



INDUSTRIAL LAND STEERING COMMITTEE

10-YEAR INDUSTRIAL LAND STRATEGY

June 2021

Industrial Lands Authority

Shaping our State's future



FOREWORD BY INDUSTRIAL LAND STEERING COMMITTEE

Industrial land plays a key role in the economic wellbeing of our towns, regions and benefits extend across the whole state. Having adequate supply of well-located industrial land across the state is just as important as making sure that necessary infrastructure is in place enabling industry to activate this land.

The Strategy has been developed with aim of providing recommendations on the priority infrastructure required to unlock industrial land across Western Australia over the next decade. The Strategy covers all types of industrial land – Strategic Industrial Areas (SIAs), General Industrial Areas (GIAs), and Technology Parks.

Industrial land infrastructure can be regulatory and physical. Regulatory processes generally refers to approvals, while physical infrastructure refers to material items, such as roads and other enabling services.

As well as identifying key infrastructure, the Strategy also demonstrates the positive economic contribution of industrial land and activity to the State.

With the impacts of the world-wide pandemic still filtering through the economies, it is clear that the demand for Western Australia's resources is expected to remain strong. The state is well placed to cater for the rise in renewable energy sector, while automation and robotics are changing the way that industrial estates are designed and operate. All these factors have been considered in the preparation of the Strategy.

The Strategy has been prepared in collaboration between Industrial Land Steering Committee agencies and is being presented to Infrastructure Western Australia to assist with the preparation of the State's first Infrastructure Strategy in 2021.



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EXECUTIVE SUMMARY

Industrial land is a vital component of a healthy, growing economy. Easy, efficient and affordable access and development of industrial land in Western Australia, helps to stimulate private sector investment, create jobs and drive economic growth.

Land access is vital for a broad range of sectors – from Western Australia’s mature resource and agribusiness industries to emerging sectors like renewable energy and automation technologies.

In order to be attractive to industry, it is important that industrial land is located strategically and is integrated with infrastructure. Planning for the development and long-term operation of industrial areas must be undertaken in a coordinated and sustainable manner

to ensure there is enough development-ready land to meet market demand and that it is supported by the necessary infrastructure.

The key purpose of the 10-Year Industrial Land Strategy (the Strategy) is to provide recommendations on the priority infrastructure required to unlock industrial land in Western Australia over the next decade.

The Strategy is state-wide and covers

all types of industrial land – Strategic Industrial Areas (SIAs), General Industrial Areas (GIAs), and Technology Parks.

The Strategy examines existing Regulatory (non-build) processes, such as approvals, and physical infrastructure, such as the construction of roads, and provides recommendations on the priority projects required to enable industrial land developments. It also demonstrates the positive economic contribution of industrial land and activity to the State.

KEY TERMS



Ashburton North SIA



Hedland Junction

SIAs: industrial land areas designed for investment in downstream processing and other strategic industrial activities. SIAs are strategically selected for their proximity to major resource projects and key infrastructure such as roads, rail and ports. They provide project-ready land with sufficient planning, environmental and infrastructure coordination to enable project certainty for industrial proponents.

GIAs: provide for a broad range of industrial, service and storage activities and are generally sold to private proponents. An adequate supply of appropriately serviced GIAs is crucial in enabling continued economic growth. GIAs play an integral role in regional economies, as many of the State’s large resource projects require supporting services usually located in GIAs.

Regulatory (non-build) infrastructure: agreements and approvals secured in advance of development, such as environmental approvals or Development Contribution Plans, which set out development contributions made by land developers by way of land, works, or payments towards the provision of infrastructure.

Physical infrastructure: the construction of infrastructure such as roads, power, water, gas and telecommunications to a standard required by the proponents that will eventually operate within the industrial estate.

THE EXISTING ENVIRONMENT

Industrial land facilitates activities that are crucial to Western Australia's economic prosperity.

The combined gross output of the 12 SIAs across the State in the 2018-19 financial year was over \$49 billion, contributing \$22 billion Gross State Product (GSP) or about 8 per cent of Western Australia's economy.

GIAs are equally significant contributors to employment within the Perth and Peel regions, and play an important role supporting the resources and agricultural sectors in regional Western Australia. For example, the Land Use and Employment Survey conducted by Department of Planning, Lands and Heritage (DPLH) indicates that more than 152,000 jobs were provided across 16 major industrial centres in Perth and Peel.

Industrial land in Western Australia is evolving as new industries establish themselves in the State, global trends influence existing projects and government policy responds as a result. Research has found local industrial areas need to be more responsive to the undercurrents shaping the way economies work and the emergence of new industries, such as automation and big data.

Industrial land is also expected to play a key role in Western Australia's economic recovery from COVID-19. During times of economic uncertainty, having an ample supply of industrial land and infrastructure is important to encourage businesses to establish operations and enable new industries to develop. In July 2020, the State Government launched the \$5.5 billion WA Recovery Plan to drive economic and social recovery across the State and create a pipeline of

jobs for Western Australians, including through investment in industrial land and industrial land facilities.

Business confidence and industrial sales activity have declined since the impacts of the pandemic were first felt in Australia in early 2020. However, it is expected global demand for Western Australia's resources exports is likely to increase as foreign governments use infrastructure projects to pull their economies out of recession. This is expected to have positive flow-on effects for Western Australia's resources sector and, as a result, demand for industrial land across the state.

Historically, the State Government, via DevelopmentWA, was the key provider of SIAs and GIAs in Western Australia. While the State Government continues to be the only provider of SIAs, in the early 2010's, DevelopmentWA (then LandCorp) began de-constraining large general industrial estates in 'outer ring' areas to allow the private sector to become more involved in the delivery of general industrial land across the Perth and Peel regions. The private sector responded and several industrial estates have since been delivered by private developers. DevelopmentWA research indicates the private sector has supplied about 80 per cent of general industrial land to the market in the last five years.

The infrastructure requirements for SIAs and GIAs differ, with SIAs generally requiring a foundation proponent to extend or establish initial infrastructure while GIAs are generally sold to private proponents already serviced with roads, power, water and sewer connections.

In recent years, industrial land developers have raised concerns

about the availability of well-located and developable general industrial land. The 'business as usual' approach of acquiring, developing and selling industrial lots has been challenged by fragmented land ownership and the high cost of production in a slow market. Development costs include delivering mandated infrastructure, such as roads, sewer and power upgrades, and fill and holding costs. Pre-development, State Government-funded contributions for infrastructure, as demonstrated at Forrestdale Business Park West, could be considered as a solution to help unlock general industrial land across Perth and Peel.

Recognising the importance industrial land plays in economic activity across the state, the State Government committed to \$50 million Industrial Land Development Fund as part of the 2021 State Election. The initiative will make funding available to create 'project-ready' general and strategic industrial land by funding the building of roads, installing power and water services or upgrades and delivering environmental and other regulatory approvals at Industrial Lands Authority estates across Western Australia.

The need for infrastructure upgrades around industrial estates has been identified by industry groups as one of the key barriers to successful industrial land delivery. The Urban Development Institute of Australia and the Property Council of Australia have identified the need for upgraded infrastructure and the pre-funding and coordination of Development Contribution Plans as critical for successful industrial land delivery in the Perth and Peel regions.

RECOMMENDATIONS

The Strategy provides 10 general recommendations to unlock industrial land in Western Australia over 10 years:

- 1) Strategic Industrial Areas: prioritise the finalisation of land assembly in accordance with Government's Strategic Industrial Area land assembly model.
- 2) Strategic Industrial Areas: develop an infrastructure funding model to attract foundation proponents and fund common use infrastructure or capacity upgrades in service infrastructure, subject to agreed funding principles and business case approval.
- 3) Strategic Industrial Area: Capitalise on Defence opportunities at the Australian Marine Complex to deliver major infrastructure upgrades.
- 4) General Industrial Areas: consider pre-funded development contribution plans for complex GIAs.
- 5) Existing industrial estates: protect existing industrial areas in the Perth and Peel regions from residential encroachment.
- 6) Road upgrades: progress recommended road upgrades to help activate constrained industrial land.
- 7) Sewer: provide sewers in existing general industrial estates and develop a new approach for the provision of sewers in future industrial areas.
- 8) Regional WA: support the development of enabling physical infrastructure in regional WA to facilitate the establishment of new industries.
- 9) Regional WA: continue the Regional Development Assistance Program's work, especially in the Wheatbelt, to facilitate serviced light industrial land.
- 10) Technology parks: develop an agreed state-wide approach for the establishment and ongoing management of Technology Parks, including ensuring they are provided with the required enabling physical infrastructure.

The Strategy also provides a list of recommended priority physical infrastructure projects and regulatory (non-build) processes upgrades (pages 58 – 63) to be activated over the next ten years.

TYPES OF INDUSTRIAL INFRASTRUCTURE RELEVANT TO RECOMMENDATIONS

INDUSTRIAL LAND	KEY PHYSICAL INFRASTRUCTURE	KEY REGULATORY PROCESSES
SIAs	<ul style="list-style-type: none"> • Entrance roads and intersections • Rail connections • Infrastructure corridors (common-user and multi-user) • Gas network offtakes • Water Servicing – potable, process and waste • Power 	<ul style="list-style-type: none"> • Planning approvals • Environmental approvals • Native title and aboriginal heritage • Tenure – resolve pastoral, mining and other tenure • Acquisition and protection of industrial core, buffer and infrastructure corridors
GIAs	<ul style="list-style-type: none"> • Linking industrial estates to freight corridors (metro and regional) • Grade separated intersections • Sewer (existing industrial metro) • Power • Water upgrades (regional WA) • Public transport • Telecommunications 	<ul style="list-style-type: none"> • Planning approvals • Environmental approvals • Development Contribution Plan • Native title • Tenure • Investment attraction activities
Technology Parks	<ul style="list-style-type: none"> • Telecommunications • Public Transport • Parking • State-wide approach to Technology Parks 	<ul style="list-style-type: none"> • Investment attraction activities

PURPOSE, SCOPE AND OBJECTIVES OF THE STRATEGY

An innovative, whole-of-government approach is required to drive economic diversification and jobs growth, particularly in relation to the activation of industrial land.

Recognising this, the Industrial Lands Steering Committee (ILSC) was formed to bring together the key government agencies responsible for delivering industrial land. The ILSC consists of:

- Department of Jobs, Tourism, Science and Innovation (Chair)
- Department of Transport
- Department of Primary Industries and Regional Development
- Department of Planning, Lands and Heritage (DPLH)
- DevelopmentWA (via its Industrial Lands Authority business unit)

Advising the Western Australian Government on infrastructure priorities for industrial land matters is a specific focus area for the committee. In keeping with this focus, the Strategy will be submitted to Infrastructure WA to highlight the key infrastructure requirements for industrial areas across the state.

Both regulatory and physical infrastructure help to stimulate new industrial land developments and rejuvenate existing industrial areas. Not all infrastructure needs to be delivered in the early phases of an industrial land development with some infrastructure, such as road upgrades, able to be staged and delivered as required. However, it is important for strategic infrastructure planning to occur early to avoid the need for infrastructure to be retrofitted in the future.

The Strategy seeks to advise Infrastructure WA on the prioritisation of infrastructure to unlock industrial land in Western Australia over 10 years. The Strategy has been developed by ILSC agencies using desktop research, broad stakeholder engagement and regular cross-agency strategy meetings. The Strategy will act as an input into Infrastructure WA's expected State Infrastructure Strategy, with the aim of helping to bridge the gap between Western Australia's infrastructure priorities and its strategic goals for industrial land development.

PURPOSE

To identify and prioritise the 10 year physical infrastructure and regulatory process requirements to unlock priority strategic and general industrial land across the State.

OBJECTIVES

The key objectives of the 10-Year Industrial Land Strategy are:

1. To identify and prioritise the key infrastructure needed to activate industrial land across Western Australia, including both regulatory and physical infrastructure
2. To demonstrate the economic contribution of industrial land and activity to the State;
3. To demonstrate the benefits of delivering identified infrastructure priorities.

SCOPE

In addition to the key high-level objectives, the Strategy:

- Includes an overview of the current status of industrial land across the State, including an overview for each of the regions (including Perth and Peel);
- Considers relevant state government policy and the current external environment.
- Defines what 'project ready' means for each of these industrial land types;
- Identifies infrastructure needs and prioritisation across all types of industrial land: SIA, GIA, and Technology Parks;

BACKGROUND:

INDUSTRIAL LAND AND ITS IMPORTANCE



Flinders Precinct, Latitude 32

WHAT IS INDUSTRIAL LAND?

There are three distinctive types of industrial land:

- Strategic Industrial Areas;
- General (or Light) Industrial Land;
- Technology (or Business) Parks

Table 1 provides a summary of different industrial land typologies and the activity that occurs on each.

Table 1: Industrial Land Types

INDUSTRIAL TYPOLOGIES AND LOCATION CRITERIA

INDUSTRY TYPOLOGY

ACTIVITY

LOCATION CRITERIA

1. STRATEGIC INDUSTRIAL AREAS

- Industrial activities of significant economic and strategic importance to the State
- Strategic, value-adding activities such as downstream resource processing that represent new segments of key industrial value chains.
- Industries likely to have off-site impacts such as major hazard risk, light, noise, odour or emissions
- These industries generate significant investment and employment

- Large land areas required
- On major transmission (electricity and gas) infrastructure networks
- Road access by heavy vehicles
- Direct port connection – via road or rail
- Close to major population centre to source employees and ancillary general industrial needs
- Sufficient separation distances between sensitive uses, such as residential, and industry through an established buffer

2. GENERAL INDUSTRIAL – DISTRICT ESTATES AND SPECIAL USE SITES OF LOCAL SIGNIFICANCE. ESTATES WITH SMALL TO MODERATE SIZED INDUSTRIES.

- Consumer and business orientation
- Provide goods and services to regional, state and international markets
- Not hazardous or offensive
- Can include business parks, offices, local services, fabrication and manufacturing
- Limited bulky goods showroom

- Access to key freight routes, including Over Size over Mass network as well as the freight rail network
- Potable and processing water, sewer/land for waste water disposal, electricity, other energy (food and metal processing are heavy water users and may require associated recycling facilities)
- Large, skilled workforce catchment
- Moderate to large, relatively flat sites – any processing is land intensive
- Potential for large amounts of onsite storage



INDUSTRIAL TYPOLOGIES AND LOCATION CRITERIA

INDUSTRY TYPOLOGY

ACTIVITY

LOCATION CRITERIA

- WAREHOUSING AND DISTRIBUTION

- Storage and display of goods, including wholesale
- May be hyper-large sites dependent upon scope of operation
- Trend towards automated goods handling and smart buildings
- Trend towards dedicated distribution parks (see logistics below)

- Road and rail freight routes
- Proximity to strategic and regional centres
- Close to centres of population and trade
- Areas where there is minimal impact on neighbouring uses but do not require major buffers or separation zones
- Due to nature of operations, need for sites to be as flat as possible, allowing for large buildings with maximum accessibility for handling vehicles
- Large sites, large lots, can be multi-storey
- Large hardstand areas and ample parking (staff, customers & delivery vehicles)

- TRANSPORT AND LOGISTICS

- Transport and courier depot and services
- Distribution centre
- Packaging, parts and services
- Disposal, recycling
- Material management
- Geared towards high technology/smart automated systems
- Likely to need expansion to be identified as later phases of sequential development

- Good access to airport and/or seaport
- Interstate, inter-regional arterial roads, rail freight
- Very large sites (could be greater than 200 hectares),
- Very large lots (possibly 9,000m² minimum)
- Large hardstand areas and parking sites
- Links to warehousing sites
- All utilities including ICT networks

3. SPECIAL INDUSTRIAL & TECHNOLOGY PARK

- A specialised location for scientific and technological research and development activities
- May include production, manufacturing and assembly of products

- Proximity to strategic and regional centres
- Close to centres of population and trade
- Proximity to public transport
- In proximity of research and scientific facilities (e.g. universities)
- All utilities including ICT networks

4. LIGHT / COMMERCIAL

- LOCAL LIGHT AND SERVICE INDUSTRIAL ESTATES. GENERALLY HAVE SMALL SCALE OPERATIONS WHICH DON'T NORMALLY REQUIRE LAND USE BUFFERS

- Consumer oriented (e.g. household goods and clothing)
- Manufacturing which uses partially processed materials to make products
- Showroom and services

- Highly accessible, visible frontage, transport/activity corridors, some residential locations
- Very close to centres of population and trade
- Areas where there is minimal impact on neighbouring uses but do not require major buffers of separation zones
- Local employment catchment



WHY IS INDUSTRIAL LAND IMPORTANT?

Industrial land is instrumental in driving jobs and growth in Western Australia and therefore forms a vital part of the social fabric and economic prosperity of the State. Ensuring an adequate supply of strategic and well-serviced industrial land is critical in underpinning the industries that drive our State – from large resources projects and new technology centres to small businesses in regional towns.

STRATEGIC INDUSTRIAL AREAS

SIAs are significant economic drivers for Western Australia. The combined gross output of the 12 SIAs across the State with industrial operations in the 2018–19 financial year was \$48.6 billion, contributing \$22 billion to Gross State Product (GSP). This represented approximately 8 per cent of Western Australia’s economy. The SIAs were responsible for the direct full time

employment of 18,190 people.

The Burrup SIA delivered the greatest impact for the State at over \$9 billion GSP, followed by Kwinana, Ashburton North and Kemerton, with impacts ranging from \$5.5 billion to \$1.1 billion GSP.

There has been a significant increase in demand for SIAs in the last five years

driven by a range of global and local factors. A number of major industrial projects were under construction in Kemerton and Kwinana during the 2018–19 financial year. When the facilities are operational, expected in 2023–24, direct full-time employment is estimated to increase by an additional 1,749 people.

Table 2: All SIAs – Total Economic Impacts

INDICATOR	UNIT	CURRENT OPERATING IMPACT (2018–19)	ADDITIONAL OPERATING IMPACT (2023–24)	CONSTRUCTION IMPACT (2018–19)
 Gross output (turnover)	\$ million	48,603	2,428	761
 GRP	\$ million	22,156	-1640	435
 Income	\$ million	5,883	76	218
 Employment	FTEs	18,190	1,749	2,409

Note: GRP in this instance is equivalent to Gross State Product – that is the region of interest is the State of Western Australia (Synergies 2020).



GENERAL INDUSTRIAL AREAS

GIAs are significant contributors to employment within the Perth and Peel regions, and play an important role supporting the resources and agricultural sectors in regional Western Australia.

GIAs have an intrinsic link to the economic strength and sustainability of a region. Many of the large resource projects scattered around the state require supporting services, usually located in regional towns, such as Karratha, Newman, Port Hedland and Kalgoorlie. DevelopmentWA, through ILA, remains the key provider of GIAs in these towns, especially in the north of the State. In addition to supporting the resources sector, general and light industrial land play a crucial role in supporting the activities of agriculture, tourism and manufacturing across regional Western Australia.

Contribution to Perth and Peel

The Land Use and Employment Survey conducted by the State Government indicates that more than 152,000 jobs were provided across 16 major industrial centres in Perth and Peel. The Kewdale/ Welshpool Industrial precinct accounted for 17 per cent of all industrial centre employment, with Malaga, Perth Airport and Wangara acting as the other major employment areas.

Table 3: Employment by Industrial Centre – Perth & Peel

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

Strong population growth and a concentration of jobs in the Central sub-region of Perth, particularly the central business district, is placing significant pressure on transport networks. Creating employment opportunities close to where people live is essential to help reduce congestion and long commutes which impact on quality of life, environmental sustainability and the economy.

Employment self-sufficiency is a measure of the number of jobs in a defined area compared to the number of working aged population. The self-sufficiency score for the sub-regions of Perth can be improved through better integration of land use planning and transport networks, particularly around activity centres and station precincts. Improving employment self-sufficiency across the Perth and Peel regions will require the creation of employment opportunities that match the skill sets of the various labour forces. The activation of industrial land plays an important role in addressing this challenge. Employment self-sufficiency is projected to improve most strongly in the South Metropolitan Peel and North-West sub-regions, with little or no change in the North-East and Central sub-regions to 2050.

Table 4: Self-sufficiency – Perth & Peel @3.5

REGION	SELF SUFFICIENCY – 2011	SELF SUFFICIENCY – 2050
Central	139%	139%
North West	49.2%	59.2%
North East	80.3%	85.5%
South Metro & Peel	59%	74%

Regional General and Light Industry Land

Regional Western Australian communities are serviced by general industrial land areas that have been developed in response to demand. In most towns, stocks of general industrial land are currently sufficient however, due to the cyclical nature of resource projects, which are often key drivers of demand for industrial land, additional industrial land needs to be planned

for. DevelopmentWA has been working to de-constrain future regional general industrial land supply over the past decade, especially in the north-west of the State. With the decrease in resource sector construction activity and population growth in recent years, demand for general industrial land has weakened.



WHO SUPPLIES INDUSTRIAL LAND?

Historically, the State Government, via DevelopmentWA, was the key provider of SIAs and GIAs across the state. While the State Government continues to be the only provider of SIAs, in the early 2010's, DevelopmentWA (then LandCorp) began de-constraining large general industrial estates in 'outer ring' areas including Neerabup, Peel Business Park and Latitude 32, to allow the private sector to become more involved in the delivery of general industrial land across the Perth and Peel regions. The private sector responded, and several industrial estates have been delivered by private developers, including Northlink Industrial Park in Wangara, Landsdale Industrial, Tonkin Highway Industrial Park, Roe Highway Industrial Estate in Kenwick and Swan Brewery Industrial Park in Canning Vale. Smaller scale industrial projects have also been delivered in Hazelmere, Malaga and Jandakot. DevelopmentWA research indicates

the private sector has supplied approximately 80 per cent of general industrial land to the market in the last five years.

Despite this, in recent years, industrial land developers have raised concerns about the availability of well-located and developable general industrial land. The 'business as usual' approach of acquiring, developing and selling industrial lots has been challenged by fragmented land ownership and the high cost of production in a slow market. Development costs include delivering mandated infrastructure, such as roads, sewer and power upgrades, and fill and holding costs. Pre-development, State Government-funded contributions for infrastructure, as demonstrated at Forrestdale Business Park West, could be considered as a solution to help unlock general industrial land across Perth and Peel.

CONTEXT:

THE EXISTING ENVIRONMENT AND EMERGING TRENDS

The industrial land environment is evolving as new industries establish themselves in Western Australia, global trends influence existing projects and government policy responds as a result.

The COVID-19 pandemic has also had an impact on the industrial land sector, encouraging the WA Government to invest in the sector, and others, to help stabilise the economy. Prior to the pandemic, the world was already experiencing social, economic and environmental change at an unprecedented rate. In response, and

to moderate the economic impact of cyclical mining investment and develop new industries and jobs, the WA Government has focused on the diversification of the state economy.

While iron ore currently dominates mining production, the mining and processing of metals such as

lithium are areas of potential future investment and employment growth. The WA Government is also targeting growth in other sectors including defence, advanced manufacturing and agribusiness, which all have industrial land requirements.



WA'S EMERGING INDUSTRIES

Automation and robotics are changing the way that businesses operate and interact and this has an impact on industrial land, from a planning perspective and in terms of infrastructure delivery. Advancements in technology have resulted in solutions with greater flexibility, capability and productivity.

