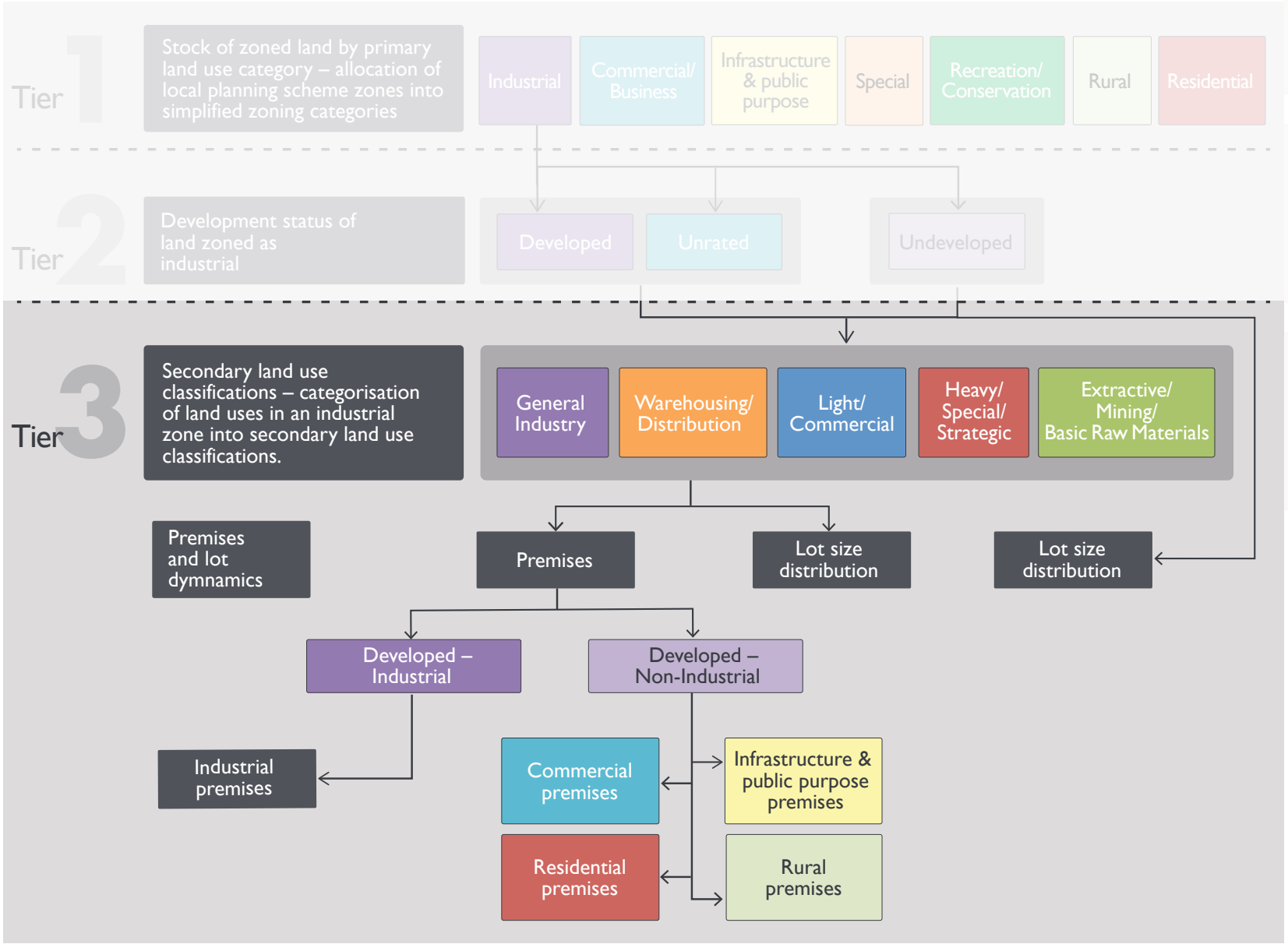
Figure 16 shows the development status of land zoned as industrial by industrial centre. It provides a comparative view of development status as a proportion of land zoned as industrial for each of the 15 industrial centres (including Perth Airport and Jandakot Airport). As with table 4, the Perth and Jandakot Airports have been included, however, due to the nature of local planning scheme and land tenure information, aerial imagery has been used to determine the stock of developed and undeveloped land for these sites. In figure 16, "developed – industrial use" and "developed – non industrial" have been combined and are shown in blue.

Figure 17: Primary land use categories as a share of zoned land for each industrial centre



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

Figure 18 Integrated Regional Information System (IRIS) tiered land supply assessment model – Tier two



4.3 Tier three – Land use characteristics of land categorised as industrial

The information provided in tier three only relates to land categorised as industrial in the primary land use category. Tier three allows further exploration into the characteristics of land use on industrial land into:

- secondary land-use classifications;
- the lot size distribution; and
- the nature of development (premises) types against the intended industrial zone through assessment of premises records by Landgate against local planning scheme zoning.

Secondary land-use classifications

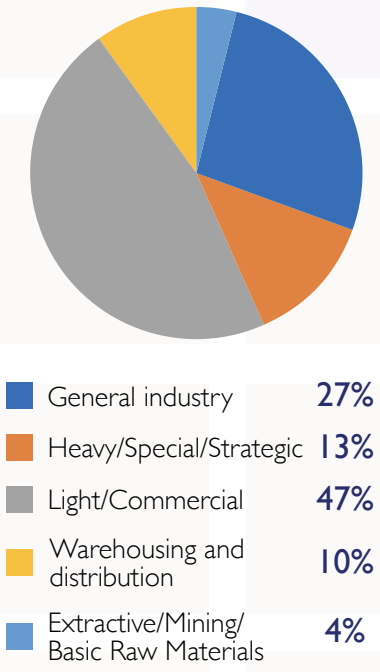
Using the IRIS model, the primary zoning categories from tier one can be categorised into secondary land-use classifications. The secondary land-use classifications present a finer grained analysis of land use for the 13 industrial centres (excluding Perth Airport and Jandakot Airport).

For land categorised as industrial at the tier one level, the secondary land-use classifications for the 13 industrial centres are: general industry, heavy/special/strategic, light/commercial, warehousing and distribution, and extractive/mining/basic raw materials.

Figure 19 shows the proportion of secondary land use classifications across the 13 industrial centres. Light/commercial uses comprise almost half of all use classes in industrial centres.

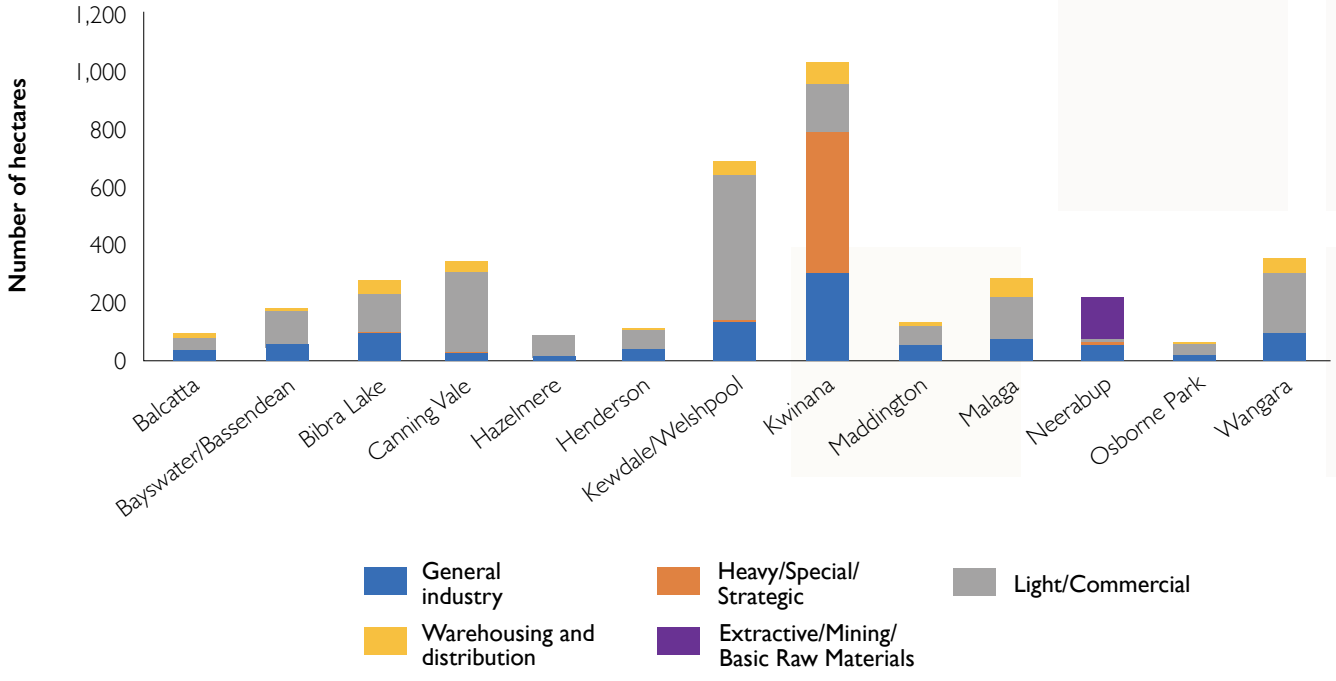
Figure 20 displays the secondary land use classifications for individual industrial centres. Based on the stock of land, light/commercial uses are most significant in the Kewdale/Welshpool industrial centre while extractive/mining/basic raw materials uses are substantial in the Neerabup industrial centre. Heavy/special/strategic uses are predominantly located in the Kwinana industrial centre though small stocks are present in the Bibra Lake and Canning Vale industrial centres.

Figure 19: Secondary land use classifications – share of land categorised as industrial



Source: IRIS, Department of Planning, Lands and Heritage (2019)
Note: numbers may not sum due to rounding

Figure 20: Secondary land use classifications by industrial centre



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

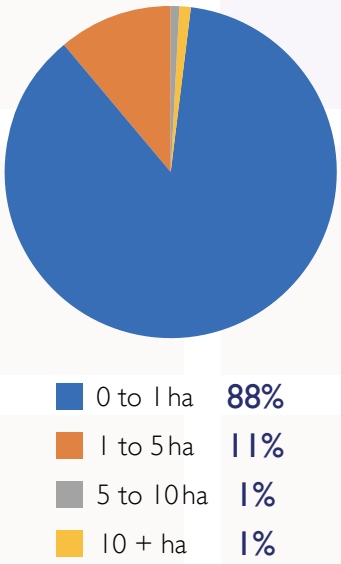
Figure 21 depicts the various secondary land use classifications as a proportion of land categorised as industrial for each of the 13 centres.

The Maddington industrial centre has the highest proportion of general industry uses, while light/commercial uses are predominant in the Canning Vale industrial centre. The highest proportion of Warehousing and distribution uses were located within the Malaga and Bibra Lake industrial centres.

Lot size distribution

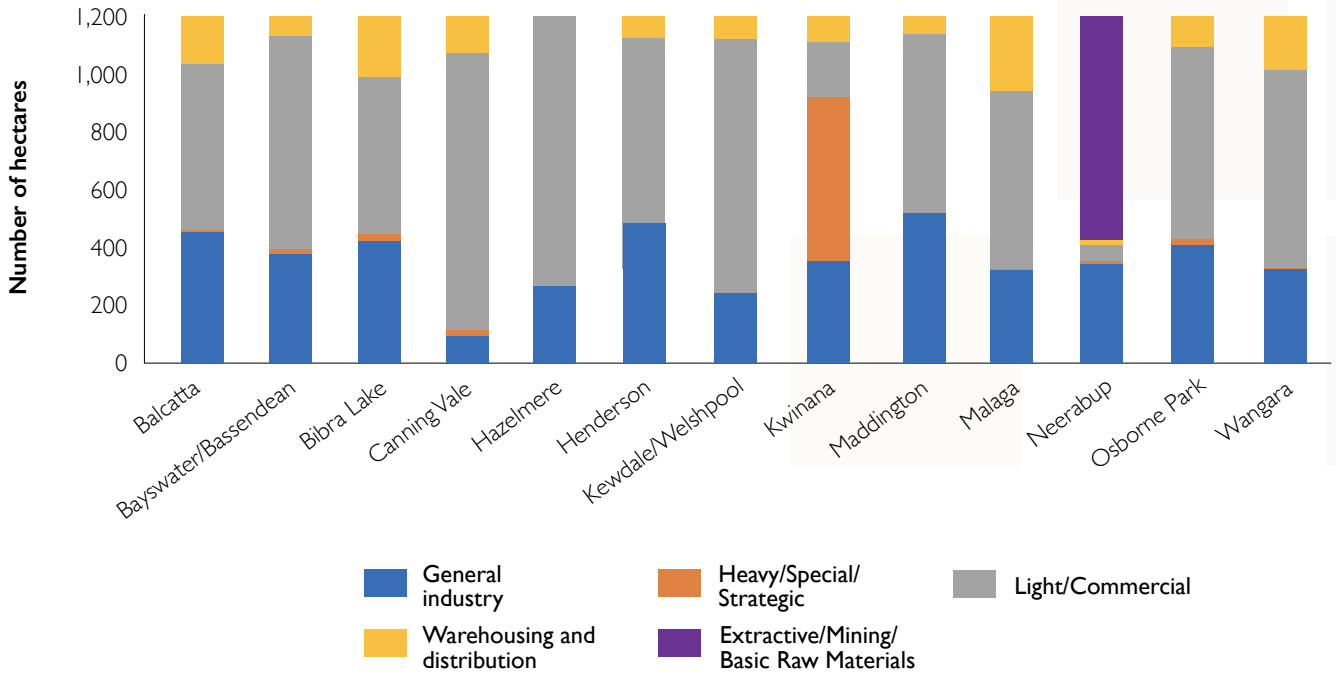
Lot size distribution analysis in this section relates specifically to lots on land categorised as industrial in tier one. The proportion of lots on land categorised as industrial in tier one that fall into each of the lot size cohorts is depicted in Figure 22. The majority (88 per cent) of lots in the profiled industrial centres are less than one hectare; however, as a proportion of total area, they comprise less than one third of land categorised as industrial, in the industrial centres (Figure 23). Figure 24 shows a finer breakdown of lot size counts and distribution across the industrial centres.

