

## Part 10 - South-east sub-region



The South-east sub-region consists of the Shire of Serpentine-Jarrahdale, the City of Gosnells and the City of Armadale. The total area of zoned land in this sub-region is 159,077 hectares of which 668 ha is dedicated as industrial zoned land (0.42 per cent) – representing 6.5 per cent of the metropolitan total of industrial zoned land.

## Demographic profile

The 2010 ABS estimated resident population for this sub-region is 184,919. An estimated 106,724 people live in the City of Gosnells with the majority of growth occurring in the south-western areas of Southern River, Forrestdale, Brookdale and Wungong. The City of Armadale has an estimated resident population of 60,983 according to 2010 ABS statistics. The Shire of Serpentine-Jarrahdale has an existing population of 17,212 residents (ABS, 2011). By 2031 the sub-region is forecast to have a population of 228,000.

The South-east sub-region generally reflects the same ageing of the population that is being experienced in other sub-regions. However, an exception to this trend has occurred in the Shire of Serpentine-Jarrahdale which has experienced a significant reduction in the number of people aged between 20-30 years old, and a higher number of people aged between 35 and 50 years old, with a corresponding peak in the 5 to 15 year old age group.

## Planning profile

The primary strategic metropolitan centre in this sub-region is Armadale. In addition to its commercial function, Armadale also provides a range of facilities and services including local government administration offices, government and institutional facilities, major transport infrastructure, regionally significant open spaces and recreational areas, and a cultural and heritage precinct. The continued effort to improve the amenity of the city centre and capitalise on the area's distinctive cultural and location attributes will be critical to attracting new business and employment to the area and improving employment self-sufficiency (ESS).



The hierarchy of activity centres in the South-east sub-region have been categorised into the following three types:

Strategic Metropolitan Centres	Secondary Centres	District Centres
Armadale	Maddington	Byford Forrest Lakes Gosnells Kelmscott Wungong* Mundijong* Thornlie North Forrestdale (Newhaven)*

\*emerging centre

Source: *Directions 2031 and Beyond*

*Directions 2031 and Beyond* aims to achieve an increase in dwellings from 65,000 in 2008 to 100,000 dwellings in the South-east sub-region by 2031.

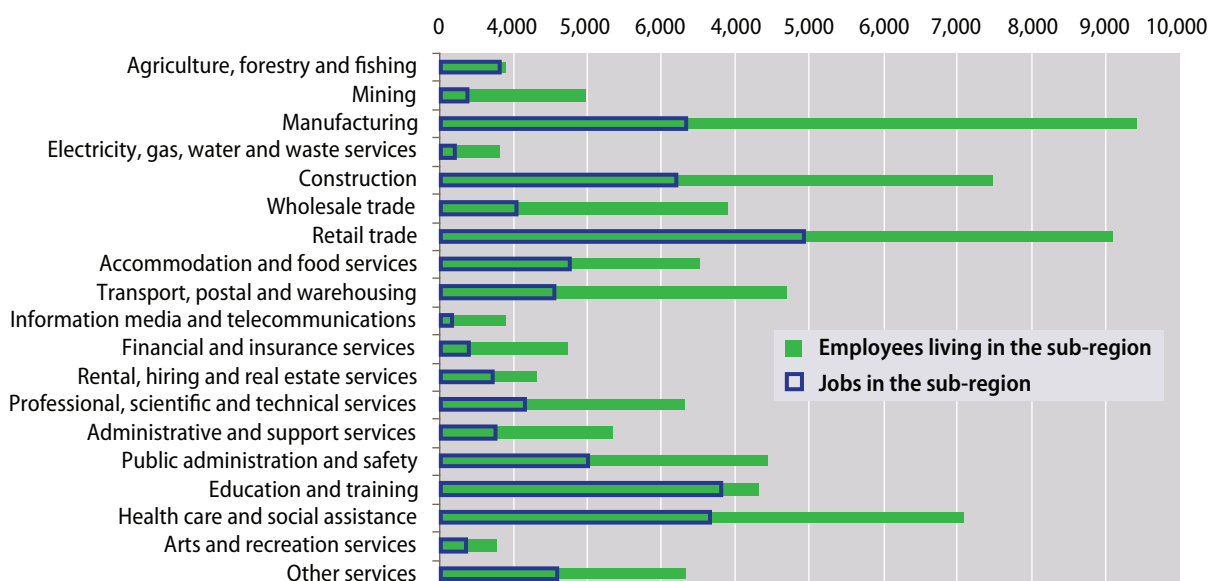
The majority of greenfield growth is expected to occur in the Shire of Serpentine-Jarrahdale and the City of Armadale, and the most significant infill/redevelopment opportunities exist in the City of Gosnells. With the increase in residential population in this sub-region, it will therefore be important to provide adequate employment land to cater for this increase.

## Economic profile

The graph below represents the number of employees living in the South-east sub-region employed in the particular industry (green bar) represented against the number of jobs existing for that industry in the sub-region (blue bar).

The main employment industry sectors in the South-east sub-region are manufacturing, retail health care and social services. Serpentine-Jarrahdale has a significantly higher percentage employed in agriculture and construction, which reflects the Shire's rural characteristics.

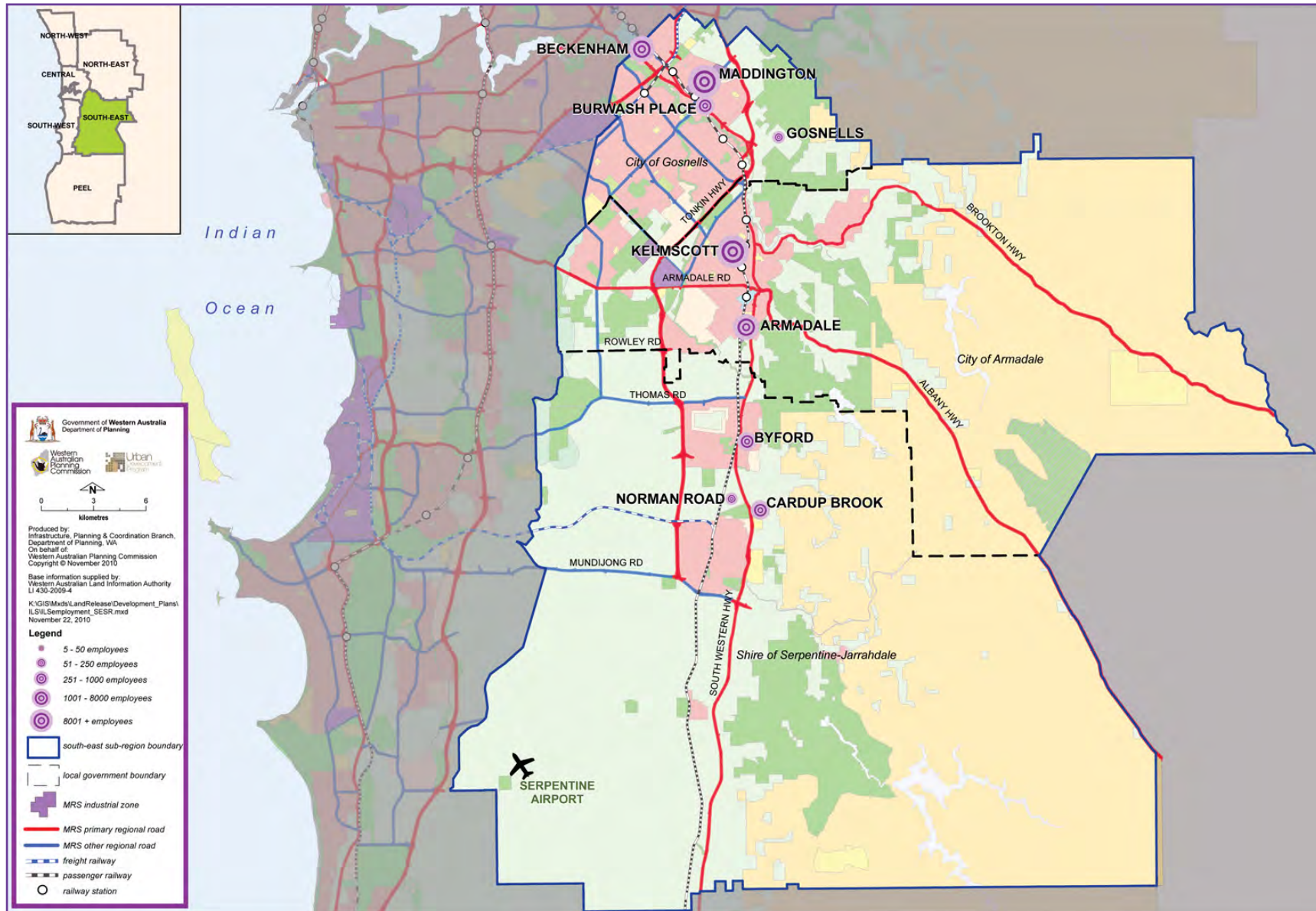
The ESS for this sub-region is 42 per cent at present. *Directions 2031 and Beyond* identified an ESS target of 55 per cent for this sub-region. This target translates into the need for an additional 32,000 to 48,000 jobs in this sub-region over the next 25 years.



Source: 2006 ABS Census of Population and Housing



Figure 24: Industrial employment centres - south-east sub-region





## Physical infrastructure

Infrastructure in the South-east sub-region is limited, and has no major airport or port facility. Nonetheless, it does have several infrastructure planning projects underway, which reflects the potential to offer a much stronger level of economic growth if the timely provision of infrastructure is incorporated with future strategic planning for the region.

### Water

The availability of groundwater for potable supplies or irrigation of public open spaces is limited across most of the outer metropolitan Perth and Peel regions. Alternative options will be required to trade or transfer existing licences should they be available or investigations made into alternative water resources.

Additional water storage infrastructure is being planned in Byford, Mundijong and Forrestfield. In addition, there are potential water recycling plants being planned at Westfield and Jandakot, although both will be dependent on the level of demand forecast.

### Energy

Additional energy infrastructure will be required to service the growing population. The Department of Planning and Western Power have developed a Network Capacity Mapping Tool that shows electricity capacity and utilisation as a result of land/building development and the future planning capacity of electricity infrastructure.

### Road and freight network

Through the Main Roads Western Australia works program, a number of key strategic road planning projects, both planned and in progress, have been identified for the South-east sub-region. Provision has been made to increase the traffic volume capacity of both Armadale Road and Tonkin Highway to cater for additional urban development and the need to enhance the connection of Tonkin Highway with the South Western Highway near Mundijong.

A Southern Link Road will also be investigated that has the potential to provide a road link from the Mundijong area across Albany and Brookton Highways. This route would avoid the need for large heavy vehicles to traverse the Darling Scarp through more built up urban areas and provide a high standard of connectivity for freight vehicles from rural areas to the southern end of Tonkin Highway.

Similar to the North-east and North-west sub-regions, there are no east-west primary regional road routes south of Armadale Road until Pinjarra Road. With the further development planned for the Kwinana Industrial area, including the Outer Harbour, James Point Port and the completion of the Latitude 32 area, there will be an even more urgent need for improved east west connections into this area. Proposed routes include Rowley Road, Anketell Road and Mundijong Road.

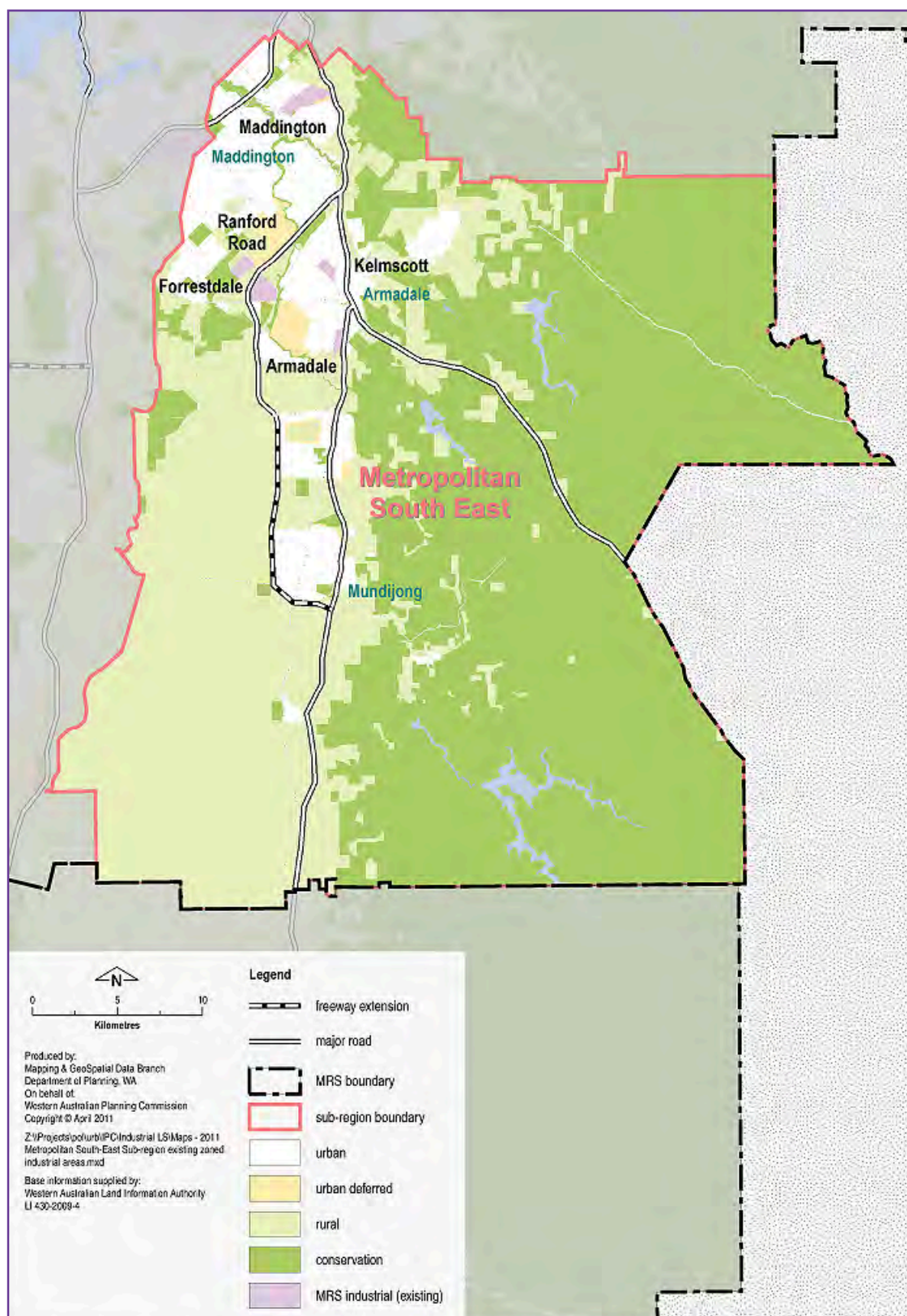
Investigations are underway to examine the suitability of intermodal freight terminals at various strategic locations throughout the Perth and Peel regions, of which West Mundijong in the South-east sub-region is being considered, given its proximity to the intersection point of the rail system and the primary road network.

## Industrial and employment land in the sub-region

The existing Maddington-Kenwick and Forrestdale regional industrial areas will be progressively developed to cater for a range of manufacturing, processing, warehousing and bulk goods handling activities. These centres are well connected to intermodal freight facilities at the Welshpool-Kewdale industrial centre and are ideally placed to take advantage of the potential synergies with major export oriented industrial centres such as Kwinana and Latitude 32, located in the South-west sub-region.

In response to strategic employment and economic issues, the Department of Planning, in partnership with the City of Armadale, City of Gosnells and the Shire of Serpentine Jarrahdale will develop regional economic development strategies to address:





**Figure 25: Metropolitan south-east sub-region existing zoned industrial areas**



- Facilitating major revitalisation initiatives such as *Armada Alive*;
- Capitalising on existing assets such as the Champion Lakes development;
- Diversifying local employment opportunities;
- Investment in industrial and employment land; and
- Facilitating economic development opportunities such as attracting business investment.

All local government authorities will be required to revise their Town Planning Schemes to better reflect current land uses occurring on site. This is particularly the case for land north-west of Kelvin Road, Maddington, presently zoned "Rural" under the local planning scheme, located within the City of Gosnells local municipal boundaries. Such land should be rezoned to industry or equivalent to reflect actual uses occurring on site.

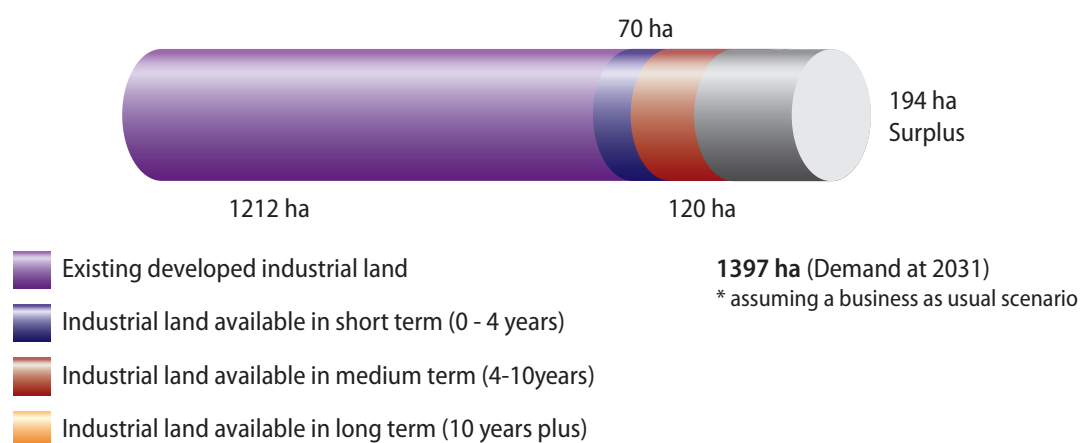
## Future industrial land supply in the sub-region

The strategy has identified several locations where future industrial sites may be considered, to accommodate future demand and economic growth. The future drivers for the South-east sub-region are considered to be:

- Population growth;
- Sustained levels of economic growth and employment targets;
- Improved freight infrastructure; and
- De-constraining existing industrial land.

The industrial land supply in this sub-region to 2031, based on Property Council of Australia (PCA) data, is represented below in figure 26.

With a forecast demand of 1397 ha by 2031, and based on existing data on the available supply in the pipeline, the sub-region will have a surplus of 194 ha of industrial land by 2031. Regardless of this forecast surplus in supply, forward planning to identify areas where additional industrial land may be located will still be required.



**Figure 26: Current non-heavy industrial zoned land supply: South-east sub-region**

(Source: Property Council of Australia)



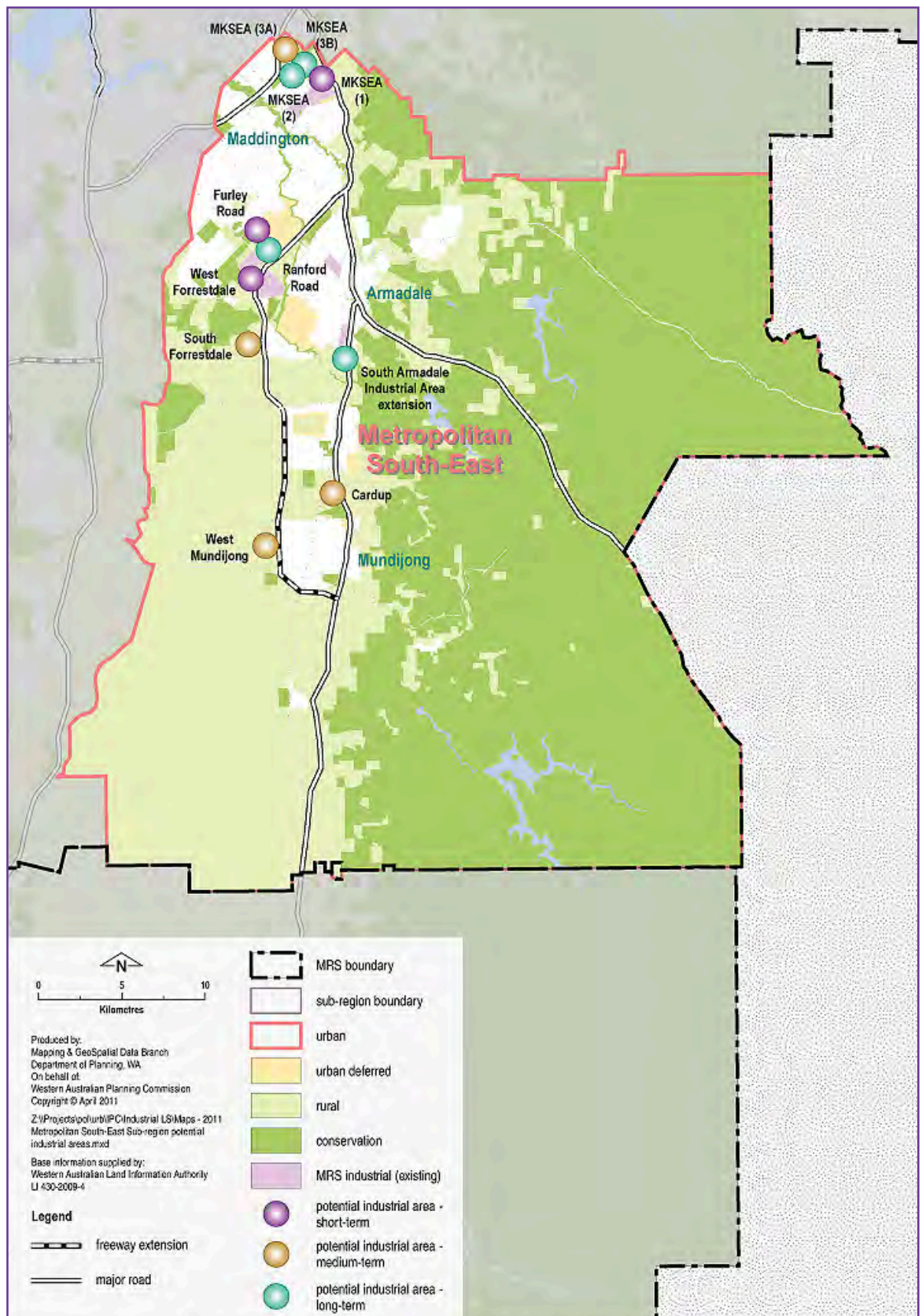


Figure 27: Metropolitan south-east sub-region potential non-heavy industrial areas





The strategy has identified possible industrial investigation sites or areas within the South-east sub-region. These investigation areas are not currently zoned “Industrial” in the Metropolitan Region Scheme. Further planning and environmental investigations are required for all sites and the exact area and configuration of these sites is subject to further investigation. These sites have been categorised into anticipated zoning timeframes, however, these timeframes are subject to change and dependent upon various factors, including proponents’ willingness to progress the necessary planning, environmental and servicing investigations to support rezoning proposals.

