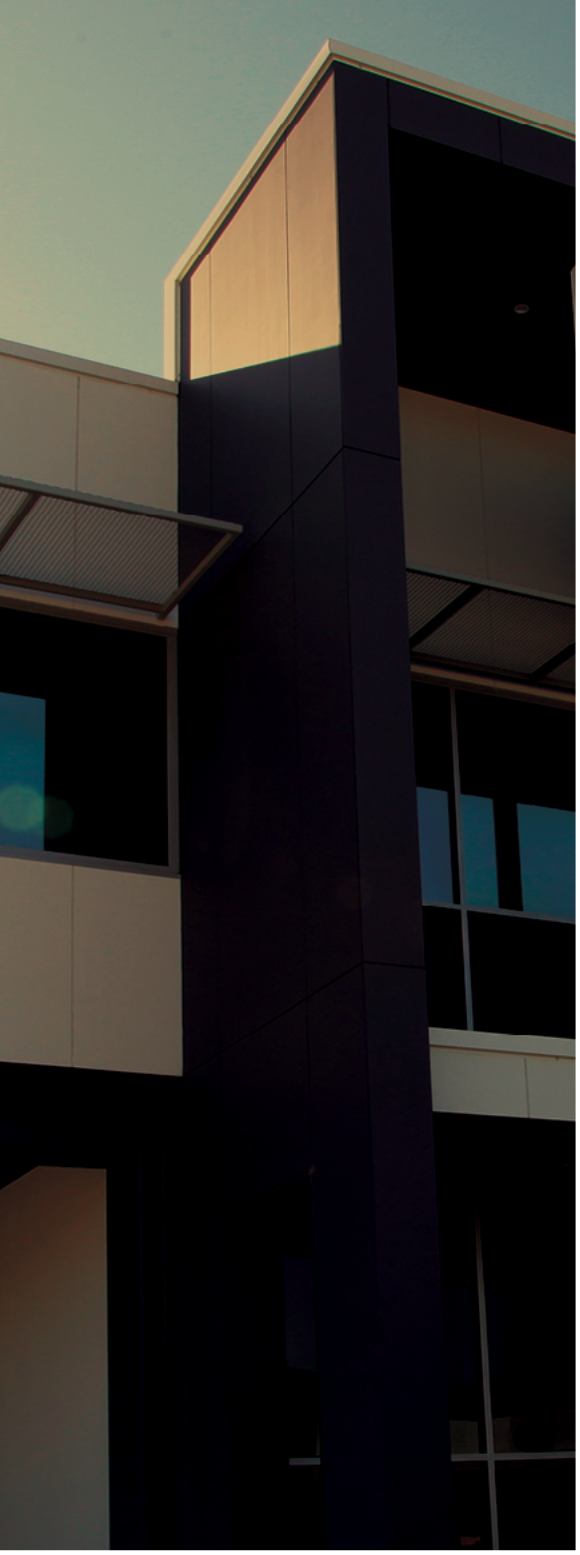

Urban Development Program

Economic and Employment Land Monitor

Perth metropolitan and Peel regions

April 2015

Department of Planning

Western Australian Planning Commission

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Executive Summary

The Western Australian Planning Commission's Economic and Employment Land Monitor represents the first in depth analysis on the employment and land use characteristics of selected major industrial centres in the Perth metropolitan region. Employment land is broadly defined as land that could be used for employment generating activities and industrial centres are key locations of employment land.

The Economic and Employment Land Monitor uses the tiered land supply assessment model, the central output of the Department of Planning's Integrated Regional Information System (IRIS), to report on land use dynamics. The industrial centre profiles examine patterns of existing industrial land use to inform planning decisions relating to future land supply. The land supply data presented in the report is calculated as at the end of 2013.

The Economic and Employment Land Monitor details the stock of industrial zoned land at the latter stages of the land supply pipeline that is development-ready i.e. after land has undergone rezoning (where necessary) in the local planning scheme, is largely serviced with appropriate infrastructure, and where appropriate, subdivided. Land supply is one of the most widely discussed aspects of the Western Australian planning and development system. Maintaining an adequate stock of employment land facilitates economic development.

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 market activity.

Key findings

- Net industrial land consumption through subdivision in the Perth metropolitan and Peel regions has fluctuated between 100 and 300 hectares per annum since 2001.
- Between 2001/02 and 2013/14, net industrial land consumption through final subdivision approvals averaged 215 hectares per annum.
- As of the 2011 Census there were 121,629 people employed across thirteen profiled industrial centres.
- Manufacturing is the largest industry sector at 26 per cent of all employment across the profiled industrial centres.
- At the tier one level of the tiered land supply assessment model, there is 5,560 hectares of land zoned as industrial across the profiled industrial centres.
- The profiled industrial centres are nearly fully developed with almost 90 per cent of land zoned for industrial use categorised 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 50 per cent of the land zoned as industrial.
- There is a prevalence of small lots in the profiled industrial centres, with approximately 90 per cent of all industrial lots being no more than 1 hectare in size. In terms of total land area, small lots encompass one third of land zoned as industrial in the industrial centres.
- Between 1993/94 and 2005/06, the median sales values of both industrial land and property in the Perth metropolitan region rose slowly before rapidly increasing in the late-2000's as demand exceeded supply. The median sales values have largely been maintained since then.

Economic and **Employment Land Monitor**

Perth metropolitan and Peel regions

Link to complete and interactive list of tables and figures over the page

The graphic on the left and on every page is a quick link to the Contents, which are also interactive.

List of figures

List of tables

1.0 Introduction

The Urban Development Program

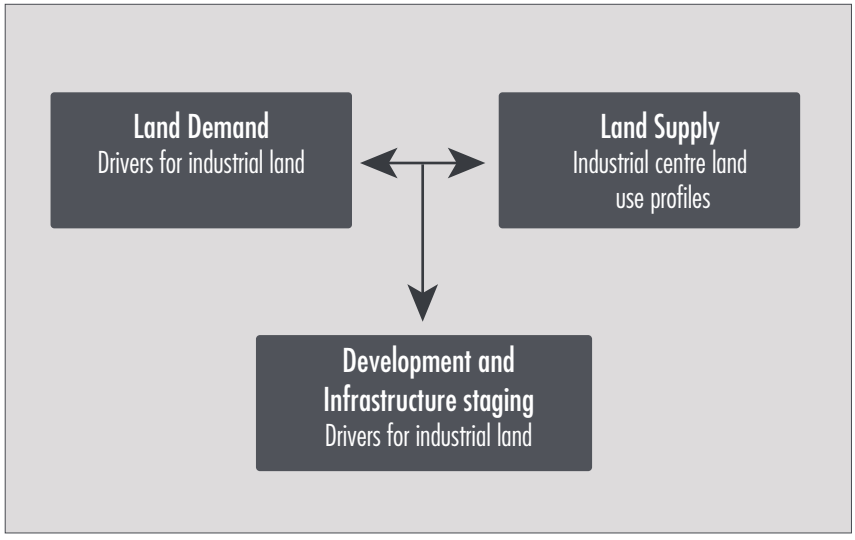
The Department of Planning prepares the Urban Development Program (UDP) for the Western Australian Planning Commission to support inter-agency decision-making regarding urban development and the provision of infrastructure and services.

The Urban Development Program 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 Program 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 such as the *Economic and Employment Lands Strategy: non-heavy industrial, Perth metropolitan and Peel regions* (EELS) and is an implementation tool for *Directions 2031 and Beyond.*

The *Economic and Employment Land Monitor* report forms a major 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 statewide 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



2.0 Demand drivers for industrial land

Key points

- The drivers for industrial land demand are complex.
- The demand for well-located industrial land will remain strong in the Perth metropolitan and Peel regions.
- The combination of a continued export oriented economy, economic growth and population growth are likely to drive demand for industrial land in the Perth metropolitan and Peel regions for a considerable time.

Economic conditions and population growth interact to drive demand for industrial land. Figure 2 shows the relationships between economic and demographic factors that influence the demand for industrial land.

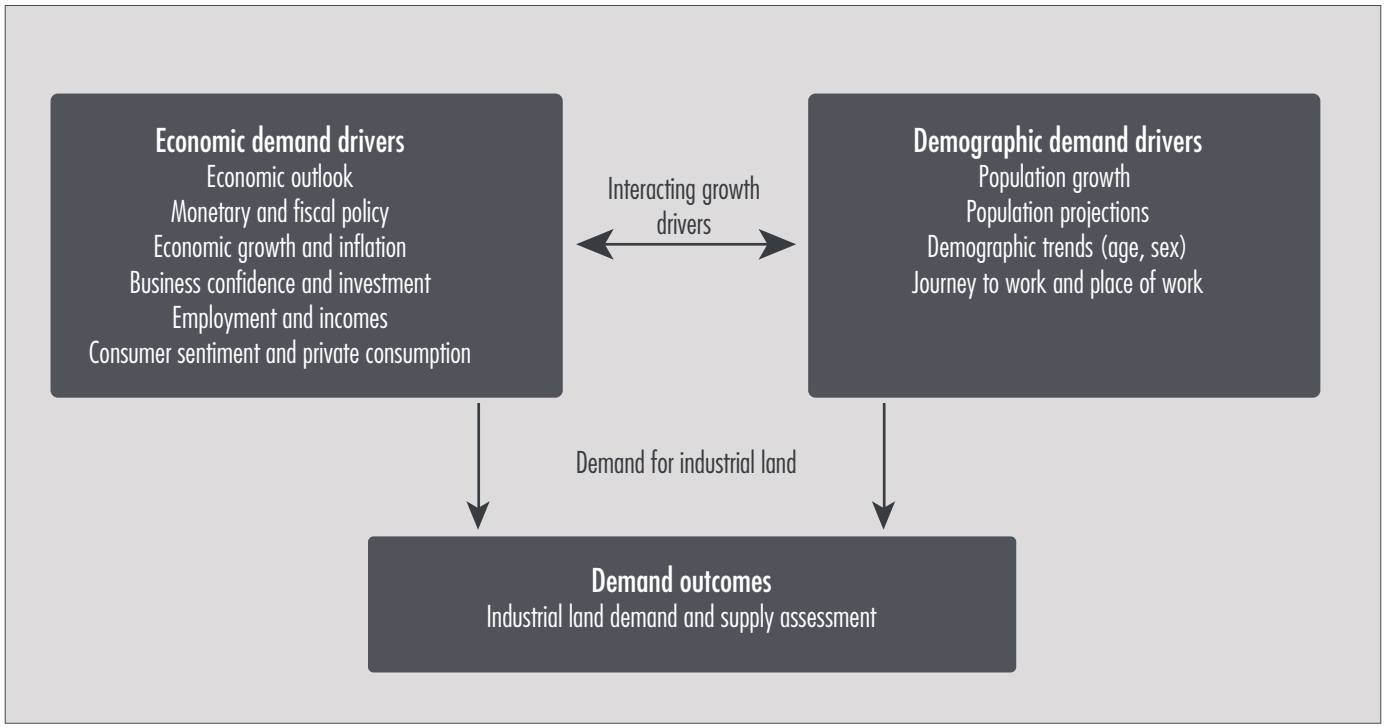
Population growth

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

Western Australia has experienced above average levels of population growth over the past decade. The State had a population growth rate in Australia at 2.2 per cent over the 12-month period, ending June 2014.[1] Although this growth is now moderating, Western Australia's annual population growth is projected to be 1.9 per cent for the forward estimates period to 2017/18.[2]

1 Australian Bureau of Statistics Catalogue 3101.0 – Australian Demographic Statistics, June 2014
2 Department of Treasury, 2014, *2014-15 Government Mid-year Financial Projections Statement*

Figure 2: Economic and demographic demand drivers



Economic outlook

The economic outlook is a fundamental starting point in assessing industrial land demand. The industrial market in the Perth metropolitan and Peel regions is closely linked to the fortunes of the State's significant export industries such as mining, agriculture and food, manufacturing, civil engineering and construction. The profitability of adding value to locally produced or imported products and demand for those 'value added' outputs drives industrial land demand.[3] Over the past decade, business investment in the resources sector and other export industries has flowed through to other sectors of the economy, some of which also add to industrial land demand. Industries such as wholesale and retail trade and financial services benefit from an increase in export demand.[4] Downturns in major industries which underpin industrial land demand can have implications for the broader industrial land market.

Economic growth for Western Australia is expected to be moderate in the near term as the economy continues to transition from investment driven to export led growth.[5] Key parameters of the economic forecast for Western Australia are provided in Table 1.

Business investment and confidence

Business investment is a key driver of economic growth and a critical factor in the demand for industrial land. Increased business investment impacts on the demand for labour, wage growth, and population growth.[6]

During the past decade, the record growth in business investment in Western Australia was driven by the construction of major liquefied natural gas (LNG) and iron ore projects which appears to have peaked during 2012/13 (Figure 3). Business investment in the State represented 26.4 per cent of all business investment in Australia in 2013. The outlook for business investment in major resource projects is forecast to decline as projects move into their operational phase. The decline in spending on major projects is expected to be partially offset by a growth in business investment in the non-resources sectors of the economy such as residential construction. Total business investment in Western Australia is forecast to decline by seven per cent in 2015/16, and 2.5 per cent in 2017/18.[7] New business investment in Australia is forecast to fall by 4.5 per cent in 2014/15 and 3 per cent in 2015/16.[8]

3 Western Australian Planning Commission, 2012, *Perth and Peel Development Outlook 2011/12*
4 Chamber of Commerce and Industry, 2013, *Economic Reach of the Western Australian Resources Sector*
5 Department of Treasury (2014), 2014-15 Government Mid-year Financial Projections Statement
6 Western Australian Planning Commission, 2012, *Perth and Peel Development Outlook 2011/12*
7 Department of Treasury (2014), 2014-15 Government Mid-year Financial Projections Statement
8 Government of Australia (2014), Budget 2014-15 Mid-Year Economic and Fiscal Outlook

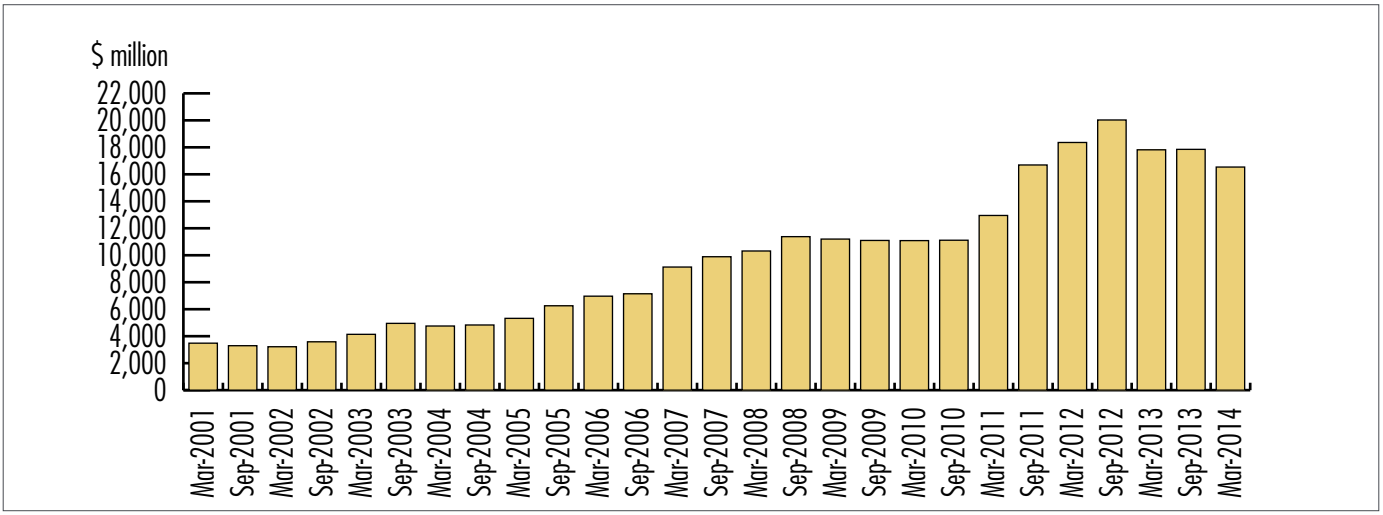
The Westpac-Chamber of Commerce and Industry (CCI) Survey of Business Expectations is an indicator for business confidence in Western Australia. The June quarter 2014 found that 46 per cent of WA businesses expect economic conditions to deteriorate over the next 12 months; with only 15 per cent of businesses expecting economic conditions to improve over the coming year. The deterioration in confidence reflects the challenging operating environment, with trade conditions and exports declining and softening demand for labour.[9]

Table 1: Key economic forecasts and parameters – Western Australia

	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
	Actual	Estimated Actual	Budget Estimate	Forward Estimate	Forward Estimate	Forward Estimate
Average annual growth	**%**	**%**	**%**	**%**	**%**	**%**
Gross State Product growth (GSP)	5.1	3.75	2.25	2.25	3.75	5.0
State final demand growth	5.0	0.25	-1.0	0.25	1.25	2.0
Household consumption growth	3.9	2.0	1.75	2.75	3.5	3.75
Business investment growth	8.3	-7.5	-9.5	-7.0	-5.0	-2.5
Dwelling investment growth	-1.8	14.0	10.0	4.0	2.0	1.5
Government investment growth	2.0	3.75	-1.0	0.5	1.0	2.5
Population growth	3.5	2.6	1.9	2.0	2.1	2.2
Employment growth	3.5	1.5	2.25	1.75	1.75	2.0
Unemployment rate	4.4	5.0	5.25	5.25	5.0	4.75
Consumer Price Index growth (CPI)	2.3	3.0	2.25	2.5	2.5	2.5
Wage Price Index growth	4.0	3.25	2.75	3.25	3.5	3.75
Median House Price	7.1	6.6	2.5	1.4	0.8	1.5
Crude oil price ($US/barrel)	92.2	108.9	85.4	80.6	83.6	85.7
Exchange rate US / A (cents)	102.7	91.5	87.2	83.3	81.8	80.8
Effective iron ore price ($US/tonne) free on board (FOB)	121.1	114.4	65.9	68.1	70.3	72.6

Source: Department of Treasury (2014) 2014-15 Government Mid-year Financial Projections Statement

Figure 3: Private business investment – Chain volume, seasonally adjusted – Western Australia



Source: Australian Bureau of Statistics Catalogue 5206.0 - Australian National Accounts: National Income, Expenditure and Product, March 2014

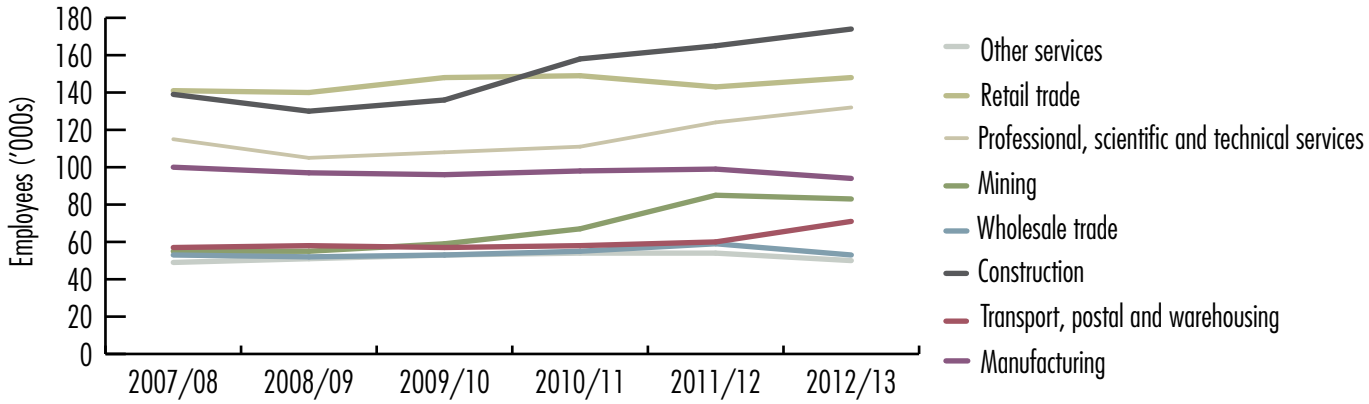
[9] Westpac, CCI Survey of Business Expectations, June Quarter 2014

Employment

Demand for goods and services generated or value added in Western Australia leads to demand for labour and industrial land. Over the past decade, sustained business investment in major projects has contributed to employment growth.[10] Figure 4 shows the changes in employment levels of major industries of employment from 2007/08 to 2012/13 for Western Australia. In recent years, there has been growth in the construction industry, as well as in transport, postal and warehousing, retail trade and professional, scientific and technical services.

Employment growth in Western Australia averaged 3.7 per cent per annum over the three years to 2012/13. Since then, employment growth has eased and is consistent with a decline in business investment from its peak in 2012/13. The forecast for employment is for growth of 2.25 per cent in 2014/15.[11] The forward estimates for employment growth for the whole of Australia are 1 per cent for 2014/15 and 1.75 per cent for 2015/16.[12]

Figure 4: Change in employment by industry – Western Australia



Source: Australian Bureau of Statistics Catalogue 8155.0 – Australian Industry 2012-13 (2014)

Other Drivers

Beyond economic and demographic drivers, the demand for industrial land is influenced by industry specific characteristics, such as market trends, technological advancement and operational innovations. These include shifts in scale and size of production operations; emphasis on research and development activities; cleaner, less polluting processes; increasing the hours of operation; growth of small to medium size enterprises in both the services and manufacturing sectors; greater use of machinery, trucks and computer control of stock; and use of broadband and other technology.[13]

Freight network and industrial land

Industrial land in Perth plays a vital role in the efficient movement of goods within and outside the metropolitan area. Freight movement is anticipated to rise in the future which has implications for existing freight intermodal terminals located in industrial centres. Increased freight activity will intensify the importance of these industrial centres in the freight network and in the wider metropolitan area. Future growth in freight activity will also generate demand for additional land for new intermodal facilities, including container storage, in suitable locations. Future development of the freight network will aim to grow supply chain efficiencies, and generate synergies with associated industrial land uses.[14] [15]

[10] Western Australian Planning Commission, 2012, *Perth and Peel Development Outlook 2011/12*
[11] Department of Treasury, 2014, *2014-15 Government Mid-year Financial Projections Statement*
[12] Government of Australia (2014), Budget 2014/15, Mid-Year Economic and Fiscal Outlook
[13] Western Australian Planning Commission, 2012, *Perth and Peel Development Outlook 2011/12*
[14] Western Australian Planning Commission, 2012, *Economic and Employment Lands Strategy*
[15] Department of Transport, 2013, Western Australian Regional Freight Transport Network Plan

3.0 Supply of development ready industrial land

Key points

- At times, there can be a mismatch between industrial land supply and the preferences of potential buyers and tenants.
- Industrial land consumption in the Perth metropolitan and Peel regions has fluctuated between 100 and 300 hectares per annum since 2001 (net figure, based on subdivision).
- On average, approximately 215 hectares of industrial land was consumed through final subdivision approval over the same period.