Figure 22: Lot sizes as a proportion of lots on land categorised as industrial



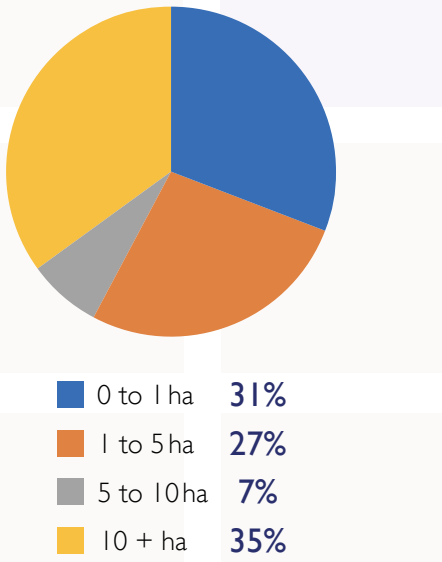
Source: IRIS, Department of Planning, Lands and Heritage (2019)
Note: numbers may not sum due to rounding

Figure 21: Secondary land-use classifications – Share of land categorised as industrial by industrial centre



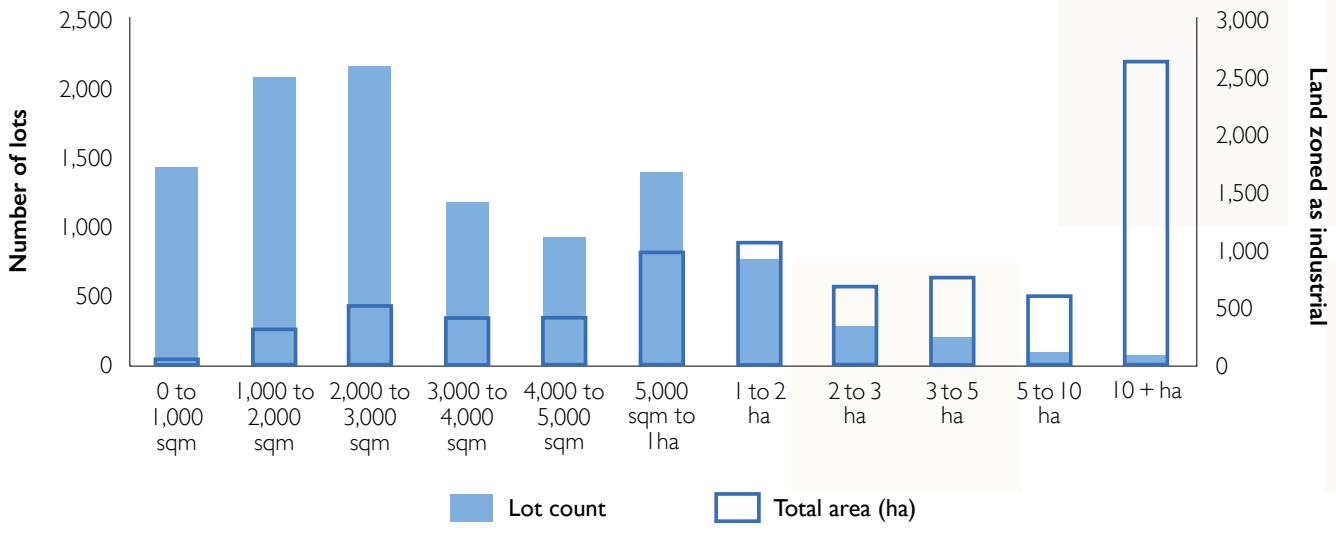
Source: IRIS, Department of Planning, Lands and Heritage (2019)

Figure 23: Lot sizes as a share of land categorised as industrial



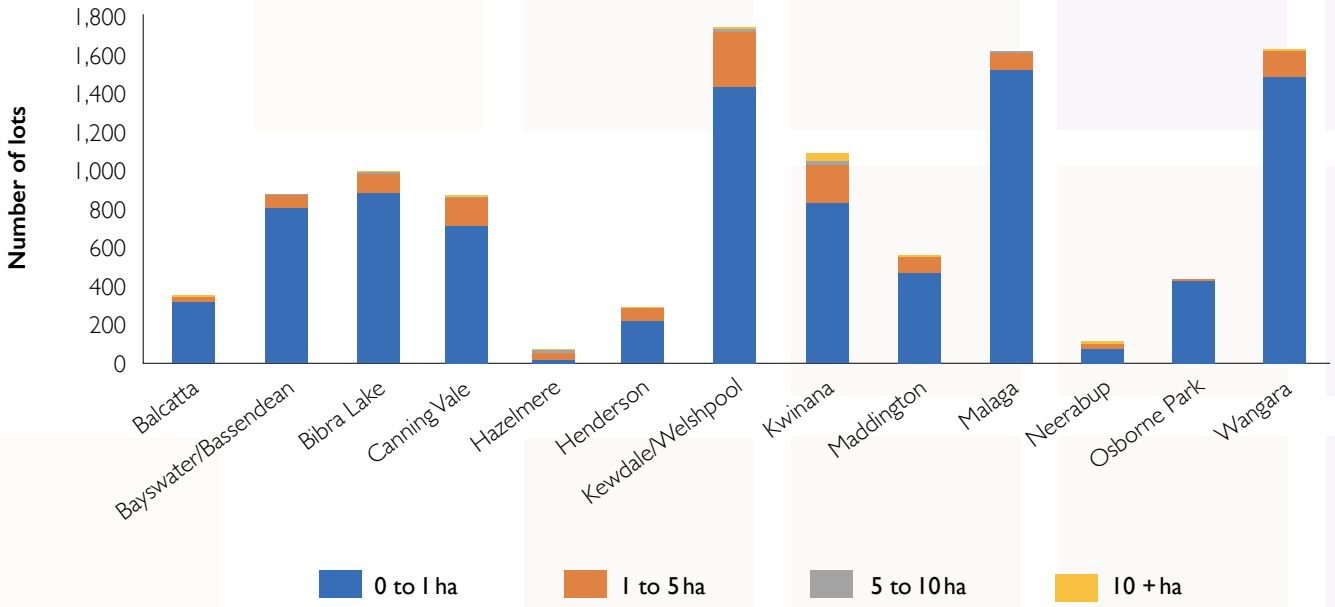
Source: IRIS, Department of Planning, Lands and Heritage (2019)

Figure 24: Lot size count and profile (all industrial centres)



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

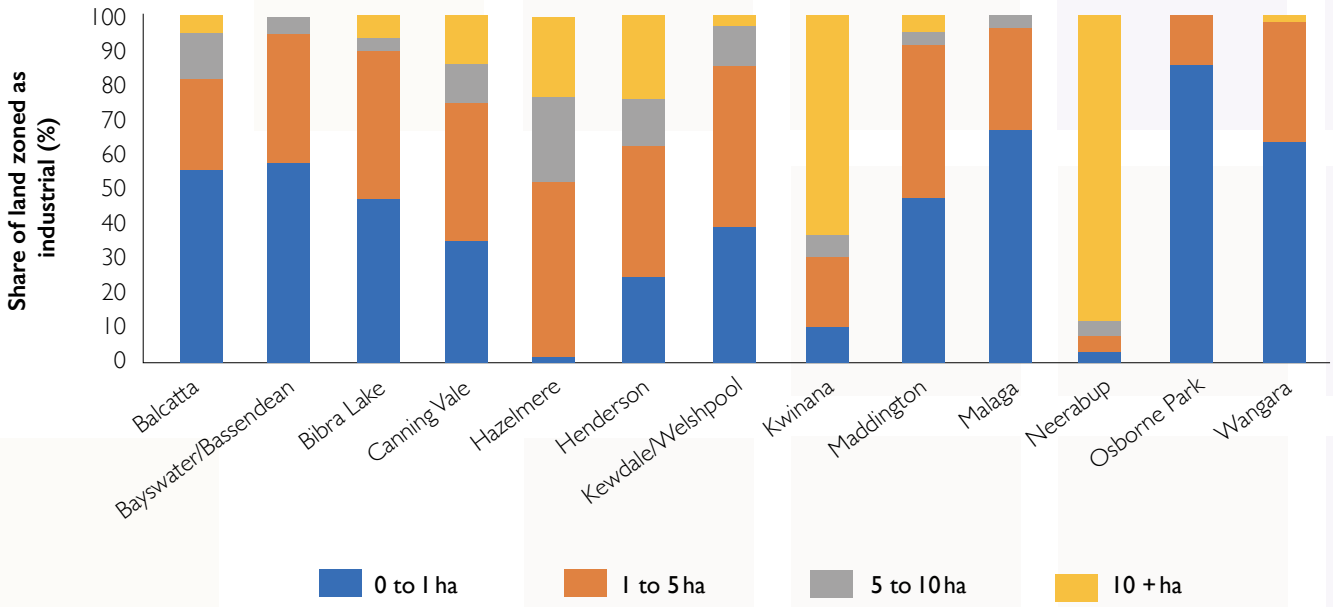
Figure 25: Lot size count by industrial centre



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

Figure 25 shows the lot size counts for each industrial centre. The numbers of lots one to five hectares in size is greatest in the Kewdale/ Welshpool industrial centre. Lots over five hectares are predominantly located in the Kewdale/ Welshpool, Malaga, Wangara and Kwinana industrial centres. Kewdale/Welshpool has the highest number of individual lots of any industrial centre.

Figure 26: Share of lot sizes by industrial centre



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

Figure 26 shows the various lot sizes as a share of industrial land for each industrial centre. Malaga and Osborne Park industrial centres have the highest number of lots under one hectare, with approximately 80 per cent of lots categorised as less than a hectare in each precinct.

Kewdale/Welshpool and Hazelmere industrial centres accounted for the largest proportion of lots between one and five hectares, with 46 and 50 per cent respectively. The greatest proportion of lots that are ten hectares and above are found in the Neerabup industrial centre, with 88 per cent of the centre consisting of these sized lots. Figure 27 shows the lot size count and profile of each of the 13 industrial centres.

Figure 27: Lot size profile by industrial centre

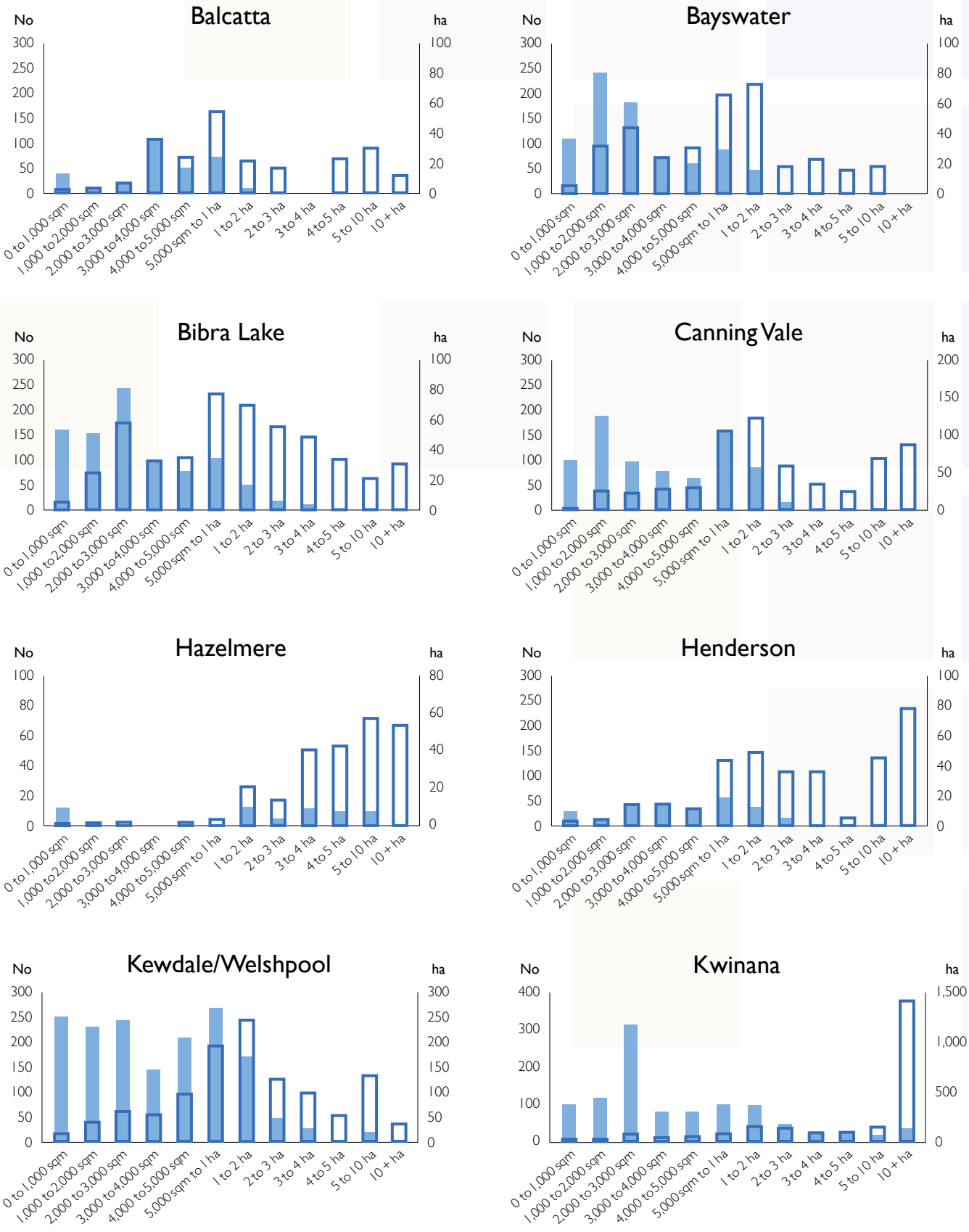
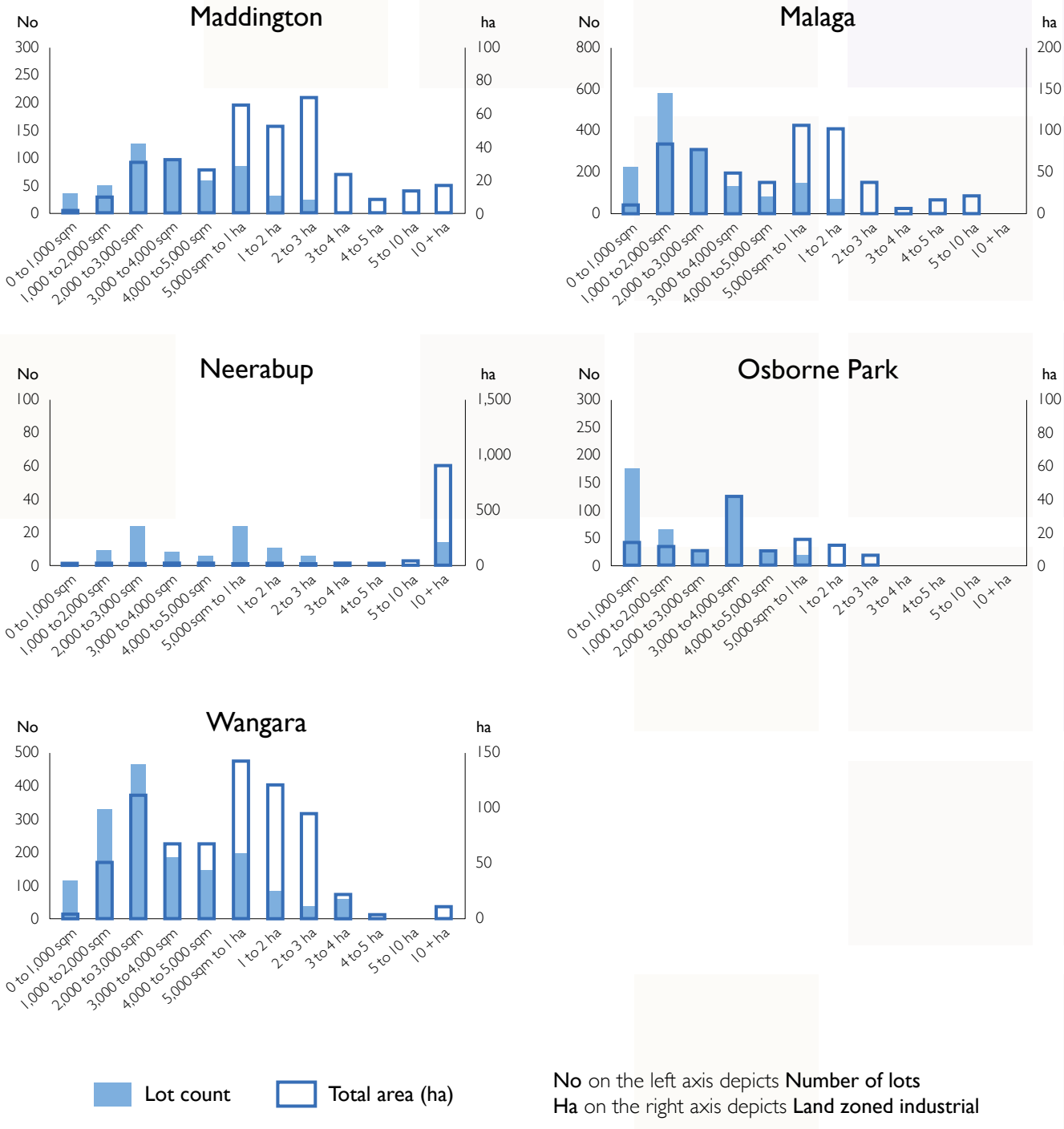


Figure 27: Lot size profile by industrial centre (cont.)



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

Premises profile

For the purposes of this analysis, premises records collected by Landgate have been categorised for assessing land use and development. The categorisation process is based on the name allocated to each premises use. For example, a premise allocated the name 'refinery' will fall under the 'industrial premises' category. As such, the premises types should be treated with caution. It is also important to note that industrial centres can provide for a variety of uses, as permitted under the relevant local planning scheme. Therefore, a lower proportion of industrial uses should not always be viewed negatively.

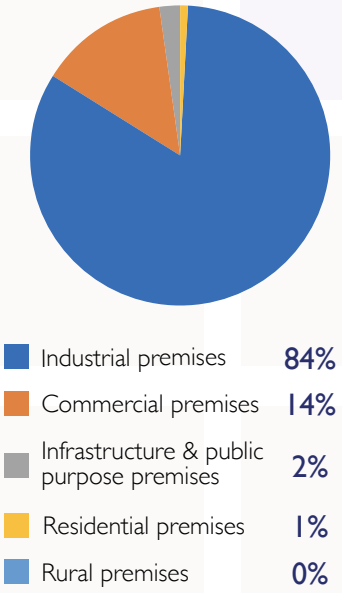
In the assessment of the premises profile of industrial centres, development (premises) with an industrial premises record on land zoned as industrial are considered to be consistent with the primary land use objective of the industrial zoning. As previously discussed, non-industrial uses refers to development (premises) which differ in type from the principle land use objective of the industrial zone. That is, development on industrial land with a premises record other than industrial are considered to be non-industrial uses. Examples of non-industrial development include residential or rural development (premises) on land zoned as industrial in the IRIS model.