Name	Zoning Status (MRS)	Stage (if relevant)	Gross Area
Future short term non-heavy industrial sites (0-4 years)			
Furley Road	Rural and Urban Deferred	N/A	47 ha
West Forrestdale	Rural	N/A	120 ha
MKSEA Precinct 1	Rural	1	104 ha
Potential medium term non-heavy industrial sites (4-10 years)			
South Forrestdale	Rural	N/A	354 ha
MKSEA Precinct 3A	Rural	3A	81 ha
Cardup	Rural	N/A	208 ha
West Mundijong	Rural	N/A	455 ha
Potential long term non-heavy industrial sites (strategic landbank sites) (10 years +)			
MKSEA Precinct 2	Rural, Parks and Recreation, Public Purpose	2	290 ha
MKSEA Precinct 3B	Rural	3B	17 ha
Ranford Road	Urban Deferred	N/A	75 ha
South Armadale Industrial Area	Rural	N/A	81 ha
Total gross area			1832 ha

**\*Note:** The areas provided in this table exclude land that already is zoned “Industrial” in the Metropolitan Region Scheme. Please note that the total areas of these sites are still subject to investigation.

## South-east sub-region possible non-heavy industrial sites

The following section provides an overview of the possible industrial sites that have been identified as part of the strategy, to support future growth and demand in the South-east sub-region. The sites are defined by three separate categories: future short term industrial sites, potential medium term industrial sites, and potential long term industrial sites (strategic landbank sites).

### Future short term non-heavy industrial sites

The short term industrial sites within the South-east sub-region have been identified as follows.

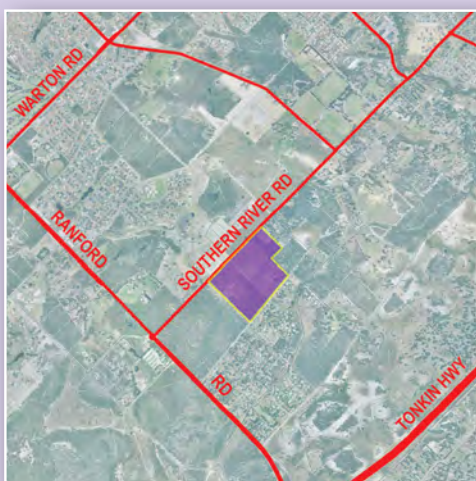
#### Furley Road

Currently zoned rural and urban deferred in the MRS, the site could be constrained by a resource enhancement wetland. The site has transport linkages to Southern River Road and Matison Road and has all services available.

The area is suitable to the provision of producer services.

#### Status of availability

- Planned release in two to four years.



## West Forrestdale

This land is contained within the jurisdiction of the Metropolitan Redevelopment Authority (MRA) on the western side of the Tonkin Highway. It is being planned and developed by the MRA as an extension to the Forrestdale Business Park.

Preliminary investigations and studies are currently being undertaken prior to the preparation of a structure plan. A final structure plan and development contribution scheme are expected to be released in mid 2012.

West Forrestdale is intended to deliver general and light industrial land.

### Status of availability

- Will require an MRS amendment.
- Parts of the site are constrained by wetlands.
- Abuts Jandakot Regional Park and potential for DRF/ priority flora.
- A high pressure gas easement (Dampier Bunbury Natural Gas Pipeline) runs through the middle of the site.



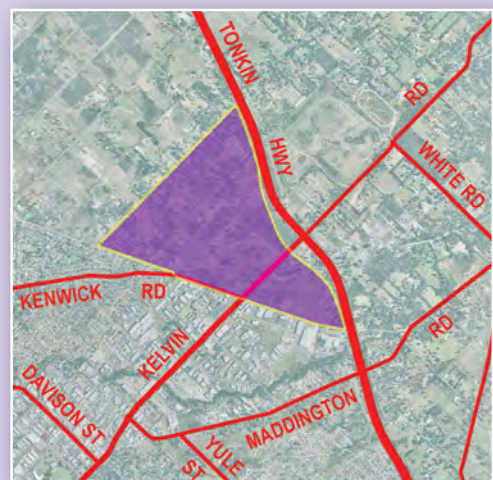
## Maddington Kenwick Strategic Employment Area Precinct 1

The provision of industrial land within the Maddington Kenwick Strategic Employment Area (MKSEA) has been an active planning matter for well over a decade. A Concept Plan has been prepared and adopted by the City of Gosnells, detailing the staging and development of this area, to provide industrial land on an ongoing basis for the next 10 to 15 years.

Precinct 1 comprises 59 separate allotments with 55 landowners. Some of the area is also under consideration for eco-industry precincts, which are anticipated to accommodate benign industrial land uses. The proposed scheme amendment contains a Bush Forever site.

### Status of availability

- A scheme amendment has been initiated.
- A management plan or a modification to the scheme amendment will have to occur before the amendment can be put out to public comment and adopted by the WAPC.
- Additionally, a water management plan and/or agreement will have to be negotiated with the Department of Water.





## Potential medium term non-heavy industrial sites

In the South-east sub-region, two sites (South Forrestdale and Maddington - Kenwick Strategic Employment Area (MKSEA)) have been identified, which have Government support for further planning investigation and to remove constraints, subject to a

more detailed investigation into the sites feasibility. A further two sites (Cardup and West Mundijong) have capacity to be developed in the medium term, however, investigative work for these sites has not occurred to the same extent. Each of these sites is described in the following section.

Issue	South Forrestdale
Land ownership	<ul style="list-style-type: none"> <li>Six main landowners. Traditionally the subject site has predominantly been used for rural/ agricultural purposes, however, developers are willing to investigate alternative land uses as the land is no longer deemed viable for productive rural/ agricultural use. City of Armadale is supportive of new employment areas.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>The site has effective transport linkages with routes such as Tonkin Highway, Rowley Road, Nicholson Road-Armadale Road and South-Western Highway, HWL and Heavy Haulage routes, therefore ensuring the site has access to an appropriate road network for both freight and employment within the area.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>The subject site is adjacent to Bush Forever areas. Development adjacent to Bush Forever sites should be sensitive to the environmental values of the Bush Forever sites and take measures to reduce potential environmental impacts.</li> <li>Abuts a RAMSAR Wetland within Forrestdale Lake Nature Reserve. Appropriate drainage measures and wetland buffers required.</li> <li>No declared rare or priority flora, or significant fauna locations are recorded within the site. A series of TEC areas are denoted north of the site, with 1000 m buffers from those areas extending into the study site.</li> <li>Located close to Forrestdale Lake and wetlands.</li> </ul>
Topography/ soil	<ul style="list-style-type: none"> <li>Generally flat and between 25 m and 30 m AHD. Key topographical feature is the proximity to Forrestdale Lake, immediately north-west of the site. More than 90 per cent of the site has a slope of less than 1 per cent drainage and stormwater management measures are expected to be extensive.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>The interface between existing residential development adjacent to the northern site boundary and the existing semi-rural land adjacent to the western, southern and eastern boundaries of the site will require consideration.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>Conservation and Resource Enhancement wetlands and their buffers (100 m and 50 m respectively) reduce the developable area of the site. Consultation with DEC is required where development within the buffers is proposed. Environmental investigations will be required if reclassification of the northeast Resource Enhancement wetland is to be considered.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>The subject site has been recognised to be a site of heritage significance, being named "Forrestdale Lake and Adjacent Wetlands". This site is not registered on the State Register of Heritage Places as being one of heritage significance. However it is registered with the National Trust, the Municipal Inventory and the Register of the National Estate as having significance.</li> <li>Forrestdale Lake and Thompson's Lake are collectively listed as Australian Ramsar site number 35 - a "declared Ramsar wetland" designated under Article 2 of the Ramsar convention.</li> </ul>



Issue	South Forrestdale
Site contamination	<ul style="list-style-type: none"> <li>No sites are recorded in the DEC Contaminated Sites Database within the area.</li> <li>The majority of the site is low-to-moderate risk for acid sulphate soils, with some areas of moderate to high ASS risk in the southern/central portion of the site and in the northeast corner, in association with a resource enhancement wetland.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>Existing underground and overhead power infrastructure exists to the site (132 kV and 330 kV transmission lines) along Nicholson Rd and through (north-south) the proposed area.</li> <li>The proposed Forrestdale substation is due to be energised at a planned service date of 2015, and cater for the Forrestdale industrial area. The substation is located approximately 4 km west from the proposed area and should be able to meet the initial demand.</li> <li>The proposed Armadale substation is also due to be energised at a planned service date of 2020. This substation may also be able to cater for the proposed industrial area as well. It is proposed to be located approximately 4 km east from the proposed industrial area as well. Western Power will monitor the demand growth of the area to be in the position to cater for the additional demand as it grows.</li> <li>High pressure gas main located in Armadale Road with capacity to service future uses.</li> <li>No wastewater planning exists for this area. No water planning has been undertaken for this area and it could be included as part of the wider Armadale Byford scheme that is being considered. The timing of this scheme review has not been set and is likely to be two to three years from completion. Extension from the existing system is unlikely to provide sufficient supply especially for fire requirements.</li> <li>Parts of the site are located in the Forrestdale main drain catchment.</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>Existing residential development lies within close proximity to the site with future residential development planned to occur in the area. This is likely to provide increased incentive to developers and businesses to undertake activities in the area as population demand for the area is clearly evident.</li> <li>The residential component of the Wungong Urban Water Master Plan should provide employment opportunities for the site.</li> <li>The Wungong Project will provide a workforce that can provide workers for any industries that establish at South Forrestdale.</li> </ul>

## Preferred uses and potential end users

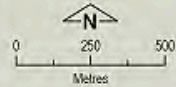
The above site is located within close proximity to Forrestdale Lake, which is an environmentally sensitive area located adjacent to existing residential development. Therefore, future industrial development should be sensitive to the surrounding environmental context. The predominant type of industrial development on-site will be general industrial development. However, some of the site should also be zoned Industrial Business in order to enable the provision of additional employment opportunities for those in nearby residential areas (both existing and future). In this regard, the General Industry development will contain land uses such as Commercial Vehicle Parking, Storage and Warehouse.

Development within the Industrial Business zone will contain land uses such as Recreation-Public, Garden Centre, Restaurant and Showroom. It is envisaged that this site is likely to contain a high degree of Producer and Consumer services, largely due to its proximity to existing and future planned residential development and other sensitive land uses.

Agri-food processor uses will be considered for this site due to its close location to rural producers from the south east and east; as well as close proximity to Perth. The inclusion will be subject to compliance with town planning and environmental considerations.



## South Forrestdale



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On behalf of:  
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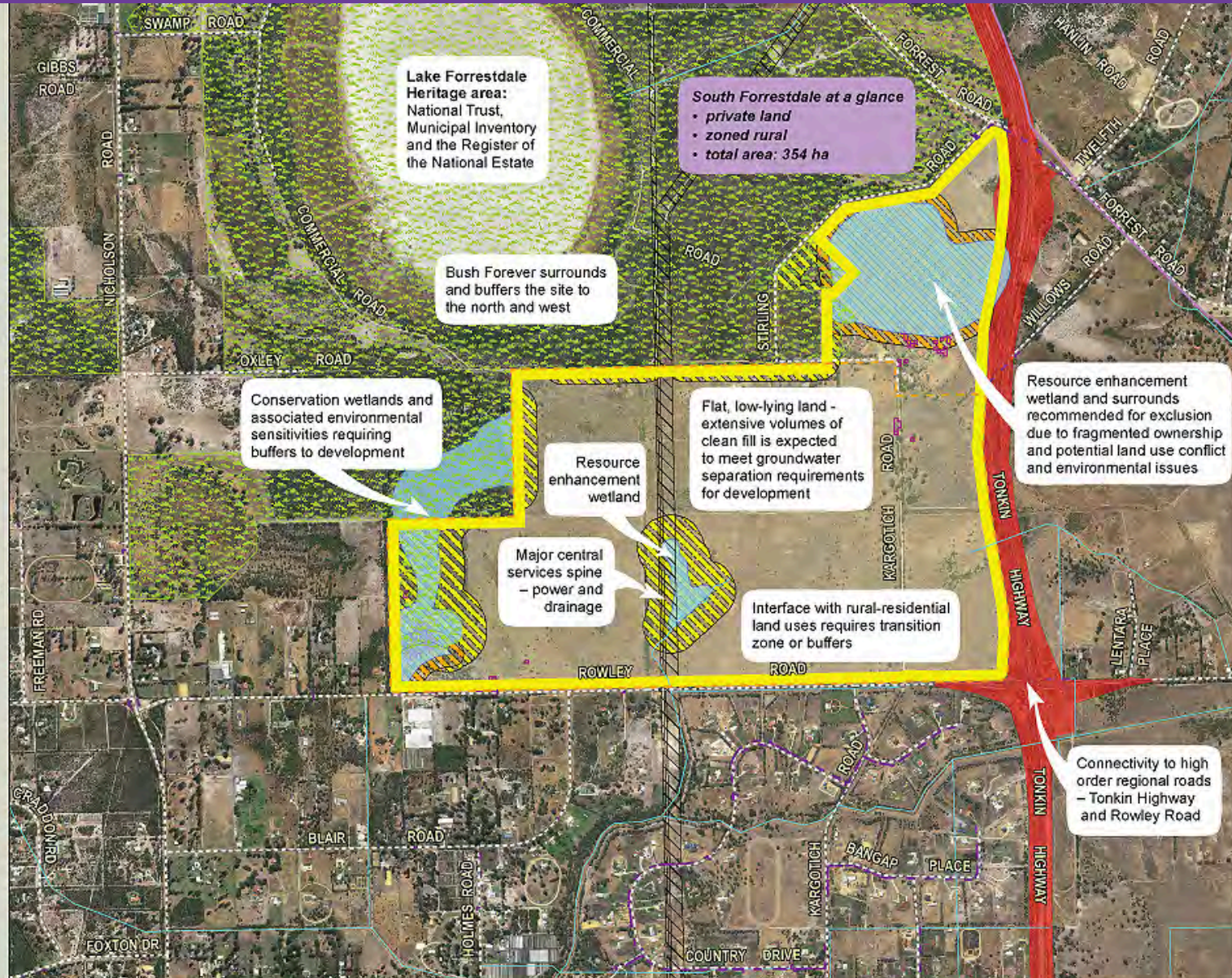
Zipofurb/PC/Industrial LS/Maps - 2011,  
South Forrestdale.mxd

Base information supplied by:  
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LI 430-2009-4

1:16,000 2010 Aerial imagery supplied by:  
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### Legend

- local road
- drainage line
- sewer main
- Western Power distribution underground
- possible site area change
- Western Power transmission easement
- potential industrial area - medium-term
- Regional scheme reserve**
  - primary regional road
- Development constraints**
  - 100m conservation wetland buffer
  - 50m resource wetland buffer
  - Bush Forever & native vegetation
  - slope > 5%
  - wetland





## Key actions - South Forrestdale

Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Planning and land use	1	Undertake MRS amendment.	Up to 7 years from commencement to complete key planning related actions (these are contingent upon the completion of key infrastructure studies).
	2	Prepare a District Structure Plan.	
	3	Amend the Local Planning Scheme to appropriate zoning and land uses.	
	4	Prepare Local Structure Plan(s).	
	5	Development Contribution Plan.	
	6	Undertake a local demand assessment to determine the staging requirements for release of land in line with population growth and industrial land demand in the south east sub-region.	
	7	Address interface issues with conservation areas and urban and rural land uses.	
Environment	8	Development in this area will require careful consideration and minimisation of potential polluted water flows into Forrestdale Lake and the Peel Harvey catchment. Drainage may need to be installed and directed to interception or treatment wetlands prior to discharge and development would require application of Water Sensitive Urban Design principles including peak flow reduction and adequate nutrient reduction.	Up to 3.5 years from commencement to complete key environmental actions.
	9	Investigate, in consultation with the DEC, the acceptability of industrial development within the identified TEC buffer affecting the northern portion of the site.	
	10	The appropriate water management investigations for this site should be undertaken by the proponent in accordance with Better Urban Water Management (WAPC 2008). Management plans should be consistent with the recommendations of the Southern River Integrated Land and Water Management Plan (DoW 2009) and Forrestdale main drain arterial drainage strategy (DoW 2009) for portions of the site.	
	11	Follow up outcomes of initial environmental and groundwater draining investigations to determine capability of the land to alternative (potential industrial) development.	
Infrastructure and servicing	12	No wastewater planning exists for this site. Water Corporation to undertake a detailed water supply study for the site, if development is to occur. No water planning has been undertaken for this area and it could be included as part of a wider Armadale Byford scheme that is being considered. Subject to resource priorities and availability of sufficiently detailed information about proposed industrial area, the Water Corporation may be able to schedule this work on Statewide Planning Program within two to three years.	Up to 7 years from commencement to complete key infrastructure studies.
	13	Commence investigations for servicing, rezoning and structure planning with particular regard to drainage and water servicing provision and cost.	
	14	Undertake investigations on future demand on power and gas.	
Physical landform and soils	15	Undertake Acid Sulphate Soils investigations and prepare an Acid Sulphate Soils Management Plan where moderate to high acid sulphate soils risk levels are detected.	3 months to complete the preliminary site assessment for acid sulphate soils.
	16	Undertake heritage surveys (indigenous and European).	