The term 'land supply' is often used in different contexts with quite 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 development in the relevant region or local planning scheme and is undeveloped (industrial zoned land in the context of industrial zoned land supply).[16]

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.[17]

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. The expansion of non-industrial land uses, such as retail and office space, in traditional industrial areas presents increased competition for industrial land buyers and tenants, particularly in the Central sub-region of the Perth metropolitan area.[18]

With the supply of development ready industrial land there is a need for maintaining an adequate mix of lot sizes to cater for small to medium firms, and also businesses that require larger facilities or storage areas. In recent years, there has been increasing demand for larger lots while there continues to be limited growth in the availability of larger parcels of industrial land.[19]

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 100 to 300 hectares per annum. Industrial land consumption through subdivision averaged approximately 215 hectares per annum between 2001/02 and 2013/14 (Figure 5). 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.

As detailed in Section two, wider economic conditions leading to changes in market conditions can influence the demand and consequently, the consumption of industrial land and contribute to fluctuations in the consumption rate. Industrial land costs and availability are major constraints to industrial land consumption.[20] When land supply is limited, industries may be forced to delay or limit expansion plans or seek alternative sites (interstate or overseas). Rising land costs can impact on the competitiveness of Perth as a viable destination for industries to establish operations. Capacity to access finance for expanding or establishing operations can also constrain the ability to realise the consumption of industrial land.[21]

Industrial subdivision approvals

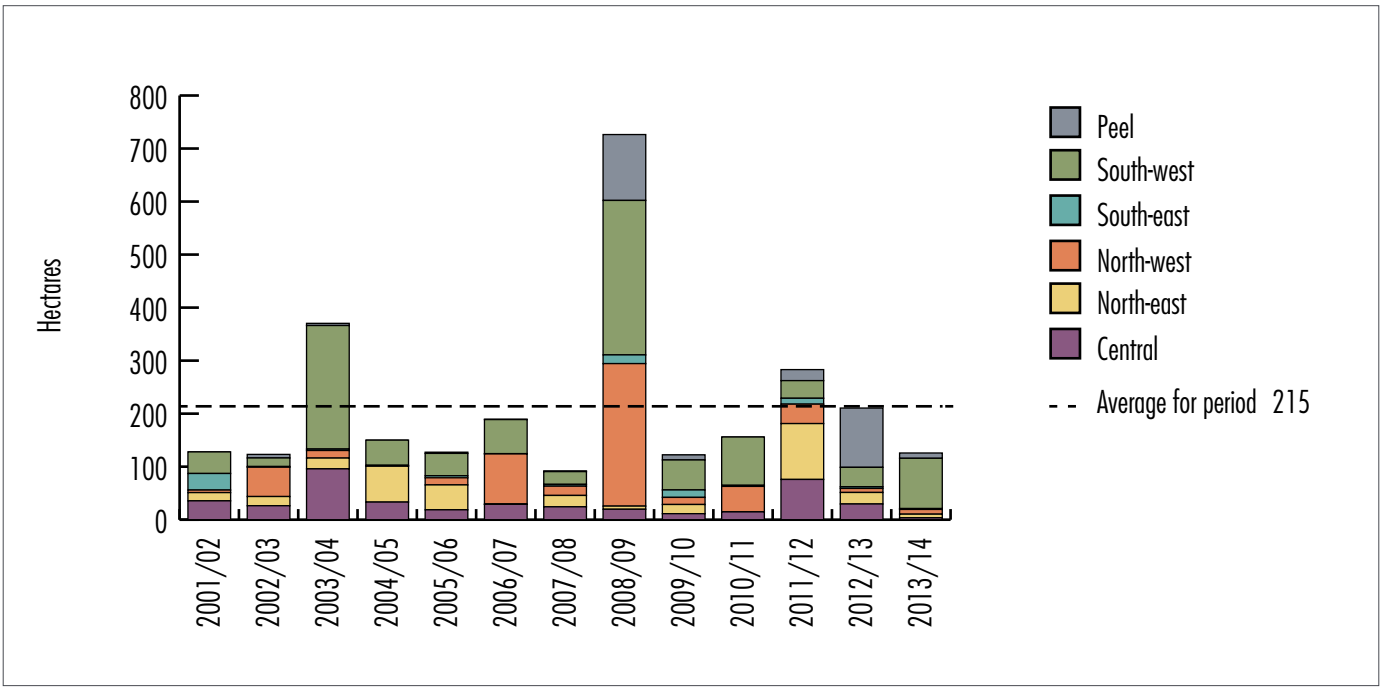
Final subdivision approvals represent lot creation and broadly correspond to zoned land consumption. The type and form of industrial development, however, can be difficult to accurately monitor as the subdivision of industrial land provides limited information on the type and intensity of industrial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

As at the end of June 2014, there were 2,338 lots with conditional approvals for industrial subdivision (Table 2). The highest stock of proposed lots with conditional approval was in the North-west sub-region (Figure 6). During 2013/14, 477 lots were granted

16 Western Australian Planning Commission, 2014, *Urban Growth Monitor*
17 Western Australian Planning Commission, 2012, *Economic and Employment Lands Strategy*
18 Western Australian Planning Commission, 2012, *Economic and Employment Lands Strategy*
19 Property Council of Western Australia, 2013, Encouraging Industrial Land Development in Perth
20 Knight Frank, 2014, Perth Industrial Market Brief May 2014
21 Western Australian Planning Commission, 2012, Statewide Industrial Developers' Intentions Survey 2011

conditional approval, of which approximately one third were in the Central sub-region and one third were in the North-west sub-region. Final approvals were issued for 106 lots in 2013/14. Just under half of the 106 lots were in the Central sub-region. Due to a number of factors such as landowner intentions, market conditions, servicing conditions, not all conditional approvals reach final approval stage.[22]

Figure 5: Historical industrial land consumption – Final subdivision approvals



Source: Department of Planning, internal database (2014)

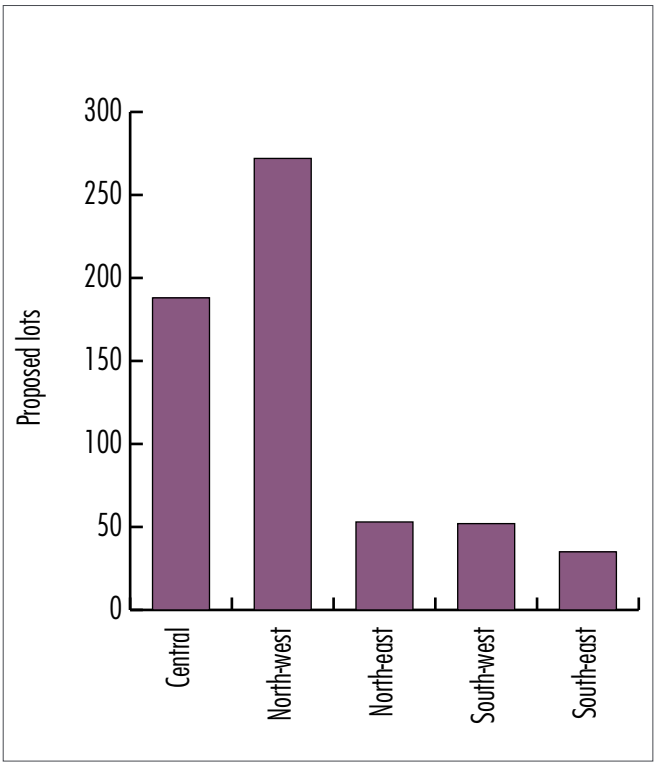
Table 2: Industrial subdivision activity 2013/14

Sub-region	Applications lodged	Applications under assessment	Conditional approvals granted	Stock of current conditional approvals	Final approvals issued
	1 July 2013 – 30 June 2014	As at 30 June 2014	1 July 2013 – 30 June 2014	As at 30 June 2014	1 July 2013 – 30 June 2014
	Proposed lots	**Proposed lots**	**Proposed lots**	**Proposed lots**	**Lots**
Central	134	7	157	188	51
North-west	107	30	141	272	23
North-east	17	4	22	53	7
South-west	49	1	35	52	15
South-east	91	65	48	35	5
Perth metropolitan region sub-total	**398**	**107**	**403**	**600**	**101**
Peel	68	0	74	133	5
Total	**466**	**107**	**477**	**733**	**106**

Source: Department of Planning, internal database (2014)

[22] Western Australian Planning Commission (2012) *Economic and Employment Lands Strategy*

Figure 6: Industrial subdivision activity – June 2014 – Stock of proposed lots with current conditional approvals



Source: Department of Planning, internal database (2014)

4.0 Employment in industrial centres

Section four of this report profiles the employment characteristics of 13 industrial centres in the Perth metropolitan and Peel regions. The industrial centres in this report are defined using the Australian Bureau of Statistics 2011 Destination Zones (DZN) to recreate each centre using a best fit approach. The 13 centres profiled in the report do not capture all industrial employment in the Perth metropolitan and Peel regions. However, profiling these centres provides an indication of the scale and mix of employment in Perth's major industrial centres.

As at the time of the 2011 Census, there were 121,631 people employed across the 13 industrial centres in the Perth metropolitan and Peel regions (Table 3). The largest workforce is located within the Kewdale/Welshpool industrial centre, comprising 22 per cent of all industrial centre employment covered by this report. This is followed by the Osborne Park industrial centre (at 17 per cent) and the Canning Vale and Malaga industrial centres (both at 12 per cent) of the total employment of the 13 centres (Figure 7).

Figure 8 shows that manufacturing, at 26 per cent, is the most common industry of employment in industrial centres, followed by other industry types at 18 per cent and construction at 13 per cent.

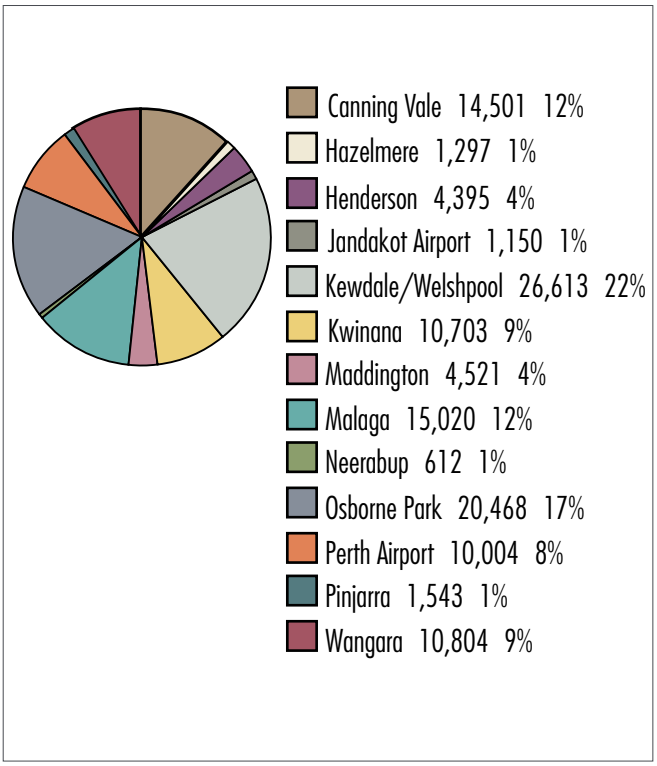
Table 3: Industrial centre by size of workforce

Industrial centre	Size of workforce (persons)
Kewdale/Welshpool	26,613
Osborne Park	20,468
Malaga	15,020
Canning Vale	14,501
Wangara	10,804
Kwinana	10,703
Perth Airport	10,004
Maddington	4,521
Henderson	4,395
Pinjarra	1,543
Hazelmere	1,297
Jandakot Airport	1,150
Neerabup	612
Total	**121,631**

Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.

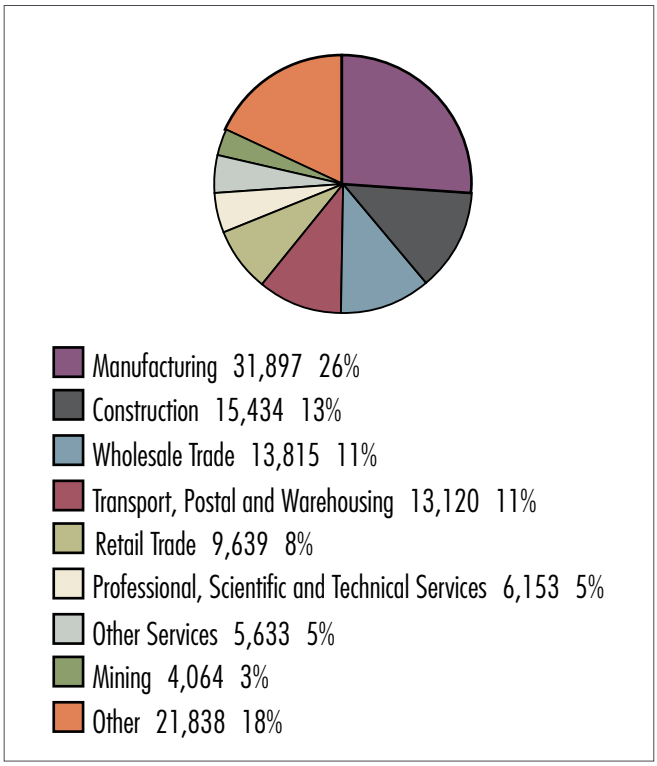
Figure 7: Size of workforce for industrial centres



Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.

Figure 8: Industries of employment in industrial centres



Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.

Figure 9 on the following page indicates that the number of employees working in the manufacturing industry is highest in the Kewdale/Welshpool industrial centre while the number of employees in the retail industry is greatest in the Osborne Park industrial centre.

The number of employees in the transport, postal and warehousing industry is greatest at Perth Airport, followed by the Kewdale/Welshpool industrial centre, indicating that these centres play a vital role in the movement of goods in the Perth metropolitan region.

Figure 10 indicates that manufacturing is an important industry at several centres, comprising at least 50 per cent of the employment at Henderson, Pinjarra and Neerabup industrial centres. Employment in the transport, postal and warehousing industry, as a proportion of all industrial centre employment, is greatest in the industrial centres in the North-east sub-region, namely at Perth Airport, followed by the nearby industrial centres of Hazelmere and Kewdale/Welshpool.

The Malaga and Wangara industrial centres show similarities in the proportions of employment in certain industries, which may indicate that the two industrial centres serve similar functions for their respective population catchments (Figure 10). Both comprise similar proportions of the manufacturing, mining, retail trade and other services industries, though absolute employee numbers in the Malaga industrial centre are greater than in the Wangara industrial centre.

Figure 9: Count of employees in industrial centres

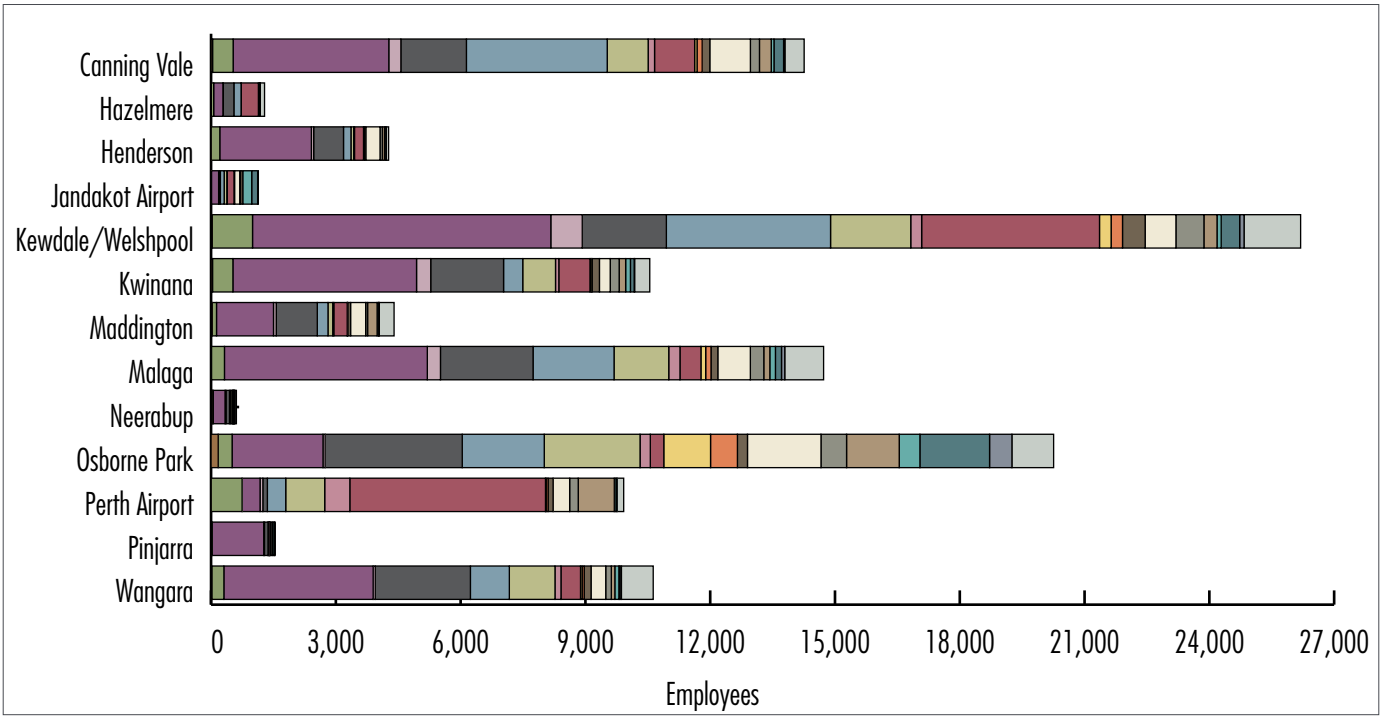


Figure 10: Share of employment in industrial centres

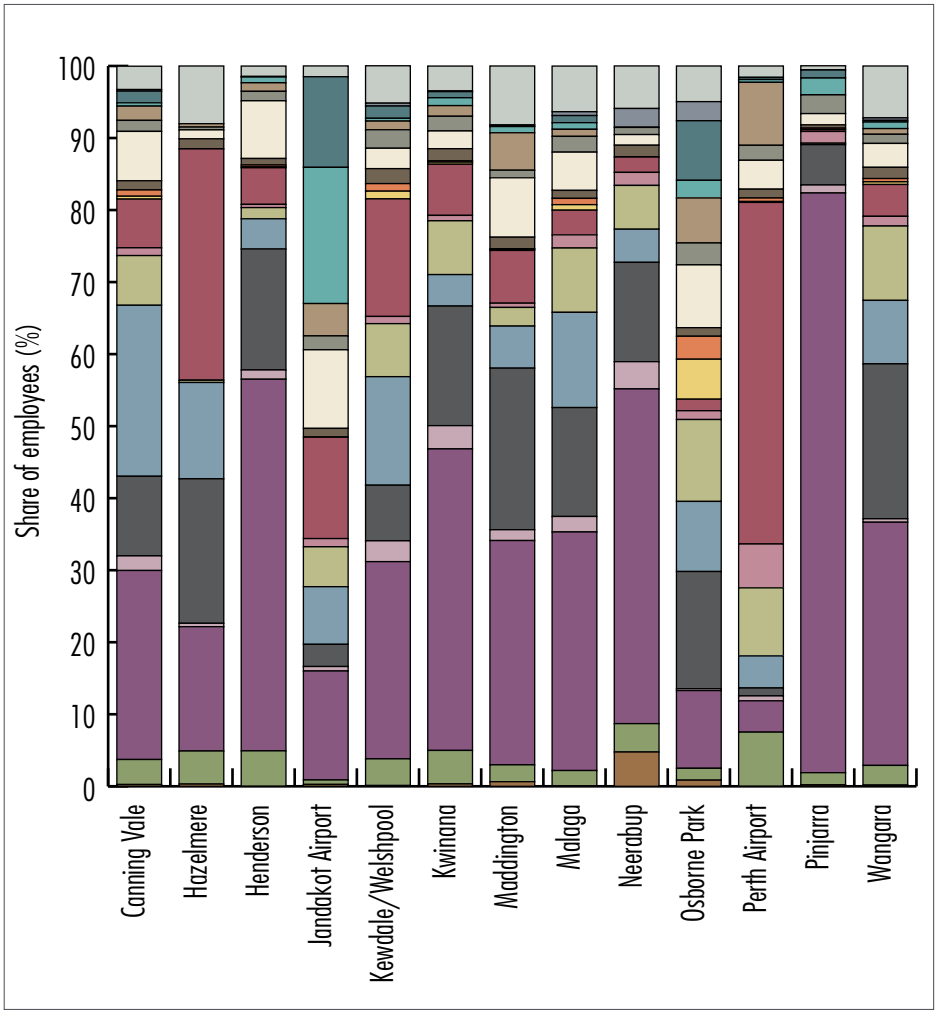


Chart legend, source and note common to Figure 9 and 10

- Other Services
- Arts and Recreation Services
- Health Care and Social Assistance
- Education and Training
- Public Administration and Safety
- Administrative and Support Services
- Professional, Scientific and Technical Services
- Rental, Hiring and Real Estate Services
- Financial and Insurance Services
- Information Media and Telecommunications
- Transport, Postal and Warehousing
- Accommodation and Food Services
- Retail Trade
- Wholesale Trade
- Construction
- Electricity, Gas, Water and Waste Services
- Manufacturing
- Mining
- Agriculture, Forestry and Fishing

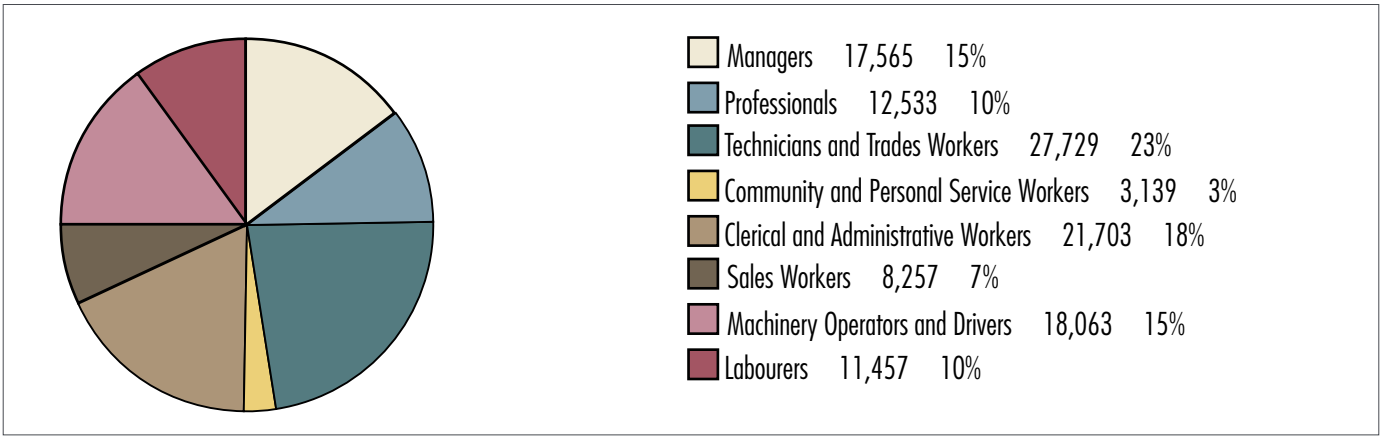
Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions

Figure 11 below shows that technicians and trade workers comprise the largest occupational group in industrial centres at 23 per cent of all workers. This is followed by clerical and administrative workers at 18 per cent, managers at 15 per cent and machine operators and drivers at 15 per cent.