Automation and robotics are changing the way that businesses operate and interact and this has an impact on industrial land, from a planning perspective and in terms of infrastructure delivery. Advancements in technology have resulted in solutions with greater flexibility, capability and productivity.

SIAs have seen a significant increase in demand in the last 5 years driven by a range of global and local factors. For example, the rise in demand for lithium, which is commonly used in electric vehicles and battery storage, has led to the construction of two new processing facilities by producers Tianqi Lithium at the Kwinana SIA and

Albemarle Lithium at the Kemerton SIA. Both facilities will process spodumene from the Greenbushes mine in the South-West which until now directly exported to other global markets without further downstream processing. A third lithium refinery facility is proposed by Covalent Lithium for the Kwinana SIA. This increase in demand is a result of global producers seeking downstream processing facilities in stable, sustainable and ethical jurisdictions.

Some examples of emerging industries in Western Australia include:

- **Pawsey Supercomputing Centre in Bentley Technology Park** – an unincorporated joint venture between CSIRO, Curtin University, Edith Cowan University, Murdoch University and The University of Western Australia. It is supported by the Western Australian and Federal Governments. The Centre is one of two, tier-one, high-performance computing facilities in Australia, whose primary function is to accelerate scientific research for the benefit of the nation.
- **Australian Automation and Robotics Precinct at Neerabup** – DevelopmentWA is proposing to develop a 94-hectare piece of land north of the Neerabup industrial estate to facilitate the creation of the Australian Automation and Robotics Precinct. The Precinct will act as an advanced technology cluster to promote, develop, test and train in autonomous and robotic equipment for the energy and resources sector. This facility will also have application for the space, defence, agricultural and health industries.
- **WesTrac Technology Training Facility in Collie** – the only Caterpillar Autonomous Training Facility in the world outside of Caterpillar's own testing and training ground in Arizona, USA. The facility will be developed on land owned by Bluewaters Farm Holdings in Collie's Coolangatta Industrial Estate.
- **Hydrogen in Denham** – Western Australia's technical expertise in the installation and deployment of stand-alone power systems has positioned the State to consider deploying hydrogen energy systems. The coastal town of Denham is the first regional town where the capability of hydrogen as a future renewable energy source is being tested. Denham's current energy assets, including its diesel facility and wind farm, are ageing and in need of replacement. Horizon Power is considering a new power solution comprised of a solar farm, hydrogen fuel cells and storage tanks and a lithium-ion battery.

- **Industry 4.0 test-labs** – The Australian Government has established five Industry 4.0 test-labs to support Australian businesses to integrate new technologies into their operations and take advantage of the opportunities arising from Industry 4.0. The UWA I4.0 ERDi Test-lab is a collaboration between the University of Western Australia, the Department of Industry, Innovation and Science, AMIRA International, Enterprise Transformation Partners

and South Metropolitan TAFE. The test-lab has been established to enable the widespread adoption of technologies including autonomous robots, simulation technology, systems integration, cyber security and big data in Australia's energy and resources sectors. The lab is designed to attract global technology suppliers seeking to build, test and certify their technologies against international standards.

- **The Agri-Innovation Precinct (AIP)** – to be developed by the Shire of Murray at Peel Business Park and will include common-use infrastructure to accommodate high technology food production, value-added processing and university-led research and development, including science laboratories, food product, research and small batch production facilities, offices and co-working spaces, cold and dry storage and warehousing, packaging and distribution and incubator space.

CASE STUDY – CATHODE ACTIVE MATERIAL MANUFACTURING

Western Australia has demonstrated its capability to supply raw minerals and attract investment in battery minerals processing, particularly in the Kwinana and Rockingham Strategic Industrial Areas.

Now the WA Government, as part of its implementation of the Future Battery Industry Strategy, is pursuing the next logical stage of the value chain: precursor cathode active materials manufacturing (P-CAM).

The availability of industrial land within the Rockingham Strategic Industrial Area has the following key advantages to attract a P-CAM manufacturing plant:

- Proximity to key chemical reagent supply
- Proximity to key inputs such as nickel-sulphate required for precursor, as well as lithium hydroxide

for future investments in cathode

- Availability of industrial scale water, power, and gas
- Established road, rail and port infrastructure
- Access to highly skilled and experienced workforce within a short driving distance.

A P-CAM manufacturing plant will also benefit from the industrial synergies offered by a range of existing globally competitive industrial companies already involved in the global battery supply chain such as BHP Nickel West, Tianqi Lithium, Covalent Lithium as well as local Western

Australian companies such as Coogee Chemicals.

A P-CAM manufacturing plant will also benefit from the established supply chains of other major mineral processing and chemical manufacturing operations in the Kwinana and Rockingham strategic industrial areas.

Development of a local P-CAM industry will create jobs and diversify the economy, as well as potentially unlocking opportunities to move further along the value chain.





CASE STUDY – INDUSTRY 4.0

Industry 4.0 (or the fourth Industrial Revolution) is transforming how industries and businesses operate worldwide, including in Western Australia.

Industry 4.0 refers to the rapid technological change disrupting businesses across all industries and uses transformative technologies to connect the physical world with the digital world. It provides a prime opportunity for Australia to invest in leading manufacturing processes – for example, by enabling bespoke products to be created efficiently at high speed.

Forces driving the digital transformation include the “Internet of Things” (IoT); acceleration (advances in technology); convergence; and individualisation (the creation of digital identities).

Trends of Industry 4.0 include artificial intelligence (AI) and machine learning; sensor technology and data analytics; advanced materials; additive manufacturing (3D printing); advanced automation and robotics; augmented and virtual reality; and machine-to machine and human-to-machine communication.

CSIRO estimates Australian industry needs up to 161,000 new specialist AI workers by 2030 in machine learning, computer vision, natural language processing and other AI technologies to support the demand from industry and create the products and exports of future economies.

From an industrial land perspective, many industries in Australia are now investing in automated warehouses with the aim of lowering supply chain costs. This will lead to reduced employee density in traditional industrial settings and a shift in employee skills, with less manual labour and greater skilled employment.

Industry 4.0 will redefine how Australians live and work as well as the social fabric of communities.



THE MEGATRENDS SHAPING OUR ECONOMY

In 2019, DevelopmentWA commissioned PwC to investigate the impact of 'megatrends' on industry and industrial land in Western Australia over the next 20 years.

Megatrends are global forces of change that impact business, the economy, society, cultures and individual lives, and define our future world.

The resulting research report, 'Global trends and the impact on industry and industrial land in Western Australia 2020-2040', was finalised in February 2020 and identified eight major global megatrends that will have an impact on industrial land demand and use in Western Australia:

- Industry 4.0;
- Sustainable and Smart Cities;

- Growth in renewable resource industries to combat pollution and emissions, and the development of a circular economy;
- Demand for 'clean' food for a growing urban population;
- The Asian Century;
- A shift towards a knowledge economy, changing how and where people work;
- Transport redefined – changing the way people and services move;
- Empowered Consumers – changing consumer demands.

To address these trends, industrial areas need to be more responsive to the undercurrents shaping the way economies work. Some recommended responses for consideration include:

Make industrial land more flexible for future industry and jobs

Employment will become more flexible as technology allows a shift away from traditional working arrangements and employees seek jobs that facilitate their other life commitments, with more work likely to be done from residential areas and through co-working spaces.

Robotics and automation are expected to create industrial estates with lower job densities than current estates. This trend is more likely in outer-metropolitan industrial areas. These areas will still require significant freight transport connections, but the emphasis on employee amenity will reduce.

Demand for high job density office-style Technology Parks will grow. Centrally located industrial areas will be under pressure to blend industrial, residential and commercial uses and provide greater employee amenity. They are also likely to intensify in activity as they undergo a gradual renewal.

The trend of consumers having greater power in product development and purchasing will continue. Coupled with the increase in online retail spending, supply chains will be under pressure. This will lead to increased demand for smaller, inner-city distribution centres spread throughout the city.

Integrate tertiary education and training into industrial areas

Rapid automation and robotics will demand workers with specific skills for monitoring and servicing. Tailored education and training providers are needed for this new workforce, presenting an opportunity for industrial land to connect industry with education and training providers.

Create common-use space and infrastructure

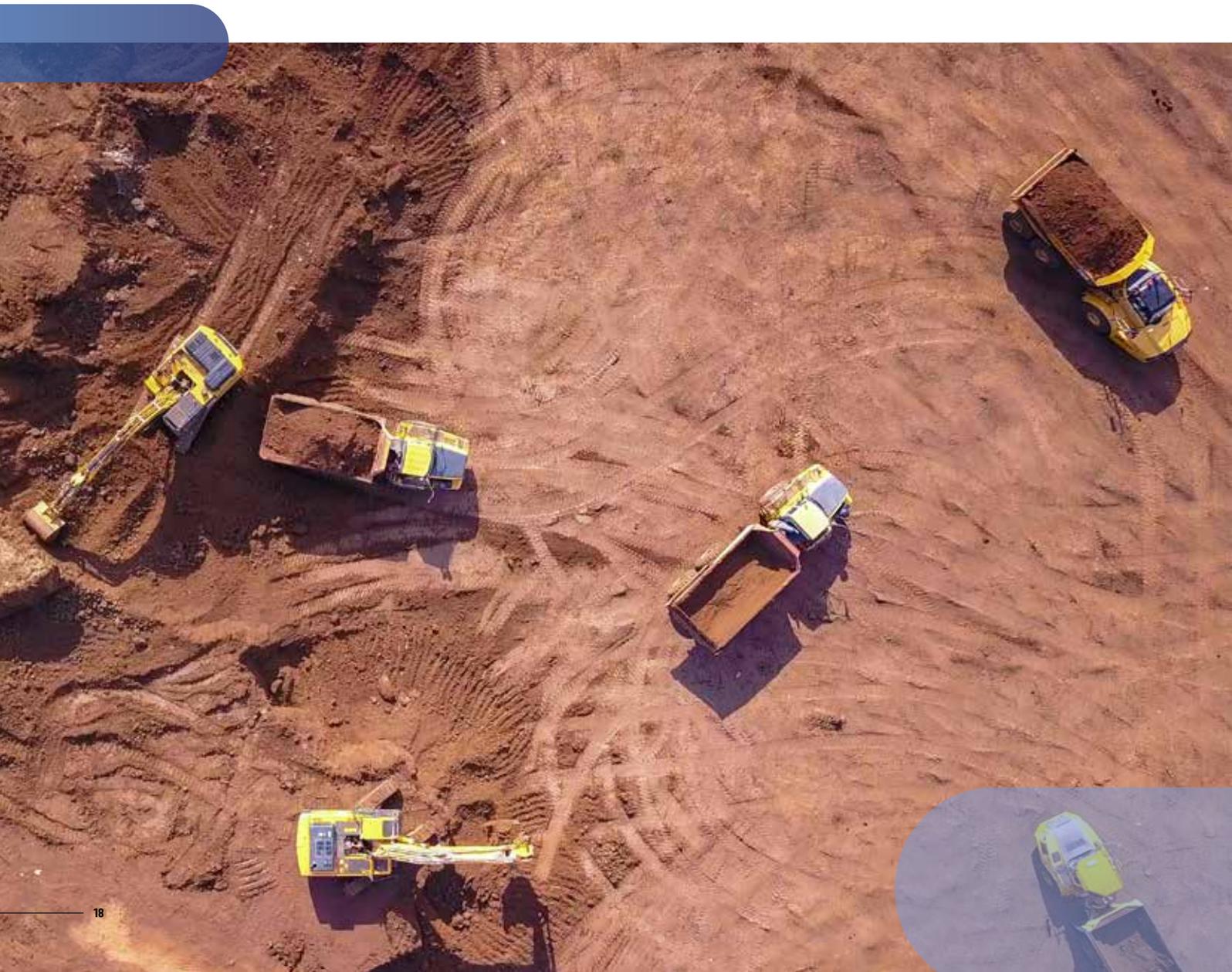
There is a global shift towards the sharing economy, where individuals rent or borrow their resources to others for a fee. Although not new for industrial areas, adoption is not yet widespread. New industrial buildings will need to be adaptable and have common-use spaces and infrastructure.

Position WA industrial areas as ethical, clean and green

Social media has empowered consumers to demand transparency and ethical behaviour in raw material use and supply chain management. WA's highly ethical food production industry and associated chain of custody is well positioned to respond to this demand. Industrial areas can also be positioned as ethical, clean and green.

Increase readiness for resource processing

As the population becomes increasingly concerned with sustainability and businesses look to become self-sustaining, industrial estates will need to adapt to match. On-site energy generation, waste disposal and recycling, and water collection and recycling are some of the key features likely to become the norm in industrial estates.



THE IMPACT OF COVID-19 ON INDUSTRIAL LAND

The COVID-19 pandemic undermined Western Australia's economy, like most global economies, but the State's response has positioned us to rebound faster and stronger than first expected.

In July 2020, the State Government launched the \$5.5 billion WA Recovery Plan to drive economic and social recovery across the State and create a pipeline of jobs for Western Australians. The investment will target industry sectors such as construction, manufacturing, tourism and hospitality, renewable energy, education and training, agriculture, mining and conservation.

The Recovery Plan included investment in industrial land and industrial land facilities, including infrastructure investment at the Australian Marine Complex in Henderson, investment in the establishment of the Robotics and Automation Centre at the Neerabup Industrial Estate, provision of serviced general industrial land at Kemerton Strategic Industrial Area and road upgrades at the Boodarie Strategic Industrial Area.

The COVID-19 pandemic highlighted the important role of industrial land and activities in servicing Australian cities, especially during unprecedented times. Despite this, the sector was affected in several ways. The impacts of the COVID-19 pandemic could result in months, possibly years, of operational disruption to domestic and global supply chains and, as a result, the use of associated infrastructure such as ports and airports. Certain sectors and industries continued to perform well under the conditions, including grocery, pharmaceutical, e-commerce, and transport and logistics occupiers, while

others sectors such as manufacturing and wholesalers were challenged as supply from offshore markets was disrupted.

COVID-19 has changed the investment landscape and will likely reshape how industrial occupiers operate. The pandemic has caused significant disruptions to global supply chains and as a result, industrial occupiers are increasingly focusing on supply chain management and considering ways to adapt their supply chains to become more resilient in the case of a future event.

The initial impact of the COVID-19 pandemic on the industrial land market can be classified in three key trends:

- In-shoring — specifically the manufacturing of medical products and pharmaceuticals. It is unlikely to flow-on to other sectors;
- Increase in inventory levels — especially of food and white goods resulting in demand for warehousing and cold storage; and
- High-Spec Warehousing — predominantly for automation, high-tech and cold storage.

Some of the medium-term trends expected to impact industrial areas are:

- Institutional investors are likely to turn their attention to industrial land, rather than residential or commercial, with banks looking favourably at the industrial class of property due to better returns. This could in turn drive demand for well-located industrial properties.
- Secondary industrial estates, such as those located in the outer suburbs

and not on linked to transport infrastructure, could be adversely affected as businesses seek to locate close to population centres.

- Improvements in communication technologies, such as teleconferencing, could lead large firms to relocate their offices and staff to business parks or industrial areas outside the Perth Central Business District to reduce operating costs.
- Discretionary retailers down-sizing and being replaced by large Distribution Centres in industrial areas, like the DFO Outlet at Perth Airport.
- Businesses shifting to low-rise buildings in industrial and business. With social distancing in place for the foreseeable future, lower density office space could be in higher demand.
- Construction is likely to be pre-commitment only, especially for the e-commerce and logistics sectors. Securing tenants in advance will be crucial for new developments. The more speculative developments are likely to be limited due to economic conditions and will also need to be flexible to cater for a variety of uses.
- The return of manufacturing in certain areas, such as medical equipment. Labour costs are likely to remain a hurdle for the return of manufacturing in other sectors.

The longer-term impacts of the COVID-19 pandemic on the industrial land market remain largely unknown.

RELEVANT GOVERNMENT POLICY

INFRASTRUCTURE WA - STATE INFRASTRUCTURE STRATEGY

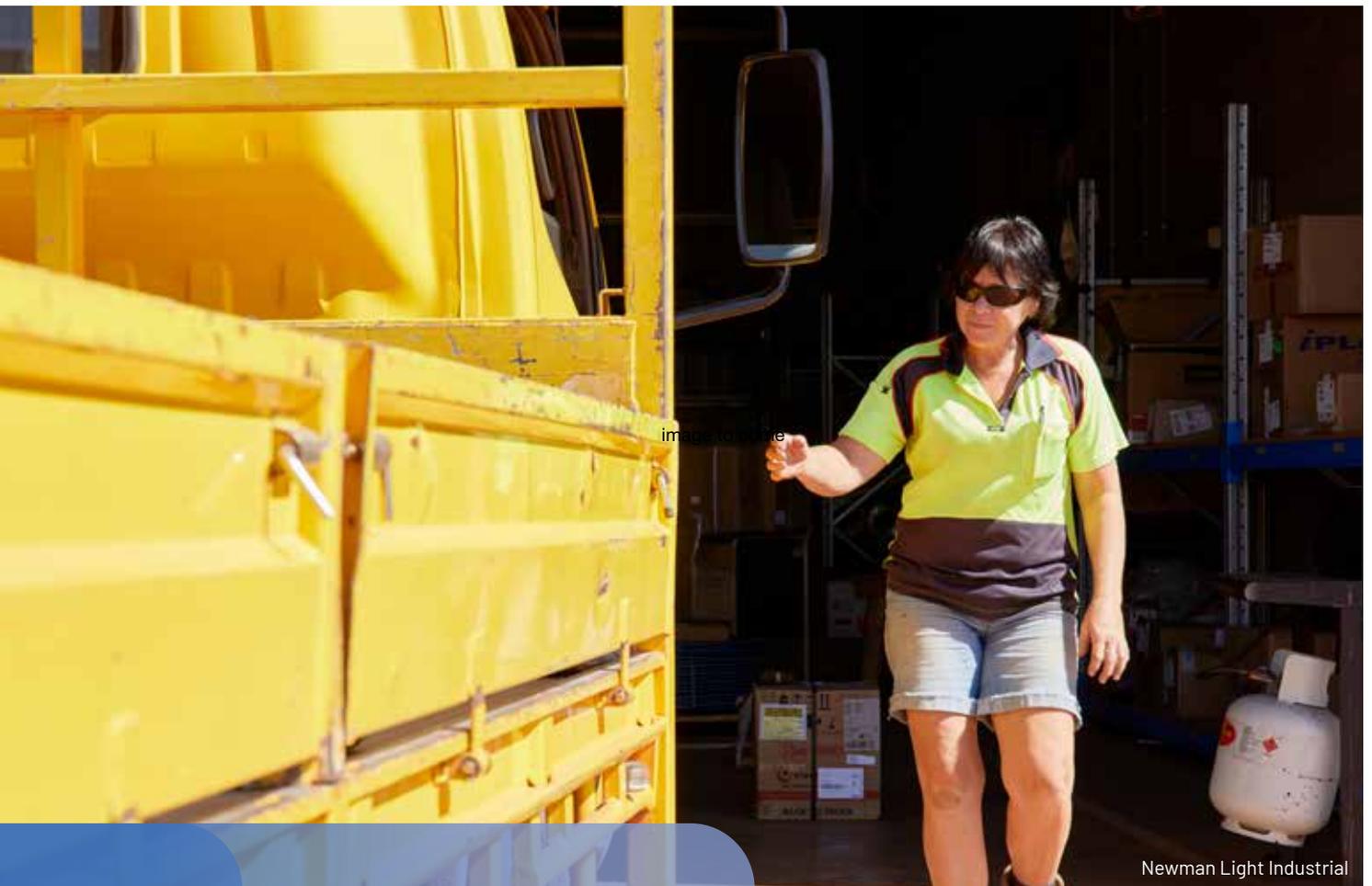
The formation of Infrastructure WA in 2019 to provide expert advice and assistance to the WA Government on a range of infrastructure matters provides a vehicle for industrial land infrastructure requirements identified by the ILSC to be formally adopted as government priorities. The *Infrastructure Western Australia*

Act 2019, sets out the functions and responsibilities of Infrastructure WA, some of which include:

- Delivery of a State Infrastructure Strategy addressing infrastructure needs and priorities for the next 20 years;
- Assessing major public infrastructure proposals;
- Coordinating the provision of information and submissions to

Infrastructure Australia (under the direction of the Premier).

The Strategy represents an opportunity to highlight to the WA Government the importance of industrial land as a key input into economic growth, particularly in the post COVID-19 economic recovery. It is crucial the State Infrastructure Strategy recognises the importance of industrial land in delivering jobs and economic growth in Western Australia.



Newman Light Industrial

STRATEGIC INDUSTRIAL AREAS

SIAs are delivered by the Department of Jobs, Tourism, Science and Innovation (JTSI) as the lead policy agency for the State Government, with DevelopmentWA, via its Industrial Lands Authority (ILA), as the estate manager. JTSI and the ILA work together to obtain funding and undertake land assembly activities to de-constrain SIAs and make them ready for lease to major downstream processing or strategic industries. Infrastructure provision is often planned but historically not provided in advance, either due to cost and/or uncertainty about a proponent's needs.

PERTH & PEEL @ 3.5 MILLION

In March 2018, the State Government released *Perth and Peel @ 3.5 million* [P&P@3.5m], a whole-of-government suite of strategic land use planning and infrastructure documents, including four sub-regional planning frameworks (Frameworks) published by the Western Australian Planning Commission. The Frameworks provide high level strategic direction in terms of land use, jobs and infrastructure for a city of 3.5 million people. The Frameworks anticipate an additional 800,000 new dwellings by 2050, with 380,000 of these within existing developed areas, creating a compact and connected city, making best use of existing and proposed infrastructure, and protecting important environmental assets. The Frameworks provide a level of certainty about the amount

of land required, its locations, and intended use, including for residential, commercial and industrial development, as well as addressing employment self-sufficiency, transport and infrastructure considerations.

The individual land use and infrastructure frameworks for the Central, North West, North East and South Metropolitan Peel sub-regions identify existing and future industrial land to accommodate projected demand for Perth and Peel as a whole, taking into consideration constraints (e.g., environmental and basic raw materials). This is based on projected consumption rates of industrial land. Strategic industrial centres identified in the Frameworks include Kwinana SIA, Wagerup, Pinjarra and Kewdale/Welshpool, with a further 32 existing industrial centres across all sub-regions. The Frameworks consider servicing and transport/freight infrastructure needed to support and encourage investment into industrial land and strongly support the protection of employment land from encroachment of competing and incompatible land uses.

Improved utilisation of industrial land through access to existing and proposed transportation infrastructure (including freight) is important, with the Frameworks identifying infrastructure staging, projects and timelines. For the sub-regions with lower employment self-sufficiency, such as the North West and the South East sector of the South Metropolitan Peel sub-regions, it is critical that employment opportunities focus on key industries that encourage people to live and work within the same sub-region.

The Frameworks provide Industrial Investigation and Industrial Expansion areas and 'key considerations' for these locations. They also identify Planning Investigation Areas, which could lead to the identification of additional industrial land if deemed suitable and necessary. The Frameworks have a 30-year timeframe, with the first review expected to commence in 2021. The review of the Frameworks presents an opportunity to ensure that the provision of industrial land and the staging of associated infrastructure remains current and aligns with Infrastructure WA's State Infrastructure Strategy.

