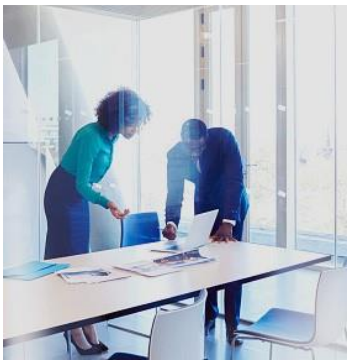
GHD Advisory



Neerabup Industrial Area Economic and Employment Strategy Report

City of Wanneroo

June 2020

GHD

Contents

Figures

Tables

Executive Summary

This Economic and Employment Strategy Report (the 'Report') is a technical assessment of the key economic and industrial land market factors that will influence the development and employment growth of the Neerabup Industrial Area (NIA). It has been prepared for the City of Wanneroo to support the drafting of the upcoming NIA Structure Plan and should also prove useful for informing other future strategic planning activities.

The NIA is an approximately 1,000 hectare parcel of land in the North-West subregion of Perth with the capacity to house up to an estimated 3,600,000 square metres of industrial floorspace on the approximate 600 hectares of developable land. It is situated within the City of Wanneroo and in the coming years is expected to become a large employment node in the City with connections to major freight links. The area is in its very early stages of industrial growth, with its current estimated 900 employees growing to 20,000 jobs by 2060 under a moderate growth scenario or by 2050 under a high growth scenario. The businesses which currently operate within the NIA are characterised by the following key land use planning floorspace types:

- Manufacturing, Processing and Fabrication,
- Storage and Distribution
- Utilities and Communications,
- Office and Business floorspace,
- Service Industry, and
- Primary and Rural (expected to diminish as more intensive industrial activities occur).

The development of the NIA is expected to be predominantly influenced by rapid population growth in surrounding population centres, as well as the Greater Perth Metropolitan Area's economy, and the broader Western Australian economy. Macroeconomic forces including population growth play a large role in the demand for industrial lands in the area, which align with the Perth industrial real estate market. The area's location near Perth's fastest growing populations serves a key role in the provision of population driven industrial production.

The NIA shares a competitive market for industrial land with Wangara-Landsdale, which currently has some competitive advantages including availability of existing building stock, freehold in lieu of leasehold title and better connectivity to labour and product markets. Despite these current advantages, the Wangara-Landsdale industrial area is estimated to reach full build-out by about 2030, leaving the Neerabup Industrial Area with the highest land availability in the north-west corridor. This availability, as well as a range of other growth triggers such as the completion of a number of infrastructure links including the Mitchell Freeway extension, extension of Flynn Drive and Neeves Road, and supporting industrial activity in the Muchea Industrial Area means that the NIA is expected to grow significantly over the next few decades.

The area is forecasted to reach full build-out within the next 40-45 years as a result of the growth associated with these increases to the competitiveness of industrial activity in the area, as well as the right policies and initiatives in place and favourable macroeconomic conditions. At full build-out employment is expected to plateau at around 28,700 jobs, assuming constant labour intensity over time.

High growth in the area can be, in part, stimulated by supporting and facilitating business and investment attraction, with a number of possible initiatives set out below.

1. **Ensuring availability of development ready land.** Supplying these development sites with required services such as water, power and sewerage will be key to ensure that industrial developers who are ready to commit their investments are not sent looking elsewhere. Offering increased readiness for development with respect to other areas could place the NIA at a competitive advantage.
2. **The development of anchor tenancies for the NIA in order to increase activation of the area and encourage the development of industry clusters around them.** This can be achieved through a variety of targeted incentive schemes, such as rent-holidays, streamlined development applications, collaborative development strategies, subsidised rates and funding grants. These anchor tenancies and their associated industry clusters should be highly publicised as Neerabup's industrial identity in order to attract similar industrial producers and maximise the return on investment to land owners. The City of Wanneroo could potentially play a guiding or facilitating role in this process.
3. **Staging the development of the NIA so as to allow a cost-effective roll-out of essential infrastructure and services.** Studies should be undertaken to ensure that essential infrastructure and services are developed such that the development of infrastructure is just ahead of the demand for industrial land. Doing so will mitigate unnecessary capital, asset replacement and maintenance expenditure until such time that it is genuinely required to meet the industrial floorspace demand of the area.
4. **Land owners should ensure flexible lot-sizing for development.** Rigid lot-sizing may artificially reduce demand for land in the area. By keeping lot-sizing flexible, the NIA will be able to cater to small producers whilst still keeping land available for anchor tenancies.
5. **The City of Wanneroo should streamline approvals processes for development of the NIA.** Time spent awaiting the outcome of a development application is time added to the end of product lead-times. The City of Wanneroo can expedite and prioritise approvals processes for the area and provide dedicated resources to assist developers with their applications and development strategies.
6. **Landowners should ensure the NIA is an attractive place to work.** The labourforce of the future will demand favourable working conditions with easy access to their place of work and a pleasant working environment. Whilst the exact requirements of the workforce of the future cannot be known for certain, adequate provision of Service Industrial zoned land, greenspace, parking and other amenities should be made available to ensure that the NIA is an attractive place to work.

In addition to the above recommendations, landowners in the NIA could also enhance the growth rate of the area with the following:

- Offering discounted leases or rates for early stages of the NIA in order to achieve a self-sustaining cluster of industry in the area.
- Entering into joint-venture style agreement with other landowner(s) in order to ensure policy alignment of each relevant organisation. While it is understood that preliminary discussions indicate a joint-venture style agreement is not feasible in the immediate future, this option may be re-examined in the future as appropriate.
- Providing greater certainty around staging and infrastructure upgrades such as the proposed passenger rail line through the area as such information becomes available.

Disclaimer

This report: has been prepared by GHD for City of Wanneroo and may only be used and relied on by City of Wanneroo for the purpose agreed between GHD and the City of Wanneroo as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Wanneroo arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions described in section 1.3 and 7.1 of this report made by GHD in consultation with the City of Wanneroo. GHD disclaims liability arising from any of the assumptions being incorrect.

1. Introduction

This Economic and Employment Strategy Report (the 'Report') is a technical assessment of the key economic and industrial land market factors that will influence the development and employment growth of the NIA (NIA). The goal of this Report is to identify and assess the relevant issues and opportunities that will influence the growth and development of the precinct and provide recommendations on how the structure plan and Council should respond to these factors in order to best achieve the City of Wanneroo's vision for the area. This introduction is divided into five sections:

- Study aims and objectives
- Approach
- Data sources and assumptions
- Study area
- Structure of the report

1.1 Study Aims and Objectives

As outlined above, the primary objective of this Report is to identify and assess the relevant issues and opportunities that will influence the growth and development of the NIA and provide recommendations on how the structure plan and Council should respond to these factors in order to achieve the City of Wanneroo's vision for the area. To satisfy these objectives this Report must:

- Develop a detailed understanding of the existing and future demographic and economic conditions that may influence the growth and development of the NIA;
- Develop a detailed understanding of the current policy framework and how it will impact the growth and development of the NIA;
- Develop insights on the performance and potential changes in the industrial land market and how it may influence the growth and development of the NIA;
- Obtain insights from market participants on relevant issues and opportunities that will influence the growth and development potential of the NIA;
- Develop land use development scenarios to test and determine the optimal land use profile for the structure plan to accommodate; and
- Provide recommendations to Council on initiatives they can undertake to influence the market to develop and operate in the NIA to achieve their strategic planning objectives for the area.

1.2 Approach

To complement and extend work already completed and ensure the structure plan best responds to identified economic and market issues and opportunities the following methodology has been employed:

1. Define a geographic area which represents the industrial land market in which the NIA will be competing in to attract economic and development activity;
2. Review previously completed background studies and reports to identify key information gaps to address with the Report;

3. Analyse relevant strategic planning and economic development frameworks to determine the relevant factors that may influences development within NIA;
4. Assess and analyse relevant historical and forecast demographic, economic and property market data to identify key trends
5. Assess and analyse existing supply of industrial land within the relevant study areas;
6. Analyse and review proposed and committed major projects and developments within the area to assess how they might influence the role, function, composition and timing of development at the Neerabup industrial estate;
7. Assess potential take up rates for industrial land within the relevant study areas;
8. Assess and consider the competitive advantages and disadvantages of the NIA and its ability to attract and retain targeted and desired economic activity and uses;
9. Prepare land development scenarios to assist the development and preparation of the structure plan; and
10. Outline potential direct and indirect actions Council can undertake to improve the economic competitive of the NIA and help achieve the strategic planning objectives for the area.

1.3 Data Sources and Assumptions

Key data sources used in this Report include:

- Various government strategies, policies and strategies
- Australian Bureau of Statistics demographic and industrial data
- Pricefinder land sales and property data
- Land Use Employment Survey floorspace and employment data

The following assumptions are held throughout the report:

- key data sources, as outlined above, collectively and accurately reflect the existing and future demographic, economic and land use characteristics and priorities for the Neerabup Indusial Area and North-West region;
- data that was sourced or supplied for the study was the best available to the authors at the time of writing;
- data quality, including accuracy, completeness and currency was assumed to be appropriate at the scale that it was used in the study (i.e. fit for purpose);
- information available on future major projects and developments is accurate and complete; and
- the data sourced from Pricefinder accurately reflects land values in the industrial land market.

1.4 Study Area

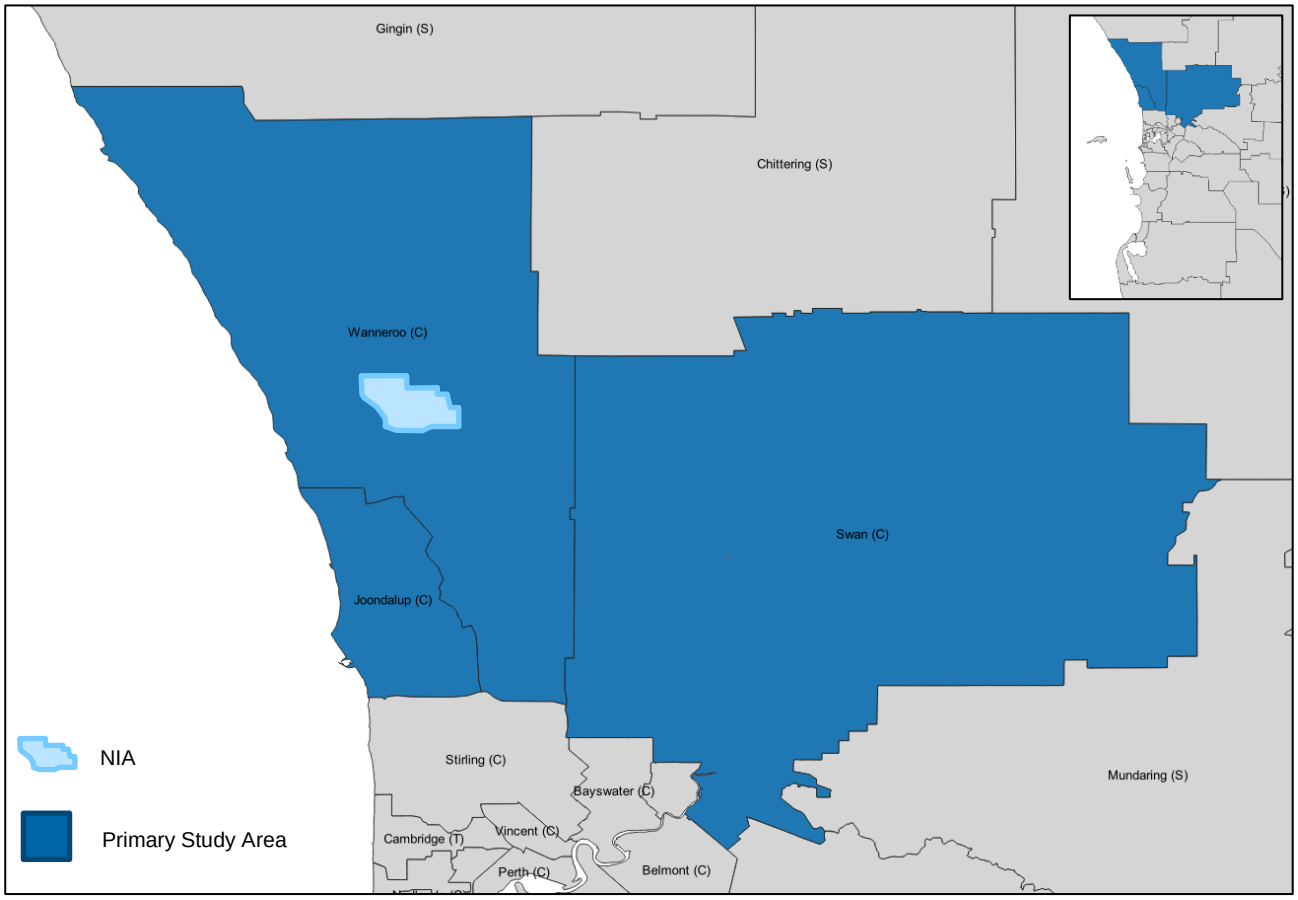
A study area was defined to facilitate a review of the relevant economic factors that will influence the growth and development of the NIA. The appropriateness of a study area is based on how geographically representative it is of the communities, economies and industrial land markets that will influence the growth and development outcomes and opportunities of the chosen area. For the purposes of selecting a study area for the NIA, the factors that were considered when defining the boundary of the study area included:

- location and extent of the NIA;

- the existing and future regional transport network influencing travel time to and from the area;
- location and nature of existing centres, established industrial area activities and surrounding key land uses;
- administrative boundaries such as statistical boundaries, established industrial land markets areas,
- the location of natural and engineering boundaries such as local conservation areas, national parks, waterways and heavy infrastructure; and
- perceptual and psychological boundaries of convenience, accessibility, community and relationship to the site and surrounding communities.

The chosen study area is the area of the City of Wanneroo, City of Joondalup and City of Swan. Analysis will be presented at the Local Government Area level for each of these areas and overall findings for the study area. The study area is illustrated in **Figure 1** below.

Figure 1. Map of the Primary Study Area and location on the NIA



Source: GHD Advisory, 2019

The study area includes the planned industrial estates east of the NIA at East Wanneroo and Bullsbrook within the City of Swan. This region reflects the property market in which the NIA will be competing to attract and retain development and economic activity. It also reflects the communities and economies which the land has been zoned to service.

Analysis of the study area will provide the greatest insight into the issues and opportunities that will influence the growth and development area.

1.5 Structure of the Report

This Economic and Employment Strategy Report provides a comprehensive review of NIA's regional economy, industrial land market, drivers for growth and employment potential if these drivers are acted upon.

The report begins by examining the NIA in detail, with a presentation of the current research and market sound conducted for the area to date, current industrial land supply relative to other areas, land sales and land sales growth, sale prices and expected demand for the area. The section continues with an analysis of the industrial profile of the area, a description of its growth drivers and an assessment of the competitiveness of the area relative to other industrial areas in its market.

The report first explores the current economy of the study area. This analysis includes a profiling of local demographics, with an exploration of population, age structure, dwellings, stability of residence, education levels, industries of employment, occupations, workforce status, incomes, journey and methods of travelling to work and Socio-Economic Indexes for Areas (SEIFA) scores. The section continues with a detailed examination of the area's economic profile, including historic employment growth, business counts, workforce by industry and occupation and the employment self-sufficiency (ESS) of the area. These demographic and economic profiles are assessed relative to the overall Greater Perth Metropolitan Area as a reference point.

After exploring the current community and economic profile of the area, its future community and economic profile is considered. This includes a survey of the most up-to-date major projects and developments in the area, future population projections and land use forecasts.

The report then presents the most relevant state and regional economic policies in the Study Area in order to demonstrate the strategic importance of the project for the overall State and Greater Perth Metropolitan Area.

Land Development Scenarios for the Neerabup Industrial Area are then described and presented, presenting floorspace utilisation and employment projections for the NIA under a range of different growth outcomes. These include four scenarios relating to different projections of industrial growth rates in the area.

The report then concludes with concluding remarks on the NIA and provides some recommendations and initiatives which the City of Wanneroo can undertake to maximise the competitiveness and business attractiveness of the NIA.

2. Neerabup Industrial Area

The NIA is expected to be an important future driver of employment within the City of Wanneroo, with around 1,000 hectares of predominantly general industrial land. Recognising environmental constraints including conservation and Bush Forever sites, around 600 hectares of this total area is believed to be developable as industrial employment lands with the capacity to house up to 3,600,000m2 of industrial floorspace. In 2016 just 106,000 square metres of floorspace was developed, employing 659 workers.[1] Utilisation of industrial land is forecasted to have increased employment to around 900 workers in the years since.[2]

[1] WA Department of Lands, Planning and Heritage, Land Use and Employment Survey (2016)

[2] In the high growth scenario. For more details refer to Section 7.

This section is divided into four subheadings:

- Industrial Profile of the NIA
- Growth Drivers in the NIA
- Competitiveness of the NIA
- Key Findings and Considerations

2.1 Industrial Profile of the NIA

Future planning for the Neerabup Industrial Estate requires a deep understanding of the productive capacity and capability of the area and the surrounding local workforce that it draws upon.

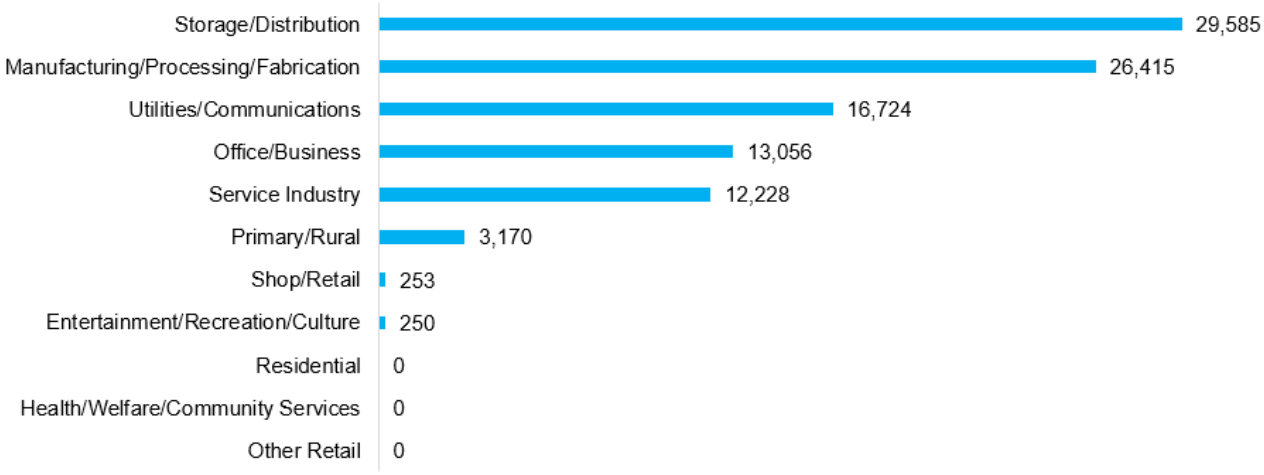
Land development in the Neerabup Industrial Area will, as in all industrial areas, be a function of industrial land demand and industrial land supply. At present, there is an abundance of available land in the Neerabup Area,.

It is estimated that upon full development of the estate a workforce of 28,700 employees could be ultimately accommodated, even when allowing for some vacant floorspace and underutilisation in the area. It is noted however that a significant proportion of the available land in the area is currently occupied by extractive industries and is expected to remain in this use for some time.

This overall employment capacity is calculated by applying the ratio of employees per square metre of floorspace in the Wangara-Landsdale industrial area in 2016 to the industrial land supply in Neerabup Industrial Area. This ratio is estimated to be 94 employees per hectare as estimated from WA Department of Planning, Lands and Heritage Land Use and Employment Survey data in 2016.

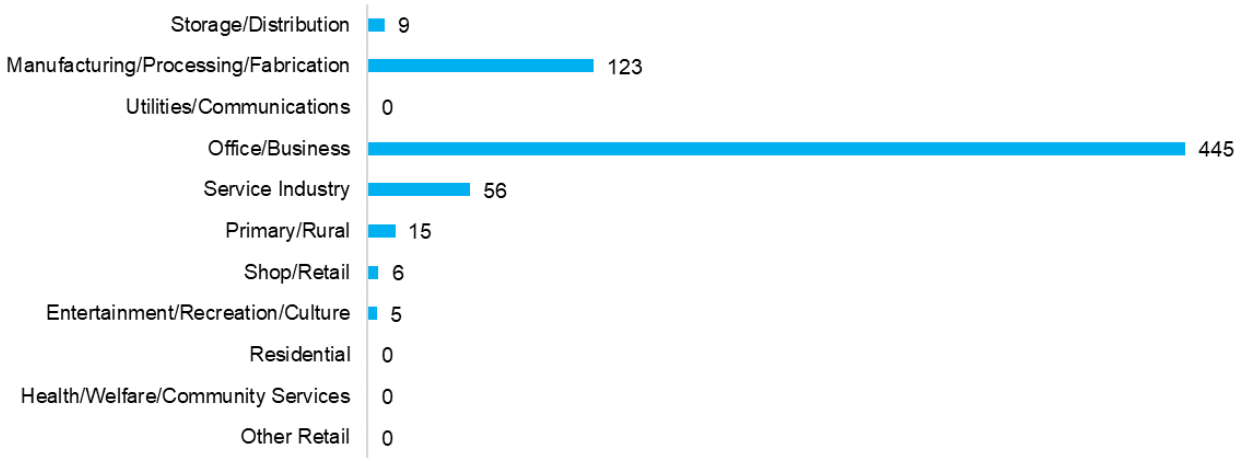
This Land Use and Employment Survey data showsthe Neerabup Industrial Area floorspace and employment profile in 2016 as shown in Figure 3 and Figure 4.

Figure 2. Neerabup Industrial Area floorspace by land use planning category, square metres, 2016



Source: Department of Planning, Lands and Heritage, Land Use and Employment Survey 2016.