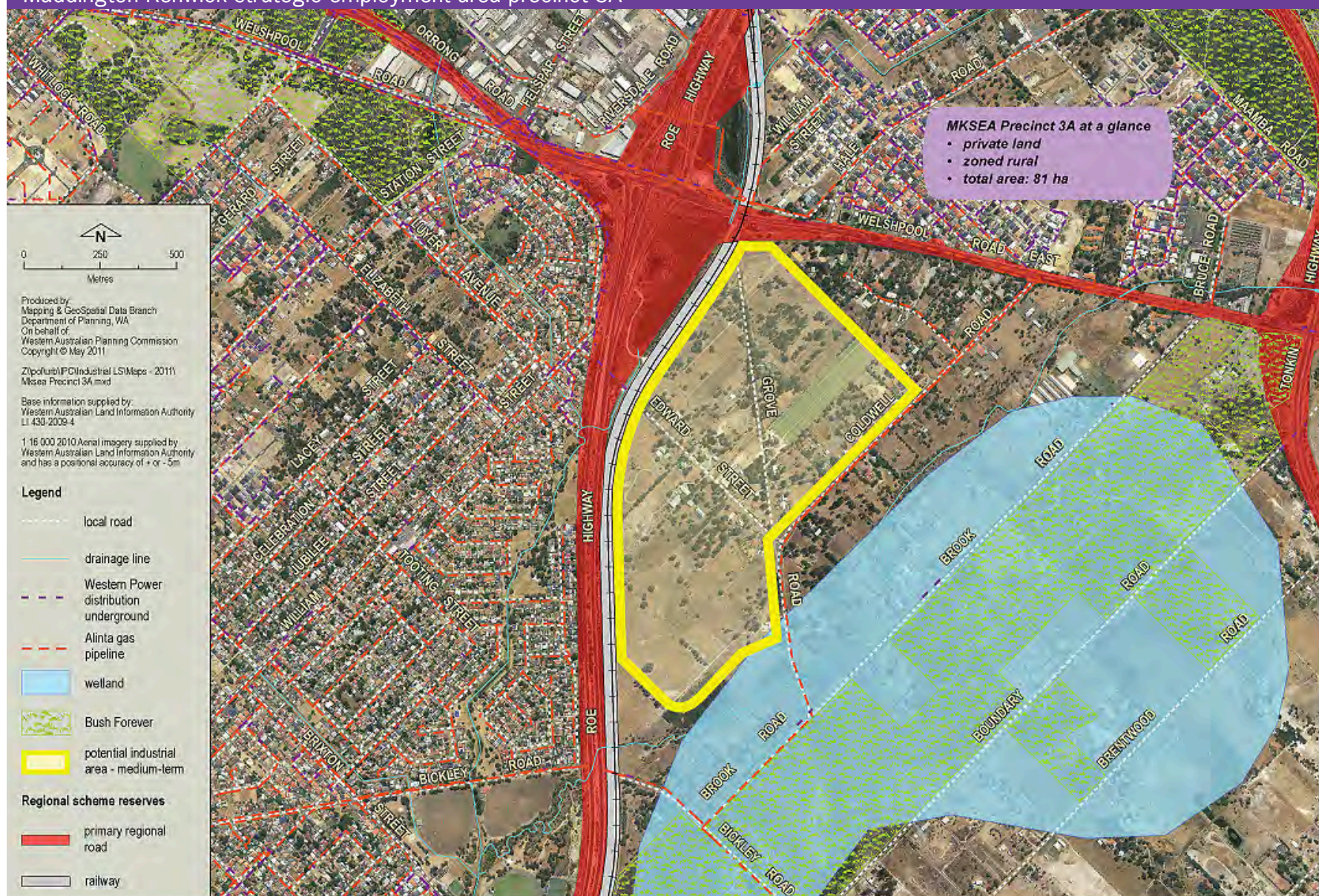




Issue	Maddington Kenwick strategic employment area precinct 3A
Land ownership	<ul style="list-style-type: none"> <li>• Fragmented ownership.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>• Tonkin and Roe Highways are in close proximity. Welshpool Road is located directly to the north of the site. Nearby Kelvin Road provides access direct to Albany Highway.</li> <li>• Located close to the Kewdale Intermodal Terminal which provides freight connections to Fremantle, Kwinana, Midland and interstate.</li> <li>• Perth Airport is within 5 km of the site via Tonkin Highway.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>• Numerous populations of threatened flora. Adjacent to Bush Forever site 387 (Greater Brixton Street Wetlands, Kenwick).</li> </ul>
Topography/ soil	<ul style="list-style-type: none"> <li>• Low lying site.</li> <li>• The site contains areas of high-to-moderate and moderate-to-low acid sulphate soils (ASS) risk within three metres of the surface. Portion of high risk running through entire site following creek/drainage channel and area of ASS associated with a wetland.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>• Adjacent to existing industrial land. This may constrain development of certain types of industrial uses.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>• Adjacent to Greater Brixton Street Wetlands (Bush Forever Site 387) which will require an appropriate buffer and best practice urban water management regimes.</li> <li>• Adjacent numerous TEC's and populations of DRF/ priority flora.</li> <li>• Contains portion of Yule Brook.</li> <li>• Flora and vegetation studies required to identify any areas of high conservation to be protected.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>• Heritage studies to be undertaken.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>• The amount of land that is rezoned industrial will depend on the amount of land required for drainage purposes. This will be determined from environmental site surveys, water management programs and environmental monitoring.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>• Will require considerable additional servicing infrastructure.</li> <li>• The closest substation to this site is the Kalamunda substation that is located approximately 8 km north-east of proposed industrial area. Existing power distribution exists to the site (330 kV) along (north – south) the proposed area. This substation should be able to meet the initial demand from the proposed industrial area. Western Power will monitor the demand growth of the area to be in a position to cater for the additional demand as it grows.</li> <li>• The proposed Maddington substation has not been constructed and is proposed to be commissioned in 2011.</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>• The Kewdale/Welshpool industrial area is located close to the site.</li> <li>• Located close to the residential areas of Kenwick, Beckenham, East Cannington, Forrestfield and Wattle Grove.</li> </ul>



## Maddington Kenwick strategic employment area precinct 3A



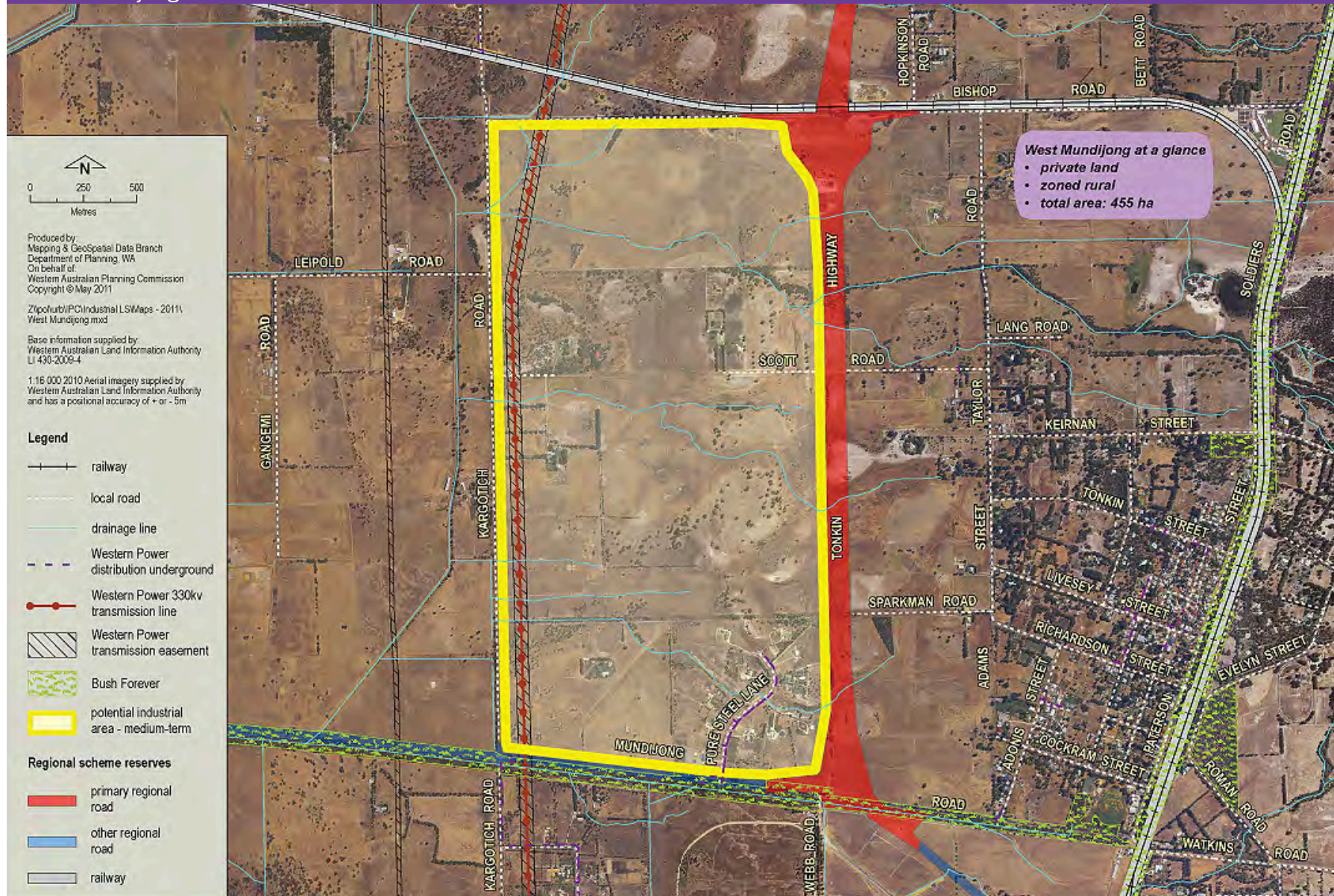




Issue	West Mundijong
Land ownership	<ul style="list-style-type: none"> <li>• Private and corporate landowners.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>• Freight rail located to the north of the site.</li> <li>• Close proximity to Tonkin Highway and Mundijong Road (long vehicle and road train access).</li> <li>• Proposed extension of Tonkin Highway from Thomas Road to Mundijong Road and ultimately to South Western Highway.</li> <li>• Site has good access to Perth Airport, the proposed Kwinana Port, the Kwinana Freeway and the South Western Highway.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>• TEC and flora (DRF) constraints along Mundijong Road.</li> </ul>
Topography/soil	<ul style="list-style-type: none"> <li>• Land subject to inundation (palusplain).</li> <li>• Low to fair agricultural capability.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>• Minimal.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>• Small areas of conservation category wetland.</li> <li>• Comprehensive vegetation assessments required to identify any important flora species and communities.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>• Heritage studies to be undertaken.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>• Investigations need to be undertaken to determine any site contamination issues.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>• Power is available (330kV transmission as well as overhead and underground distribution).</li> <li>• Water services available in the town site.</li> <li>• The appropriate water management investigations for this site should be undertaken by the proponent in accordance with Better Urban Water Management (WAPC 2008).</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>• Close proximity to Armadale, a strategic metropolitan centre.</li> </ul>



## West Mundijong

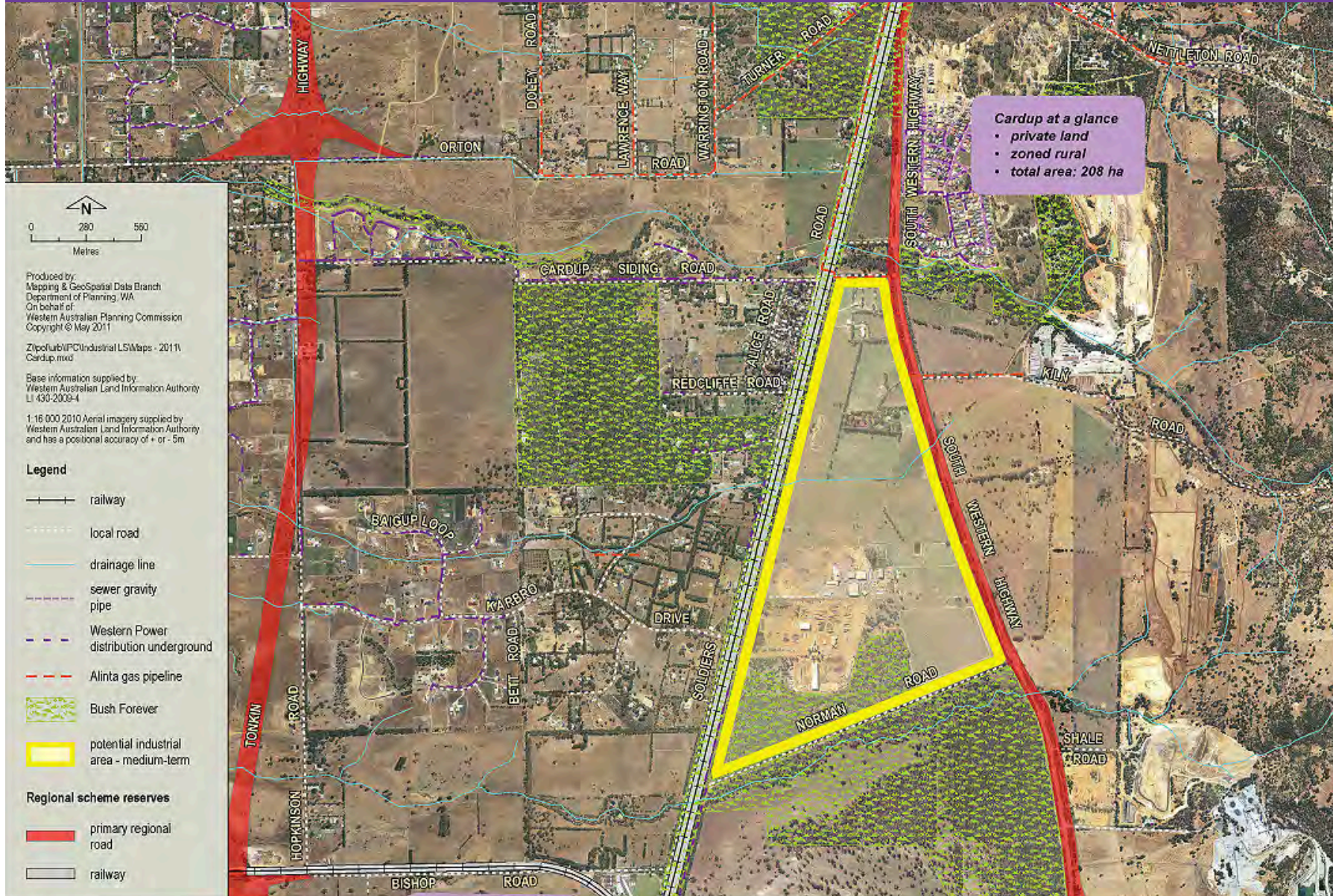




Issue	Cardup
Land ownership	<ul style="list-style-type: none"> <li>Effectively controlled by three to four parties who are working together to advance the rezoning of the land to industrial.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>Direct access from South Western Highway.</li> <li>Existing south east rail corridor runs along the site along the western boundary.</li> <li>Excellent freight and network rail linkages.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>Some Bush Forever constraints.</li> </ul>
Topography/ soil	<ul style="list-style-type: none"> <li>The topography of the subject site is undulating with a generally western aspect. The natural surface height ranges from 48 metres Australian Height Datum (AHD) along the western boundary to approximately 80 m AHD in the south east corner of the subject site, resulting in a north-westerly aspect.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>No surrounding land uses that will adversely impact on development potential.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>The conservation of wetlands and vegetation which occur within the project area can be readily accommodated.</li> <li>Numerous TEC's adjacent or within the site.</li> <li>Includes portion of Bush Forever Site 361.</li> <li>Require vegetation assessments prior to consideration of area for development.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>No heritage sites of Aboriginal or European significance have been discovered within the project area.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>Contamination is unlikely to be an issue and can be managed through the environmental approvals process. A small amount of localised contamination may be present within Lot 10 and Lot 60 and is predominantly associated with some aboveground and underground storage tanks and stormwater discharge into a holding pond. This will likely require a Detailed Site Investigation and possible remediation to support subdivision.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>Close proximity to utility infrastructure.</li> <li>The appropriate water management investigations for this site should be undertaken by the proponent in accordance with Better Urban Water Management (WAPC 2008).</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>Strategically located between the urban growth areas of Byford and Mundijong-Whitby.</li> </ul>
Design specifications	<ul style="list-style-type: none"> <li>Has the potential to be developed to accommodate supporting business/industry uses such as for the commercial and services sector.</li> </ul>



## Cardup







## Potential long term non-heavy industrial sites (strategic landbank)

In addition to the investigation areas and existing industrial estates, further sites were identified which indicated some level of potential for further investigation in the longer term that would contribute to the strategic land bank for future industrial land supply.

It should be acknowledged that a number of these sites may already have existing uses that preclude industrial activity taking place in the medium-to-long term. In these instances the future uses of these sites will be based on the future needs of the sub-region as well as the results of detailed investigations and studies.

In the South-east sub-region, these sites are as follows:

Ranford Road	Total area 75 ha
<p><b>Land status:</b> A 75ha portion of land located north-west of the Tonkin Highway / Ranford Road intersection has been identified for future light industrial development in the Southern River / Forrestdale / Brookdale / Wungong district structure plan.</p> <p><b>Zoning:</b> MRS: Urban Deferred. TPS: General Rural.</p> <p><b>Current uses:</b> Adjoins Ranford Road south (a 100 ha site located north-west of the Forrestdale Business Park, zoned Industrial). At present the site is severely constrained by Bush Forever reservations (62 ha), and a Water Corporation drain (5 ha), leaving less than 25 ha of net land for industrial development. LandCorp is in the process of undertaking local structure planning for the site however, the timing associated with land availability is at this stage unclear.</p> <p><b>Environmental constraints:</b> Significant wetland constraints.</p> <p><b>Transport linkages:</b> Ranford Road long vehicle, road train and RAV route.</p> <p><b>Serviceability:</b> All services available at Ranford Road end.</p> <p><b>Potential land use hierarchy:</b> This area is suitable to the provision of Producer services, and is close to good freight network route linkages.</p>	



MKSEA Precincts 2 and 3B	Total area 307 ha
<p><b>Land Status:</b> Fragmented ownership.</p> <p><b>Zoning:</b> MRS: Rural, Parks and Recreation. TPS: General Rural, Special Rural.</p> <p><b>Current uses:</b> Various land uses.</p> <p><b>Environmental constraints:</b> A large portion of the site is constrained by environmental issues, which excludes it from being developed to its full industrial potential. Precinct 3B is less likely to be rezoned to industrial due to environmental considerations (Yule Brook) and Aboriginal heritage significance.</p> <p><b>Transport linkages:</b> Tonkin and Roe Highways, Welshpool Road.</p> <p><b>Serviceability:</b> Will require considerable additional servicing infrastructure.</p> <p><b>Potential land use hierarchy:</b> Rezoning the land through the scheme amendment process will depend on requisite buffers to the greater Brixton Street wetlands and existing conservation wetlands (zoned parks and recreation) and a water management plan to be adopted.</p>	
South Armadale Industrial Area	Total area 81 ha
<p><b>Land Status:</b> Fragmented ownership.</p> <p><b>Zoning:</b> MRS: Rural; TPS: Rural Living 2 and Parks and Recreation.</p> <p><b>Current uses:</b> Various land uses.</p> <p><b>Environmental constraints:</b> To be further investigated.</p> <p><b>Transport linkages:</b> Adjacent to South Western Highway. Easy access to Tonkin and Albany Highways.</p> <p><b>Serviceability:</b> To be further investigated.</p> <p><b>Potential land use hierarchy:</b> To be further investigated.</p>	

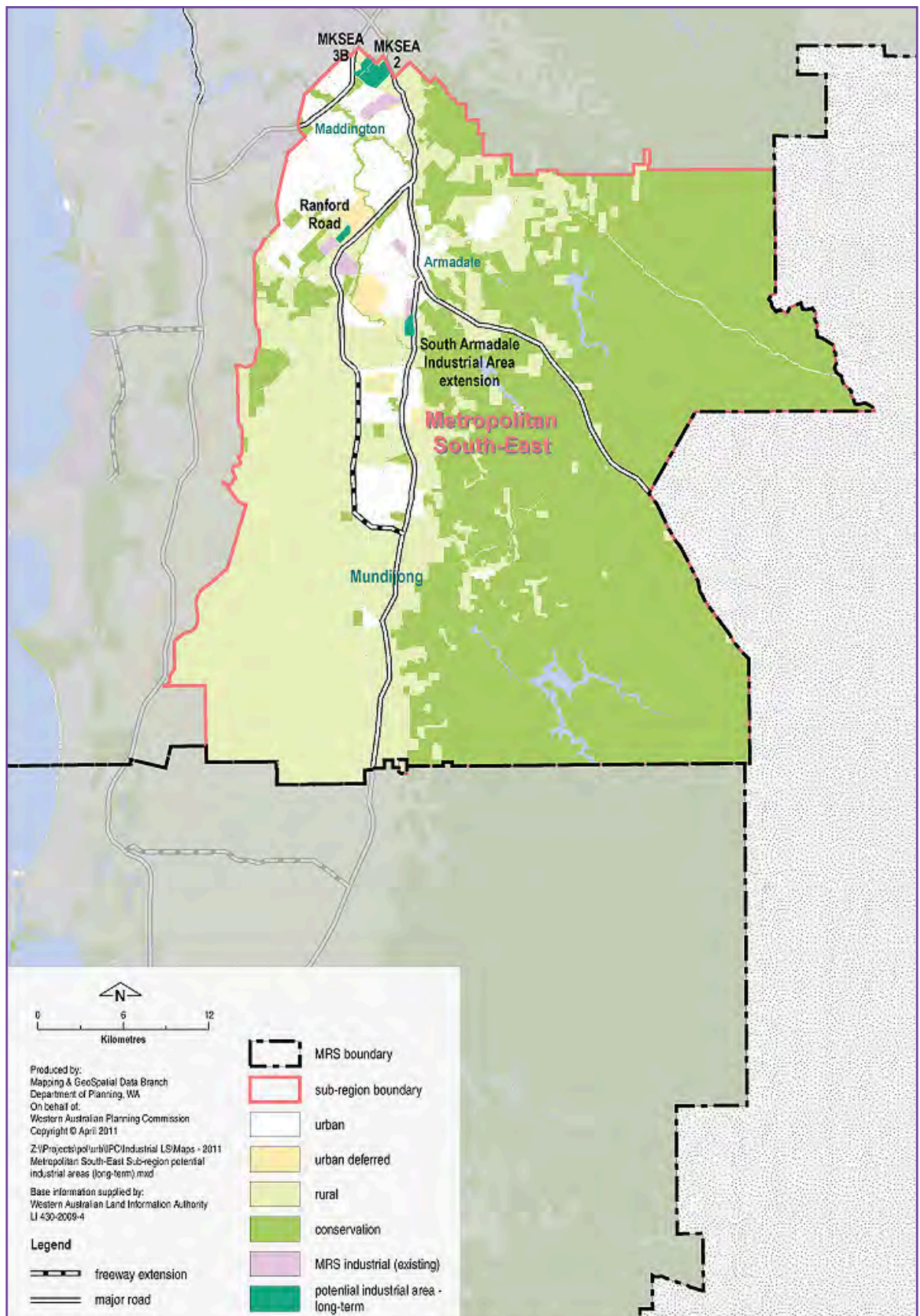


Figure 28: Metropolitan south-east sub-region potential non-heavy industrial areas (long term)





## South-east sub-region - long term outlook

The resolution of existing development constraints facing sites in the South-east sub-region will require prioritisation in order to realise the additional land supply potential within the sub-region.