Figure 12 shows that the number of professionals is highest in the Osborne Park industrial centre. The Kewdale/Welshpool industrial centre has the highest number of technician and trade workers, along with clerical and administrative workers and machinery operators and drivers.

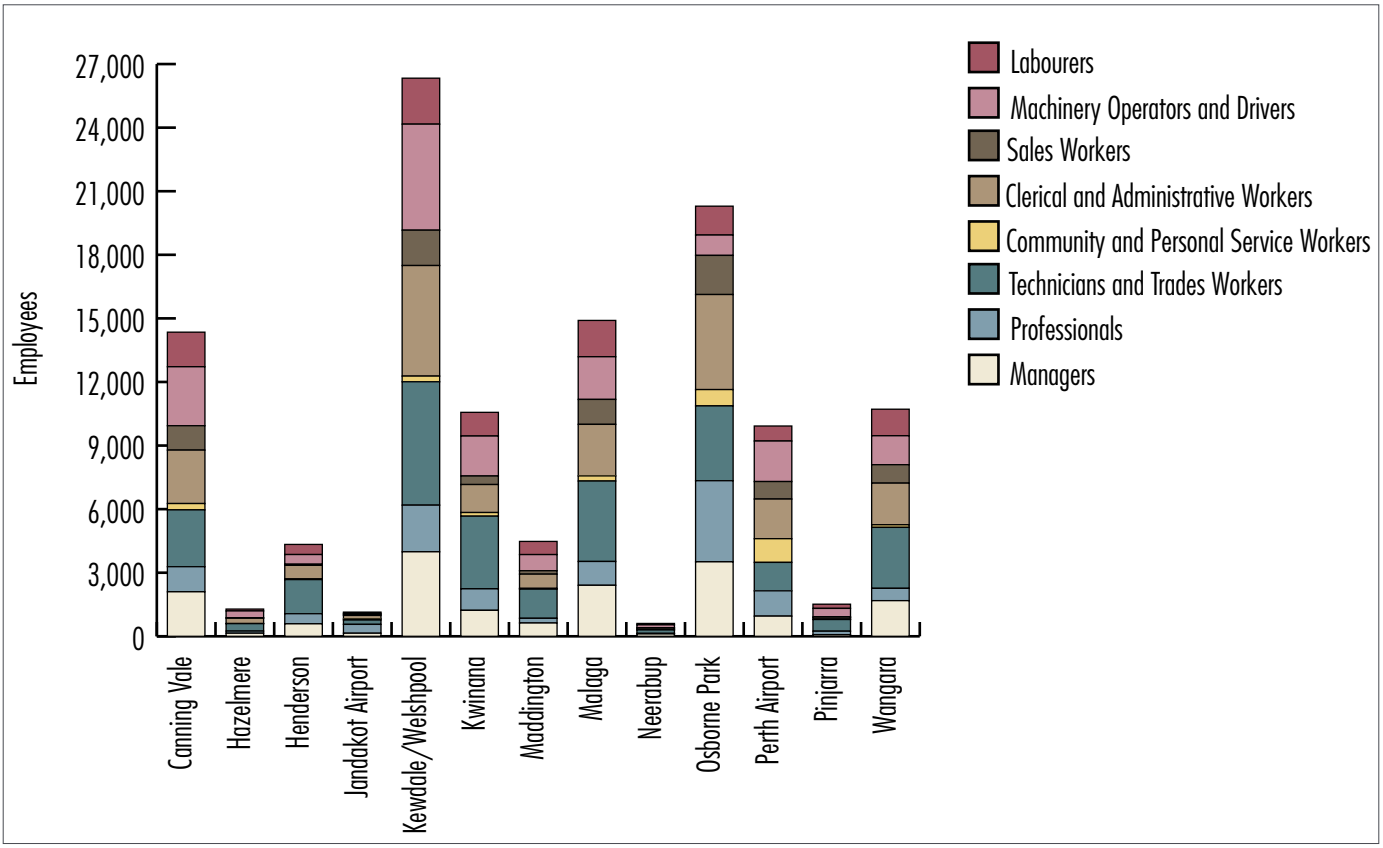
Figure 11: Occupational groups in industrial centres



Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.

Figure 12: Number of employees and their occupations within industrial centres

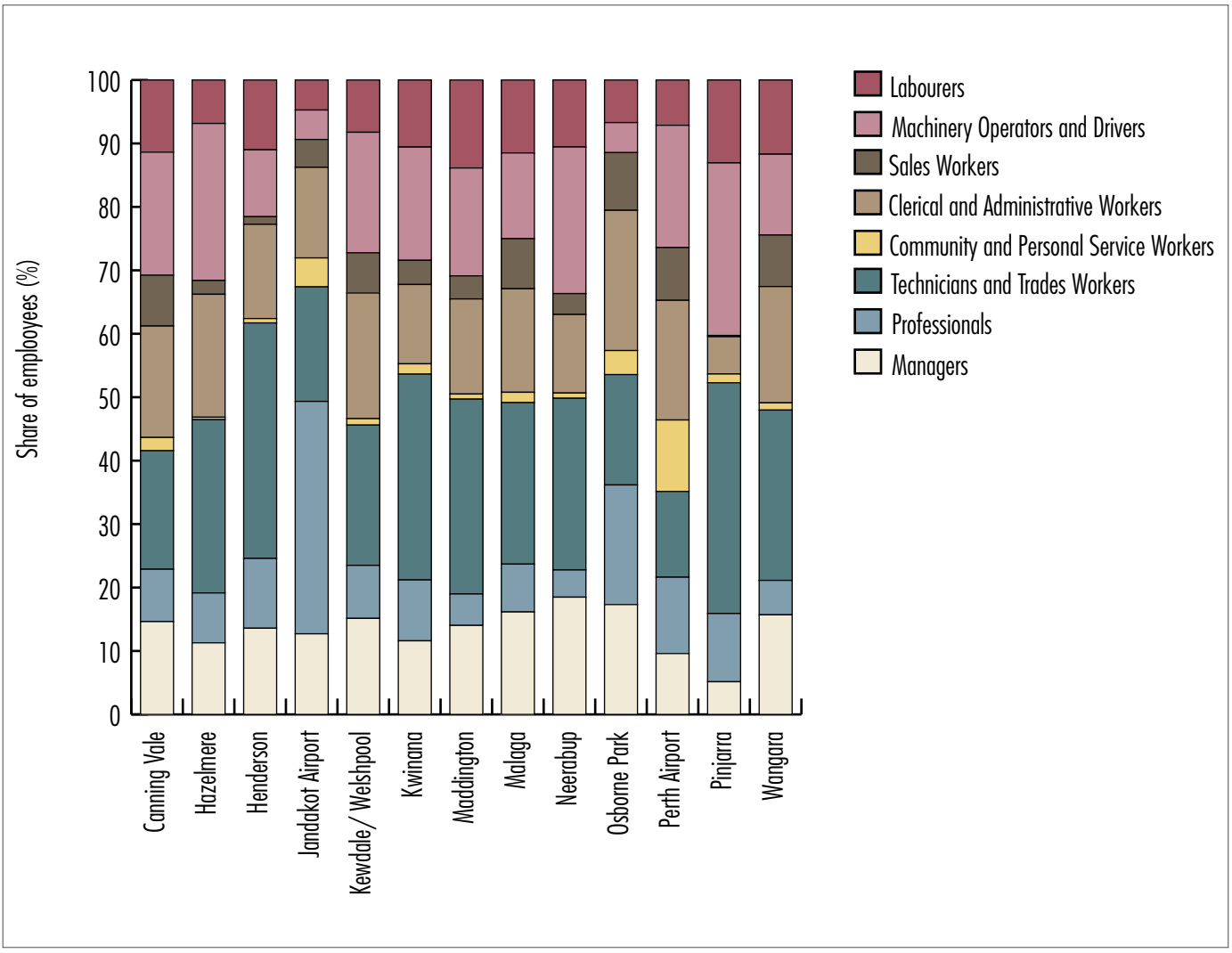


Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions

Figure 13 shows the share of occupations in each of the 13 industrial centres. Although the Jandakot Airport industrial centre had a relatively small number of professionals (Figure 12), it has the highest proportion of professionals as a share of industrial centre employment, which may be related to the high number of aviation training and aviation related businesses located within the industrial centre.[23] The highest proportion of technical and trade workers, and machinery operators and drivers as a share of industrial centre employment are found in the Pinjarra industrial centre. The Malaga and Wangara industrial centres appear to have similar proportions of occupational groups. This corresponds with Figure 10, indicating that the two industrial centres share similarities in employment characteristics.

Figure 13: Share of occupations in industrial centres



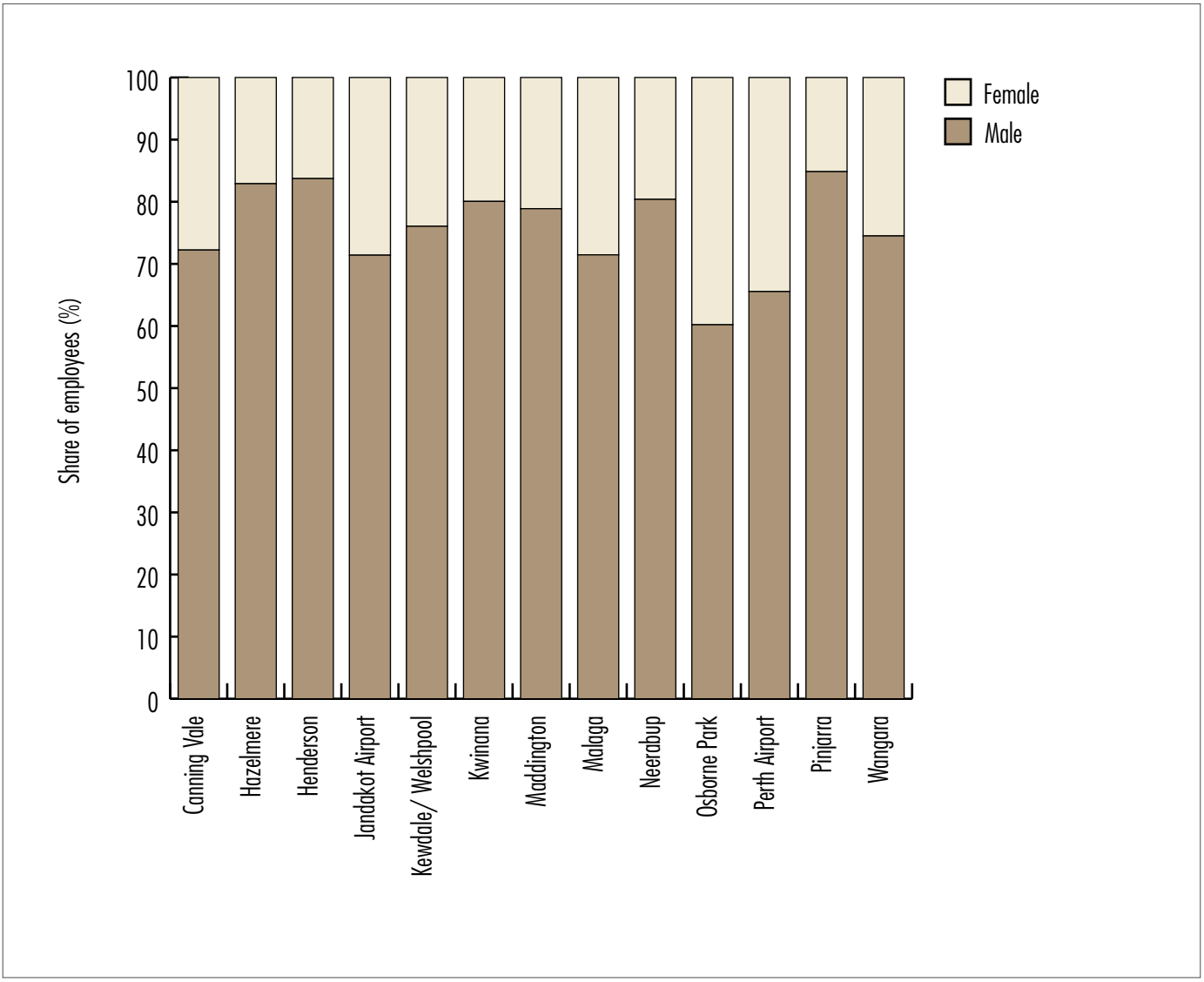
Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions

[23] Jandakot airport tenant directory http://www.jandakotairport.com.au/corporate/tenant-directory.html

In terms of gender distribution, approximately 72 per cent of workers in industrial centres are male. The highest proportion of males as a percentage of the workforce is found in the Pinjarra industrial centre, while the highest proportion of females is found in the Osborne Park industrial centre (Figure 14).

Figure 14: Gender distribution by industrial centre

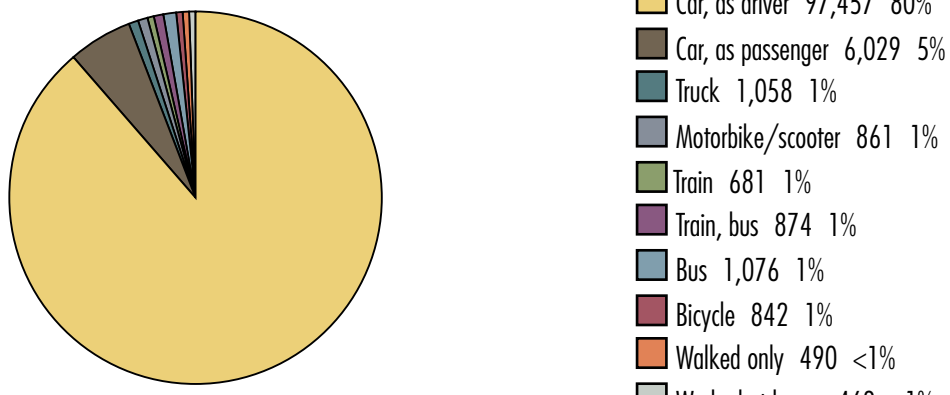


Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.

Approximately 95 per cent of journeys to work in industrial centres are undertaken by motor vehicle, either as the driver or as a passenger (Figure 15). The lowest percentage of travel by motor vehicle was reported for the Jandakot Airport and Osborne Park industrial centres (Figure 16). Jandakot Airport had the highest percentage of workers who only walked to work; however, due to the lower number of employees at this centre; this number should be treated with caution. The Osborne Park industrial centre had the greatest proportion of workers who travelled by public transport (train only, train and bus, bus only).

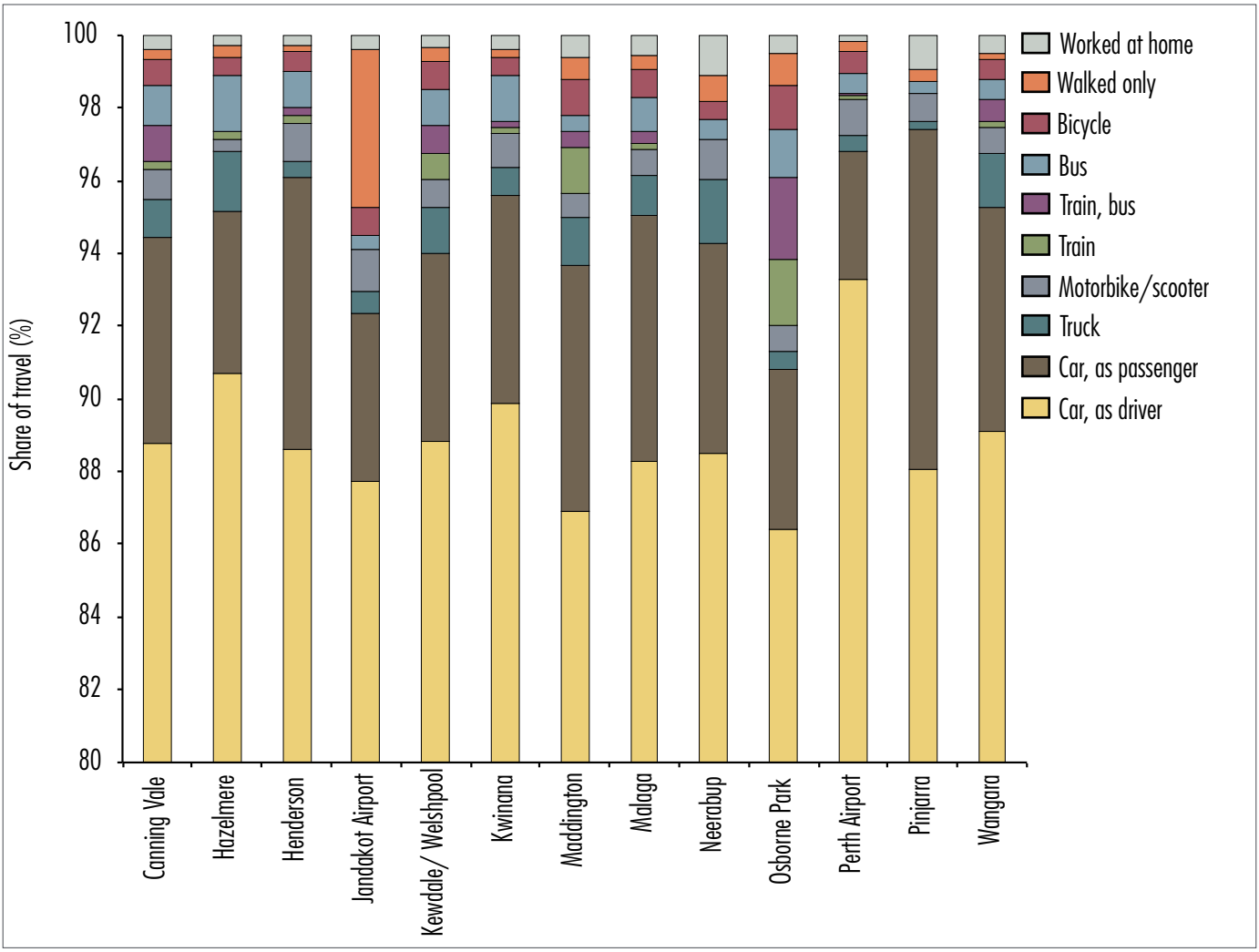
Figure 15: Method of travel to work



Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the DZN definition of 13 industrial centres in the Perth metropolitan and Peel regions.

Figure 16: Method of travel to work by industrial centre



Source: Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Data relates to the Destination Zones (DZN) definition of 13 industrial centres in the Perth metropolitan and Peel regions.
Axis begins at 80 per cent to show breakdown in proportions of method of travel to work.

5.0 Industrial land use in industrial centres

Section 5 of this report is based on the tiered land supply assessment model, the central output of the Integrated Regional Information System (IRIS). The model is a Geographic Information System (GIS) based tool used to assess key measures of industrial land dynamics in the Perth metropolitan and Peel regions. The industrial centre profiles are intended to examine patterns of existing industrial land use and inform planning decisions relating to future land supply. The data presented in this section is calculated as at the end of 2013.

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 and tertiary 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 is the fact that 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 clearly 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.

Due to the nature of local planning scheme and land tenure information, Perth Airport, Jandakot Airport and the Pinjarra industrial centres have been excluded from this assessment.

The IRIS model and the land supply pipeline

Government produces strategic planning documents to identify potential locations for future development that are necessary to meet future land demand. Examples include the *Economic and Employment Lands Strategy* and regional or sub-regional structure plans. These documents identify expansion and investigation areas for land that may be suitable for industrial use, providing subsequent planning, environmental and infrastructure assessments demonstrate that development is suitable. This represents the start of the land supply pipeline.[24]

After the appropriate studies have been undertaken and an identified area is rezoned for industrial use in region and local planning schemes, government and the private sector respond to the new zoning by servicing the land with the necessary infrastructure and undertaking subdivision suitable for its specified use.[25]

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.

[24] Western Australian Planning Commission, 2012, *Perth Peel Development Outlook 2011/12*
[25] Western Australian Planning Commission, 2012, *Perth Peel Development Outlook 2011/12*

Tiered land supply assessment model

The tiered land supply assessment model is a Geographic Information System (GIS) based tool, which for this report has been used to evaluate the characteristics of industrial land use in the Perth and Peel regions. The model provides a measure of assessing stocks of 'development ready' industrial land.

1

Tier one refers to the stock of zoned land potentially available for development for the specified primary use within the defined geographic catchment. This tier provides information on the stock of zoned land in industrial centres.

2

Tier two relates to the development status of land zoned for development. This tier provides information on the development status of land zoned industrial as its primary purpose in tier one.

- **Developed lots** refer to lots on industrial zoned land for which premises information has been captured in Landgate's property valuation database.
- **Undeveloped lots** refer to lots on industrial zoned land which have been recorded as vacant in Landgate's property valuation database.
- **Unrated lots** refer to lots on industrial zoned land for which no vacant land or premises valuation have been recorded. This may include State or local government owned lots or premises exempt from rates, Crown allotments, common property within lots on survey, newly created lots on survey, land otherwise exempt from rates and some public roads which are zoned for the primary land use under the local planning scheme. This classification may include a mix of both developed and undeveloped lots. For the purposes of this assessment, unrated lots are considered to be developed.