Figure 3. Neerabup Industrial Area employment by land use planning category, employees, 2016

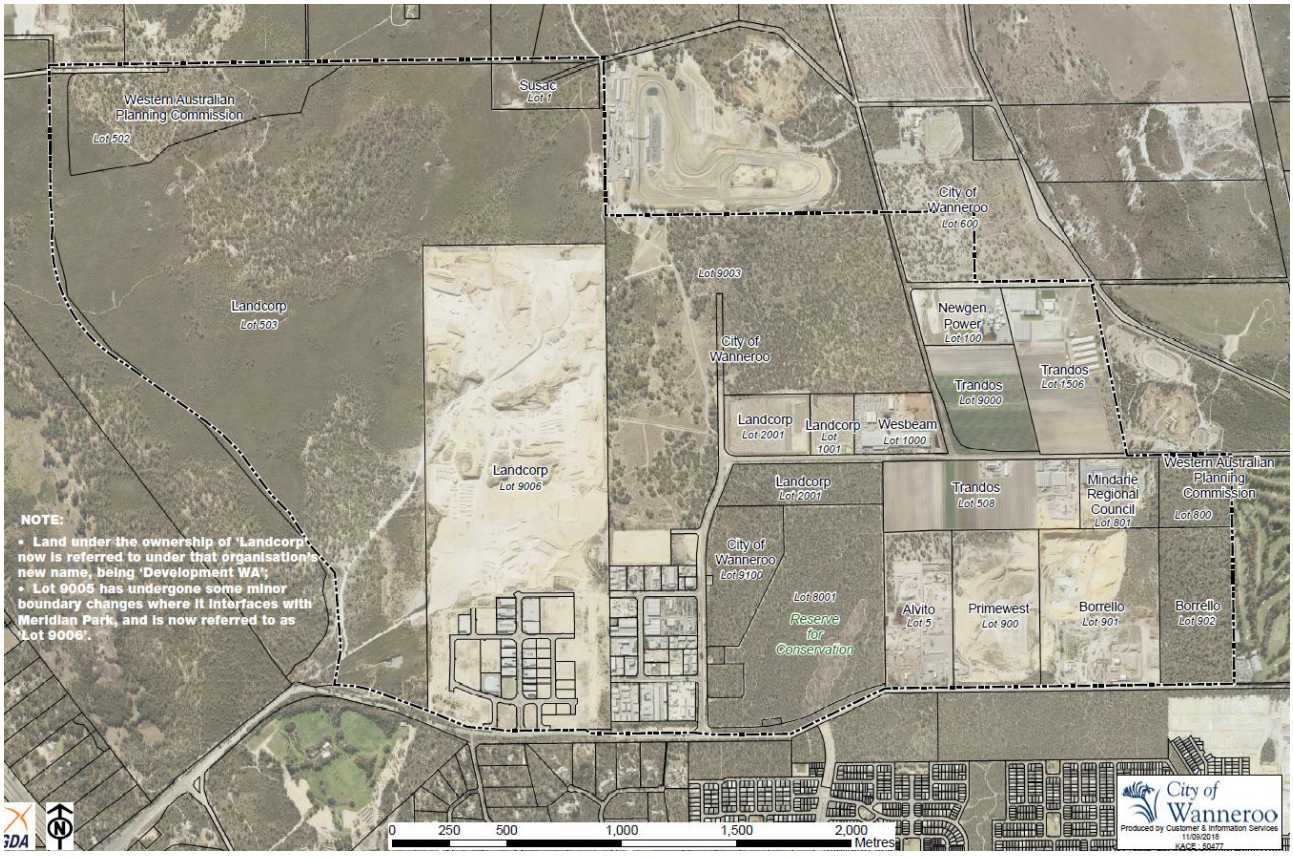


Source: Department of Planning, Lands and Heritage, Land Use and Employment Survey 2016.

2.1.1 Land Ownership in the Neerabup Industrial Area

The NIA contains land predominantly owned by Development WA and the City of Wanneroo as shown in Figure 5.

Figure 4. Land ownership plan of the NIA as of 2018



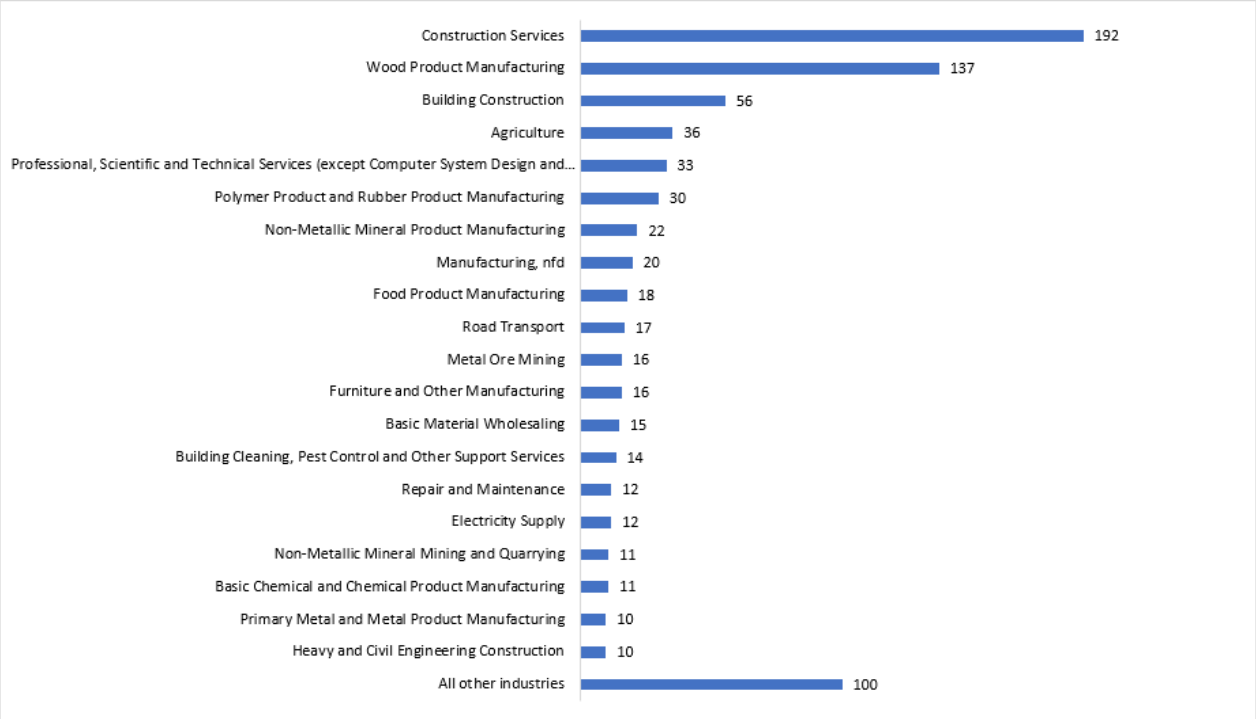
Major landholders in the area include Development WA, the City of Wanneroo and the Trandos family. In addition, some other key private landholdings include Newgen Power and Wesbeam. Market sounding

commissioned by the City of Wanneroo has revealed a preference from developers and owners for freehold land, which is thought to deliver a higher profit-margin for industrial producers operating in the Greater Perth Metropolitan Area.[3]

2.1.2 Industries located in the NIA

The Australian Bureau of Statistics Census of Population and Housing provides employment data by industry. Analysis of this data provides an overview of the types of industry currently operating in the area. Figure 6 provides a breakdown of estimated employment by industry type in the area.

Figure 5. Industrial Profile of the NIA: Employment by ANZSIC2 industries (2016), N = 787



Source: ABS Census of Population and Housing 2016

2.2 Growth Drivers in the NIA

The City of Wanneroo and Development WA have previously set a target of 20,000 jobs within the Neerabup Industrial Area.[4] Given the current early phase of the NIAs lifecycle, significant growth in the industrial area and its surrounding population centres will be needed to meet this target.

Growth to 20,000 jobs is expected to be primarily driven by land demand from strong population growth in surrounding areas. While population growth is expected to be a key growth driver, other drivers as detailed in this section were also taken into consideration in the development of the floorspace and employment development scenarios.

[3] Y Consulting (2019). NIA Market Review and Industry Consultation, report, p.19-20

[4] City of Wanneroo (2016). Economic Development Strategy 2016-2021, p.3

Previous market sounding undertaken by Y Research (2019), the City of Wanneroo (2017), and Syme Marmion & Co (2008) into industrial floorspace in Perth and Peel region more generally as well as detailed consultation with the City of Wanneroo identified the following drivers for increasing demand for industrial land in the area:

- **Rapid residential growth** – rapid residential growth in the region is expected to increase the demand for general industrial land, particularly in relation to population driven industries such as food processing and building construction.
- **Infrastructure development** – infrastructure development such as transport and logistics and communications have significant potential to increase the competitiveness of the area, and therefore drive growth. A large number of major infrastructure developments are expected or planned to be completed in coming decades, including the Mitchell Freeway extension, extension/realignment of Flynn Drive/Neeves Road and continued development of Muchea and Bullsbrook industrial areas.
- **Supply shortfalls** –he NIA is well positioned to service gaps in the supply for industrial floorspace and the region's growing industrial land market.
- **Affordable land** – in the near-term, the affordability of industrial land in the NIA is expected to increase demand by industrial tenants who require access to affordable land development opportunities.
- **Flexible lot sizing** – the greenfields profile of the NIA means that expanding development can be undertaken with flexible lot sizing, tailored to the requirements of industry.
- **Regulated land uses** – the suitability of industrial lands in the NIA for a range of regulated land uses including those considered undesirable in areas in closer proximity to residential areas or transport corridors, such as recycling depots, car wrecking or sand blasting make the area an attractive option for these usages.
- **Government land uses** – the NIA is highly suitable for government usage requiring proximity of operations with population centres, such as the Water Corporation, Transperth, Main Road Western Australia and the City of Wanneroo itself.

A review of the specific growth drivers impacting the NIA is provided later in Table 15. These are used to inform the floorspace and employment development scenarios.

2.3 Competitiveness of the NIA

The NIA is currently in an early phase of its industrial lifecycle and has competitive advantages and disadvantages associated with this status.

Currently, the availability of affordable land with flexible lot sizes places the area at a significant competitive advantage over other more densely populated industrial areas such as Wangara-Landsdale to the south. Competitive disadvantages compared to other industrial areas also result from this early phase in the area's lifecycle, namely the partially developed nature of surrounding population centres and yet uncompleted key logistics and transportation connections to the area.

Over time, these competitive advantages and disadvantages are expected to transition providing a net benefit for industrial floorspace and employment growth in the area:

- The City of Wanneroo currently has the fastest population growth of any local government area in Western Australia in terms of absolute numbers. Population centres in close proximity to the NIA are therefore expected to greatly expand and densify, with the region adding significant amounts of

working age population over the next few decades. The future demographic profile of the area is discussed in detail in Section 5.

- Whilst the area is currently comparatively less connected to the key freight terminals of Kewdale, Perth Airport, Jandakot and Fremantle than other areas, the connection of the area to these terminals is expected to provide large gains to competitiveness in years to come. Significant latent demand for industrial land in the area is expected to be capitalised upon at such time.
- The availability of industrial land in the area is expected to provide for a significant surge in industrial floorspace demand as other industrial areas reach full capacity. This is particularly expected to be the case for the estimated full build-out of the Wangara-Landsdale industrial area estimated to occur around 2030.

The NIA Market Review and Industry Consultation report by commissioned by the City of Wanneroo in 2019 surveyed the views of the market and suggested that the area could improve competitiveness by:

- Ensuring availability of development ready land,
- Seeking out anchor tenancies to increase activation of the area and encourage the development of industrial clusters which service them,
- Effectively staging the roll-out of essential infrastructure and services to ensure cost-effectiveness of the precinct,
- Maintaining flexible lot-sizing in order to accommodate a large variety of business sizes,
- Streamlining approvals processes for development in the area, and
- Ensuring that the area is an attractive place to work.

2.4 Key Findings and Considerations

- The NIA is expected to be an important future driver of employment within the City of Wanneroo, with around 1,000 hectares of predominantly general industrial land. Of this area, around 600 hectares is currently developable allowing for an estimated capacity of 3,600,000 square metres of floorspace generating 28,700 jobs.
- The NIA is in an early stage of its development and is currently growing at a slower pace than other more mature industrial areas. This trend is expected to undergo a reversal in the medium-term with growth in the area driven by rapid residential growth in the North-Western subregion, affordable land, flexible lot sizing, exhaustion of available industrial lands in other nearby industrial areas such as Wangara-Landsdale and the completion of major transport and infrastructure connections in the near future and coming decades.
- As of 2016 the land use planning floorspace types with the largest shares of employment were Office/Business, Manufacturing/Processing/Fabrication and Service Industry. The industry sectors with the highest amount of employees in the area include construction services, wood product manufacturing, building construction and agriculture.
- Streamlined approvals processes that ensured the availability of development-ready land that can quickly and flexibly respond to the needs of the market is suggested. This will become increasingly more important towards 2030 as available land supply in the City's other industrial precincts such as Wangara-Landsdale is exhausted. Similarly, it is recommended that the City ensures that the land under its control

is development ready, particularly closer to this time when the demand for industrial floorspace in the area is expected to greatly increase.

3. Economic Policies in the Study Area

A range of state and regional strategic plans and policies collectively outline the future growth, development vision and objectives of communities and economies within the northern region of Perth that makes up the study area. Analysing this framework will provide a better understanding of the strategic objectives and vision driving the NIA and identify potential opportunities and issues the NIA could respond to and address.

To focus the analysis of this framework and determine what is driving the area and how it might influence its growth and development this section will analyse urban and regional land use strategies and policies, long term infrastructure plans, regional development strategies and economic development plans and strategies. It is divided into three sections:

- State policies and strategic plans
- Regional policies and strategic plans
- Key findings and considerations

3.1 State Policies and Strategic Plans

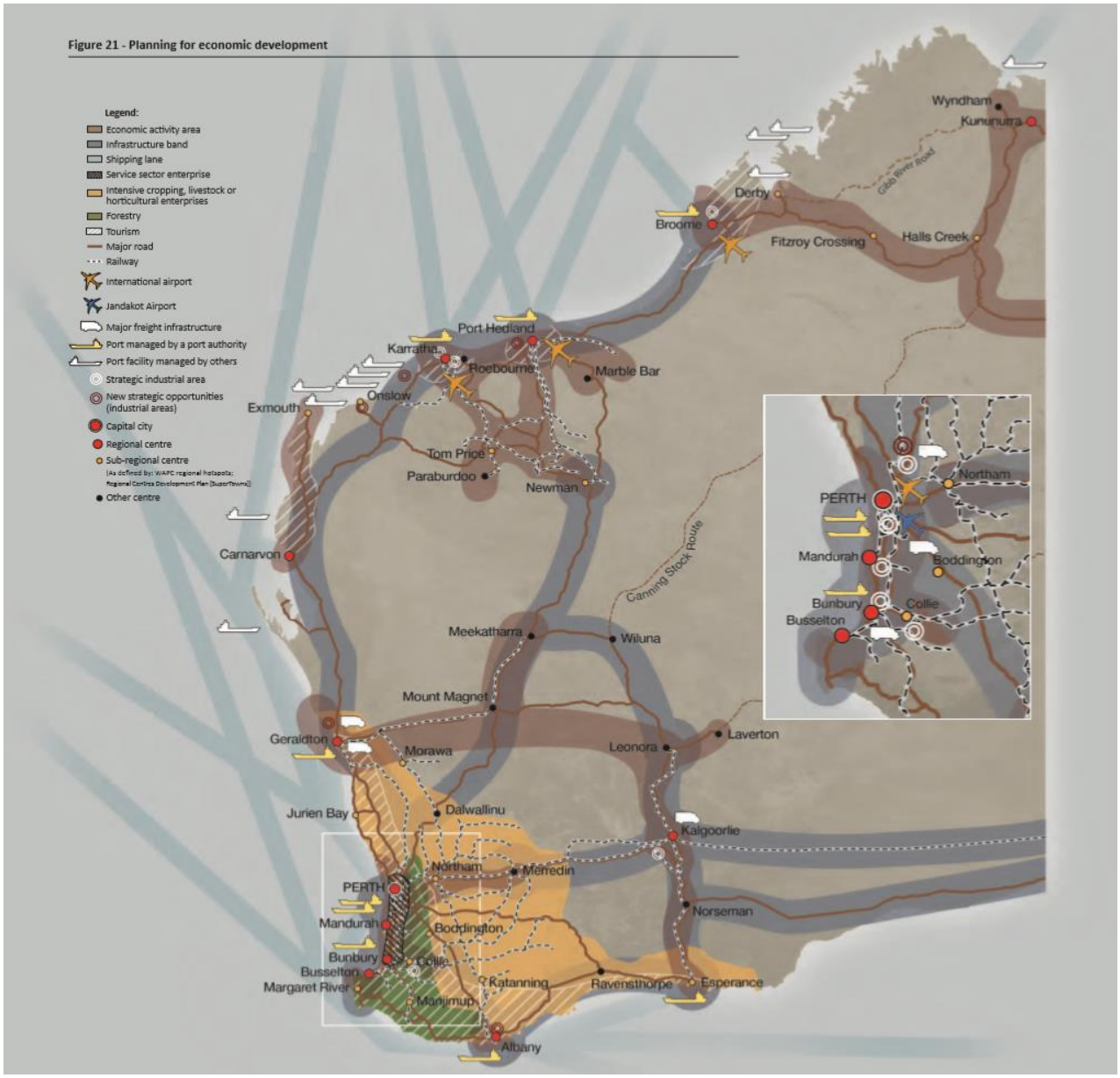
The following key State Government policies and strategic plans are of relevance to the NIA:

State Planning Strategy 2050

In June 2014 the Western Australian Planning Commission (WAPC) released the State Planning Strategy 2050 to provide a State strategic context and basis for the integration and coordination of land-use planning and development across state, regional and local jurisdictions. The intention of the Strategy is to provide planners with an account of what is known about the future and the expectations of Western Australian's to guide future land-use planning and state development.

The Strategy is relevant to the NIA as it envisages a state which is diverse, resilient and internationally competitive, with employment opportunities that contribute to sustained growth and prosperity. The NIA is located in a key economic activity area that, as it develops, will directly assist the State in realising this vision by contributing to employment and industry.

Figure 6. The NIA is located within a key economic activity area in the State Planning Strategy 2050



Source: Western Australian Planning Commission 2014

To achieve the sustained levels of growth outlined in the State Planning Strategy 2050, the State will need to improve its productivity and maintain high rates of employment. This will be done by enhancing its global competitiveness and resilience to changing economic conditions, including diversifying the workforce and creating more employment opportunities to support a growing population.

The NIA is well positioned to execute the objectives and vision of the State Planning Strategy and as it grows will contribute to sustainable economic development in Western Australia in the years to 2050.

Other relevant State planning policies and strategies

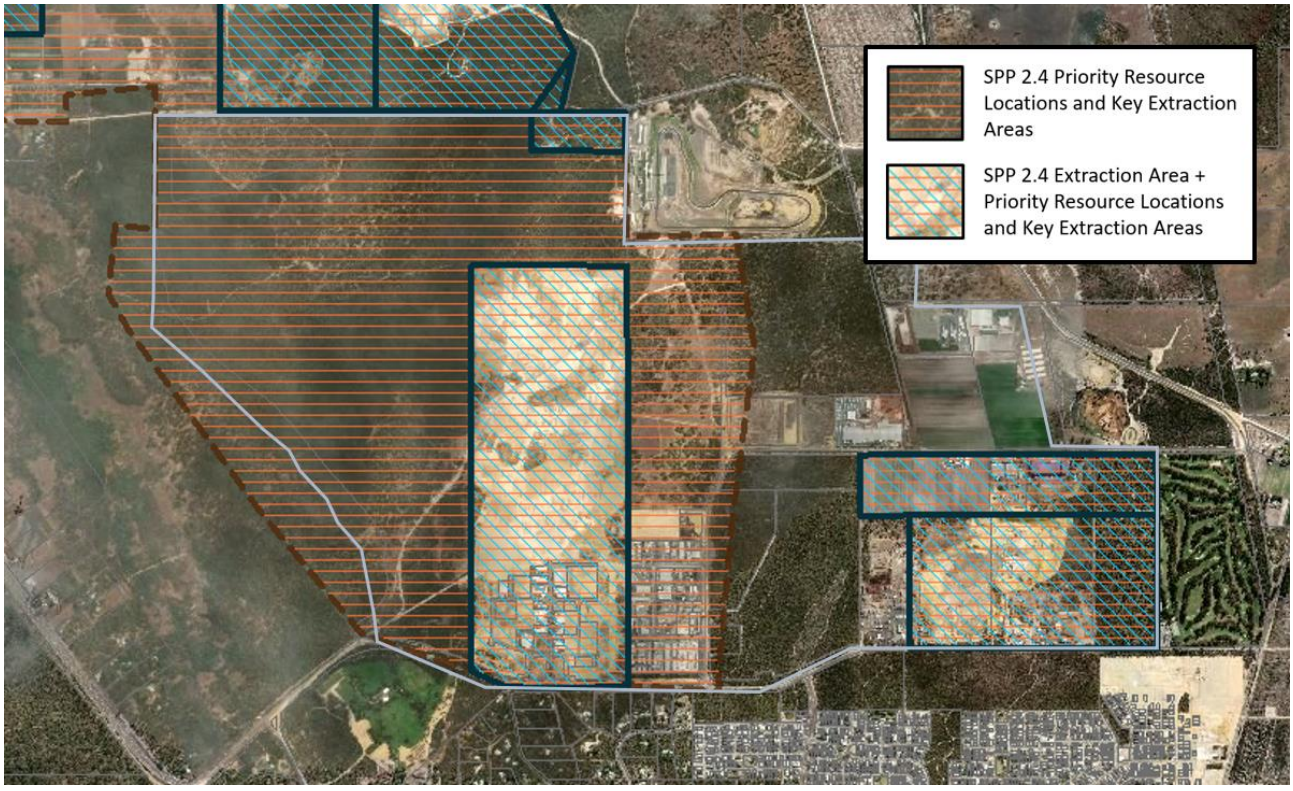
- **State Planning Policy 4.1: State Industrial Buffer (2004):** The aim of the State Industrial Buffer policy is to provide for the safety and amenity of surrounding land uses while having regard to the rights of landowners who may be affected by residual emissions and risk. Of particular relevance to the NIA is the

policy's objective to protect industry, infrastructure and special uses from the encroachment of incompatible land uses, in particular residential land use.