STRATEGIC INDUSTRIAL HUB

As part of the State Election in 2021, the State Government committed to the establishment of a Strategic Industrial Hub over the Western Trade Coast industrial zone south of the Perth CBD. The existing industrial precincts, including Henderson, Latitude 32, Kwinana and Rockingham Industry Zone will become a dedicated hub for high-tech manufacturing. The State Government has committed to developing an overarching Master Plan to coordinate a range of government activity currently underway in the area, including AMC infrastructure upgrades and the Westport planning process.

It is anticipated that the Master Plan will focus on four key themes:

Land and infrastructure:

- including the establishment of a strategic planning framework, planning authority approvals process, land assembly, delivery

and key infrastructure projects, including synergies with Westport.

- Industry development and diversification:
 - including Defence, Defence industries, Future Battery Industries, hydrogen and LNG sectors, and resources.
- Investment and trade attraction:
 - including synergies with the Future Battery Industry Strategy, other industry assistance and grants, investment and trade attraction, and communication strategy.
- Skills and workforce capability:
 - including skills reform, and jobs and workforce development.

This work will be led by the Department of Jobs, Tourism, Science and Innovation, working with Development WA, other key state government agencies and industry stakeholders.

DIVERSIFY WA

To support Western Australia's Economic Development, the State Government launched the Diversify WA Framework in July 2019. The framework's vision for Western Australia to have 'a strong and diversified economy delivering secure, quality jobs through increased investment across a broad range of industries.

Diversify WA matches Western Australia's competitive strengths to global megatrends, identifying six priority economic sectors as the keys to

building a more resilient, sustainable and stronger economy:

- Energy
- Tourism, events and creative industries
- International education
- Mining, mining engineering and technical services
- Technology and advanced manufacturing
- Primary industries

FUTURE BATTERY INDUSTRY STRATEGY

The WA Government developed the 'Future Battery Industry Strategy for Western Australia' aimed at growing Western Australia's future battery industry and transforming it into a significant source of economic development, diversification, jobs and skills. Furthermore, in support of the lithium industry, the Future Battery Industries Cooperative Research Centre (FBICRC) was established in Perth in 2019. The FBICRC provides industry-led research capability to grow Australia's competitiveness and contribution in the global battery industries value chain.

RENEWABLE HYDROGEN STRATEGY

Hydrogen is presenting as an emerging technology that will play an important part in Western Australia's energy future. The WA Renewable Hydrogen Strategy

was launched by the State Government in July 2019 and set out the strategic focus areas for the development of the industry in Western Australia. Numerous projects have since been launched, including a plan for the coastal town of Denham to be the first regional town where the capability of hydrogen as a future renewable energy source is being tested. In September 2020, the WA Government called for expressions of interest from commercial groups interested in producing renewable hydrogen at the Oakajee SIA.

WESTPORT

In August 2020, the WA Government endorsed the independent Westport Taskforce's recommended location and design for a future container port at Kwinana to meet Western Australia's long-term freight needs. The recommendations included a land-backed port to be built within the Kwinana Industrial Area, connected by an uninterrupted freight corridor via Anketell Road and Tonkin Highway. The ILSC engaged closely with the Westport Taskforce to gain a full understanding of the impacts of the new port on existing and future industrial estates. The Taskforce recommended two options for the timing of the move – either transitioning from Fremantle to Kwinana gradually while operating two ports in parallel for a period, or moving trade from Fremantle to Kwinana in one step.

ROAD

Road infrastructure upgrades will be needed to help facilitate forecast future traffic, including port freight movements. These will include a potential major redesign of the Anketell Road corridor which could see it become a four-lane divided freight corridor between the coast and Tonkin Highway, creating an unrestricted 100km/hour link to outer urban freight hubs. A purpose-built road freight corridor will allow the new port facility to operate more efficiently without the constraints that currently impact the Fremantle Inner Harbour.

RAIL

Rail upgrades under investigation include duplication of a 13km section of track between Kwinana and Cockburn and a marshalling yard at Kwinana. An upgraded rail network could support at least 1.7 million Twenty-foot Equivalent Unit (TEU) and also provide efficiencies for bulk freight traffic servicing export berths and industrial facilities in Kwinana. A further advantage of these upgrades would be the operational flexibility they would provide, which would help the rail system provide low-cost freight options to its users. The majority of container freight transported by rail utilises the Forrestfield Intermodal Terminal, which is approaching operational capacity.

INTERMODAL TERMINALS

Supply chain infrastructure is being planned to efficiently distribute up to 2.6 million TEUs by road and up to 1.2 million TEUs via rail by 2068. To handle this volume on rail, a network of efficient Intermodal Terminals (IMTs) is required in Western Australia. Under this model,

containers would be loaded onto rail at the port and moved to various IMTs around Perth and the regions where they are unloaded and trucked a short distance to their destination. Western Australia is currently in the early stages of developing its metropolitan and regional IMT network to handle greater volumes, at speed and with improved reliability. The new port and upgraded rail corridors will be the catalyst for investment in new IMTs and capacity improvements at existing facilities.

The new port and the related upgrades to road and rail infrastructure have the potential to significantly change the industrial market profile in the Perth and Peel regions. They also have the potential to open-up Latitude 32 as a location for a variety of transport and logistics users to establish their operations. It is therefore important that when considering road and rail upgrades, their interface with Latitude32 is considered. The full extent and specific nature of these infrastructure upgrades will be determined during the next stage of Westport's work and will be subject to environmental approvals.

TRANSPORT STRATEGIES

In June 2020, the State Government released the 'Revitalising Agricultural Region Freight Strategy' (RARF) and the 'Draft South-West Supply Chain Strategy' (SWSC). The RARF Strategy provides a framework for government and private investment in road, rail and intermodal projects in the key agricultural regions of the Mid-West, Wheatbelt, Great Southern and Goldfields-Esperance. \$200 million in combined Commonwealth and State funding has



been allocated to key RARF projects under the WA Agricultural Supply Chain Improvements initiative. The draft SWSC identifies future road, rail, air and port infrastructure requirements in the South West region over the next 10 to 15 years, focusing on key freight supply chains in the region. Both strategies seek to improve the efficiency of freight road and rail infrastructure, which will likely provide benefits to industrial estates in their respective regions.



RESEARCH:

OVERVIEW OF INDUSTRIAL LAND AND INFRASTRUCTURE AND FUTURE REQUIREMENTS

INDUSTRIAL MARKET IN WESTERN AUSTRALIA

The demand for industrial land across the Perth metropolitan and Peel regions is closely linked to the State's significant export and export-related industries. Western Australia experienced unprecedented economic growth over the decade to 2014.

In 2003–04, the mining industry accounted for less than one fifth of the State's GDP, growing to over one-third in 2010–11 at the peak of the mining boom. This rapid growth in the mining industry saw benefits flow through to other industries, particularly construction and manufacturing.

Following the end of the mining boom, the State's economy experienced a substantial downturn, largely due to a sharp reduction in resource sector investment and the associated

departure of workers from interstate and overseas. The flow-on effects of these contractions had profound implications for the industrial market. The industrial market across Perth and Peel, and other regional centres, has been subdued for a significant period.

Business investment is a key driver of the State's economic growth with increased business investment leading to growth in employment, labour force and population, and eventually demand for industrial land. Over the past decade, business

investment has varied substantially. Investment surged in the 2010–11 and 2012–13 financial years as a result of high commodity prices and heavy investment in the resource sector, particularly LNG and iron ore. This was followed by a significant decline in business investment in the second half of the decade.

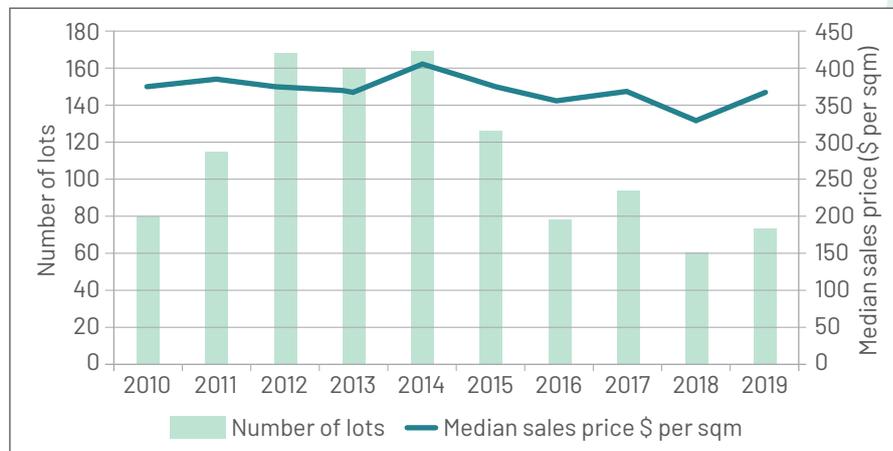
The median price per square metre is a useful indicator of the value and therefore demand for industrial land. Both the number of industrial lot sales as well as the value of industrial land

per square metre has generally declined from 2014 onwards. In 2019, Perth and Peel recorded a median sales price of \$360 per square metre. The number of industrial lot sales in 2019 decreased by approximately two thirds compared to the volume of transactions in 2014. After several years of decline, in 2019 industrial land values (\$ per m²) experienced an increase of 11 per cent.

Research reveals a sufficient supply of vacant, serviced, industrial land available on the open market. In October 2020, there were 289 developed general industrial lots on the market in Perth and Peel, with a total area of more than 228 hectares. The data indicates that there was a noticeable increase in land on the market in Perth and Peel over 2020, especially in the outer industrial estates, and there was a noticeable decrease in availability of general industrial land in the central sub-region, as lots at the Tonkin Estate in Ashfield and the Swan Brewery Estate in Canning Vale sold out. In the current market, the key factors to enable the sale of industrial land are competitive asking prices and strategic location, according to industrial real estate agents.

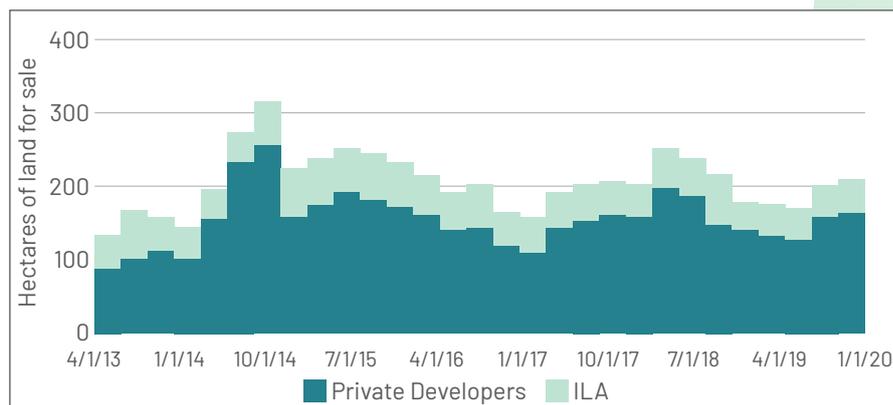
Business confidence and industrial sales activity has declined since the impacts of the pandemic were first felt in Australia in early 2020. However, it is expected global demand for Western Australia's resources exports is likely to increase as foreign governments use infrastructure projects to pull their economies out of recession. This is expected to have positive flow-on effects for Western Australia's resources sector and, as a result, demand for industrial land across the state. Furthermore, the sudden and rapid increase in e-commerce during the pandemic had led to the increased

Chart 1 – Value of industrial lots per m², Perth and Peel, 2010 to 2019



Source: Landgate (2019)

Chart 2 – Total industrial land on the market – Perth & Peel (ha)



Sources: Industrial Lots for Sale Report' by 'Tamrico Nominees Industrial Consultants'

uptake of warehousing space in the State's industrial market.

Larger regional centres have sufficient supply of general industrial land, including Broome, Karratha, Port Hedland, Geraldton, Albany and Bunbury. Lack of demand remains the key issue in these areas, with exception of Karratha where resources projects continue to generate some demand. Supply in Kalgoorlie and Newman remains constrained by native title resolution. Kalgoorlie has limited stock, about one to two years, of light industrial land available on the market, while Newman has no developed land on the market.

KIMBERLEY REGION

Due to its remoteness, the Kimberley region faces unique challenges. The region's economy relies on a limited number of primary economic sectors, so broadening and diversifying the existing economic base is the key for future growth. The region is a net exporter of goods and services so any diversification strategy needs to focus on making the region less susceptible to the uncertainties of global commodity prices.

The provision of 'enabling' infrastructure, including adequate power capacity, adequate transport facilities, such as roads, ports, airports, and sufficient land zoned and serviced for light industrial and commercial uses, is key for economic diversification and growth in the Kimberley region.

The region's transport infrastructure will continue to play a crucial role in facilitating economic growth by providing connections to State, interstate and overseas markets. At present, there is no rail network, which places greater pressure on the region's roads. There is a need to build resilience in the road network which can be severely impacted during the wet season. The region's key industrial areas are located in the major centres of Broome, Kununurra, Wyndham and Derby.

BROWSE LNG PRECINCT (SIA)

The Browse LNG Precinct is located 60km north of Broome and is currently limited in purpose to the processing of offshore gas reserves, such as the Browse Basin gas reserves. It is designed for up to four processing facilities with a port connection. Land assembly is largely complete but there is no infrastructure as the proponents for which the SIA was intended are pursuing other development opportunities. Until

further demand for the SIA is identified or approved uses widened, there is no need for further approvals or physical infrastructure.

GENERAL INDUSTRIAL

The key general industrial estate within the region is the 412ha Broome Road Industrial Park, which has been designed to service Broome and the West Kimberley region. In addition to developed industrial land, Kimberley Ports Authority (KPA) has land available for lease in the Port precinct for strategic port uses, and the proposed Kimberley Marine Supply Base.

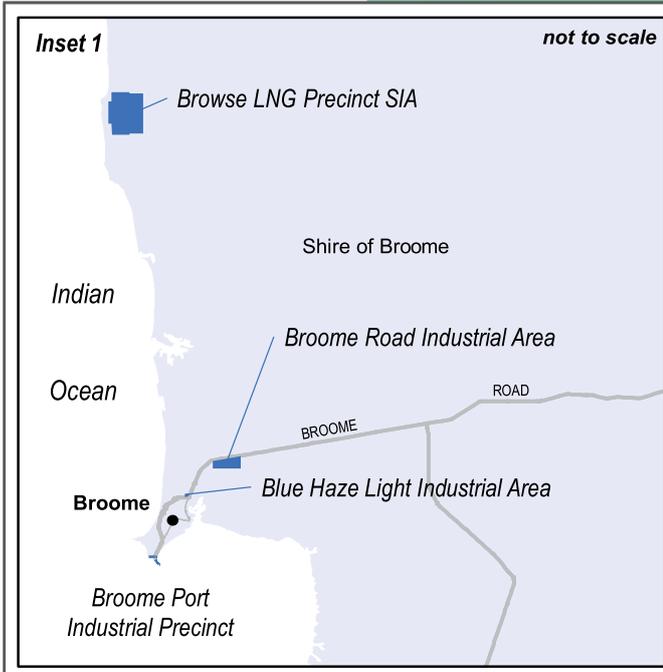
Other GIAs within the Kimberley Region include:

- Broome's Blue Haze Light Industrial Area;
- Broome Port Industrial Precinct;

- Kununurra Light Industrial;
- Derby Light Industrial & Derby Port Precinct;
- Wyndham Light Industrial & Port Precinct.

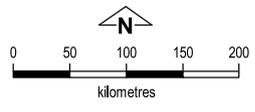
There is currently ample supply of both developed, ready and future identified land in Broome, Kununurra, Derby and Wyndham. Depending on future demand for industrial land in the Wyndham and Derby Ports, future upgrades to road access for heavy vehicles could be considered.





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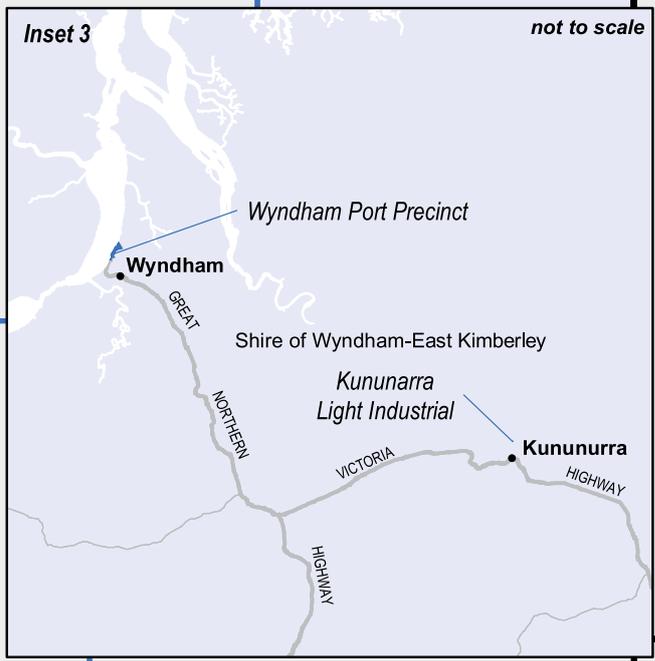
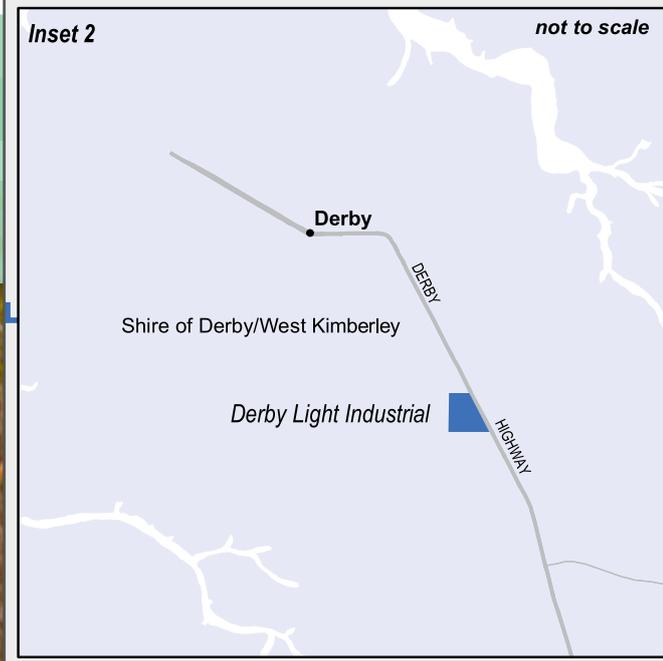
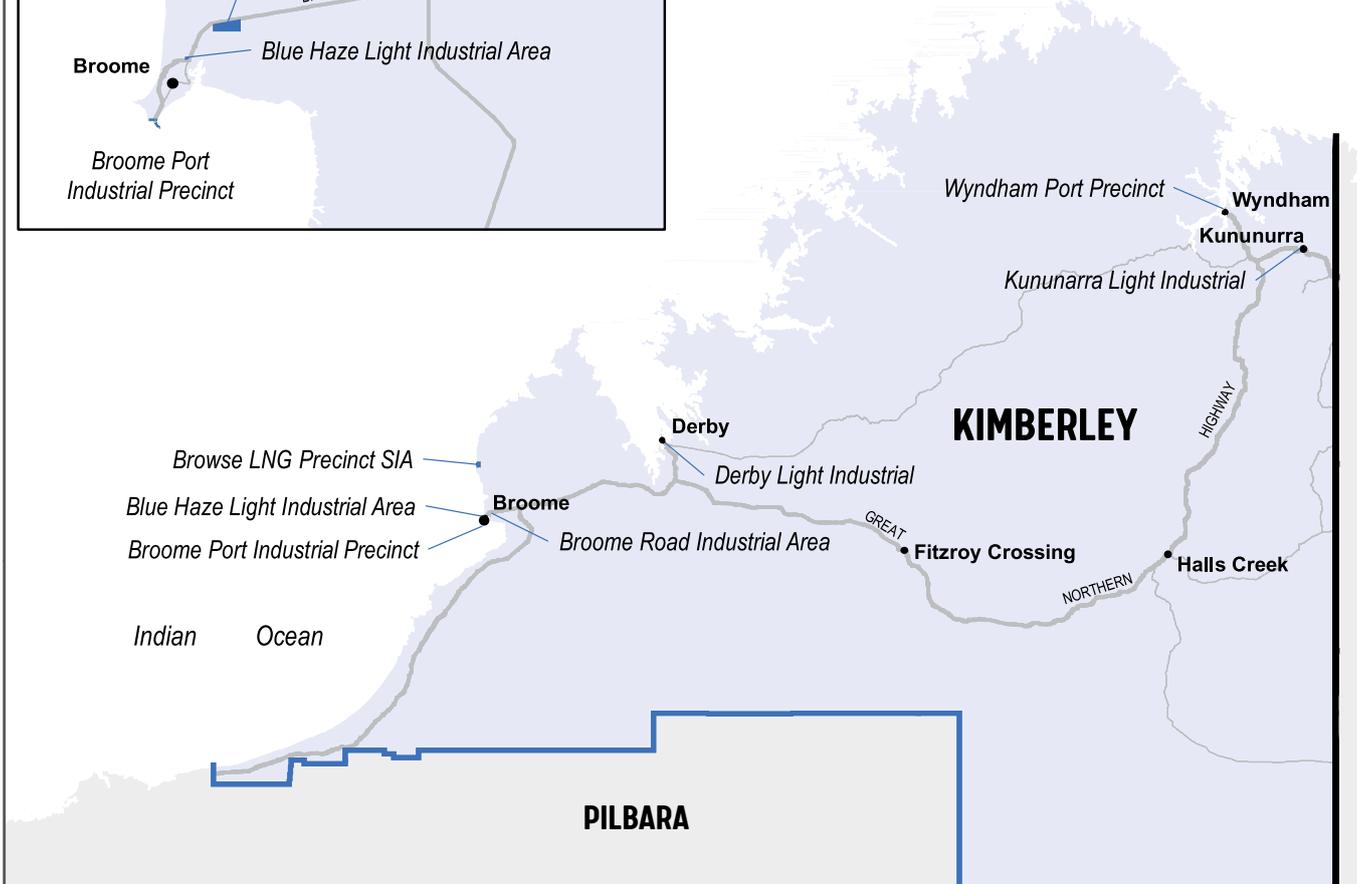
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PILBARA REGION

Mining, construction and exports dominate the Pilbara region's economy. The Pilbara is the state's mining powerhouse and makes a significant contribution to Australia's national economic prosperity. Its iron ore and liquefied natural gas industries were valued at over \$70 billion in 2019/20, representing more than 70 per cent of mineral and energy production in Western Australia.



In addition to the resources industry, the region attracts tourists through its unique and internationally recognised natural features, as well as a high number of visitors in the region linked to mining, construction and travel for business. One of the key issues in developing industrial land in the Pilbara is the cost of fill required to elevate industrial land, often located in low lying areas which are prone to flooding.

Most of the industrial areas across the Pilbara's key centres – Karratha, Port Hedland and Newman – accommodate support services to the region's mining industry.