Figure 28 shows the different premises types recorded by Landgate on land zoned as industrial. Eighty-four per cent of premises are recorded as industrial premises and 17 per cent as non-industrial premises consisting of commercial, residential, infrastructure and public purposes premises.

Figure 29 depicts the proportion of industrial premises relative to other premises types in each of the industrial centres. Industrial premises comprise the highest proportion of premises in the Neerabup industrial centre. The Hazelmere industrial centre has the lowest proportion of industrial premises.

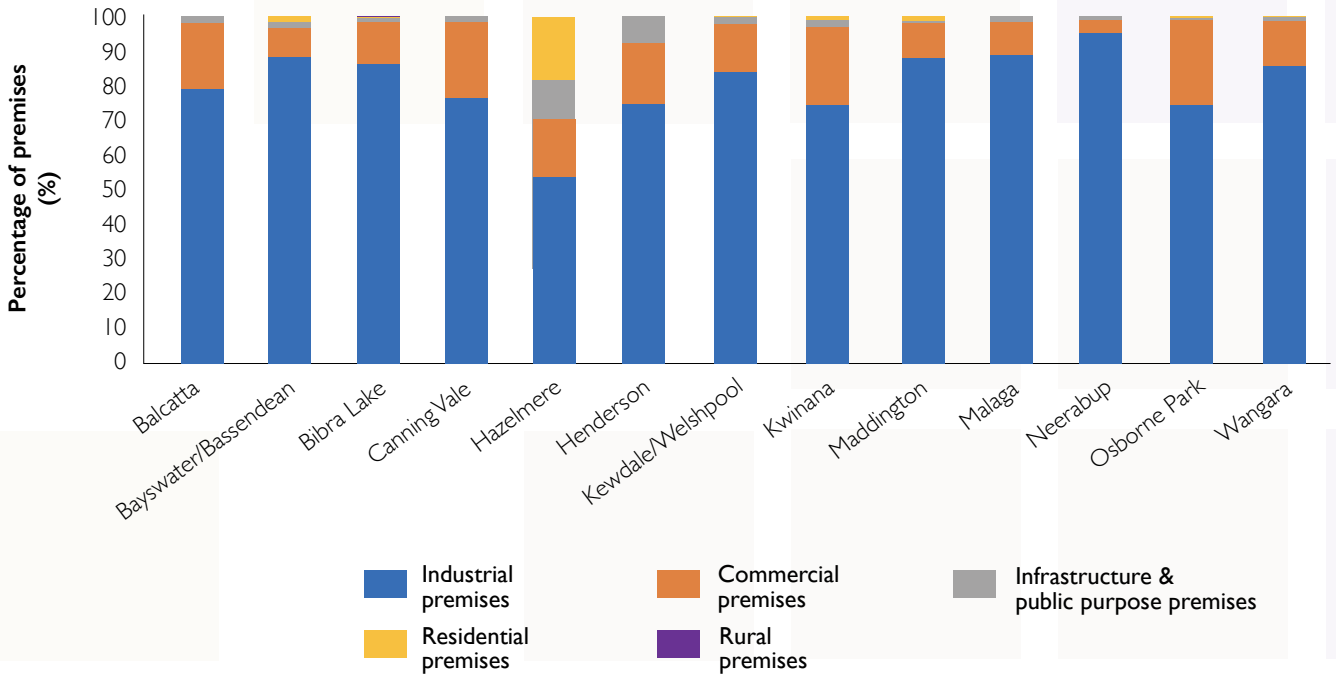
Figure 30 shows the number of industrial premises for the 13 industrial centres. The Wangara industrial centre has the highest count of industrial premises. While the Kwinana industrial centre has the largest stock of land zoned as industrial out of the 13 industrial centres (Figure 11), it has a low number of industrial premises relative to the Malaga, Wangara and Kewdale/Welshpool industrial centres. The density of industrial premises is often correlated with the type of industrial activity in the area.

Figure 28: Share of premises on land categorised as industrial



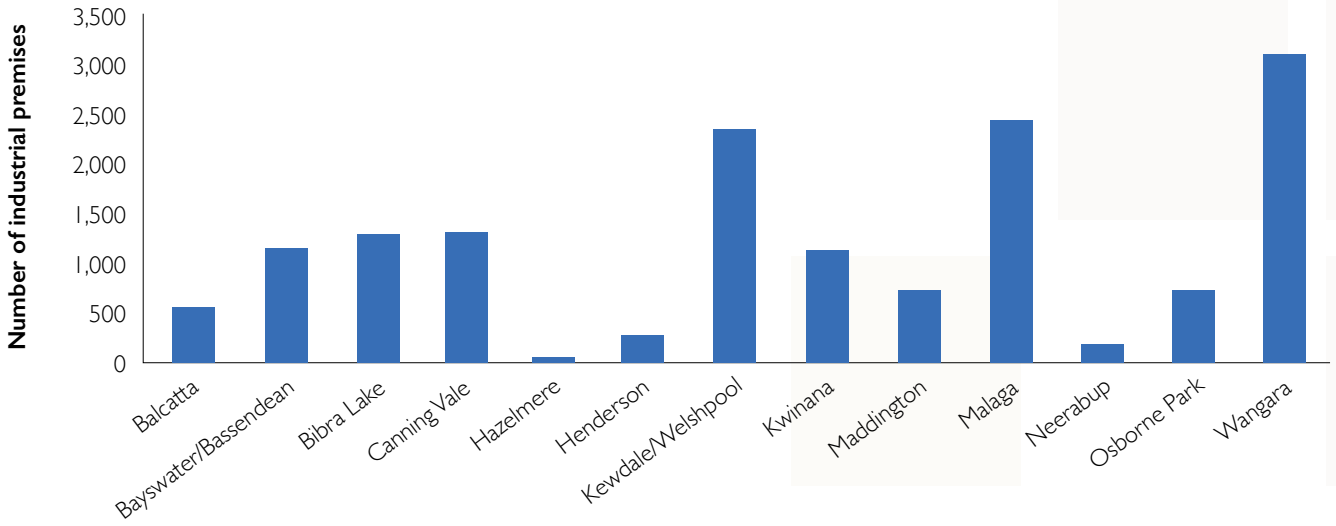
Source: IRIS, Department of Planning, Lands and Heritage (2019)
Note: numbers may not sum due to rounding

Figure 29: Share of premises on land categorised as industrial by industrial centre



Source: IRIS, Department of Planning, Lands and Heritage (2018)

Figure 30: Number of industrial premises by industrial centre



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

4.4 Industrial development at Perth Airport and Jandakot Airport

Due to the nature of land tenure information, the Perth Airport and Jandakot Airport industrial centres have been excluded from most of the assessment using the IRIS model. Planning for both airports; however, has identified land for non-aviation development, adding to the supply of land available for industrial development in the Perth metropolitan and Peel regions.

Under the Perth Airport Preliminary Draft Master Plan, Perth Airport estate is comprised of 2,110 hectares of land. In 2014, there was approximately 770 hectares of land available for non-aviation development, of which 230 hectares has been developed.[15] Since 2014, approximately 50 hectares have been further developed. Non-aviation development predominantly consists of commercial, warehousing and distribution facilities. Based on annual rates of non-aviation development over the past five years, Perth Airport has forecasted (for the next five years) annual rates of non-aviation development of 10 hectares for the Airport North precinct, 10 hectares for the Airport West precinct and 5 hectares for the Airport South precinct.[16]

Under the Jandakot Airport Master Plan, the Jandakot Airport estate is 620 hectares in size, of which approximately 200 hectares of land has been identified for non-aviation development. It is envisaged that, when fully developed, the non-aviation precincts will consist of a mix of warehousing, workshop, office and retail space.[17]

[15] Perth Airport Pty Ltd, 2014, Perth Airport Preliminary Draft Master Plan 2014

[16] Perth Airport Pty Ltd, 2019, Perth Airport Preliminary Draft Master Plan 2020

[17] Jandakot Airport Holdings, 2015, Jandakot Airport Master Plan 2014

Table 5: Tiered land supply assessment – Summary table

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Balcatta						
Located in the Central sub-region. Main industries of employment: • construction • professional, scientific and technical services • manufacturing Main occupational groups: • technicians and trade workers • clerical and administrative workers • managers	182	100	Developed 99% Undeveloped 1%	Light/ Commercial 48% General industry 38% Warehousing and Distribution 14%	Less than 1 hectare 56% 1 to 5 hectares 26% 5 to 10 hectares 13% 10 hectares and above 5%	Industrial premises 79% Commercial premises 19% Infrastructure & public purpose premises 2%
Bayswater/Bassendean						
Located in the Central sub-region. Main industries of employment: • manufacturing • construction Main occupational groups: • technicians and trade workers • clerical and administrative workers • machinery operators and drivers	302	210	Developed 87% Undeveloped 13%	Light/ Commercial 61% General industry 32% Warehousing and distribution 6% Heavy/ Special/ Strategic 2%	Less than 1 hectare 57% 1 to 5 hectares 37% 5 to 10 hectares 5%	Industrial premises 88% Commercial premises 9% Infrastructure & public purpose premises 1% Residential premises 2%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Bibra Lake						
Located in the South-West sub-region Main industries of employment: • manufacturing • construction • wholesale trade Main occupational groups: • Main occupational groups	441	420	Developed 95% Undeveloped 5%	Light/ Commercial 45% General industry 35% Warehousing and distribution 18% Heavy/ Special/ Strategic 2%	Less than 1 hectare 47% 1 to 5 hectares 42% 5 to 10 hectares 4% 10 hectares and above 6%	Industrial premises 86% Commercial premises 12% Infrastructure & public purpose premises 1%
Canning Vale						
Located in the Central sub-region. Main industries of employment: • manufacturing • wholesale trade • construction Main occupational groups: • machinery operators and drivers • technicians and trade workers • clerical and administrative workers	554	480	Developed 97% Undeveloped 3%	Light/ Commercial 80% Warehousing and distribution 11% General industry 8% Heavy/ Special/ Strategic 2%	Lots Less than 1 hectare 35% 1 to 5 hectares 40% 5 to 10 hectares 11% 10 hectares and above 14%	Industrial premises 76% Commercial premises 22% Infrastructure & public purpose premises 2%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Hazelmere						
Located in the North-east sub-region. Main industries of employment: • transport, postal and warehousing • construction • manufacturing Main occupational groups: • machinery operators and drivers • technicians and trades workers • clerical and administrative workers	220	220	Developed 89% Undeveloped 11%	Light/ Commercial 78% General industry 22%	Less than 1 hectare 2% 1 to 5 hectares 50% 5 to 10 hectares 25% 10 hectares and above 23%	Industrial premises 54% Commercial premises 17% Infrastructure & public purpose premises 11% Residential premises 19%
Henderson						
Located in the South-west sub-region. Main industries of employment: • manufacturing • construction Main occupational groups: • technicians and trade workers • managers • clerical and administrative workers	300	320	Developed 95% Undeveloped 5%	Light/ Commercial 53% General industry 40% Warehousing and distribution 7%	Less than 1 hectare 25% 1 to 5 hectares 38% 5 to 10 hectares 14% 10 hectares and above 24%	Industrial premises 75% Commercial premises 18% Infrastructure & public purpose premises 8%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Kewdale/Welshpool						
Located in the Central sub-region. Main industries of employment: • transport, postal and warehousing • manufacturing • wholesale trade Important location for freight and logistics activities. Main occupational groups: • technicians and trades workers • machinery operators and drivers • clerical and administrative workers	1,020	960	Developed 98% Undeveloped 2%	Light/ Commercial 73% General industry 20% Warehousing and distribution 7%	Less than 1 hectare 39% 1 to 5 hectares 46% 5 to 10 hectares 12% 10 hectares and above 3%	Industrial premises 84% Commercial premises 14% Infrastructure & public purpose premises 2%
Kwinana						
Located in the South-west sub-region. Main industries of employment: • manufacturing • construction Important location for freight and logistics activities. Main occupational groups: • technicians and trade workers • machinery operators and drivers • clerical and administrative workers	2,100	1,940	Developed 76% Undeveloped 24%	Heavy/ Special/ Strategic 47% General industry 29% Light/ Commercial 16% Warehousing and distribution 8%	Less than 1 hectare 11% 1 to 5 hectares 20% 5 to 10 hectares 6% 10 hectares and above 63%	Industrial premises 74% Commercial premises 22% Infrastructure & public purpose premises 2% Residential premises 1%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Maddington						
Located in the South-east sub-region. Main industries of employment: • construction • manufacturing Main occupational groups: • technicians and trades workers • machinery operators and drivers • labourers	310	180	Developed 93% Undeveloped 7%	Light/ Commercial 51% General industry 43% Warehousing and distribution 5%	Less than 1 hectare 47% 1 to 5 hectares 44% 5 to 10 hectares 4% 10 hectares and above 5%	Industrial premises 88% Commercial premises 10% Infrastructure & public purpose premises 1% Residential premises 1%
Malaga						
Located in the North-east sub-region. Main industries of employment: • manufacturing • construction • wholesale trade Main occupational groups: • technicians and trades workers • managers • clerical and administrative workers	430	360	Developed 96% Undeveloped 4%	Light/ Commercial 51% General industry 27% Warehousing and distribution 22%	Less than 1 hectare 67% 1 to 5 hectares 29% 5 to 10 hectares 4%	Industrial premises 89% Commercial premises 10% Infrastructure & public purpose premises 2%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Neerabup						
Located in the North-west sub-region. Main industries of employment: • manufacturing • construction Main occupational groups: • machinery operators and drivers • technicians and trade workers • managers	980	1010	Developed 90% Undeveloped 4%	Extractive/ Mining/ Basic Raw Materials 64% General industry 29% Light/ Commercial 5% Heavy/ Special/ Strategic 1% Warehousing and distribution 1%	Less than 1 hectare 3% 1 to 5 hectares 5% 5 to 10 hectares 4% 10 hectares and above 88%	Industrial premises 95% Commercial premises 4% Infrastructure & public purpose premises 1%
Osborne Park						
Located in the Central sub-region. Main industries of employment: • construction • manufacturing • etail trade Main occupational groups: • technicians and trades workers • clerical and administrative • managers	90	80	Developed 98% Undeveloped 2%	Light/ Commercial 55% General industry 34% Warehousing and distribution 9% Heavy/ Special/ Strategic 2%	Less than 1 hectare 86% 1 to 5 hectares 14%	Industrial premises 75% Commercial premises 24% Residential premises 1%

	Tier One	Tier Two		Tier Three		
Industrial centre overview	***Stock of zoned land (ha)***	***Stock of land zoned as industrial (ha)***	***Development status of land zoned as industrial***	***Secondary land use classifications as a proportion of land zoned as industrial***	***Lot size distribution as a proportion of all lots on land zoned as industrial***	***Premises profile on land zoned as industrial***
Wangara						
Located in the North-west sub-region. Main industries of employment: • construction • manufacturing Main occupational groups: • technicians and trades workers • clerical and administrative • managers	570	640	Developed 87% Undeveloped 13%	Light/ Commercial 57% General industry 27% Warehousing and distribution 16%	Less than 1 hectare 64% 1 to 5 hectares 35% 10 hectares and above 2%	Industrial premises 86% Commercial premises 13% Infrastructure & public purpose premises 1% Residential premises 1%

5 Building Approvals

The Australian Bureau of Statistics (ABS) publishes data on building approvals by type of building, according to its *Functional Classification of Buildings*[18].

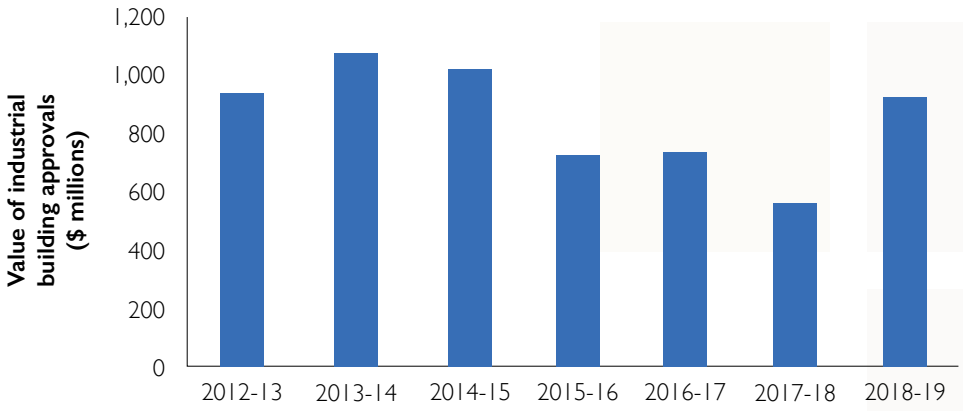
Figure 31 illustrates the total value of industrial building approvals for the Perth and Peel regions. The total value of industrial building approvals in the 2018-19 financial year was $926 million.