## Key planning actions for the south-east sub-region

Key Stakeholders	Actions
Shire of Serpentine-Jarrahdale City of Armadale City of Gosnells WAPC Department of Planning LandCorp Department of State Development	<ul style="list-style-type: none"> <li>Develop, in conjunction with the local governments, an economic development and employment strategy for the South-east sub-region.</li> <li>Undertake a local demand assessment to determine the staging requirements for the release of land in line with population growth.</li> <li>Shire of Serpentine-Jarrahdale — finalise district structure planning process to form the framework for future local structure planning in Mundijong and Cardup.</li> <li>City of Gosnells to finalise structure planning and scheme amendments for MKSEA.</li> <li>All local authorities be required to review and revise town planning schemes to properly reflect current land uses occurring in certain locations, in particular, the land located north-west of Kelvin Road, Maddington.</li> </ul>
LandCorp Department of Planning Department of Environment and Conservation Department of Water Main Roads of Western Australia Water Corporation Office of Energy Alinta Gas Wester Power Heritage Council	<ul style="list-style-type: none"> <li>Undertake feasibility studies with respect to the identified medium term sites in the South-east sub-region and determine most appropriate delivery models and level of government involvement in this sub-region to facilitate industrial land development.</li> </ul>
Water Corporation Jandakot Airport Holdings	<ul style="list-style-type: none"> <li>Additional water storage infrastructure planned for Byford, Mundijong and Forrestfield.</li> <li>Potential water recycling plants being planned at Westfield and Jandakot.</li> <li>Wastewater planning to be undertaken, including the Armadale Byford scheme.</li> </ul>
Proponent/s and/or landowner/s Department of Planning Department of Environment and Conservation	<ul style="list-style-type: none"> <li>Consultation required for sites with buffers for conservation and resource enhancement wetlands.</li> <li>Assessment of any environmental investigations undertaken for reclassification of conservation and resource enhancement wetlands, if appropriate.</li> <li>Undertake acid sulphate soil investigations.</li> <li>Flora and fauna investigations.</li> <li>Ascertain if any buffers to sensitive land uses are required.</li> </ul>

Key Stakeholders	Actions
Proponent/s and/or landowner/s Department of Water Department of Planning Department of Environment and Conservation Water Corporation	<ul style="list-style-type: none"> <li>Water management plan for MKSEA to be finalised.</li> </ul>
Alinta Gas Western Power	<ul style="list-style-type: none"> <li>Facilitate infrastructure provision to allow development of sites.</li> <li>Western Power - proposed Forrestdale and Armadale substations. Commissioning of Maddington substation.</li> </ul>
Main Roads Western Australia	<ul style="list-style-type: none"> <li>Increase the traffic volume capacity of Armadale Road and Tonkin Highway.</li> <li>Enhance the connection of Tonkin Highway with the South-Western Highway near Mundijong.</li> <li>Improve east-west connections into the sub-region.</li> </ul>
Proponent/s and/or landowner/s Department of Indigenous Affairs Heritage Council of Western Australia	<ul style="list-style-type: none"> <li>Facilitate the undertaking of Indigenous and European heritage and ethnographic studies where necessary and required.</li> </ul>
Metropolitan Redevelopment Authority	<ul style="list-style-type: none"> <li>Finalise structure plan for Forrestdale Business Park.</li> </ul>
Proponent/s and/or landowner/s Department of Water	<ul style="list-style-type: none"> <li>Water management investigations and documents to be prepared in accordance with Better Urban Water Management (WAPC 2008)</li> </ul>



## Part 11 - South-west sub-region



The South-west sub-region comprises the City of Cockburn, City of Rockingham and Town of Kwinana. The total area of zoned land in this sub-region is 52,700 hectares, of which 3,400 ha is dedicated as "industrial" zoned land (6 per cent) – representing 33 per cent of the metropolitan total of industrial zoned land.

The South-west sub-region accommodates the largest percentage of industrial zoned land within the Perth and Peel regions, with the Kwinana Industrial Area and the Australian Marine Complex being key contributors.

## Demographic profile

In 2010 the ABS estimated resident population for this sub-region was 224,472 people. The City of Rockingham accommodates the majority of the population with its resident population estimated to be 104,130, followed by the City of Cockburn with 91,313 people. The Town of Kwinana, which has the largest proportion of industrial zoned land within its area, has a resident population of 29,029 (ABS, 2011). By 2031, the sub-regions population is forecast to be 278,000.

In terms of the ageing population, the South-west sub-region is similar to other sub-regions. However, the South-west sub-region has experienced the highest increase in the number of residents aged between 20 and 40 years old in recent years.

## Planning profile

*Directions 2031 and Beyond* identifies Rockingham as the major strategic metropolitan centre in the South-west sub-region. It provides a full range of services, facilities and activities necessary to support the communities within its catchment. Other centres within this sub-region are classed as follows:

Strategic Metropolitan Centres	Secondary Centres	District Centres
Rockingham	Cockburn Kwinana	Baldivis Cockburn Coast* Karnup* Secret Harbour Spearwood Warnbro Wandj*

\*emerging centre

Source: *Directions 2031 and Beyond*

*Directions 2031 and Beyond* aims to achieve an increase in dwellings from 82,000 in 2008 to 123,000 dwellings in the South-west sub-region by 2031.



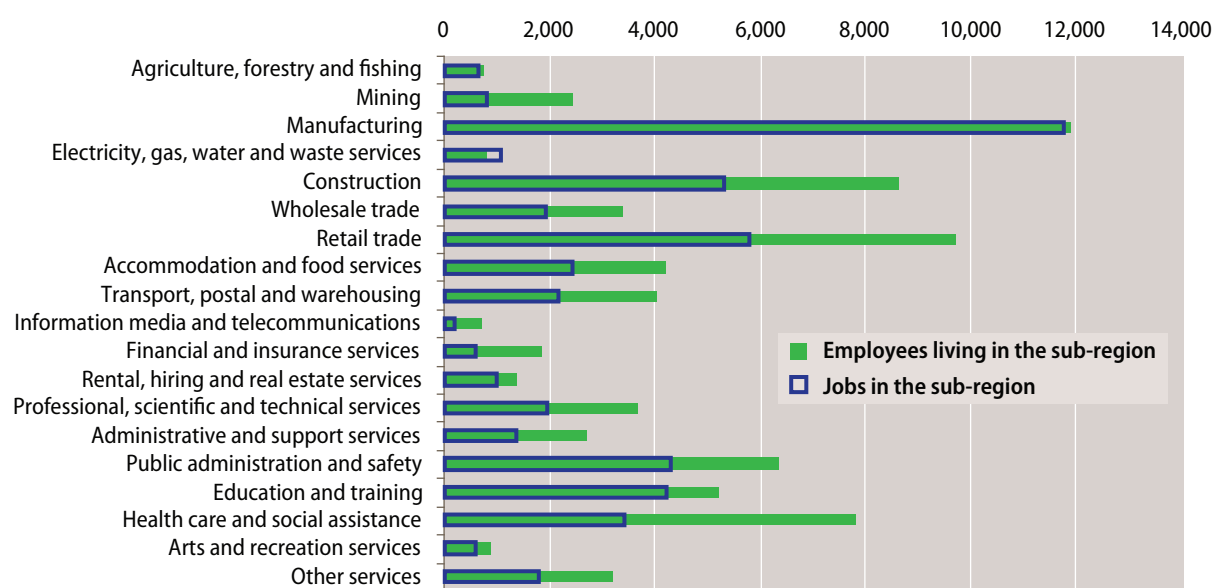


The South-west sub-region has approximately 8700 ha of undeveloped urban and urban deferred zoned land.

More than 40 per cent of the total of the Perth and Peel region's urban expansion and investigation areas indicated in the Department of Planning's draft urban expansion plan has been identified in the South-west sub-region and includes Karnup and Baldivis.

## Economic profile

The following graph represents the number of employees living in the South-west sub-region employed in the particular industry (green bar) represented against the number of jobs existing for that industry in the sub-region (blue bar).



Source: 2006 ABS Census of Population and Housing

The main industries providing employment in the South-west sub-region are manufacturing, construction, retail trade, health care and public administration. As mentioned previously there is a large proportion of land within this sub-region dedicated to industrial land use activities. However, as the distribution of employment by sub-region clearly reflects, there is still a substantial amount of the industrial labour force working outside the sub-region.

The employment self-sufficiency (ESS) for this sub-region is currently 60 per cent. *Directions 2031 and Beyond* identified an ESS target of 70 per cent for this South-west sub-region. This target translates into the need for an additional 87,000 to 113,000 jobs in the sub-region over the next 25 years.

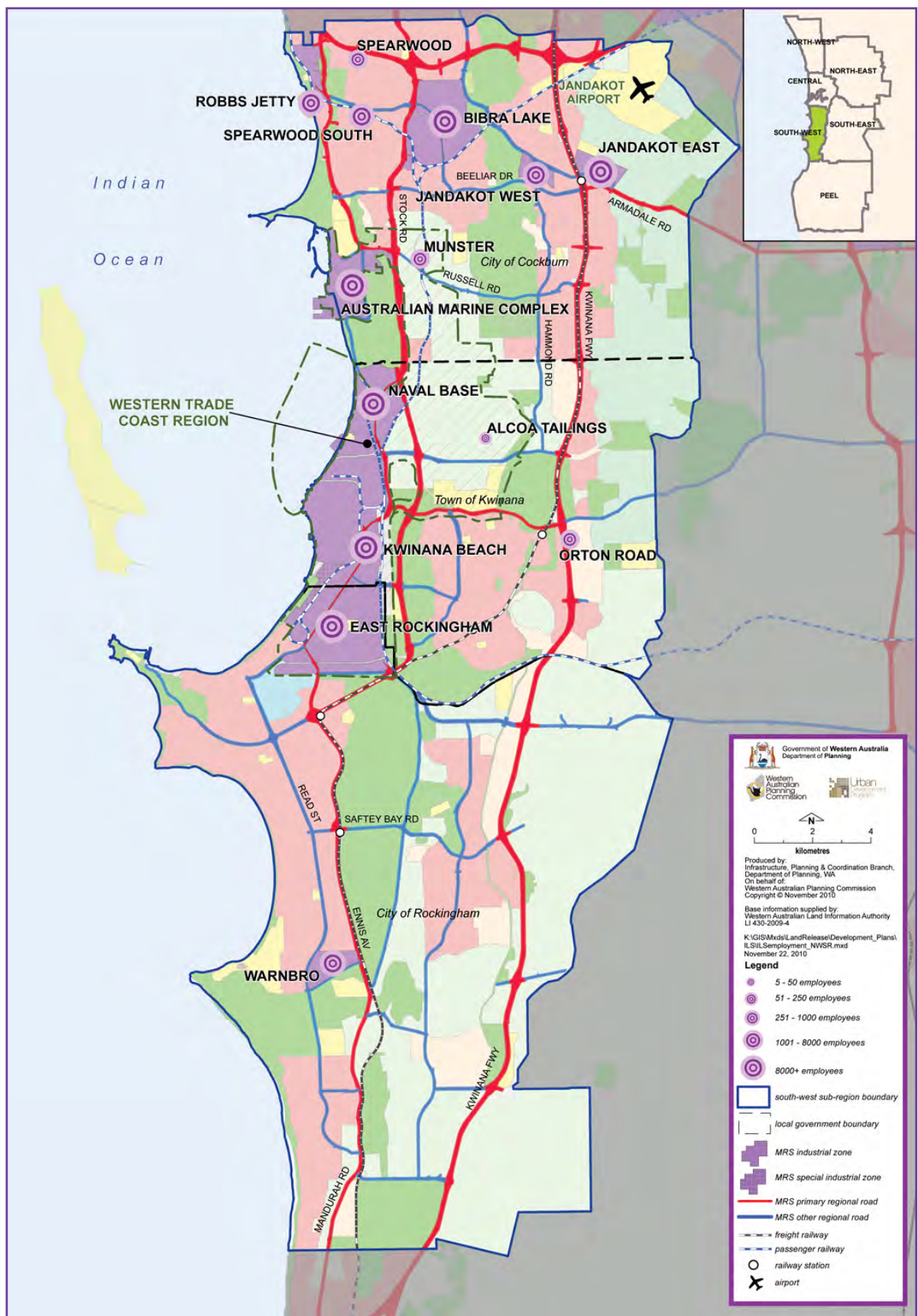


Figure 29: Industrial employment centres - south-west sub-region



## Physical infrastructure

The South-west sub-region differs from all of the other outer sub-regions having both a seaport and general aviation airport within the sub-region. Both have significant development and expansion planned over the next decade and beyond.

### Fremantle Harbour

The Fremantle Inner Harbour is anticipated to reach its capacity to handle container traffic by 2020. To ensure that long term needs are met for the forecast containerised import and export demands, an additional overflow port has been identified to cater for this eventual overflow. In 2009, the State Government established the Fremantle Port Optimum Planning Group to provide future strategies for ports in the Fremantle-Cockburn areas. This group presented its findings to Government, which identified proposals for future consideration.

### Jandakot Airport

The Jandakot Airport Masterplan was released in 2009. It is an update of the Jandakot Airport Masterplan 2005 and outlines the strategic direction for the efficient and economic development of Australia's busiest general aviation airport. Recognising the need for external investment to fund further infrastructure necessary for the continued growth of aviation at the airport, the masterplan identifies opportunities for commercial development on the airport land. The masterplan proposes to manage, maintain and develop Jandakot Airport in a safe, balanced and environmentally responsible manner in order to enhance the economic vitality and community service needs of Western Australia.<sup>1</sup>

### Water

Planning for upgrades to some of the existing waste water treatment plants in this sub-region is already under way. Construction of the East Rockingham Waste Water Treatment Plant is expected to commence in 2015. This will bring much needed added capacity to the sub-region, and will enable the rezoning of a

number of Urban Deferred areas to Urban. With the urban development of Karnup, there is also a planned reservoir to be constructed after 2020, to cater for anticipated demand. The Water Corporation has also been investigating the potential for a water recycling plant at Port Kennedy, and establishing a potential water trading arrangement.

### Energy

Additional energy infrastructure will be required to service the growing population. The Department of Planning and Western Power have developed a Network Capacity Mapping Tool that shows electricity capacity and utilisation as a result of land/building development and the future planning capacity of electricity infrastructure.

### Road and freight network

There are a number of key freight routes running through this sub-region, including Roe Highway and the Kwinana Freeway/Forrest Highway. Rowley Road, which will be a primary access route to the new port (Kwinana Quay) and into the Latitude 32 Industrial Estate, will also play a vital role.

The recently completed construction of Roe Highway Stage 7 has resulted in improved road safety, reduced freight transport costs and enhanced community amenities and access between Midland/Kenwick and Kwinana and beyond. The Kwinana Freeway/Forrest Highway has taken long distance heavy haulage traffic away from built-up areas and provides relief for coastal routes through Mandurah and the South-Western Highway.

This sub-region still suffers the same poor east-west connectivity as its northern counterparts, and the upgrading and extension of such roads as Rowley Road, Anketell Road and Mundijong Road will facilitate better east-west links than that which presently exist.

The Kwinana Intermodal Terminal is already planned for the South-west sub-region within the Latitude 32 Industrial Estate. However, further extensive studies are still required to be carried out before its feasibility can be determined.

<sup>1</sup> Jandakot Airport Master Plan 2009, Foreword



## Industrial and employment land in the sub-region

The Western Trade Coast strategic industrial area will continue to be a major focus of metropolitan and state industrial activity, with a focus on heavy manufacturing, processing, fabrication and export. It comprises the Kwinana Industrial Core, Latitude 32, the Rockingham Industry Zone; and the Australian Marine Complex precinct at Henderson.

These industrial centres will provide a significant amount of employment land to meet the short, medium and long term market demand for industrial land in metropolitan Perth, and will generate significant employment opportunities for the South-west sub-region. The planned outer harbour in Cockburn Sound will provide a regional hub for the continued growth of both national and international trade.

In order to realise the strategic employment potential for this sub-region, a new governance model for the continuing development and evolution of the Western Trade Coast strategic industrial area is now in place.





**Figure 30: Metropolitan south-west sub-region existing zoned industrial areas**

## Future industrial land supply in the sub-region

The strategy has identified locations where future industrial sites may be considered to accommodate future demand and economic growth. The future drivers for the South-west sub-region are considered to be:

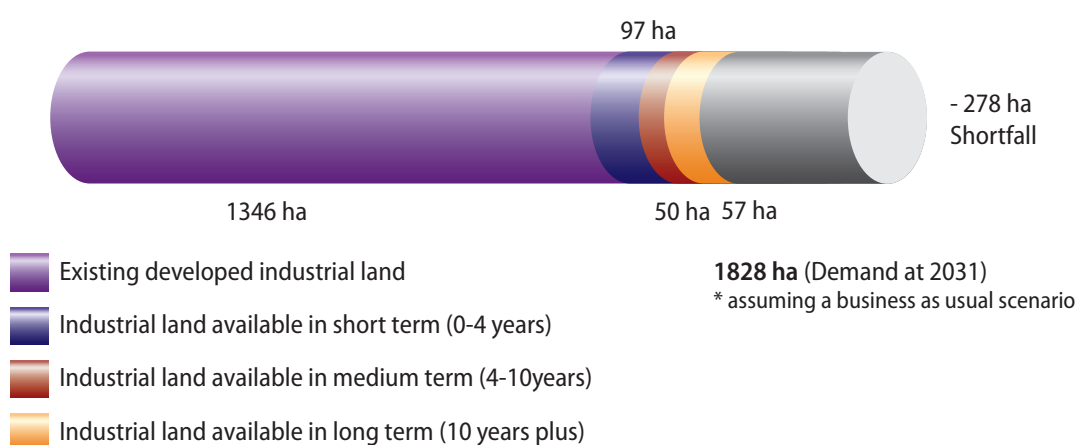
- A continued resource boom and associated economic growth;
- Diversity in Industrial land uses and lot sizes;
- Provision of land to suit more specific industrial related land uses;
- Excellent access to transport linkages; and
- Synergies of industries within the Western Trade Coast.

The industrial land supply in this sub-region to 2031 is represented as shown below in figure 31.

With a forecast demand of 1828 ha by 2031, and based on existing data on the available supply in the pipeline, the sub-region will encounter a deficit of 278 ha if no additional land is released to the market by 2031.

There is a reasonable amount of land identified within the supply pipeline, however, some of it may only become available in the very long term and other land identified is constrained by environmental conditions which need to be resolved prior to the release of the land. Future supply is heavily reliant on the effective capacity of Latitude 32 and the ability of LandCorp to facilitate the release of land to the market.

The strategy has identified possible industrial investigation sites or areas within the South-west sub-region. These investigation areas are not currently zoned "Industrial" in the Metropolitan Region Scheme. Further planning and environmental investigations are required for all the identified sites and the exact area and configuration of these sites are subject to change. These sites have been categorised into anticipated zoning timeframes, however, these timeframes are also subject to change and dependent upon various factors, including proponents' willingness to progress the necessary planning, environmental and servicing investigations to support rezoning proposals.



**Figure 31: Current industrial zoned land supply: Metropolitan south-west sub-region**

(Source: Property Council of Australia)





Name	Zoning Status (MRS)	Stage (if relevant)	Gross Area
Future short term non-heavy industrial sites (0-4 years)			
Jandakot Airport	Public Purpose	N/A	148 ha
Latitude 32 - Flinders	MRS does not apply. Subject to Hope Valley – Wattleup Act and Masterplan.	Stage 1	70 ha
Potential medium term non-heavy industrial sites (4-10 years)			
North East Baldivis	Rural	N/A	1026 ha
Latitude 32	MRS does not apply. Subject to Hope Valley – Wattleup Act and Masterplan.	Stages 2 (Wattleup) and 3 (Cockburn Cement)	195 ha
Potential long term non-heavy industrial sites (strategic landbank sites) (10 years +)			
Postans	Rural and Public Purpose	N/A	159 ha
Latitude 32	MRS does not apply. Subject to Hope Valley – Wattleup Act and Masterplan.	Stages 4-10	952 ha
Latitude 32 Extension	Rural	N/A	400 ha
Total gross area			2950 ha

**\*Note:** The areas provided in this table exclude land that already is zoned "Industrial" in the Metropolitan Region Scheme. Please note that the total areas of these sites are still subject to investigation.



## South-west sub-region possible non-heavy industrial sites

The following section provides an overview of the possible industrial sites that have been identified as part of the EELS, to support future growth and demand in the South-west sub-region. The sites are defined by three separate categories: future short term industrial sites, potential medium term industrial sites, and potential long term industrial sites (strategic landbank sites).

### Future short term non-heavy industrial sites

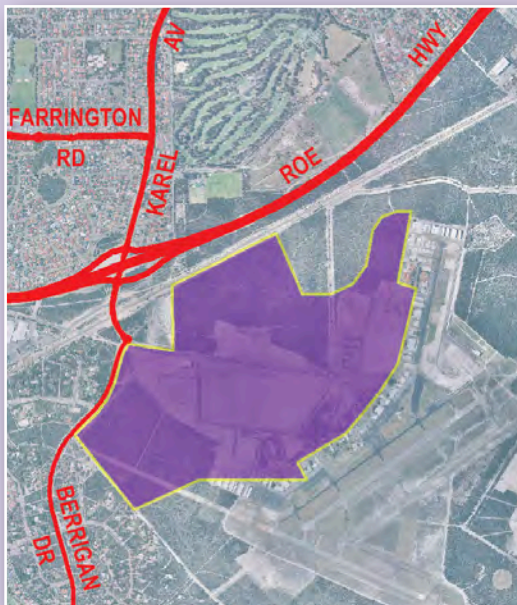
The short term industrial sites within the South-west sub-region have been identified as follows on page 133.

## Jandakot Airport

The airport site comprises a total area of 622 hectares over which Jandakot Airport Holdings Pty Ltd (JAH) holds a 99 year lease. In addition to operating the aviation facilities and maintaining large conservation areas JAH has approval to develop approximately 150 hectares of land for "non-aviation" use - predominantly commercial/industrial, mixed business use.

The relatively recent completion of "Roe 7" now provides very good vehicular access into the airport site which is located between other major industrial precincts - Canning Vale (600ha), Jandakot (200ha) and Bibra Lake (540ha).

To date approximately 40 hectares of land has been developed with a further 25 hectares being available now. The expectation is that future take up will average 12-15 hectares per year.