3

Tier three incorporates information from local planning schemes to assess the nature of the development type against the intended land use as indicated by the local planning scheme zone. For this tier, development on industrial zoned land is further refined into the following land use classifications:

- **General industry** refers to development intended to accommodate consumer and business orientation uses that are not hazardous or offensive.
- **Light/Commercial** refers to development intended to accommodate consumer oriented (household) goods and clothing, manufacturing, (which uses partially processed materials to make products), showrooms and services.
- **Heavy/Special/Strategic** refers to development intended to accommodate heavy, special or strategic industries that often require a large area of land and produce emissions, including air borne particles, light, noise and odour that may impact surrounding areas and therefore require a buffer to ensure adequate separation from sensitive land uses.
- **Warehousing and distribution** refers to development intended to accommodate storage and display of goods. This classification may include wholesale, extra-large sites or numerous small sites depending upon the scale of operation.
- **Extractive/Mining/Basic Raw Materials** refers to any extractive industry and the removal of basic raw materials including sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone), gravel and other construction and road building materials.

Tier three also relates to the assessment of the development type against the intended purpose based on the local planning scheme zone.

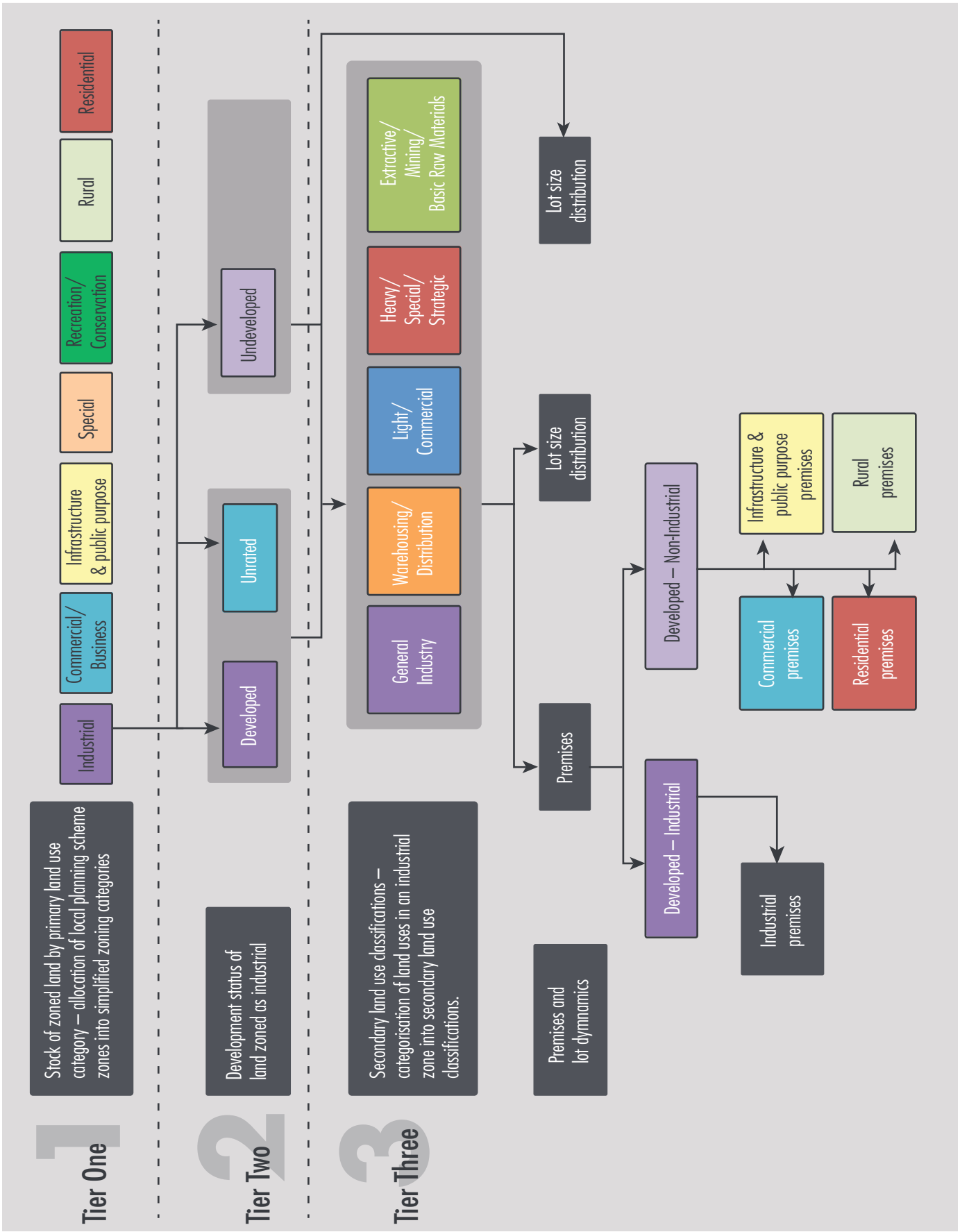
For this analysis, **industrial uses** refer to development (premises) that is considered to be consistent with the primary land use objective of land zoned as industrial.

Non-industrial uses refer to development (premises) which differ in type from the principle land use objective of land zoned as industrial. Examples of non-industrial uses are commercial premises or residential or rural development (premises) on land zoned for industrial development in the IRIS model. If in 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.

Tier three also provides information on lot size count and distribution.

Zoned land classifications presented in this section are based on local planning scheme and premises information as at the end of 2013.

Figure 17: Integrated Regional Information System (IRIS) tiered land supply assessment model – Industrial centres



5.1 Tier one – Stock of land potentially available for development

Using the Integrated Regional Information System model, land zone dynamics of the industrial centres, detailed in Section 4, are provided with the exception of Perth Airport, Jandakot Airport and Pinjarra. The airports have been omitted as they are not subject to local planning scheme zoning and do not have premises information in Landgate's property valuation database. Pinjarra has been omitted as no vacant land or premises valuation have been recorded in Landgate's property valuation database. The industrial centres in this report are defined using the Australian Bureau of Statistics 2011 Destination Zones (DZN) to recreate each centre using a best fit approach. 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 10 industrial centres. As discussed previously, IRIS uses 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. The seven primary land-use categories are; industrial, commercial/business, residential, recreation/conservation, rural, special and infrastructure and public purpose.

According to IRIS, there is approximately 7,300 hectares of zoned land (all primary land use categories) in total for the 10 industrial centres (Table 4). Figure 18 displays the stock of zoned land (all primary land use categories) in each industrial centre.

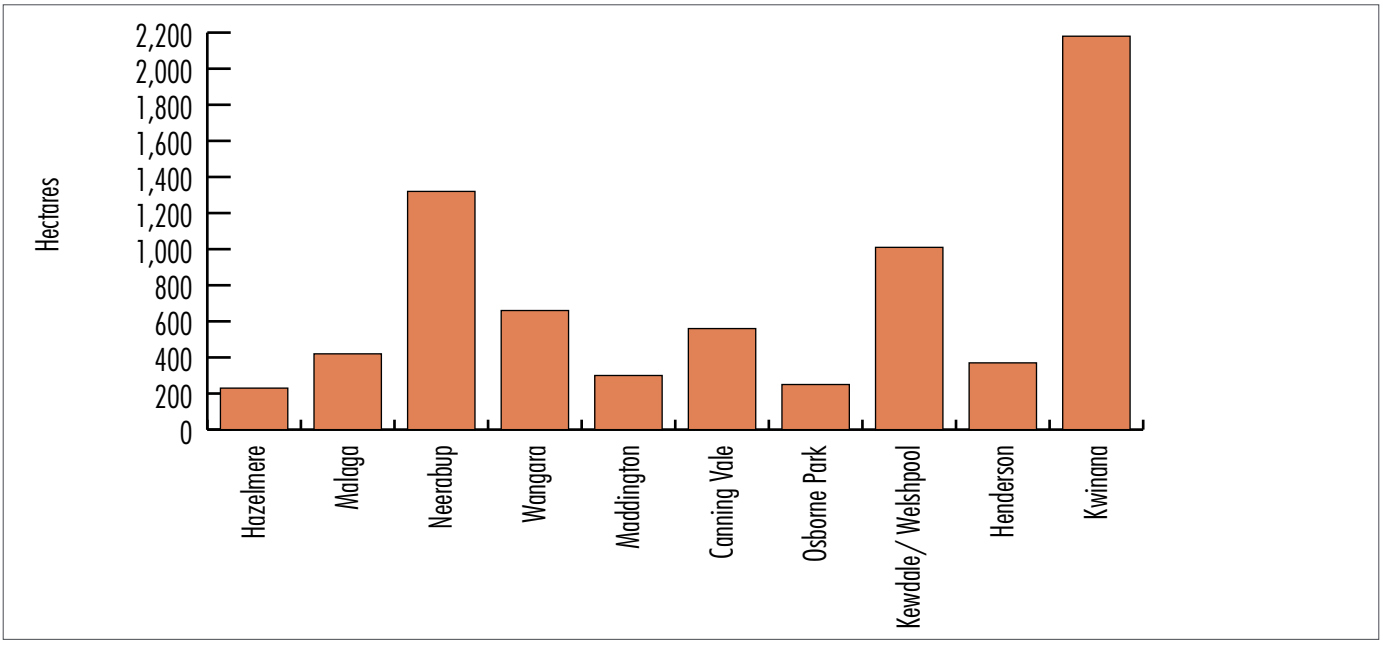
Table 4: Tier one – Stock of zoned land by industrial centre

Industrial centre	Stock of zoned land (ha)
Hazelmere	230
Malaga	420
Neerabup	1,320
Wangara	660
Maddington	300
Canning Vale	560
Osborne Park	250
Kewdale/Welshpool	1,010
Henderson	370
Kwinana	2,180
Total	**7,300**

Source: IRIS, Department of Planning (2014)

Note: Figures may not sum due to rounding. Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

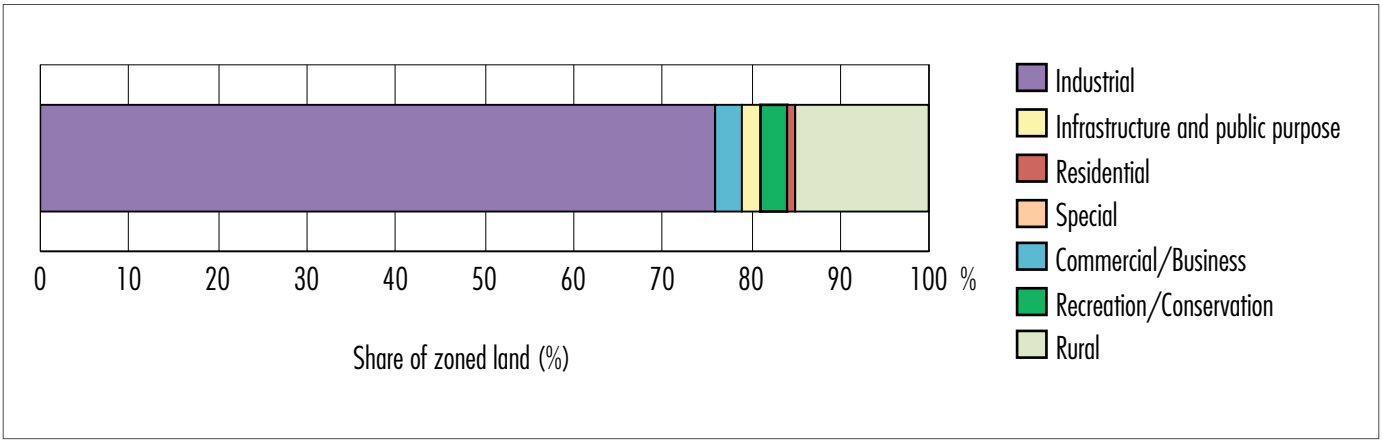
Figure 18: Stock of zoned land by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 19: Primary land-use categories as a share of zoned land (all industrial centres)

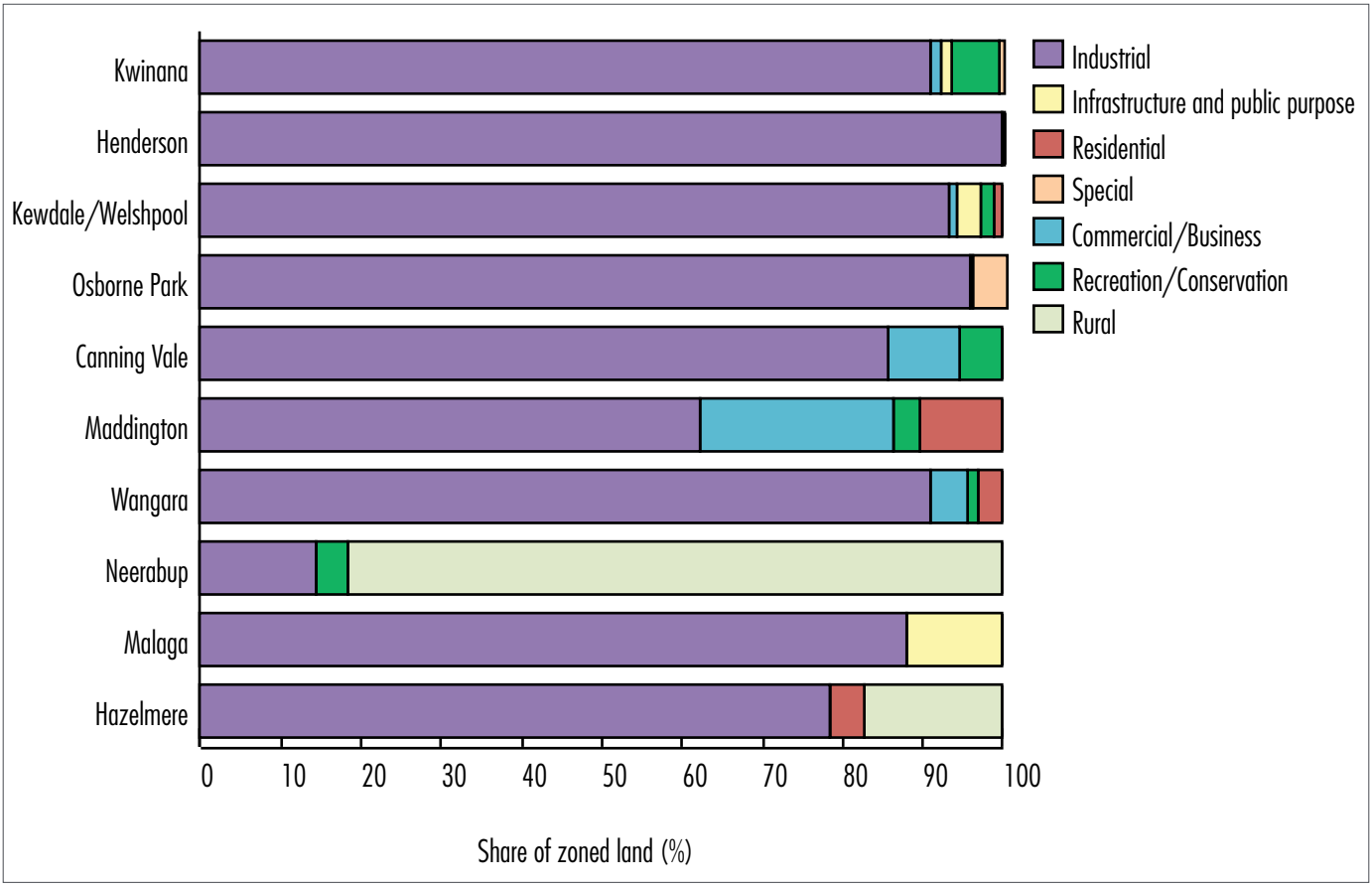


Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Of the 7,300 hectares, just under 80 per cent (5,560 hectares) is categorised as industrial for its primary land use (Figure 19). Figure 20 below shows the proportions of zoned land by primary land use category for each of the 10 industrial centres. As shown in Figure 18, the highest stock of zoned land exists in the Kwinana industrial centre, of which approximately 90 per cent is categorised industrial (Figure 20).

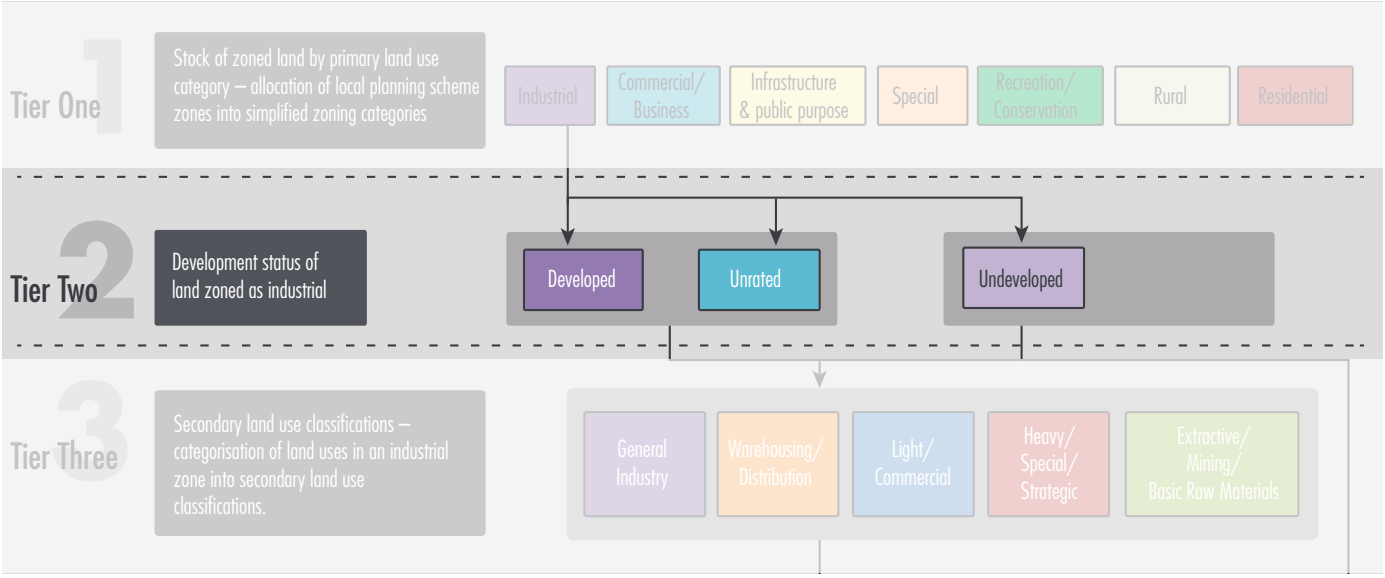
Figure 20: Primary land use categories as a share of zoned land for each industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 21: Integrated Regional Information System (IRIS) tiered land supply assessment model – Tier two



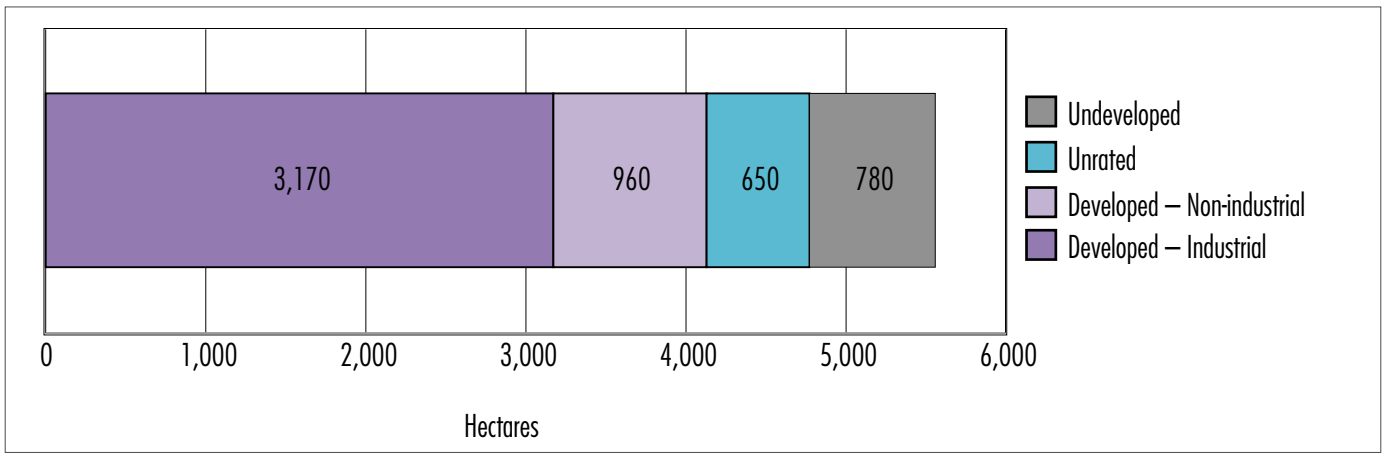
5.2 Tier two – Development status of land categorised as industrial

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.

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 7,300 hectares of total zoned land of which approximately 5,560 hectares is zoned as industrial in the IRIS model. Figure 22 shows the development status of the 5,560 hectares of land zoned as industrial.

Figure 22: Development status of land zoned as industrial (all industrial centres)



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Developed

Developed refers to lots for which premises information has been captured in Landgate's property valuation database. Of the 5,560 hectares of land zoned as industrial, approximately 4,780 hectares (86 per cent) is categorised as developed.

Out of the 4,780 hectares of developed land, 3,170 hectares (66 per cent) can be further classified as developed – industrial use, and 960 hectares (20 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, residential or rural development (premises) on land zoned as industrial in the IRIS model. If in 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 is provided in Tier three.

Unrated

There is approximately 650 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 780 hectares (16 per cent) of land zoned as industrial classified as undeveloped.

Table 5 shows the stocks of developed, unrated and undeveloped land zoned as industrial by industrial centre.