This represents a 65 per cent increase from the previous year, in which approvals with a collective value of $562 million were recorded. Industrial building approvals peaked in 2013-14 with $1 billion worth of approvals granted within the financial year.

Figure 32 shows the value of industrial building approvals by type of building for Perth Metropolitan and Peel regions from 2012-13 to 2018-19.

Warehouses accounted for 54 per cent of the total value of industrial building approvals for Perth and Peel in 2018-19, compared to 62 per cent in 2017-18. Throughout the eight-year period, warehouses made up 73 per cent of the total value of industrial buildings approved.

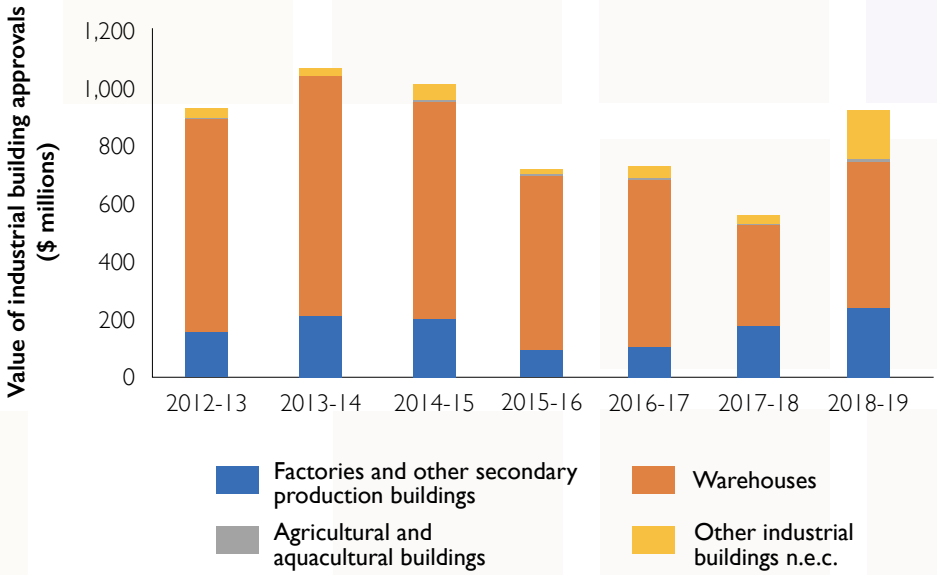
Figure 31: Perth and Peel value of building approvals



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

[18] More information on the ABS' Functional Classification of Buildings is available here: https://www.abs.gov.au/ausstats/abs@.nsf/mf/1268.0.55.001.

Figure 32: Value of industrial building approvals by type of building, Perth metropolitan and Peel regions, 2012-13 to 2018-19



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

6 Employment in industrial centres

Section four of this report profiles the employment characteristics of the respective industrial precincts. In addition to the 13 industrial centres profiled in Section 3, this section also includes data for Perth Airport, Jandakot Airport and the Pinjarra industrial centre.

Employment data has been sourced from the 2015/17 Perth and Peel Land Use and Employment Survey (LUES). The LUES is undertaken to support the Department's and WAPC's strategic planning processes to assist in the review of principles, policies and modelling relating to land uses in different locations.

Almost 157,000 sites were surveyed across the Perth and Peel regions 2015 to 2017, with a response rate of 90 per cent. Data for non-responding sites has been imputed, to provide a more complete employment profile of individual areas.

It is important to note that the employment profiles described in this section of the document are not directly comparable with those of the previous version. Previously, Australian Bureau of Statistics 2011 Destination Zones (DZN) were used to recreate each centre using a 'best-fit' approach with employment information from the 2011 Census.

The LUES surveys all commercial, industrial, public purpose and recreation zoned land within the profile areas. As such, LUES data for the Perth and Peel regions, as a whole, should be viewed as a sub-set of total employment. Employment estimates reflect this as LUES employment estimates are approximately 18 per cent lower than the count published by the ABS for the Perth and peel regions.

At the time of the LUES, an estimated 152,580 people were employed across the industrial centres included in this assessment (Table 6). The largest workforce was located within the Kewdale/Welshpool industrial centre, comprising 17 per cent of all industrial centre employment covered by this report. This was followed by the Malaga, Perth Airport and Wangara industrial centres (all at approximately 11 per cent) (Table 6 and Figure 33).

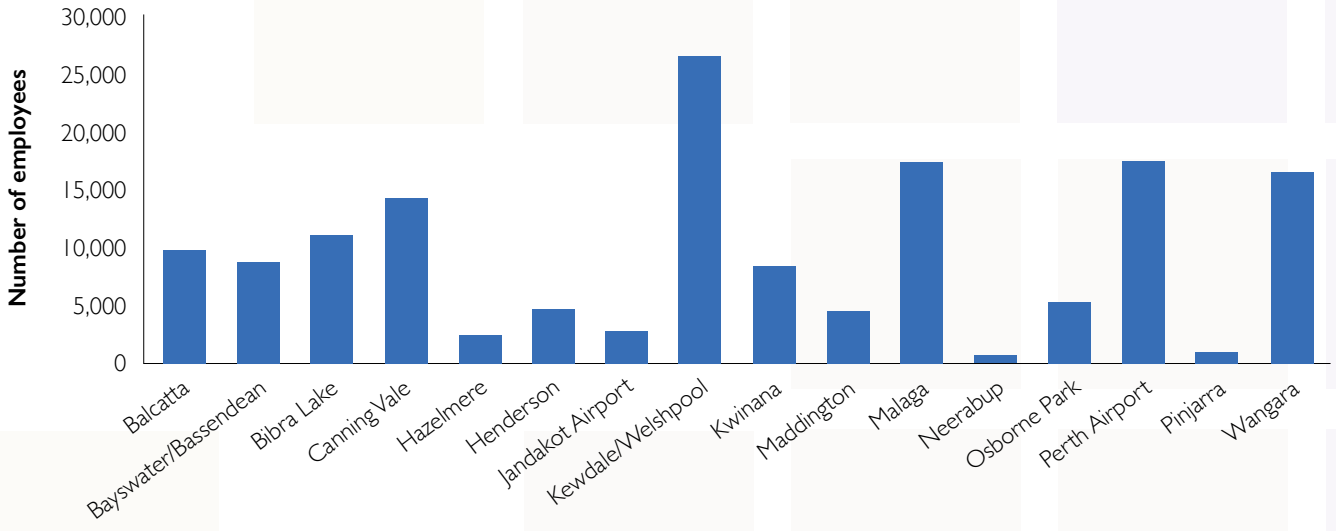
Figure 35 shows that Office/Business, at 56 per cent, is the highest employer within the industrial centres, followed by Storage/Distribution at 12 per cent and Manufacturing/Processing/Fabrication at 10 per cent.

Table 6: Industrial centre by number of employees

Industrial centre	Employment estimate
Balcatta	9,890
Bayswater/Bassendean	8,800
Bibra Lake	11,150
Canning Vale	14,320
Hazelmere	2,490
Henderson	4,800
Jandakot Airport	2,870
Kewdale/ Welshpool	26,630
Kwinana	8,500
Maddington	4,550
Malaga	17,410
Neerabup	700
Osborne Park	5,403
Perth Airport	17,510
Pinjarra	1,020
Wangara	16,560
Total	**152,580**

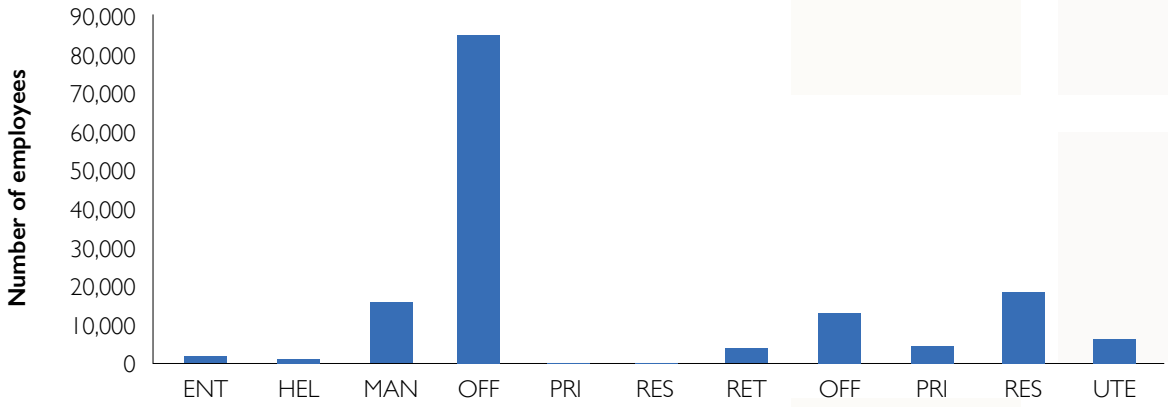
Source: 2015/17 Perth and Peel Land Use and Employment Survey

Figure 33: Industrial centre employment



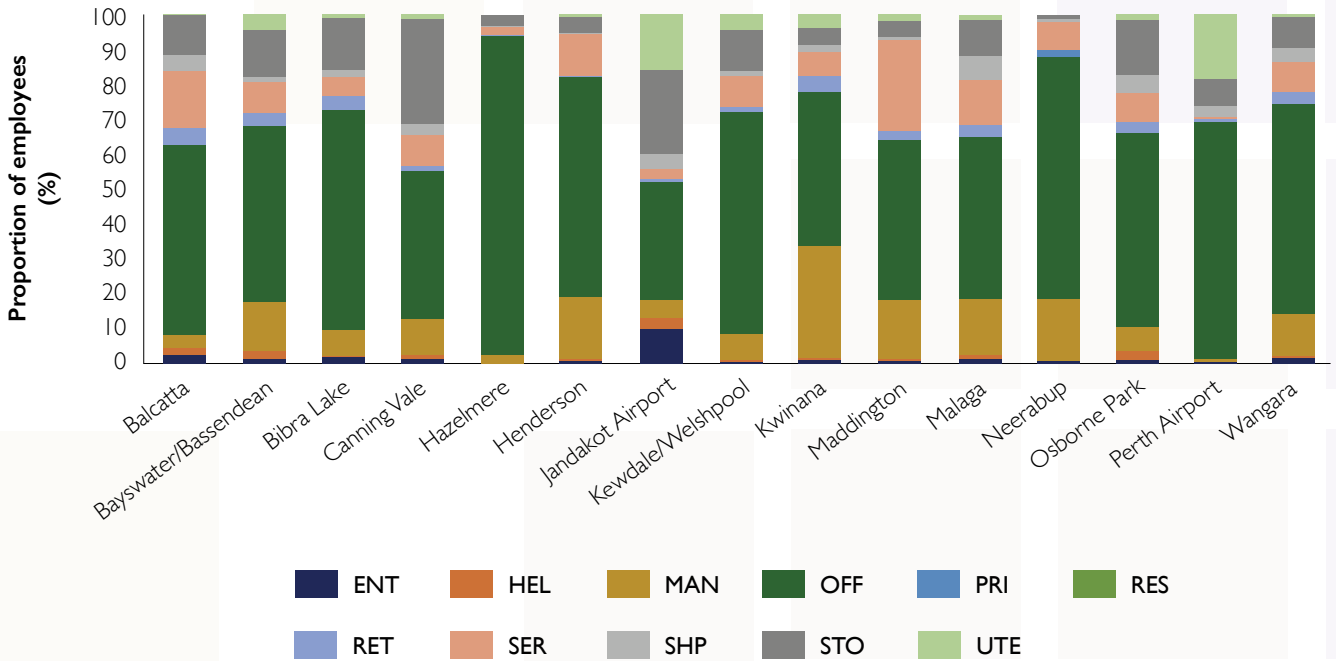
Source: 2015/17 Perth and Peel Land Use and Employment Survey

Figure 34: Employment by planning land use classification (PLUC) in industrial centres



Source: 2015/17 Perth and Peel Land Use and Employment Survey
Note: Pinjarra industrial centre has been excluded due to insufficient PLUC employment data available

Figure 35: Proportion of employees by land use in industrial centres



Source: 2015/17 Perth and Peel Land Use and Employment Survey
Note: Pinjarra industrial centre has been excluded due to insufficient PLUC employment data available.

Figure 35 indicates that the proportion of employees on Manufacturing/Processing/ Fabrication land uses is highest in the Kwinana industrial centre, which is unsurprising considering that Kwinana supports heavier industrial activity. The proportion of employees on Service industry land uses is greatest in the Maddington industrial centre while Canning Vale had the highest proportion of employment on Storage/Distribution land uses out of all the industrial centres.

6.1 Employment density

The employment density per hectare of zoned land can be determined using the IRIS model in conjunction with data from the 2015/17 Perth and Peel Land Use and Employment Survey (LUES) (Table 7). It should be noted that this figure is a guide only, as the proportion of developed land differs between centres. The Osborne Park industrial centre has the highest employment density, at 59 employees per hectare of total zoned land and the Neerabup industrial centre the lowest, at just one employee per hectare. As detailed in the sections above, the Osborne Park industrial centre has the second largest workforce of the centres. It is characterised by a high number of small lots and light/commercial land use activities which contribute to the high employment density of the centre. The Neerabup industrial centre which is mostly undeveloped is also comprised mostly of extra-large lots and contains extractive/ mining/basic raw materials activities which are generally expansive land uses, leading to a lower employment density for the centre.

Table 7: Industrial centre by number of employees

Industrial centre	Stock of zoned land (ha)	Number of employees	Employees per hectare of zoned land
Balcatta	180	9,890	55
Bayswater/Bassendean	300	8,800	29
Bibra Lake	440	11,150	25
Canning Vale	550	14,320	26
Hazelmere	220	2,490	11
Henderson	300	4,800	16
Kewdale/ Welshpool	1,020	26,630	26
Kwinana	2,100	8,500	4
Maddington	310	4,550	15
Malaga	430	17,410	40
Neerabup	980	700	1
Osborne Park	90	5,403	60
Wangara	570	16,560	29
Total	**7,510**	**152,580**	**20**

Source: 2015/17 Perth and Peel Land Use and Employment Survey

7 Industrial centre floor space

The 2015/17 LUES surveyed a total of almost 15 million square metres of floor space across the industrial centres (Table 8). With more than 3 million hectares of floor space surveyed, the Kewdale/Welshpool industrial centre, comprised approximately 20 per cent of total floor space area. More than 1 million hectares of floor space was also surveyed in Bibra Lake, Canning Vale, Kwinana, Malaga and Wangara.