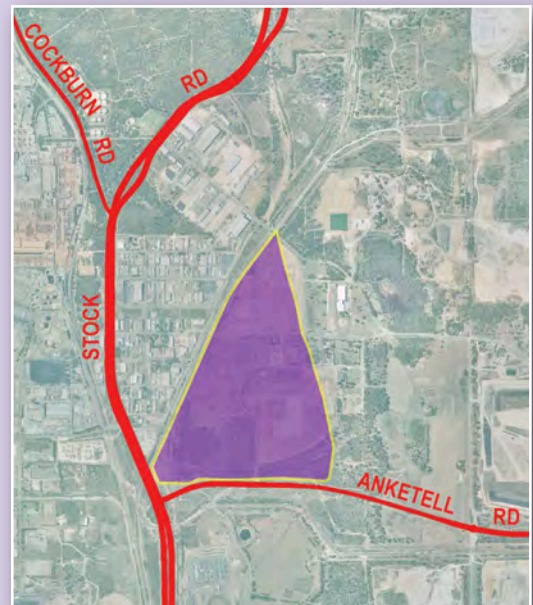


## Latitude 32 Industry Zone - Flinders Precinct

The project area (formerly known as the Hope Valley Wattleup Redevelopment Project) covers 1400 ha and consists of two former town sites and the surrounding rural area, which are to be redeveloped for a mix of industrial uses. The first stage of development known as Flinders Precinct (former Hope Valley townsite) was released in early 2010. A District Structure Plan for the remainder of the site was advertised for public comment in mid 2010.

### Status of availability

- 70 ha already zoned Industrial being developed by LandCorp at the Flinders Precinct - available now.
- Some of the site has already been earmarked to be set aside for conservation of wetlands and bushland.
- Detailed planning and feasibility investigations under way for next stage of development at Wattleup, pursuant to the Act and Structure Plan, with the potential for up to 40 ha to be released in 2013.







**Figure 32: Metropolitan south-west sub-region potential non-heavy industrial areas**

## Potential medium term non-heavy industrial sites

The sites highlighted and discussed in the following section are those which, through the multi-criteria analysis and subsequent ranking of weighted scores, were seen as warranting further investigation and analysis.

The North East Baldvis site is noted as the preferred site for future industrial development in the South-west sub-region.

Issue	North East Baldvis
Land ownership	<ul style="list-style-type: none"> <li>Large areas of contiguous land still remain in the ownership of a few parties.</li> <li>At least one private landowner is supportive of land being utilised for industrial purposes.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>Very well located in relation to major transport infrastructure.</li> <li>Mundijong Road designated as a regional road and proposed to be upgraded to provide more direct access to the Rockingham regional centre. Mundijong Road extends east to the South Western Highway and will ultimately connect with the extension of the Tonkin Highway.</li> <li>The subject land is adjacent to the Kwinana Freeway which, with its connection into the Forrest Highway, provides better connectivity and releases pressure from coastal routes and the South-Western Highway.</li> <li>The planned Fremantle-Rockingham Controlled Access Highway (FRAH) will improve access to the site and will have a direct connection to Mundijong Road.</li> <li>Planned improvements to the road network will provide more direct access to Rockingham.</li> <li>Located close but with good separation to significant urban growth precincts in the south-west corridor (particularly in Baldvis/Karnup/Wellard/Kwinana) and the related workforce.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>Industrial development is unlikely to be constrained by existing buffers for surrounding land uses (feed lots, poultry farms and a waste landfill site). Some limited environmental investigation may be required and remediation works undertaken if contamination is found.</li> <li>Environmental considerations should include the assessment of drainage, and the possible role of new and existing constructed wetlands as nutrient filters.</li> </ul>
Topography/soil	<ul style="list-style-type: none"> <li>The site is generally flat and low lying at approximately 5-10 m AHD with very gentle to flat land surface.</li> <li>Site will require significant fill.</li> <li>The land is within the floodplain of the Serpentine River and Peel Main Drain. Further technical investigations will be required to determine the amount of land that can be developed for industrial purposes and any associated infrastructure requirements. Based on the DoW's current floodplain development strategy for the area, a proponent will need to demonstrate that proposed development does not detrimentally impact the general flooding regime.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>Existing and surrounding uses may present conflicts, particularly with encroachment of Special Rural land uses and treatment of existing uses within any development (e.g. WaterSki Park and Golden Ponds Fish and Marron Farm) in the subject area.</li> <li>Visual impact will require thorough consideration through any development application or rezoning process in accordance with requirements of the relevant Town Planning Scheme, and in particular consideration for the rural buffer to the Freeway (with associated landscape protection and revegetation requirements) is likely to be a key issue.</li> <li>Future detailed planning should occur to ensure that the amenity of residential areas is not adversely affected.</li> </ul>

Continued on page 136





Issue	North East Baldvis
Priority natural resources	<ul style="list-style-type: none"> <li>Future alternative subdivision and use of the land can be considered if it is demonstrated any land in the Policy Area does not contain raw materials worthy of protection and/or the Western Australian Planning Commission resolve to exclude that land from the Basic Raw Materials Policy Area.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>A Threatened Ecological Community (TEC) exists outside the eastern edge of the site and two Priority Flora (P4) locations are found within the site. Priority flora locations should be avoided where possible. Investigation into the buffer requirements around the TEC will be required.</li> <li>Important roadside vegetation exists along Mundijong Rd. No road widening proposals should impact this vegetation.</li> <li>Flora, vegetation and fauna assessments will be required.</li> <li>Impacts on Bush Forever Sites and wetlands should be avoided.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>There is one registered Aboriginal Heritage site located at the corner of Millar Road and the Kwinana Freeway; which is a camp site. It is contained and as such is not expected to impact on the developable area.</li> <li>The proposed site is not within any known heritage site listed under the State Register of Heritage Places.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>No mention of the area is recorded in the DEC Contaminated Sites Database.</li> <li>A number of activities undertaken within the site have the potential to result in contamination.</li> <li>Some limited environmental investigation may be required and remediation works undertaken if contamination is found.</li> <li>Moderate to low risk for Acid Sulphate Soils (ASS).</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>Water planning has been reviewed by Water Corporation to accommodate potential industrial land uses in this area. Significant distribution mains will be required through southern residential areas.</li> <li>A significant constraint could be on site drainage; the area is within the Mundijong drainage district and is set up as a rural drainage system.</li> <li>Investigations into groundwater levels and appropriate drainage infrastructure to achieve a suitable separation distance to groundwater will be required.</li> <li>Some capacity in existing power and scheme water services is available and the site has good proximity to the Serpentine Main Drain. Power infrastructure (132kV and 330KV transmission lines) run north-south along the ends of the proposed area. Investigations into future demands on these services are required.</li> <li>The proposed Baldvis substation is due to be energised at a planned service date of 2014 and will cater for the increase in general population and commercial activity. This substation should be able to meet the initial demand from the proposed industrial area. Western Power will monitor the demand growth of the area to be in a position to cater for the additional demand as required.</li> <li>It is envisaged that any wastewater generated in this area would be conveyed to the proposed East Rockingham WWTP that is scheduled to be in operation by 2016. The Water Corporation is not prepared to support the rezoning of the North East Baldvis site until the site for the East Rockingham Waste Water Treatment Plant is secured. While there is existing gas distribution infrastructure to the north and south of the subject area, it is probable that it does not have the capacity to service a commercial/ industrial development. That being the case, network reinforcement would be required if this area was selected for development.</li> <li>A new or modified District Water Management Strategy will be required prior to rezoning.</li> <li>The Department of Water has completed a review of the Serpentine River and Peel Main Drain flood studies as well as a groundwater model for this area. Consultation with the Department is recommended to further determine the extent of water resource constraints to development.</li> </ul>

## Preferred uses and potential end users

The North East Baldvis site is a large land area suitable for a wide range of uses. The site is likely to be suitable for larger lot general industrial uses.

Owing to the low-lying and flat nature of the land, it is expected that low-polluting, low water use industries would be more suited to the location. Although there may be demand for some minor consumer services within the site, and a need for light/service industry along the special rural interface, it is envisaged that the majority of the site will be used for general industrial uses that are not hazardous.

This site is well suited to the provision of producer services and has the potential for Strategic Export/Knowledge based industry. The area also has good

access to the freight network route connections with road and rail opportunities that position the site as a strategic industrial location.

Potential end users are therefore expected to be those that provide producer services such as:

### Warehousing and distribution

Storage and display of goods, which may be wholesale; hyper large sites or numerous small sites dependant upon scope of operation; tend towards dedicated distribution parks (see logistics below) and demonstrate a trend towards automated goods handling and smart buildings.

## Key actions - North East Baldvis

Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Planning and land use	1	Undertake MRS amendment.	Up to 6 years from commencement to complete key planning related actions (these are contingent upon completion of water and sewer planning studies).
	2	Prepare a District Structure Plan.	
	3	Amend the Local Planning Scheme to appropriate zoning and land uses.	
	4	Prepare Local Structure Plan(s).	
	5	Development Contribution Plan.	
	6	Address interface issues with surrounding land uses.	
Environment	7	Although no contaminated sites are listed in the DEC Contaminated Sites database, environmental investigations may be required for the landfill on Millar Road between Mandurah Road and Baldvis Road; feedlots within the site east of Kwinana Freeway; and the poultry farm on Millar Road east of Kwinana Freeway.	Up to 3.5 years from commencement to complete key environmental actions, including: <ul style="list-style-type: none"> <li>• 34 months for the Detailed Site Investigation (if required);</li> <li>• 12 months for the District Water Management Strategy; and</li> <li>• 12 months for the Local Water Management Strategy.</li> </ul>
	8	The appropriate water management investigations for this site should be undertaken by the proponent in accordance with Better Urban Water Management (WAPC 2008) prior to rezoning. A new or modified District Water Management Strategy will be required.	
	9	Conduct a vegetation assessment.	
	10	Undertake investigations to determine the buffer requirements for any TECs on site in consultation with DEC.	
	11	Undertake flora and fauna surveys and relevant wetland assessments.	

Continued on page 138

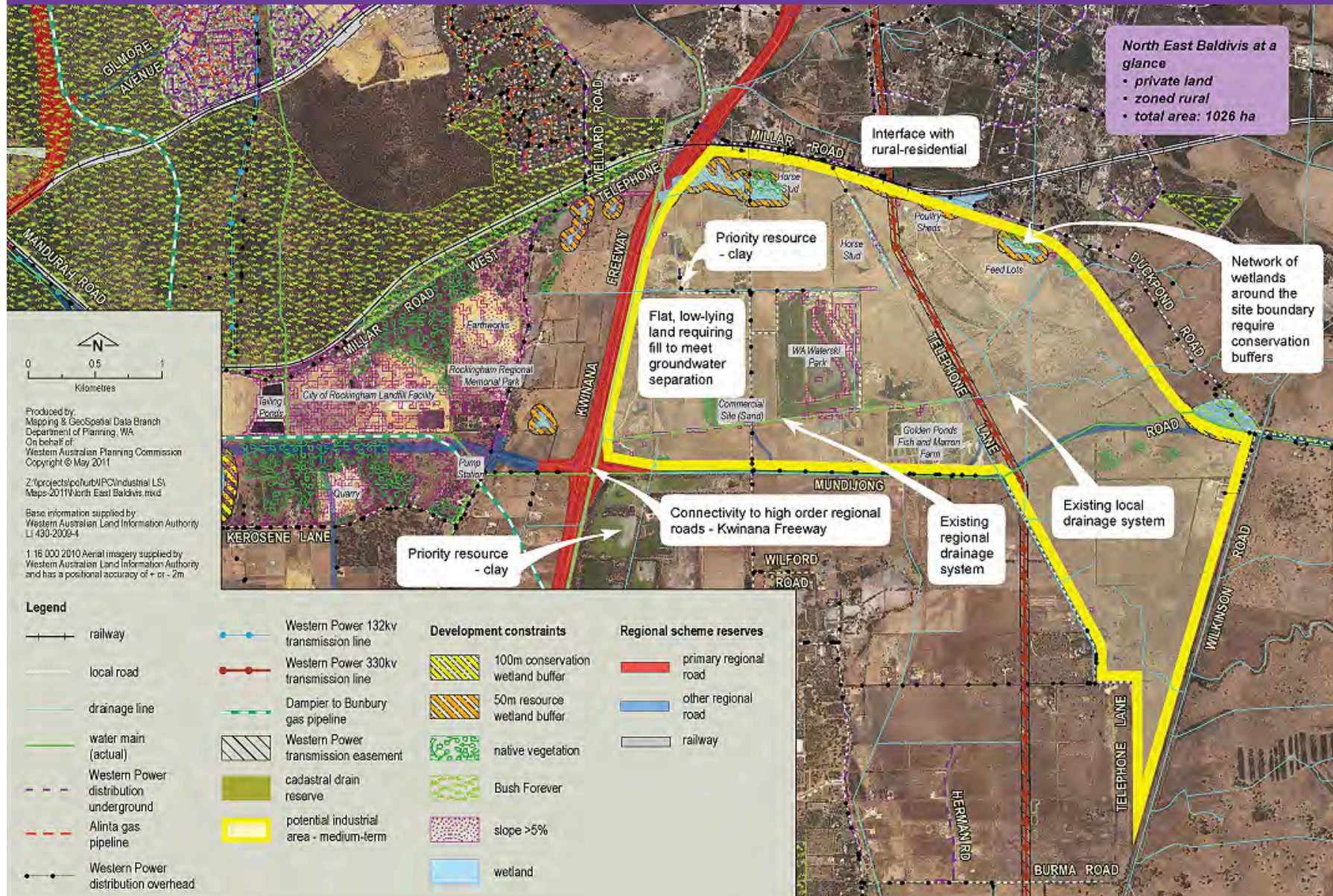




Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Infrastructure and servicing	12	Water Corporation indicated that water supply could potentially come from the Tamworth reservoir. However, further studies would need to be undertaken to identify the flows that could be supplied from this source. Further planning studies would need to be undertaken by the Water Corporation to confirm that the Rockingham WWTP is the most suitable option.	Up to 6 years from commencement to complete key infrastructure planning studies; including planning and construction of the proposed East Rockingham Waste Water Treatment Plan (target completion 2016).
	13	Undertake a Regional Transport Strategy that will help inform the rezoning process.	
	14	Undertake investigations on future demand for power and gas.	
Physical landform and soils	15	Undertake heritage surveys (Indigenous and European).	3 months to complete the preliminary site assessment for acid sulphate soils.
	16	Investigate whether land to the east of Kwinana Freeway contains raw materials worthy of protection and, if none found, exclude from basic raw materials policy area.	
	17	The majority of the area located east of Baldivis Road is noted as moderate to low risk for acid sulfate soils (ASS). Where significant earthworks are required, an acid sulphate soils assessment, and potentially an acid sulphate soils management plan to the satisfaction of the DEC, will be required.	
	18	Undertake floodplain investigations, to determine the amount of land that can be developed for industrial purposes and any related infrastructure requirements to avoid potential detrimental impact on the general flooding regime of the area.	



## North East Baldivis





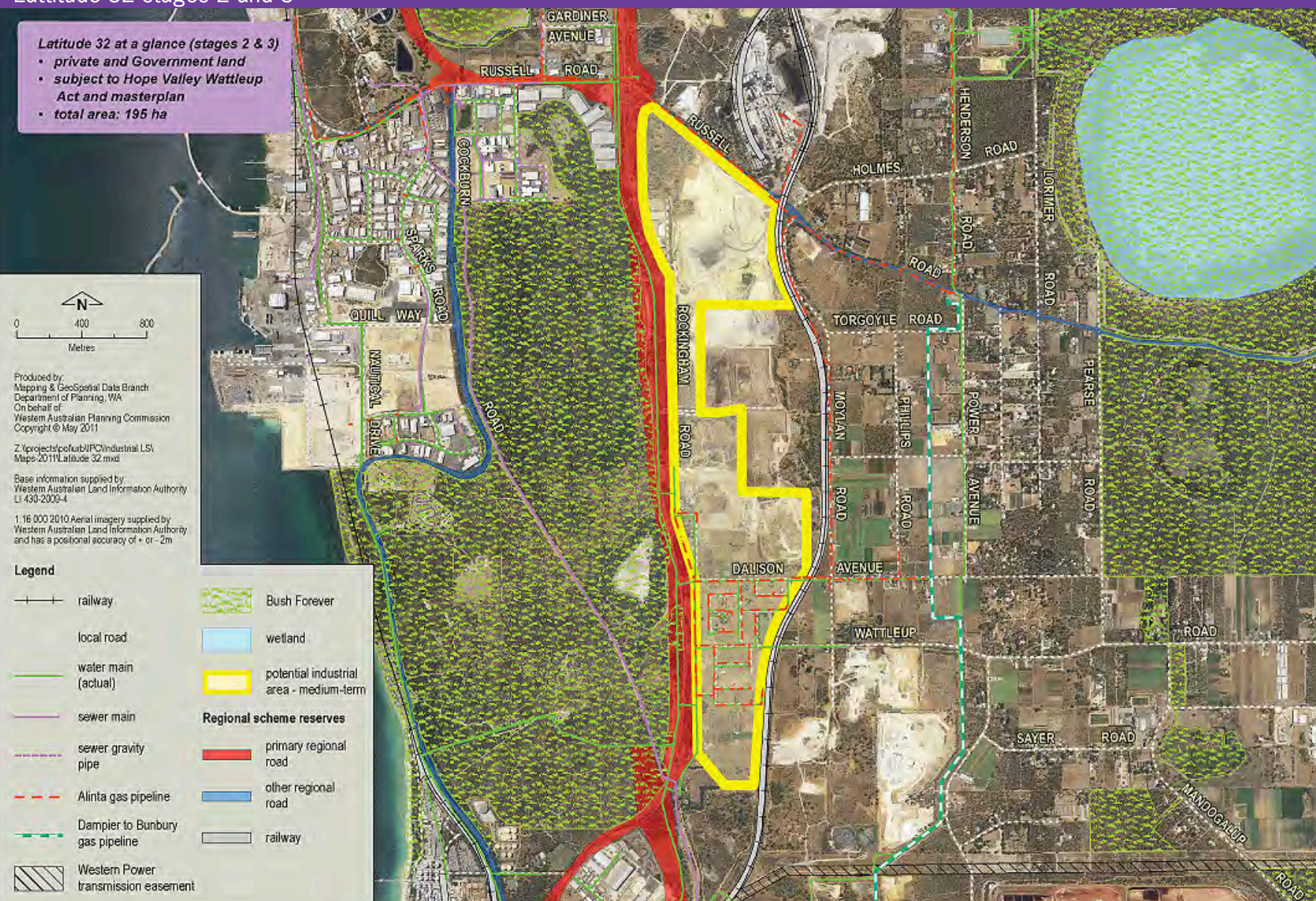


Issue	Latitude 32 stages 2 and 3
Land ownership	<ul style="list-style-type: none"> <li>• 40 hectare concentrated LandCorp ownership within the Wattleup town site. However 10 remaining residential properties require acquisition.</li> <li>• Fragmented land ownership north and south of the Wattleup town site.</li> <li>• Majority of Stage 3 land owned by Cockburn Cement and currently being quarried for limestone.</li> </ul>
Accessibility (incl. transport networks)	<ul style="list-style-type: none"> <li>• Currently serviced by poor standard rural roads, which will require substantial upgrading and / or delivery of new transport network.</li> <li>• Restricted access available from Rockingham Road, due to the future construction of the Fremantle Rockingham Controlled Access Highway (FRCAH).</li> <li>• Upgrading and widening of Russell Road (including possible realignment) will be required.</li> <li>• Area currently not serviced by public transport.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>• No known environmental sensitivities.</li> </ul>
Topography/soil	<ul style="list-style-type: none"> <li>• Some earthworks will be required at Wattleup town site, however, land is generally well graded for industrial development.</li> <li>• Stage 3 land is currently being quarried by Cockburn Cement. Extensive earthworks may be required to accommodate batters to new road and rail infrastructure and to provide separation to groundwater post quarrying.</li> <li>• No known acid sulphate soils present.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>• Wattleup town site is adjacent to existing market gardens within Stage 2, however, is well removed from major residential areas.</li> <li>• Stage 3 in close proximity to rural-residential community north-east of Latitude 32, which is already sensitive to Cockburn Cement's operations.</li> <li>• Increased industrial traffic movements on Russell Road may create conflict with new residential areas east of Latitude 32, near the Kwinana Freeway.</li> </ul>
Priority natural resources	<ul style="list-style-type: none"> <li>• Latitude 32 classified as a Priority Resource Extraction Area by the WAPC and will be subject to extensive quarrying over the medium to long term.</li> <li>• Rocla has lodged an exploration licence over the entire Latitude 32 area, which would provide them first right of access to materials on Crown Land, including road reserves within the Wattleup town site.</li> <li>• Cockburn Cement's quarrying operations at Stage 3 will cease over the next five years.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>• No known conservation issues.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>• No known heritage issues.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>• Market garden land north and south of the Wattleup town site may have site contamination issues due to current and previous rural activities, however this should not affect development.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>• Area currently poorly serviced by infrastructure.</li> <li>• Close proximity to new service infrastructure corridors in the Rockingham Road reserve, in particular sewer being constructed to service the Flinders Precinct. However, new pumping stations will be required.</li> <li>• Some electricity capacity within the Wattleup town site, however, overall development will require major power upgrades including new zone sub-stations.</li> <li>• Existing 300mm and 500mm distribution water mains will require extension from Rockingham Road and Russell Road corridors.</li> </ul>

Continued on page 142



## Latitude 32 stages 2 and 3







Issue	Latitude 32 stages 2 and 3
Close to work force	<ul style="list-style-type: none"> <li>South-west corridor is undergoing major population growth, with several major new urban developments in Kwinana, Cockburn and Rockingham, which have traditionally been blue collar workforce areas.</li> </ul>
Design specifications	<ul style="list-style-type: none"> <li>The Latitude 32 District Structure Plan indicates a variety of lot sizes within Stage 2, ranging from Local Commercial Centre lots of 2500 m<sup>2</sup>, General Industrial lots of 5000 m<sup>2</sup> and Transport Industry lots up to 5 hectares.</li> <li>Anticipated lot sizes within Stage 3 range from 5000 m<sup>2</sup> – 5 hectares (General Industry).</li> <li>Design guidelines will be required for each stage prior to development commencing.</li> </ul>

## Potential long term non-heavy industrial sites (strategic landbank)

Additional to the investigation areas and existing industrial estates, other sites were also identified which indicated some level of potential for further investigation in the longer term that would contribute to the strategic land bank for future industrial land supply.