BOODARIE SIA

The Boodarie SIA includes 4,000ha of strategic industry-zoned land with an established industry protection zone. It is located 12km south-east of Port Hedland and 4km west of South Hedland. It connects directly with south west creek in Port Hedland Port via a planned infrastructure corridor. Current proponents are the Alinta and TransAlta gas fired power plants. DevelopmentWA owns approximately 80ha of land available for immediate lease while the balance of the estate requires the resolution native title, pastoral lease and mining tenure across the strategic industry zone, infrastructure corridors and industry protection zone to be project ready.

DevelopmentWA will commence construction on a \$10.5M upgrade of the Boodarie Station access road intersection with Great Northern Highway in 2021. This will future proof the intersection with acceleration lanes in both directions to account for future heavy vehicle traffic. The project will seal the first one to two kilometers of Boodarie Station access road.

ANKETELL SIA

The Anketell SIA is 600ha of strategic industry zoned land with an established industry protection zone located 30 km north-east of Karratha. It is a green-field estate with no proponents and connects directly with the proposed Anketell Port via a planned infrastructure corridor. DevelopmentWA owns the entire strategic industry zone which is available for immediate lease but the estate requires major infrastructure investment. The area was designed primarily for iron export proponents which have not proceeded to date and which would have developed the necessary foundation rail and port infrastructure.

BURRUP SIA

The Burrup SIA is a series of sites zoned for strategic industry on the Burrup Peninsula, 20km north-west of Karratha. The SIA connects directly to the Dampier Port via a constructed service corridor. Current proponents include the Karratha LNG Gas Plant, Pluto LNG Plant, Yara Fertilisers and the Yara Technical Ammonia Plant. As of January 2021, there is 120 hectares across two sites available for development, with

three sites under option to lease by proponents, including the Perdaman urea project which requires significant upgrades to the wharf, process water and new road infrastructure to proceed. Outside of specific proponent needs, the Burrup SIA is considered project ready but is increasingly limited for development due to the presence of significant Aboriginal rock art.

MAITLAND SIA

The Maitland SIA is 2,500ha of strategic industry-zoned land with an established industry protection zone located 24km south west of Karratha. The SIA connects with the Dampier Port via a 35km planned service corridor which has become physically constrained due to the significance of Rock Art on the Burrup peninsular and the proliferation of infrastructure and State Agreement tenure across the Burrup Causeway. Key infrastructure gaps for Maitland include power, process and waste water servicing along with a suitable intersection and entrance road off North-West Coastal highway. The only established proponent is the EDL mini-LNG Gas Plant. A portion of the strategic industry zone and industry

protection zone is under option to lease by a proponent. Native title and pastoral lease interests are required to be resolved across the strategic industry zone, service corridor and industry protection zone.

ASHBURTON NORTH SIA

The Ashburton North SIA is approximately 2,000ha of strategic industry-zoned land with an established industry protection zone located 11km west of Onslow. The SIA connects directly with the Onslow Port via service corridors. Current proponents are the Wheatstone LNG Gas Plant and BHP Macedon Domestic Gas Plant. Several other sites are available for lease and are under consideration by proponents. Native title and pastoral lease tenure are required to be resolved across the strategic industry zone and industry protection zone. Wharf export facilities, additional roads, process water and power infrastructure may also be required to be established by future proponents.



Ashburton SIA

GENERAL INDUSTRIAL

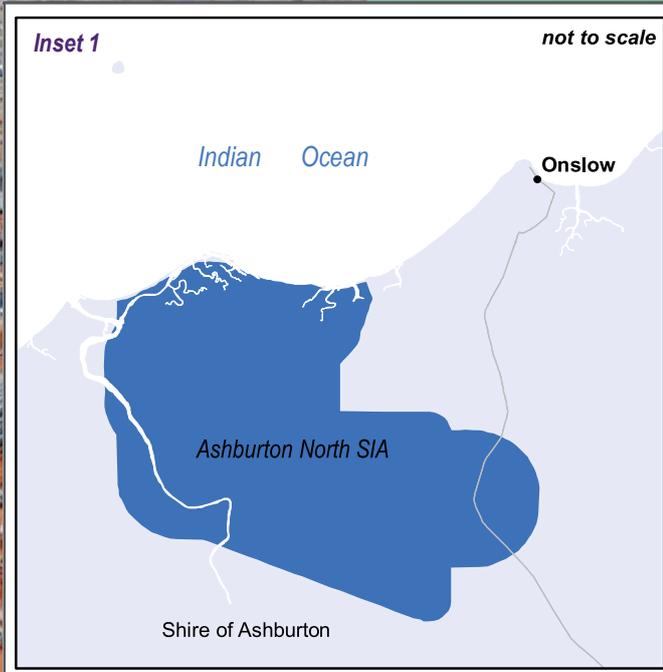
Key General Industrial Areas within Pilbara include:

- Port Hedland – Wedgefield Industrial Estate;
- Kingsford Business Park;
- Karratha – Gap Ridge General Industrial Estate;
- Karratha Light Industrial Area; and
- Newman Light Industrial

Gap Ridge General Industrial Estate is designed for all sizes of general and light industry for transport and logistics, lay-down and warehousing businesses supporting the oil, gas and mining sectors as well as major industries situated in the Burrup Peninsula. A heavy use sub-precinct is also included within estate to allow for clustering of high impact industrial uses, whilst ensuring separation is maintained with low-impact uses.

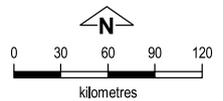
A variety of lots are available at Wedgefield Industrial Estate, with further stages to be brought to the market as demand arises. In total, DevelopmentWA will develop the multi stage release of approximately 90ha of light industrial land and some 190ha of general industrial/transport development land, depending on demand. Wedgefield has good access for heavy vehicles.

The Pilbara currently has a significant amount of developed industrial land on the market, as well as land in both Port Hedland and Karratha that is ready to be developed if demand increases. Newman remains an issue, with unresolved native title currently constraining the development of the next stage of the Newman Light Industrial Area.



Legend

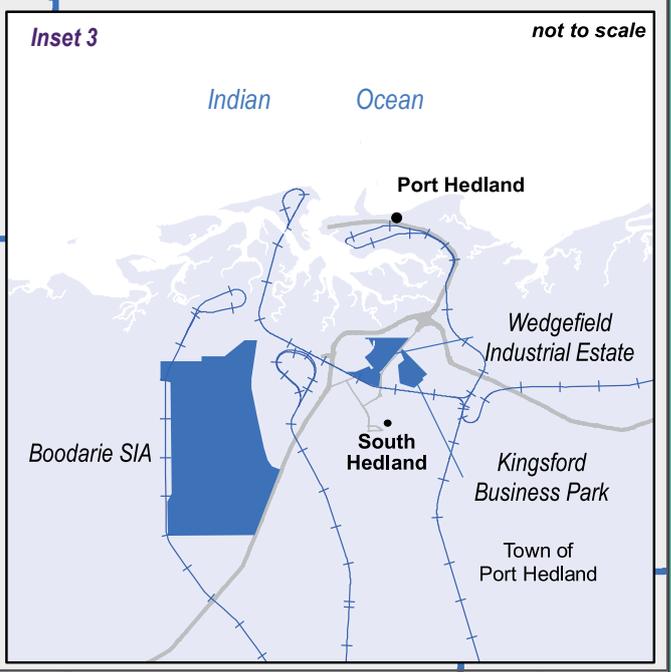
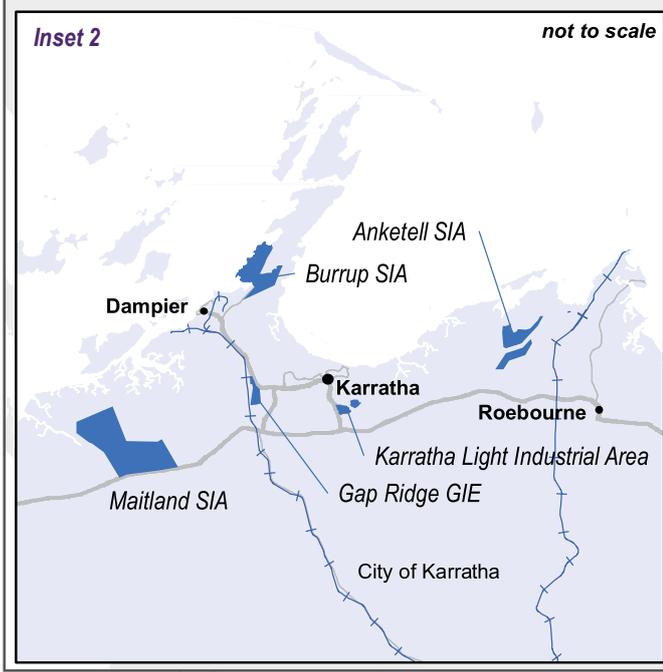
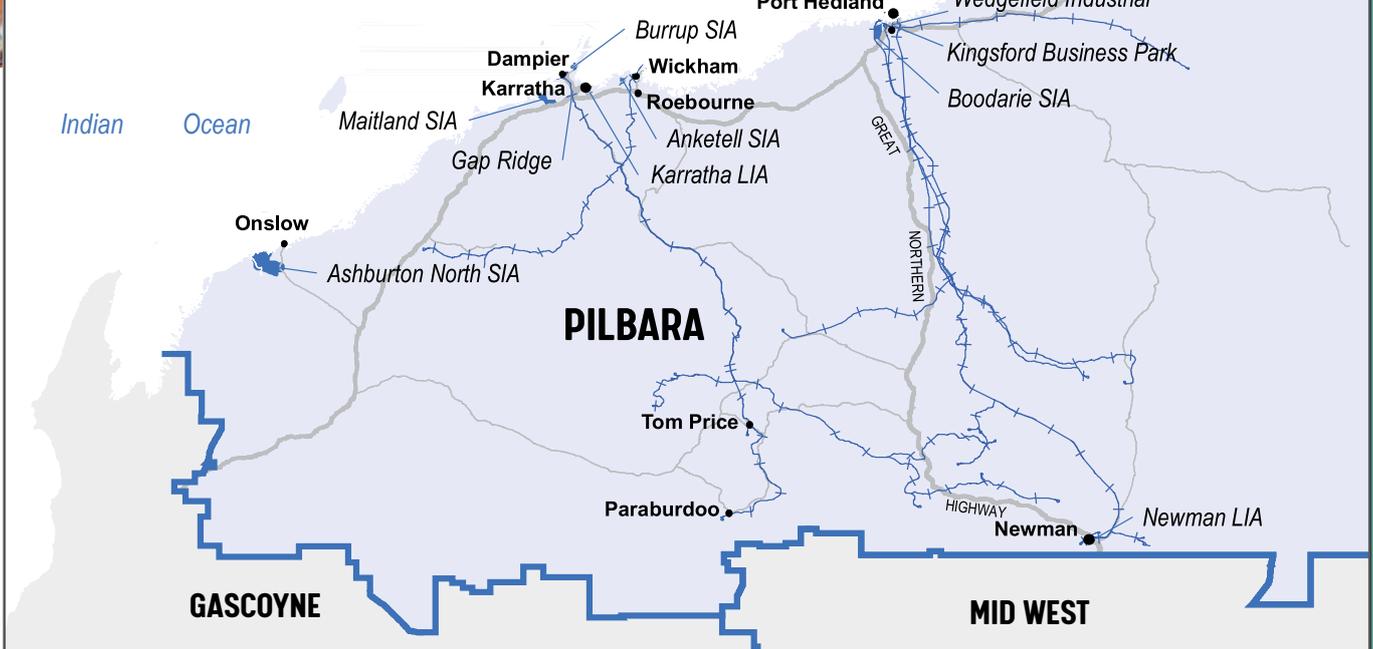
- Major town
- Town
- Industrial areas
- +—+—+ Freight
- Primary road
- Secondary road
- Planning region boundary



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GASCOYNE REGION

The Gascoyne region is Western Australia's least populated region, with the key economic drivers being tourism and agriculture. The region is home to the World Heritage-listed Ningaloo Reef and 84 per cent of its land mass has pastoral leases over it. With a population of less than 10,000, the region contributes 0.5 per cent towards Western Australia's GSP.

The key regional centres are:

- Carnarvon, a regional food-bowl. Its horticultural district is considered as the best-managed irrigation district in Australia.
- Exmouth - initially established as town to support the Harold E Holt Naval Base, Exmouth has become a tourist hot-spot and developed a significant fishing industry.

There are no SIAs within the Gascoyne region.

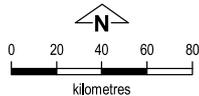
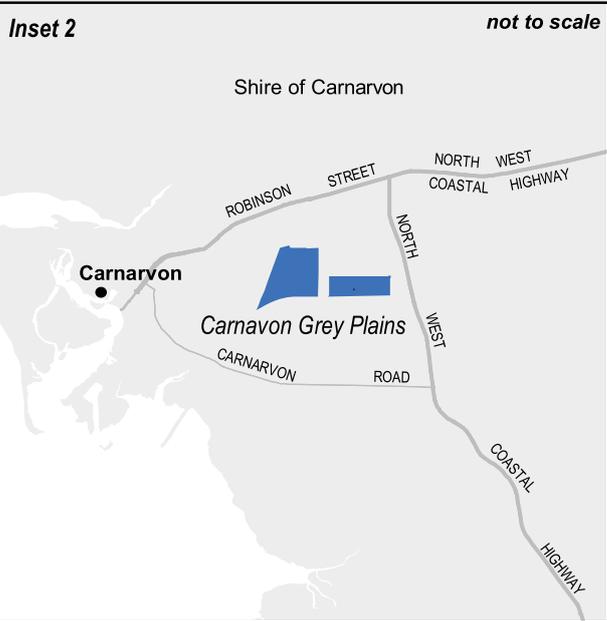
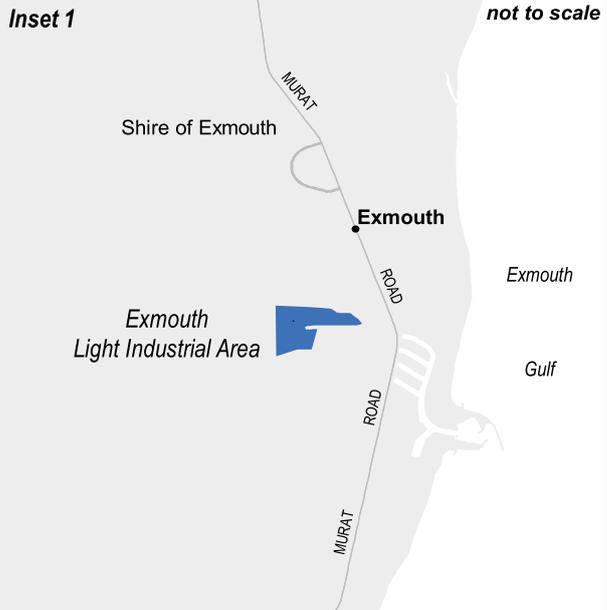
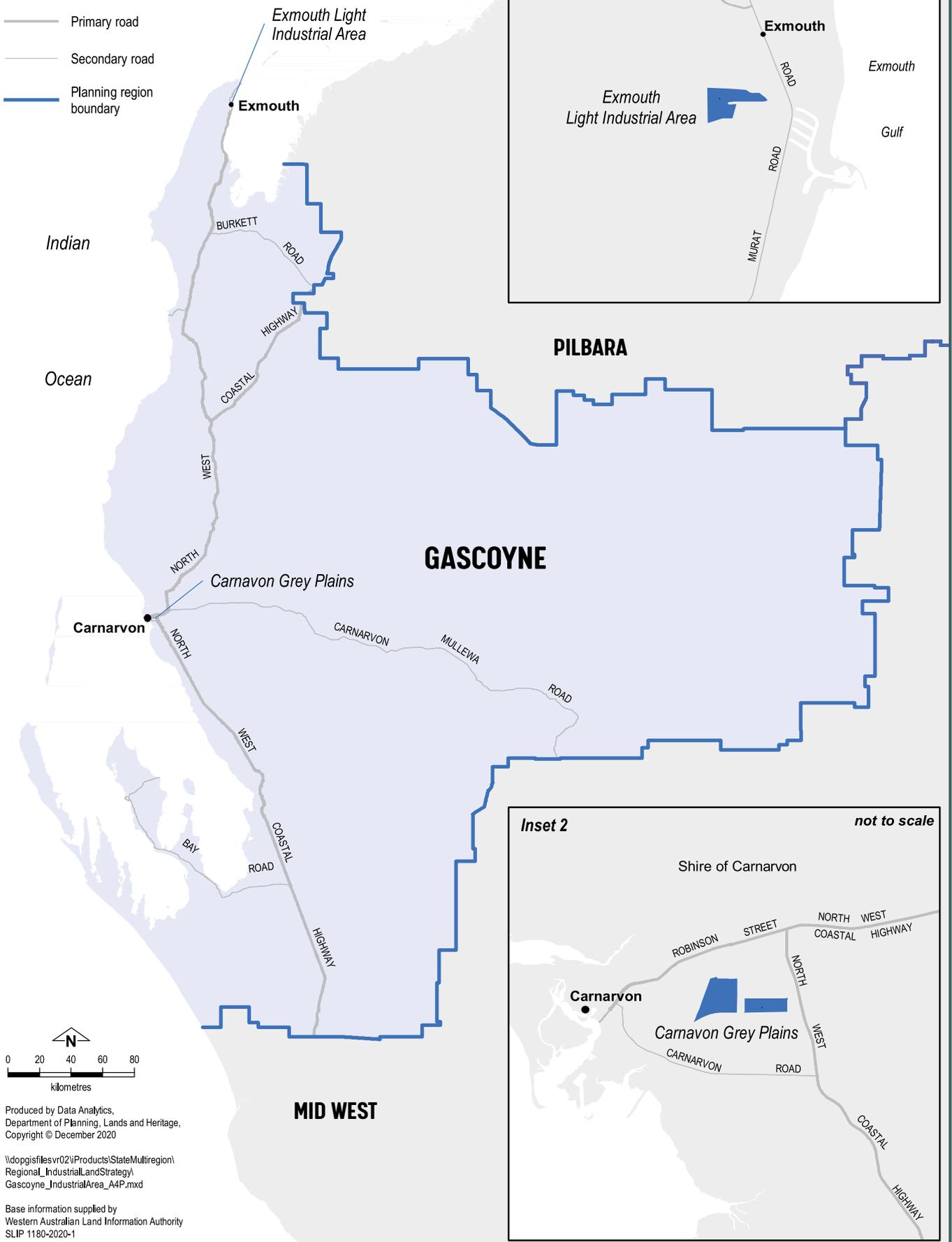
GENERAL INDUSTRIAL

Both Carnarvon and Exmouth have existing and future industrial areas located next to the townsites. In both towns, identified industrial areas are located on transport routes. The key issue for both towns remains demand from businesses seeking to establish operations.



Legend

- Major town
- Town
- Industrial areas
- Primary road
- Secondary road
- Planning region boundary



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MID WEST REGION



MID WEST REGION

The Mid West region has a diverse economy built around mining, agriculture, fishing, tourism, retail and manufacturing. Growth in the region's economy will invariably require additional workers with particular skills for certain industry sectors. Geraldton is the region's key population centre.

The region is a diverse mineral province with substantial reserves of gold, base metals, mineral sands, vanadium, magnetite and nationally significant gas reserves. Minerals processing represents a substantial opportunity for the region's economy.

Renewable hydrogen is currently receiving considerable attention and the Mid West Development Commission is working with proponents on potentially significant export projects in the region. While these projects are more closely aligned to the strategy process for strategic industrial areas, there will undoubtedly be an increase in general industry to support this development, and this would likely translate into a need for a significant expansion of general industrial land in the area.

OAKAJEE SIA

The Oakajee SIA is 1,134ha of strategic industry-zoned land with an established industry protection zone located 23km north of Geraldton. It is a green-field estate with no proponents and connects directly with the proposed Oakajee Port via planned infrastructure corridors.

DevelopmentWA owns the entire strategic industry and industry protection zones which is available for immediate lease but the estate requires major infrastructure investment. The area was designed primarily for iron export proponents which would have developed the necessary rail and port infrastructure but have not proceeded to date. It also has significant renewable energy potential in the industry protection zone. For the SIA to develop independent of the port infrastructure, the development of road, process water and energy infrastructure will be required.

GENERAL INDUSTRIAL AREAS

Key general industrial areas include:

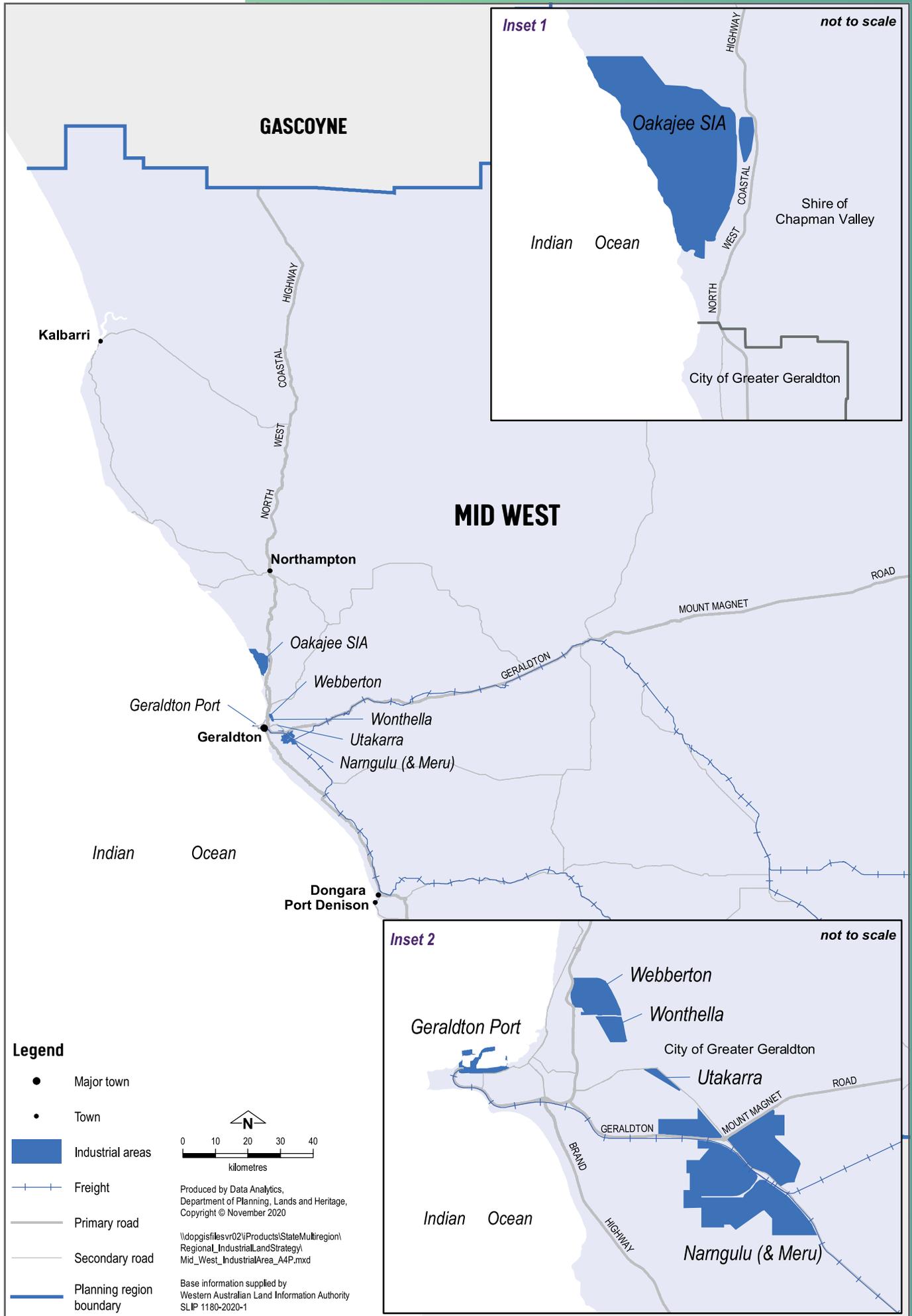
- Narngulu & Meru
- Geraldton Port
- Webberton
- Wonthella
- Utakarra

Significant stocks of developed industrial land are located across the suburbs of Webberton and Wonthella. This area contains a mix of general, light and serviced industrial developments.