Table 8: Industrial centre by surveyed floor space

Industrial centre	Total surveyed floor space (m^2)
Balcatta	54,7550
Bayswater/Bassendean	777,670
Bibra Lake	1,396,830
Canning Vale	1,558,370
Hazelmere	257,550
Henderson	571,850
Jandakot Airport	428,530
Kewdale/ Welshpool	3,050,270
Kwinana	1,346,580
Maddington	439,910
Malaga	1,493,420
Neerabup	106,450
Osborne Park	463,300
Perth Airport	893,260
Pinjarra	26,020
Wangara	1,477,690
Total	**14,837,240**

Source: 2015/17 Perth and Peel Land Use and Employment Survey

7.1 Occupied floor space

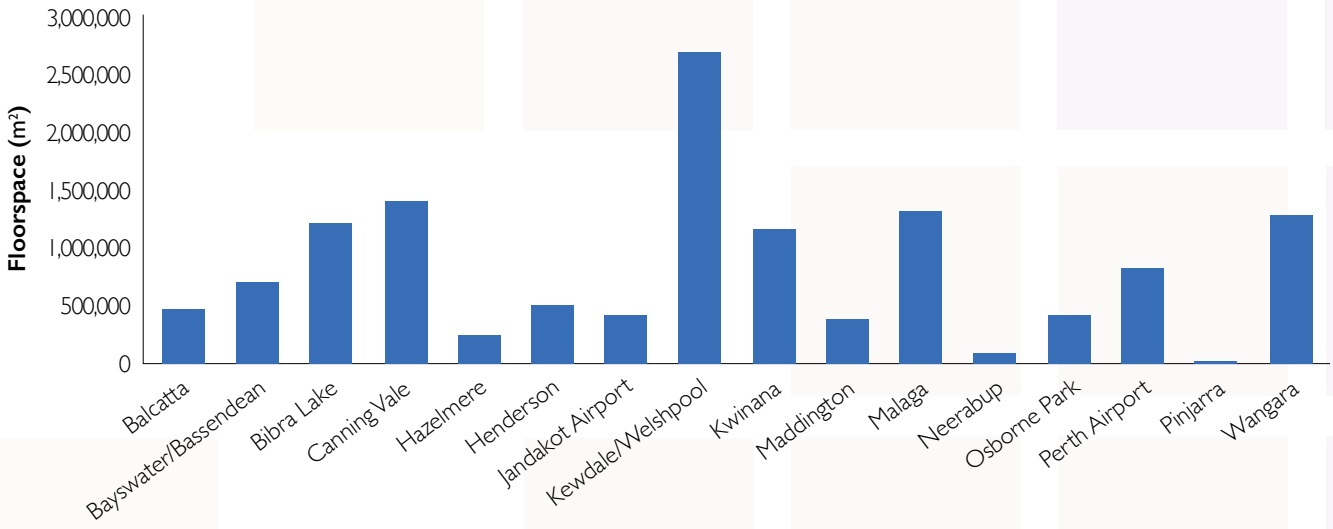
Approximately 90 per cent of surveyed floor space was occupied at the time of the survey.

The Kewdale/Welshpool industrial centre comprised approximately 20 per cent of total occupied floor space, followed by Canning Vale (11 per cent) and Malaga and Wangara at 10 per cent each of total occupied floor space. Figure 36 shows the volume of occupied floor space for each of the industrial centres.

Storage/Distribution land uses amounted to almost half (41 per cent) of the total occupied floor space across the industrial centres. Manufacturing land uses followed at 21 per cent of total occupied floor space and Office/Business at 14 per cent.

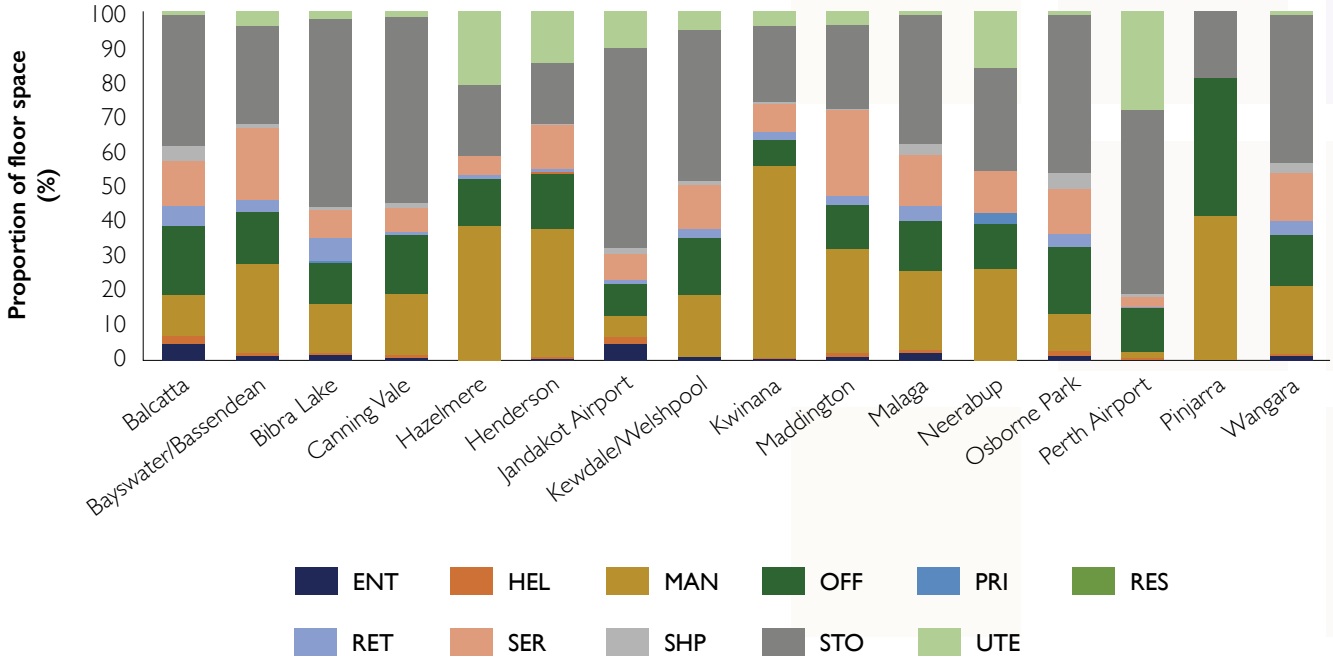
At the individual centre level, the greatest share of Storage/Distribution land uses was at Jandakot Airport, where these type of land uses comprised almost 60 per cent of the centre's occupied floor space. Kwinana had the greatest share of manufacturing land uses as a proportion of a centre's occupied floor. Figure 37 shows the breakdown of land uses by floor space for each of the industrial centres.

Figure 36: Occupied floor space



Source: 2015/17 Perth and Peel Land Use and Employment Survey

Figure 37: Share of floor space by land use

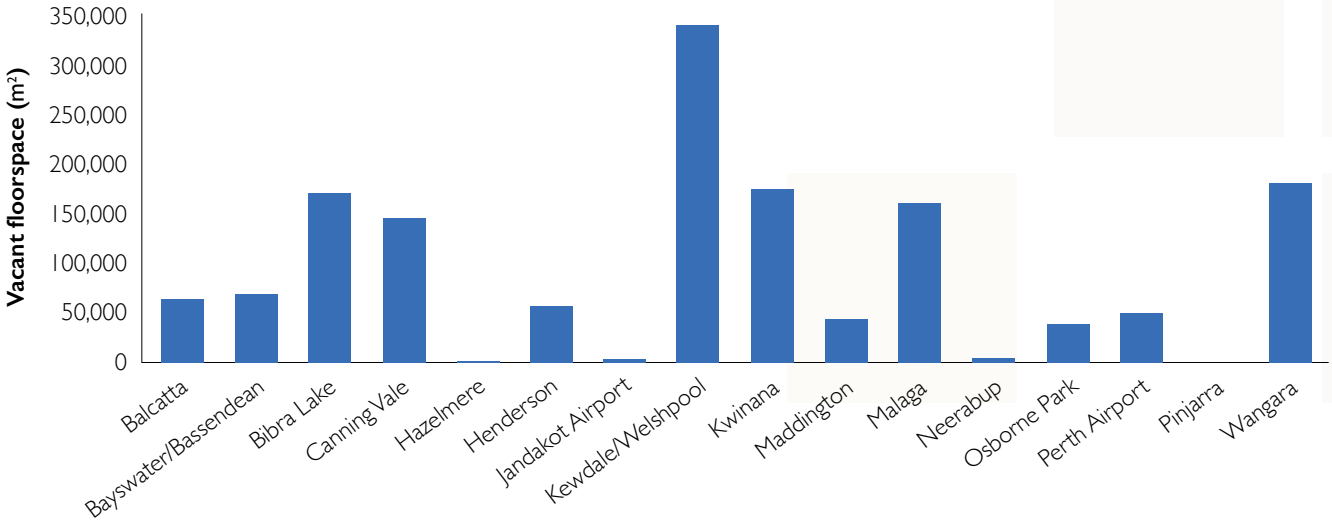


Source: 2015/17 Perth and Peel Land Use and Employment Survey

7.2 Vacant floor space

Across all the centres, vacant floor space comprised approximately 10 per cent of total surveyed floor space. Kewdale/Welshpool accounted for the highest volume of vacant floorspace however, Kwinana recorded the highest vacancy rate, at 13 per cent. Only Pinjarra recorded no vacant floor space.

Figure 38: Vacant floor space



Source: 2015/17 Perth and Peel Land Use and Employment Survey

8 Industrial land and property market

Section 8.1 of this report discusses industrial land sales for Perth metropolitan and Peel and makes comparison to regional WA, while section 8.2 reports on industrial property sales. For the purpose of this report, 'industrial land sales' refer to the sales of vacant lots on land zoned for industrial purposes. 'Industrial property sales' refer to the sales of industrial units in existing buildings. The data discussed in these sections have been sourced from Landgate's sales evidence database.

8.1 Industrial land sales

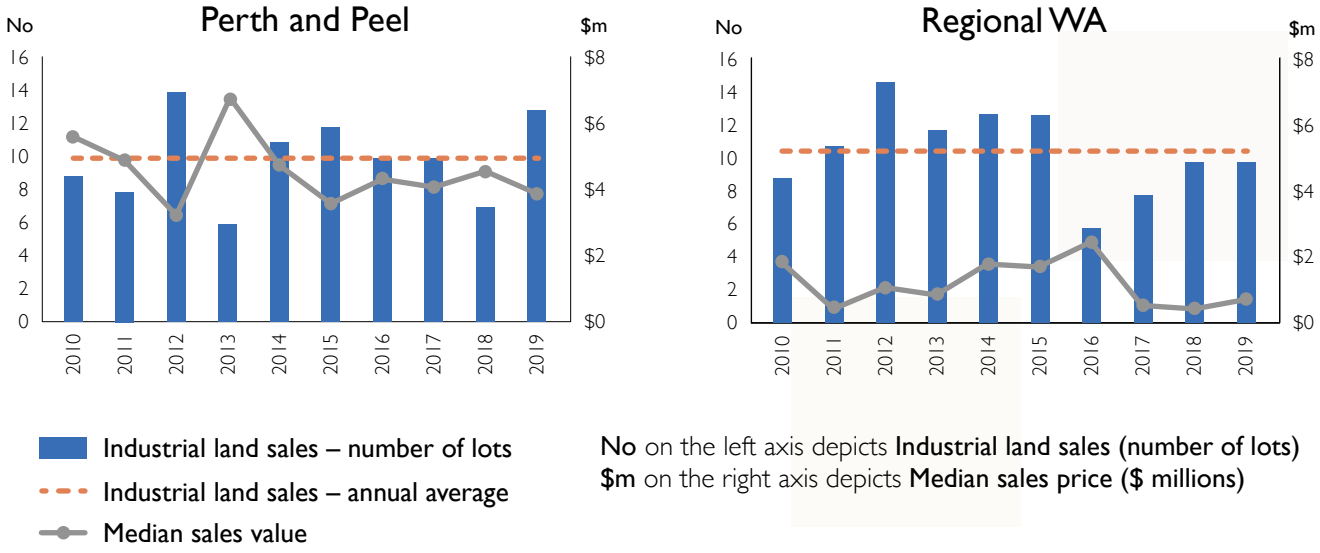
Industrial land sales for Perth metropolitan and Peel – lots greater than one hectare

Figure 39 shows industrial land sales between 2010 and 2019 for lots greater than one hectare in area, in Perth and Peel and regional WA. According to Landgate's sales evidence database, there were 13 lots sold in 2019 in Perth and Peel; higher than the 10-year annual average of 10 lots. The median sale price of lots in Perth and Peel dropped to its lowest in 2012 at $3.26 million, however, has since increased in 2019 to $3.9 million.

In comparison, industrial sales in regional WA for lots greater than one hectare recorded a consistently lower median sales price than Perth and Peel. Lot sales in regional WA peaked in 2012 at 15; higher than the 10-year annual average of 11 lots.

The small annual sales volumes of industrial lots larger than one hectare shown in Figure 39 make trend analysis for this type of property unreliable. Annual price data should therefore be used with caution when drawing conclusions regarding market trends.

Figure 39: Industrial land sales Perth and Peel and Regional WA – Lots greater than one hectare, 2010 to 2019



Source: Landgate (2019)

Industrial land sales for Perth metropolitan and Peel – lots less than one hectare

Figure 40 shows data for industrial land sales between 2010 and 2019 for lots less than one hectare in Perth and Peel and regional WA. According to Landgate's sales evidence database, there were 62 lots sold in 2019 in Perth and Peel; approximately half of the 10-year annual average. The median sale price has also trended downward since 2014, falling to $787,000 in 2019. This decline may be indicative of an oversupply of industrial land during the period.

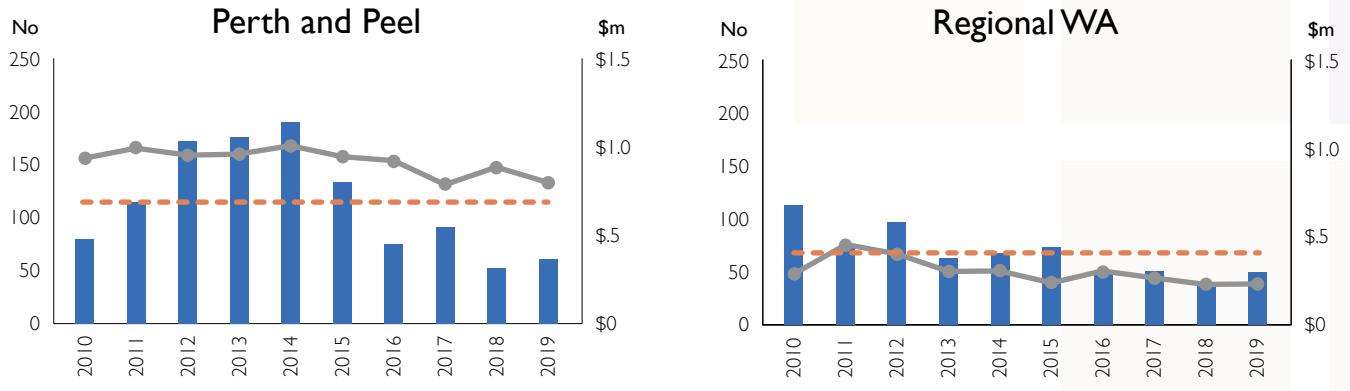
Median sale price and industrial land sales for lots less than one hectare were lower throughout regional WA, compared to Perth and Peel. The median sales price in regional WA peaked in 2011 at $450,000.

Industrial land sales by industrial centre – lots greater than one hectare

Industrial land sales for lots greater than one hectare between 2010 and 2019 are depicted in Figure 41. Balcatta has been omitted due to insufficient land sales within the time period. Annual sales volume at the industrial centre scale over the 10 years is low, with most centres recording just a few sales .

For lots greater than one hectare, most industrial centres only recorded one or two sales within a financial year. Consequently, the median sales value should be treated with caution. Industrial centres that recorded the most consistent number of sales within the 2010 to 2019 period were Bibra Lake, Canning Vale, Kwinana and Wangara, however these centres still recorded no sales of industrial land in some financial years.