- **State Planning Policy 2.4: Basic Raw Materials Policy:** The State Planning Policy 2.4: Basic Raw Materials Policy serves to:
    - identify the location and extent of known basic raw material resources (meaning sand, clay, hard rock, limestone, gravel and other construction and road building materials);
    - protect Priority Resource Locations, Key Extraction Areas and Extraction Areas from being developed for incompatible land uses which could limit future exploitation
    - ensure that the use and development of land for the extraction of basic raw materials does not adversely affect the environment or amenity in the locality of the operation during or after extraction; and
    - provide a consistent planning approval process for extractive industry proposals including the early consideration of sequential land uses.

The policy is relevant to the NIA as the central and western portion of the area is identified as a limestone/lime sand resource and as a Priority Resource Location being known for areas of high resource potential which should be held available for current and future extraction. The locations of these resources and existing extractive industry operating in the area are demonstrated in Figure 7. The yellow marked area of the map demonstrates the extent of ongoing extractive industry operations.

Figure 7. Location and extent of basic raw materials in the NIA as defined in SPP2.4.



Source: WA Department of Planning, Lands and Heritage 2020

3.2 Regional Policies and Strategic Plans

Perth and Peel @ 3.5 million

In March 2018 the WAPC released the Perth and Peel @ 3.5 million suite of documents including four sub-regional land use planning and infrastructure frameworks. The sub-regional frameworks provide a set of spatial plans for the Perth and Peel Regions over the next 30 years and provide guidance to state and local government agencies on land use, employment, movement networks, environmental protection, infrastructure investment and the delivery of physical and social infrastructure.

The Perth and Peel @ 3.5 Million document highlights that consideration should be given to existing and emerging competitive advantage, including sub-regional changes in labour specialisation, industry clustering and evolving employment land assets, to attract business and industry to locate in the sub-region without adversely affecting growth elsewhere in the Perth and Peel regions. Importantly, the document stipulates that agricultural lands should not be viewed as industrial land "in waiting", which will guide the market by confining industrial lands to pre-allocated areas such as Neerabup.

North-West Sub-regional Planning Framework

The North-West Sub-regional Planning Framework was released as part of the Perth and Peel @ 3.5 Million suite of documents and relates specifically the North-West Sub-region where the NIA is located. Key policy positions outlined in framework include:

- An employment self-sufficiency target of 59.5 percent by 2050 which assumes a growth of 143,560 additional jobs between 2011 and 2050;
- An additional 417,840 residents to settle in the region between 2011 and 2050 to reach a total population of 740,330;
- Significant urban development planned to occur in the area immediately west and east of the NIA, at Alkimos, Two Rocks, Yanchep and East Wanneroo;
- Demand for up to 49.2 hectares (gross) per annum of industrial land each year from 2011 to 2050;
- A proposed land supply of 3,260 hectares of industrial land for the region which includes the investigation areas Nowergup, North Pinjar and South Pinjar which are immediately adjacent to the NIA;
- A potential passenger railway line, subject to further investigation, that will pass through the NIA; and
- A new highway, the Whiteman-Yanchep Highway, that will be the new north-south primary distributor road that will connect the North-West sub-region to the North-East and Central sub-regions

North-East Sub-regional Planning Framework

The North-East Sub-regional Planning Framework relates to the sub-region immediately east of the NIA. Key policy positions outlined in framework which relate to industrial planning and development include:

- An employment self-sufficiency target of 85.8 percent by 2050 which assumes a growth of 110,570 additional jobs between 2011 and 2050.
- An additional 241,430 residents to settle in the region between 2011 and 2050 to reach a total population of 450,580.
- Demand for up to 78.2 hectares of industrial land each year from 2011 to 2050.

- A proposed supply of 3,850 hectares of industrial land for the region which includes the investigation areas of North Ellenbrook and Bullsbrook South.
- A proposed future intermodal (road-rail) freight terminal at Bullsbrook in the medium to long term to facilitate industrial jobs growth and development in the region.

3.3 Local Strategy Plans and Policies

City of Wanneroo Economic Development Strategy 2016-2021

In 2016 the City of Wanneroo released its Economic Development Strategy 2016-2021 (EDS) which outlined the ongoing rapid growth of the local government area and the opportunities and challenges that this growth will present to the area of the next 50 years. The importance of the Neerabup Industrial Area as a future employment land within the greater context of the City of Wanneroo's local economy in the City of Wanneroo is clearly established throughout the document. In particular, the EDS outlined the need to create a suitable and adequate supply of employment in years to come. In order to meet this target, the EDS outlines five economic development programs to be implemented between 2016 and 2021, as outlined in Figure 8.

Figure 8. City of Wanneroo Economic Development Programs 2016-2021

Source: City of Wanneroo Economic Development Strategy 2016-2021

The Neerabup Industrial Area is specifically mentioned under Program 2.2 and Program 2.2.1 as a key employment location. Under the program the NIA is to:

a) Conduct a review of land use permissibility in industrial zones to facilitate economic development

b) Develop a Project Management Plan for Neerabup

c) Develop an integrated economic plan for Neerabup Industrial Area to set a vision and drive economic opportunities for the entire area.

d) Develop an Inward Investment Strategy for Neerabup.

e) Implementation of the Neerabup Project Plan

f) Investigate the feasibility of an industrial incubator and innovation centre in Neerabup Industrial Area

g) Investigate the feasibility of early delivery of the eastern extension to Flynn Drive from Old Yanchep Road through to Naves Road.

The EDS outlines that the emerging NIA will employ in excess of 20,000 people at full capacity and will contribute significantly towards achieving State targets for local employment. In particular, the EDS suggests that key industries for the area are expected to be advanced manufacturing and engineering, which build upon the existing automotive and construction services in the area as well as clean technology such as residential solar power and agribusiness.

Economic and Employment Lands Strategy; Non Heavy Industrial – Perth Metropolitan and Peel Regions 2012

In April 2012 the then WA Department of Planning and Western Australian Planning Commission released the Economic and Employment Lands Strategy: Non-Heavy Industrial – Perth Metropolitan and Peel Regions which applies to the type of industrial land uses predominantly planned for the Neerabup Industrial Area. The Strategy was prepared to focus on the importance of general and light industry as an employment driver in the Perth and Peel region in the period 2012-2032.

The Strategy aims to identify the areas, type and locations of general and light industrial land required during this time period and to review the then existing land development program and identify possible extension opportunities. In addition, it aimed to identify and evaluate the suitability of locations for new general and light industrial estates (such as the NIA) and to develop a strategy to facilitate the delivery of general and light industrial land and to assist in the restoration of the Government's long-term general and light industrial landbank.

Although only in its very early stages at the time of writing, the NIA is identified as a key part of the City of Wanneroo's future industrial landscape going forward. This is made clear by the identification of demand drivers in the region which are considered to be:

- Population growth;
- Sustained levels of economic growth and employment targets;
- Increased industrial land values;
- Improvements in the transport network;
- Improvements in service infrastructure; and
- Resolution of environmental issues.

These demand drivers were considered in detail in the formulation of floorspace and employment forecasts for the area.

3.4 Key Findings and Considerations

A review of the state and regional strategic planning and economic framework has revealed a number of key findings and consideration for the future planning and development of the NIA. These include:

- The NIA has been identified as a strategic source of basic raw materials. The planned development of the area should consider the likely life of the extractive resources and ensure land use conflicts do not occur while the resource is being extracted.
- Significant transport and economic enabling infrastructure is planned for in the areas surrounding the NIA and Bullsbrook. This infrastructure will increase the attractiveness for businesses seeking to establish in the area. These projects are identified as inputs to floorspace and employment modelling later in the report.
- Previous strategies have determined that long term demand for industrial land within the North-West and North-East subregions is expected to be approximately 49.2 and 78.2 hectares (gross) per annum respectively, with the Neerabup Industrial area employing 20,000 workers in the long-term;
- An employment self-sufficiency target of 59.5% for the North-West region 2050 will require economic and development growth in the region to exceed population growth; and
- Other industrial lands identified for future expansion and investigation within the North-East and North-West subregions are expected to develop over the coming decades, such as the Muchea industrial area. Once online, these industrial estates are expected to provide complementary industry and producer inputs to the NIA.

4. Current Economy of the Study Area

Results of the ABS Population and Household Census and other relevant data sources have been used to identify key characteristics of the existing community and economy within the Primary Study Area (PSA). Analysis and assessment of the social, demographic and economic characteristics of the PSA identifies significant and unique factors to address and respond to within the structure plan and accompanying economic development strategy. In order to do so, findings from the PSA are presented with results of the Greater Perth area for comparative purposes. It is divided into three sections:

- Community profile
- Economic profile
- Key findings and considerations

4.1 Community Profile

4.1.1 Population

The area surrounding the NIA represents a significant portion of the Greater Perth Metropolitan Area that is experiencing significant growth and development. As outlined in Table 1 below, between 2006 and 2016 the PSA's population increased by 122,618 residents to total 476,510 residents in 2016. This growth equates to an average annual growth rate of 3.0 percent. The LGA experiencing the greatest total change during this period was the City of Wanneroo, which grew at 5.4 percent. This rate of growth was significantly higher than the growth rate of the Greater Perth Metropolitan Area.

Table 1. Historic population growth by area

Area	2006	2011	2016	Total Growth	Average Annual Growth Rate
Wanneroo	110,941	152,076	188,216	77,275	5.4%
Joondalup	149,675	152,405	154,443	4,768	0.3%
Swan	93,276	108,462	133,851	40,575	3.7%
PSA	**353,892**	**412,943**	**476,510**	**122,618**	**3.0%**
Greater Perth	1,445,077	1,728,865	1,943,861	498,784	3.0%

Source: Australian Bureau of Statistics, Census of Population and Housing Place of Usual Residence

4.1.2 Age Structure

At the time of the 2016 Census the population of each LGA within the PSA had a similar age cohort. As outlined in Table 2 below, the majority of residents were in the 30-59 year range which is not too dissimilar to the age profile of the Greater Perth Metropolitan Area.

Table 2. Age structure by area, 2016

Area	0-19		20-29		30-59		60+	
Wanneroo	56,648	42%	26,971	42%	78,583	39%	26,011	34%
Joondalup	40,247	30%	18,185	28%	64,317	32%	31,692	41%

Area	0-19		20-29		30-59		60+	
Swan	38,004	28%	19,721	30%	56,227	28%	19,886	26%
PSA	**134,899**	**100%**	**64,877**	**100%**	**199,127**	**100%**	**77,589**	**100%**
Greater Perth	490,456		283,765		800,675		368,973	

Source: ABS Census of Population and Housing Place of Usual Residence

4.1.3 Structure of Occupied Dwellings

At the time of the 2016 Census the structure of occupied dwellings of each LGA within the PSA had a greater tendency towards detached houses than the Greater Perth Metropolitan Area, a trend which is not expected to have changed greatly since that date.

Table 3. Structure of occupied dwellings by area, 2016

Area	Detached House		Semi-detached House		Flat/Unit		Other (Incl. Not Stated)	
Wanneroo	62,312	39%	7,458	39%	221	9%	347	28%
Joondalup	53,079	33%	5,330	28%	1,634	64%	310	25%
Swan	43,545	27%	6,570	34%	704	28%	586	47%
PSA	**158,936**	**100%**	**19,358**	**100%**	**2,559**	**100%**	**1,243**	**100%**
Greater Perth	610,142		136,640		65,505		5,792	

Source: ABS Census of Population and Housing 2016, Selected Dwelling Characteristics; excl. 117 PSA "Not Applicable" responses

4.1.4 Stability of Residence

At the time of the 2016 Census, residents in each of the LGAs within the PSA moved house less frequently than residents in the overall Greater Perth Metropolitan Area. This is shown in Table 4 below for residents aged one year or over for 1 year household mobility or five years and over for five year household mobility.

Table 4. One and five year household mobility by area, 2016

Household Mobility	Who in Household Moved?	Area				
		Wanneroo	Joondalup	Swan	PSA	Greater Perth
1 Year Household Mobility	All	4.6%	3.4%	4.5%	4.2%	4.9%
	Some	1.5%	1.4%	1.6%	1.5%	1.7%
	None	24.5%	27.7%	25.0%	25.7%	26.6%
	Not stated	2.0%	2.3%	2.0%	2.1%	2.2%
5 Year Household Mobility	All	14.9%	11.2%	14.4%	13.6%	14.9%
	Some	1.8%	1.9%	1.9%	1.9%	1.9%
	None	15.2%	21.1%	16.1%	17.4%	17.8%
	Not stated	0.8%	0.7%	0.8%	0.8%	0.9%

Source: ABS Census of Population and Housing 2016, Selected Dwelling Characteristics; excl. 22,324 PSA "Not Applicable" responses

4.1.5 Education

At the time of the 2016 Census, residents in the LGA's of the PSA held slightly lower levels of qualifications than the overall Greater Perth Metropolitan Area. The data presented in Table 5 demonstrates the highest level of education achieved for the population in each respective area at the time of the 2016 Census. For example, on balance the number of residents who held a bachelor degree in the PSA was 10 percent of the population, versus 13 percent in the Greater Perth Metropolitan Area. The Joondalup LGA was an exception, demonstrating somewhat higher levels of education than Wanneroo or Swan and in some cases higher levels than the overall Greater Perth Metropolitan Area.

Table 5. Highest level of education attainment by area, 2016

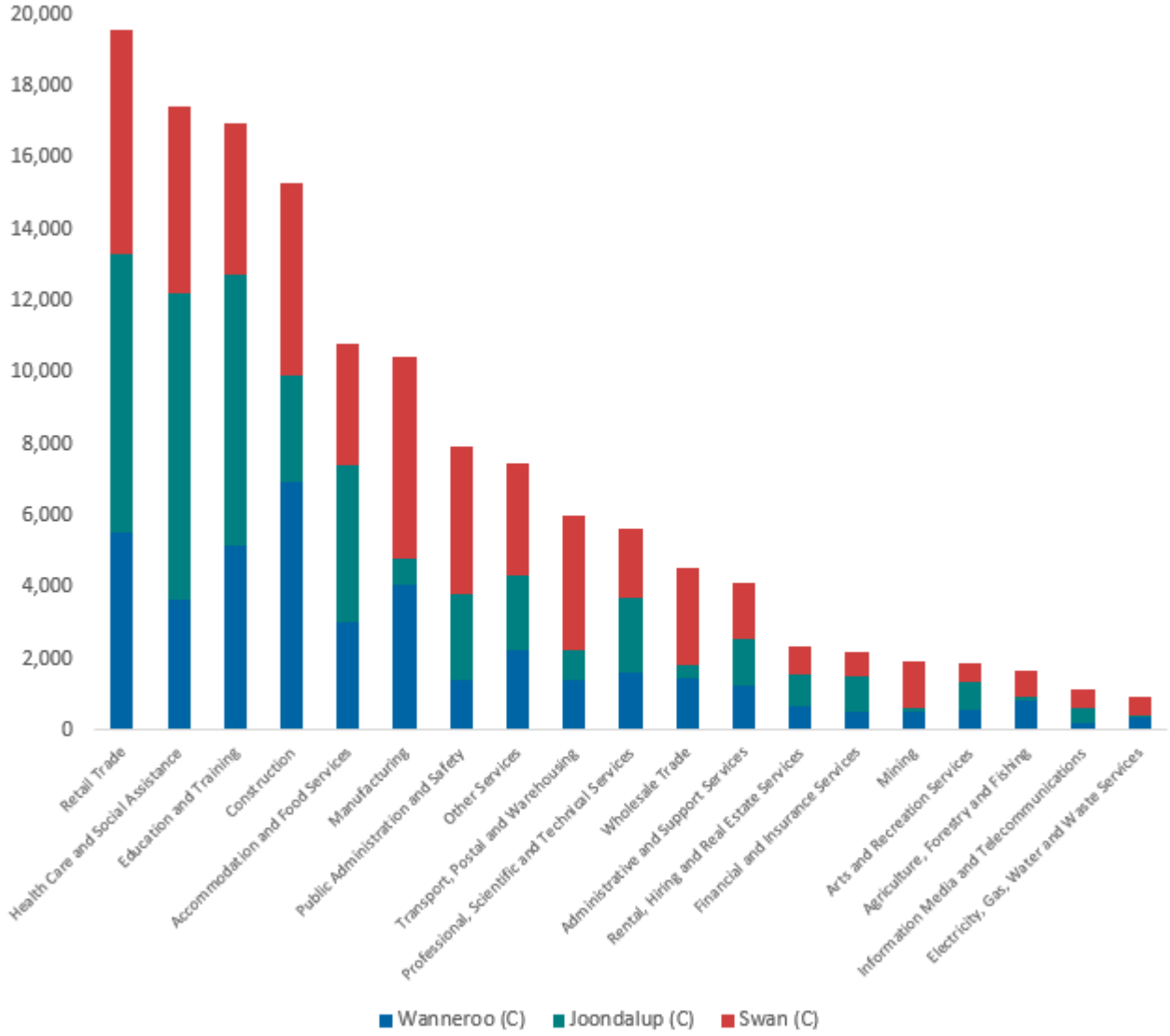
Education Level	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Postgraduate Degree Level	3,186	2%	4,770	3%	2,273	2%	**10,227**	**2%**	70,474	4%
Graduate Diploma and Graduate Certificate Level	1,924	1%	3,087	2%	1,341	1%	**6,348**	**1%**	32,921	2%
Bachelor Degree Level	16,248	9%	21,534	14%	11,037	8%	**48,817**	**10%**	257,461	13%
Advanced Diploma and Diploma Level	13,865	7%	13,704	9%	9,371	7%	**36,947**	**8%**	146,740	8%
Certificate III & IV Level	29,173	15%	22,601	15%	20,384	15%	**72,159**	**15%**	256,406	13%
Secondary Education – Years 10 and above	53,364	28%	41,410	27%	39,252	29%	**134,026**	**28%**	512,506	26%
Certificate I & II Level	102	0%	48	0%	77	0%	**231**	**0%**	895	0%
Secondary Education – Years 9 and below	8,074	4%	5,171	3%	6,594	5%	**19,846**	**4%**	87,122	4%
Supplementary Codes	5,688	3%	4,139	3%	3,701	3%	**13,531**	**3%**	53,175	3%
Not stated	13,369	7%	8,465	5%	10,829	8%	**32,663**	**7%**	155,841	8%
Total	188,216	100%	154,443	100%	133,851	100%	**476,510**	**100%**	1,943,861	100%

Source: ABS Census of Population and Housing 2016, Employment, Income and Education; excl. 101,728 PSA "Not Applicable" responses

4.1.6 Industries of employment of resident workforce

The 2016 Census demonstrates the industries of employment of residents in the Primary Study Area. This represents the industries worked by residents in any area, which may be either within or outside of the boundaries of the PSA. The largest employers in the area are in the population driven sectors of Retail Trade, Health Care and Social Assistance, Education and Training, and Construction. The dominance of population driven industries in the PSA is indicative of the fast-growing nature of the North-West Sub-Region. The number of employees in each industry is demonstrated below in Figure 9.

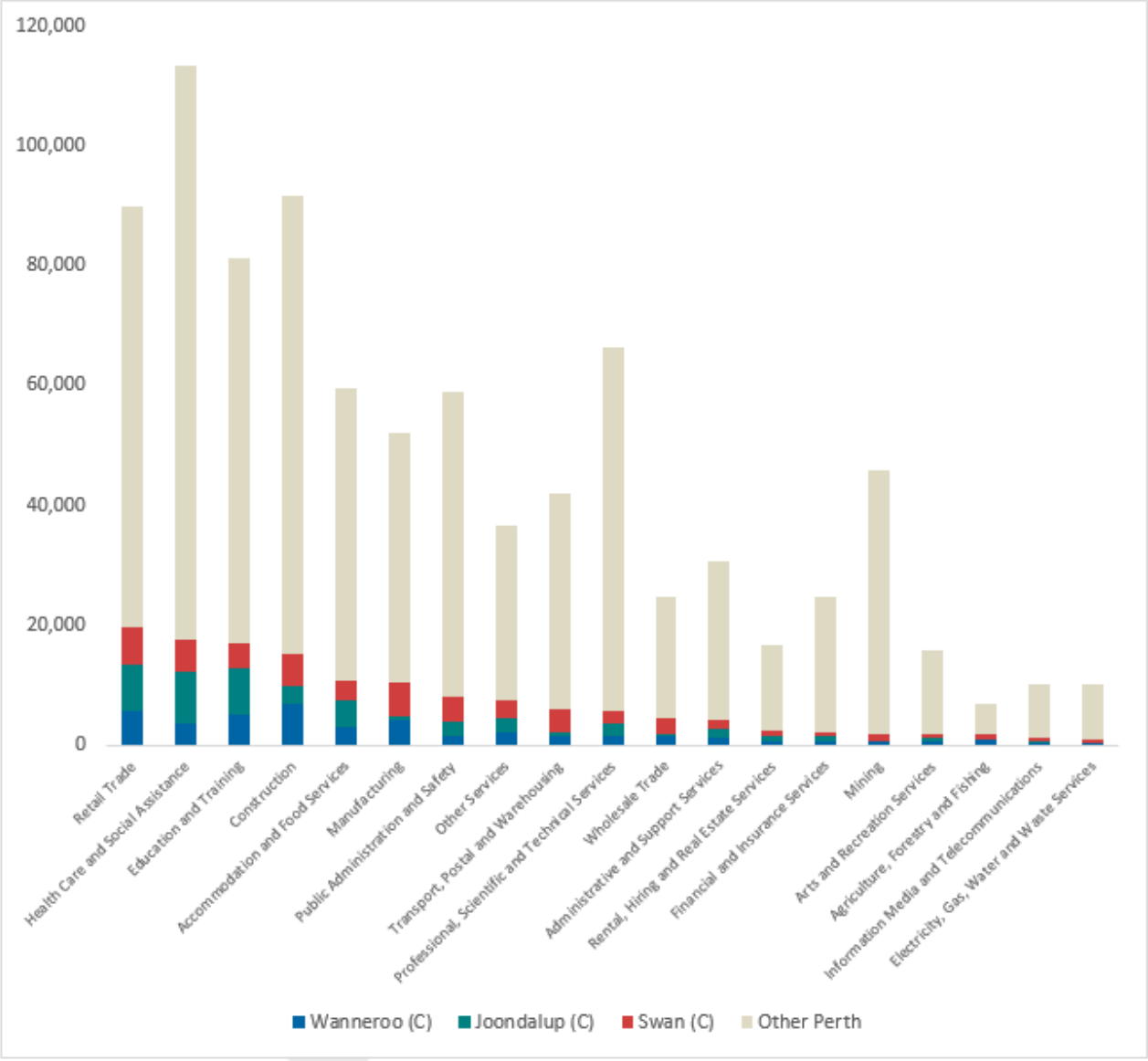
Figure 9. Industry of employment (ANZSIC1) of residents in the PSA, 2016



Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset; excl. 5,808 “Inadequately described” and 1,464 “Not stated” PSA responses

The difference in industries of employment for residents in the PSA as compared to those of the overall Greater Perth Metropolitan Area is demonstrated in Figure 10. Certain export-oriented industries such as Professional, Scientific and Technical Services and Mining feature more predominantly in the industrial structure of resident workers in the Greater Perth Metropolitan Area.