The Narngulu Industrial Area is located at the south-eastern periphery of the Geraldton urban area and contains some heavy industry, including the Iluka mineral sands processing site. There are significant stocks of undeveloped industrial land within the area, including several lots owned by DevelopmentWA which are under consideration by proponents. Narngulu has access to existing water, power and gas servicing infrastructure and there is significant opportunity for further development for a range of light and general industry.

The availability of power has been identified by the Mid-West Regional Development Commission as a key issue. The challenge is to achieve the substantial power upgrades necessary to modernise and lift the capacity of the grid while remaining globally competitive through ongoing usage charges, which encompass network charges. The current network charges make this challenging, as does the lack of a mechanism for the first user disadvantage in terms of 'wearing' the network access capital charges for necessary upgrades.

Also identified as key infrastructure is Oakajee Narngulu Infrastructure Corridor, and more specifically a road link between Narngulu and Oakajee, which would service as a Geraldton bypass, removing heavy vehicles from suburban Geraldton. The Geraldton Bypass is being considered as part of the planning work for the 'Dongara Geraldton Northampton Route'.



GOLDFIELDS-ESPERANCE REGION

A strong mining sector is the most valuable contributor to the Goldfields–Esperance economy. Other important economic sectors in the region include tourism, agriculture, fishing, retail and manufacturing.

From a geographic perspective, the north of the region is predominantly focused on mining, whereas the south is generally more economically diverse. Kalgoorlie and Esperance are the region's key population centres.

The Goldfields–Esperance Development Commission indicates Esperance and Kalgoorlie–Boulder have the greatest need for industrial land, with new projects in Kalgoorlie–Boulder seeking a location for downstream processing and other projects seeking to provide energy solutions.

Esperance Port is the largest nickel concentrate exporting port in the southern hemisphere. It is also the deepest port in southern Australia, capable of handling Cape size vessels of up to 200,000 tonnes, and fully loaded Panamax size vessels of up to 75,000 tonnes.

MUNGARI SIA

The Mungari SIA is 700ha of strategic industry-zoned land with an established industry protection zone located 26km west of Kalgoorlie. It is a green-field estate with no proponents. DevelopmentWA owns the entire strategic industry zone which is available for immediate lease but the estate requires major infrastructure investment. Gas and process water infrastructure needs to be extended from Kalgoorlie to the estate and a central road and power substation infrastructure will also need to be established. A structure plan may be required for Mungari in the future.

GENERAL INDUSTRIAL AREAS

Key General Industrial Areas include:

- West Kalgoorlie (Anzac Drive Industrial)
- South Boulder
- Esperance Port
- Chadwick
- Esperance LIA (Norsman Road/Shelden Road)

There is 373ha of developed industrial land within the City of Kalgoorlie with another 521ha identified for future industrial development subject to approval of scheme amendments, structure plans, infrastructure and addressing environmental and heritage matters. The main general industrial regions within Kalgoorlie are West Kalgoorlie, including Kalgoorlie Anzac Drive, and South Boulder. Almost all the industrial land has been developed, with the exception of some smaller lots currently available for sale in West Kalgoorlie.

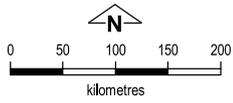
In addition, following the signing a sublease with Lynas Corporation for Lot 500, the City of Kalgoorlie–Boulder, with support from the WA Government, has been working to unlock more land for industrial investment to support local minerals processing and renewable energy production. The Kalgoorlie Industrial Land Study has been undertaken with funding allocated by the WA Government in early 2020 to identify opportunities, constraints and future actions to encourage future investment



in regional development and business opportunities for Kalgoorlie–Boulder. It is intended that future industrial land parcels within the Study area will address a gap in the market by providing larger areas than those available in serviced GIAs while providing sites that are not subject to formal statutory buffers typically required when planning for SIAs. The study has assumed the industrial proponents will not have impacts outside their lot boundaries or, if they do have off-site impacts, proponents will either mitigate those impacts to an appropriate standard or resolve the sensitive use conflicts. The aim of the study is to guide future planning and provide key actions to ensure the supply of available industrial land will meet anticipated demand and future development is able to capitalise on the opportunities identified.

The infrastructure needs for this site are varied or unknown as they will depend on the type of industry attracted to the site. Water may be a significant requirement as well as waste management, power and digital capacity. Logistics, such as safe access for large vehicles, has been important in the development of the Anzac Drive upgrades and road access or rail access or both could be important depending on the industry attracted to the site.

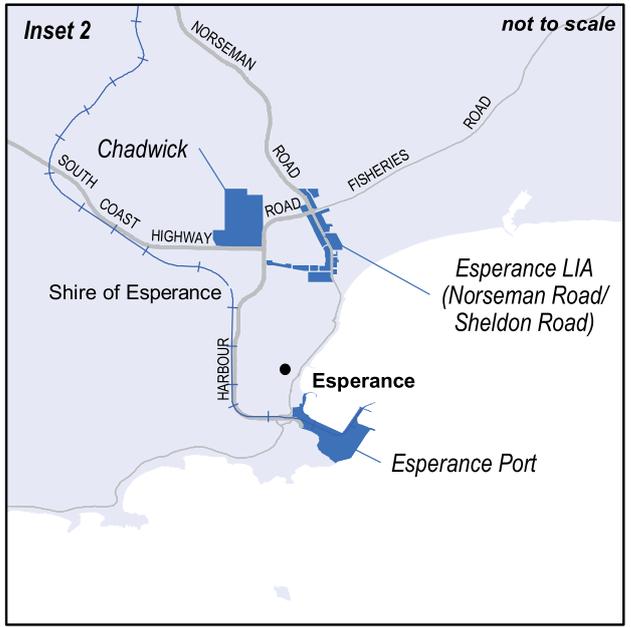
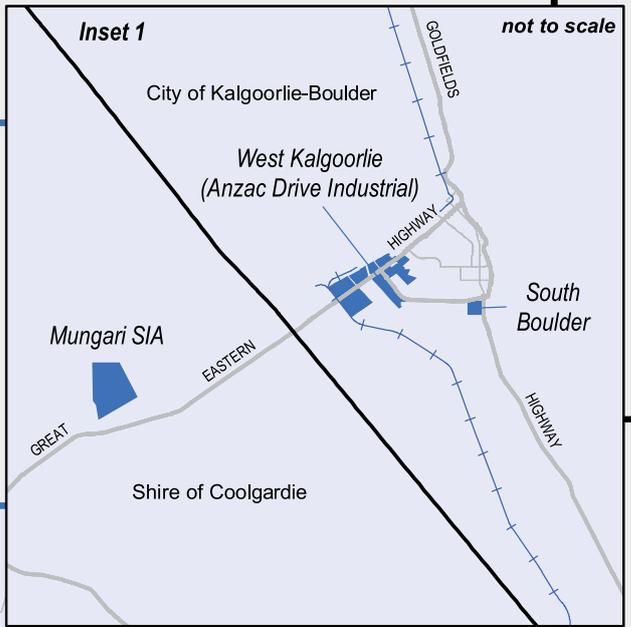
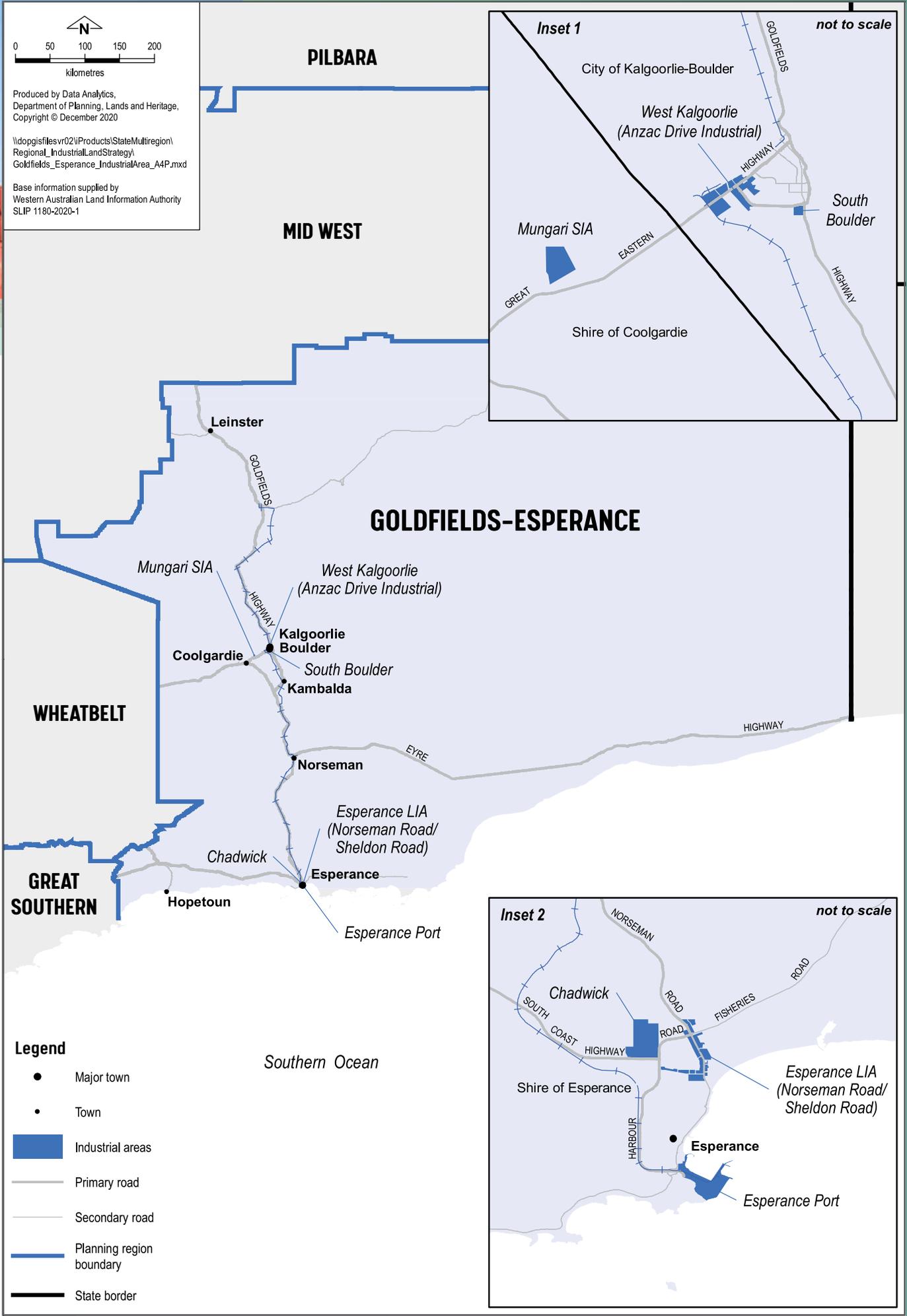
Similar to Newman, in Kalgoorlie, unresolved native title is currently constraining development of the Anzac Drive West industrial estate.



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Legend

- Major town
- Town
- Industrial areas
- Primary road
- Secondary road
- Planning region boundary
- State border



WHEATBELT REGION

The Wheatbelt region's economy is predominantly based around agriculture and aquaculture industries, with some mining activity. The Wheatbelt is a world-leading producer of agricultural exports, such as grain and hay, and is by far the largest agricultural producing region in the State. With most of its product targeted for export, road and rail transport plays an important role in moving the produce.

Small to medium enterprises play a critical role in the Wheatbelt's economy and there is a need to ensure that their growth is enabled through the provision of serviced light and general industrial land. Due to low land values and the high cost of connecting and upgrading services, including power and water to green-field sites, development by the private sector is not viable in most locations. Through the Regional Development Assistance Program (RDAP), DevelopmentWA has worked with local governments to provide serviced light industrial land across regional town-sites. RDAP has been established to address the sometimes prohibitive costs associated with development in regional Western Australia, which can make industrial land unviable for private developers. It also frees up land supply in areas where the supply of privately developed land is often limited, or non-existent.

There are currently no Strategic Industrial Areas in the Wheatbelt.

GENERAL INDUSTRIAL AREAS

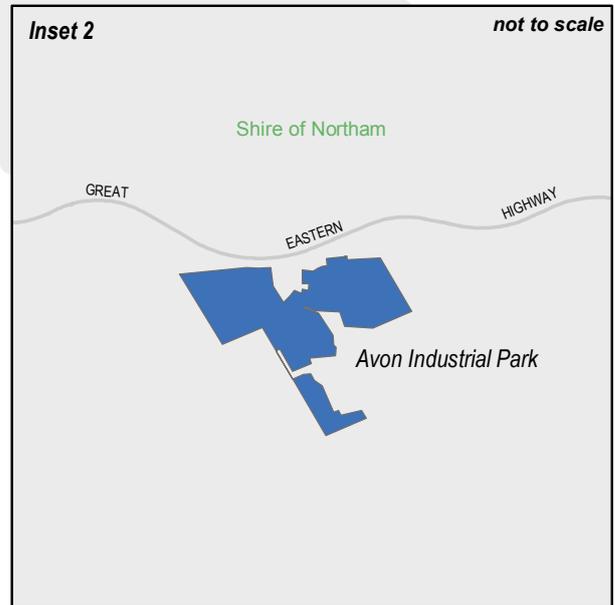
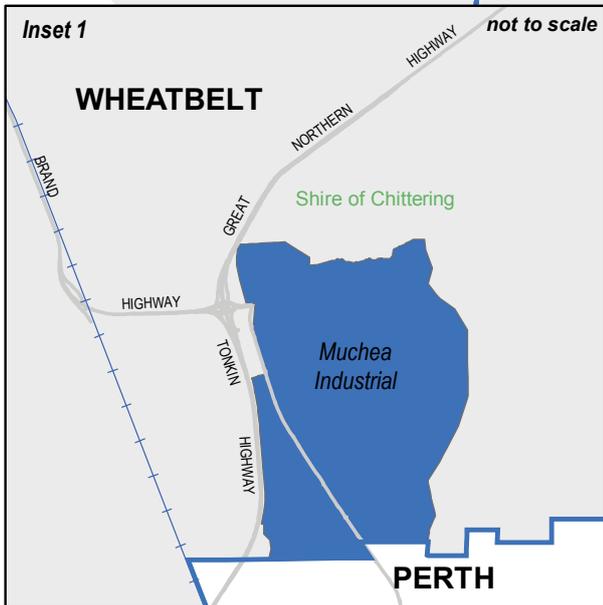
AVON INDUSTRIAL PARK

Avon Industrial Park is located 18km east of Northam and 116km east of Perth in the heart of the Avon District. The estate offers 200ha of industrial land, within a total park area of 470ha. It is well serviced by road, power and water with easy access to ports and other supply sources in the metropolitan area. Given the location of the Park on the Eastern Goldfields Railway, it is well placed to have a rail spur to the park which could attract industries that move bulk freight directly to port.

MUCHEA INDUSTRIAL PARK

The Muchea Industrial Park is strategically located at the intersection of the Brand Highway, Great Northern Highway and the new Northlink - Tonkin Highway extension. The park offers access to major transport links and is expected to offer future RAV 10 access for heavy vehicles. With the pending upgrade to the Great Northern Highway - Muchea to Wubin and the Bindoon Bypass, triple road trains will be able to travel as far south as the Muchea Industrial Park, which is expected to drive demand for industrial land from freight and logistics companies. Provision of gas and water is the key infrastructure needed to attract industries to the industrial park.

10 Year Industrial Land Strategy



PERTH AND PEEL REGIONS



SIA - KWINANA AND ROCKINGHAM

The Kwinana and Rockingham SIAs contain the Perth metropolitan region's only heavy industrial land.

The Kwinana SIA is Western Australia's original and premier SIA. Located south of Perth, it is almost fully developed, with little vacant land available if current project proposals proceed. It is well connected to the Fremantle Port Authority's Kwinana Bulk Terminal and several proponents have their own jetty infrastructure. It has established road, rail, process water, power and gas connections. Major operations currently include BP, Alcoa's alumina refinery, Tianqi's lithium hydroxide plant, Wesfarmers's LPG and LNG production plants, Water Corporation's desalination plant and the Kwinana waste-to-energy plant. There is limited spare power capacity to accommodate the likely additional load from new industrial proponents in the Kwinana area.

Infrastructure upgrades to augment the network will be required. Future proponents may be required to upgrade power or other infrastructure depending on their demand profiles.

The Rockingham SIA is just south of the Kwinana SIA and is well connected to the Kwinana Bulk Jetty via service corridors. It has established road, power, water and gas connections close by. Major tenants include Nickel West, Coogee Chemicals, Puma Fuels and Bitumen and the Rockingham waste-to-energy plant. Future proponents may be required to upgrade power or other infrastructure network depending on their demand profiles. There is over 200ha of land currently available for lease. Take up of this land has accelerated in recent years as the Kwinana SIA reaches capacity.

Continued demand for heavy industrial land will require consideration for additional strategic industrial land, with good access to port infrastructure via road and service corridors.

AUSTRALIAN MARINE COMPLEX

Established in 2003, the AMC is Western Australia's key shipbuilding and sustainment industrial precinct, supporting defence, mining, oil and gas, and commercial marine industries. Since its establishment, the WA Government has made significant investments to deliver common user infrastructure at the AMC to support industry's needs.

In November 2020, the State Government released the AMC Strategic Infrastructure and Land Use Plan (SILUP). The plan outlines the short, medium, and long-term infrastructure upgrades required to guide the AMC's ongoing development as a nationally significant industrial area for the defence, marine and resources industries. Infrastructure upgrades will enable the precinct to consolidate its role as Australia's primary location for construction of minor naval vessels,

while improving facilities supporting current and future naval sustainment work.

The infrastructure options outlined in the SILUP will enable the Collins class Full Cycle Docking (FCD) program to be delivered at the AMC, which would provide \$8.4 billion of economic benefits to Western Australia and create 3000 jobs. The WA Government is spending over \$100 million for infrastructure and workforce development to support FCD and additional defence industry objectives.

The Northern harbour development plans include activation of the Northern Common User Facility through a land-backed wharf, fabrication buildings and a connection to the southern Common User Facility via a vessel transfer path.

The southern harbour development plans include concept options that meet Defence requirements and ensure the continued support of major project delivery in the marine and resources sectors. Both concepts propose key infrastructure including:

- Multiple new berths;
- A new fabrication shed and two outdoor hardstand positions;
- New vessel transfer paths;



- New breakwaters; and
- A large vessel dry berth.

In December 2020, DevelopmentWA and the Defence West commenced early market engagement to understand interest in the development of a Large Vessel Dry Berth at the AMC. A Large Vessel Dry Berth would primarily support large hulled vessel build and sustainment needs of Department of Defence and Royal Australian Navy, while enabling the attraction of new commercial opportunities.

GENERAL INDUSTRIAL AREAS

NORTH WEST SUB-REGION

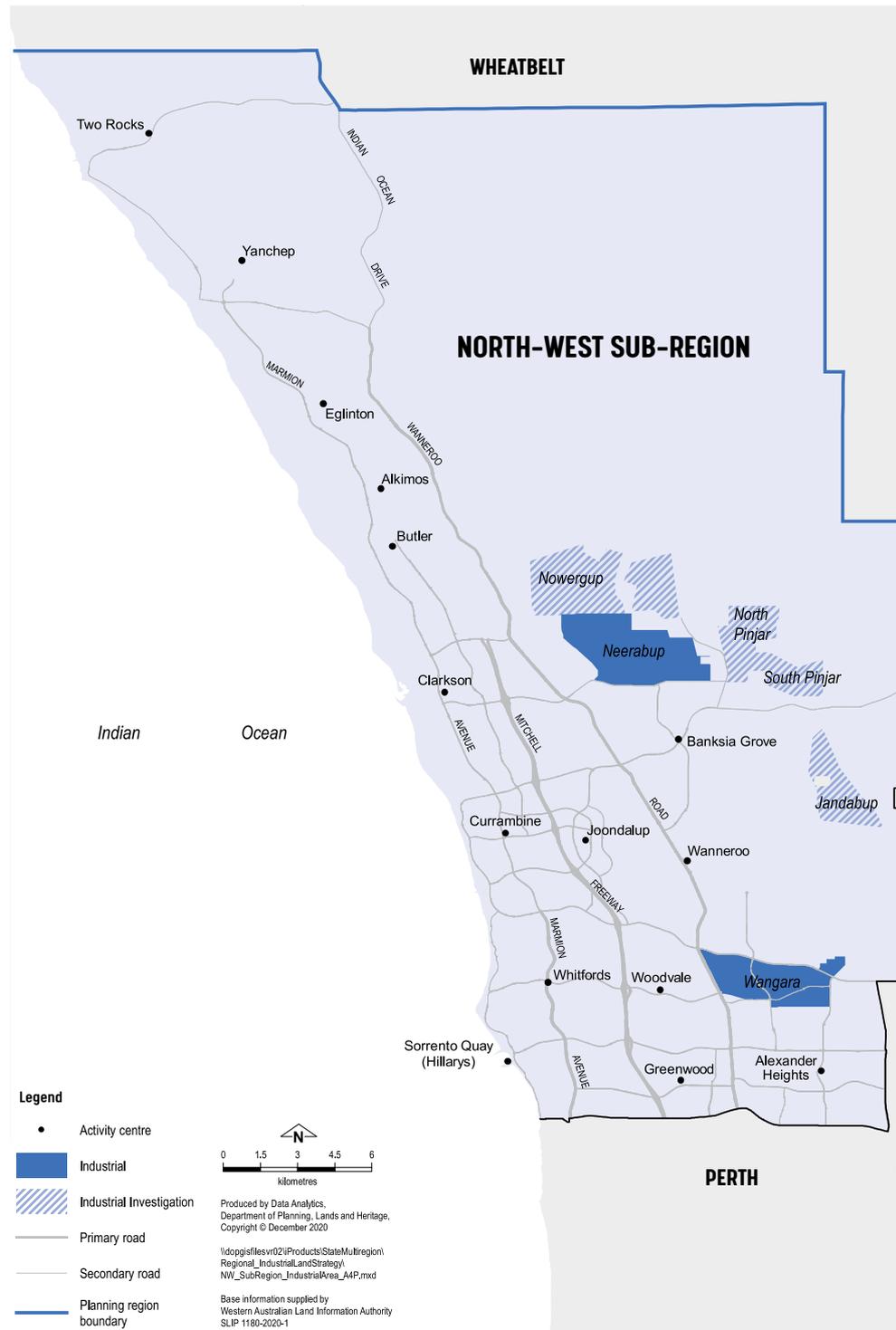
Existing industrial areas in the sub-region are Wangara, Landsdale and Neerabup. The Wangara and Landsdale industrial areas are mostly developed, with the final lots currently on the market.