Figure 40: Industrial land sales Perth and Peel and Regional WA – Lots greater than one hectare, 2010 to 2019



No on the left axis depicts **Industrial land sales (number of lots)**
$m on the right axis depicts **Median sales price ($ millions)**

Source: Landgate (2019)

Figure 41: Industrial land sales – Lots greater than one hectare, 2010 to 2019

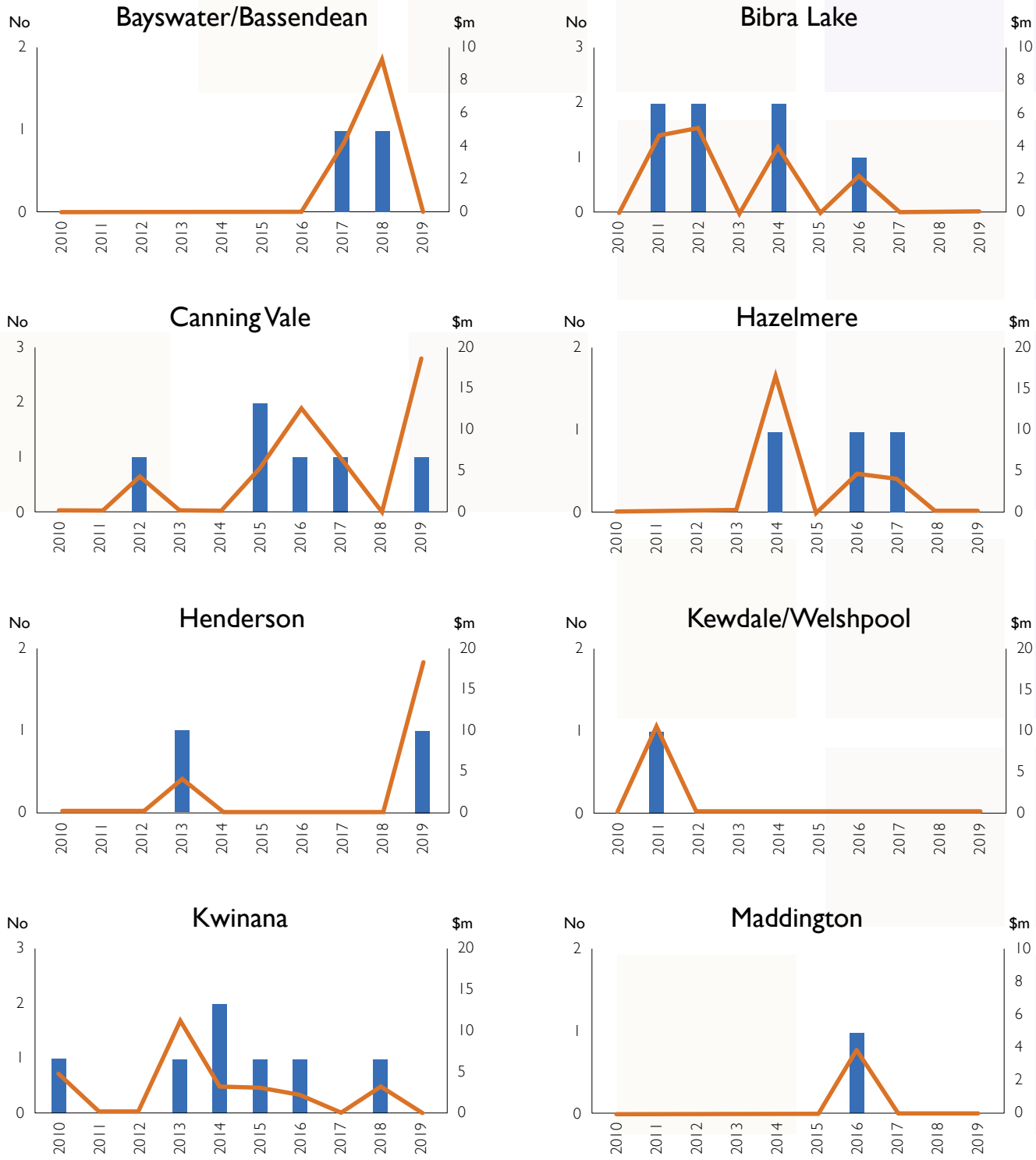
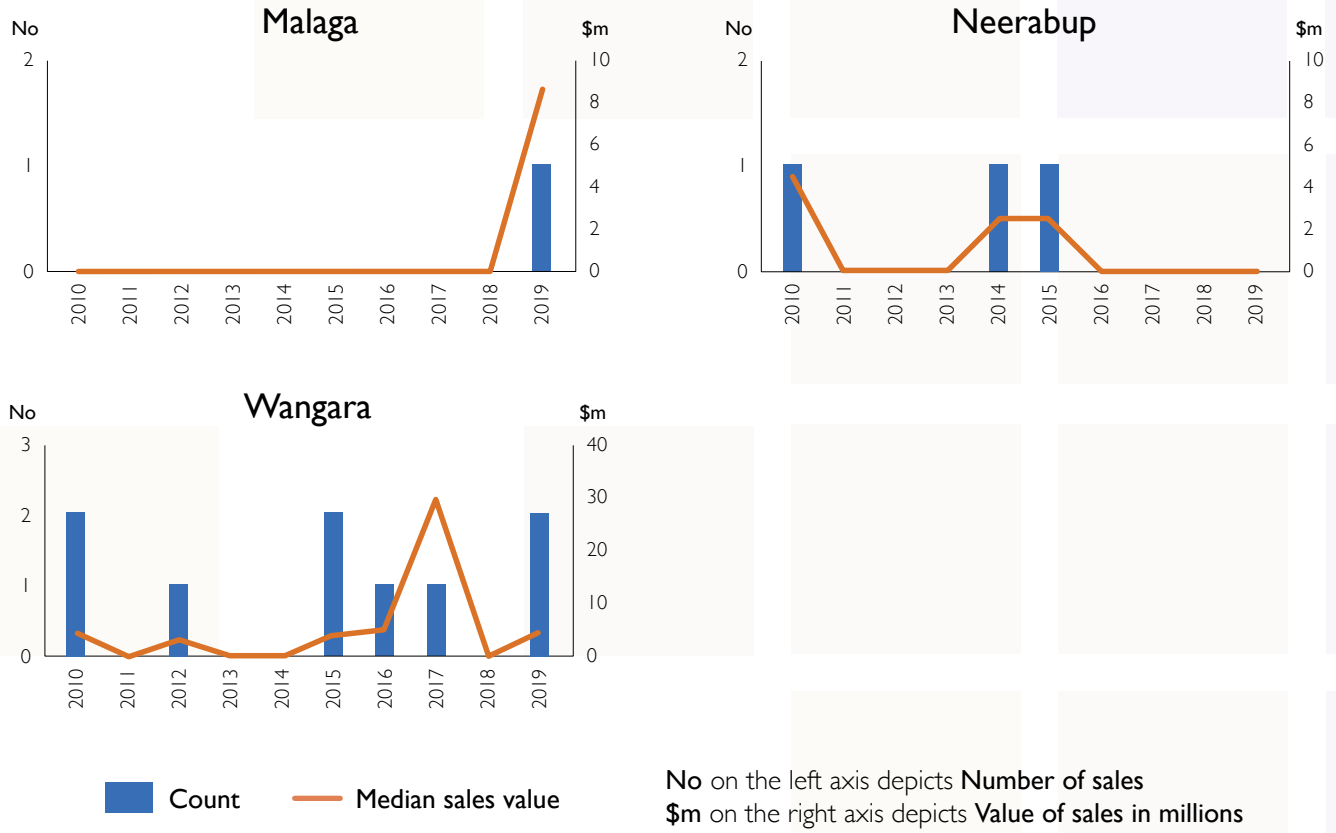


Figure 41: Industrial land sales – Lots greater than one hectare, 2010 to 2019 (cont.)



Source: Landgate (2019)

Industrial land sales by industrial centre – lots less than one hectare

Figure 42 shows industrial land sales for lots less than one hectare between 2010 and 2019. Hazelmere has not been included as no sales were recorded in the time period. In general, for industrial land, the volume of sales is higher for lots less than one hectare in comparison to lots greater than one hectare. The highest number of sales at the industrial centre scale for lots less than one hectare was 52 in 2012 in Wangara, which also had the highest average number of sales over the 10-year period with an average of 28 sales per annum.

With the exception of Bayswater/Bassendean, Kewdale/Welshpool and Canning Vale, most industrial centres have experienced a decline in sales volumes in recent years. Bayswater/Bassendean recorded an increase in sales from 2016 to 2019. Similarly, median sales prices have generally declined in recent years, apart from Bayswater/Bassendean and Canning Vale, which have remained steady. Balcatta and Henderson had no sales of lots less than one hectare in the 2019 calendar year.

Figure 42: Industrial land sales – Lots less than one hectare, 2010 to 2019

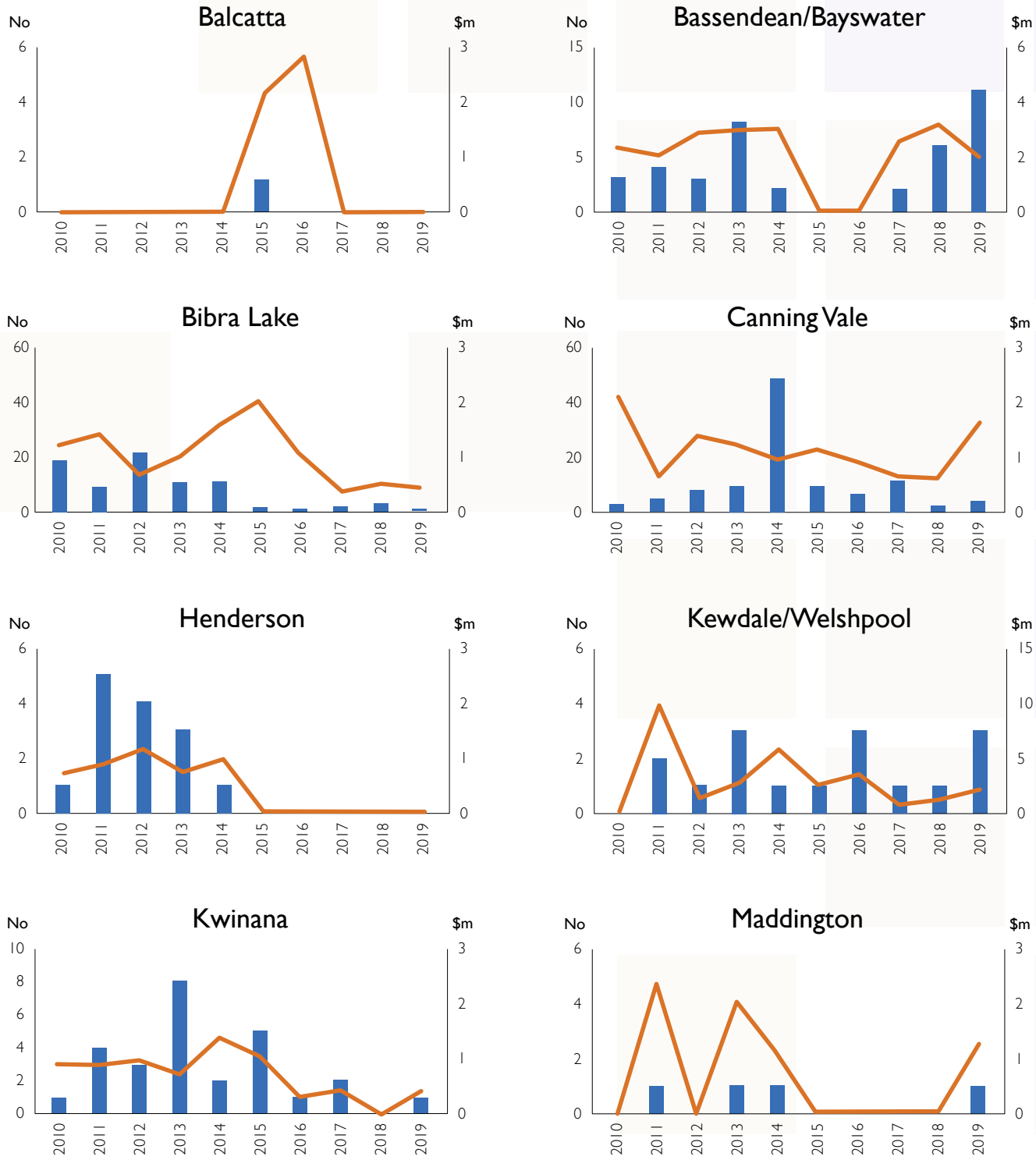
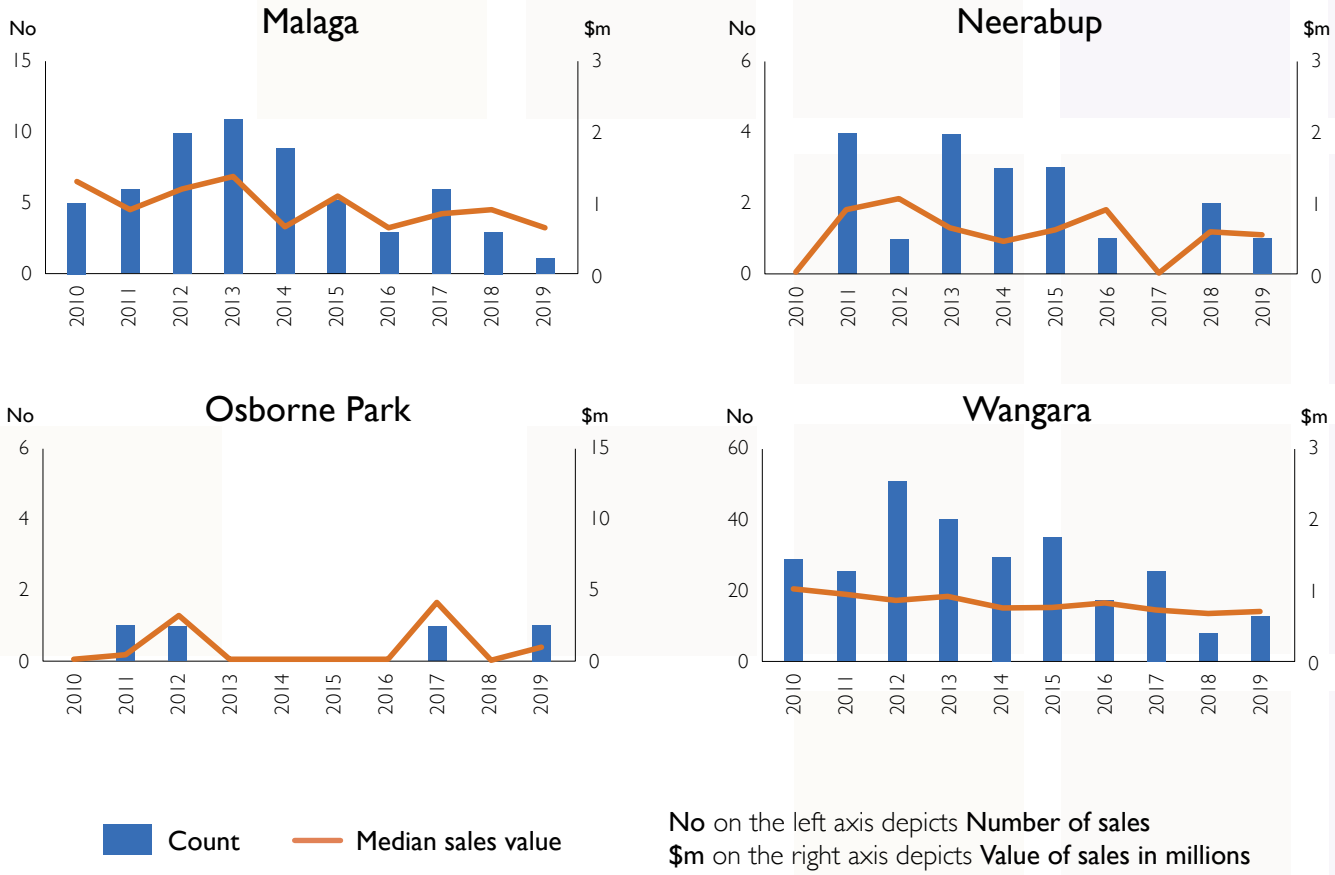


Figure 42: Industrial land sales – Lots less than one hectare, 2010 to 2019 (cont.)



Source: Landgate (2019)

8.2 Industrial property sales

Industrial property sales (as opposed to industrial lot sales) refers to transactions involving the sale of a property on which buildings have been constructed, rather than a vacant lot.

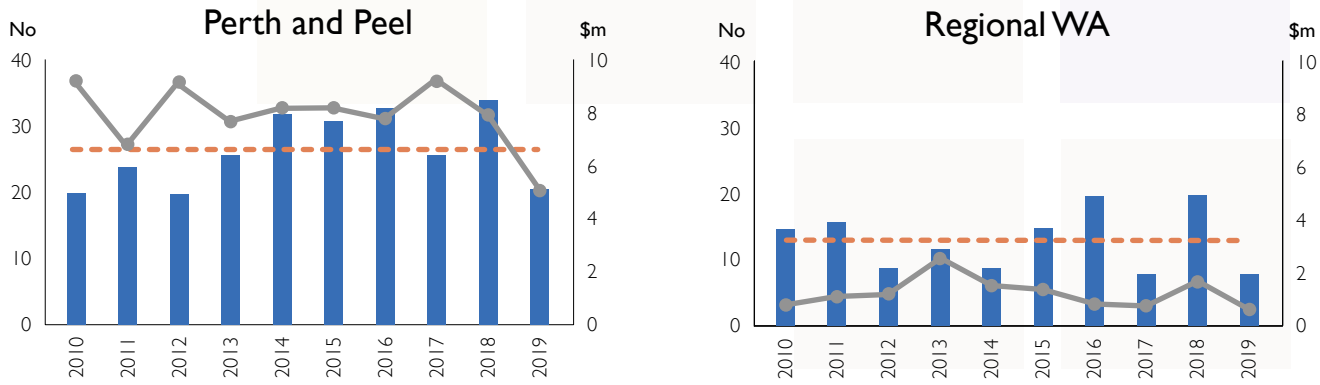
Industrial property sales for Perth metropolitan and Peel – lots greater than one hectare

Figure 43 shows industrial property sales between 2010 and 2019 in Perth and Peel and regional WA on lots greater than one hectare in area. According to Landgate's sales evidence database, there were 21 properties sold in 2019 in Perth and Peel; slightly less than the 10-year annual average of 27 lots. The median sale price of properties dropped to its lowest in 2019 at $5.2 million; this is a significant decrease from 2018, in which a median sales price of $7.9 million was recorded.