Figure 10. Industry of employment (ANZSIC1) of residents in the PSA relative to Perth, 2016



Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset; excl. 33,944 "Inadequately described" and 9,085 "Not stated" Greater Perth responses

4.1.7 Occupation of residents in the catchment areas

The Census demonstrated the occupation held by residents of the PSA on the 2016 Census night. Relative to the Greater Perth Metropolitan Area, the PSA houses a larger working-class population. Wanneroo and Swan demonstrated a lower concentration of managers and professionals than Joondalup, which held a higher level than the Greater Perth Metropolitan Area. This is demonstrated in Table 6 below.

Table 6. Occupations held by residents in the PSA on Census night 2016

Occupation	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Managers	8,798	10%	10,046	13%	6,362	10%	**25,206**	**11%**	105,417	12%
Professionals	13,627	16%	18,544	24%	8,911	14%	**41,082**	**18%**	204,469	23%

Occupation	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Technicians and Trades Workers	16,795	19%	12,526	16%	11,063	18%	**40,384**	**18%**	143,625	16%
Community and Personal Service Workers	10,507	12%	8,356	11%	7,517	12%	**26,380**	**12%**	99,683	11%
Clerical and Administrative Workers	12,679	14%	11,874	15%	9,365	15%	**33,918**	**15%**	125,237	14%
Sales Workers	9,126	10%	7,752	10%	6,287	10%	**23,165**	**10%**	84,234	9%
Machinery Operators and Drivers	6,329	7%	3,182	4%	6,056	10%	**15,567**	**7%**	60,236	7%
Labourers	9,679	11%	5,519	7%	6,698	11%	**21,896**	**10%**	82,368	9%

Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset; excl. 2,437 "Inadequately described", 1,373 "Not stated" and 245,099 "Not applicable" PSA responses.

4.1.8 Workforce Status

At the time of the 2016 Census, the PSA had a slightly lower level of unemployment than the Greater Perth Metropolitan Area. This is largely due to the significantly lower level of unemployment in Joondalup relative to the Area, as the Wanneroo and Swan LGAs reported higher levels. A full break-down of the resident workforce status by area at the time of the 2016 Census is provided below in Table 7.

Table 7. Workforce status of residents in the catchment area on Census night in 2016

Workforce Status	Wanneroo	Joondalup	Swan	PSA	Greater Perth
Full-time employment	54,824	46,484	40,198	**141,506**	565,146
Part-time employment	29,190	28,455	19,653	**77,298**	306,273
Unemployed	8,284	5,814	5,770	**19,868**	81,483
Labour force	92,298	80,753	65,621	**238,672**	952,902
Unemployment	9.0%	7.2%	8.8%	**8.3%**	8.6%

Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset

4.1.9 Income

On the night of the 2016 Census, residents in the PSA reported overall much lower levels of income than the Greater Perth Metropolitan Area. This result is likely due to a combination of a number of factors, such as the population-driven nature of industries worked by the resident workforce and overall lower levels of education. Full details of the individual weekly income levels of these residents is presented in Table 8.

Table 8. Weekly income levels of residents in the PSA on Census night in 2016

Income	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
$1 - $499	36,216	19%	30,625	20%	25,849	19%	**92,680**	**19%**	69,193	5%
$500 - $999	32,087	17%	25,466	16%	23,348	17%	**80,906**	**17%**	101,668	8%
$1,000 - $1,499	23,039	12%	18,770	12%	17,066	13%	**58,873**	**12%**	113,724	9%
$1,500 - $1,999	13,793	7%	13,468	9%	9,762	7%	**37,018**	**8%**	108,098	8%
$2,000 - $2,999	8,434	4%	10,159	7%	5,621	4%	**24,208**	**5%**	105,158	8%
$3,000 or more	3,565	2%	6,252	4%	2,240	2%	**12,059**	**3%**	101,013	8%
Nil Income	15,615	8%	12,447	8%	10,924	8%	**38,991**	**8%**	159,562	13%
Negative Income	927	0%	488	0%	688	1%	**2,103**	**0%**	8,888	1%

Income	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Not stated	11,338	6%	7,247	5%	9,354	7%	**27,944**	**6%**	135,761	11%
Not applicable	43,217	23%	29,519	19%	28,997	22%	**101,728**	**21%**	370,327	29%
Total	**188,231**	**100%**	**154,441**	**100%**	**133,849**	**100%**	**476,510**	**100%**	**1273,392**	**100%**

Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset.

4.1.10 Journey to Work

The distances travelled to work were reported by residents in the PSA the night of the 2016 Census and are shown below in Table 9. On average, these residents travelled more or less the same distance to work as residents in the overall Greater Perth Metropolitan Area.

Table 9. Distance travelled to work by residents in the PSA on Census night in 2016

Distance travelled to work	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Nil distance	5,196	6%	5,972	8%	3,526	6%	**14,694**	**7%**	55,430	6%
0 km to 2.5 km	4,452	5%	3,995	5%	3,250	5%	**11,697**	**5%**	62,920	7%
2.5 km to 10 km	17,365	21%	17,480	23%	11,373	19%	**46,218**	**21%**	258,148	29%
10 km to 30 km	34,267	41%	35,659	48%	31,379	52%	**101,305**	**46%**	369,340	42%
30 km to 50 km	15,063	18%	8,386	11%	7,108	12%	**30,557**	**14%**	74,183	8%
50 km and over	6,772	8%	3,122	4%	3,548	6%	**13,442**	**6%**	56,482	6%
Total	**83,115**	**100%**	**74,614**	**100%**	**60,184**	**100%**	**217,913**	**100%**	**876,503**	**100%**

Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset; excl. 258,608 “Not applicable” PSA responses.

4.1.11 Method of Travel to Work

The method of travel to work were reported by residents in the PSA the night of the 2016 Census and are shown below in Table 10. On average, these residents were more reliant on vehicle transport than residents of the overall Greater Perth Metropolitan Area, and also had a lower utilisation of active transport methods such as walking and cycling.

Table 10. Method of travel to work by residents in the PSA on Census night in 2016

Commute Mode	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Vehicle	65,231	74%	55,610	71%	47,641	76%	**168,482**	**74%**	809,849	71%
Public Transport	8,635	10%	8,468	11%	4,603	7%	**21,706**	**9%**	109,446	10%
Active Transport	1,218	1%	1,489	2%	1,300	2%	**4,007**	**2%**	43,656	4%
Other Mode	1,200	1%	835	1%	822	1%	**2,857**	**1%**	15,820	1%
Work from home	11,851	13%	11,896	15%	8,312	13%	**32,059**	**14%**	166,062	15%
Total	**88,135**	**100%**	**78,298**	**100%**	**62,678**	**100%**	**229,111**	**100%**	**1,144,833**	**100%**

Source: ABS Census of Population and Housing 2016, Place of Usual Residence dataset; excl. 2,303 “Not stated” and 245,099 “Not applicable” PSA responses.

4.1.12 SEIFA

It should be noted that the SEIFA is a statistical assessment of the welfare of areas based on information from the 2016 Census. SEIFA's attempt to assess the comparative levels of advantage and disadvantage to social resources, materials and the ability for an individual to participate in society based on socio-economic indicators for a geographical area. The calculated values for each region are then compared to those averages determined for the State and Australia.

A score of 1,000 is considered the mean for the comparative region and the decile value represents the area's percentile range within the comparative region i.e. the lowest scoring 10 percent of areas are given a decile number of 1, the second lowest 10 percent of areas are given a decile number of 2, and so on. Table 11 below outlines the LGAs with the highest and lowest SEIFA scores within the study area relative to WA. The benchmark area of WA is used instead of Greater Perth as Greater Perth does not feature as an area in the SEIFA indices and taking the mean of SEIFA scores is not possible.

Table 11. SEIFA of PSA Local Government Areas

Local Government Area	Score	Rank in WA	Rank in Australia
Wanneroo	1,015	97 of 137	423 of 541
Joondalup	1,078	130 of 137	519 of 541
Swan	1,003	83 of 137	388 of 541

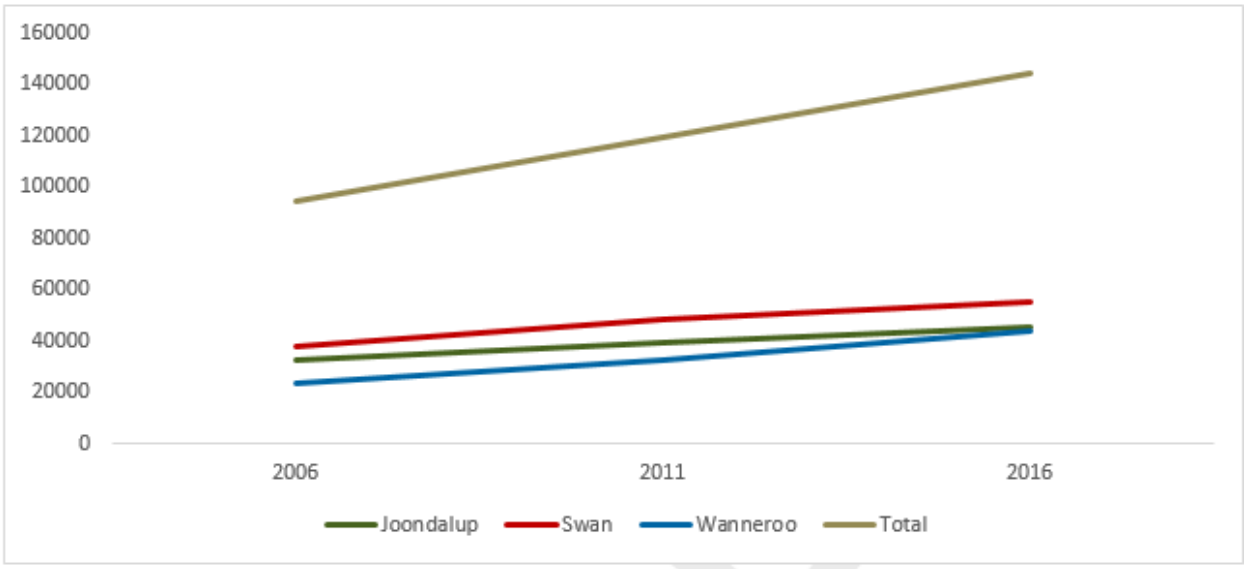
From Table 11 it can be seen that the Wanneroo and Swan LGA's rank significantly lower than Joondalup which is among the most affluent LGA's in the Greater Perth Metropolitan Area. This result is evident in other community and economic factors which have been examined such as income level and education levels.

4.2 Economic Profile

4.2.1 Historic Employment Growth

Employment in the PSA has grown significantly in the years 2006 – 2016. This is demonstrated in Figure 11 below which outlines the path of employees (Place of Work) growth between Census years.

Figure 11. Number of jobs worked in each study area by Census date



Source: Australian Bureau of Statistics, Census of Population and Housing, Place of Work dataset, 2006, 2011, 2019

4.2.2 Business counts

The majority of businesses in the project area are involved with the construction industry, a finding to be expected in a region experiencing rapid urban expansion and development. Significant numbers of businesses are also found in the professional, scientific and technical services industries, rental, hiring and real estate services, and transport, postal and warehousing.

Table 12. Registered businesses by industry

Industry	Wanneroo	Joondalup	Swan	Grand Total (PSA)
Accommodation and Food Services	381	412	401	1,194
Administrative and Support Services	567	476	433	1,476
Agriculture, Forestry and Fishing	327	142	372	841
Arts and Recreation Services	122	166	121	409
Construction	4,017	3,548	2,184	9,749
Currently Unknown	119	129	90	338
Education and Training	126	178	131	435
Electricity, Gas, Water and Waste Services	38	32	49	119
Financial and Insurance Services	750	1,281	693	2,724
Health Care and Social Assistance	455	821	334	1,610
Information Media and Telecommunications	71	111	52	234
Manufacturing	656	366	706	1,728
Mining	50	54	65	169
Other Services	712	577	637	1,926
Professional, Scientific and Technical Services	1,179	1,931	951	4,061
Public Administration and Safety	48	35	55	138
Rental, Hiring and Real Estate Services	947	1,088	919	2,954
Retail Trade	619	702	624	1,945
Transport, Postal and Warehousing	1,424	663	1,384	3,471
Wholesale Trade	395	333	464	1,192
Grand Total	**13,003**	**13,045**	**10,665**	**36,713**

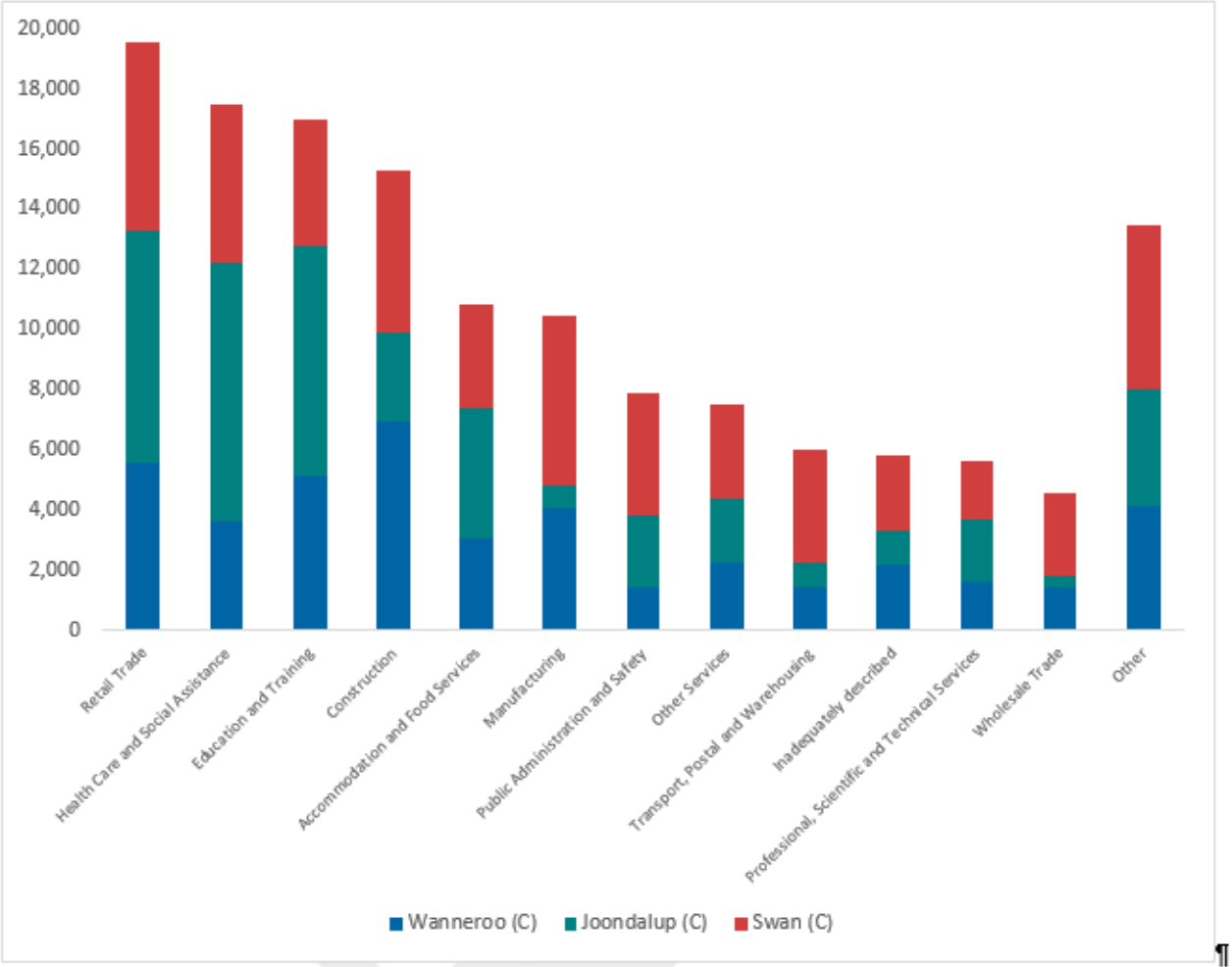
Source: Australian Bureau of Statistics, Counts of Australian Businesses, including Entries and Exits, 2016 to 2018, Cat. No. 8165

4.2.3 Workforce by Industry

The industry composition of the PSA is demonstrated by the 2016 Census “Place of Work” dataset which examines the areas which residents from all areas commute to the PSA for work. Figure 12 below demonstrates that the key industries present in the PSA are Retail Trade, Healthcare and Social Assistance,

Education and Training and Construction. These jobs reflect both the jobs worked by the resident workforce and also the presence of significant employment centres such as Joondalup Gate Shopping Centre, Joondalup and Midland hospitals, and Edith Cowan University.

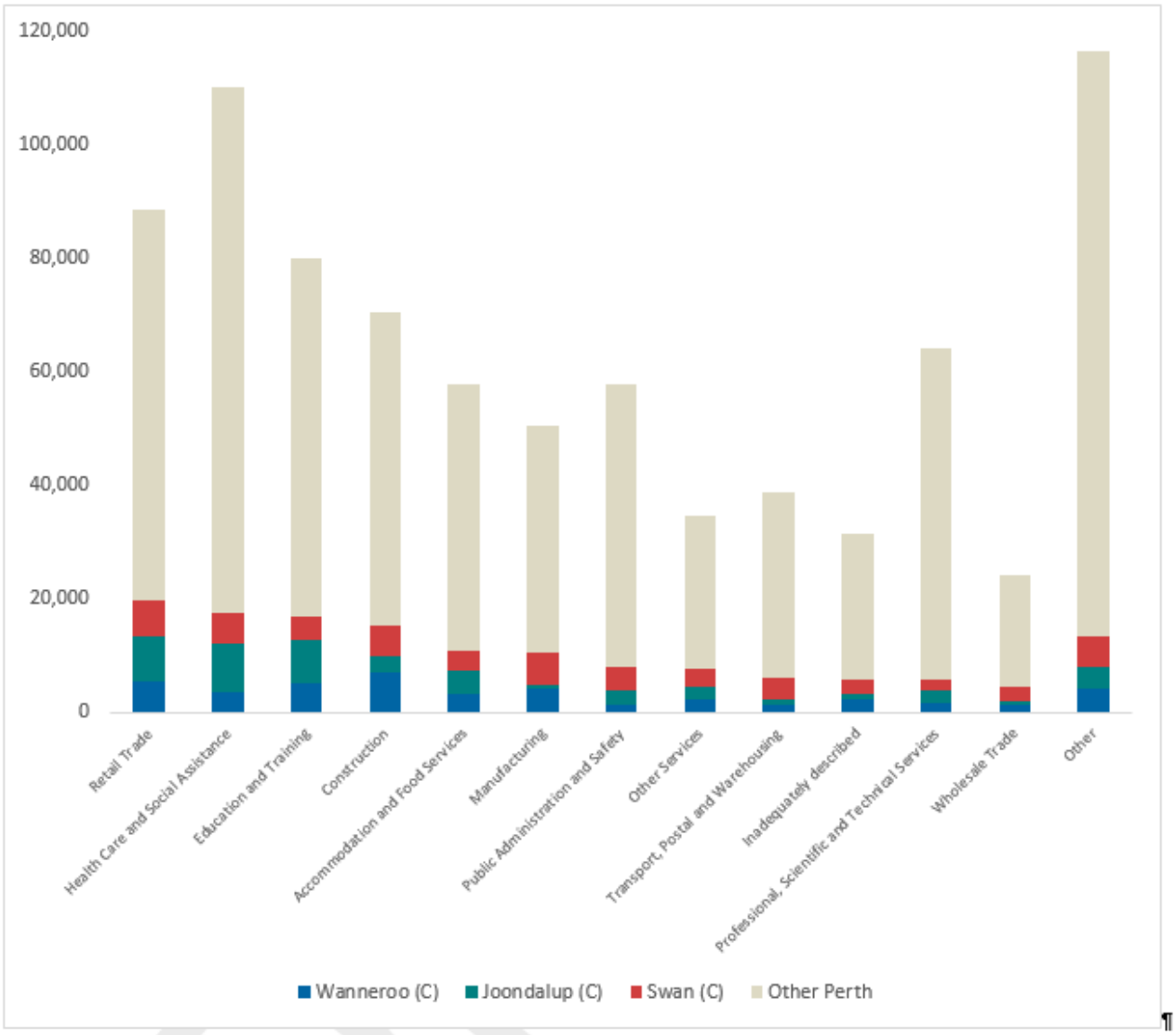
Figure 12. Jobs worked by residents in the primary study area, 2016



Source: ABS Census of Population and Housing Place of Work dataset, 2016. Note: "Other" category includes (from most to least): Rental, Hiring and Real Estate Services, Financial and insurance Services, Mining, Arts and Recreation Services, Agriculture, Forestry and Fishing, Not stated, Information Media and Telecommunications, Electricity, Gas, Water and Waste Services.