Neerabup is in the early stages of development and is the only identified industrial area in the North-West sub-region supplying industrial land over the next 10 years. It is located 35km north of the Perth CBD, and has a gross area of 1,000ha.

Remaining industrial areas in the North-West sub-region are identified as 'industrial investigation' in the P&P@3.5M and include Nowergup, Pinjar and Jandabup. These areas form part of the East Wanneroo District Structure Plan, with infrastructure requirements to fall outside the scope of this strategy, expected to be identified as part of the planning process. The sites are well positioned in relation to the future freight road network and could provide job opportunities in close proximity to future population catchments. These sites do, however, contain various environmental constraints including the existing Priority 1 Public Drinking Water Source Areas; Bush Forever areas; and the presence of basic raw materials.

The key issue for the North-West sub-region is the lack of key demand drivers for industrial land. Majority of industrial demand is population driven and the North-West sub-region has the lowest employment self-sufficiency of any region.

In terms of infrastructure provision, it will be critical to link the North-West and North-East sub-regions with a



road. This will involve upgrading Flynn Drive between Wanneroo and the future Whiteman to Yanchep Highway, upgrading Neaves Road to a primary distributor road to improve capacity and efficiency for freight and general traffic and finalising the upgrade of the Gngangara Road and Wanneroo Road intersection. The Whiteman to Yanchep Highway is a proposed new freight route

which will connect Neerabup and the new proposed industrial areas with Perth Airport, Kewdale Intermodal Terminal and established industrial areas such as Malaga and Welshpool.

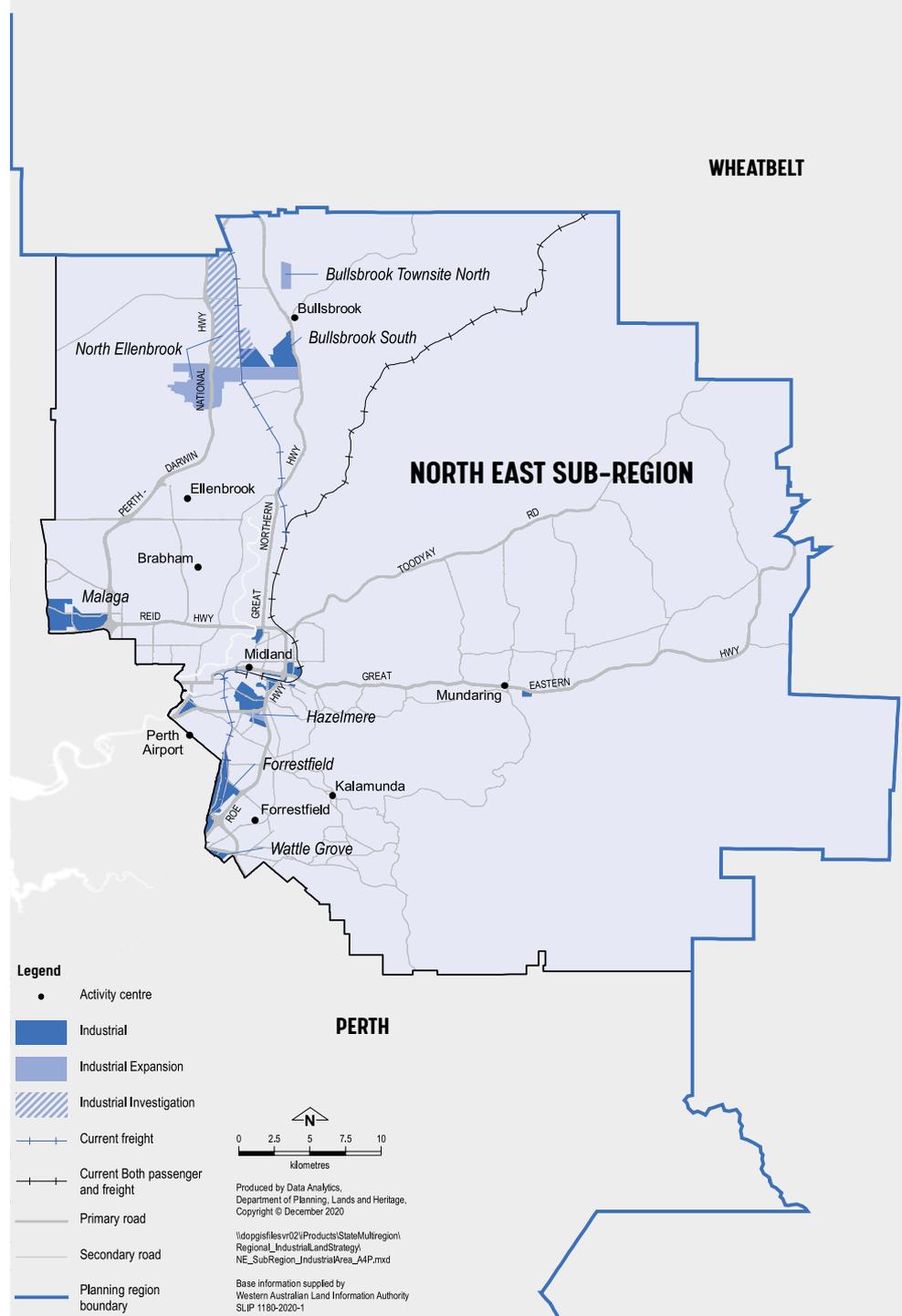
NORTH EAST SUB-REGION

The North-East sub-regions' key industrial centres include Malaga, Hazelmere and Forrestfield. Existing industrial areas in the sub-region provide more than 32,000 jobs. Malaga industrial area has mostly been developed and has a mixture of industrial uses including bulky goods, manufacturing, warehousing and retail. Hazelmere industrial area is often described as one of the most sought-after industrial locations in Perth by the transport, logistics and mining equipment sectors due to its proximity to freight networks and its linkages to Great Northern Highway.

These industrial areas are located on significant transport routes, including Roe Highway, Tonkin Highway, Reid Highway, Great Eastern Highway and Great Northern Highway. Other significant demand drivers of industrial land include nearby Perth Airport and Kewdale Intermodal Terminal.

The State Government is leading the Bullsbrook Freight and Industrial Land Use Planning Strategy (BFILUPS), intended to guide local structure planning, the integration of the intermodal facility and the development of the freight network. The BFILUPS project area encompasses 2,766ha, accounting for more than three quarters of the industrial land in the North-East metropolitan sub-region. The timeframe for full development of the project area is approximately 70 years.

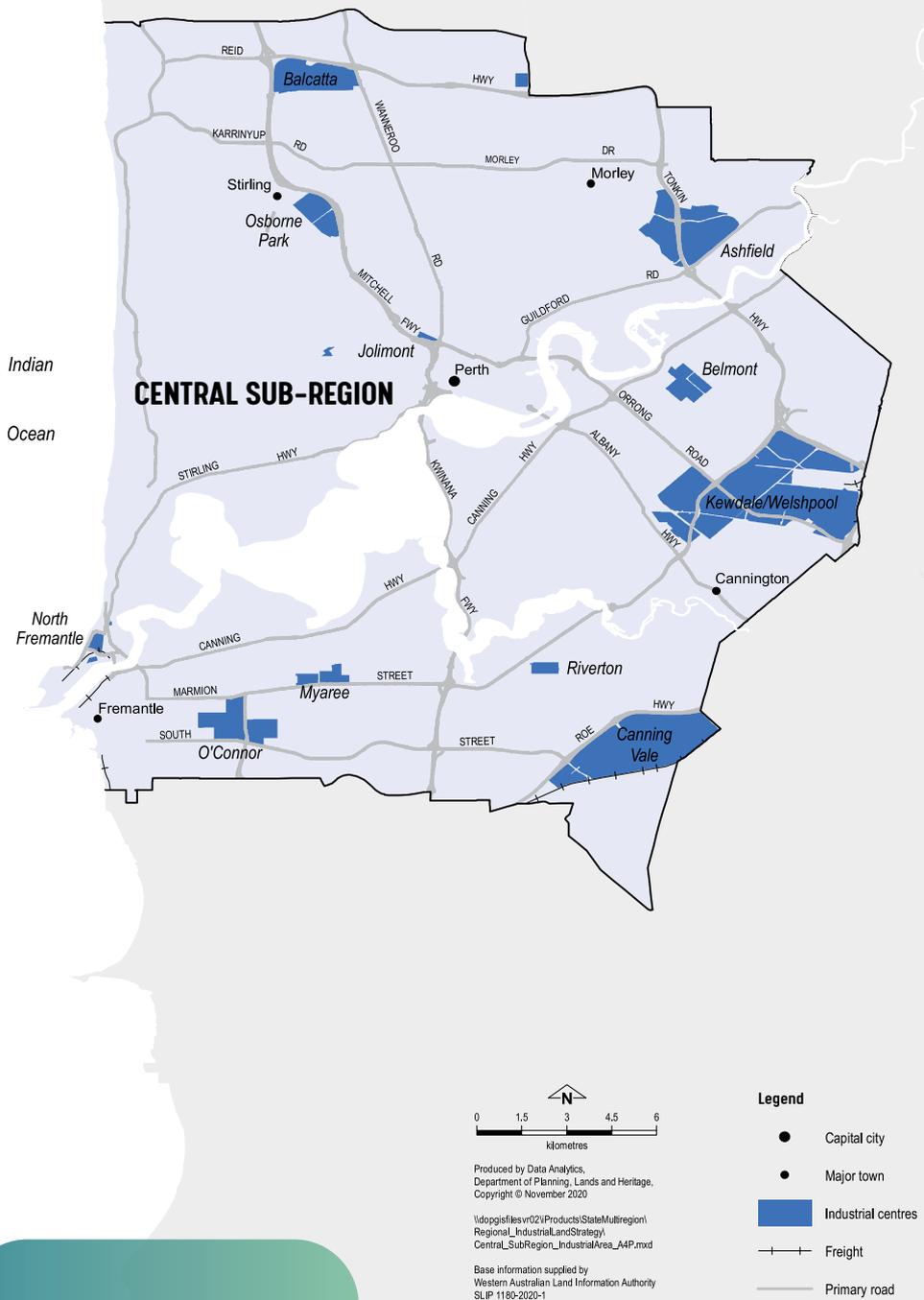
The Perth-Darwin Highway (NorthLink) connects Tonkin Highway with the Great Northern Highway near the Muchea Industrial Park, via Ellenbrook. A truck-breakdown area adjacent to Muchea Industrial Park will enable triple road trains to be converted to double road trains, and allow them to access the Perth Metropolitan area and industrial park. The facility is expected to be attractive for mining laydown and logistic-related activities.



In recent years, Perth Airport has invested significantly in commercial developments that provide employment opportunities. Road upgrades around Perth Airport provide a link between major freight routes and multiple access points to Tonkin, Leach and Roe Highways for business located on Perth Airport land.

The key infrastructure requirements identified in the North-East sub-region include key road upgrades within the Hazelmere Industrial Area to provide

better access to freight networks (confirmed by Main Roads), the provision of sewer in Hazelmere, the upgrade of Stock Road in Bullsbrook between Northlink (Perth to Darwin Highway) and Great Northern Highway, as well as the development of the East-West connector road (Neaves Road) to link the North-West sub-region with the Bullsbrook Industrial Area and Perth to Darwin highway.



Kewdale Intermodal and the Perth and Jandakot Airports, are key infrastructure drivers of demand for industrial land, as well as freight access to and from Fremantle port and Intermodal Link Services. Improvements to the metropolitan freight rail network are expected to accommodate the increase in international containers expected by about 2050, according to P&P@3.5M.

The Central Sub-region industrial estate's employment density is significantly higher than that of industrial areas in outer regions. More importantly, with the changing nature of industries, the employment levels in the Central sub-region are expected to increase. It is crucial adequate infrastructure is provided to enable this continual growth.

Sewer is a specific constraint in some cases, limiting the type of industries able to use an industrial area. Several existing mature industrial areas across Perth and Peel, such as Ashfield, Welshpool and Kewdale, have evolved without having sewerage systems. Their redevelopment is currently constrained, with only some industries able to utilise these locations. Some of these industrial areas are located close to public transport and close to population. The provision of sewer would enable these areas to intensify development and increase employment density.

When considering the infrastructure needed for the Central sub-region, upgrades to transport infrastructure are not expected to feature prominently as it is mostly in place. The key drivers are instead enabling infrastructure such as sewer and telecommunications, to allow existing industrial areas to regenerate, increase employment density and reach their capacity.

CENTRAL SUB-REGION

Existing industrial centres include Canning Vale, Myaree, O'Connor, Bayswater/Bassendean and Kewdale/Welshpool. There is limited land available within the sub-region to cater for any future industrial growth as most existing industrial areas are developed, and there are no additional areas for expansion. The existing industrial locations have good accessibility to major transport infrastructure, including Fremantle

ports, Perth and Jandakot airports, freight routes and existing or proposed intermodal terminals.

The industrial areas in the Central Sub-Region are advantaged by their proximity to population centres and existing industry. This is also reflected in the high land values experienced in these areas, creating pressure on industrial uses. There are already examples of industrial uses being 'squeezed' out in locations such as Osborne Park.

SOUTH METROPOLITAN SUB-REGION

The South Metropolitan sub-region is home to Perth and Peel's most strategic industrial land. The sub-region includes several existing industrial centres which provide more than 42,390 jobs.

Key demand drivers for industrial land in the South Metropolitan sub-region include:

- Perth Airport
- Kewdale and Forrestdale intermodal terminals and associated warehouse and logistics;
- Maddington-Kenwick Strategic Employment Area;
- Tonkin Highway - Forrestdale, South Forrestdale;
- Planned Intermodals - Mundijong;
- Kwinana and Rockingham SIAs;
- Down-stream processing; and
- The Australian Marine Complex

The sub-region is home to strategic conglomeration of the Kwinana and Rockingham SIAs, and the Australian Marine Complex, with the largely undeveloped Latitude 32 industrial estate expected to provide general industrial land to support existing developments.

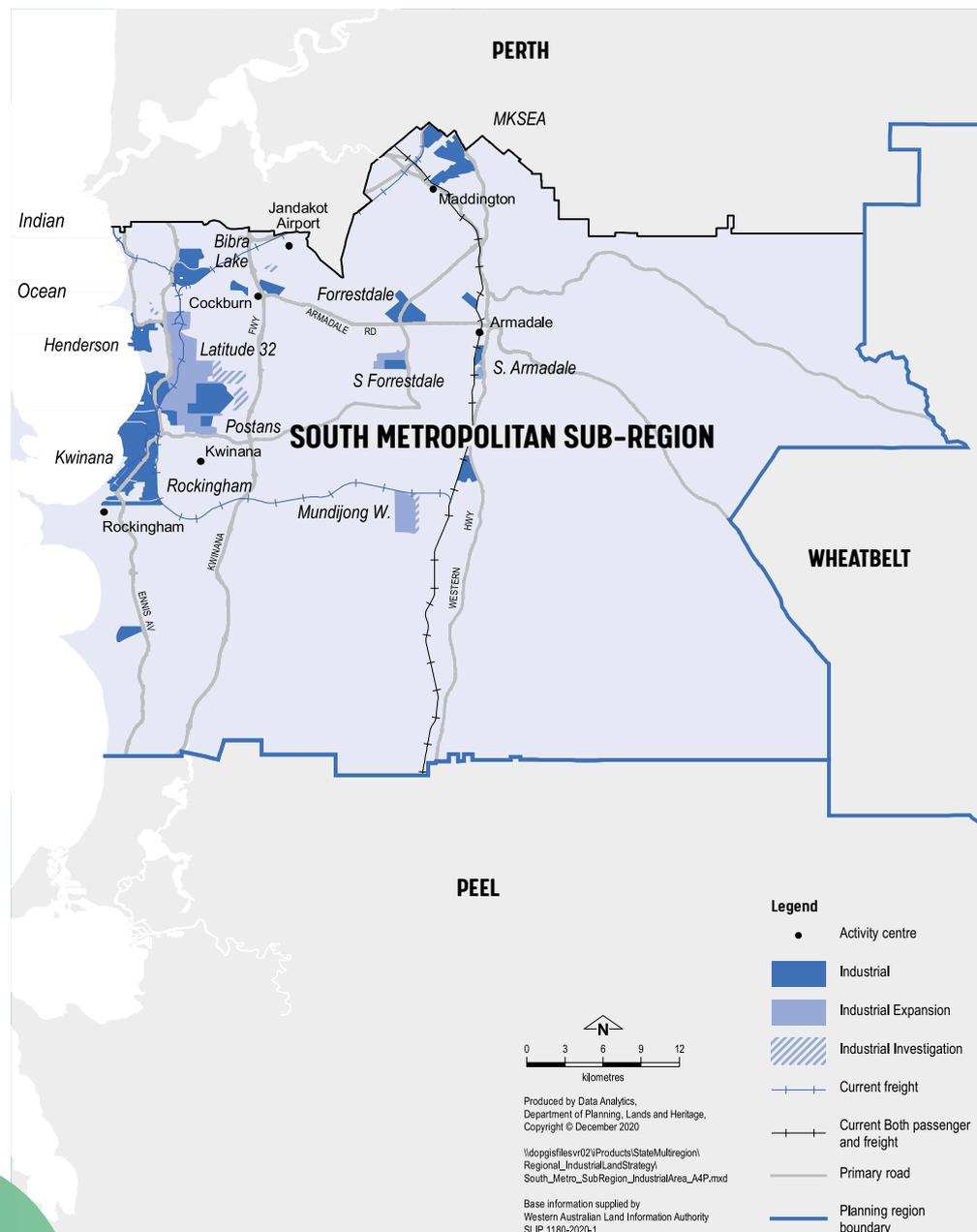
The development of Latitude 32 is being progressed by DevelopmentWA. The key issues in activating this area include fragmented land ownership, resource extraction and the need for road upgrades to link industrial land to the freight road network. Road upgrades identified as high-priority in the short and medium term include upgrades to the Russell Road and Rockingham Road intersection (to grade separated), Russell Road, Wattleup and Rowley Road, and the planning and delivery of the North-South connector through Latitude 32.

The Maddington Kenwick Strategic Employment Area has also been identified as a key industrial area. The development is currently being driven by the private sector, however key issues include land fragmentation, environmental constraints, finalisation of the development contribution plan, and trunk infrastructure, including sewer and road upgrades.

At Forrestdale Business Park West, the government-funded delivery of infrastructure and a Development Contribution Plan will enable the delivery of industrial land. At Forrestdale South private landowners are driving the

activation of the industrial land but trunk infrastructure remains an issue.

A future industrial land prospect is West Mundijong. The structure planning for the 440ha industrial estate is being undertaken by the Shire of Serpentine Jarrahdale. Potentially creating up to 880 industrial lots, this development could include an intermodal transport facility and is designed to attract large-scale industrial and agricultural investors and developers. Longer-term infrastructure upgrades include the extension of Tonkin Highway and realignment of the freight rail line in Mundijong.





CASE STUDY – FORRESTDALE BUSINESS PARK WEST

BACKGROUND

The Forrestdale Business Park West (FBPW) is located about 21km south-east of the Perth CBD. To date, approximately 25 per cent of the site has been developed, comprising DevelopmentWA's Crossroads Industrial Estate, Hitachi Global Machinery Australia's headquarters and Western Power's new South Metropolitan Depot facility. It is expected there will only be limited further development until critical infrastructure upgrades are undertaken.

The construction phase of a fully-developed site is estimated to unlock \$816 million in private investment and create 2,857 jobs. Once constructed, businesses operating on the lots are expected to have annual economic activity of about \$1.6 billion and provide 4,478 full time jobs.

DEVELOPMENT CONTRIBUTION PLAN

DevelopmentWA prepared the Development Contribution Plan (DCP) for FBPW, creating a framework for the collection of cost contributions from landowners to deliver the infrastructure required to facilitate the orderly development of the site.

DevelopmentWA identified that a substantial investment will be required to fully activate the estate and the private sector is unlikely to fund this investment without 'seed funding' from government, which could be recouped through the DCP. DevelopmentWA determined the site,

which is a priority for the Industrial Lands Authority (ILA), requires \$27 million of seed funding to deliver 140ha of general industrial land once fully developed. The development area consists of 40 individual lots and reserves that are owned by 22 landowners. It is expected that the land assembly process required to establish the infrastructure corridors required for road, electrical and water services and was resolved without the need for compulsory acquisitions.

FUNDING & DELIVERY MODEL

DevelopmentWA undertook option analysis to determine the optimum level of Government investment to activate FBPW. It sought an upfront state government funding contribution of up to \$27 million to undertake critical land assembly and deliver infrastructure to remove barriers to private sector investment in the site.

Funding was requested over two stages:

- Stage 1 (\$7.5 million in 2018-19) to:
 - Complete the preparation, advertising and approval of the DCP;
 - To fund the land acquisitions required to enable installation of critical infrastructure (comprising land for two major road entry points and a sewer pressure main); and
 - Fund DevelopmentWA delivery agency role, staff resourcing and technical consultant services;

- Stage 2 (\$19.5 million in 2019-20 – pre-condition of the DCP being approved) to deliver critical road and service infrastructure necessary to activate development by private landholders.

The funding was approved in early 2019. The first wastewater pump station was operational in October 2019 and critical land acquisition was completed by June 2020. The DCP was approved by the Western Australian Planning Commission in late 2020. ILA has tendered the works to deliver stage two – the critical infrastructure within the precinct – in late 2020.

The project is being delivered by DevelopmentWA via the ILA. The ILA is responsible for the delivery of identified infrastructure, land acquisition negotiations and land assembly. DevelopmentWA retains statutory planning authority functions.

The state government funding was approved with several preconditions to ensure the assumptions within the funding request were achievable. Of the \$27 million, approximately \$25.8 million will be recovered and reimbursed to the Consolidated Account from contributions into the DCP and from the disposal of surplus land acquired for the delivery of critical infrastructure. The finalisation of the DCP was the key requirement before funding was approved. Reimbursement is estimated to commence in 2021-22 and conclude in 2028-29.

PEEL REGION

The Peel region's economy is diverse, with the minerals sector complemented by stable manufacturing and construction service industries, agriculture, health services, tourism and retail trades.

However, there are not enough jobs available in the region to cater for the local working population with approximately 25,900 residents leaving the region to work each day.

The region's minerals sector produces alumina, gold, copper and mineral sands. The key resource companies operating regionally include Alcoa, South32, Newmont and Doral.