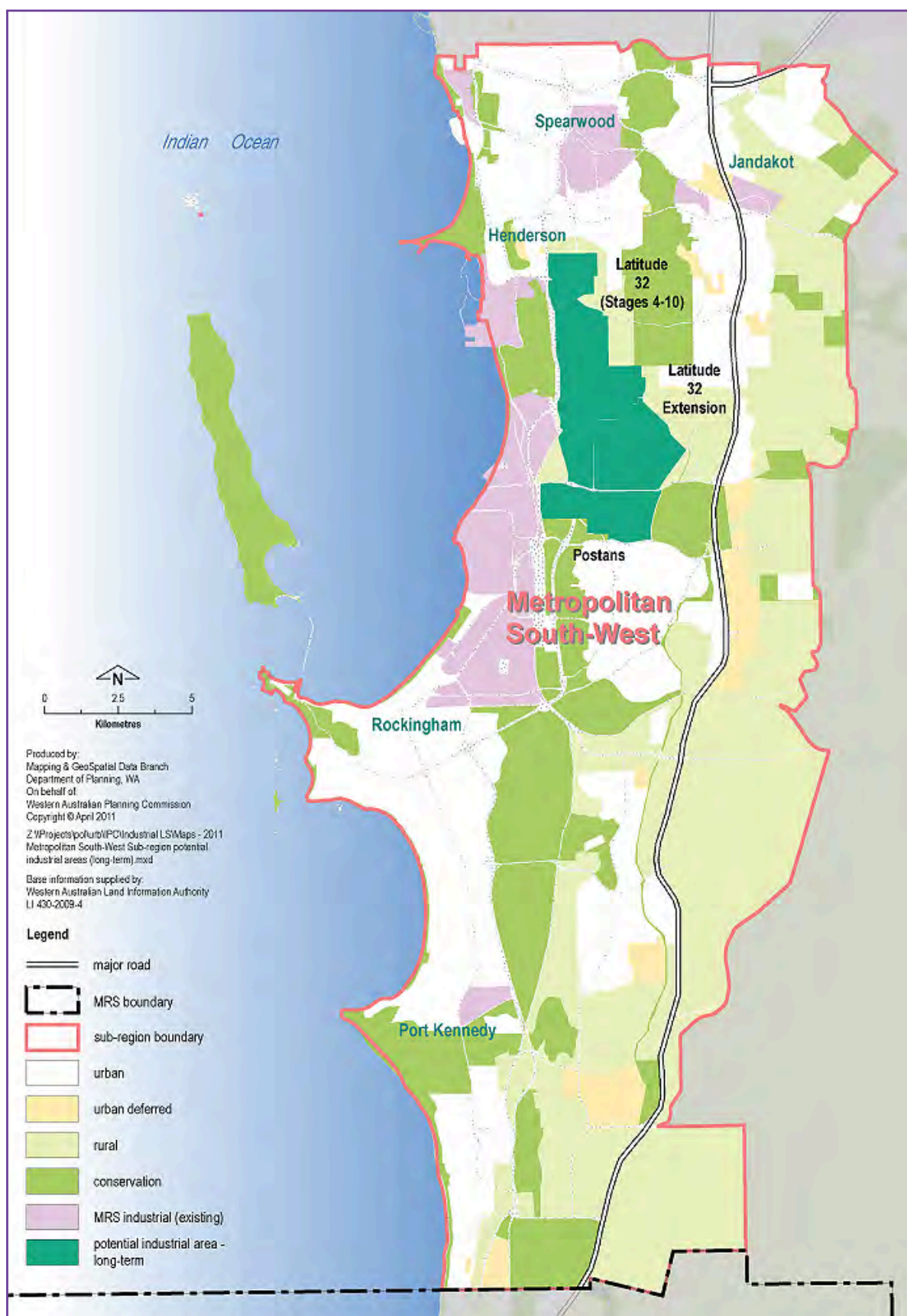
It should be acknowledged that a number of these sites may already have existing uses that preclude industrial activity taking place in the medium to long term. In these instances the future uses of these sites will be based on the future needs of the sub-region as well as the results of detailed investigations and studies.

In the South-west sub-region, these sites are as follows:

Postans	Total area 159 ha
<p><b>Land status:</b> Government land (Agriculture WA), 2 x C Class Crown Reserves with management order with CEO for Agriculture.</p> <p>The Medina research station is a support research annex in close proximity to the Department's metropolitan facilities. Subject to further planning work the Department may be able to consolidate research activities on around 60 ha, with the balance of the land being potentially surplus to requirements.</p> <p><b>Current use:</b> Research centre.</p> <p><b>Environmental constraints:</b> Limestone outcrop (approx. 80,000 m<sup>3</sup> rock on hill) and Spearwood sands – quality appears to range from armour to road base. Some existing vegetation on site though does not appear to be of any significance. Westernmost block has low grade limestone.</p> <p><b>Transport linkages:</b> Thomas Road.</p> <p><b>Serviceability:</b> Major sewer, gas and other infrastructure running through site (southern and eastern boundaries).</p>	



Latitude 32 Stages 4-10	Total area 952 ha
<p><b>Land status:</b> Highly fragmented land ownership. Limited LandCorp ownership (around 5%).</p> <p><b>Zoning:</b> MRS does not apply. Area subject to Hope Valley – Wattleup Redevelopment Act and Masterplan.</p> <p><b>Current uses:</b> Market gardens, turf farms, rural lifestyle, quarries.</p> <p><b>Environmental constraints:</b> Some wetlands, which are to be preserved. Potential for site contamination due to ongoing rural activities.</p> <p><b>Transport linkages:</b> Currently serviced by poor standard rural roads. Will require the provision of an extensive new transport network, including the construction of major arterial roads (Rowley Road, Fremantle Rockingham Highway, Anketell Road widening) and new local roads. Area currently unserved by public transport. Kwinana – Midland freight railway line traverses the area, with Latitude 32 identified as a suitable location for a new intermodal freight terminal.</p> <p><b>Serviceability:</b> Existing ground levels, ongoing quarrying operations and the fragmented land ownership make servicing of Stages 4-10 very difficult in the short to medium term.</p> <p><b>Potential land use hierarchy:</b> Transport industry around major infrastructure (intermodal terminal, Rowley Road), supported by General Industry (capitalising on close proximity to Kwinana) and light industry on eastern and northern boundaries to minimise land use conflict.</p>	



**Figure 33: Metropolitan south-west sub-region potential non-heavy industrial areas (long term)**





### Latitude 32 Extension | Total area 400 ha

**Land status:** Fragmented Rural land around large Alcoa landholding. Highly dependent on Latitude 32 outcomes.

**Zoning:** MRS: Rural. TPS: Rural A and Rural B.

**Current uses:** Alcoa ponds mostly surrounded by natural bushland (Bush Forever) with some semi-rural, rural industry developments to the north east.

**Environmental constraints:** There is a threatened ecological community buffer area in the south western portion of the area.

**Transport linkages and serviceability:** Well developed access to rail and freight network roads due to adjacent existing industrial land.

**Potential land use hierarchy:** This area is well suited to the provision of both Consumer and Producer services (to improve employment self containment in Kwinana) as well as Strategic Export/Knowledge based industries pending the development horizon for the Alcoa industries and mud lakes. This area has excellent freight network route linkages and is also in close proximity to planned port facilities. The inclusion of an agri-food processing plant will be considered for this site, subject to compliance with town planning and zoning considerations.

### South-west sub-region - long term outlook

Taking into consideration the anticipated growth of the metropolitan region, and major infrastructure upgrades associated with the Outer Harbour project and Latitude 32, the expansion potential of existing general industrial areas in the South-west sub-region will become critical to land supply and should be explored in greater detail.



## Key planning actions for the south-west sub-region

Key Stakeholders	Actions
City of Cockburn City of Rockingham Town of Kwinana WAPC Department of Planning LandCorp Department of State Development	<ul style="list-style-type: none"> <li>Develop, in conjunction with local government, an economic development and employment strategy for the South-west sub-region.</li> <li>Undertake a local demand assessment to determine the staging requirements for the release of land in line with population growth.</li> <li>To consolidate future intermodal terminal location in the sub-region.</li> <li>City of Rockingham to provide Cumulative Impact Assessment as part of the MRS rezoning process for the Rockingham Industrial Zone.</li> </ul>
LandCorp Department of Planning Department of Environment and Conservation Department of Water Main Roads of Western Australia Water Corporation Office of Energy Alinta Gas Wester Power Heritage Council	<ul style="list-style-type: none"> <li>Undertake feasibility studies with respect to the identified medium term sites in the South-west sub-region and determine most appropriate delivery models and level of government involvement in this sub-region to facilitate industrial land development.</li> <li>Complete structure planning for Latitude 32 and Rockingham Industrial Zone.</li> </ul>
Water Corporation	<ul style="list-style-type: none"> <li>Complete construction of the East Rockingham waste water treatment plant.</li> <li>Potential for water recycling plant at Port Kennedy.</li> </ul>
Proponent/s and/or landowner/s Department of Planning Department of Environment and Conservation	<ul style="list-style-type: none"> <li>Consultation required for sites with buffers for conservation and resource enhancement wetlands.</li> <li>Assessment of any environmental investigations undertaken for reclassification of conservation and resource enhancement wetlands, if appropriate.</li> <li>Undertake acid sulphate soil investigations.</li> <li>Flora and fauna investigations.</li> <li>Ascertain if any buffers to sensitive land uses are required.</li> </ul>
Alinta Gas Western Power	<ul style="list-style-type: none"> <li>Infrastructure provisioning to facilitate development of the sites.</li> </ul>
Main Roads Western Australia	<ul style="list-style-type: none"> <li>Improve east-west connectivity.</li> <li>Upgrading and extension of Rowley Road, Anketell Road and Mundijong Road.</li> </ul>
Proponent/s and/or landowner/s Department of Indigenous Affairs	<ul style="list-style-type: none"> <li>Facilitate the undertaking of Indigenous and European heritage and ethnographic studies where necessary and required.</li> </ul>
Proponent/s and/or landowner/s Department of Water	<ul style="list-style-type: none"> <li>Water management investigations and documents to be prepared in accordance with Better Urban Water Management (WAPC 2008).</li> </ul>



## Part 12 - Peel sub-region



The Peel sub-region comprises the City of Mandurah and the Shires of Murray and Waroona. The total area of zoned land in this sub-region is 199,950 hectares of which 3393 ha is zoned for industry in the Peel Region Scheme (1.7 per cent).

## Demographic profile

The ABS 2010 estimated population in the Peel sub-region is approximately 89,656 people. The City of Mandurah has the highest population with 70,413 people. The second highest population is in the Shire of Murray with 15,401 people and then followed by the Shire of Waroona which has a resident population of approximately 3842 people (ABS, 2011). The population of the Peel sub-region is expected to increase to 133,000 by 2031.

The Peel sub-region differs significantly from 'outer metropolitan Perth sub-regions as there has been a significant decrease in the number of people aged 20 to 30 years old and a greater increase in people aged 50 to 60 years over the last few years.

## Planning profile

Mandurah is the primary strategic metropolitan centre for this sub-region, providing regional comparable retail, community and health services, and professional and business services for a large catchment. Mandurah city centre will continue to be the primary focus for commercial activity within the sub-region into the future.

Strategic Metropolitan Centres	Secondary Centres	District Centres
Mandurah	Pinjarra	Falcon Halls Head Lakelands Waroona Ravenswood (Riverfront)*

\*emerging centre

Source: *Directions 2031 and Beyond*

*Directions 2031 and Beyond* aims to achieve an increase in dwellings from 38,000 in 2008 to 64,000 dwellings in the Peel sub-region by 2031.





## Economic profile

The graph below represents the number of employees living in the Peel sub-region employed in the particular industry (green bar) represented against the number of jobs existing for that industry in the sub-region (blue bar).

Compared to other sub-regions, there is strong representation of the manufacturing, construction and retail trade employment sectors, with health care and social assistance and education and training being the second tier of sector employment providers in the sub-region.

The Employment Self Sufficiency (ESS) for this sub-region is currently 71 per cent. *Directions 2031 and Beyond* identified an ESS target of 80 per cent for the Peel sub-region. This target translates into the need for an additional 36,000 to 56,000 jobs in this sub-region over the next 25 years.

The Peel sub-region will continue to grow and perform strongly, given the potential development opportunities that exist as well as an increasing population base.

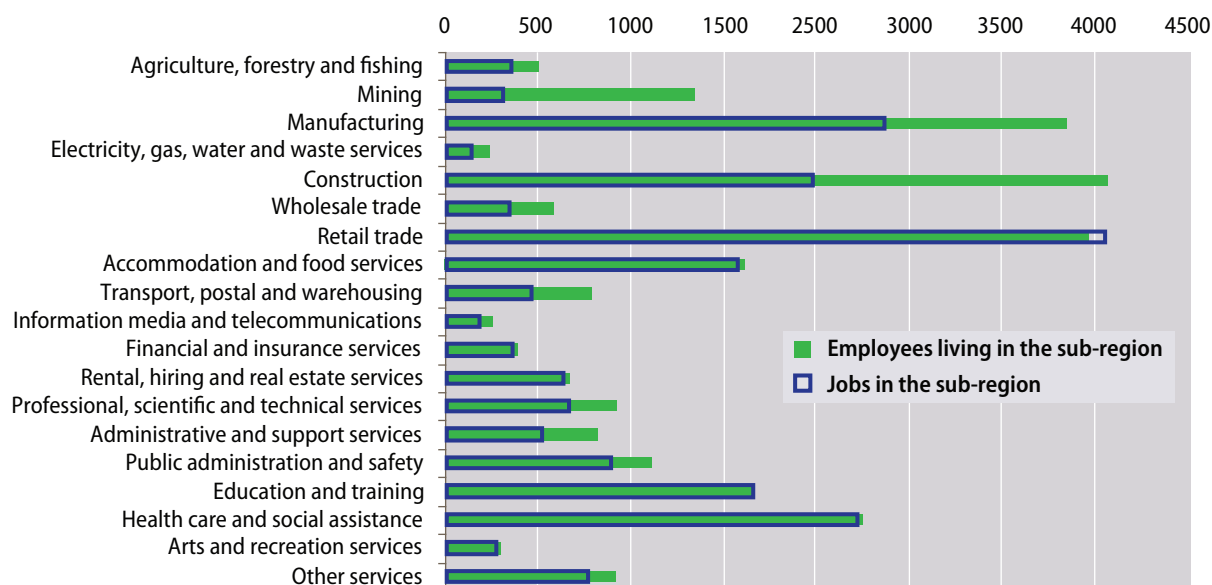
## Physical infrastructure

The Peel sub-region continues to experience rapid growth, which will place increasing pressures on existing infrastructure and increase the need to provide for additional key infrastructure to service the growing region into the future.

### Water

The greater Mandurah wastewater catchment currently comprises treatment plants at Gordon Road, Halls Head, Caddadup and Pinjarra. With forecast rapid population growth, and current maximum operating capacities nearing their threshold, there will be a need for an increase in treatment and conveyancing capacity. Wastewater planning for the greater Mandurah area catchment is currently being reviewed by the Water Corporation.

The Department of Water has released the draft Murray Drainage and Water Management Plan which aims to facilitate development that embraces total water-cycle management principles and water sensitive urban design (WSUD) best-management practices. It provides a framework for future planning and development



Source: 2006 ABS Census of Population and Housing

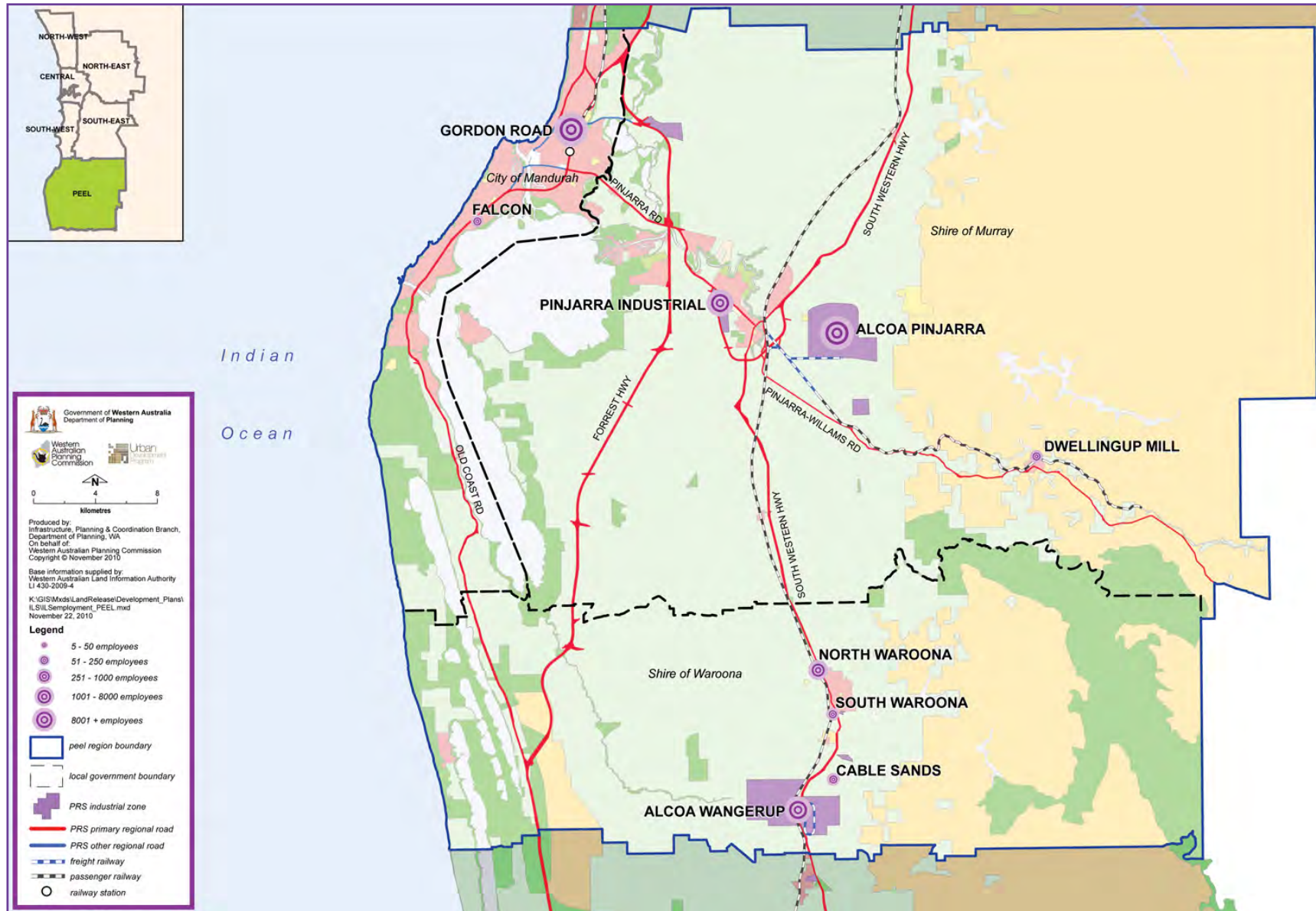


Figure 34: Industrial employment centres - Peel region





associated site-specific water management strategies and plans. The plan has been undertaken at a sub-regional scale and does not absolve proponents from undertaking detailed design studies and meeting all other statutory requirements, during the planning phase of development.

## Energy

Additional energy infrastructure will be required to service the growing population. The Department of Planning and Western Power have developed a Network Capacity Mapping Tool that shows electricity capacity and utilisation as a result of land/building development and the future planning capacity of electricity infrastructure.

## Road and freight network

Within the Peel sub-region there are some key freight and regional road routes that provide access from the metropolitan area to the South West. The recent opening of the Kwinana Freeway/Forrest Highway has resulted in improved road access to the South West of WA. Freight traffic can now travel via this route rather than along Old Coast Road.

## Industrial and employment land in the sub-region

The Oakley and Wagerup strategic industrial centres, being Alcoa's Pinjarra and Wagerup refineries, underpin much of the industrial activity within the sub-region. The mineral processing plants generate substantial export revenue for the sub-region, and offer the opportunity for a number of support industries to operate within the region, boosting its employment base.

The Nambeelup industrial area, located approximately 10 kilometres north-east of the Mandurah city centre, will become increasingly important to the sub-region and its establishment and expansion are regarded as a high priority. Work is presently underway to prepare a District Structure Plan for the Nambeelup core industrial area and its outer extent.

## Future industrial land supply in the sub-region

The strategy has identified locations where possible industrial sites may be considered, to accommodate future demand and economic growth. The future drivers for the Peel sub-region are considered to be:

- Population growth;
- Sustained levels of economic growth and employment targets;
- Proximity to existing infrastructure including Kwinana Freeway and Forrest Highway;
- Availability of land for development; and
- Affordability of land relative to Perth Metropolitan land.

The population forecast for this sub-region by 2031 is estimated to be 133,000 people.

The industrial land supply in this sub-region to 2031 is represented as shown in figure 35.