Relative to the Greater Perth Metropolitan Area, it can be seen in Figure 13 below that the structure of jobs available in the PSA are relatively similar, with some notable exceptions such as Professional, Scientific and Technical Services and Mining (not shown).

Figure 13. Jobs worked by residents in the PSA relative to the rest of Perth, 2016



Source: ABS Census of Population and Housing Place of Work dataset, 2016. Note: "Other" category includes (from most to least): Rental, Hiring and Real Estate Services, Financial and insurance Services, Mining, Arts and Recreation Services, Agriculture, Forestry and Fishing, Not stated, Information Media and Telecommunications, Electricity, Gas, Water and Waste Services.

4.2.4 Workforce by Occupation

The occupations represented by jobs in the PSA in 2016 featured a similar proportion of Manager positions and a marginally smaller proportion of Professional level positions than those represented by the Greater Perth Metropolitan Area. This can be seen below in Table 13.

Table 13. Occupation levels of jobs in the PSA, 2016

Occupation	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Managers	9,181	10%	15,807	11%	5,011	12%	**29,999**	**11%**	101,439	12%
Professionals	16,873	19%	25,228	18%	6,067	14%	**48,168**	**18%**	196,905	24%

Occupation	Wanneroo		Joondalup		Swan		PSA		Greater Perth	
Technicians and Trades Workers	13,228	15%	22,654	16%	8,293	19%	**44,175**	**16%**	117,363	14%
Community and Personal Service Workers	12,484	14%	18,311	13%	5,060	12%	**35,855**	**13%**	95,356	11%
Clerical and Admin Workers	11,236	13%	18,494	13%	5,372	12%	**35,102**	**13%**	122,851	15%
Sales Workers	12,201	14%	17,969	13%	4,898	11%	**35,068**	**13%**	82,460	10%
Machinery Operators and Drivers	4,389	5%	9,938	7%	3,345	8%	**17,672**	**6%**	49,259	6%
Labourers	9,111	10%	14,813	10%	5,259	12%	**29,183**	**11%**	70,953	8%
Total	**88,703**	**100%**	**143,214**	**100%**	**43,305**	**100%**	**275,222**	**100%**	**836,586**	**100%**

Source: ABS Census of Population and Housing 2016, Place of Work Dataset

4.2.5 Employment Self-Sufficiency

Employment Self-Sufficiency (ESS) is a representation of the employment opportunities available in close proximity to where people live. It is measured by the ratio of local population and local jobs. The ESS of the North West Sub Region is demonstrated below in Table 14.

Table 14. Employment Self-Sufficiency of the NW Sub Region, 2016

Area	Local Population	Local Jobs	ESS	Target
Wanneroo	88,642	43,930	49.6%	-
Joondalup	78,559	45,988	58.5%	-
NW Sub Region	**167,201**	**89,918**	**53.8%**	**59.5%**

Source: ABS Census of Population and Housing 2016, Place of Work dataset and Place of Usual Residence dataset, GHD Advisory 2019

4.3 Key Findings and Considerations

- Wanneroo and Swan are relatively disadvantaged compared to the Greater Perth Metropolitan Area, and greatly disadvantaged compared to the Joondalup. On balance, the PSA is somewhat disadvantaged compared to the Greater Perth Metropolitan Area. This is demonstrated through a combination of factors such as income, education levels and SEIFA scores;
- Both the jobs worked by residents of the PSA and the jobs available within the PSA are highly population-driven. Resident workers in professional positions commute to other areas in general, most notably, the Perth CBD. Perth City, Joondalup-Edgewater and Madeley-Darch-Landsdale Statistical Area 2's (SA2s) are the top three destinations for work for within the PSA. It is noted that the Madeley-Darch-Landsdale SA2 includes the Wangara/ Landsdale Industrial Area, which is approaching full build-out. Future employment is expected to accrue to the NIA from around 2030.
- The North West Sub-Region, which contains both Wanneroo and Joondalup, has an ESS target for 2050 of 59.5 percent. The current ESS rate is 54 percent demonstrating the need for local employment creation. The development of the Neerabup Industrial Area over time should increasingly see local residents of suitable levels of qualification remaining within the area for their work, thereby increasing the ESS rate for the North West Sub-Region.

- Analysis of the businesses structure of the PSA compared to Greater Perth indicates that the PSA has a specialisation in businesses associated with the industrial economy. This suggests that the PSA currently provides a competitive advantage for industrial businesses. This is likely the result of the cost of industrial land being cheaper in the PSA and the need for industrial businesses to establish in areas which best service a wider population catchment and are close to areas associated with urban growth and development.
- Analysis of the proportion of skilled resident labour within the PSA compared to Greater Perth indicates that other areas of Perth have a greater specialisation of skilled resident labour than the PSA. This represents significant latent demand for employment in the Neerabup Industrial Area as these industries typically require access to concentrations of skilled labour to operate.

5. Future Community Profile of the Study Area

Future population growth, economic development and the delivery of regionally significant infrastructure can have important implications for the growth and development of an industrial precinct. This section of the Report focuses on understanding how the demographic, economic and land use characteristics of the study areas are likely to change. It is divided into three sections:

- Major projects and developments
- Population growth
- Key findings and considerations

5.1 Major Projects and Developments

An assessment of proposed, recent or ongoing major projects and other developments across the study area highlights that there is a significant volume of infrastructure investment occurring within the corridor and changes to the supply of industrial floorspace. The majority of the identified developments are outlined in Table 15 below.

Table 15. Future Major Infrastructure and industrial land developments in the PSA

Project Name	Infrastructure Class	Status	Expected NIA Growth Impact	Expected date
Ocean Reef Marina	Tourism and Recreation	Under Construction	Small	2020
Mitchell Freeway Extension	Transport and Logistics	In planning	Moderate	2021
Extension/Realignment of Flynn Dr/Neeves Rd	Transport and Logistics	In planning	Moderate	2025
Wangara-Landsdale industrial area floorspace supply exhausted	Industrial Development	Ongoing	High	2030
Intermodal Facility for Bullsbrook	Transport	Proposed	Moderate	2030
Muchea Industrial Area development	Industrial Development	Under development	Moderate	2030
NIA Solar Energy Park	Energy	Proposed	Moderate	2030
Whiteman Yanchep Highway	Transport and Logistics	Proposed	Large	2031
Waste to Energy Facility	Energy	Mooted	Small	2035
NIA Train Station	Transport and Logistics	Proposed	Small	2040

5.2 Population Growth

A review of state government published population projection for the Local Government Areas within the PSA, as outlined in Table 16 below, indicates that the total population of the PSA is expected to grow at a much faster rate than the overall Greater Perth Metropolitan Area. This growth is largely on the back of strong anticipated population expansion in Wanneroo and Swan. Joondalup is expected to decline in population over the period 2016-2031.

Table 16. Population projection for the PSA

Area	2016[1]	2016[2]	2021[2]	2026[2]	2031[2]	Average Annual Growth Rate (2016-2031)[2]
Wanneroo	188,216	195,520	230,000	283,100	346,300	3.9%
Joondalup	154,443	161,050	157,100	157,400	159,000	-0.1%
Swan	133,851	137,320	164,020	198,100	231,800	3.6%
PSA	**476,510**	**493,890**	**551,120**	**638,600**	**737,100**	**2.7%**
Greater Perth	1,943,861	1,924,060	2,066,150	2,287,465	2,516,730	1.8%

Note: Some variation exists in the population figures provided by the ABS and the WA DPLH. In order to ensure numbers are comparable, both figures for 2016 have been provided. Sources:[1]Australian Bureau of Statistics, Census of Population and Housing Place of Usual Residence; [2] Department of Planning, Lands and Heritage, WA Tomorrow, 2019.

5.3 Key Findings and Considerations

A review of the future community profile for the study area has revealed a number of key findings of relevance for the future planning and development of the NIA. These are:

- A large number of significant industrial and infrastructure projects are planned for in and around the Neerabup and Bullsbrook industrial areas. These are expected to positively influence the competitiveness and growth of the Neerabup Industrial Area, as enabled by growing populations in the area.
- Significant urban expansion is expected within the coastal corridor in the North-West subregion (2.7% p.a.) at a pace much faster than that of the overall Greater Perth Metropolitan Area (1.8% p.a.). It is expected that this significant urban expansion will translate into a growing demand for population-driven industrial products and services, such as housing and construction and processed goods and subsequent industrial employment.
- Analysis of the strategic planning framework, review of the future major projects and developments and planned population growth for the North-West and North-East sub regions is supportive of this growth, as demonstrated in the next section.

6. Industrial Land Market Assessment

The Greater Perth Metropolitan Area is home to a large range of industrial precincts and land. These are predominantly characterised by maritime use in the case of Fremantle, noxious industries in Kwinana to Perth's south, transportation and logistics reliant industries in close proximity to connections in Perth's east and a range of general industrial lands disbursed throughout.

There is currently a large supply of 'general industrial' zoned land in the Greater Perth Metropolitan Area. The northern area, where Neerabup is located, presents many opportunities for entrants to the industrial market under both leasing and owner-occupied arrangements. In the case of general industry lots, land values are reflective of their location, with comparatively higher land values achieved in locations which are close to both labour markets and product markets.

Neerabup is host to around 1,000 hectare of industrial lands which are available for in the production of both final products and intermediate goods for the use in supply-chains of final production. These industrial lands currently generate a modest amount of employment and productive opportunities for an economy, with potential for a significant amount of growth going into the future.

Stakeholder consultation with Development WA and the City of Wanneroo has revealed that land values in the NIA are generally lower than in other areas, even those situated nearby such as Landsdale and Wangara. This is thought to be due to less efficient transportation connections to the area leading to larger times to market and subsequently increased costs of production. The primary access route to the area, Flynn Drive, is a single-carriageway road that provides a relatively inefficient east-west freight route when compared to the aforementioned industrial area's Mitchell Freeway and Tonkin Highway access.

This section is divided into the following headings:

- High Value Industry
- Industry Cluster Analysis
- Current Industrial Land Supply
- Land Sales
- Expected Demand for Industrial Land
- Key Findings and Considerations

6.1 High Value Industry

An economy can generally be described by the composition of its high and low value economic activity. Low value economic activity refers to industries and business that primarily service the local population e.g. retail trade, construction and public and administration services. These industries provide an important local service but the economic output and employment they generate cannot maintain sustainable levels of employment for the local community alone. If there is no high value economic activity in the local area the resident community will need to travel or relocate to other areas to access employment.

High value economic activities generate employment and economic activity by trading their goods and services with other economic regions. These industries generate employment activity that is not dependent on local consumption alone and effectively imports wealth from other economies. This wealth is then circulated in the local economy and increases the growth of lower value economic activities. These industries are typically

knowledge intensive and take the form of Creative and Digital, Advanced Manufacturing, Knowledge Based and Corporate Services and Tertiary Health and Higher Education Services

As Greater Perth continues to grow and develop it is important to ensure there is a geographic spread of high and low value economic activities. This ensures all residents have access to diverse employment and income opportunities, reduce their commuting distances and improve the economic sustainability of communities outside Perth's inner city.

With that said, industries and businesses choose to operate in locations that provide them with the greatest competitive advantage. Research on the clustering behaviour of high value economic activities indicate that locations which have the following attributes are likely to attract and support high value economic industries:

- have access to a high concentration of skilled labour;
- have the ability to expand the scale and scope of their activity on or near their site;
- are in close proximity to major economic activity generators such as airports, seaports and commercial business districts;
- are in close proximity to knowledge producing infrastructure such as universities, research institutes, major community facilities and tertiary hospitals;
- the capacity to export out of a region is the core driver of economic activity;
- collocate and cluster with other supporting and high value economic industries; and
- provide a high level of amenity to attract and retain skilled workers.

From the above it can be seen that primary drivers and locational requirements of high value economic activity relate to travel time, accessibility, local demographic profile and the scale of neighbouring economic activity. Metropolitan CBD locations generally best satisfy the above as result of historic investments in the transport network that reinforce the primacy of the CBD. This can make it difficult for non-metropolitan CBD locations to compete and attract high value economic activities.

6.2 Industry Cluster Analysis

As outlined by the Chief Economist of Australia in the *Australian Industry Report* (2014) attention must be given to tradeable industries in order to improve the economic development opportunities for Australia.

Tradeable industries, as defined in Table 17 below, refer to industries that predominantly export their goods and services to regions outside of the local area. This trade generates employment and economic opportunities above what can be generated by local consumption alone. These industries provide economic opportunities for residents to increase their standard of living and generate economic activity.

Table 17. Key Industry Cluster Definitions

Tradeable Industry Cluster	Definition
Food and Agribusiness (FA)	The Food & Agribusiness sector includes food-related agricultural production, food processing, forestry, logging and the major inputs into these sectors (such as veterinary services and the production of pesticides and food packaging), but does not include the wholesale or retail sale of these goods.
Energy and Resources (ER)	The energy and resources sector is comprised of products and services used in the exploration, extraction, processing, storage, production and export of energy and other key resources

Tradeable Industry Cluster	Definition
Tourism and the Visitor Economy (T)	The tourism and visitor economy refers to the economic impacts and benefits that visitors make to a local area. As such, the accommodation and visitor economy is not isolated on any one set of industries. It has multiple primary and secondary impacts to industries like accommodation, cafes and restaurants, transport, retail, arts and recreation and many more.
Creative Industries (CI)	Economic activity focused on linking creativity with commercial markets: these industries use creativity as their source of value, generating ideas into new intellectual property (IP) and then using and commercialising that IP in innovative ways - often through industry inter-action on a project-by-project basis.
Advanced Manufacturing (AM)	Advanced manufacturing includes any manufacturing process that takes advantage of high-technology or knowledge-intensive inputs as an integral part of its manufacturing process. It includes chemical and medicinal manufacturing, vehicle and transport manufacturing, professional and scientific equipment manufacturing, computer and electronic manufacturing and specialised machinery and equipment manufacturing.
Knowledge and Corporate Services (KCS)	The OECD defines the knowledge industry sector as any industry which is primarily based on the production, distribution and use of knowledge and information. This definition is adapted from a discussion paper by the ABS – Measuring a Knowledge-based Economy and Society, An Australian Framework (Catalogue number: 1375.0). The Corporate Industry Sector includes corporate head offices and management services. These are companion industries and therefore have been combined for the purposes of this report.

Source: GHD (2018) and the Australian and New Zealand Standard Industrial Classification (ANZSIC) (2006)

It is interesting to note that the above tradeable industries align with the industries identified in the strategic planning framework as industries critical to the future economic development of the regions across the corridor. For the structure plan to best consider and assist the economic development opportunities within the North West Region it must consider how it can improve the economic competitiveness of these industries in areas where they are clustering.

6.3 Current Industrial Land Supply

At the time of the release of the subregional plans in 2018 it was outlined that there is an existing supply of 1,040 hectares of vacant zoned industrial land within the North-West region and 760 hectares of vacant zoned industrial land within the North-East region. The sub-regional frameworks also outline planned additional supply of 2,220 hectares and 2,820 hectares of new industrial land in the North-West and North-East regions respectively.

It is also noted that there is currently a large supply of vacant industrial premises within the PSA. An overall building vacancy rate of 10.3 percent in 2017 is indicative of the wider industrial land market and the macroeconomic conditions of the time. Of particular importance to the NIA is the vacancy rate in the Wanneroo LGA. The vacancy rate of the area at 11.8 percent highlights that future demand can be absorbed within existing buildings before additional industrial land is required for development.

The PSA is expected to undergo a transitional phase of development as existing industrial areas reach full capacity. For example, the Wangara-Landsdale industrial area is expected to reach capacity around 2030, at which point demand for industrial floorspace in the region is expected to be satisfied by the Neerabup Industrial Area.

Table 18. Industrial Floorspace in the PSA, 2017

Area	Total Industrial Floorspace	% Vacant Floor Area
Wanneroo	1,556,169 m^2	11.8%
Joondalup	185,438 m^2	6.9%
Swan	2,544,074 m^2	9.7%
PSA	**4,285,681 m^2**	**10.3%**

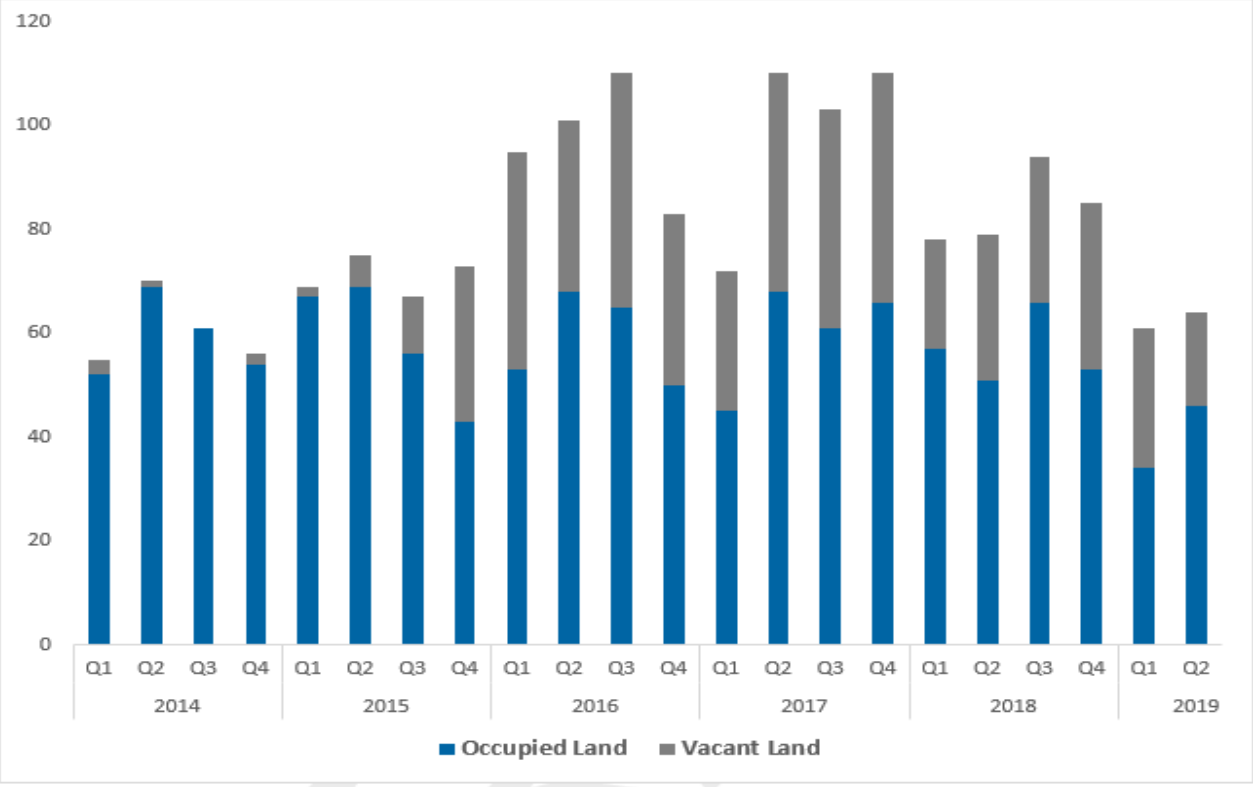
Source: Department of Planning, Lands and Heritage, Land Use and Employment Survey 2017

6.4 Land Sales

6.4.1 Sales volumes

Industrial land sales data for the PSA was obtained for the period Q1 2014 – Q2 2019 from PriceFinder data. Data was obtained relating to land zoned industrial, both occupied and vacant. It can be observed in the data shown in Figure 14 that sales of these lands peaked over the 2016-17 period, with large amounts of vacant land being sold from late 2015 onwards.

Figure 14. Total number of recorded industrial land sales in the PSA, Q1 2014 – Q2 2019

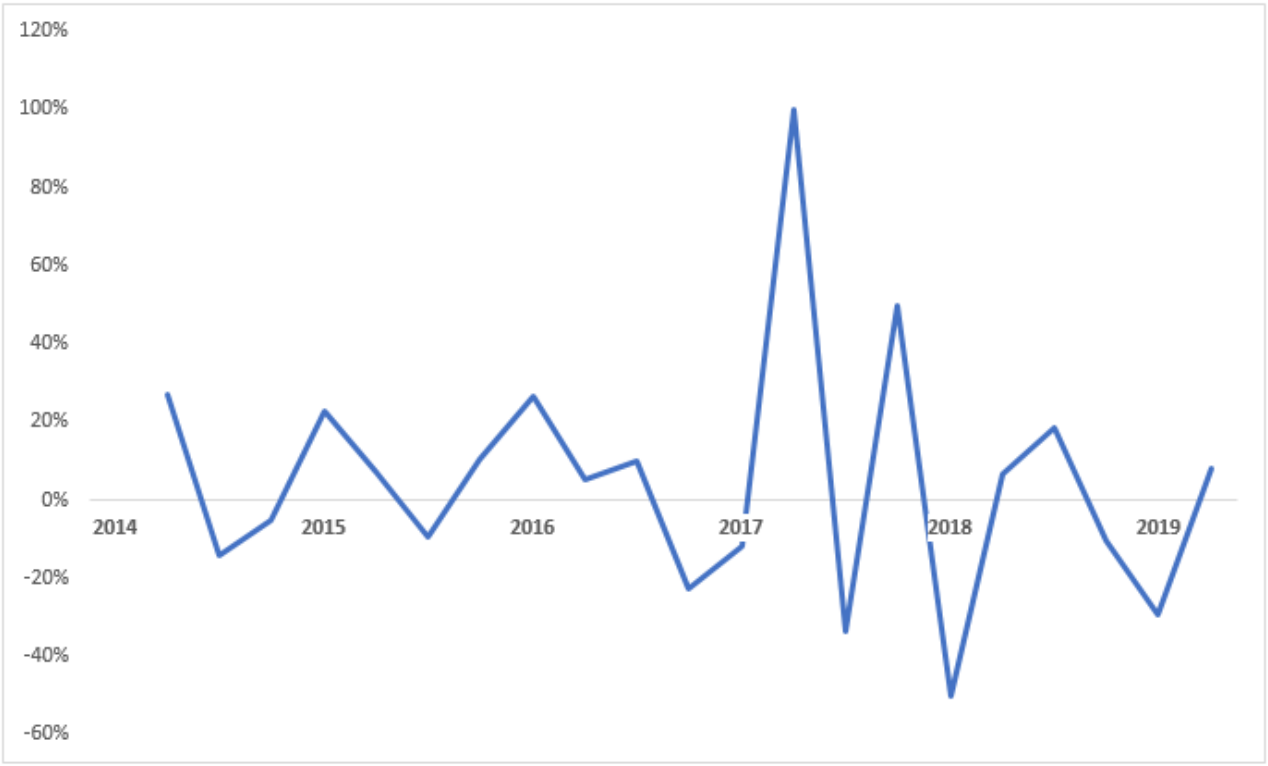


Source: PriceFinder 2019, GHD Advisory 2019

6.4.2 Land Sales Growth

Quarterly sales growth in these lands is also represented below in Figure 15 reflects the 2017 peak in the total number of land sales.