Table 5: Developed and undeveloped land zoned as industrial by industrial centre

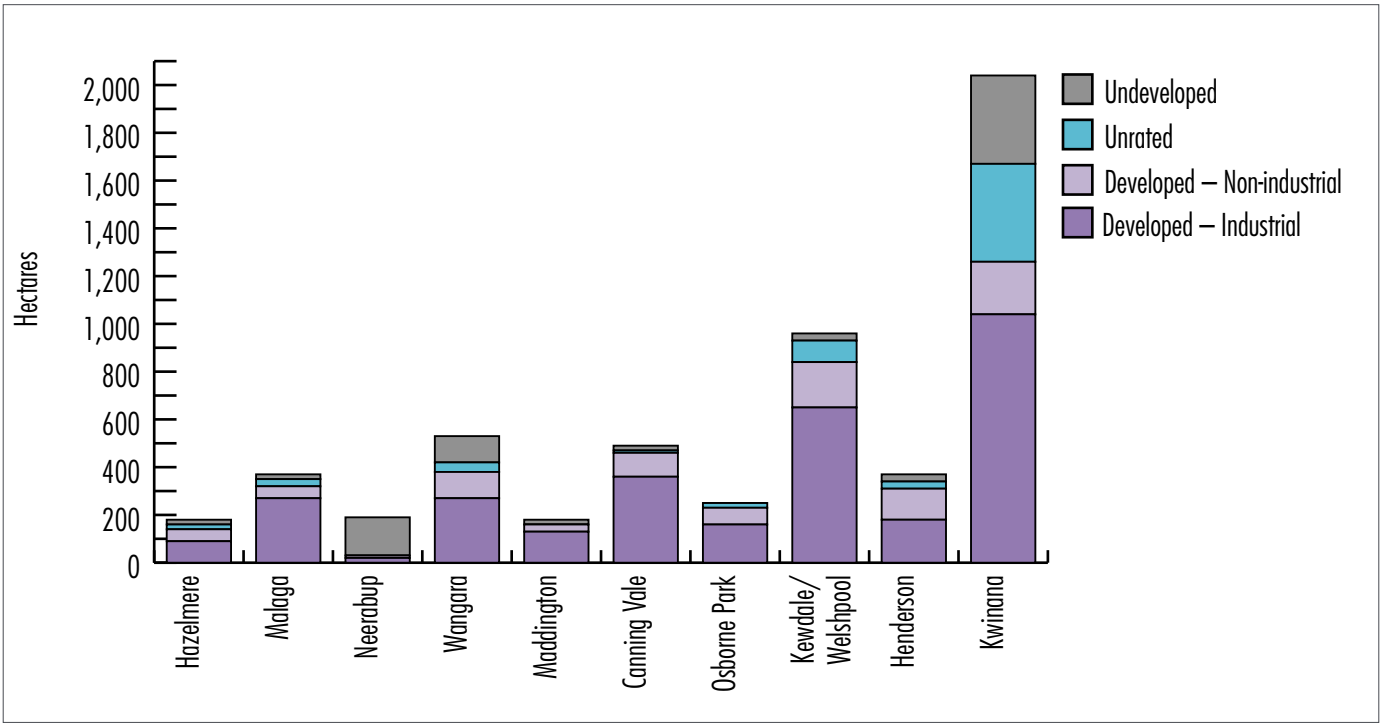
Industrial centre	Lots with a property record		Lots with no property record	Lots with a vacant property record	Total (ha)
	Developed – Industrial use (ha)	Developed - Non-industrial use (ha)	Unrated (ha)	Undeveloped (ha)	
Hazelmere	90	50	20	20	180
Malaga	270	50	30	20	370
Neerabup	20	10	0	160	190
Wangara	270	110	40	110	530
Maddington	130	30	0	20	180
Canning Vale	360	100	10	20	490
Osborne Park	160	70	20	0	250
Kewdale/Welshpool	650	190	90	30	960
Henderson	180	130	30	30	370
Kwinana	1,040	220	410	370	2,040
Total	3,170	960	650	780	5,560

Source: IRIS, Department of Planning (2014)

Note: Figures may not sum due to rounding. Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 23 below shows the development status of land zoned as industrial by industrial centre. Figure 24 provides a comparative view of development status as a proportion of land zoned as industrial for each of the 10 industrial centres.

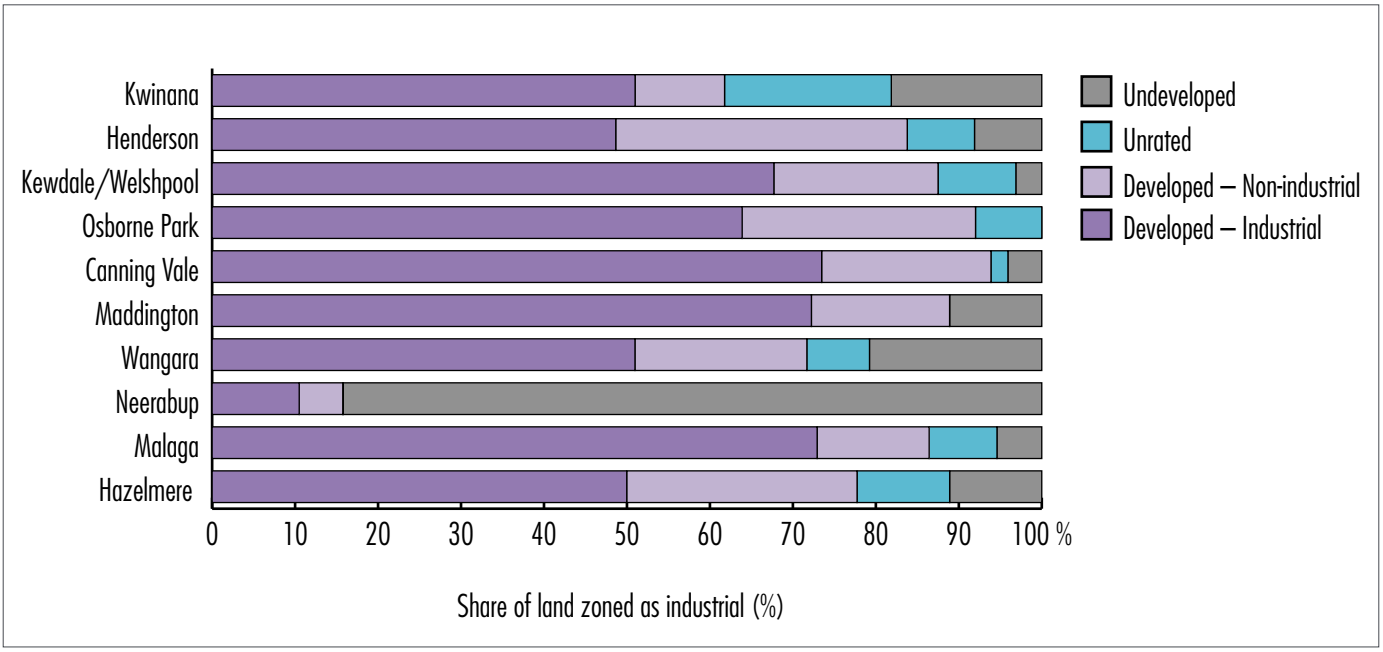
Figure 23: Stock of developed and undeveloped land zoned as industrial



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

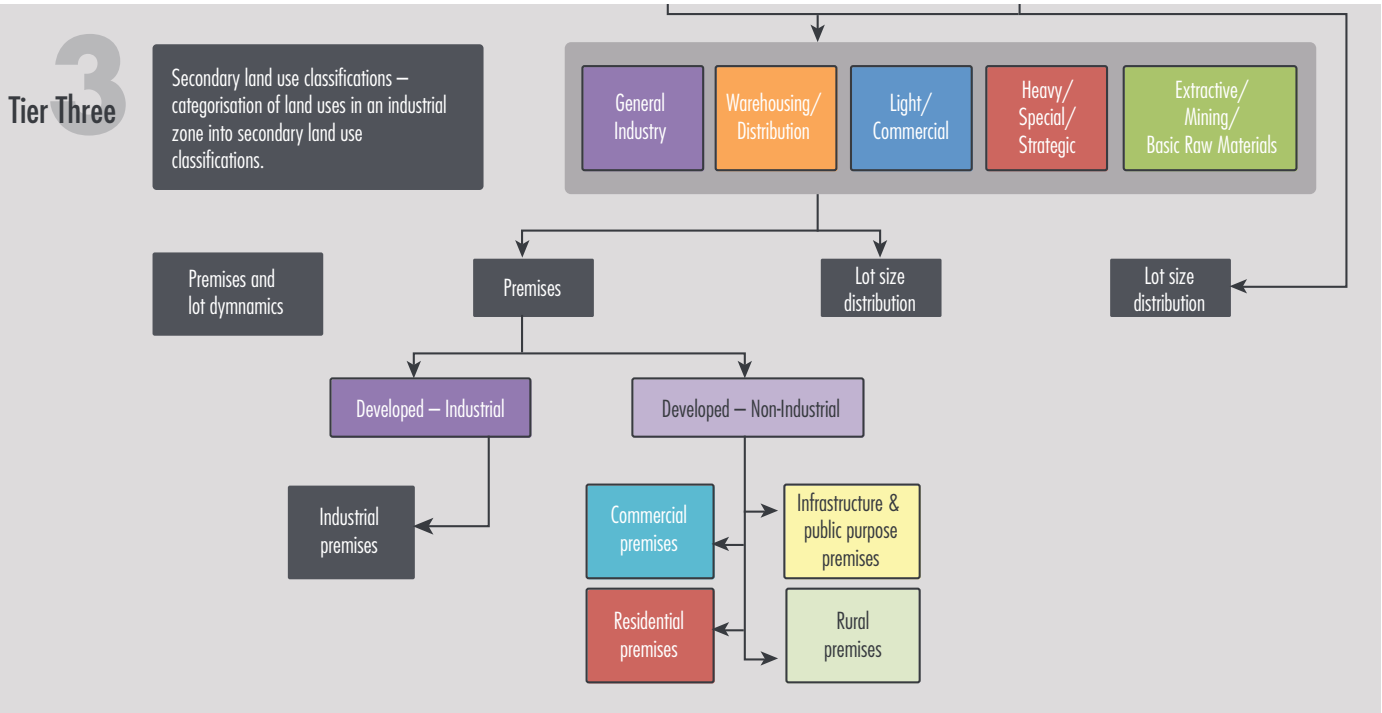
Figure 24: Development status of land zoned as industrial by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 25: Integrated Regional Information System (IRIS) tiered land supply assessment model – Tier three



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

The information provided in tier three only relates to land categorised as industrial in tier one. 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.

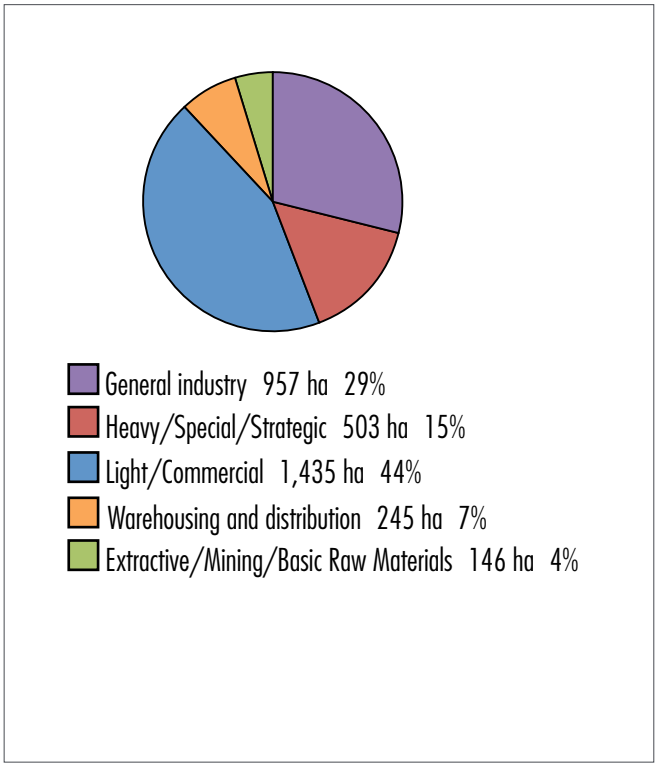
Secondary land-use classifications

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 10 industrial centres.

For land categorised as industrial at the tier one level, the secondary land-use classifications for the 10 industrial centres are: general industry, heavy/special/strategic, light/commercial, warehousing and distribution, and extractive/mining/basic raw materials.

Figure 26 shows the proportion of secondary land use classifications across the 10 industrial centres. Light/commercial uses comprise almost half of all use classes in industrial centres.

Figure 26: Secondary land use classifications – share of land categorised as industrial

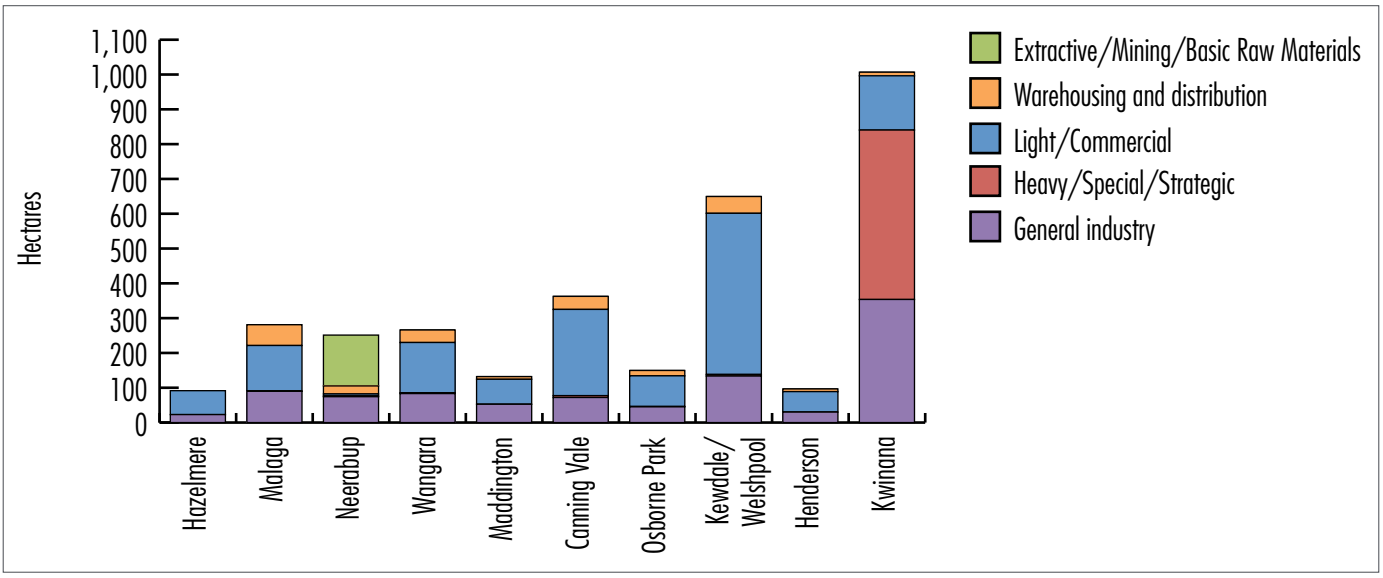


Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 27 displays the secondary land use classifications for individual industrial centres. Based on the stock of land, light/commercial uses is largest in the Kewdale/Welshpool industrial centre while extractive/mining/basic raw materials uses are most substantial in the Neerabup industrial centre. Heavy/special/strategic uses are predominantly in the Kwinana industrial centre, though small stocks are also present in the Neerabup, Wangara, Canning Vale and Kewdale/Welshpool industrial centres.

Figure 27: Secondary land use classifications by industrial centre

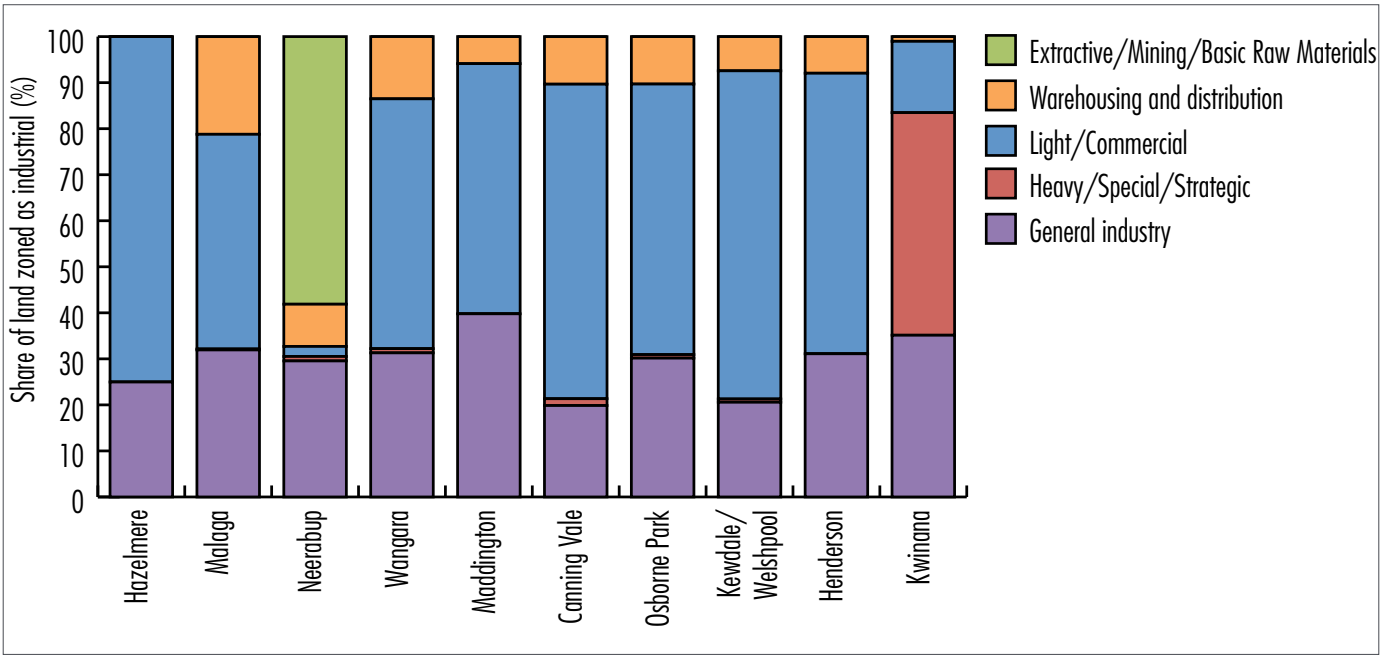


Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 28 depicts the various secondary land use classifications as a proportion of land zoned as industrial for each of the 10 centres. The Maddington industrial centre has the highest proportion of general industry uses, while light/commercial uses are predominant in the Hazelmere industrial centre. Warehousing and distribution uses, as a proportion of industrial zoned land is greatest in the Malaga industrial centre.

Figure 28: Secondary land-use classifications – Share of land categorised as industrial by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Lot size distribution

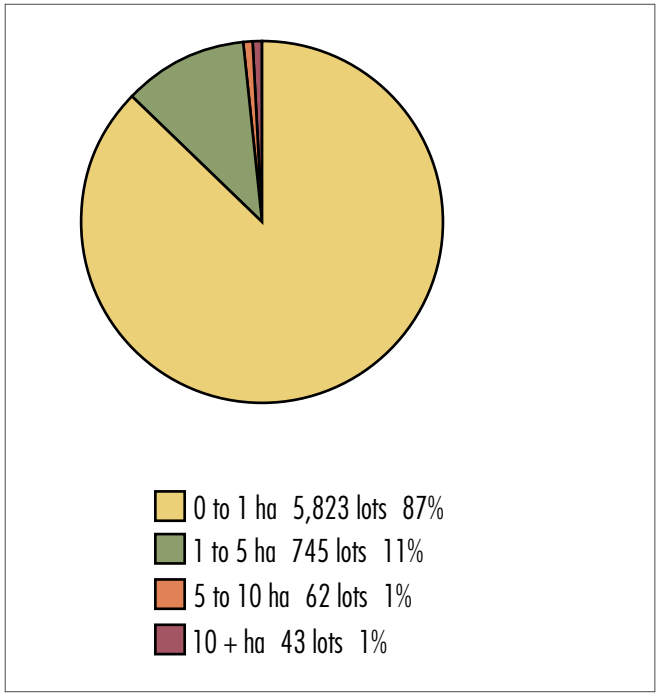
The reporting on lot size distribution relates only to lots categorised as industrial in tier one. For the purposes of this analysis, small lots refer to lots up to one hectare in size, medium sized lots are between one and five hectares, large lots are sized between five and nine hectares and extra-large lots are 10 hectares and above (Table 6).

Table 6: Industrial lot sizes

Lot size definition	Lot sizes
Small lots	Up to 1 hectare
Medium lots	1 to 5 hectares
Large lots	5 to 10 hectares
Extra-large lots	10 hectares and above

Lot sizes, as a proportion of all lots on land categorised as industrial in tier one, is depicted in Figure 29. The majority of lots in the profiled industrial centres are small lots, however, as a proportion of area, they comprise approximately one third of land categorised as industrial in industrial centres (Figure 30). Figure 31 shows a finer breakdown of lot size counts and distribution across the industrial centres.