In comparison, industrial property sales for lots greater than one hectare in regional WA peaked at 20 properties in 2016 and 2018. Median sales price reached its highest in 2013 at $2.6 million.

The small annual sales volumes of industrial properties larger than one hectare shown in Figure 43 make trend analysis for this type of property unreliable. Annual price data should therefore be used with caution when drawing conclusions regarding market trends.

Figure 43: Industrial property sales Perth and Peel and Regional WA – Lots greater than one hectare, 2010 to 2019



Industrial land sales – number of lots

Industrial land sales – annual average

Median sales value

No on the left axis depicts **Industrial land sales (number of lots)**
$m on the right axis depicts **Median sales price ($ millions)**

Source: Landgate (2019)

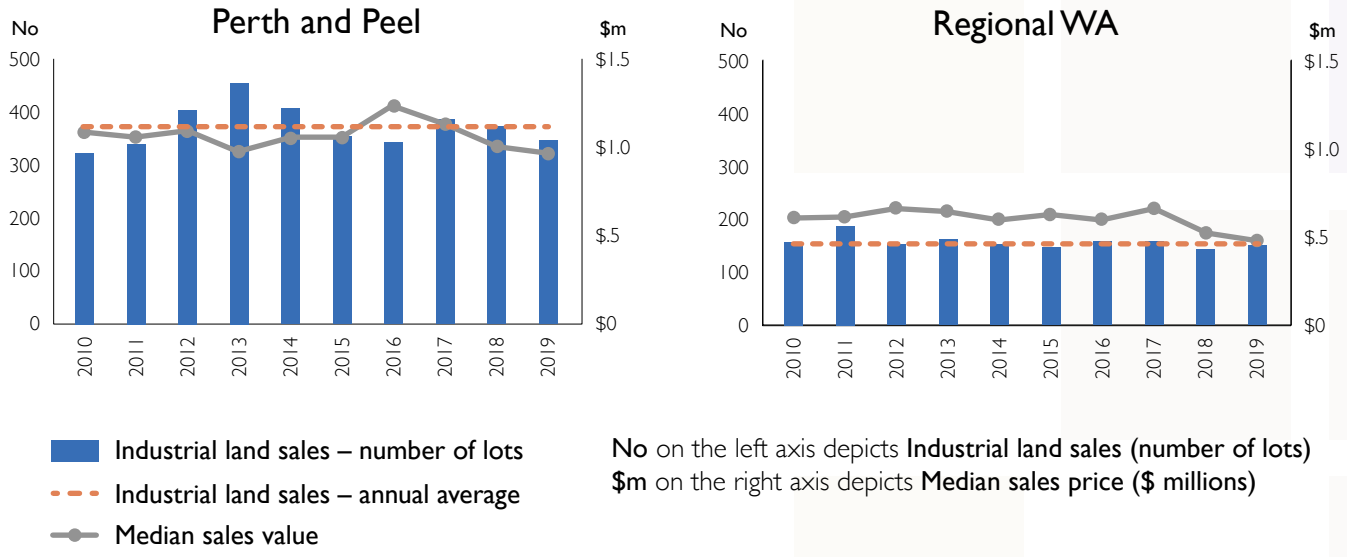
Industrial property sales for Perth metropolitan and Peel – lots less than one hectare

Figure 44 shows industrial property sales between 2010 and 2019 for lots less than one hectare in area. According to Landgate's sales evidence database, there were 314 lots sold in 2019 in Perth and Peel; slightly lower than the 10-year annual average of 337 lots. In 2016 the median sales value peaked at $1.1 million, while property sales recorded the second lowest of 312 throughout the 10-year period in. The median sales price for lots sold in 2019 was $872,000 the lowest recorded in the decade for Perth and Peel. Figure 44 indicates property sales and median sales price were higher for Perth and Peel compared to regional WA.

Industrial property sales by industrial centre – lots greater than one hectare

Figure 45 shows industrial property sales between 2010 and 2019 for properties on lots greater than one hectare. Neerabup and Osborne Park have not been included due to an insufficient number of sales during the period. Individual industrial centres have low annual volume of sales for properties on lots greater than one hectare, the most being nine in 2016 in Kewdale/Welshpool. The highest average number of sales over the 10-year period at five sales per annum was also in Kewdale/Welshpool. In recent years, there has been a downward trend in the median sales value, however, at a precinct level, the small number of sales make it difficult to draw any conclusions with regard to price trends.

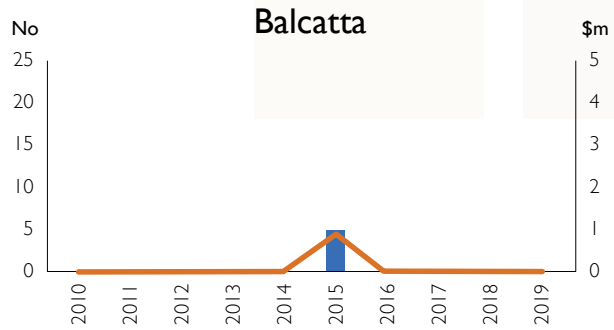
Figure 44: Industrial property sales Perth and Peel and Regional WA – Lots less than one hectare, 2010 to 2019

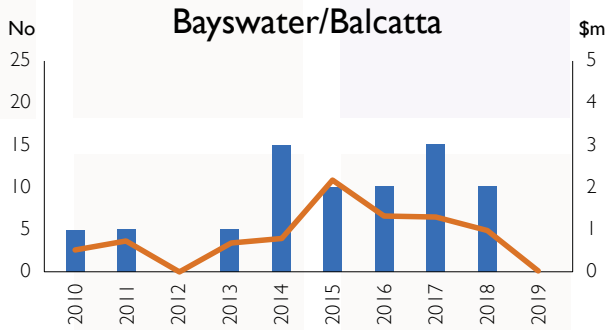


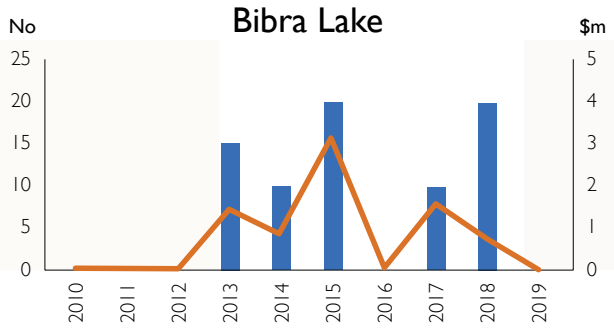
No on the left axis depicts **Industrial land sales (number of lots)**
$m on the right axis depicts **Median sales price ($ millions)**

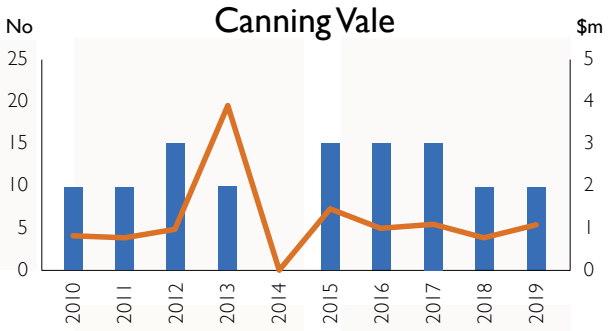
Source: Landgate (2019)

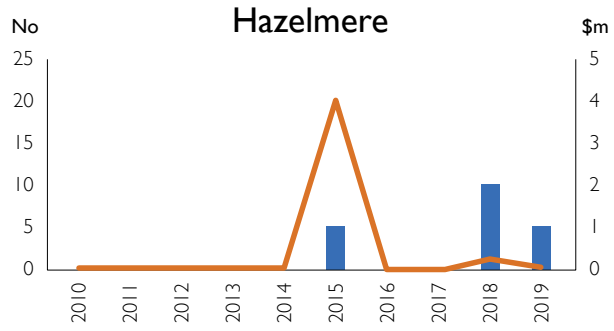
Figure 45: Industrial property sales – Lots greater than one hectare, 2009 to 2019

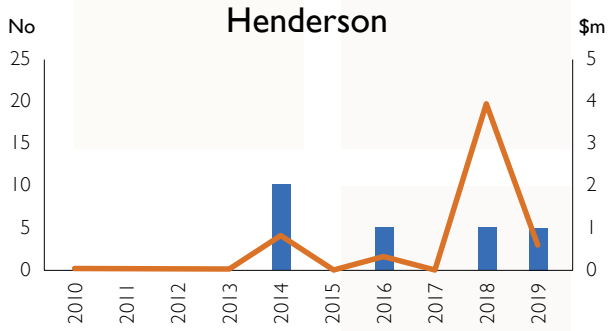


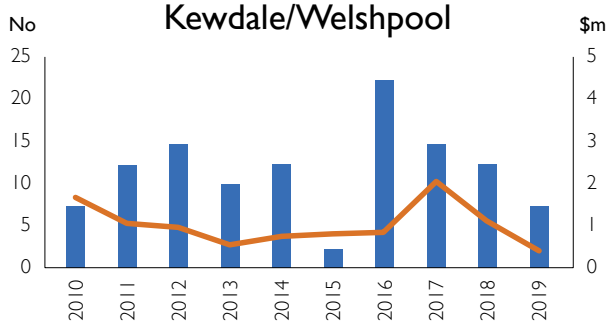












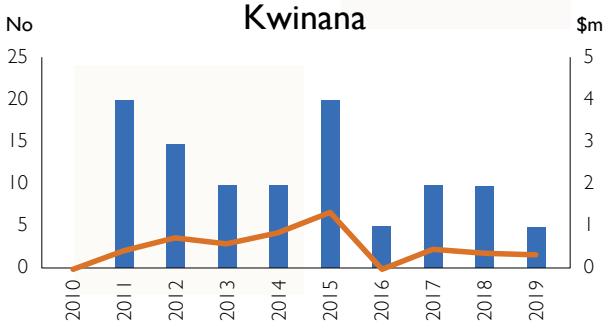
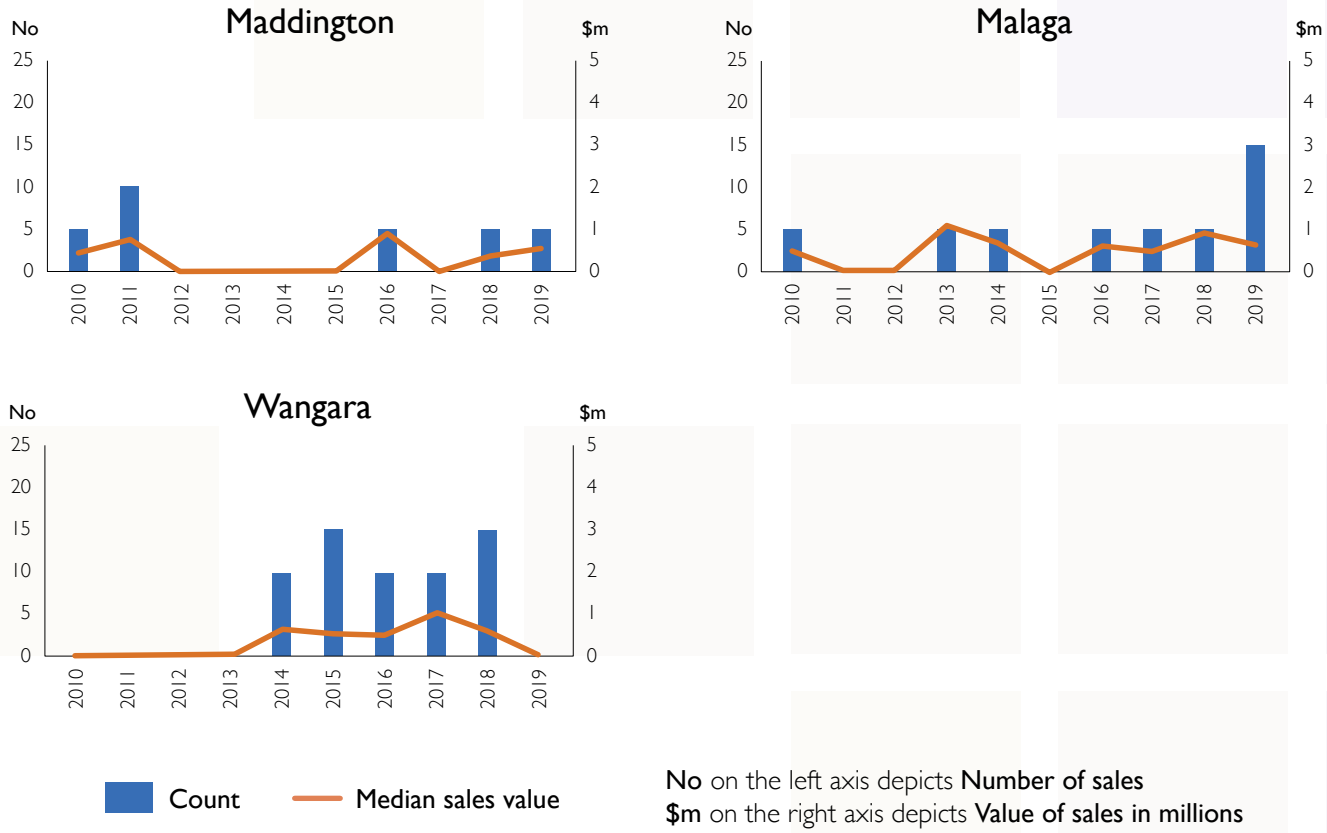


Figure 45: Industrial property sales – Lots greater than one hectare, 2009 to 2019 (cont.)



Source: Landgate (2019)

Industrial property sales by industrial centre – lots less than one hectare

Industrial property sales between 2010 and 2019, for properties on lots less than one hectare, is shown in Figure 46. Wangara recorded the most sales with an average of 39 sales per annum. Neerabup and Henderson recorded the lowest number of sales per annum with an average number of zero and two per annum respectively.

Sales values have remained relatively consistent throughout the 10-year period for most centres. The median value of sales for Balcatta, Kwinana, Wangara and Malaga have been the most stable over the 10-year period, which may indicate a stable supply of industrial properties on lots less than one hectare within this timeframe. Henderson appears to have a greater fluctuation of sales values, with a spike in 2013. This is likely linked to low sales volume for the area. Since 2014, sales volumes have fallen substantially in Balcatta, and Bassendean/Bayswater while values have only marginally increased.