Most of the local businesses, with the exception of resources, are population driven. Establishing export-driven businesses has been identified as a key target for the region and is being

addressed through the Transform Peel initiative and the launch of the Peel Business Park by DevelopmentWA.

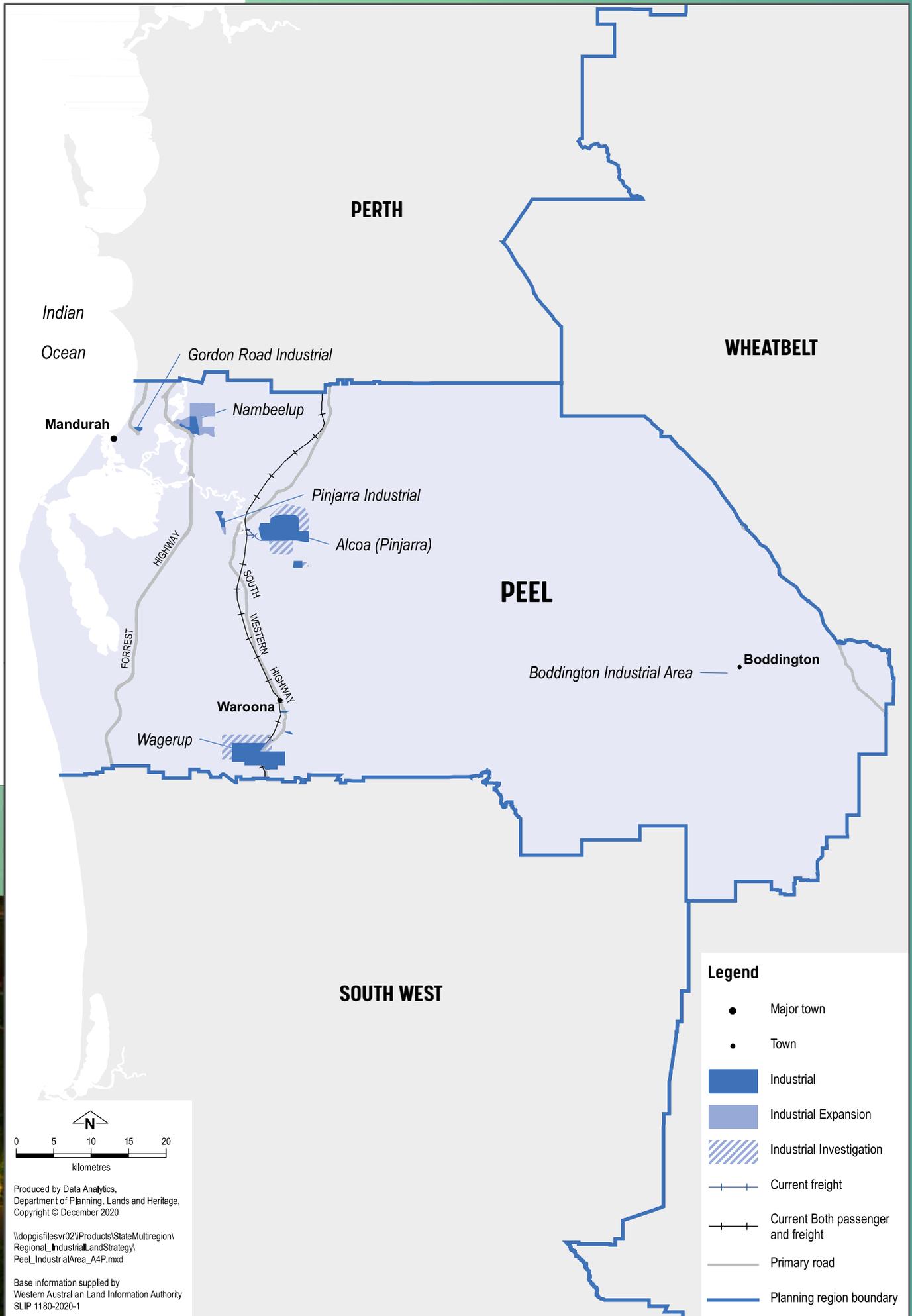
The Peel region has two major general industrial estates - Nambelup, or the Peel Business Park, and the Pinjarra Industrial Area. The Gordon Street industrial estate, located in Mandurah's town centre, has been fully developed, with businesses located there seeking to expand are being forced to relocate elsewhere.

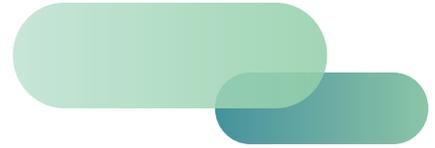
Nambelup has ample general industrial and industrial expansion land identified for the long-term. The key issue within

the precinct has been provision of trunk infrastructure. The State Government funded the delivery of the first stage of trunk infrastructure but additional funding will be required longer-term to enable the delivery of industrial land. Road upgrades to link the estate to the freight network have also been identified as critical.

The Peel Business Park has been earmarked mostly for Agri-businesses and support services, while the Pinjarra industrial area houses many of the support businesses for the nearby Alcoa operations. Future stages are available at both estates.







SOUTH WEST REGION

The South West supports a strong and diverse regional economy that continues to attract residents to live and work in the area. The region has the most diversified economy of all the State's nine non-metropolitan regions. Major industries include agriculture and horticulture, timber and forest products, mineral extraction, processing and manufacturing, tourism, construction and fishing and aquaculture.



Kemerton SIA

The Greater Bunbury sub-region contains the majority of general industrial land within the South West region. The major industrial developments include Picton Industrial Park and Preston Industrial Estate, both located in Bunbury's east. In addition, planning is underway for Waterloo Industrial park, which will provide a long-term supply of industrial land for the greater Bunbury Region. Other key regional centres with significant industrial estates are Collie and Busselton.

The Port of Bunbury is critical to the region's economy and is the export port of the South West region for bulk products. Commodities include alumina, mineral sands, caustic soda, wood chips and general cargo. While it has been identified that Bunbury Port has potential for growth, the State Government's draft South-West Supply Chain Strategy identified opportunities to improve road and rail freight infrastructure into the port and connections to Perth.

KEMERTON SIA

The Kemerton SIA is 2,000ha of strategic industry-zoned land with an established industry protection zone located 25km north of Bunbury. Current proponents include Simcoa Silicon Smelter, Tronox Titanium Dioxide Plant, Kemerton Power Station and the Albemarle Lithium Plant (currently under construction). Environmental approvals to clear vegetation are the most significant constraint for the SIA. Once clearing approvals are obtained, land acquisitions and transfers can be finalized. The Strategic Assessment may also require planning amendments as part of its implementation. Establishment of a rail spur connection off the South West Mainline to the east of Kemerton will be driven by proponent demand and upgrades to the capacity of power infrastructure are likely to be required by future proponents.

SHOTTS SIA

The Shotts SIA is 240ha of strategic industry-zoned land with an established industry protection zone located 7km east of Collie. There are no current proponents. Access to gas and process water are the most significant constraints for the SIA as well as its size, being a relatively small SIA. Intended as a coal downstream processing SIA, its approved uses in the planning system are currently being expanded.

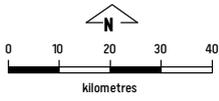
GENERAL INDUSTRIAL AREAS

Key general and light industrial areas include:

- Picton Industrial
- Preston Industrial Park
- Davenport & Halifax Industrial Estate
- Waterloo Industrial
- Bunbury Port
- Collie LIA
- Coolangatta
- Busselton Airport
- Busselton LIA
- Dunsborough LIA
- Margaret River LIA

There is an abundant supply of industrial land across the South-West region, especially within the Greater Bunbury region. Significant infrastructure upgrades, including to the Bunbury Outer Ring Road, are underway and are expected to significantly improve access to industrial land. Other infrastructure needs include upgrades to the electricity network to enable growth in the Greater Bunbury region and network configuration to meet demand in areas south of Picton under peak conditions. If rail access was enabled, through the development of an IMT in the region, it would represent a significant opportunity to improve the efficiency of multiple supply chains in the region and reduce the number of trucks on Forrest Highway.

10 Year Industrial Land Strategy

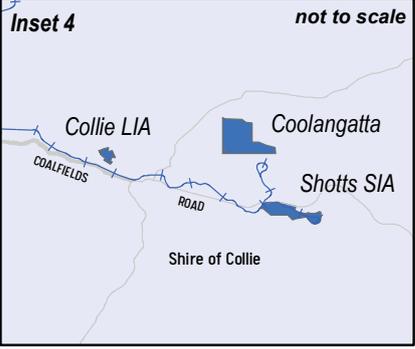
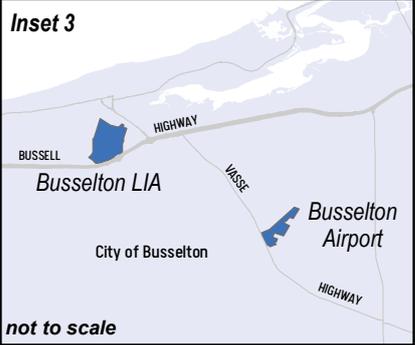
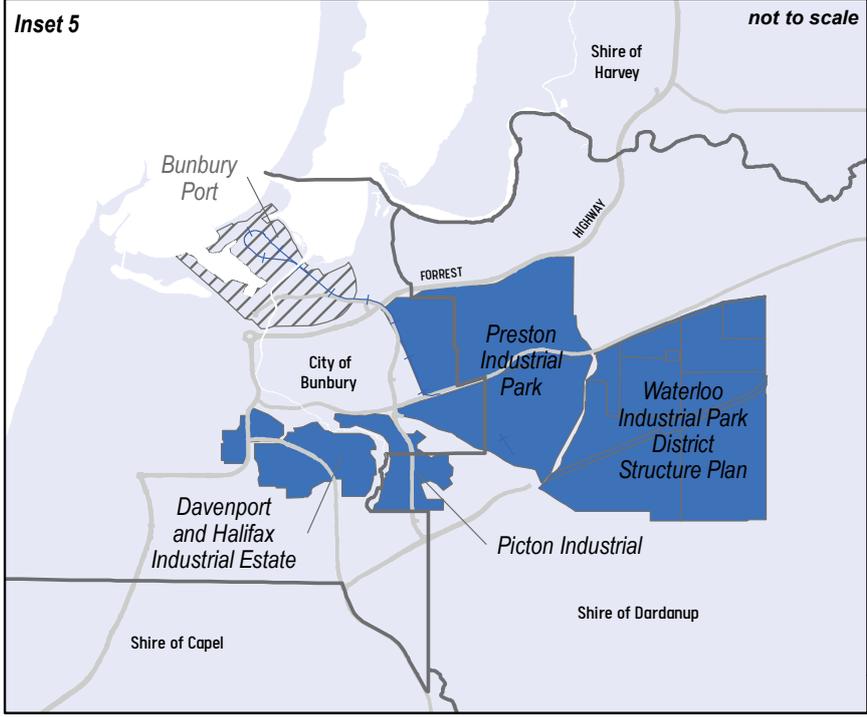
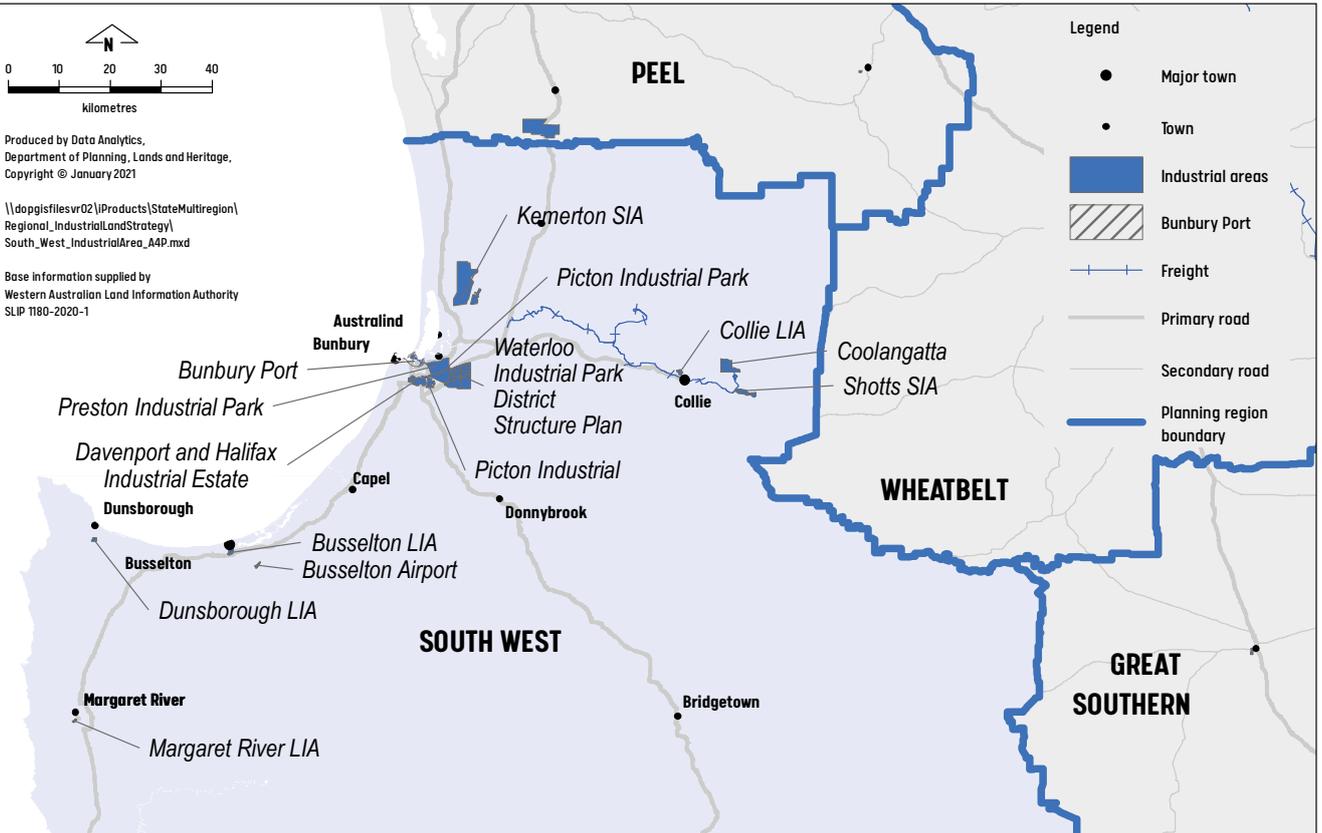


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SLIP 1180-2020-1

- Legend
- Major town
 - Town
 - Industrial areas
 - ▨ Bunbury Port
 - +— Freight
 - Primary road
 - Secondary road
 - Planning region boundary



GREAT SOUTHERN REGION

The Great Southern region has a diversified economy bolstered by its key industries of agriculture, tourism and mining. The future growth of the Great Southern region's economy will rely to a large extent on the expansion of the region's exports, and the role of the Port of Albany is critical in capitalising on potential export opportunities. Industrial zoned land at the port is constrained but there are opportunities to locate non-essential industrial land uses elsewhere.

Road upgrades are required to improve the regional and inter-regional road network to accommodate grain and other freight and reduce road use conflicts. Upgrades include the construction of passing lanes on Albany Highway, the re-alignment of a portion of the Highway and the construction of remaining phases of the Albany Ring Road, which will provide a more efficient heavy vehicle access route to the Port of Albany and improve safety in the Albany town centre. This will reduce port-related traffic on Albany Highway and South Coast Highway all of which pass through Albany's urban areas.

To improve the efficiency of the transport network it is advantageous to shift freight transport off roads and onto the rail system, with intermodal

transfer facilities located at strategic sites to enable the transfer of road and rail freight. One of these is Mirambeena Strategic Industrial Area north of Albany.

MIRAMBEENA SIA

The Mirambeena SIA is 130ha of strategic industry-zoned land with an industry protection zone located on Down Road 14km north of Albany. The western end of Down Road is planned as a timber precinct, with more general SIA uses intended for the eastern end of Down Road. It connects directly with the Albany Port via road and rail. Current proponents are Plantation Energy Australia and CBH. Future SIA proponents may need to upgrade power and water infrastructure to suit their needs. There is no reticulated gas network available to Mirambeena.

GENERAL INDUSTRIAL AREAS

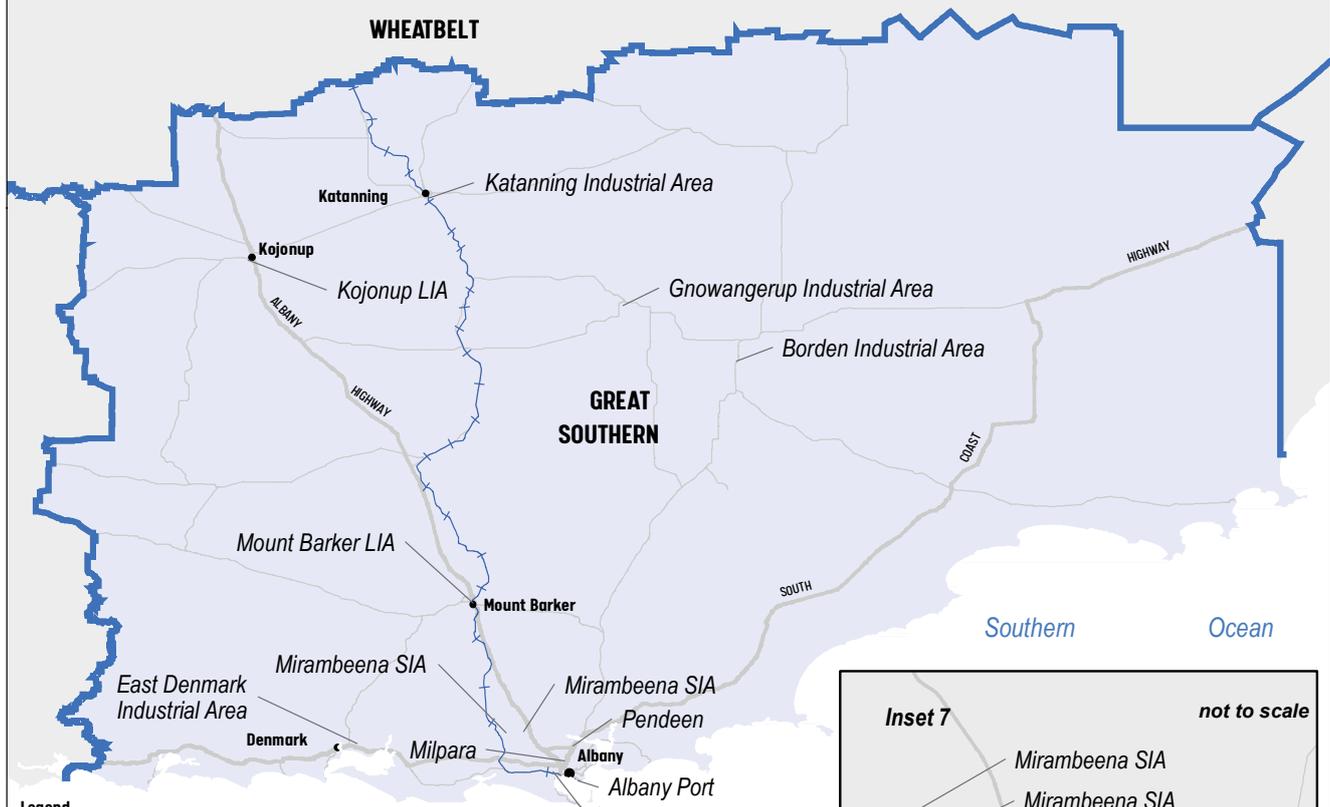
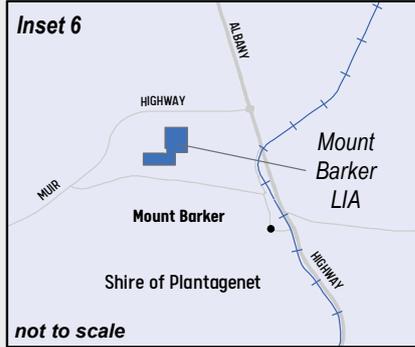
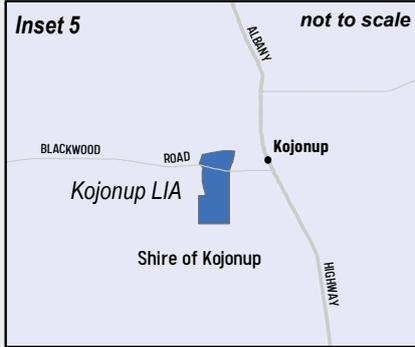
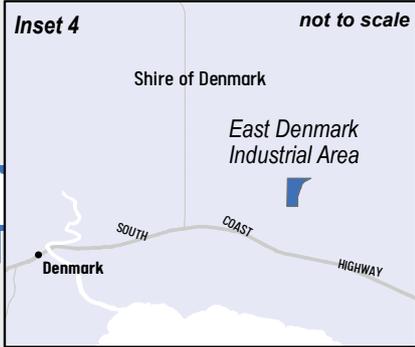
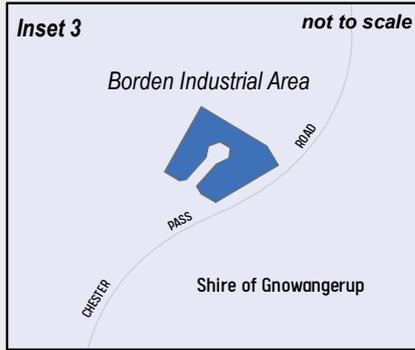
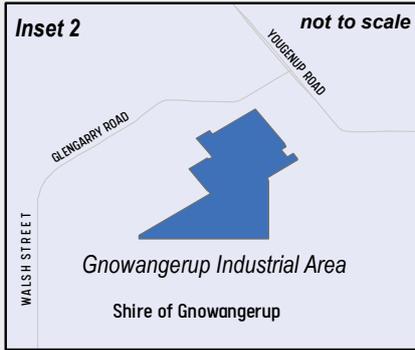
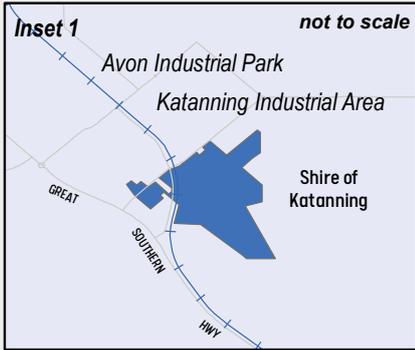
Key general and light industrial areas include:

- Albany Port
- Pendeen
- Gledhow/Robinson industrial area
- East Denmark Industrial Area
- Yerriminup Agribusiness Precinct
- Katanning Industrial Area

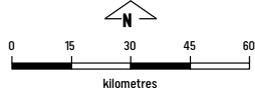
Ample general industrial land has been identified within Albany. Some of the key infrastructure needs identified for the area include road upgrades around and within Albany, including the construction of passing lanes on Albany and South Coast Highways and the construction of the proposed Stages 2, 3 and 4 of the Albany Ring Road, which will provide a more efficient heavy vehicle access route to the Port of Albany and improve safety in the Albany town centre. The development of a rail spur into the Mirambeena Industrial Area is also considered a longer-term need.