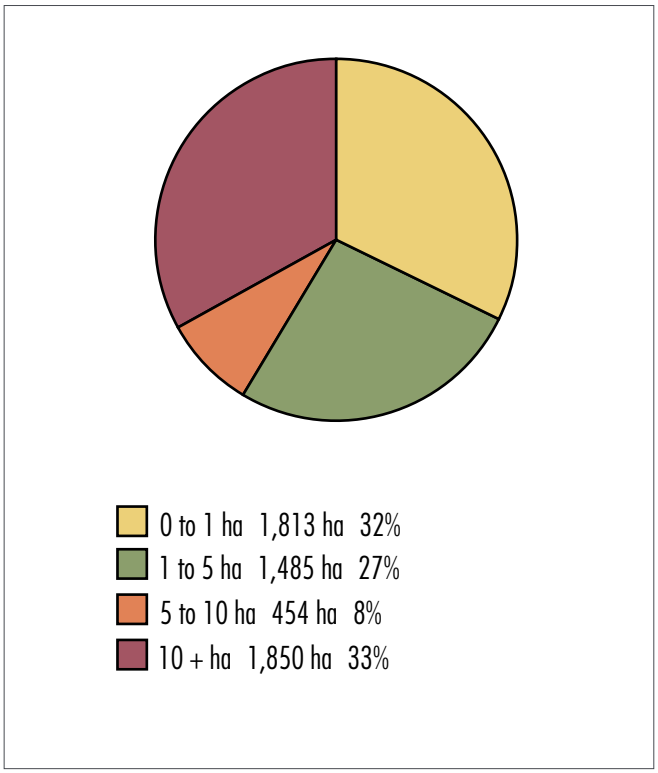
Figure 29: Lot sizes as a proportion of land categorised as industrial (lots)



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

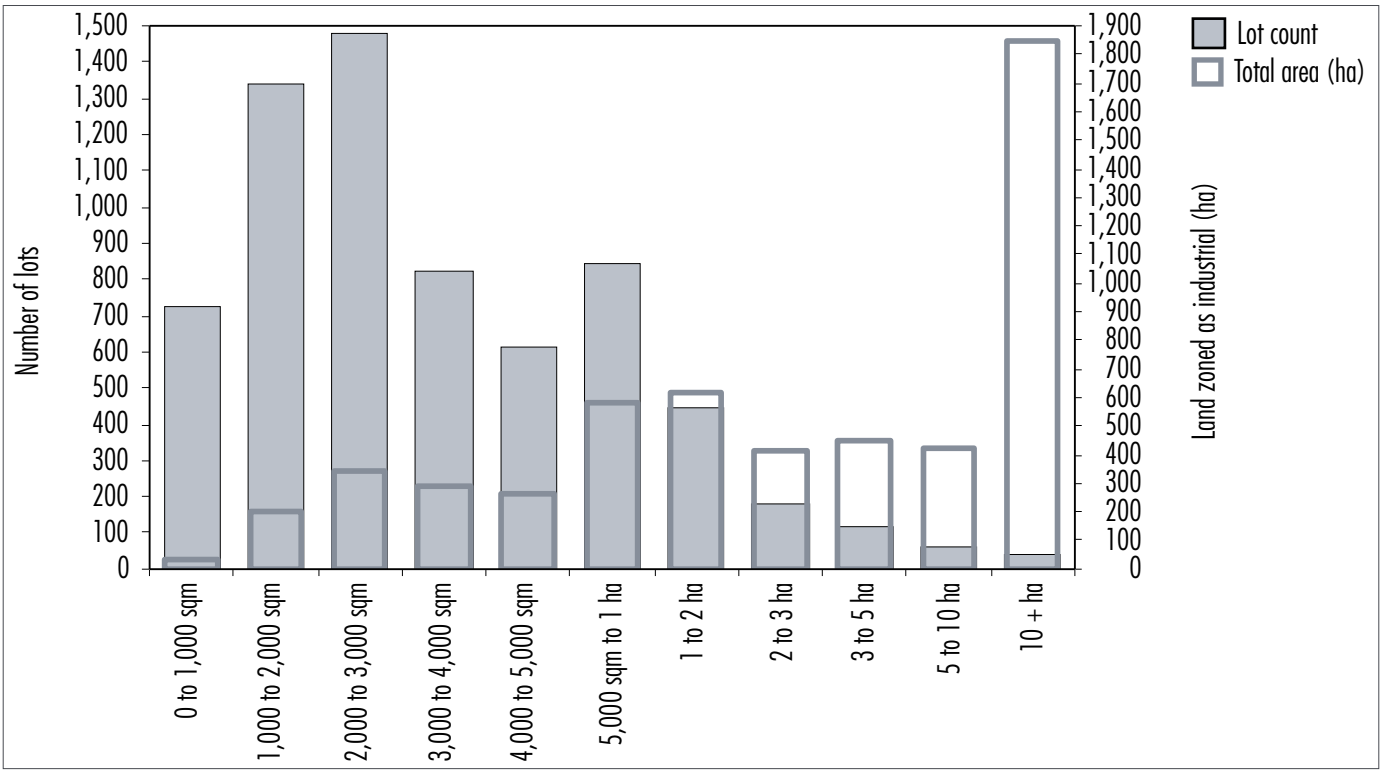
Figure 30: Lot sizes as a share of land categorised as industrial (area)



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 31: Lot size count and area (all industrial centres)

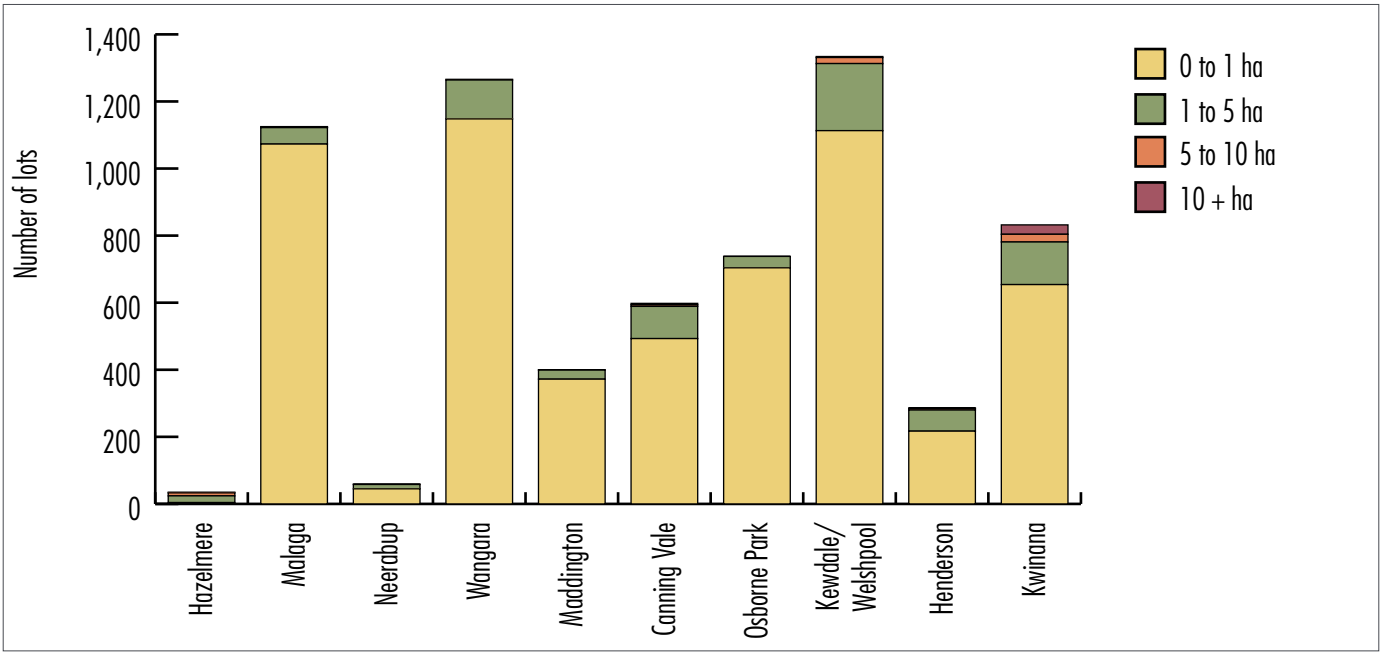


Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 32 below shows the lot size counts for each industrial centre. Numbers of medium sized lots (one to five hectares) are greatest in the Kewdale/Welshpool industrial centre, while large and extra-large lots are predominantly located in the Kwinana industrial centre. Kewdale/Welshpool has the highest number of individual lots of any industrial centre.

Figure 32: Lot size count by industrial centre



Source: IRIS, Department of Planning (2014)

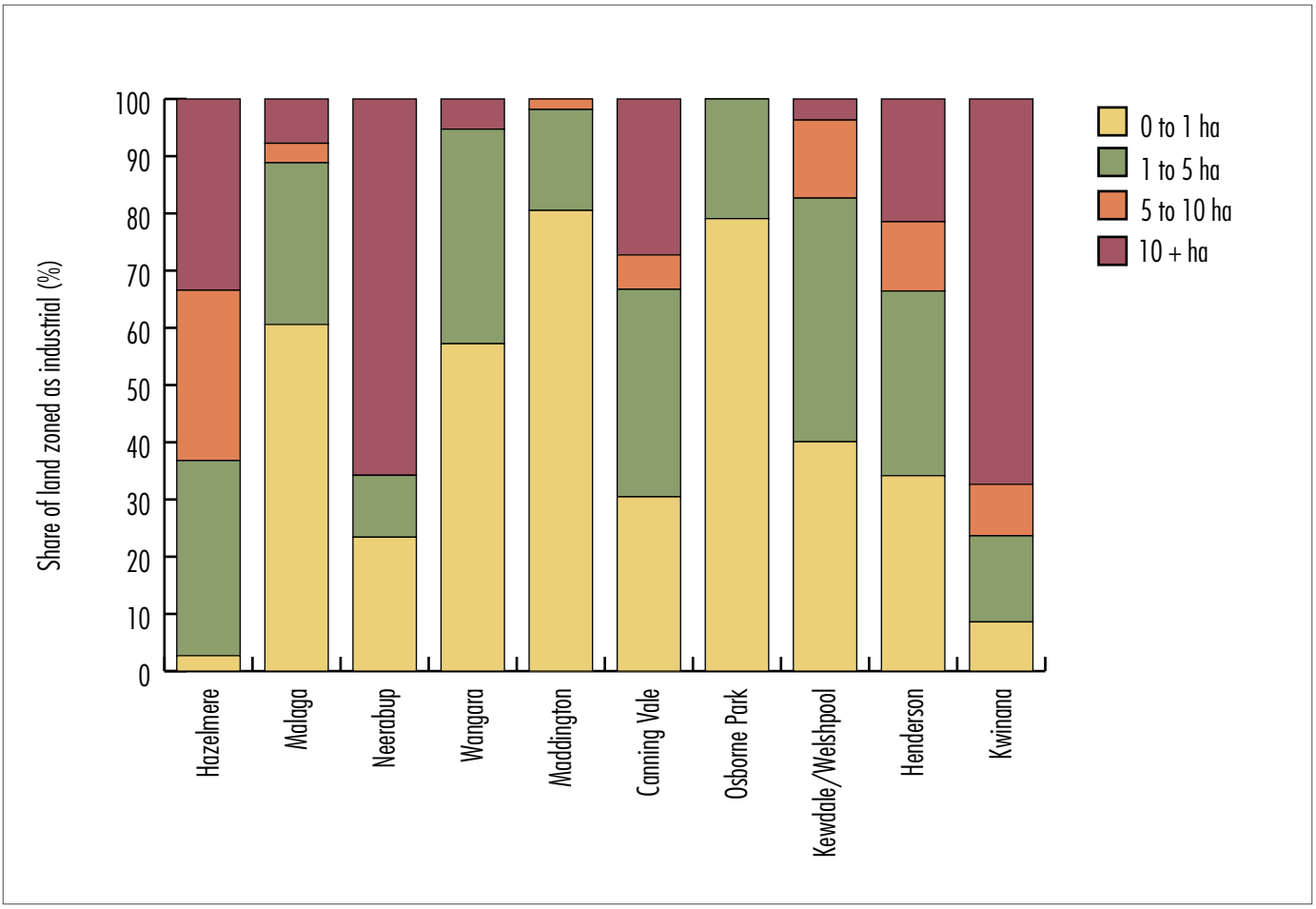
Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 33 shows the various lot sizes as a share of the stock of land categorised as industrial for each industrial centre. The Maddington and Osborne Park industrial centres have the greatest proportion of small lots (approximately 80 per cent).

Medium-sized lots as a proportion of all lots vary across the centres, from the smallest proportion at the Neerabup industrial centre (approximately 10 per cent) to the largest proportion at the Kewdale/Welshpool industrial centre (approximately 40 per cent). The greatest proportion of large and extra-large lots is found in the Kwinana industrial centre, with almost 80 per cent of the centre consisting of large and extra-large lots.

Figure 34 shows the lot size count and profile of each of the 10 industrial centres.

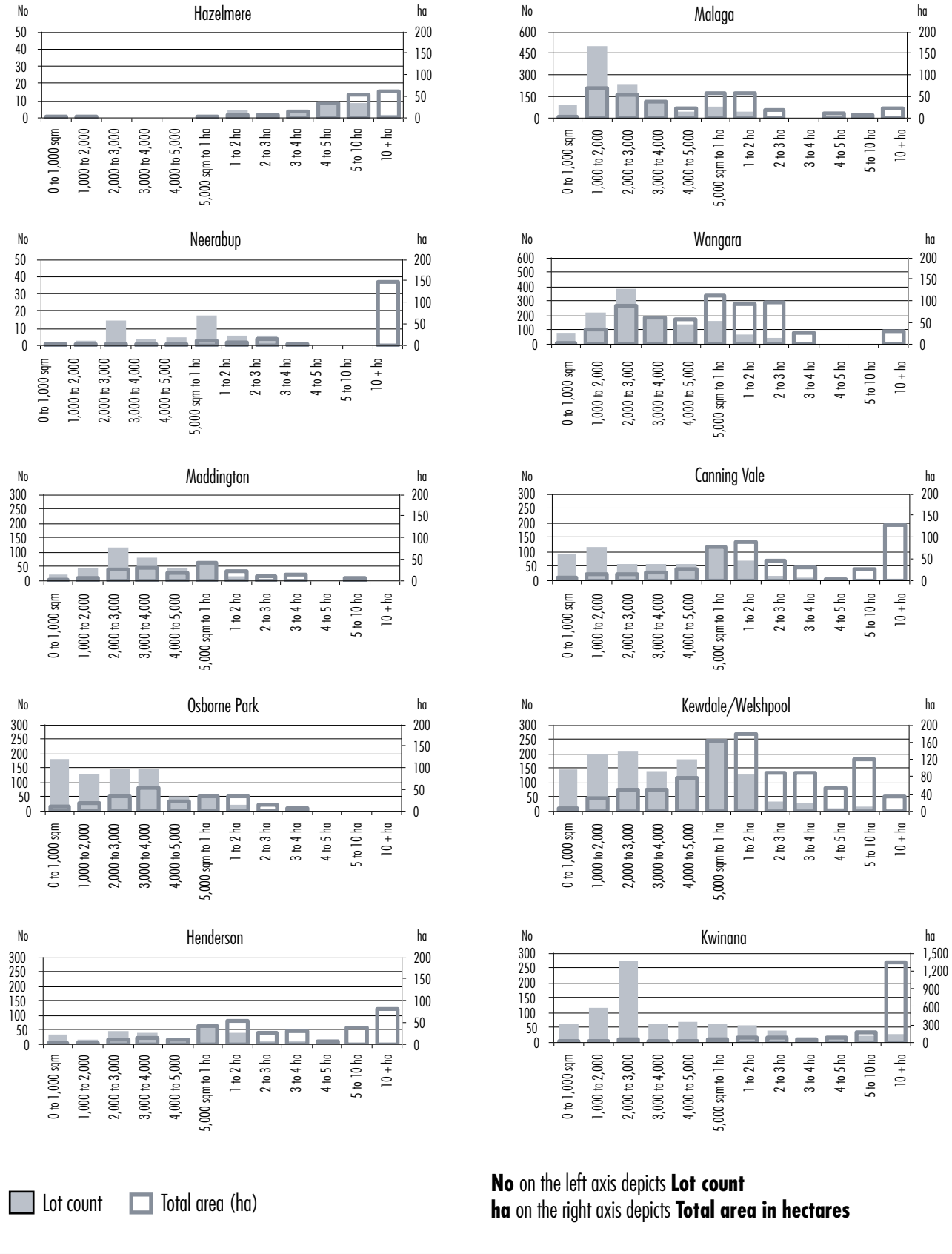
Figure 33: Share of lot sizes by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 34: Lot size profile by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

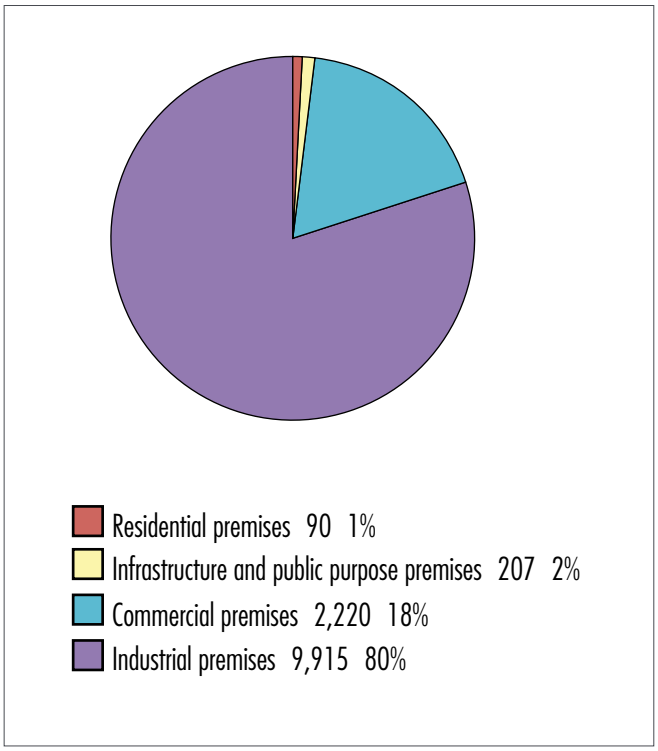
Premises profile

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. As such, the premises types should be treated with caution.

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 categorised as industrial in the IRIS model.

Figure 35 shows the different premises types recorded by Landgate on land zoned as industrial. Approximately 80 per cent of premises are recorded as industrial premises and 20 per cent as non-industrial premises consisting of commercial, residential and infrastructure and public purpose premises.

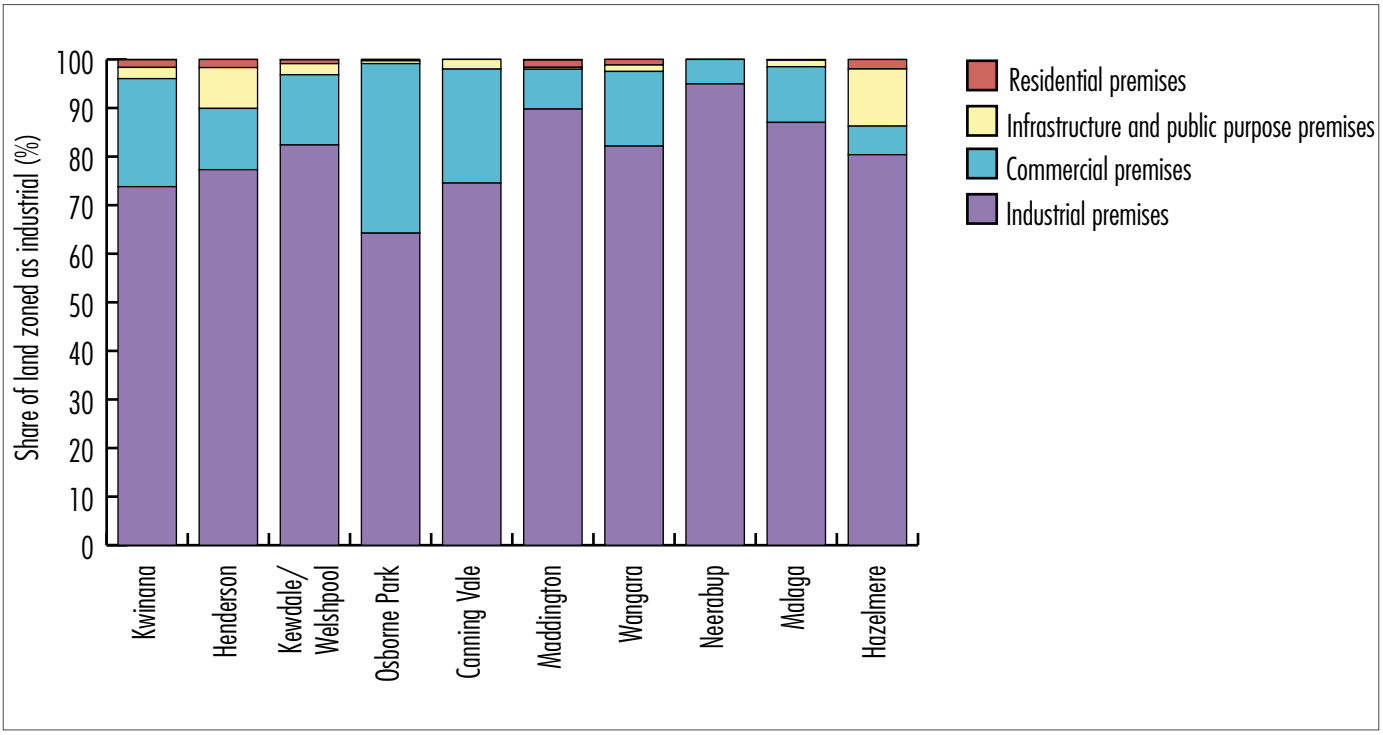
Figure 35: Share of premises on land zoned for industrial use



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 36: Share of premises on land zoned for industrial use by industrial centre



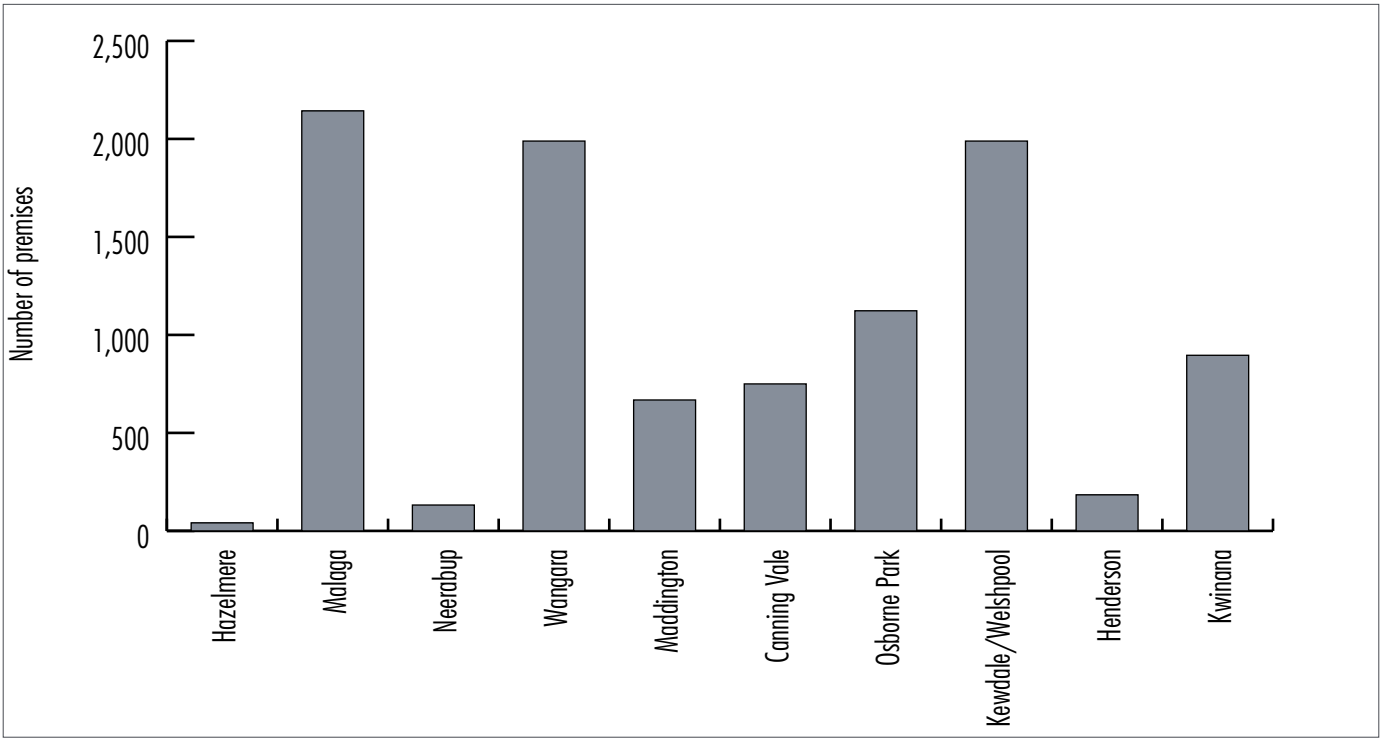
Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

Figure 36 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 Osborne Park industrial centre has the lowest proportion of industrial premises and the highest proportion of commercial premises.