Figure 15. Periodical sales growth of industrial zoned lands in the PSA, Q1 2014 – Q2 2019



Source: PriceFinder 2019, GHD Advisory 2019

Lower growth in sales in the period since is due partly to macroeconomic factors and potentially also a lag in the registration of this land sales data.

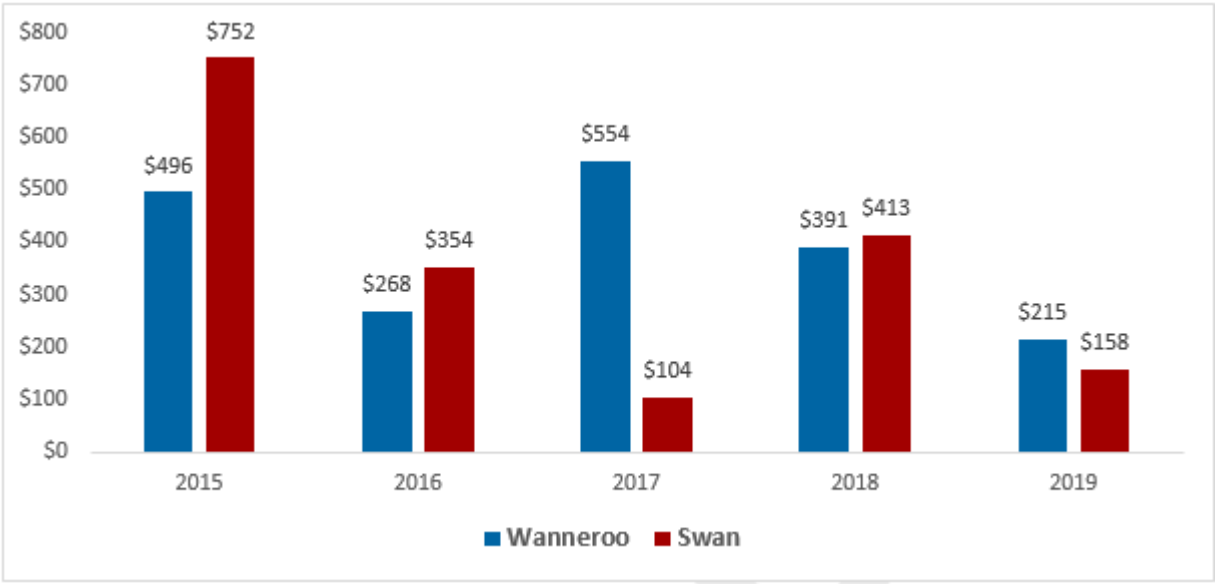
6.4.3 Sale Prices

Stakeholder consultation with Development WA indicated typical land values for the NIA to be around $200/m^2 on average. This rate is believed to be lower than at comparative estates that are located with increasing proximity to the Perth CBD such as Wangara and Landsdale, believed to be around $300/m^2 - $400/m^2 on average.

An assessment of vacant industrial land prices through the period of 2015-2019 demonstrates an average $298 $/m^2 sale price for these lands. Figure 16 demonstrates the change in these rates over time across Swan, Wanneroo and the PSA.

Joondalup was excluded from this analysis as there are no significant industrial precincts within the LGA.

Figure 16. Average sales prices for vacant industrial lands in Wanneroo and Swan



Source: PriceFinder 2019, GHD Advisory 2019

It should be noted that the very low average vacant industrial land sale price in 2017 is largely a result of the sale of the Bullsbrook industrial estate, totalling over 60 hectares of vacant industrial land. A large sale of this land also occurred in 2016 and this is reflected to a lesser degree by the lower sales price in that year.

It is anticipated that industrial floorspace will become increasingly expensive in existing industrial areas over time as they reach full capacity. In the case of Wangara-Landsdale, these prices are expected to peak with its full build-out expected to occur around 2030. At this point it is expected demand and associated land values will increase in the NIA.

6.5 Expected Demand for Industrial Land

Table 19 below outlines the demand for vacant industrial land between 2015 and 2050 as outlined in the North-West and North-East sub regional plans.

Table 19. Planned Demand for Industrial Land

	2015-2021	2022-2031	Post 2031
North-West Region	345 ha	490 ha	935 ha
Average annual consumption rate		49.2 ha	
North-East Region	545 ha	780 ha	1,485 ha
Average annual consumption rate		78.2 ha	

Source: North-West Sub-regional Planning Framework and North-East Sub-regional Planning Framework, Department of Planning, Lands and Heritage, 2018.

As outlined above the demand for industrial land across the PSA is expected to be 49.2 hectares per annum over the long term. Analysis of recent key vacant industrial land market indicators within the PSA, as outlined in Table 20 below, reveals that the market is performing well below long term forecast expectations.

Table 20. Historic Industrial Land Market Indicators

	2015	2016	2017	2018	2019 YTD
Number of sales	16	29	37	18	13
Total vacant land area sold (m^2)	33,505	166,782	213,869	37,288	122,056
Total value of sales	$18.9m	$52.5m	$61.4m	$14.8m	$22.6m
$/$m^2$	$564	$314	$287	$398	$185
Average area of vacant land per sale	2,904	5,751	5,780	2,072	9,388
Average annual consumption rate of zoned vacant industrial land (2015-2018)					11.47 ha

Note: The 11.47 average annual consumption rate of zoned vacant industrial land refers to **Net** land area and this should be taken in to consideration when compared to the higher targets outlined in the planning strategies outlined in this document.

Source: PriceFinder 2019, GHD Advisory 2019

The average annual consumption rate of zoned vacant industrial land within the PSA between 2015 and 2018 was 11.47 hectares per annum (net). Consultation and engagement with Development WA indicates that this trend is expected to continue in the short term as demand is absorbed within existing vacant industrial premises and with the current level of infrastructure in the region. In the medium-term, the exhaustion of industrial land supply in the Wangara-Landsdale industrial area and the development of a number of key infrastructure projects are expected to strongly increase industrial growth in the NIA.

The demand for vacant industrial land is expected to grow substantially within the PSA once:

- the development of major transport and economic infrastructure in the region occurs;
- existing industrial precincts such as Wangara are fully developed; and/or
- general macroeconomic conditions increase the demand for industrial floorspace growth.

6.6 Key Findings and Considerations

- The NIA is predominantly general industrial zoned land, placing the area in the same market as the industrial lands of Wangara-Landsdale. The current supply of industrial land in this area is expected to reach exhaustion around 2030, presenting increased opportunities for entrants to the industrial market under both leasing and owner-occupied arrangements arising in the NIA.
- Land values are generally lower in the NIA than comparable areas, reflective of the high level of supply for this land and developing nature of population centres in close proximity.
- Current rates of industrial land consumption are estimated to be around 11.47 hectares of net land area per annum. The demand for industrial land in the NIA is expected to grow substantially with the exhaustion of industrial floorspace in nearby industrial areas, the development of major transport and economic infrastructure in the region and/or positive macroeconomic conditions impacting industrial floorspace demand in the area.

7. Land Development Scenarios

Four land development scenarios have been developed for the Neerabup Industrial Area. These scenarios provide a forecast for anticipated development of industrial floorspace and employment and include:

- Scenario One: A reference growth rate scenario, using historical WA Department of Planning, Lands and Heritage Land Use and Employment Survey data to understand current growth and draw inference from surrounding industrial areas. This scenario demonstrates the growth of the NIA under current market conditions using a reference growth rate from the nearby Wangara-Landsdale industrial area continuing into the foreseeable future.
- Scenario Two: A high growth scenario, demonstrating high levels of growth achievable in the NIA if a variety of growth triggers including infrastructure development and land supply exhaustion in competing industrial areas are realised. The scenario effectively takes Scenario One as a baseline and adds the full range of additional growth accelerators to the forecast.
- Scenario Three: A moderate growth scenario, demonstrating high levels of growth achievable in the NIA if a variety of growth triggers including infrastructure development and land supply exhaustion in competing industrial areas are realised. The scenario effectively takes Scenario One as a baseline and adds additional growth accelerators to the forecast which are considered to be of a very high likelihood.
- Scenario Four: A low growth scenario, demonstrating levels of growth in the Neerabup Industrial Area continuing at the historic growth trend in the area. This scenario demonstrates a pessimistic view of an industrial area unable to capitalise on growth opportunities in population and infrastructure in the surrounding area. The forecast is drawn from historic growth in the NIA alone.

7.1 Forecasting Assumptions and Methodology

The land development scenarios forecast the floorspace build-out and employed persons for the period 2020 through to 2070. This time period was chosen as it reflects current thinking by the City of Wanneroo and Development WA that the NIA will take around 50 years to reach full build-out. Growth rates for build-out and employment differ depending on the Land Use Development Scenario and are outlined in the next section. To inform these rates of growth, a number of additional assumptions were used to model the Land Use Development Scenarios, notably:

- a total land area in the NIA of 1,000 ha[5],;
- a total developable land area in the NIA of 600 hectares due to environmental constraints as informed by discussion with the City of Wanneroo, Development WA and assessment of mapping resources;
- a total utilisable floorspace maximum capacity in the NIA of 3,600,000 square metres, equivalent to 60 percent of the 600 hectares of developable land. This is in line with standard planning assumptions of developable area of land;
- a number of inferences have been made from LUES data relating to the Wangara-Landsdale industrial area. These were considered highly relevant indicators for growth tendencies as the Wangara-Landsdale industrial area represents an industrial area in a mature phase of its lifecycle and the area is in very close proximity to the Neerabup Industrial Area. This proximity means that many of the growth drivers

[5] City of Wanneroo NIA Structure Plan, 2017

experienced in the Neerabup Industrial Area will be similar to those seen at Wangara-Landsdale currently. Relevant indicators drawn from the area include:

- Jobs per thousand square metres of developable floorspace (9.4 in 2016);
- Floorspace vacancy rate (14.0% in 2016);
- An overall industry composition, to which the Neerabup Industrial Area is expected to transition.

Data was obtained from the WA Department of Planning, Lands and Heritage 1990-2016 and interpreted in conjunction with the research presented in this report to develop each of the above outlined scenarios. In addition, consultation revealed a number of projects and other events that were used to increase the expected rate of industrial growth in the NIA under scenario's Two and Three. Each of the scenarios assume a transition in industrial profile from the current NIA profile to the current Wangara-Landsdale profile – this assumption recognises the fact that the later is better representative of an industrial area in the region in a mature phase of its lifecycle. The following assumptions were made for to develop each development scenario:

- **Scenario One:** As this scenario follows the Wangara-Landsdale employment growth rate, it remains constant at 5.8 percent per annum. No consideration is made for additional growth triggers in this relatively modest growth scenario.
- **Scenario Two:** Strong employment growth occurs from 2030 onwards, as the Neerabup Industrial Area is able to capitalise on a large number of key growth opportunities and triggers. These include the exhaustion of industrial land floorspace in the Wangara-Landsdale industrial area (assumed to occur around 2030) and the completion of a number of key infrastructure projects in the area including:
  - Ocean Reef Marina (2020)
  - Mitchell Freeway Extension (2021)
  - Extension/realignment of Flynn Drive/Neeves Road (2025)
  - Wangara/Landsdale land exhaustion (2030)
  - Intermodal facility at Bullsbrook (2030
  - Muchea Industrial Area development (2030)
  - NIA solar energy park (2030)
  - Whiteman-Yanchep Highway (2031)
  - Waste to energy facility at the NIA (2035
  - Train line through the NIA (2040)
- **Scenario Three:** Similar to scenario two, but only including growth triggers which are considered to be of a very high likelihood. These are:
  - Mitchell Freeway Extension (2021)
  - Extension/realignment of Flynn Drive/Neeves Road (2025)
  - Wangara/Landsdale land exhaustion (2030)
- **Scenario Four:** A low growth scenario demonstrated by ongoing levels of employment growth currently occurring in the NIA (2.3 percent per annum). No consideration is made for additional growth triggers in this low growth scenario.

7.2 Development Scenario Results

This section considered four distinct Land Use Development Scenarios presented below in Figure 18 and Figure 17. Detailed floorspace and employment tables by industry are provided in Appendix A (floorspace) and B (employment). It can be seen that there is a close correlation between floorspace and employment growth in the NIA, with floorspace constructed as a direct result of industrial demand.

Figure 17. Forecasted net floorspace development in the NIA under each scenario, '000 m²

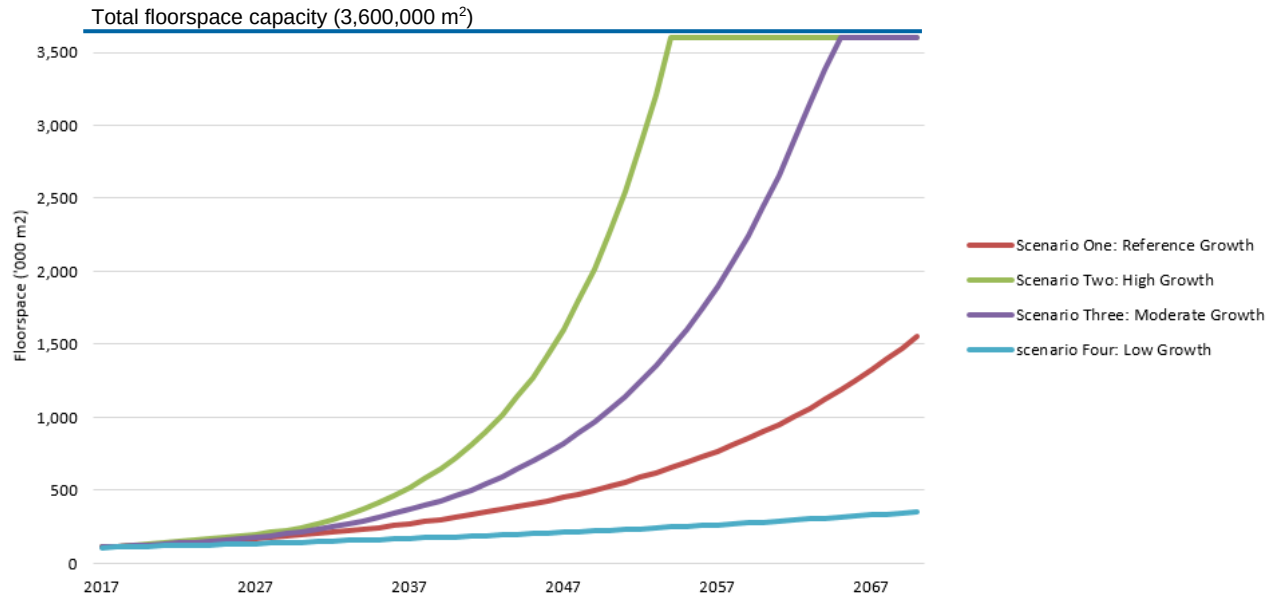
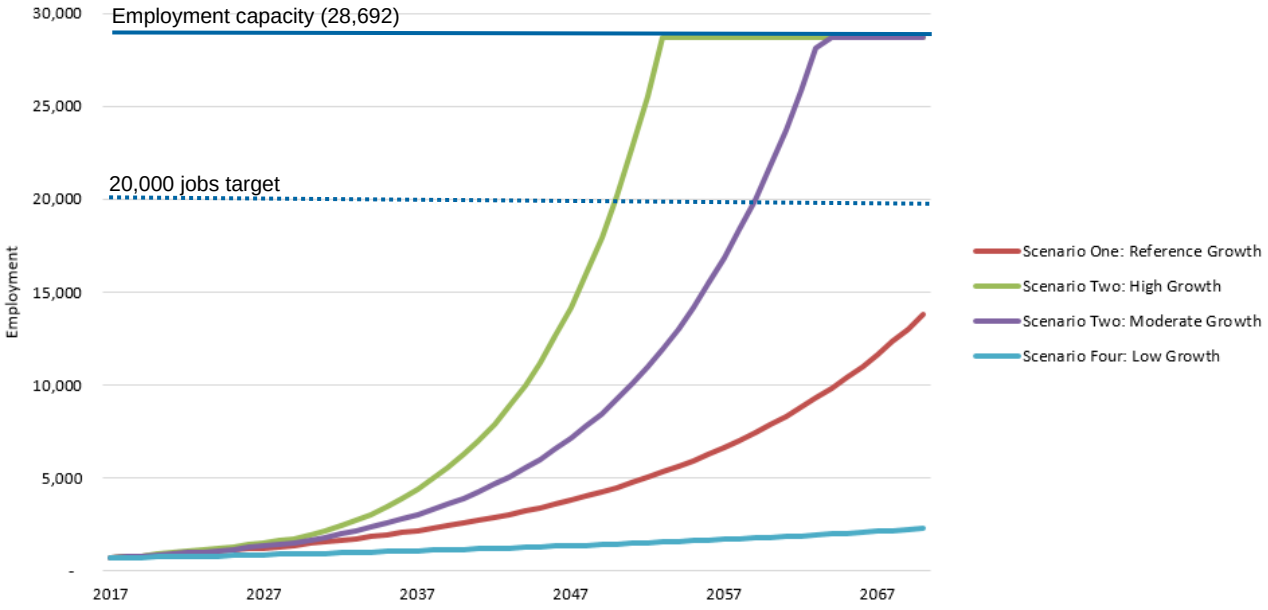


Figure 18. Forecasted employment development in the NIA under each scenario



Scenario One: Reference Growth

Scenario One demonstrates how the Neerabup Industrial Area would be expected to develop under the current growth rate of the reference industrial area, Wangara-Landsdale. This scenario is thought to be an unlikely outcome for the NIA as it does not consider additional growth drivers that are expected to come online in the area, some with a very high likelihood such as the Mitchell Freeway Extension project. Overall, this scenario falls short of the 20,000 jobs target set for the area as is to be expected. It does however provide a useful counterpoint and benchmark for the levels of growth that can be reasonably anticipated should the NIA be for some reason unable to capitalise on the relevant growth drivers in the area.

Scenario Two: High Growth

Scenario Two demonstrates an optimistic view for the Neerabup Industrial Area where it is able to grow at the reference growth rate but also effectively capitalise on all of the various growth drivers which are expected to present themselves in the area with either moderate or high likelihood, such as the Mitchell Freeway Extension and exhaustion of industrial land in the Wangara-Landsdale area but also the development of the NIA solar energy park, waste to energy facility and passenger rail through the area. Under this scenario, the NIA is able to meet the 20,000 jobs target by 2050, reaching full build-out of the industrial area in 2057.

Scenario Three: Moderate Growth

Scenario Three demonstrates the minimum expected outcome for the NIA. It uses the reference growth rate and the high likelihood growth drivers in the region such as the Mitchell Freeway Extension project, the extension/realignment of Flynn Drive/Neeves Road and the 2030 exhaustion of available industrial land supply in the Wangara-Landsdale industrial area. These growth drivers alone are sufficient to see the 20,000 job target reached by 2060. As this scenario considers high-likelihood growth drivers and references existing industrial demand for areas of its type in the same region, it is expected to represent a floor for growth in the NIA, with potential upsides for growth if other developments come online and are able to positively influence the demand for industrial floorspace in the area.

Scenario Four: Low Growth

Scenario Four demonstrates the growth that would occur in the NIA if the current rate of growth seen in the area were to persist. This is an extremely pessimistic outcome that demonstrates a future for the area that is unable to capitalise on growth drivers and within a deflated macroeconomic environment. In this scenario, the Wangara-Landsdale area would not reach full build-out, meaning that no such increases to demand for industrial floorspace in the NIA would occur. Growth drivers such as the Mitchell Freeway extension are also assumed not to occur (or not able to positively benefit the NIA). This scenario is considered highly unlikely presents an interesting look at how the NIA would develop if current growth rates observed in the early lifecycle stage of the NIA were to continue unchanged.

8. Conclusion and Recommendations

The NIA is an industrial area situated in Perth's North-West subregion that is currently in an early phase of its industrial lifecycle. It is expected to become a prominent employment area in the long-term catering to large and fast-growing populations in the subregion. Today, the NIA employs around 900 employees and contains affordable 'shovel-ready' land with flexible lot sizing. Whilst growth rates in the area are currently modest, they are expected to greatly increase over the next 10-30 years.

Major drivers for this growth arise on both the supply and the demand side. In terms of supply, the Wangara-Landsdale industrial area is approaching its limits of growth and is expected to exhaust its supply of industrial land by about 2030. Upon this time, the NIA will be a in a prime position to offer competitive industrial lands to the demands of the market. On the demand side, the NIA is positioned adjacent to the fasted growing populations in Perth and as such it is expected that demand for industrial land will increase significantly over time.

These factors present very positive growth prospects for the future of the area, which is expected to increasingly attract population driven industries such as housing construction, food processing and warehousing into the future, with good transport and logistics connections through the planned Muchea industrial area and Bullsbrook industrial area.

Employment modelling for the NIA indicates that the labour force of the area is expected to increase to around 20,000 employees between 2050 and 2060 under the most likely scenarios for growth (Scenario Two and Three). Achieving these higher levels of growth will be made possible by complimentary infrastructure developments in the region and can be supported through a number of targeted initiatives by major landholders in the area that would help to facilitate and support business and investment attraction, as set out below.