10 Year Industrial Land Strategy



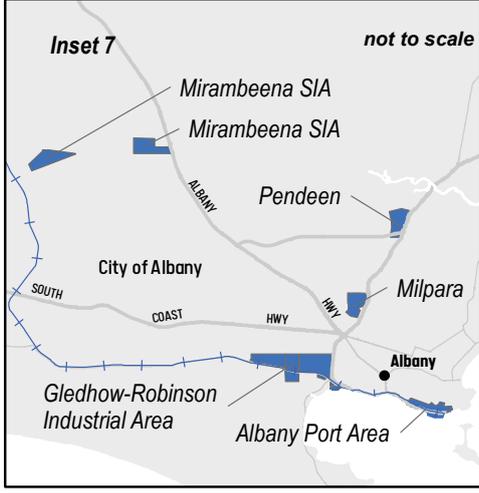
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TECHNOLOGY PARKS

Technology Parks generally incorporate co-located industry and education land uses. The focus within most Technology Parks – such as the Melbourne Innovation District or Australian Technology Park in Sydney – is on innovation. The pool of talent developed at such a site and the two-way opportunity to engage in research partnerships and alliances is attractive to industry. The parks often provide a physical space for ventures developed within a university and spun-off, as well as private start-ups.

Technology Parks in Western Australia are governed by the *Industry and Technology Development Act 1998*. There are two designated Technology Parks in Western Australia:

- Technology Park Bentley, which is part of the Bentley Curtin Specialised Activity Centre; and
- Australian Marine Complex (AMC) Technology Park in Henderson.

The physical infrastructure requirements, such as roads, parking, public transport, for Technology Parks are generally understood, however their success is often linked to other, more specific infrastructure, such as telecommunications infrastructure, shared spaces for start-ups, business incubators, and support for businesses seeking to set-up their operations. Consideration should be given to developing an approach for Technology Parks, including addressing the provision of regulatory and physical infrastructure, as well as industry incentives, to ensure industry can prosper.

TECHNOLOGY PARK BENTLEY

The Bentley Curtin Specialised Activity Centre Structure (BCSAC) plan provides a vision for the further development of Technology Park Bentley and surrounding area.

The plan was endorsed by the WA Government in 2018. The centre has a unique combination of education, research, technology, aged care and specialised functions. It is the location of State Government agencies, Curtin University, the CSIRO and numerous private and commercial organisations.

To ensure Technology Park Bentley can achieve the vision laid out in the BCSAC plan, key enabling infrastructure is required in the medium term, mostly related

to transport. The increased employment density and additional jobs targeted for the precinct will require transport improvements including improved public transport links to the area and parking within the precinct, likely multi-storey.

AMC TECHNOLOGY PARK HENDERSON

AMC Technology Park currently remains largely undeveloped. The land is held mostly in DevelopmentWA ownership, and adjoins the Australian Marine Complex. The precinct has been earmarked for research, education and technology development for the defence, marine, oil and gas, and resource sectors located in AMC.



RECOMMENDATIONS: THE PATH FORWARD

Infrastructure plays a vital role in unlocking and activating industrial areas. The Strategy provides 10 recommendations to unlock industrial land in Western Australia over 10 years, as well as a list of recommended physical infrastructure projects and regulatory process improvements.

Four of the physical infrastructure projects are considered high priority, with development recommended within the first two years.

When undertaking strategic planning for key infrastructure to service industrial land, it is also important to consider the evolution of existing industrial estates, future drivers of local demand and emerging global trends.

RECOMMENDATIONS

(1) Strategic Industrial Areas: *Prioritise the finalisation of land assembly in accordance with Government's Strategic Industrial Area land assembly model.*

This includes priority activities such as resolving native title and pastoral tenure at Ashburton North, Maitland, and Boodarie SIAs; finalisation of the Kemerton environmental Strategic Assessment, introduction of Improvement Scheme's as the preferred planning framework when planning updates are required and land acquisition.

(2) Strategic Industrial Areas: *Develop an infrastructure funding model to attract foundation proponents and fund common use infrastructure or capacity upgrades in service infrastructure, subject to agreed funding principles and business case approval.*

Up-front capital costs for infrastructure to support industrial developments is usually the responsibility of industrial proponents. These costs can often make development of new projects, particularly for foundation proponents, unattractive. Government investment in infrastructure can:

- Reduces upfront costs for proponents where appropriate and equitable,

which can be recovered elsewhere through taxes and other Government charges; and

- Allows for development of scalable, common user infrastructure which might have otherwise been single user if developed by a proponent for their own specific projects.

(3) Strategic Industrial Area: *Capitalise on Defence opportunities at the Australian Marine Complex to deliver major infrastructure upgrades.*

The State Government released the AMC Strategic Infrastructure and Land Use Plan (SILUP). The plan outlines the short, medium, and long-term infrastructure upgrades required to guide the AMC's ongoing development as a nationally significant industrial area for the defence, marine and resources industries.

(4) General Industrial Areas: *Consider pre-funded development contribution plans for complex GIAs.*

New approaches to developing general industrial lots need to be considered. Fragmented land ownership is resulting in high land costs which, when coupled with high development costs, is discouraging development. Development costs include the cost of delivering mandated infrastructure, such as power, water, sewer, and communications, as

well as holding costs and development costs. Development Contribution Plans have been used to help manage these costs, however they are often complex and costly. Pre-funded development contribution plans offer a solution. DevelopmentWA successfully secured WA Government funding to assemble critical land holdings, complete the Development Contribution Plan and to deliver the critical infrastructure needed to activate private sector development at Forrestdale Business Park West. Similar approaches should be considered for other complex industrial sites.

(5) Existing industrial estates: *Protect existing industrial areas in the Perth and Peel regions from residential encroachment.*

Existing industrial estates experience the process of re-generation over time and sometimes this can lead to non-industrial uses encroaching on industrial areas and creating land-use conflict. This can often lead to loss of industrial land as industry relocates to the periphery of an urban area. In line with the Perth and Peel @3.5 Million framework (P&P@3.5M), it is crucial existing industrial areas are protected, whilst allowing for the establishment of new industries, increased employment density and improved employment self-sufficiency.

(6) Road upgrades: *Progress recommended road upgrades to help activate constrained industrial land.*

Roads that cater for heavy vehicles and link industrial estates to existing freight routes play an important role in ensuring GIAs are established and thrive. The Strategy identifies several short, medium and long-term road upgrades across Perth and Peel that, if delivered, would enable constrained industrial land to be activated. Main Roads Western Australia has announced several road upgrades that would have a significant impact on industrial areas, including upgrades along Tonkin Highway (Maddington Kenwick Special Employment Area (MKSEA)) and Roe Highway (Hazelmere). Further road upgrades have been identified in this Strategy, including at Latitude 32 and Neerabup Industrial Area.

(7) Sewer: *Provide sewers in existing industrial estates and develop a new approach for the provision of sewers in future industrial areas.*

It is crucial that sewers are provided in industrial areas. Several existing mature industrial areas across Perth and Peel – Bayswater, Welshpool, Kewdale Hazelmere – have evolved without sewers. Their re-development is currently constrained by this, with very few industries able to use the area without sewers. Some of these industrial areas are located close to public transport and residential populations, and so their redevelopment would help to increase employment density. The WA Government should consider a new approach for the provision of sewer in industrial areas to ensure they are not constrained in the future.

(8) Regional WA: *Support the development of enabling physical infrastructure in regional WA to facilitate the establishment of new industries.*

The key issue for regional WA is on the demand side and, as a result, many regional communities are seeking to attract new industries to diversify their economies. To assist this, it is critical enabling infrastructure, such as sufficient power, water and communications, are in place to support new projects.

One example is the renewable energy sector, which is seeking to establish new projects across regional WA, with several potential projects under consideration, including in solar, hydrogen and wind. These projects are expected to drive demand for industrial land but require the right enabling infrastructure.

(9) Regional WA: *Continue the Regional Development Assistance Program's work, especially in the Wheatbelt, to facilitate serviced light industrial land.*

Small to medium enterprises play a critical role in the economies of smaller regional towns and an adequate supply of serviced light industrial land is required to ensure these businesses are sustained and have opportunities for growth. Due to low land values and the high cost of connecting and upgrading services, including power and water to greenfield sites, development by the private sector is often not viable. Through the Regional Development Assistance Program (RDAP), DevelopmentWA has worked with local governments to provide serviced



light industrial land across regions' towns. The RDAP program is seen as critical in maintaining the longer-term supply of light industrial land, especially in the Wheatbelt, and should be continued.

(10) Technology parks: *Develop an agreed state-wide approach for the establishment and ongoing management of Technology Parks, including ensuring they are provided with the required enabling physical infrastructure.*

Technology Parks are expected to play a key role in establishing future industries in WA and are expected to provide significant places of employment and activity. It is therefore crucial that enabling infrastructure is provided for these sites and an agreed, state-wide approach for the establishment and ongoing management of Technology Parks is developed.

The availability of serviced industrial land, both SIA and GI, plays a crucial role in enabling economic growth of towns, regions and the State overall. It is crucial that Infrastructure WA work on the State's first Infrastructure Strategy incorporates infrastructure requirements to ensure industrial land continues to be available for large proponents operating in SIAs, as well as small to medium size business operating in GIAs. Provision of physical infrastructure and regulatory processes identified in this document is critical in ensuring that current industries can maintain their operations and that emerging industries are able to be established and can thrive.

RECOMMENDED 10-YEAR INFRASTRUCTURE PROJECTS

URGENCY	TIMING
High	1-2 years
High-Medium	2-4 years
Medium	5-7 years
Medium-Low	8-10 years
Low	10+ years

PHYSICAL INFRASTRUCTURE PRIORITY LIST

PROJECT NAME (INDUSTRIAL AREA NAME)	REGION/ LOCATION	PROJECT TYPE (EG. ROAD, RAIL, WATER, POWER)	URGENCY	TIMING	COMMENT/DESCRIPTION
Strategic Industrial Areas					
Maitland SIA	Pilbara	Road	Medium	2-4 years	Intersection and entrance road off North-West Coastal Highway.
Ashburton North SIA	Pilbara	Road	High-Medium	2-4 years	Brolga intersection and access road.
Ashburton North SIA	Pilbara	Road	High-Medium	2-4 years	Establish a Bulk Liquids/Solids Jetty at the Port of Ashburton.
Anketell SIA	Pilbara	Road	Medium - low	8-10 years	Intersection and entrance road.
Geraldton Nargulu	Mid West	Road	Medium	5-7 years	Oakajee Narngulu Infrastructure Corridor (initially the road link between Narngulu and Oakajee bypassing Geraldton urban areas).
Oakajee SIA	Mid West	Road	High-Medium	2-4 years	Intersection and entrance road.
Mungari SIA	Goldfields	Road	High-Medium	2-4 years	Upgrade intersection and entrance road.
Mungari SIA	Goldfields	Gas access	Medium	5-7 years	Extension of gas Infrastructure 18km from APA's goldfields gas transmission line.
Mungari SIA	Goldfields	Water access	Medium	5-7 years	Progression of a water servicing solution based on foundation proponents requirements for potable and process water.
Kwinana	Perth - South Metropolitan sub-region	Water access	Medium	5-7 years	Expansion of the Kwinana Wastewater Recycling Plant and pipeline network to meet the demand for non-potable water for existing and future industries.
Kwinana/Rockingham	Perth - South Metropolitan sub-region	Power access	High	1-2 years	Progress strategic planning with Western Power to explore network augmentation and potential to create additional reserved power capacity
Rockingham SIA	Perth - South Metropolitan sub-region	Rail	Medium -Low	8-10 years	Realign Rockingham Rail Loop
Rockingham SIA	Perth - South Metropolitan sub-region	Port	High-Medium	2-4 years	Upgrade to the Kwinana Bulk Liquids Jetty to meet the demand for capacity from existing and future users
Kemerton SIA	South-West region	Rail	Medium	5-7 years	Rail spur from South-West Mainline to Kemerton SIA industrial core

PROJECT NAME (INDUSTRIAL AREA NAME)	REGION/ LOCATION	PROJECT TYPE (EG. ROAD, RAIL, WATER, POWER)	URGENCY	TIMING	COMMENT/DESCRIPTION
Kemerton SIA	South-West region	Road	High-Medium	2-4 years	Extend Kemerton Road to the north and widen/ upgrade secondary roads, including Marriot Road and Wellesley Road.
Kemerton SIA	South-West region	Power	High-Medium	2-4 years	Investigate with Western Power the funding of network augmentation and to create additional power capacity
Shotts SIA	South-West region	Gas	High-Medium	2-4 years	Extension of gas infrastructure from Worsley lateral
Shotts SIA	South-West region	Process Water	High-Medium	2-4 years	Extension of process water pipes from Wellington Dam
Australian Marine Complex	Perth - South Metropolitan sub-region	Marine Infrastructure	High-Medium	2-4 years	Construction of a Large Vessel Dry Berth and associated infrastructure including breakwaters, wharves, vessel transfer paths and servicing to meet Defence opportunity.
General Industrial Areas					
Muchea Industrial Park	Wheatbelt	Gas access	Medium	5-7 years	Installing the trunk infrastructure to connect the estate to the Bunbury to Dampier gas pipeline.
Muchea Industrial Park	Wheatbelt	Water access	Medium	5-7 years	Explore an approach to secure water connection to Muchea industrial area (current infrastructure only caters for Stage 1).
Muchea Industrial Park	Wheatbelt	Road	High-Medium	2-4 years	Construction of the RAV10 network within the Muchea Industrial Park to establish a safe and efficient movement network.
Avon Industrial Park	Wheatbelt	Rail	Low	10+ years	A long-term requirement is a rail spur. In the future a rail spur could attract industries where bulk freight can be transported via rail to or from the Avon Industrial Park.
Neerabup Industrial Estate	Perth - North-West sub-region	Road	Medium	5-7 years	Upgrade East-West Link between Neerabup Industrial Estate and Northlink (Perth-Darwin Highway), upgrade and extend Neaves Road from Perth to Darwin Highway (Northlink) through to Flynn Drive, and enable the road to be used for Freight traffic.
Neerabup Industrial Estate	Perth - North-West sub-region	Road	High	5-7 years	Upgrade Flynn Drive between Wanneroo Road and Mather Drive to dual carriage-way (upgrade to main distributor road).
Neerabup Industrial Estate	Perth - North-West sub-region	Road	Medium - Low	10+ years	Commence construction of the Whiteman to Yanchep Highway from Tonkin Highway up to Flynn/ Neaves Road.
Hazelmere	Perth - North-East sub-region	Road	High-Medium	1-2 years	Road upgrades - new grade separated interchange at GEH Bypass and Roe Highway.
Hazelmere	Perth - North-East sub-region	Road	High-Medium	1-2 years	Road upgrade - duplication of Abernethy Road between Grogan Road and the future intersection of Adelaide St.

PROJECT NAME (INDUSTRIAL AREA NAME)	REGION/ LOCATION	PROJECT TYPE (EG. ROAD, RAIL, WATER, POWER)	URGENCY	TIMING	COMMENT/DESCRIPTION
Hazelmere	Perth - North-East sub-region	Road	High	1-2 years	Road upgrade - extension of Lloyd St from Clayton St to Lakes Road, including a new bridge over the Helena River.
Hazelmere	Perth - North-East sub-region	Road	High-Medium	2-4 years	Road upgrades - intersection upgrade at Abernethy Road and Kalamunda Road.
Hazelmere	Perth - North-East sub-region	Rail	Low	Beyond the scope	Realignment of the freight rail line through Hazelmere. Land assembly is on-going and construction is beyond the timeframe of this strategy.
Hazelmere	Perth - North-East sub-region	Sewer connection	Medium	5-7 years	Provision of Sewer in the estate to enable additional land uses.
Bullsbrook	Perth - North-East sub-region	Road	High	1-2 years	Construction of Stock Road between North Link interchange (Perth to Darwin Highway) and Great Northern Highway to a single carriageway connector road with tow lanes to cater for industrial traffic
Bullsbrook	Perth - North-East sub-region	Road	Low	10+ years	Upgrade Stock Road between Northlink interchange (Perth to Darwin Highway) and Great Northern Highway to a four lane connector road catering for industrial traffic and include a bridge over the railway (grade separation).
Bullsbrook	Perth - North-East sub-region	Road	Medium	5-7 years	Upgrade East-West Link between Neerabup Industrial Estate and Northlink (Perth-Darwin Highway), by upgrading Neaves Road to a primary distributor road from Perth to Darwin Highway through to Flynn Drive/Whiteman-Yanchep Highway.
Latitude 32	Perth - South Metropolitan sub-region	Road	High	1-2 Years	Upgrading Russell Road intersection with Rockingham Road to a grade separated interchange.
Latitude 32	Perth - South Metropolitan sub-region	Road	High-Medium	2-4 years	Upgrading Russell Road between the proposed distributor road within the Latitude 32 Orion Estate and the future North-South Road through Latitude 32 to RAV-7 standard.
Latitude 32	Perth - South Metropolitan sub-region	Road	High	1-2 Years	Upgrade Wattleup Road and improved access to Rockingham Road.
Latitude 32	Perth - South Metropolitan sub-region	Road	Medium	5-7 years	Upgrade and construct Rowley Road to establish a new road connection between Kwinana Freeway and Rockingham Road.
Latitude 32	Perth - South Metropolitan sub-region	Road	Medium	10+ years	Construct North-South Distributor Road from Russell Road all the way through to Anketell Road as the main distributor road for Latitude 32.

PROJECT NAME (INDUSTRIAL AREA NAME)	REGION/ LOCATION	PROJECT TYPE (EG. ROAD, RAIL, WATER, POWER)	URGENCY	TIMING	COMMENT/DESCRIPTION
Maddington Kenwick Special Employment Area (MKSEA)	Perth - South Metropolitan sub-region	Road	High-Medium	2-4 years	Upgrading the intersections to grade separated at: · Tonkin Highway and Kelvin Road, · Tonkin Highway and Welshpool Road.
Maddington Kenwick Special Employment Area (MKSEA)	Perth - South Metropolitan sub-region	Road	High-Medium	2-4 years	Road upgrades - increase Tonkin Highway from four to six lanes between Hale Road and Kelvin Road.
Maddington Kenwick Special Employment Area (MKSEA)	Perth - South Metropolitan sub-region	Sewer connection	High-Medium	2-4 years	Extending the Sewer Trunk Main to MKSEA and distribution along main roads. This will enable future development and allow for a variety of uses within the precinct.
South Forrestdale	Perth - South Metropolitan sub-region	Road	Medium	10+ years	Upgrade to Rowley Road between Kwinana Freeway and Tonkin Highway.
Nambeelup (Peel Business Park)	Peel region	Road	Medium - Low	8-10 years	Upgrading Lakes Road and Gull/Paterson Roads to four-lane dual carriageway roads (as identified by Nambeelup Industrial Area Structure Plan).
Waterloo	South-West region	Rail	Medium - Low	8-10 years	Rail spur for the future inter modal terminal at future Waterloo industrial area.
General Industrial Areas	Great Southern region	Road	High-Medium	2-4 years	The construction of remaining phases of the Albany Ring Road, which will provide a more efficient heavy vehicle access route to the Port of Albany and improve transportation safety within the Albany town centre.
General Industrial Areas	Great Southern region	Road	High-Medium	2-4 years	The construction of passing lanes on Albany and South Coast Highways to improve road safety and improve traffic conditions for heavy vehicles.

*The list excludes Westport related infrastructure (e.g. major road and rail freight corridors upgrades), as specific nature of these upgrades will be determined during the next stage of Westport's work.

REGULATORY (NON-BUILD) PROCESS IMPROVEMENTS AT INDUSTRIAL AREAS

PROJECT NAME (INDUSTRIAL AREA NAME)	REGION/ LOCATION	PROJECT TYPE (EG. ROAD, RAIL, WATER, POWER)	URGENCY	TIMING	COMMENT/DESCRIPTION
Strategic Industrial Areas					
Infrastructure Fund	SIA	All	High-Medium	2-4 years	Develop an infrastructure funding model to support foundation proponents, common use infrastructure and provision of capacity upgrades in service infrastructure, subject to agreed funding principles and an agreed business case.
Ashburton	SIA	Pilbara	High	1-2 years	Resolve native title through commencement of ILUA negotiations with the relevant native title parties. Resolve pastoral leases.
Boodarie	SIA	Pilbara	High	1-2 years	Resolve native title through commencement of ILUA negotiations with the relevant native title parties. Resolve pastoral leases.
Maitland	SIA	Pilbara	High	1-2 years	Resolve native title through commencement of ILUA negotiations with the relevant native title parties. Resolve pastoral leases.
Maitland/ Burrup SIA	SIA	Pilbara	High	1-2 years	Resolve land assembly and alignment for the Burrup Maitland Infrastructure corridor.
Kemerton	SIA	South-West region	High	1-2 years	Finalise an environmental Strategic Assessment for the Kemerton SIA.
Mungari	SIA	Goldfields region	Medium	5-7 years	Develop Improvement Schemes for SIA's when a requirement for further statutory planning arises.
Rockingham	SIA	Perth - South Metropolitan sub-region	Medium	5-7 years	Develop Improvement Schemes for SIA's when a requirement for further statutory planning arises.
Oakajee	SIA	Mid-West region	Medium	5-7 years	Develop Improvement Schemes for SIA's when a requirement for further statutory planning arises.
Kemerton	SIA	South-West region	Medium	5-7 years	Develop Improvement Schemes for SIA's when a requirement for further statutory planning arises.
Kemerton	SIA	South-West region	Medium	5-7 years	Land acquisitions and transfers following the Strategic Assessment.

PROJECT NAME (INDUSTRIAL AREA NAME)	SIA/GIA	REGION/ LOCATION	URGENCY	TIMING	COMMENT/DESCRIPTION
General Industrial Areas					
Geraldton (overall)	GIA	Mid-West region	High-Medium	2-4 years	Power grid upgrades needed for industrial use, currently the first user is 'wearing' the whole cost.
Inner industrial Areas (Ashfield, Welshpool, Hazelmere)	GIA	Perth - Central sub- region	High-Medium	2-4 years	State Government to develop an approach to preserve industrial uses within existing industrial precincts in the Central Sub-region and an approach to upgrading infrastructure, such as sewer and telecommunications, to optimise land use and employment density.
Maddington Kenwick Special Employment Area (MKSEA)	GIA	Perth - South Metropolitan sub-region	Medium	5-7 years	Establishment of an Infrastructure Plan (pre-funding model) for the strategic acquisitions and the delivery of key infrastructure (roads, power, water) identified by the City of Gosnells in order to activate MKSEA.
South Forrestdale	GIA	Perth - South Metropolitan sub-region	High-Medium	2-4 years	Establishment of an Infrastructure Plan (pre-funding model) to deliver the trunk infrastructure.
Nambeelup (Peel Business Park)	GIA	Peel region	Low	10+ years	Planning for the next stage of infrastructure delivery, including water, sewer, telecommunications and power extensions, to service future industrial land.
Nambeelup (Peel Business Park)	GIA	Peel region	Medium - Low	8-10 years	Funding to develop a Developer Contribution Plan (DCP) for the Peel Business Park. A DCP is a priority to ensure there is a strategy in ready for the next phase of infrastructure construction to be delivered.







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