Figure 37 shows the number of industrial premises for the 10 industrial centres. The Malaga 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 10 industrial centres (Figure 18); it has a low number of industrial premises relative to the Malaga, Wangara and Kewdale/Welshpool industrial centres. The number of industrial premises may be correlated with the type of industrial activity for the area. The Kwinana industrial centre has a high proportion of heavy/special/strategic industrial activities with more expansive land requirements.

Figure 37: Number of industrial premises by industrial centre



Source: IRIS, Department of Planning (2014)

Note: Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions

5.4 Employment density

The employment density per hectare of zoned land can be determined using the IRIS model in conjunction with data from the Australian Bureau of Statistics (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 82 employees per hectare of total zoned land and the Neerabup industrial centre the lowest, at one employee per hectare of total zoned land. As detailed in the sections above, the Osborne Park industrial centre has the second largest workforce of the centres, and 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 largely undeveloped, is also comprised largely 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: Employment density by industrial centre

Industrial centre	Stock of zoned land (ha)	Number of employees	Employees per hectare of zoned land
Hazelmere	230	1,298	6
Malaga	420	15,018	36
Neerabup	1,320	614	1
Wangara	660	10,803	16
Maddington	300	4,519	15
Canning Vale	560	14,502	26
Osborne Park	250	20,469	82
Kewdale/Welshpool	1,010	26,615	26
Henderson	370	4,395	12
Kwinana	2,180	10,700	5
Total	7,300	108,933	15

Source: IRIS, Department of Planning (2014), Australian Bureau of Statistics (2011), Destination Zones (DZN) to State/Territory (POW)

Note: Figures may not sum due to rounding.
Data relates to the ABS 2011 Destination Zones (DZN) definition of 10 industrial centres in the Perth metropolitan and Peel regions.

5.5 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 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.

The Perth Airport estate comprises of 2,105 hectares of land. There is approximately 770 hectares of land available for non-aviation development, of which 225 hectares has been 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 land consumption of 2.5 to 3.5 hectares for the Airport North precinct, 0.6 to 1.5 hectares for the Airport West precinct and one to 1.5 hectares for the Airport West precinct.[26]

The Jandakot Airport estate is 622 hectares in size, of which approximately 156 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 office and business/bulk retail/showroom/warehousing and storage.[27]

[26] Perth Airport Preliminary Draft Master Plan 2014
[27] Jandakot Airport Master Plan 2009

Table 8: Tiered land supply assessment – Summary table

Industrial centre overview	Tier One	Tier Two		Tier Three		
	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: manufacturing; construction; transport logistics; wholesale trade. • Important location for freight and logistics activities. • Main occupational groups: trades and technical workers; machinery operators and drivers.	230	180	Developed 91% Undeveloped 9%	General industry 75% Light/commercial 15%	Small 11% Medium 57% Large 26% Extra-large 6%	Industrial 80% Commercial 6% Infrastructure and public purpose 12% Residential 2%
Malaga						
• Located in the North-east sub-region. • Main industries of employment: manufacturing; construction; wholesale trade. • Main occupational groups: trades and technical workers; managers; clerical and administrative workers.	420	370	Developed 90% Undeveloped 10%	General industry 32% Light/commercial 47% Warehousing and distribution 21%	Small 96% Medium 4%	Industrial 87% Commercial 12% Infrastructure and public purpose 1%
Neerabup						
• Located in the North-west sub-region. • Main industries of employment: manufacturing. • Main occupational groups: trades and technical workers; machinery operators and drivers; labourers.	1,320	190	Developed 10% Undeveloped 90%	General industry 30% Heavy/special/strategic 1% Light/commercial 2% Warehousing and distribution 9% Extractive/mining/basic raw materials 58%	Small 76% Medium 22% Extra-large 2%	Industrial 95% Commercial 5%
Wangara						
• Located in the North-west sub-region. • Main industries of employment: manufacturing; construction. • Main occupational groups: trades and technical workers; clerical and administrative workers.	660	530	Developed 80% Undeveloped 20%	General industry 31% Light/commercial 54% Warehousing and distribution 14% Heavy/special/strategic 1%	Small 91% Medium 9%	Industrial 82% Commercial premise 16% Infrastructure and public purpose 1% Residential 1%

Industrial centre overview	Tier One	Tier Two		Tier Three		
	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: manufacturing; construction. • Main occupational groups: trades and technical workers; machinery operators and drivers.	300	180	Developed 90% Undeveloped 10%	General industry 40% Light/commercial 54% Warehousing and distribution 6%	Small 93% Medium 7%	Industrial 90% Commercial 8% Residential 2%
Canning Vale						
• Located in the Central sub-region. • Main industries of employment: manufacturing; construction; wholesale trade. • Main occupational groups: machinery operators and drivers; managers; trades and technical workers.	560	490	Developed 95% Undeveloped 5%	General industry 20% Light/commercial 68% Warehousing and distribution 10% Heavy/special/strategic 2%	Small 82% Medium 16% Large 1% Extra-large 1%	Industrial 75% Commercial 23% Infrastructure and public purpose 2%
Osborne Park						
• Located in the Central sub-region. • Main industries of employment: manufacturing; construction; wholesale trade. • Main occupational groups: clerical and administrative professionals.	250	250	Developed 99% Undeveloped 1%	General industry 30% Light/commercial 59% Warehousing and distribution 10% Heavy/special/strategic 1%	Small 95% Medium 5%	Industrial 64% Commercial 35% Infrastructure and public purpose 1%
Kewdale/Welshpool						
• Located in the Central sub-region. • Main industries of employment: manufacturing; transport logistics; wholesale trade. • Important location for freight and logistics activities. • Main occupational groups: trades and technical workers; machinery operators and drivers; clerical and administrative workers.	1,010	960	Developed 95% Undeveloped 5%	General industry 21% Light/commercial 71% Warehousing and distribution 7% Heavy/special/strategic 1%	Small 84% Medium 15% Large 1%	Industrial 82% Commercial 15% Infrastructure and public purpose 2% Residential 1%

Industrial centre overview	Tier One	Tier Two		Tier Three		
	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
Henderson						
• Located in the South-west sub-region. • Main industries of employment: manufacturing; construction. • Main occupational groups: trades and technical workers.	370	370	Developed 90% Undeveloped 10%	General industry 31% Light/commercial 61% Warehousing and distribution 8%	Small 76% Medium 22% Large 2%	Industrial 77% Commercial 13% Infrastructure and public purpose 8% Residential 2%
Kwinana						
• Located in the South-west sub-region. • Main industries of employment: manufacturing; construction. • Main occupational groups: trades and technical workers; machinery operators and drivers.	2,180	2,040	Developed 80% Undeveloped 20%	General industry 35% Light/commercial 16% Warehousing and distribution 1% Heavy/special/strategic 48%	Small 79% Medium 15% Large 3% Extra-large 3%	Industrial 74% Commercial 22% Infrastructure and public purpose 2% Residential 2%

6.0 Industrial land and property market

The Perth industrial market is experiencing ongoing demand for industrial premises in established locations with good infrastructure despite a softening in Western Australia's economy. The outlook for Perth's industrial market remains positive and it is anticipated that as resource projects transition to operational phases and production volumes increase, demand will rise for transport and storage facilities.[28]

Section 6.1 of this report details industrial land sales for the Perth metropolitan region and Section 6.2 reports on industrial property sales. The analysis has been prepared using data sourced from the Real Estate Institute of Western Australia (REIWA). The categorisation of industrial land and property is based on Landgate property valuation records and has been compiled by the Institute. Industrial land refers to vacant industrial land. Industrial property consists of a variety of property valuation classifications such as showrooms, factory units, warehouses and workshops. Sales activity has been delineated into sales for lots above one hectare and sales for lots below one hectare, for both industrial land and property.

6.1 Industrial land sales

The past decade has seen rapid growth in industrial land values, driven by sustained investment in the mining and construction industries, as well as relatively constrained release of development ready industrial land. The rise in land values and the rapid take-up of available industrial land has brought Perth's industrial land values in line with interstate values.[29]

Industrial land sales for Perth – lots greater than one hectare

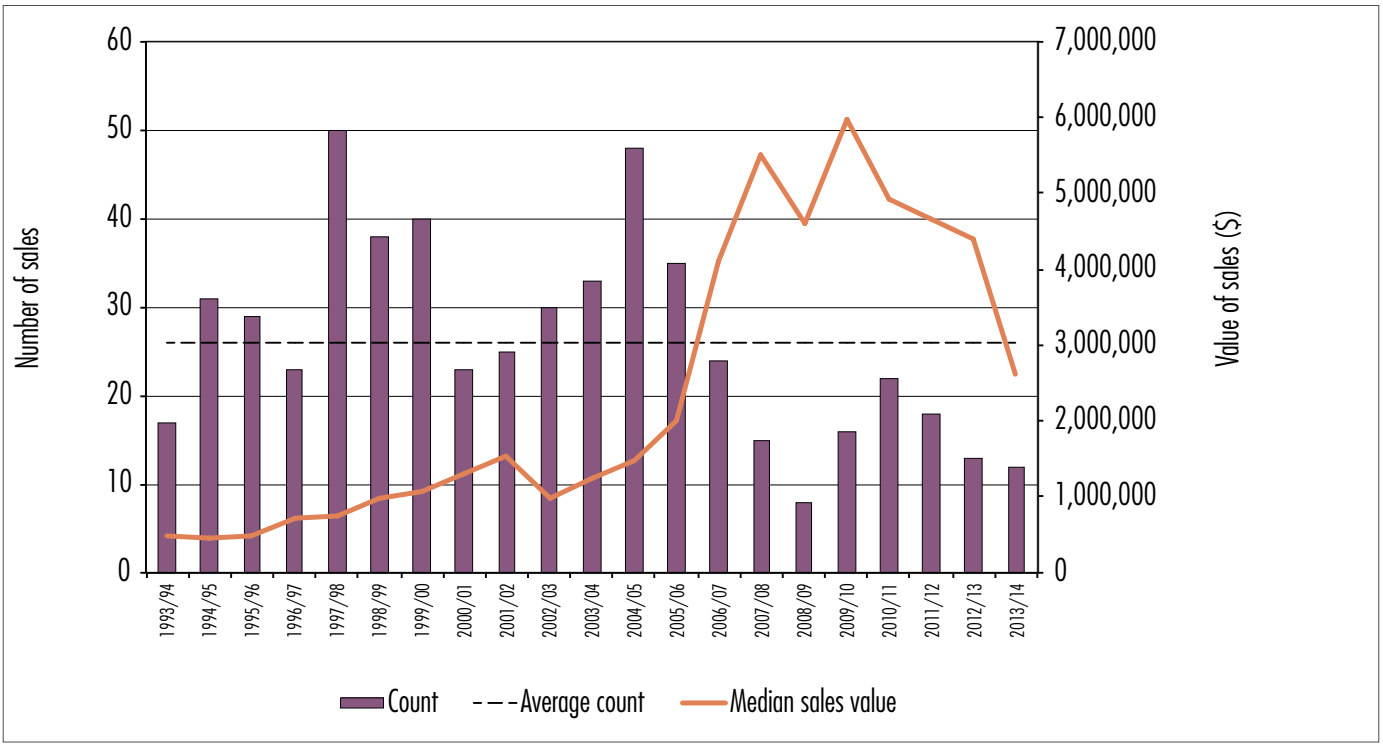
Figure 38 shows industrial land sales between 1993/94 and 2013/14 for lots greater than one hectare. The number of sales averaged 26 per annum during this period. The sales volume fluctuated with sales peaking in 1997/98, 2004/05 and a lower peak in 2010/11. Median land values rose steadily between 1993/94 and the mid 2000's, followed by a rapid rise in 2005/06 and 2006/07. The rise in median values corresponds with a fall in sales volume, indicating that higher prices during this period may have been due to reduced supply. In recent years, both sales volumes and values haven fallen.

Industrial land sales for Perth – lots less than one hectare

Industrial land sales in Perth between 1993/94 and 2013/14 for lots less than one hectare is depicted in Figure 39. The average number of sales during this period was 384 per annum. Land values rose gradually between 1993/94 and the mid-2000's, followed by a rapid rise while the sales volume dropped; suggesting insufficient supply. Higher values remained between 2007/08 and 2011/12, during which time the sales volume fell to the lowest levels for the 20-year period. Median values dropped in 2012/13, accompanied by a rise in sales volume, suggesting an increase in industrial land supply at this time may have helped reduce prices. The additional supply; however, was likely swiftly consumed as values have risen rapidly in 2013/14 while the sales volume has dropped.

[28] CBRE, 2014, Perth Industrial Market Outlook Q1 2014
[29] CBRE, 2014, Perth Industrial Market Outlook Q1 2014

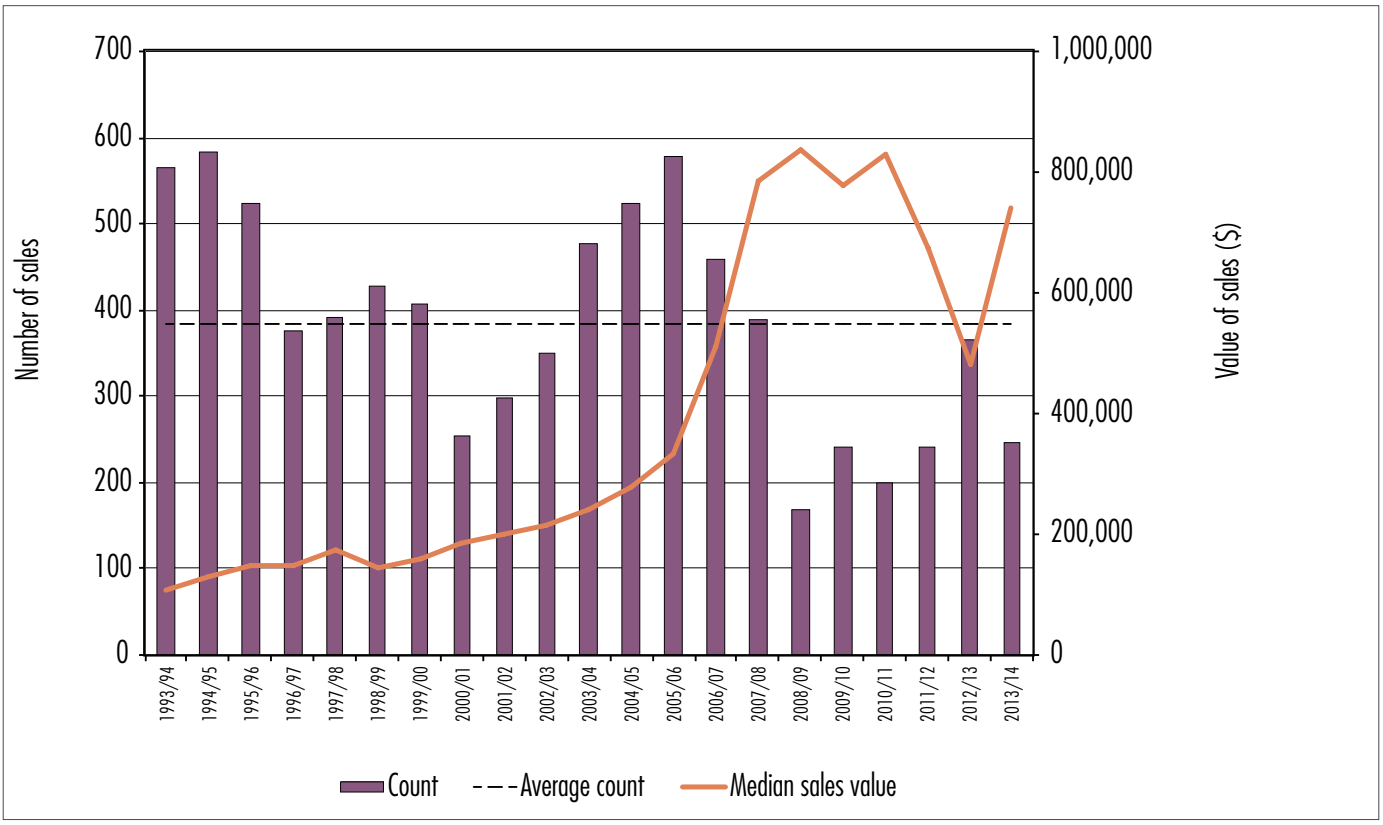
Figure 38: Perth industrial land sales – Lots greater than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements.

Figure 39: Perth industrial land sales – Lots less than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements.

The REIWA data used in the following analysis of industrial land sales is only available at the suburb scale. It is noted that there is not a perfect alignment between the industrial centres used in the previous sections of this report and the suburb scale REIWA data. The information below is considered broadly representative of sales trends for each centre.

Industrial land sales by suburb – lots greater than one hectare

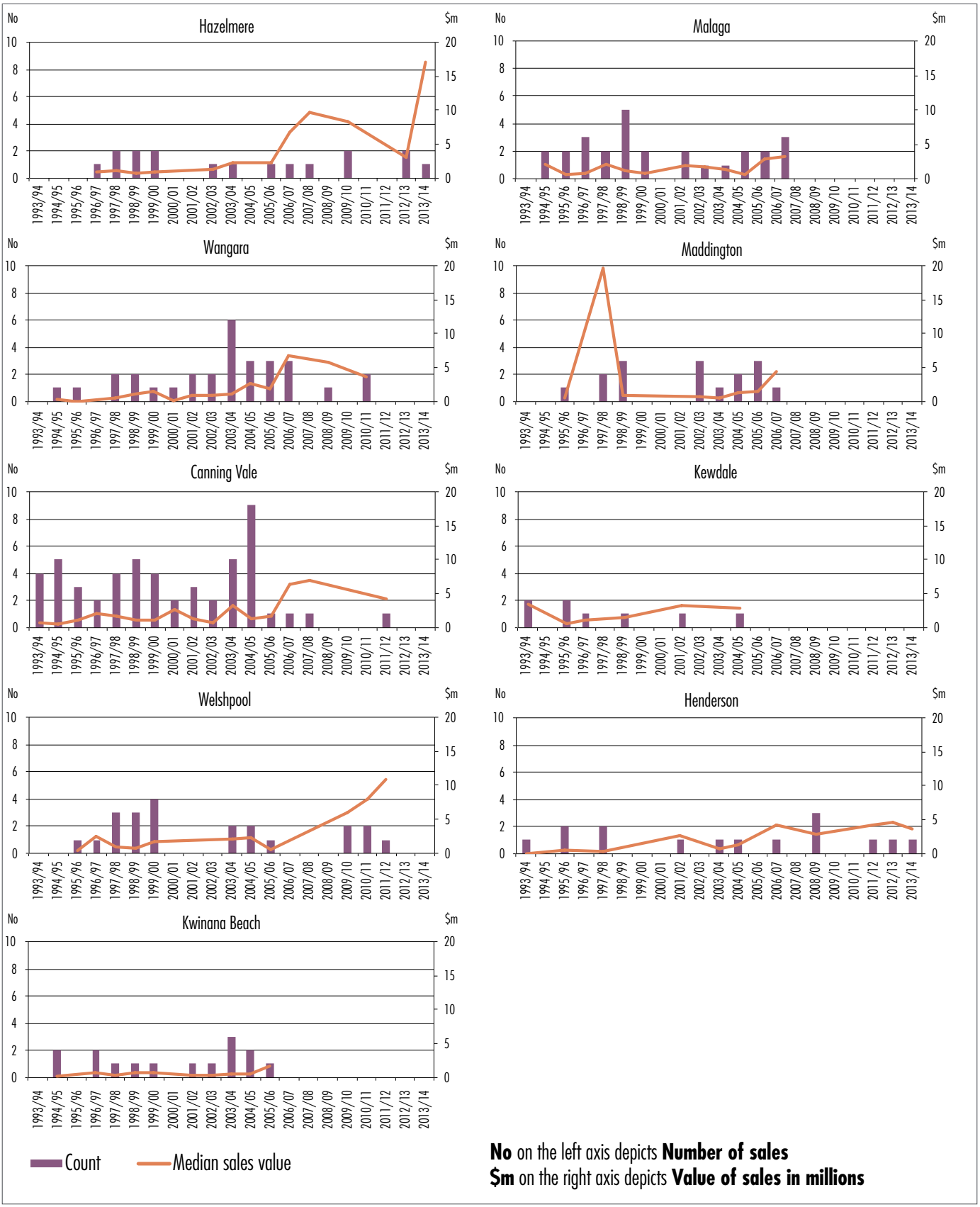
Industrial land sales for lots greater than one hectare between 1993/94 and 2013/14 are depicted in Figure 40. Neerabup and Osborne Park have been omitted due to insufficient land sales in the time period. Annual sales volume at the suburb scale over the 20 years is low, with the most being nine in Canning Vale in 2004/05. As the sales volumes were not consistent over the period, interpolation has been used to show the trend in the median sales value.

For Malaga, Maddington, Kewdale and Kwinana Beach, the median sales values remained steady between 1993/94 and the mid 2000's; however, no sales have occurred since then. Where sales volumes are low, the median sales value should be treated with caution. Examples of this include Maddington for 1996/97 and Hazelmere for 2013/14.

Industrial land sales by suburb – lots less than one hectare

Figure 41 shows industrial land sales for lots less than one hectare between 1993/94 and 2013/14. 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 suburb scale for lots less than one hectare is 115 in 1998/99 for Malaga, which had the highest average number of sales over the 20 year period with an average of 48 sales per annum. For Maddington, Osborne Park, Kewdale and Welshpool, sales volumes have dropped in recent years, while prices have varied. Neerabup, being a newer area, did not record any sales until 2002/03. For all suburbs, the median sales value shows a general rise from 1993/94 to the mid 2000's. The higher median values have been maintained since the mid 2000's for Maddington, Kewdale and Wangara, while median values have fluctuated widely for Malaga, Osborne Park and Kwinana Beach.