1. **Ensuring availability of development ready land.** Supplying these development sites with required services such as water, power and sewerage will be key to ensure that industrial developers who are ready to commit their investments are not sent looking elsewhere. Offering increased readiness for development with respect to other areas could place the NIA at a competitive advantage.
2. **The development of anchor tenancies for the NIA in order to increase activation of the area and encourage the development of industry clusters around them.** This can be achieved through a variety of targeted incentive schemes, such as rent-holidays, streamlined development applications, collaborative development strategies, subsidised rates and funding grants. These anchor tenancies and their associated industry clusters should be highly publicised as Neerabup's industrial identity in order to attract similar industrial producers and maximise the return on investment to land owners. The City of Wanneroo could potentially play a guiding or facilitating role in this process.
3. **Staging the development of the NIA so as to allow a cost-effective roll-out of essential infrastructure and services.** Studies should be undertaken to ensure that essential infrastructure and services are developed such that the development of infrastructure is just ahead of the demand for industrial land. Doing so will mitigate unnecessary capital, asset replacement and maintenance expenditure until such time that it is genuinely required to meet the industrial floorspace demand of the area.
4. **Land owners should ensure flexible lot-sizing for development.** Rigid lot-sizing may artificially reduce demand for land in the area. By keeping lot-sizing flexible, the NIA will be able to cater to small producers whilst still keeping land available for anchor tenancies.

5. **The City of Wanneroo should streamline approvals processes for development of the NIA.** Time spent awaiting the outcome of a development application is time added to the end of product lead-times. The City of Wanneroo can expedite and prioritise approvals processes for the area and provide dedicated resources to assist developers with their applications and development strategies.
6. **Landowners should ensure the NIA is an attractive place to work.** The labourforce of the future will demand favourable working conditions with easy access to their place of work and a pleasant working environment. Whilst the exact requirements of the workforce of the future cannot be known for certain, adequate provision of Service Industrial zoned land, greenspace, parking and other amenities should be made available to ensure that the NIA is an attractive place to work.

In addition to the above recommendations, landowners in the NIA could also enhance the growth rate of the area with the following:

- Offering discounted leases or rates for early stages of the NIA in order to achieve a self-sustaining cluster of industry in the area.
- Entering into a joint-venture style agreement with other landowners in order to ensure policy alignment of each relevant organisation. While it is understood that preliminary discussions indicate a joint-venture style agreement is not feasible in the immediate future, this options may be re-examined in the future as appropriate.
- Providing greater certainty around staging and infrastructure upgrades such as the proposed passenger rail line through the area as such information becomes available.

GHD
Advisory

Appendix A Floorspace by Industry ('000 net m^2)

Scenario One: Reference Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	3.3	27.8	31.1	12.8	0.3	-	13.7	-	0.3	-	17.6	**107**
2017	3.3	28.5	33.0	13.4	0.4	0.2	14.3	0.0	0.3	0.0	17.5	**111**
2018	3.3	29.4	35.1	14.0	0.5	0.4	15.0	0.1	0.4	0.0	17.3	**116**
2019	3.2	30.2	37.3	14.7	0.7	0.7	15.7	0.1	0.5	0.0	17.2	**120**
2020	3.2	31.1	39.7	15.4	0.8	0.9	16.4	0.1	0.6	0.0	17.0	**125**
2021	3.1	32.1	42.2	16.1	1.0	1.2	17.2	0.2	0.7	0.0	16.7	**131**
2022	3.0	33.1	44.9	16.9	1.2	1.5	18.1	0.2	0.8	0.0	16.4	**136**
2023	3.0	34.1	47.8	17.7	1.4	1.9	18.9	0.3	0.9	0.0	16.1	**142**
2024	2.9	35.2	50.9	18.6	1.6	2.2	19.9	0.3	1.0	0.0	15.8	**148**
2025	2.8	36.3	54.1	19.5	1.8	2.6	20.9	0.4	1.1	0.0	15.3	**155**
2026	2.6	37.5	57.6	20.5	2.1	3.0	21.9	0.4	1.3	0.0	14.9	**162**
2027	2.5	38.7	61.4	21.6	2.4	3.5	23.1	0.5	1.4	0.0	14.3	**169**
2028	2.4	40.0	65.4	22.7	2.7	4.0	24.3	0.5	1.6	0.0	13.7	**177**
2029	2.2	41.4	69.6	23.9	3.0	4.5	25.5	0.6	1.7	0.0	13.0	**185**
2030	2.0	42.8	74.2	25.1	3.3	5.1	26.9	0.7	1.9	0.0	12.2	**194**
2031	1.8	44.3	79.1	26.5	3.7	5.7	28.3	0.8	2.1	0.0	11.3	**204**
2032	1.6	45.8	84.3	27.9	4.1	6.4	29.8	0.9	2.4	0.0	10.3	**213**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2033	1.3	47.4	89.8	29.4	4.5	7.1	31.4	1.0	2.6	0.0	9.1	**224**
2034	1.0	49.1	95.8	31.0	5.0	7.9	33.1	1.1	2.8	0.0	7.9	**235**
2035	0.7	50.8	102.1	32.7	5.5	8.7	34.9	1.2	3.1	0.1	6.5	**246**
2036	0.4	52.6	108.9	34.5	6.1	9.7	36.9	1.3	3.4	0.1	4.9	**259**
2037	-	54.5	116.1	36.4	6.7	10.7	38.9	1.5	3.7	0.1	3.2	**272**
2038	-	57.2	122.0	38.3	7.0	11.2	40.9	1.5	3.9	0.1	3.3	**285**
2039	-	60.2	128.3	40.2	7.3	11.8	43.0	1.6	4.1	0.1	3.5	**300**
2040	-	63.2	134.8	42.3	7.7	12.4	45.2	1.7	4.3	0.1	3.7	**315**
2041	-	66.5	141.8	44.5	8.1	13.0	47.5	1.8	4.5	0.1	3.9	**332**
2042	-	70.0	149.2	46.8	8.5	13.7	50.0	1.9	4.8	0.1	4.1	**349**
2043	-	73.6	157.0	49.2	9.0	14.4	52.6	2.0	5.0	0.1	4.3	**367**
2044	-	77.5	165.2	51.8	9.5	15.2	55.4	2.1	5.3	0.1	4.5	**386**
2045	-	81.6	174.0	54.5	10.0	16.0	58.3	2.2	5.6	0.1	4.8	**407**
2046	-	85.9	183.2	57.4	10.5	16.8	61.4	2.3	5.9	0.1	5.0	**428**
2047	-	90.5	193.0	60.5	11.1	17.7	64.6	2.4	6.2	0.1	5.3	**451**
2048	-	95.3	203.3	63.7	11.6	18.7	68.1	2.5	6.5	0.1	5.6	**476**
2049	-	100.5	214.2	67.2	12.3	19.7	71.8	2.7	6.9	0.1	5.9	**501**
2050	-	105.9	225.8	70.8	12.9	20.7	75.6	2.8	7.2	0.1	6.2	**528**
2051	-	111.6	238.0	74.6	13.6	21.8	79.7	3.0	7.6	0.1	6.5	**557**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2052	-	117.7	251.0	78.7	14.4	23.0	84.1	3.1	8.0	0.1	6.9	**587**
2053	-	124.1	264.7	83.0	15.2	24.3	88.7	3.3	8.5	0.1	7.2	**619**
2054	-	130.9	279.1	87.5	16.0	25.6	93.5	3.5	9.0	0.1	7.6	**653**
2055	-	138.1	294.5	92.3	16.9	27.0	98.7	3.7	9.4	0.2	8.1	**689**
2056	-	145.7	310.7	97.4	17.8	28.5	104.1	3.9	10.0	0.2	8.5	**727**
2057	-	153.8	327.8	102.8	18.8	30.1	109.8	4.1	10.5	0.2	9.0	**767**
2058	-	162.3	346.0	108.5	19.8	31.7	115.9	4.3	11.1	0.2	9.5	**809**
2059	-	171.3	365.2	114.5	20.9	33.5	122.3	4.6	11.7	0.2	10.0	**854**
2060	-	180.8	385.5	120.9	22.1	35.4	129.1	4.8	12.4	0.2	10.5	**902**
2061	-	190.9	407.0	127.6	23.3	37.3	136.3	5.1	13.1	0.2	11.1	**952**
2062	-	201.5	429.7	134.7	24.6	39.4	144.0	5.4	13.8	0.2	11.8	**1,005**
2063	-	212.8	453.7	142.3	26.0	41.6	152.0	5.7	14.6	0.2	12.4	**1,061**
2064	-	224.7	479.2	150.2	27.5	44.0	160.5	6.0	15.4	0.3	13.1	**1,121**
2065	-	237.4	506.1	158.7	29.0	46.4	169.6	6.3	16.2	0.3	13.8	**1,184**
2066	-	250.7	534.6	167.6	30.6	49.0	179.1	6.7	17.1	0.3	14.6	**1,250**
2067	-	264.8	564.7	177.1	32.4	51.8	189.2	7.1	18.1	0.3	15.4	**1,321**
2068	-	279.8	596.5	187.0	34.2	54.7	199.9	7.5	19.1	0.3	16.3	**1,395**
2069	-	295.6	630.2	197.6	36.1	57.8	211.1	7.9	20.2	0.3	17.2	**1,474**
2070	-	312.3	665.9	208.8	38.2	61.1	223.1	8.3	21.4	0.4	18.2	**1,558**

Scenario Two: High Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	3.3	27.8	31.1	12.8	0.3	-	13.7	-	0.3	-	17.6	**106.9**
2017	3.2	28.4	33.3	13.5	0.4	0.3	14.4	0.0	0.4	0.0	17.2	**111.1**
2018	3.2	29.2	35.6	14.1	0.6	0.6	15.0	0.1	0.4	0.0	16.8	**115.5**
2019	3.0	29.9	38.1	14.8	0.8	0.9	15.8	0.1	0.5	0.0	16.3	**120.3**
2020	3.2	33.4	44.3	16.9	1.1	1.3	18.0	0.2	0.7	0.0	17.2	**136.3**
2021	3.1	34.5	47.8	17.8	1.3	1.8	19.0	0.2	0.9	0.0	16.7	**143.1**
2022	2.9	35.7	51.5	18.9	1.6	2.2	20.1	0.3	1.0	0.0	16.1	**150.4**
2023	2.8	37.0	55.5	20.0	1.9	2.7	21.3	0.4	1.2	0.0	15.4	**158.2**
2024	2.6	38.3	59.8	21.2	2.2	3.3	22.6	0.4	1.3	0.0	14.7	**166.4**
2025	2.4	39.9	64.9	22.6	2.6	3.9	24.1	0.5	1.6	0.0	13.9	**176.4**
2026	2.2	41.7	70.4	24.1	3.0	4.6	25.8	0.6	1.8	0.0	12.9	**187.1**
2027	1.9	43.5	76.4	25.8	3.5	5.4	27.5	0.7	2.0	0.0	11.8	**198.6**
2028	1.6	45.4	83.0	27.6	4.0	6.2	29.4	0.8	2.3	0.0	10.5	**211.0**
2029	1.3	47.5	90.2	29.5	4.6	7.2	31.5	1.0	2.6	0.0	9.1	**224.4**
2030	1.0	51.0	100.7	32.5	5.3	8.4	34.7	1.1	3.0	0.0	7.6	**245.3**
2031	0.5	55.3	113.6	36.1	6.3	10.0	38.6	1.4	3.5	0.1	5.8	**271.0**
2032	-	60.1	128.2	40.2	7.3	11.8	42.9	1.6	4.1	0.1	3.5	**299.9**
2033	-	66.6	142.0	44.5	8.1	13.0	47.6	1.8	4.6	0.1	3.9	**332.2**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	-	73.9	157.5	49.4	9.0	14.5	52.8	2.0	5.1	0.1	4.3	**368.5**
2035	-	83.6	178.2	55.9	10.2	16.3	59.7	2.2	5.7	0.1	4.9	**416.7**
2036	-	93.1	198.5	62.3	11.4	18.2	66.5	2.5	6.4	0.1	5.4	**464.4**
2037		-103.9	221.5	69.4	12.7	20.3	74.2	2.8	7.1	0.1	6.1	**518.0**
2038		-115.9	247.2	77.5	14.2	22.7	82.8	3.1	7.9	0.1	6.8	**578.3**
2039		-129.5	276.2	86.6	15.8	25.3	92.5	3.5	8.9	0.1	7.6	**646.0**
2040		-145.2	309.5	97.1	17.7	28.4	103.7	3.9	9.9	0.2	8.5	**724.0**
2041		-162.4	346.3	108.6	19.8	31.8	116.0	4.3	11.1	0.2	9.5	**809.9**
2042		-181.8	387.6	121.5	22.2	35.6	129.8	4.8	12.4	0.2	10.6	**906.6**
2043		-203.6	434.0	136.1	24.9	39.8	145.4	5.4	13.9	0.2	11.9	**1,015.2**
2044		-228.1	486.2	152.5	27.9	44.6	162.9	6.1	15.6	0.3	13.3	**1,137.4**
2045		-255.6	545.0	170.9	31.2	50.0	182.6	6.8	17.5	0.3	14.9	**1,274.8**
2046		-286.6	611.0	191.6	35.0	56.1	204.7	7.6	19.6	0.3	16.7	**1,429.3**
2047		-321.4	685.3	214.9	39.3	62.9	229.6	8.6	22.0	0.4	18.7	**1,603.0**
2048		-360.6	768.8	241.1	44.1	70.5	257.6	9.6	24.7	0.4	21.0	**1,798.4**
2049		-404.6	862.8	270.5	49.4	79.2	289.0	10.8	27.7	0.5	23.6	**2,018.1**
2050		-454.2	968.4	303.6	55.5	88.8	324.4	12.1	31.1	0.5	26.5	**2,265.1**
2051		-509.9	1,087.1	340.9	62.3	99.7	364.2	13.6	34.9	0.6	29.7	**2,542.9**
2052		-572.5	1,220.7	382.7	69.9	112.0	409.0	15.3	39.2	0.6	33.4	**2,855.3**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053		-643.0	1,370.9	429.8	78.5	125.8	459.3	17.2	44.0	0.7	37.5	**3,206.6**
2054		-643.0	1,370.9	429.8	78.5	125.8	459.3	17.2	44.0	0.7	37.5	**3,206.6**
2055		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2056		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2057		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2058		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2059		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2060		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2061		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2062		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2063		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2064		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2065		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2066		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2067		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2068		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2069		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2070		-721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**

Scenario Three: Moderate Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	3.3	27.8	31.1	12.8	0.3	-	13.7	-	0.3	-	17.6	**106.9**
2017	3.3	28.5	33.0	13.4	0.4	0.2	14.3	0.0	0.3	0.0	17.5	**111.1**
2018	3.3	29.4	35.1	14.0	0.5	0.4	15.0	0.1	0.4	0.0	17.3	**115.5**
2019	3.2	30.2	37.3	14.7	0.7	0.7	15.7	0.1	0.5	0.0	17.2	**120.3**
2020	3.2	31.1	39.7	15.4	0.8	0.9	16.4	0.1	0.6	0.0	17.0	**125.3**
2021	3.1	32.3	42.5	16.2	1.0	1.2	17.3	0.2	0.7	0.0	16.8	**131.3**
2022	3.1	33.5	45.5	17.1	1.2	1.5	18.3	0.2	0.8	0.0	16.7	**137.8**
2023	3.0	34.7	48.7	18.1	1.4	1.9	19.3	0.3	0.9	0.0	16.4	**144.7**
2024	2.9	36.1	52.2	19.1	1.7	2.3	20.4	0.3	1.0	0.0	16.2	**152.1**
2025	2.9	37.7	56.1	20.3	1.9	2.7	21.7	0.4	1.2	0.0	15.9	**160.7**
2026	2.8	39.3	60.5	21.5	2.2	3.2	23.0	0.4	1.3	0.0	15.6	**169.8**
2027	2.7	41.1	65.1	22.9	2.5	3.7	24.5	0.5	1.5	0.0	15.2	**179.7**
2028	2.5	43.0	70.2	24.4	2.9	4.3	26.0	0.6	1.7	0.0	14.7	**190.2**
2029	2.4	45.0	75.7	26.0	3.2	4.9	27.7	0.7	1.9	0.0	14.1	**201.5**
2030	2.3	47.7	82.7	28.0	3.7	5.7	29.9	0.8	2.2	0.0	13.6	**216.6**
2031	2.1	50.7	90.5	30.3	4.2	6.5	32.4	0.9	2.4	0.0	12.9	**233.0**
2032	1.9	53.8	99.1	32.8	4.8	7.5	35.0	1.0	2.8	0.0	12.1	**250.8**
2033	1.6	57.2	108.5	35.5	5.5	8.6	37.9	1.2	3.1	0.0	11.0	**270.3**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	1.3	60.9	118.9	38.5	6.2	9.8	41.1	1.3	3.5	0.1	9.8	**291.5**
2035	0.9	64.9	130.4	41.8	7.0	11.2	44.6	1.5	4.0	0.1	8.3	**314.6**
2036	0.5	69.1	143.1	45.3	8.0	12.7	48.4	1.7	4.5	0.1	6.4	**339.8**
2037	-	73.6	157.0	49.2	9.0	14.4	52.6	2.0	5.0	0.1	4.3	**367.3**
2038	-	79.6	169.8	53.2	9.7	15.6	56.9	2.1	5.4	0.1	4.6	**397.2**
2039	-	86.2	183.7	57.6	10.5	16.9	61.6	2.3	5.9	0.1	5.0	**429.8**
2040	-	93.3	198.9	62.4	11.4	18.2	66.6	2.5	6.4	0.1	5.4	**465.3**
2041	-	101.1	215.5	67.6	12.3	19.8	72.2	2.7	6.9	0.1	5.9	**504.0**
2042	-	109.5	233.5	73.2	13.4	21.4	78.2	2.9	7.5	0.1	6.4	**546.2**
2043	-	118.7	253.2	79.4	14.5	23.2	84.8	3.2	8.1	0.1	6.9	**592.2**
2044	-	128.8	274.6	86.1	15.7	25.2	92.0	3.4	8.8	0.1	7.5	**642.3**
2045	-	139.7	297.9	93.4	17.1	27.3	99.8	3.7	9.6	0.2	8.1	**696.9**
2046	-	151.7	323.4	101.4	18.5	29.7	108.3	4.0	10.4	0.2	8.8	**756.4**
2047	-	164.7	351.1	110.1	20.1	32.2	117.6	4.4	11.3	0.2	9.6	**821.3**
2048	-	178.8	381.3	119.6	21.8	35.0	127.8	4.8	12.2	0.2	10.4	**891.9**
2049	-	194.3	414.2	129.9	23.7	38.0	138.8	5.2	13.3	0.2	11.3	**969.0**
2050	-	211.1	450.1	141.1	25.8	41.3	150.8	5.6	14.4	0.2	12.3	**1,052.9**
2051	-	229.5	489.2	153.4	28.0	44.9	163.9	6.1	15.7	0.3	13.4	**1,144.4**
2052	-	249.4	531.8	166.8	30.5	48.8	178.2	6.7	17.1	0.3	14.5	**1,244.0**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053	-	271.2	578.3	181.3	33.1	53.1	193.7	7.2	18.5	0.3	15.8	**1,352.7**
2054	-	295.0	628.9	197.2	36.0	57.7	210.7	7.9	20.2	0.3	17.2	**1,471.0**
2055	-	320.8	684.0	214.5	39.2	62.8	229.2	8.6	21.9	0.4	18.7	**1,600.0**
2056	-	349.0	744.1	233.3	42.6	68.3	249.3	9.3	23.9	0.4	20.4	**1,740.6**
2057	-	379.7	809.6	253.9	46.4	74.3	271.3	10.1	26.0	0.4	22.1	**1,893.8**
2058	-	413.2	881.0	276.2	50.5	80.8	295.2	11.0	28.3	0.5	24.1	**2,060.8**
2059	-	449.7	958.8	300.6	54.9	88.0	321.2	12.0	30.8	0.5	26.2	**2,242.7**
2060	-	489.4	1,043.6	327.2	59.8	95.7	349.6	13.1	33.5	0.6	28.5	**2,441.0**
2061	-	532.8	1,135.9	356.2	65.1	104.2	380.6	14.2	36.4	0.6	31.1	**2,657.0**
2062	-	580.0	1,236.6	387.7	70.9	113.4	414.3	15.5	39.7	0.7	33.8	**2,892.5**
2063	-	631.4	1,346.3	422.1	77.1	123.5	451.0	16.8	43.2	0.7	36.8	**3,149.1**
2064	-	643.0	1,370.9	429.8	78.5	125.8	459.3	17.2	44.0	0.7	37.5	**3,206.6**
2065	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2066	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2067	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2068	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2069	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**
2070	-	721.8	1,539.1	482.6	88.2	141.2	515.6	19.3	49.4	0.8	42.1	**3,600.0**