Figure 46: Industrial property sales – Lots less than one hectare, 2010 to 2019

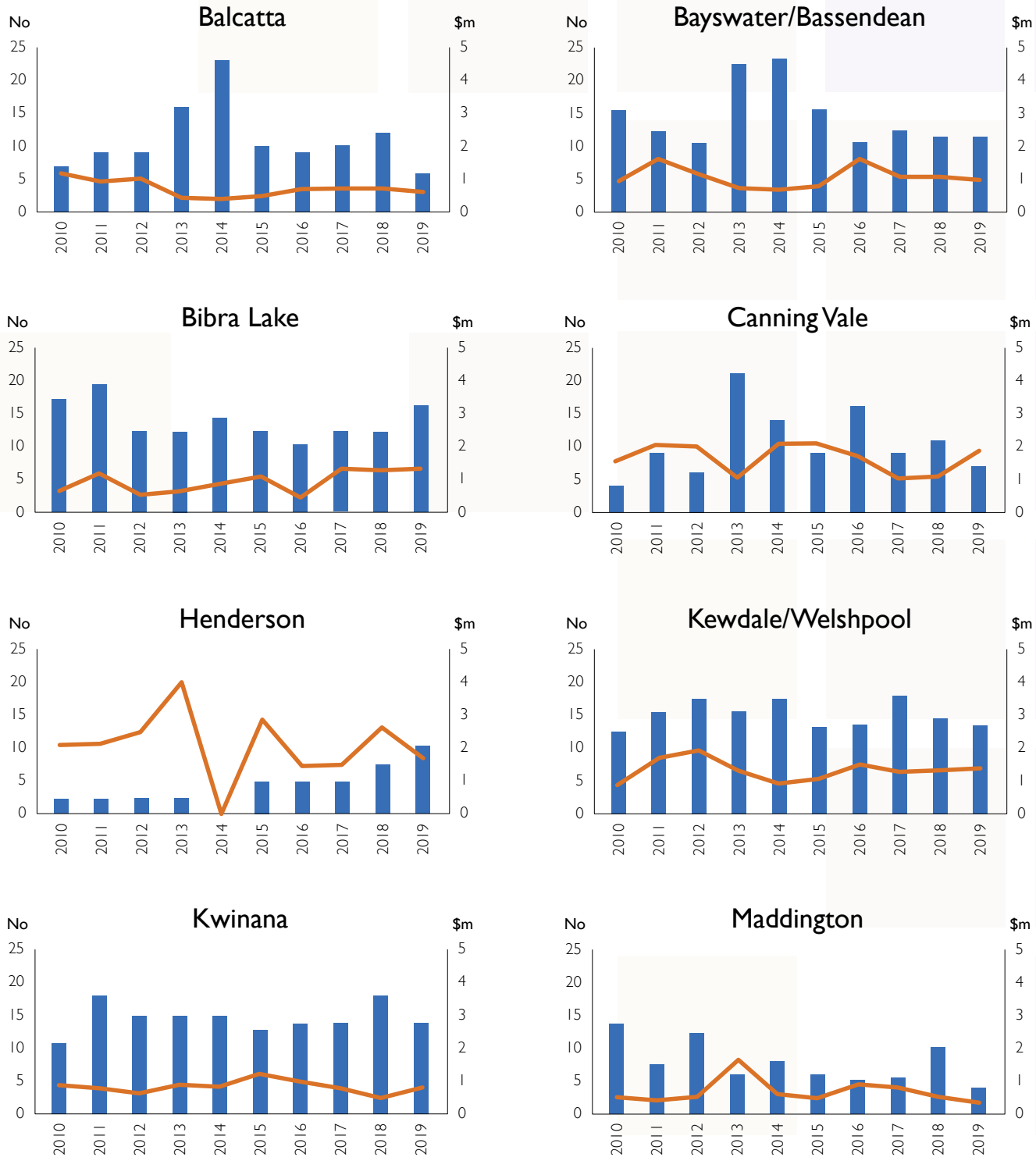
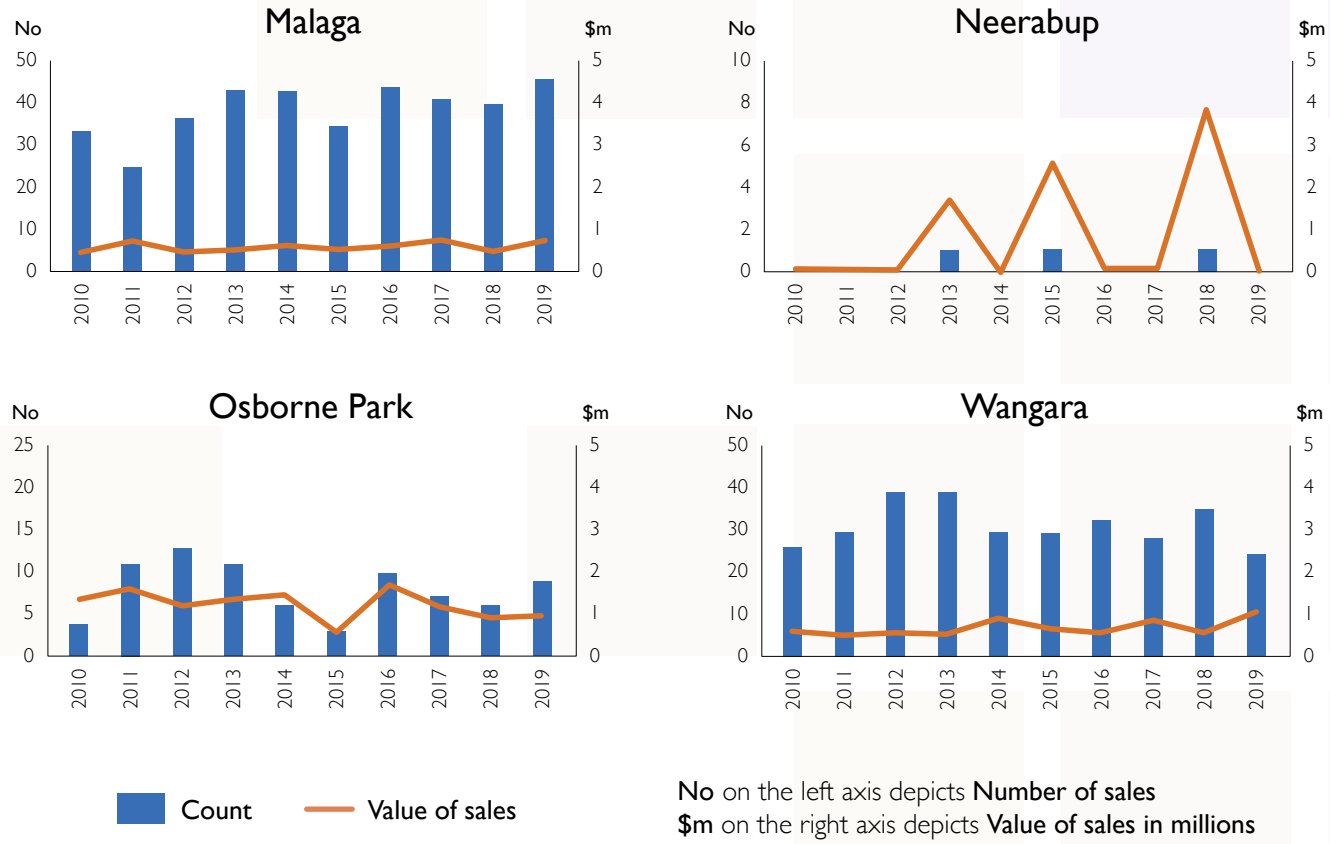


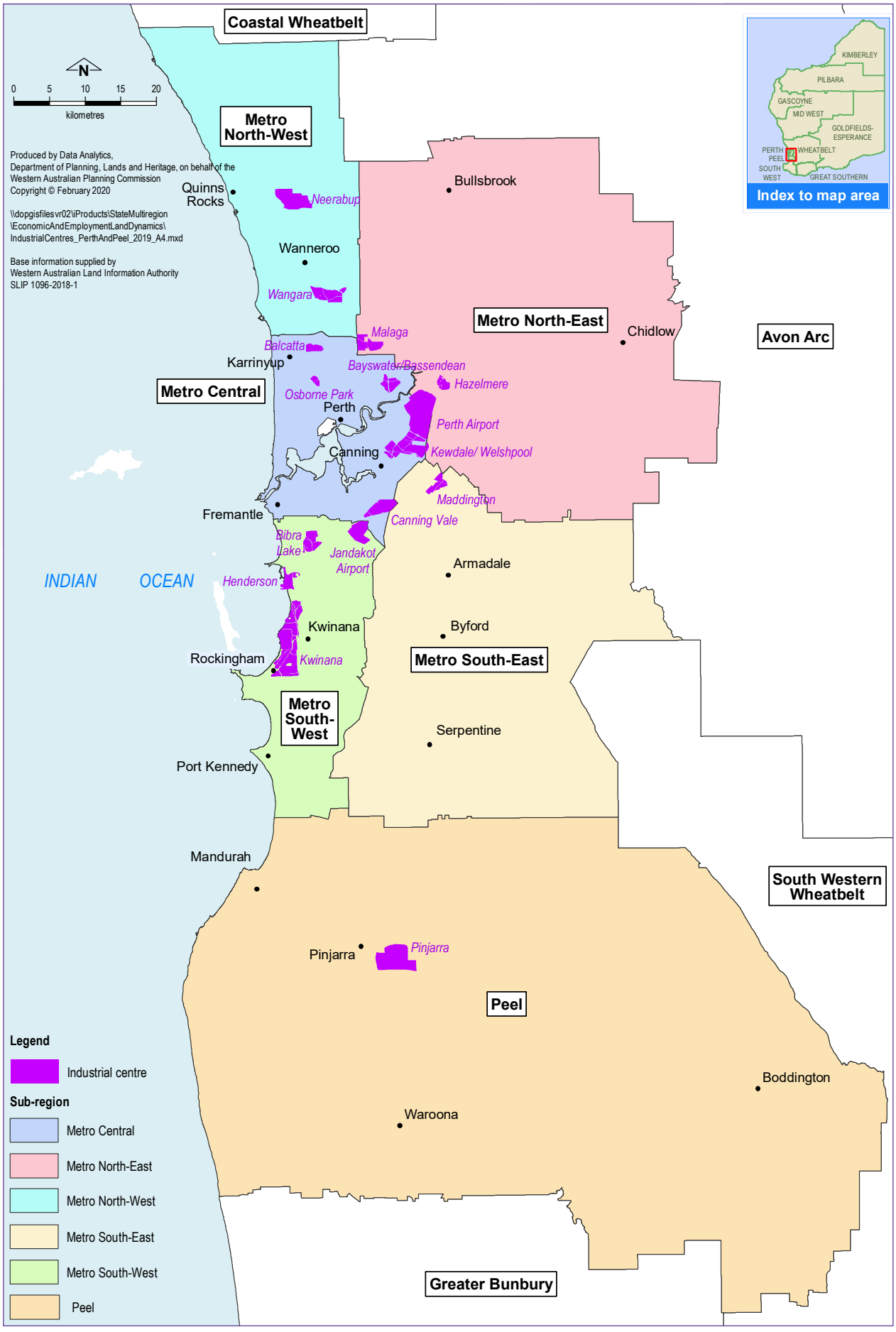
Figure 46: Industrial property sales – Lots less than one hectare, 2010 to 2019 (cont.)



No on the left axis depicts **Number of sales**
$m on the right axis depicts **Value of sales in millions**

Source: Landgate (2019)

Industrial Centres 2020 – Perth metropolitan and Peel regions



10 Definitions and methodology

Integrated Regional Information System (IRIS)

The model is a geographic information system (GIS) based tool used to assess key measures of industrial land use characteristics in the Perth metropolitan and Peel regions. The industrial centre profiles examine patterns of existing industrial land use to inform planning decisions relating to future land supply. The data presented in this section is calculated as at the end of 2017.

The IRIS model has been developed using a hierarchical classification system to allocate over 4,000 individual local planning scheme zone categories across Western Australia into one of seven simplified primary land-use categories, each with related secondary categories. The seven primary land-use categories are; industrial, commercial/ business, residential, recreation/conservation, rural, special and infrastructure and public purpose.

It is noted that the number and range of land uses which may be permitted within a given zone may vary greatly between local planning schemes. To add to the complexity of this issue, local planning schemes allow for a range of land uses that may not be immediately apparent from the zone category name alone.

Whilst this issue is challenging, it demonstrates the difficulties of monitoring land use and land tenure over time. The IRIS model is intended to rationalise the complications that exists within local planning schemes for the purposes of broadly assessing stocks of zoned land, temporal land supply and the dynamics of existing development across Western Australia.

The IRIS model enables the reporting of the stock of zoned land at the latter stages of the land supply pipeline; that is, after land has undergone rezoning (where necessary) in the local planning scheme and is largely serviced with the appropriate infrastructure. In the context of this report, it provides a measure of assessing stocks of industrial zoned land that is 'development ready' in the form of constructed lots.

Tiered land supply assessment

Tier one: Tier one refers to land zoned for development for the specified primary land use. This tier encompasses land that is potentially available for development within the defined geographic catchment. For this tier, over 4,000 individual local planning scheme zone categories across Western Australia are categorised into one of seven simplified primary land use categories:

- Residential
- Commercial/Business
- Industrial
- Rural
- Special zones
- Infrastructure and public purpose
- Recreation and conservation

Tier two: Tier two refers to the development status of land zoned for the specified primary land use. This tier splits the total stock of land zoned for development into developed, unrated and undeveloped areas.

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

Unrated refers to lots that are zoned for development for the specified primary land use 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, 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. This classification may include a mix of both developed and undeveloped lots.

Undeveloped refers to lots that are zoned for development for the specified primary land use that is recorded as vacant in Landgate's property valuation database. Under the IRIS model, the stock of undeveloped lots is a measure of future land supply.

Tier three: Tier three refers to the nature of development (premises) by assessing the development type against the intended land use as indicated by the local planning scheme zone.

Industrial uses refer to development (premises) that are considered to be consistent with the primary land use objective of land zoned as industrial.

Non-industrial uses refer to development (premises) which differ in type from the principal land use objective of land zoned as industrial. An example of a non-industrial use is residential or rural development (premises) on land that could theoretically accommodate industrial development. If, in the future, lots which were first developed for non-industrial uses were to be re-developed for industrial uses, this lot would notionally contribute to land supply.

Land Use and Employment Survey

PRI (Primary/Rural)

Land use activities which usually involve the use of large areas of land including mining, agriculture, fishing and nature conservation. The function of many of these activities is to make use of, or extract from, the land in its natural state. Since such activities are the first step in the production process they are quite distinct from the other categories.

MAN (Manufacturing/Processing/Fabrication)

This category includes land use activities involving the manufacture, processing and fabrication of all general goods. Both the scale and associated environmental impact of these activities separate them from other land use categories.

STO (Storage/Distribution)

Any land use activity which involves the storage, warehousing or wholesaling of goods usually conducted from large structures, or involving large bulky goods, but does not include activities that attract general retail trade activities.

SER (Service Industry)

This category includes service industries offering a range of services. The scale and environmental impact of such activities require their separation from other land uses. These services include film processing, cleaning, motor vehicle and other repair services, and other servicing activities, including some construction activities.

SHP (Shop/Retail)

Any activity which involves the sale of goods from a shop located separate to and/or in a shopping centre other than those included in category 6 – Other Retail.

RET (Other Retail)

Many of these activities normally are not accommodated in a shopping centre. By virtue of their scale and special nature, the goods of these activities separate them from the Shop/Retail category (e.g. car sales yard, carpet showroom).

OFF (Office/Business)

Administrative, clerical, professional and medical offices are activities which do not necessarily require the land area/floor space or exposure of other land uses. Although offices require building and parking facilities, these needs are quite distinct from those of commercial uses and service industries.

HEL (Health/Welfare/Community Services)

Includes government, government-subsidised and non-government activities which provide the community with a specific service, such as hospitals, schools, personal services and religious activities.

ENT (Entertainment/Recreation/Culture)

Activities which provide entertainment, recreation and culture for the community and which occur in building and/or on land, such as passive and active sports venues, museums, amusements, gambling services, hotels and the like.

RES (Residential)

Includes all types of residential land use ranging from single housing to nursing homes for the aged, residential hotels, motels, other holiday housing, institutions and religious housing. Floor space and employment on private Residential land uses are not included in the output of the Commercial Land Use Survey.

UTE (Utilities/Communications)

All forms of local, State, national and international communication, transport and other utilities (electricity, gas, water, sewerage, roads, parking and other transport or communication-related activities, etc.) covering the public and private sectors.

VFA (Vacant Floor Area)

This category accounts for vacant floor areas of buildings including non-residential and residential.

VLA (Vacant Land Area)

Includes land which has not been improved by development and remains unused.

Other terms

Landgate's property valuation database maintains information on rateable and taxable land throughout Western Australia.

Land supply: Land supply refers to the amount of land that is zoned for development for the specified purpose and is undeveloped.

Lot supply: Lot supply refers to the number of developed and serviced lots.

Industrial centres: Industrial centres have been defined using 2011 Census destination zones published by the Australian Bureau of Statistics. The centres have been developed using a best fit approach to reflect the extent of industrial land development within each centre and the extent of land zoned under the relevant local planning scheme.

DZN (Destination Zones): refers to geographies developed by individual state or territory governments' transport authorities, for the analysis of commuting patterns and the development of transport policy. The Destination Zones regions are not an Australian Statistical Geography Standard structure and do not represent an Australian Bureau of Statistics (ABS) standard.

Acronyms and abbreviations

ABS	Australian Bureau of Statistics
CCI	Westpac-Chamber of Commerce and Industry
DPLH	Department of Planning, Lands and Heritage
DZN	Destination Zone
EELS	Economic and Employment Lands Strategy
GDP	Gross Domestic Product
Ha	hectare
IRIS	Integrated Regional Information System
N.E.C	Not elsewhere classified
REIWA	Real Estate Institute of Western Australia
UDP	Urban Development Program

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