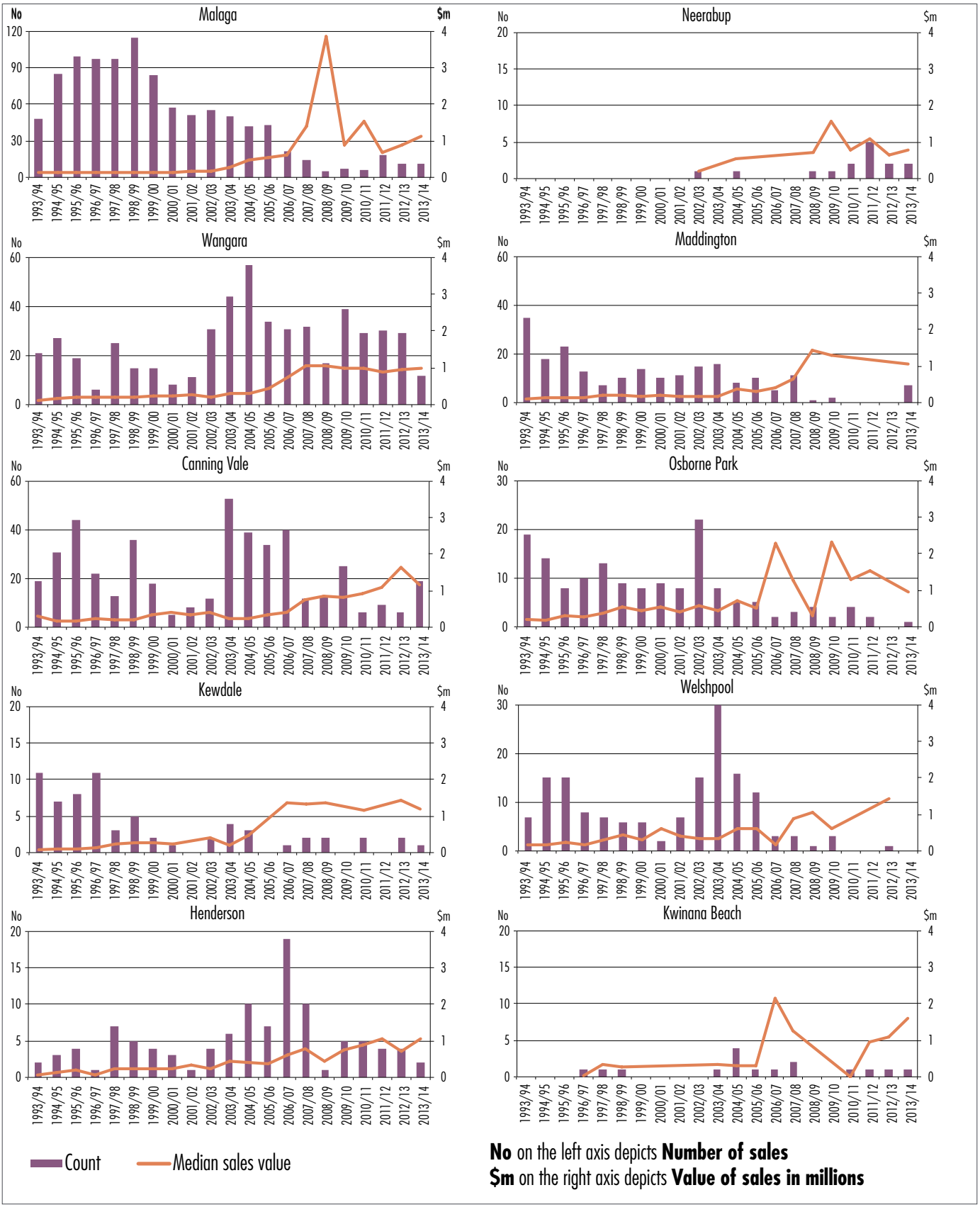
Figure 40: Industrial land sales – Lots greater than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements. A notional sales value has been assigned for years with no sales.

Figure 41: Industrial land sales – Lots less than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements. A notional sales value has been assigned for years with no sales.

6.2 Industrial property sales

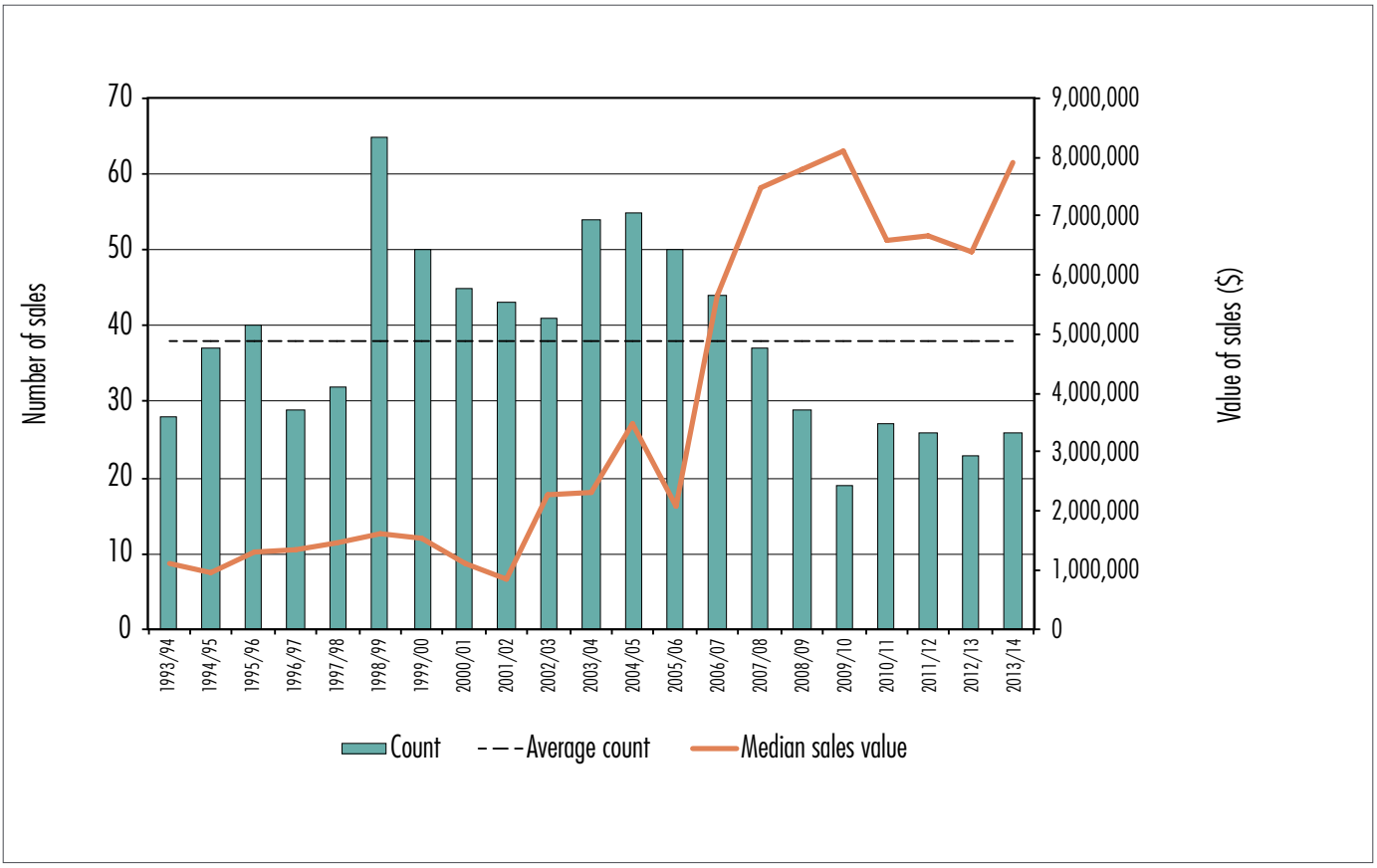
Industrial property sales for Perth – lots greater than one hectare

Figure 42 shows the industrial property sales on lots greater than one hectare in Perth between 1993/94 and 2013/14. The average number of sales for the 20 year period is 38 sales per annum. From the mid 1990s to the mid 2000's the sales volume has fluctuated, with peaks in 1998/99 followed by a lower peak in 2004/05. Over the same period, there was a steady increase in the median value of sales. Since the mid 2000s, the number of industrial property sales has fallen, while the median value of sales has risen rapidly. In recent years, median values have remained consistently high, which can be an indication of a limited supply of industrial properties on lots greater than one hectare relative to the level of demand.

Industrial property sales for Perth – lots less than one hectare

Industrial property sales on lots less than one hectare for Perth between the 1993/94 and 2013/14 is shown in Figure 43. There was an average of 896 property sales per annum during this period. During early to mid-2000s the volume of sales rose, with a corresponding rise in the median value of sales. Since 2007/08; however, the number of sales has fallen to levels similar to the late 1990s while the higher median sales values have been maintained, indicating continued demand for industrial properties on lots sized less than one hectare.

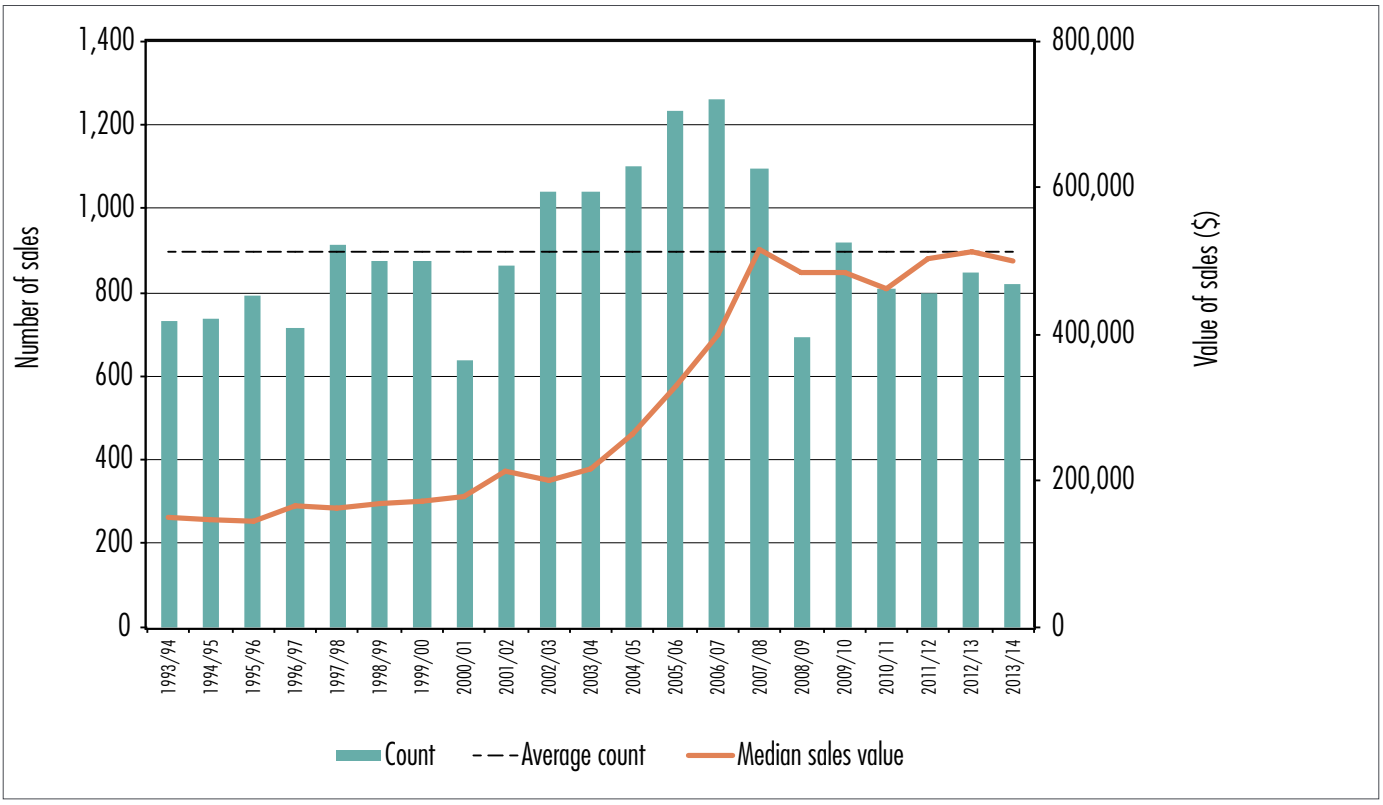
Figure 42: Perth industrial property sales – Lots greater than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements.

Figure 43: Perth industrial property sales – Lots less than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements.

Similarly to industrial land sales, the REIWA data used in the following analysis of industrial property sales is only available at the suburb scale. It should be noted that there is not a perfect alignment between the industrial centres used in the previous sections of this report and the suburb scale REIWA data. The information depicted is considered broadly representative of sales trends for each centre.

Industrial property sales by suburb – lots greater than one hectare

Figure 44 shows the industrial property sales between 1993/94 and 2013/14 for properties on lots greater than one hectare. Neerabup and Hazelmere have not been included due to an insufficient number of sales during the period. Individual suburbs have low annual volume of sales for properties on lots greater than one hectare, the most being 10 in 1995/96 for Welshpool. The highest average number of sales over the 20-year period at four sales per annum was also Welshpool. All show a general upward trend in the median sales value over the 20 years. For some suburbs, sales were sporadic over the period and interpolation has been used to show the trend in the median sales value.

Industrial property sales by suburb – lots less than one hectare

Industrial property sales between 1993/94 and 2013/14 for properties on lots less than one hectare is shown in Figure 45. Hazelmere has been excluded as no sales were recorded. Neerabup, as a newer industrial centre, only has sales data from 2001/02. Malaga has the most sales with an average of 95 sales per annum. In general, for industrial properties, the volume of sales for properties on lots less than one hectare is higher than for properties on lots greater than one hectare. The median sales values of all suburbs shown in Figure 45 are higher than the Perth median sales value (Figure 43).

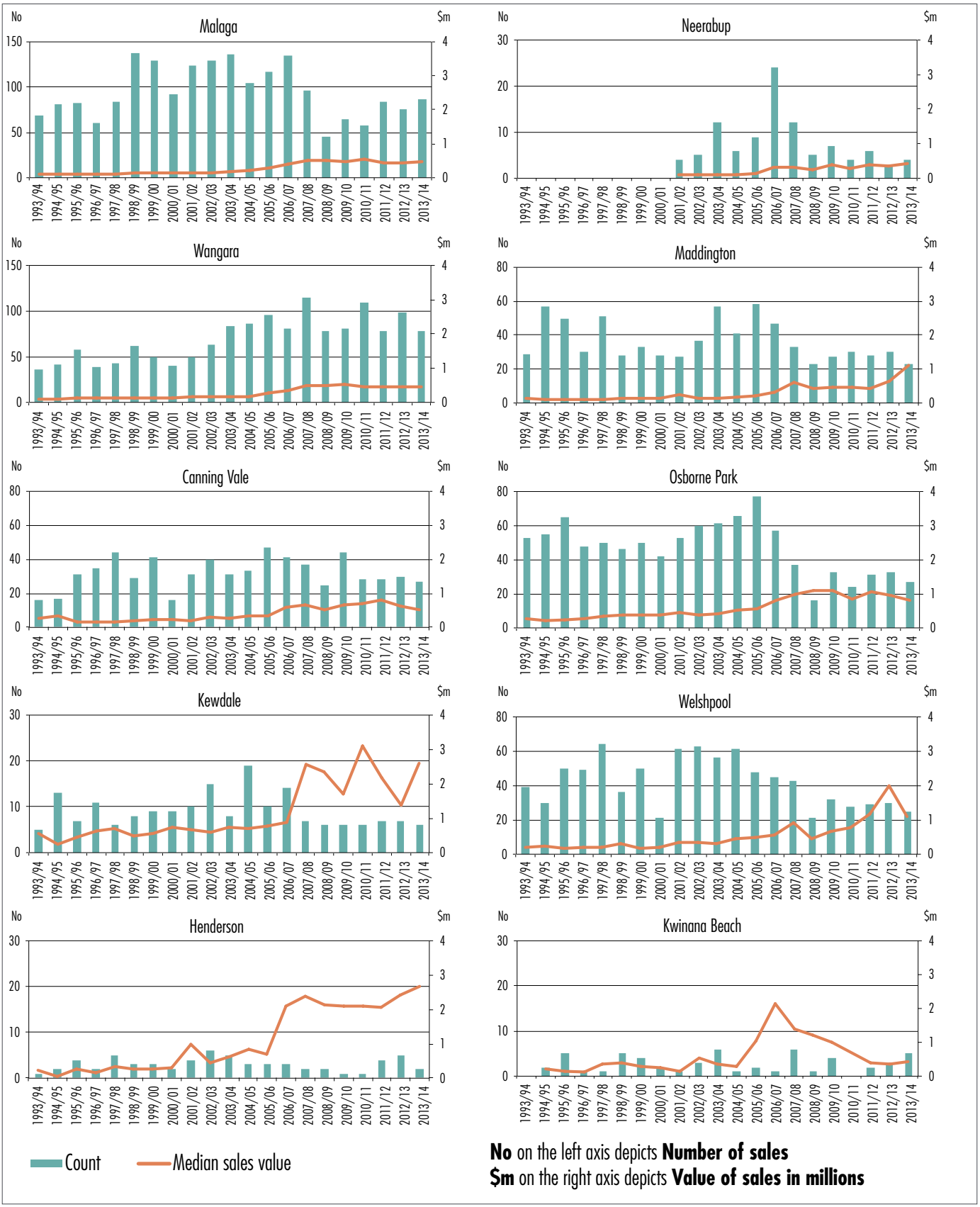
Sales values show a general upward trend for all suburbs though the extent of fluctuation in prices varies between centres. The median values of sales for Wangara and Malaga have been the most stable over the 20-year period, which may indicate a stable supply of industrial properties on lots less than one hectare during this timeframe. Henderson experienced a spike in values in 2006/07, with median values still at the higher level, while sales volumes have been stable. Since 2007/08, sales volumes have fallen in Kewdale while values have risen sharply and fluctuated widely.

Figure 44: Industrial property sales – Lots greater than one hectare, 1993/94 to 2013/14

Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements. A notional sales value has been assigned for years with no sales.

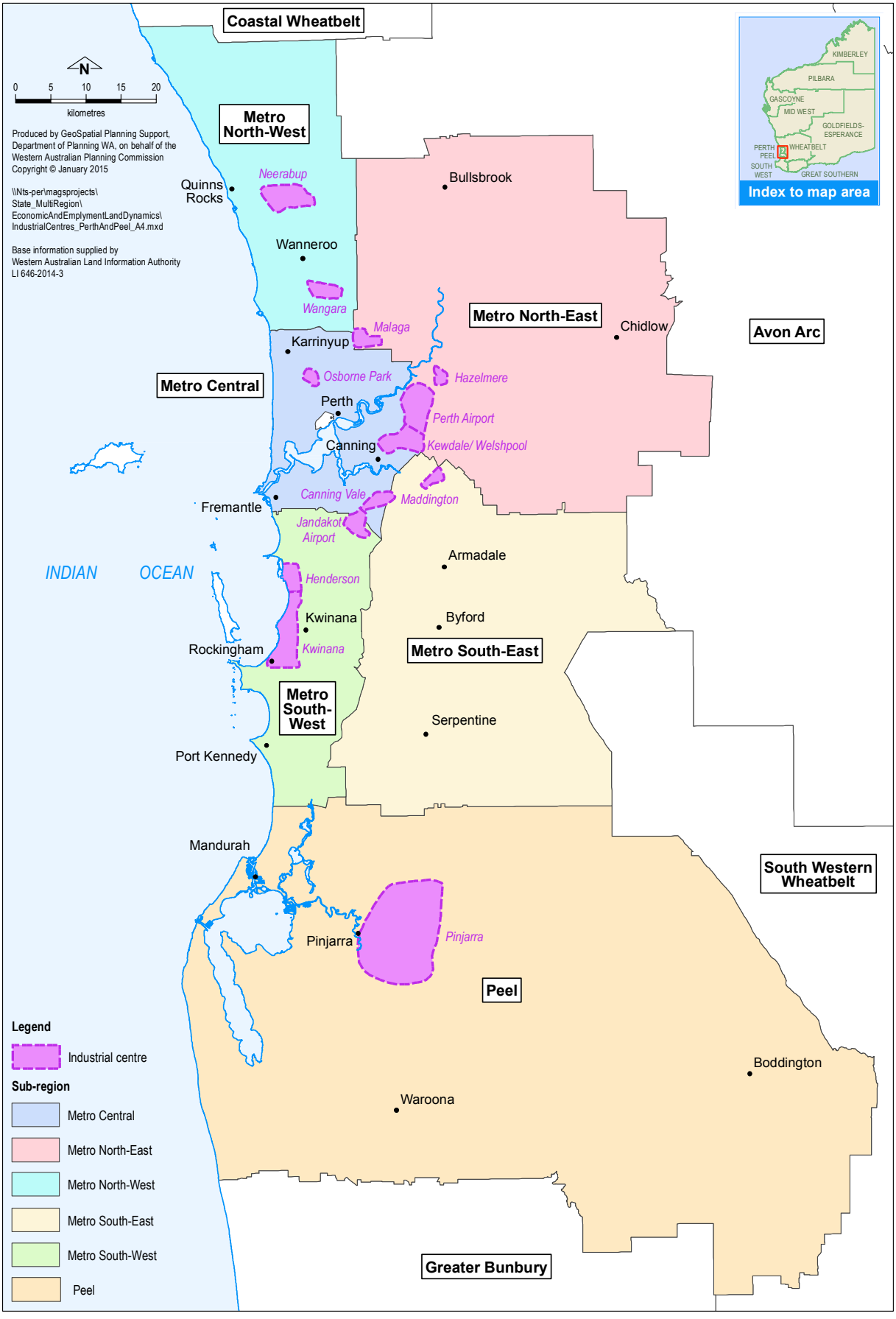
Figure 45: Industrial property sales – Lots less than one hectare, 1993/94 to 2013/14



Source: Real Estate Institute of Western Australia (2014)

Note: 2013/14 data is preliminary due to lagging settlements. A notional sales value has been assigned for years with no sales.

7.0 **Map** Industrial Centres – Perth metropolitan and Peel regions



8.0 Definitions and methodology

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. For the purposes of assessing future land supply, unrated lots are considered to be developed.
- **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.

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	Chamber of Commerce and Industry
DoP	Department of Planning
DZN	Destination Zone
EELS	Economic and Employment Lands Strategy
GDP	Gross Domestic Product
GIS	Geographic Information System
Ha	Hectare
IRIS	Integrated Regional Information System
REIWA	Real Estate Institute of Western Australia
UDP	Urban Development Program

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