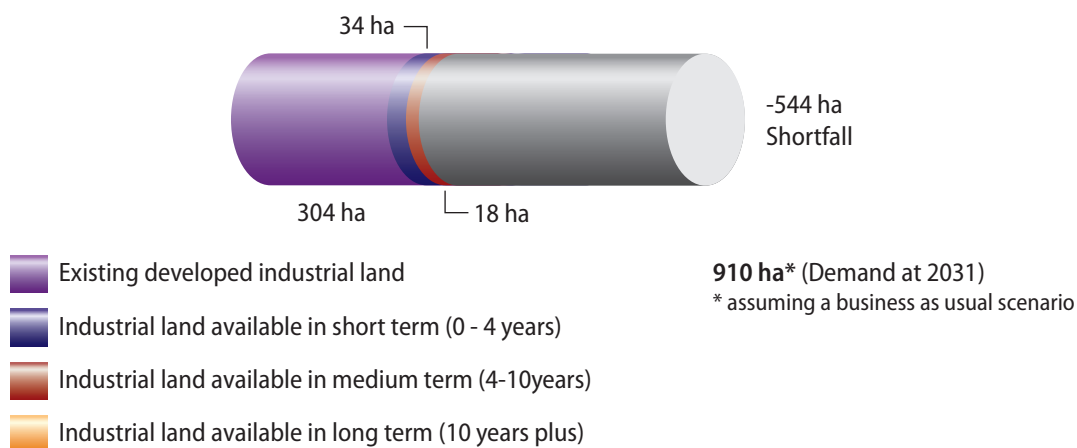
With a forecast demand of 910 ha by 2031, and based on existing data on the available supply in the pipeline, the sub-region will encounter a deficit of 544 ha if no additional land is released to the market by 2031.

The provision of sufficient industrial land will be dependent upon arrangements being made to provide suitable service infrastructure for priority industrial areas, such as Nambeelup.

The strategy has identified possible industrial investigation sites or areas within the Peel sub-region. These investigation areas are not currently zoned "Industrial" in the Peel Region Scheme. Further planning and environmental investigations are required for all sites and the developable area and lot configuration of these sites are subject to change. These sites have been categorised into anticipated zoning timeframes, however, these timeframes are also subject to change and dependent upon various factors, including proponents' willingness to progress the necessary planning, environmental and servicing investigations to support rezoning proposals.

Name	Zoning Status (PRS)	Stage (if relevant)	Gross Area
Future short term non-heavy industrial sites (0-4 years)			
N/A			
Potential medium term non-heavy industrial sites (4-10 years)			
Greenlands Road	Rural	N/A	295 ha
Nambeelup	Rural	N/A	1148 ha
West Pinjarra	Rural	N/A	229 ha
Total gross area			1672 ha

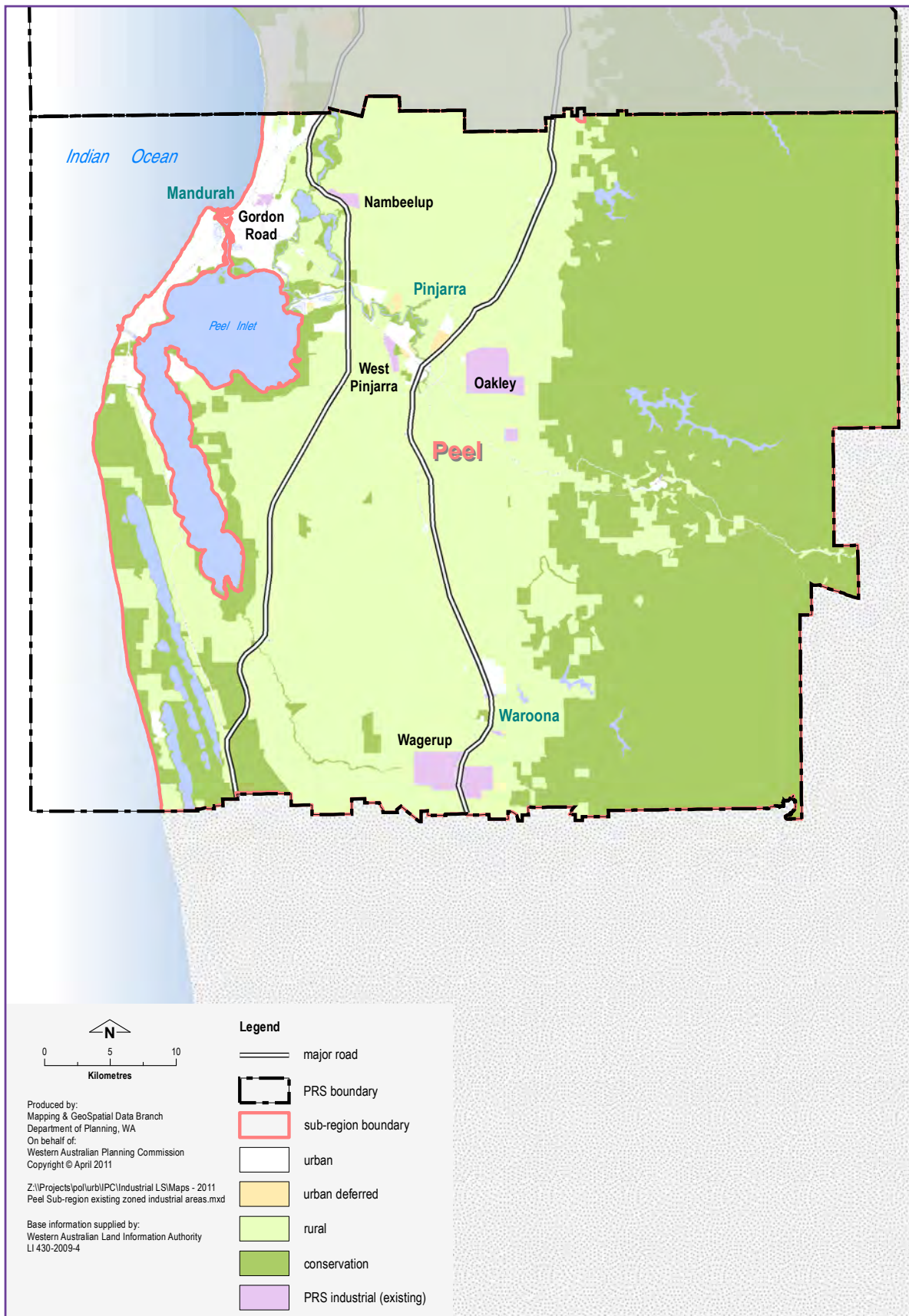
\*Note: The areas provided in this table exclude land that already is zoned "Industrial" in the Peel Region Scheme. Please note that the total areas of these sites are still subject to investigation.



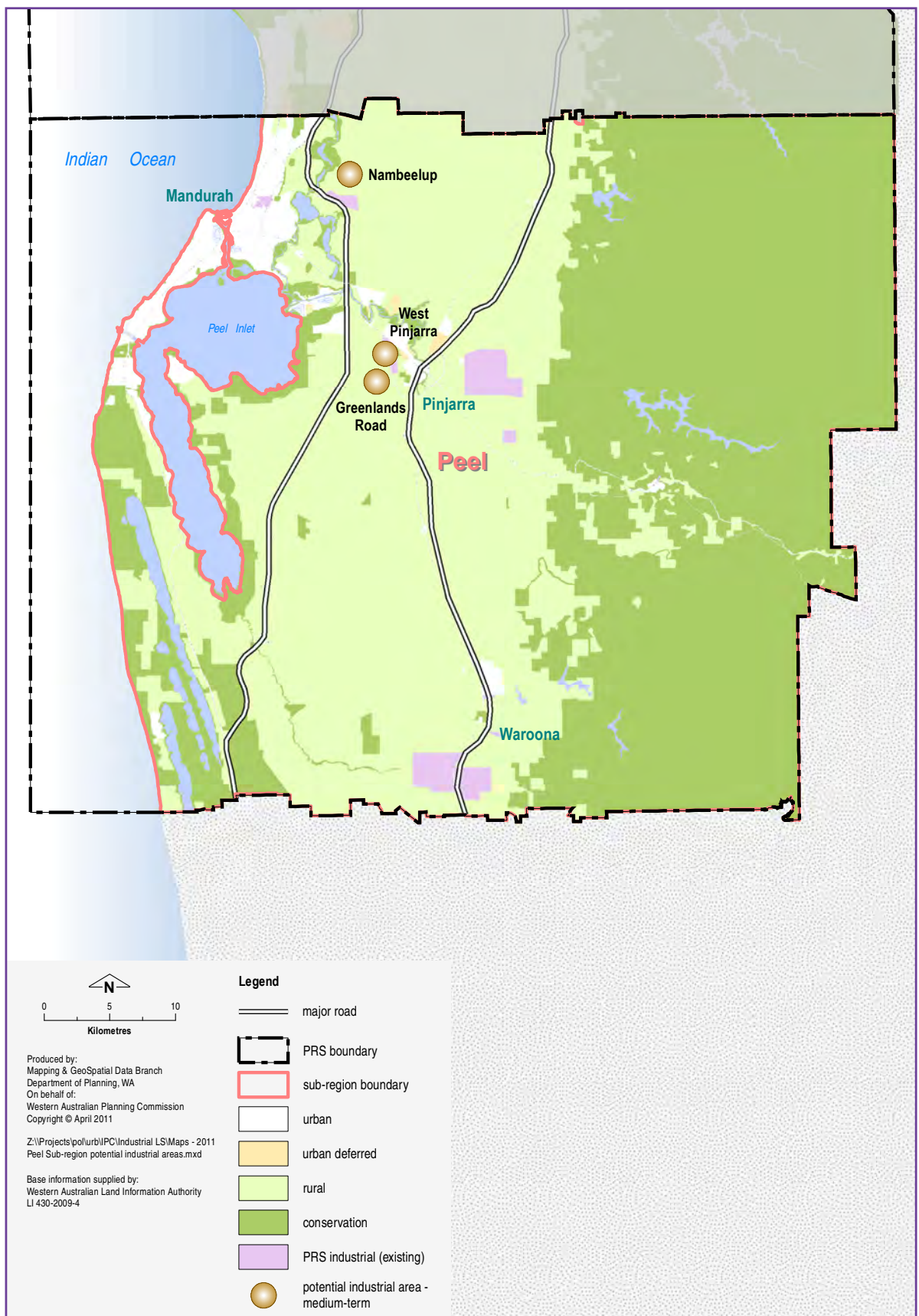
**Figure 35: Current non-heavy industrial zoned land supply: Peel sub-region**

(Source: Property Council of Australia)





**Figure 36: Peel sub-region existing zoned industrial areas**



**Figure 37: Peel sub-region potential non-heavy industrial areas**



## Peel sub-region possible future non-heavy industrial sites

The following section provides an overview of the possible industrial sites that have been identified as part of the strategy, to support future growth and demand in the Peel sub-region. The sites are defined by three separate categories: future short term industrial sites, potential medium term industrial sites, and potential long term industrial sites (strategic landbank sites).

It should be noted that the final configuration of all industrial areas within the Peel region, particularly the Greenlands Road site, will be determined through the South Metropolitan Peel Structure Plan. The draft structure plan is currently being prepared.

## Future short term non-heavy industrial sites

There are no potential short term industrial sites identified within the Peel sub-region as part of this strategy. It should be noted however that land from the existing zoned Nambeelup industrial area is likely to be released to the market over the short term.

## Potential medium term non-heavy industrial sites

In the Peel sub-region, two sites (Greenlands Road and Nambeelup) have been identified which have Government support for further planning investigation and removal of constraints, subject to the recommendations of more detailed investigations into their feasibility. West Pinjarra is also identified as becoming available in the medium term. However, investigative work for this site has not been as extensive as that for Greenlands Road and Nambeelup. Each of these is described in the following section.

Issue	Greenlands Road
Land ownership	<ul style="list-style-type: none"> <li>Owned by one private landowner and five private companies. Largely in the ownership of companies, land assembly issues are not likely to be an impediment, depending upon landowner willingness to consider alternative land uses.</li> <li>The site is predominantly utilised for rural/ agricultural purposes, with some existing industrial land located nearby.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>Serviced by effective transport linkages with frontages to the South-Western Highway, Pinjarra Road, the Perth-Bunbury Highway and Greenlands Road ensures the site has access to an appropriate road network for both freight and employment within the area.</li> <li>Existing rural residential development lies within close proximity to the site. This is likely to provide increased incentive to developers and businesses to undertake activities within the area as population growth in the area is evident.</li> <li>Existing industrial development lies within close proximity to the site.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>The site is predominantly cleared of native vegetation. Two small stands of remnant vegetation remain on the site in the centre and northwest.</li> <li>The site is generally unconstrained by environmental issues apart from a small conservation dampland. Providing the development can avoid the conservation dampland and adequately address drainage requirements environmental impacts and associated approvals will not be a significant consideration.</li> <li>The site falls within the Peel-Harvey Water Catchment area.</li> </ul>



Issue	Greenlands Road
Topography/soil	<ul style="list-style-type: none"> <li>• Soils in the area are characterised by Bassendean sands in the western portion of the site and sandy clay Guildford pockets in the eastern section of the site.</li> <li>• The site is predominantly flat and low lying. With more than 90 per cent of the site having a slope of less than 1 per cent, the site may present some difficulties for drainage. With the site being seasonally waterlogged and likely to consistently require fill of 1 m (average) appropriate treatment of stormwater, groundwater and drainage will be necessary.</li> <li>• Land will require significant fill.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>• There is an existing rural residential area immediately north of the 'potential industrial area' north of Greenlands Road.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>• The whole area is a seasonally waterlogged palusplain multiple-use geomorphic wetland. A conservation category dampland is located within the centre of the site. Development is constrained within the conservation dampland and its buffer area (100m).</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>• There are no registered areas of aboriginal or cultural heritage significance within the site.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>• No contaminated sites exist within the investigation area on the DEC Contaminated Sites database, however, a site immediately to the east of the area is noted as having contaminated soils and groundwater. The contaminated area was the site of a canola processing plant and contamination has been identified in the area. The extent of contamination into the Greenlands investigation site is not known; further investigation to the site contamination is recommended. Development which requires significant earthworks in the area will require a preliminary site assessment for ASS and potentially an ASS management plan.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>• No water supply infrastructure currently exists within the site. Water supply in the surrounding areas is complicated and a Regional Water Strategy Scheme is currently being undertaken for the area. Further studies would be required to determine preferred sources.</li> <li>• There is no wastewater infrastructure currently existing within the site. At present wastewater in adjacent areas is being conveyed to the Pinjarra WWTP, however, due to capacity issues, this is a short term option.</li> <li>• Overhead power distribution (132kV) is present at the site and a number of transmission lines run north-south to the east of the site.</li> <li>• The Pinjarra substation is located approximately 8 km from the proposed area, but mainly caters for the underlying growth of the area. This substation should be able to meet the initial demand from the proposed industrial area. Western Power will monitor the demand growth to the area to be in the position to cater for the additional demand as it grows.</li> <li>• Limited gas supply. While there is a natural gas distribution network in the townsite of Pinjarra that is about 3.2 km away, this network does not currently have the capacity to service this potential industrial site.</li> <li>• In June 2011 the Department of Water released the final Murray Drainage and Water Management Plan (DWMP) to provide district level water management guidance with respect to groundwater, surface water and flood protection. The DWMP will inform subsequent district and local planning and development decisions for the area and provide guidance for the preparation of water management documents in accordance with Better Urban Water Management (WAPC 2008).</li> <li>• Water management investigations and documents will need to be prepared in accordance with Better Urban Water Management (WAPC 2008).</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>• The Pinjarra townsite and Mandurah are located close to the subject site, and are likely to provide the necessary workforce for future use.</li> </ul>
Design specifications	<ul style="list-style-type: none"> <li>• Local planning scheme and policy requirements will need to be formulated.</li> </ul>



## Preferred uses and potential end users

While there may be demand for some minor consumer services within the site, and a need for light/service industry, the majority of the site is envisaged for General Industrial uses providing Producer Services including warehousing and distribution (storage and display of goods on a wide variety of lot sizes) and transport and logistics (depots and distribution centres on large lots, material management including disposal and recycling). The site is well placed to accommodate

high technology/smart/automated systems that will need to expand at later phases of sequential development.

Agri-food processor uses will be investigated for this site due to its proximity to South West rural producers, as well as proximity to good existing transport networks.

## Key actions - Greenlands Road

Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Planning and land use	1	Undertake a local demand assessment to determine the staging requirements for release of land in line with other industrial development existing and proposed at West Pinjarra and Nambeelup.	Up to 10 years from commencement to complete key planning related actions (these are contingent upon completion of key infrastructure studies).
	2	Following completion of various structure planning and environmental investigations, initiate amendment to the Peel Region Scheme to rezone the site from 'Rural' to 'Industry'. A corresponding amendment will be initiated to the Shire of Murray Local Planning Scheme No.4 to rezone the site from 'Rural' to 'Industrial Development'.	
Environment	3	An investigation into the environmental impacts of any proposed development and examination of buffer requirements for the identified conservation damp land will be needed.	Up to 3.5 years from commencement to complete key environmental actions.
	4	Drainage studies required given relatively flat topographical profile of site.	
	5	A District Water Management Plan will be required to demonstrate that the area is capable of supporting the change in land use, identify areas required for water management and future investigations more appropriately manage stormwater in a sustainable manner throughout the proposed development. This would need to be prepared in conjunction with Department of Water and involve the requirement for monitoring of surface water and groundwater for a minimum period of 18 months. *note: Water Management Plan should include proposals to promote the capture, storage, treatment and environmentally responsible disposal and/or reuse of stormwater.  The Department of Water has released the draft Murray Drainage and Water Management Plan (DWMP) to provide district level water management guidance with respect to groundwater, surface water and flood protection. The DWMP will inform subsequent district and local planning and development decisions for the area and provide guidance for the preparation of water management documents in accordance with Better Urban Water Management (WAPC, 2008).	
	6	Undertake a flora and fauna survey.	

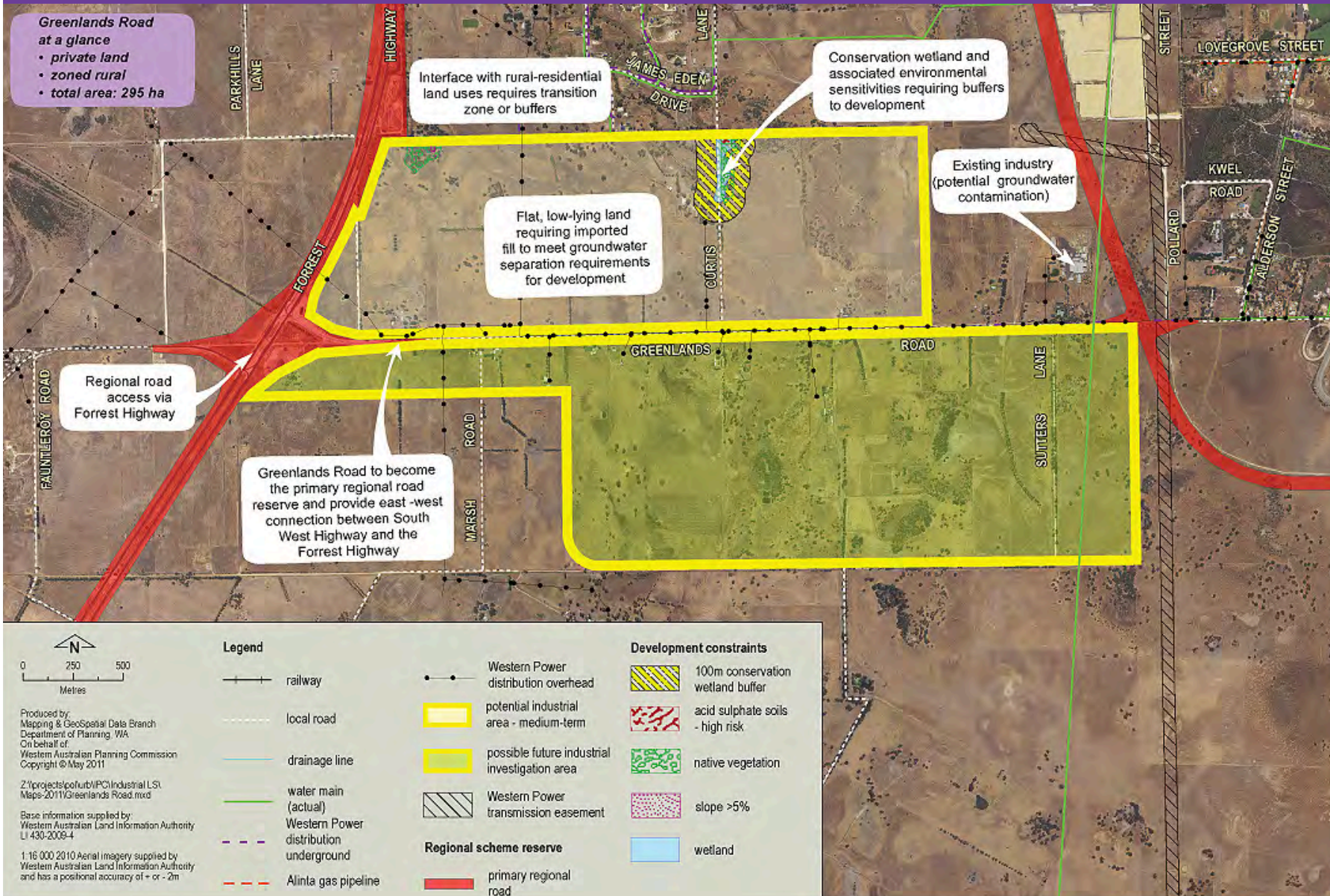
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## Greenlands Road

**Greenlands Road at a glance**

- private land
- zoned rural
- total area: 295 ha







Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Infrastructure and servicing	7	The Water Corporation has indicated that it is unlikely that the supply would not come from the trunk main. A planning study would need to be undertaken by the Water Corporation to determine the potential for utilising this main as a water supply to the development.	Up to 9 years from commencement to complete key water and sewer infrastructure studies and complete construction/ delivery of required supply and trunk infrastructure.
	8	Water Corporation would need to undertake a planning study to look at the options and feasibility to service this area for wastewater treatment and disposal purposes.	
	9	Investigations into the upgrading of the existing gas network connection from the Pinjarra town to meet future capacity demands need to be looked at by Western Power.	
Physical landform and soils	10	Undertake an Acid Sulphate Soils investigation and prepare an Acid Sulphate Soils Management Plan if acid generating material is identified.	Up to 6 months from commencement to assess the fill requirements.
	11	Soil and groundwater investigations are undertaken for all sites with potential contamination and management plans are prepared and implemented in accordance with guidelines issued by DEC's Contaminated Sites Branch.	
	12	Undertake heritage surveys (indigenous and European).	