Scenario Four: Low Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	3.3	27.8	31.1	12.8	0.3	-	13.7	-	0.3	-	17.6	**106.9**
2017	3.3	28.1	32.4	13.2	0.4	0.2	14.1	0.0	0.3	0.0	17.3	**109.2**
2018	3.2	28.5	33.7	13.6	0.5	0.3	14.5	0.0	0.4	0.0	17.1	**111.7**
2019	3.1	28.9	35.0	13.9	0.6	0.5	14.9	0.1	0.4	0.0	16.8	**114.2**
2020	3.1	29.3	36.4	14.3	0.7	0.7	15.3	0.1	0.5	0.0	16.5	**116.8**
2021	3.0	29.7	37.9	14.7	0.8	0.9	15.7	0.1	0.6	0.0	16.1	**119.4**
2022	2.9	30.0	39.4	15.1	0.9	1.1	16.1	0.2	0.6	0.0	15.8	**122.1**
2023	2.8	30.4	40.9	15.5	1.1	1.3	16.5	0.2	0.7	0.0	15.4	**124.8**
2024	2.8	30.8	42.5	15.9	1.2	1.5	17.0	0.2	0.8	0.0	15.0	**127.6**
2025	2.7	31.2	44.1	16.3	1.3	1.8	17.4	0.2	0.8	0.0	14.6	**130.5**
2026	2.6	31.6	45.8	16.8	1.5	2.0	17.9	0.3	0.9	0.0	14.1	**133.4**
2027	2.5	32.0	47.6	17.2	1.6	2.3	18.4	0.3	1.0	0.0	13.6	**136.4**
2028	2.3	32.4	49.4	17.7	1.8	2.5	18.9	0.3	1.1	0.0	13.1	**139.5**
2029	2.2	32.8	51.2	18.1	1.9	2.8	19.4	0.4	1.2	0.0	12.6	**142.6**
2030	2.1	33.2	53.1	18.6	2.1	3.1	19.9	0.4	1.2	0.0	12.0	**145.8**
2031	2.0	33.6	55.1	19.1	2.3	3.4	20.4	0.5	1.3	0.0	11.4	**149.1**
2032	1.8	34.0	57.2	19.6	2.4	3.7	21.0	0.5	1.4	0.0	10.7	**152.4**
2033	1.7	34.4	59.3	20.1	2.6	4.0	21.5	0.5	1.5	0.0	10.1	**155.8**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	1.5	34.9	61.4	20.7	2.8	4.3	22.1	0.6	1.6	0.0	9.4	**159.3**
2035	1.4	35.3	63.7	21.2	3.0	4.7	22.7	0.6	1.7	0.0	8.6	**162.9**
2036	1.2	35.7	66.0	21.8	3.2	5.0	23.3	0.7	1.9	0.0	7.8	**166.6**
2037	1.0	36.1	68.3	22.4	3.5	5.4	23.9	0.7	2.0	0.0	7.0	**170.3**
2038	0.8	36.5	70.8	23.0	3.7	5.8	24.5	0.8	2.1	0.0	6.1	**174.1**
2039	0.6	36.9	73.3	23.6	3.9	6.2	25.2	0.8	2.2	0.0	5.2	**178.0**
2040	0.4	37.3	75.9	24.2	4.2	6.6	25.9	0.9	2.3	0.0	4.3	**182.0**
2041	0.2	37.7	78.6	24.8	4.4	7.0	26.6	1.0	2.5	0.0	3.3	**186.1**
2042	-	38.2	81.4	25.5	4.7	7.5	27.3	1.0	2.6	0.0	2.2	**190.3**
2043	-	39.0	83.2	26.1	4.8	7.6	27.9	1.0	2.7	0.0	2.3	**194.6**
2044	-	39.9	85.0	26.7	4.9	7.8	28.5	1.1	2.7	0.0	2.3	**198.9**
2045	-	40.8	87.0	27.3	5.0	8.0	29.1	1.1	2.8	0.0	2.4	**203.4**
2046	-	41.7	88.9	27.9	5.1	8.2	29.8	1.1	2.9	0.0	2.4	**208.0**
2047	-	42.6	90.9	28.5	5.2	8.3	30.5	1.1	2.9	0.0	2.5	**212.6**
2048	-	43.6	92.9	29.1	5.3	8.5	31.1	1.2	3.0	0.0	2.5	**217.4**
2049	-	44.6	95.0	29.8	5.4	8.7	31.8	1.2	3.0	0.1	2.6	**222.3**
2050	-	45.6	97.2	30.5	5.6	8.9	32.6	1.2	3.1	0.1	2.7	**227.3**
2051	-	46.6	99.3	31.1	5.7	9.1	33.3	1.2	3.2	0.1	2.7	**232.4**
2052	-	47.6	101.6	31.8	5.8	9.3	34.0	1.3	3.3	0.1	2.8	**237.6**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053	-	48.7	103.8	32.6	5.9	9.5	34.8	1.3	3.3	0.1	2.8	**242.9**
2054	-	49.8	106.2	33.3	6.1	9.7	35.6	1.3	3.4	0.1	2.9	**248.4**
2055	-	50.9	108.6	34.0	6.2	10.0	36.4	1.4	3.5	0.1	3.0	**253.9**
2056	-	52.1	111.0	34.8	6.4	10.2	37.2	1.4	3.6	0.1	3.0	**259.6**
2057	-	53.2	113.5	35.6	6.5	10.4	38.0	1.4	3.6	0.1	3.1	**265.5**
2058	-	54.4	116.0	36.4	6.6	10.6	38.9	1.5	3.7	0.1	3.2	**271.4**
2059	-	55.6	118.6	37.2	6.8	10.9	39.7	1.5	3.8	0.1	3.2	**277.5**
2060	-	56.9	121.3	38.0	7.0	11.1	40.6	1.5	3.9	0.1	3.3	**283.7**
2061	-	58.2	124.0	38.9	7.1	11.4	41.6	1.6	4.0	0.1	3.4	**290.1**
2062	-	59.5	126.8	39.8	7.3	11.6	42.5	1.6	4.1	0.1	3.5	**296.6**
2063	-	60.8	129.7	40.7	7.4	11.9	43.4	1.6	4.2	0.1	3.5	**303.3**
2064	-	62.2	132.6	41.6	7.6	12.2	44.4	1.7	4.3	0.1	3.6	**310.1**
2065	-	63.6	135.5	42.5	7.8	12.4	45.4	1.7	4.3	0.1	3.7	**317.0**
2066	-	65.0	138.6	43.5	7.9	12.7	46.4	1.7	4.4	0.1	3.8	**324.2**
2067	-	66.5	141.7	44.4	8.1	13.0	47.5	1.8	4.5	0.1	3.9	**331.4**
2068	-	67.9	144.9	45.4	8.3	13.3	48.5	1.8	4.6	0.1	4.0	**338.9**
2069	-	69.5	148.1	46.4	8.5	13.6	49.6	1.9	4.8	0.1	4.1	**346.5**
2070	-	71.0	151.5	47.5	8.7	13.9	50.7	1.9	4.9	0.1	4.1	**354.3**

Appendix B Employment by Industry (Jobs)

Scenario One: Reference Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	15	123	9	56	6	-	445	-	5	-	-	**659**
2017	15	128	12	59	8	1	468	0	6	0	0	**697**
2018	15	134	15	62	9	3	491	1	6	0	0	**738**
2019	15	139	19	66	11	5	516	1	7	0	1	**780**
2020	15	145	23	70	14	7	542	1	8	0	1	**825**
2021	15	151	27	73	16	9	569	2	9	0	1	**873**
2022	15	158	32	77	19	11	598	2	10	0	1	**924**
2023	15	164	37	82	21	14	628	3	11	0	2	**977**
2024	15	171	43	86	24	17	660	4	12	0	2	**1,034**
2025	14	178	49	91	28	20	693	4	14	0	2	**1,094**
2026	14	185	56	96	32	23	728	5	15	0	3	**1,157**
2027	13	193	64	102	36	27	764	6	17	0	3	**1,224**
2028	13	200	72	107	40	31	803	7	18	0	4	**1,295**
2029	12	208	81	113	45	36	843	8	20	0	4	**1,370**
2030	11	217	90	119	50	41	885	9	22	0	5	**1,449**
2031	10	225	101	126	56	46	929	10	24	0	6	**1,533**
2032	9	234	113	133	62	52	975	11	27	0	6	**1,622**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2033	8	243	125	140	69	58	1,024	13	29	0	7	**1,716**
2034	6	252	139	148	76	65	1,075	14	32	0	8	**1,815**
2035	5	261	153	157	84	73	1,128	16	35	0	9	**1,921**
2036	3	271	169	165	92	81	1,184	18	38	0	10	**2,032**
2037	0	281	187	174	102	90	1,243	20	41	0	11	**2,150**
2038	1	297	197	185	108	95	1,315	21	44	0	12	**2,274**
2039	1	315	209	195	114	101	1,391	22	46	0	13	**2,406**
2040	1	333	221	206	120	107	1,472	23	49	0	13	**2,545**
2041	1	352	234	218	127	113	1,557	25	52	0	14	**2,692**
2042	1	372	247	231	135	120	1,647	26	55	0	15	**2,848**
2043	1	394	262	244	143	126	1,742	27	58	0	16	**3,013**
2044	1	417	277	259	151	134	1,843	29	61	0	17	**3,188**
2045	1	441	293	274	160	142	1,950	31	65	0	18	**3,372**
2046	1	466	310	289	169	150	2,063	33	68	0	19	**3,568**
2047	1	493	328	306	179	158	2,182	34	72	0	20	**3,774**
2048	1	522	347	324	189	168	2,309	36	77	0	21	**3,993**
2049	1	552	367	343	200	177	2,443	38	81	0	22	**4,224**
2050	1	584	388	363	212	188	2,584	41	86	0	23	**4,469**
2051	1	618	410	384	224	198	2,734	43	91	0	25	**4,728**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2052	1	654	434	406	237	210	2,892	46	96	0	26	**5,002**
2053	1	692	459	429	250	222	3,060	48	101	0	28	**5,291**
2054	1	732	486	454	265	235	3,237	51	107	0	29	**5,598**
2055	1	774	514	480	280	249	3,424	54	114	0	31	**5,922**
2056	1	819	544	508	297	263	3,622	57	120	0	33	**6,265**
2057	1	867	575	538	314	278	3,832	60	127	0	35	**6,628**
2058	2	917	609	569	332	294	4,054	64	134	1	37	**7,011**
2059	2	970	644	602	351	311	4,289	68	142	1	39	**7,417**
2060	2	1,026	681	637	371	329	4,537	72	151	1	41	**7,847**
2061	2	1,085	721	674	393	348	4,800	76	159	1	43	**8,302**
2062	2	1,148	762	713	416	369	5,078	80	168	1	46	**8,782**
2063	2	1,215	806	754	440	390	5,372	85	178	1	48	**9,291**
2064	2	1,285	853	797	465	412	5,683	90	189	1	51	**9,829**
2065	2	1,359	903	844	492	436	6,013	95	199	1	54	**10,398**
2066	2	1,438	955	893	521	462	6,361	100	211	1	57	**11,000**
2067	3	1,522	1,010	944	551	488	6,729	106	223	1	61	**11,638**
2068	3	1,610	1,069	999	583	517	7,119	112	236	1	64	**12,312**
2069	3	1,703	1,130	1,057	616	547	7,531	119	250	1	68	**13,025**
2070	3	1,801	1,196	1,118	652	578	7,967	126	264	1	72	**13,779**

Scenario Two: High Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	15	123	9	56	6	-	445	-	5	-	-	**659**
2017	15	128	13	59	8	2	467	0	6	0	0	**697**
2018	15	133	17	62	10	4	489	1	7	0	0	**738**
2019	14	137	21	66	13	6	513	1	8	0	1	**780**
2020	16	160	30	78	17	10	602	2	10	0	1	**925**
2021	16	167	36	83	21	13	637	3	11	0	2	**987**
2022	15	174	43	88	25	17	673	4	13	0	2	**1,053**
2023	14	182	51	94	29	21	711	4	14	0	3	**1,123**
2024	14	190	60	99	34	25	751	5	16	0	3	**1,198**
2025	13	200	71	107	39	30	799	7	18	0	4	**1,288**
2026	12	210	82	114	46	36	851	8	21	0	5	**1,385**
2027	11	221	95	123	53	43	906	9	23	0	5	**1,489**
2028	9	232	110	131	60	50	965	11	26	0	6	**1,601**
2029	8	243	126	141	69	59	1,027	13	29	0	7	**1,722**
2030	6	263	148	156	81	70	1,128	15	34	0	9	**1,911**
2031	3	288	176	174	96	84	1,253	18	40	0	10	**2,144**
2032	1	314	209	195	114	101	1,390	22	46	0	13	**2,404**
2033	1	353	234	219	128	113	1,559	25	52	0	14	**2,697**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	1	395	263	245	143	127	1,749	28	58	0	16	**3,025**
2035	1	453	300	281	164	145	2,002	32	66	0	18	**3,461**
2036	1	509	338	316	184	163	2,251	35	75	0	20	**3,893**
2037	1	572	380	355	207	184	2,531	40	84	0	23	**4,377**
2038	1	644	427	399	233	207	2,846	45	94	0	26	**4,922**
2039	1	724	480	449	262	232	3,201	50	106	0	29	**5,535**
2040	1	816	542	506	295	262	3,608	57	120	0	33	**6,240**
2041	2	917	609	569	332	294	4,058	64	135	1	37	**7,017**
2042	2	1,032	685	640	373	331	4,563	72	151	1	41	**7,891**
2043	2	1,160	770	720	420	372	5,131	81	170	1	46	**8,874**
2044	2	1,305	866	810	472	419	5,770	91	191	1	52	**9,979**
2045	2	1,467	974	910	531	471	6,488	102	215	1	59	**11,221**
2046	3	1,650	1,095	1,024	597	530	7,296	115	242	1	66	**12,618**
2047	3	1,855	1,232	1,151	672	595	8,205	129	272	1	74	**14,190**
2048	4	2,086	1,385	1,295	755	670	9,226	145	306	1	83	**15,956**
2049	4	2,346	1,557	1,456	849	753	10,375	164	344	1	94	**17,943**
2050	4	2,638	1,751	1,637	955	847	11,667	184	387	1	105	**20,177**
2051	5	2,966	1,969	1,841	1,074	952	13,120	207	435	2	118	**22,690**
2052	6	3,336	2,215	2,070	1,208	1,071	14,754	233	489	2	133	**25,515**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2054	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2055	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2056	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2057	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2058	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2059	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2060	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2061	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2062	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2063	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2064	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2065	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2066	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2067	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2068	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2069	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2070	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**

Scenario Three: Moderate Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	15	123	9	56	6	-	445	-	5	-	-	**659**
2017	15	128	12	59	8	1	467	0	6	0	0	**697**
2018	15	134	15	62	10	3	491	1	6	0	0	**738**
2019	15	139	19	66	12	5	516	1	7	0	1	**780**
2020	15	145	23	70	14	7	541	2	8	0	1	**825**
2021	15	152	28	74	16	9	573	2	9	0	1	**880**
2022	15	160	33	79	19	12	607	3	10	0	1	**939**
2023	15	167	39	84	23	15	642	3	12	0	2	**1,002**
2024	15	176	46	89	26	18	680	4	13	0	2	**1,068**
2025	14	185	53	95	30	22	724	5	15	0	3	**1,146**
2026	14	195	62	102	35	26	770	6	16	0	3	**1,229**
2027	14	205	71	109	40	30	819	7	18	0	4	**1,318**
2028	13	216	81	117	45	36	872	8	21	0	4	**1,413**
2029	12	228	93	125	51	41	928	9	23	0	5	**1,515**
2030	12	244	107	136	59	49	1,003	11	26	0	6	**1,651**
2031	11	260	123	148	68	57	1,084	12	29	0	7	**1,799**
2032	9	278	142	161	78	66	1,172	14	33	0	8	**1,961**
2033	8	297	162	175	89	76	1,267	17	37	0	9	**2,137**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	6	317	185	190	101	88	1,369	19	42	0	11	**2,329**
2035	3	339	211	206	115	101	1,480	22	47	0	13	**2,538**
2036	1	362	240	224	131	116	1,599	25	53	0	14	**2,766**
2037	1	394	262	245	143	126	1,743	27	58	0	16	**3,014**
2038	1	429	285	266	155	138	1,899	30	63	0	17	**3,285**
2039	1	468	311	290	169	150	2,070	33	69	0	19	**3,579**
2040	1	510	339	316	185	164	2,255	36	75	0	20	**3,901**
2041	1	556	369	345	201	178	2,458	39	82	0	22	**4,251**
2042	1	606	402	376	219	194	2,679	42	89	0	24	**4,632**
2043	1	660	438	410	239	212	2,919	46	97	0	26	**5,048**
2044	1	719	477	446	260	231	3,181	50	106	0	29	**5,501**
2045	1	784	520	486	284	252	3,467	55	115	0	31	**5,995**
2046	1	854	567	530	309	274	3,778	60	125	0	34	**6,533**
2047	2	931	618	578	337	299	4,117	65	137	1	37	**7,120**
2048	2	1,014	673	630	367	326	4,487	71	149	1	40	**7,759**
2049	2	1,105	734	686	400	355	4,889	77	162	1	44	**8,456**
2050	2	1,205	800	748	436	387	5,328	84	177	1	48	**9,215**
2051	2	1,313	872	815	475	421	5,806	92	193	1	52	**10,042**
2052	2	1,431	950	888	518	459	6,328	100	210	1	57	**10,943**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053	3	1,559	1,035	968	564	500	6,896	109	229	1	62	**11,925**
2054	3	1,699	1,128	1,054	615	545	7,515	118	249	1	68	**12,996**
2055	3	1,852	1,229	1,149	670	594	8,189	129	272	1	74	**14,163**
2056	3	2,018	1,340	1,252	730	648	8,924	141	296	1	81	**15,434**
2057	4	2,199	1,460	1,365	796	706	9,726	153	323	1	88	**16,819**
2058	4	2,396	1,591	1,487	867	769	10,599	167	352	1	96	**18,329**
2059	4	2,612	1,734	1,621	945	838	11,550	182	383	1	104	**19,975**
2060	5	2,846	1,889	1,766	1,030	913	12,587	198	418	2	114	**21,768**
2061	5	3,101	2,059	1,925	1,123	995	13,717	216	455	2	124	**23,722**
2062	6	3,380	2,244	2,097	1,223	1,085	14,948	236	496	2	135	**25,851**
2063	6	3,683	2,445	2,286	1,333	1,182	16,290	257	540	2	147	**28,172**
2064	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2065	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2066	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2067	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2068	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2069	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**
2070	6	3,751	2,490	2,328	1,358	1,204	16,591	261	550	2	150	**28,692**

Scenario Four: Low Growth

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2016	15	123	9	56	6	-	445	-	5	-	-	**659**
2017	15	124	11	57	7	1	453	0	5	0	0	**674**
2018	15	126	13	58	8	2	461	0	6	0	0	**690**
2019	14	127	16	60	10	3	468	1	6	0	0	**705**
2020	14	128	18	61	11	5	477	1	7	0	1	**722**
2021	14	130	20	62	12	6	485	1	7	0	1	**738**
2022	13	131	23	64	14	7	493	2	8	0	1	**755**
2023	13	133	26	65	15	9	501	2	8	0	1	**773**
2024	13	134	29	66	16	10	510	2	9	0	1	**790**
2025	12	135	32	68	18	12	519	3	9	0	1	**808**
2026	12	137	35	69	20	13	528	3	10	0	2	**827**
2027	11	138	38	71	21	15	537	3	11	0	2	**846**
2028	11	139	41	72	23	17	546	4	11	0	2	**865**
2029	10	140	44	74	25	19	555	4	12	0	2	**885**
2030	10	142	48	75	27	20	564	4	13	0	3	**906**
2031	9	143	52	77	29	22	574	5	13	0	3	**926**
2032	8	144	56	78	31	24	583	5	14	0	3	**948**
2033	8	146	60	80	33	27	593	6	15	0	3	**970**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2034	7	147	64	82	35	29	603	6	15	0	4	**992**
2035	6	148	68	83	38	31	613	7	16	0	4	**1,015**
2036	6	149	73	85	40	34	623	7	17	0	4	**1,038**
2037	5	150	77	87	42	36	634	8	18	0	4	**1,062**
2038	4	151	82	89	45	39	644	8	19	0	5	**1,086**
2039	3	152	87	91	48	41	655	9	20	0	5	**1,111**
2040	2	153	92	93	50	44	666	10	21	0	5	**1,137**
2041	1	155	98	95	53	47	677	10	22	0	6	**1,163**
2042	0	155	103	96	56	50	688	11	23	0	6	**1,189**
2043	0	159	106	99	58	51	704	11	23	0	6	**1,217**
2044	0	163	108	101	59	52	720	11	24	0	6	**1,245**
2045	0	166	111	103	60	53	736	12	24	0	7	**1,273**
2046	0	170	113	106	62	55	753	12	25	0	7	**1,302**
2047	0	174	116	108	63	56	770	12	26	0	7	**1,332**
2048	0	178	118	111	65	57	788	12	26	0	7	**1,363**
2049	0	182	121	113	66	59	806	13	27	0	7	**1,394**
2050	0	186	124	116	68	60	825	13	27	0	7	**1,426**
2051	0	191	127	118	69	61	844	13	28	0	8	**1,459**
2052	0	195	130	121	71	63	863	14	29	0	8	**1,493**

Year	Primary/Rural	Manufacturing/Processing /Fabrication	Storage/Distribution	Service Industry	Shop/Retail	Other Retail	Office/Business	Health/Welfare/Community Services	Entertainment/Recreation/ Culture	Residential	Utilities/Communications	Total
2053	0	200	133	124	72	64	883	14	29	0	8	**1,527**
2054	0	204	136	127	74	66	903	14	30	0	8	**1,562**
2055	0	209	139	130	76	67	924	15	31	0	8	**1,598**
2056	0	214	142	133	77	69	945	15	31	0	9	**1,635**
2057	0	219	145	136	79	70	967	15	32	0	9	**1,672**
2058	0	224	148	139	81	72	989	16	33	0	9	**1,710**
2059	0	229	152	142	83	73	1,012	16	34	0	9	**1,750**
2060	0	234	155	145	85	75	1,035	16	34	0	9	**1,790**
2061	0	239	159	149	87	77	1,059	17	35	0	10	**1,831**
2062	0	245	163	152	89	79	1,083	17	36	0	10	**1,873**
2063	0	251	166	155	91	80	1,108	17	37	0	10	**1,916**
2064	0	256	170	159	93	82	1,133	18	38	0	10	**1,960**
2065	0	262	174	163	95	84	1,159	18	38	0	10	**2,005**
2066	0	268	178	166	97	86	1,186	19	39	0	11	**2,051**
2067	0	274	182	170	99	88	1,213	19	40	0	11	**2,098**
2068	0	281	186	174	102	90	1,241	20	41	0	11	**2,147**
2069	0	287	191	178	104	92	1,270	20	42	0	11	**2,196**
2070	0	294	195	182	106	94	1,299	20	43	0	12	**2,246**

Level 10 999 Hay Street
Perth WA 6000 Australia

61 8 6222 8222
advisory@ghd.com

Rev.No.	Author	Reviewer Name	Signature	Approved for Issue Name	Signature	Date
Draft A	Aaron Kosovich	Mark Case		Kym Petani		18/12/2019
Draft B	Aaron Kosovich	Lizzie O'Brien		Kym Petani		26/05/2020
Final	Aaron Kosovich	Lizzie O'Brien		Kym Petani		11/06/2020