Issue	Nambeelup
Land ownership	<ul style="list-style-type: none"> <li>The majority of land within the Nambeelup site is in private ownership, with three properties being owned by private landowners and five properties owned by private companies. LandCorp also owns one of the super lots (120 ha). Land assembly is not likely to be an impediment as the land is currently in large landholdings 40 – 200 ha parcels.</li> <li>The majority of the site is currently vacant land, formerly used for grazing, with exception of an operating piggery and a composting facility in the north-eastern portion of the site, a concrete batching plant on Lot 604 Lakes Rd and a disused abattoir on a portion of Lot 1 (north-western part of the site). An existing kennel estate is located in the central part of the Nambeelup area, which consist of 32 individually owned 2 ha lots. Consideration is being given for inclusion of the Nambeelup park kennel estate as part of the longer term industrial investigation area within the Nambeelup District Structure Plan currently being prepared by the DoP. Further to the east of the kennel estate is Murrayfield Airpark which currently serves as a small aircraft aerodrome for the Peel sub-region.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>Perth-Bunbury Highway provides direct connection to Perth in the north and Bunbury in the south.</li> <li>Lakes and Paterson/Gull Roads provide good east-west and north-south access to Mandurah, Pinjarra and future Keralup development. Due to importance of Lakes and Paterson Roads it is likely that these roads will become "Other Regional Roads" and will be widened and upgraded to the required standard in order to accommodate the long-term development needs of the sub-region.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>The site is mostly cleared but retains remnants of native vegetation.</li> <li>High groundwater level is the characteristic of the whole Nambeelup area. Placement of fill and subsoil drainage would be required at the development stage to achieve adequate separation of development to groundwater.</li> <li>The majority of land within the Nambeelup area is classified as a "Multiple Use Wetland". DEC mapping also shows "Resource Enhancement Wetlands" and 'Conservation Category wetlands' (CCW) within the site. Some properties also contain EPP lakes.</li> <li>Further work will be required to be undertaken in relation to CCW's on individual lots prior to any development in order to determine wetland boundaries, buffer distances and specific management requirements.</li> </ul>

Issue	Nambeelup
Topography/soil	<ul style="list-style-type: none"> <li>The majority of the site is classified as Bassendean Sands with underlying Guilford Formation clays. Portions of the site are prone to inundation with groundwater being close to the surface, therefore, management of high groundwater levels and drainage is a significant issue.</li> <li>The majority of the land within the Nambeelup area is classified as 'having moderate-to-low' risk of ASS occurring within 3 m of natural soil surface. However, there are some occurrences of high-to-moderate risk, mainly within land abutting Nambeelup Brook and waterlogged areas.</li> <li>Acid sulphate soils reports would be required prior to development on properties with 'High to Moderate' risk of acid sulphate soils (ASS). Such reports should provide detailed information on the likely presence and distribution of the ASS on the property and also demonstrate the capacity of land to sustain the proposed land uses.</li> <li>Fill required to be imported from off-site.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>The area is adjacent to existing key freight network route linkages.</li> <li>Suitable interface with the freeway, regional roads, future residential development at Keralup and surrounding rural residential areas will be an important consideration during detailed planning stages for Nambeelup Industrial Estate.</li> <li>Existing kennel estates are located in the centre and to the east of the Nambeelup site. As these estates contain residential dwellings, careful consideration will need to be given to the types of industrial uses in the vicinity to ensure any potential off-site impacts are acceptable. Consideration is being given to rezoning and developing the Nambeelup Kennel Park for industrial purposes in the long-term.</li> <li>Also off-site impacts and buffers of existing uses in Nambeelup, such as the piggery and composting facility, Murrayfield aerodrome, abattoir (currently not in operation) and a concrete batching plant need to be considered during detailed planning stages.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>A number of Conservation Category and Resource Enhancement wetlands are found within the Nambeelup Industrial project area.</li> <li>Populations of threatened and priority flora species may exist. Further detailed flora surveys would be required during the rezoning stage on individual landholdings.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>An artefact scatter site on Lot 11 Lakes Rd (Murrayfield Airfield gravel airstrip) was found in the course of the 2005 work previously undertaken for the WAPC. Also Serpentine River (Permanent Listing) and Nambeelup Brook (Stored Data listing) are two registered sites located along the western and southern boundaries of Nambeelup area. These sites are not likely to be an impediment to future industrial development, however consultation with the DIA may be required and any obligations under the Aboriginal Heritage Act 1972 will be required to be observed by developers.</li> <li>There are no known sites of European Heritage at Nambeelup.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>There are two contaminated sites registered on DEC's Contaminated Sites database at Nambeelup, being Lots 89 &amp; 109, which contain a piggery and compost/waste management facility operations.</li> <li>Groundwater and soil beneath these sites have been monitored for several years as required by the licence conditions. Soil investigations found elevated levels of nutrients and ground water investigations revealed higher levels of ammonia concentrations. The sites are classified as Contaminated - restricted use, which would not be an impediment for any future industrial uses, however further testing/analysis should be carried out if any groundwater extraction is proposed.</li> </ul>

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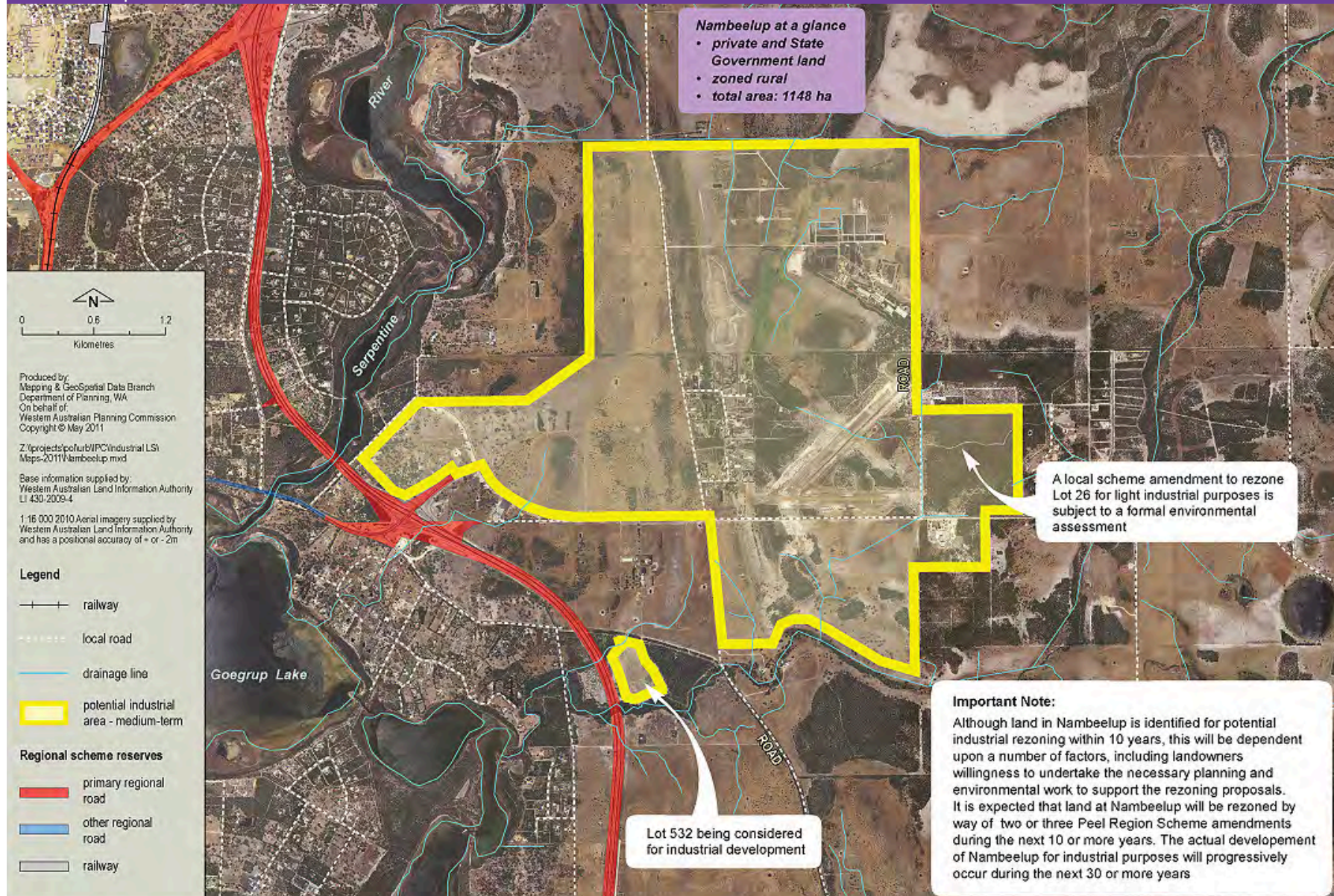
Issue	Nambeelup
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>Provision of services is one of the main impediments to future industrial development in Nambeelup, as currently there are no services to the site and the extension of services will be at the developers' cost, which may be cost prohibitive.</li> <li>Water Corporation is currently undertaking an investigation into the most appropriate strategy for provision of water services to Nambeelup and Keralup areas.</li> <li>The Stirling Dam Trunk Transfer Main – DN1400 is located to the east of the site. Water Corporation also has recently constructed an additional DN 1400 trunk main in Lakes Road to support the supply to the Mulga Drive High Level Water Tank. Water Corporation advises that a direct connection to this main would not be possible. At this stage there is no detailed planning for supply of potable water to Nambeelup.</li> <li>Mandurah Lateral Gas pipeline was recently installed and is running east-west through the centre of Nambeelup along Redheads Road. There is an opportunity to connect to this pipeline, however, pressure reduction infrastructure would be required to be constructed.</li> <li>Western Power is currently investigating possible options for provision of power to the site. It is likely that a new substation will be required to be located centrally in Nambeelup in the vicinity of Lakes and Paterson Roads intersection.</li> </ul>
Close to workforce	<p>Nambeelup is located 10 km from Mandurah City Centre and approximately 12 km from Pinjarra, and is also abutting Keralup development site to the north, which is predicted to achieve up to 90,000 population when fully developed.</p> <p>Nambeelup Industrial Area would play a major role in achieving employment self-sufficiency target of 80 per cent identified for the Peel sub-region in <i>Directions 2031 and Beyond</i>.</p>
Design specifications	Local planning scheme, policy requirements and design guidelines will apply.

## Preferred uses and potential end users

This area is well suited to the provision of both Consumer and Producer services as well as Strategic Export/Knowledge based industries. The inclusion of agri-food processor uses will be investigated for this site due to its proximity to South West rural producers and proximity to existing transport networks.



## Nambeelup







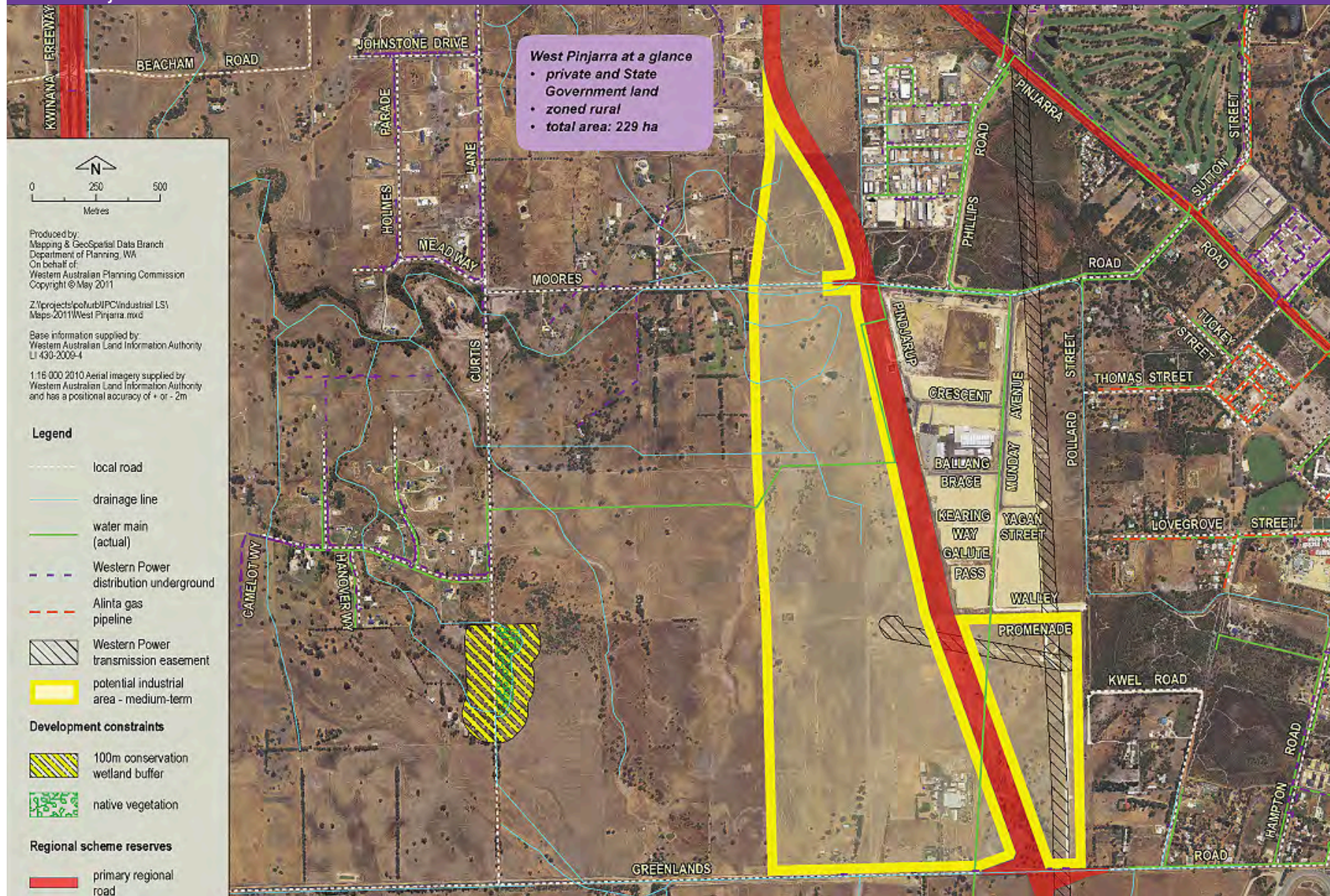
## Nambeelup - Key actions

Technical Issue/Criteria	Action	Key Action	Delivery Timeframes
Planning and land use	1	Peel Region Scheme amendments to rezone various stages/properties within the Nambeelup Industrial Area from Rural to Industrial, will be initiated following completion of relevant planning and environmental investigations.	Up to 18 months from commencement to complete key planning actions.
	2	Amend the Local Planning Scheme to appropriate industrial zoning.	
	3	Prepare and finalise a District Structure Plan (DSP) for Nambeelup Industrial Area (NIA).	
Environment	4	Prepare District Water Management Strategy to support the NIA DSP.	Up to 2 years from commencement to complete key environmental actions.
	5	Environmental Report to be prepared as part of the DSP process, which would help to identify critical environmental issues, areas required to be protected, provide recommendations on location of public open space, buffer distances and setback requirements from environmentally sensitive areas.	
	6	Wetland assessment and management plan.	
	7	Undertake flora and fauna surveys.	
Infrastructure and servicing	8	Servicing Report to identify options for provision of necessary essential services to Nambeelup. Servicing Report will be done as part of the NIA DSP preparation process and would include initial liaison with the major service providers.	Up to 2 years from commencement to complete key infrastructure studies.
	9	Water Corporation to investigate and plan for provision of potable water and sewerage services to Nambeelup Industrial area.	
	10	Undertake investigations on future demand for power and gas.	
	11	Traffic/Access report to be prepared as part of the NIA DSP, which will also review any available background information and also previous traffic modelling and reports in relation to Keralup site. This report will provide conclusions and recommendations in relation to the regional traffic implications, road layout for NIA, road reserves, intersection treatment/spacing, staging, etc.	
Physical landform and soils	12	Undertake an Acid Sulphate Soils investigation and prepare an Acid Sulphate Soils Management Plan if acid generating material is identified.	Approximately 3 months to complete preliminary site assessment for acid sulphate soils.
	13	Undertake heritage surveys (Indigenous and European).	

Issue	West Pinjarra
Land ownership	<ul style="list-style-type: none"> <li>Ownership includes two private landowners, three private companies, LandCorp and the State Government. Land assembly issues are not likely to be an impediment, depending upon landowner willingness to consider alternate land uses.</li> <li>The extension area is predominantly utilised for rural/ agricultural purposes, with one of the lots for industrial use.</li> <li>The West Pinjarra area abuts the existing industrial area, which includes LandCorp's recently created Pinjarra Industrial Estate along with the Pinjarra industrial area. In total the existing area is in the order of 145 ha.</li> </ul>
Accessibility (including transport networks)	<ul style="list-style-type: none"> <li>Serviced by effective transport linkages with routes along the South-Western Highway, Pinjarra Road, Greenlands Road and the Perth-Bunbury Highway. The site has access to an appropriate road network for both freight and employment within the Pinjarra and Mandurah areas.</li> <li>Existing residential development lies within close proximity to the site in Pinjarra townsite with future residential development planned within the area. This is likely to provide increased incentive to developers and businesses to undertake activities within the area as population demand for the area is able to be clearly seen.</li> <li>Existing industrial development lies within close proximity to the site which is also likely to provide increased incentive to developers and businesses to undertake activities within the area as a working example of industrial development being utilised in the area.</li> </ul>
Environmental sensitivities	<ul style="list-style-type: none"> <li>Few identified environmental constraints.</li> <li>Predominantly low lying Prime Agricultural Land with some fair rating.</li> </ul>
Topography/soil	<ul style="list-style-type: none"> <li>The site is located on the relatively flat alluvial Pinjarra plain system at the foot of the Darling Scarp.</li> <li>The regional geology of the site is predominantly sandy clay, clays and clayey sands of the Guildford Formation.</li> <li>Hydrogeological information indicates the site overlies the Serpentine Area superficial aquifer. Regional groundwater flow is expected to be in a north-westerly direction, eventually discharging into the Peel Inlet/Indian Ocean. Site specific groundwater flow is to the north.</li> <li>The site is predominantly flat and low lying, presenting some difficulties for drainage. With the site being seasonally waterlogged and is likely to consistently require fill of 1 m (average) with appropriate treatment of stormwater, groundwater and drainage throughout the development, increasing development costs.</li> </ul>
Potential land use conflict	<ul style="list-style-type: none"> <li>Minimal. Mainly due to the extension area abutting the existing industrial zoned land to the east with current rural land potentially rezoned to special rural in the future.</li> </ul>
Conservation	<ul style="list-style-type: none"> <li>To be further investigated.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>A search on the Department of Indigenous Affairs website found no registered areas of aboriginal or cultural heritage significance within the West Pinjarra area. Further site investigation is required.</li> </ul>
Site contamination	<ul style="list-style-type: none"> <li>Two contaminated sites exist within the investigation area that is identified on the DEC Contaminated Sites database, however, further environmental investigations over an additional lot immediately to the east of the registered lots has identified groundwater contamination. It is understood this site will be included on the Contaminated Sites database in the near future.</li> <li>DEC is working with the source site landowner to determine the level of contamination present.</li> <li>Any development requiring significant earthworks in the area will require a preliminary site assessment for ASS and Dewatering requirements.</li> </ul>
Service infrastructure accessibility	<ul style="list-style-type: none"> <li>Power is available through transmission lines with the proposed site, with a 330/132 Kv Western Power Terminal Station at Alcoa Pinjarra. A water main transects the proposed site, however, the closest sewer infrastructure is north east of the site in Pinjarra.</li> </ul>
Close to workforce	<ul style="list-style-type: none"> <li>The Pinjarra townsite and Mandurah are located close to the subject site, and are likely to provide the necessary workforce for future use.</li> </ul>
Design specification	<ul style="list-style-type: none"> <li>Not applicable to this site, with the exception of local planning scheme and policy requirements.</li> </ul>



## West Pinjarra





## Potential long term non-heavy industrial sites (strategic landbank)

In addition to the investigation areas and existing industrial estates, other stages of the Nambeelup industrial development have been identified which indicate some potential for further investigation in the longer term that would contribute to the strategic land bank for future industrial land supply.

## Peel sub-region – long term outlook

The future of general industrial land supply in the Peel sub-region depends heavily on the development of the Nambeelup industrial estate.

## Key planning actions for the Peel sub-region

Key Stakeholders	Actions
City of Mandurah Shire of Murray Shire of Waroona WAPC Department of Planning LandCorp Department of State Development Peel Development Commission	<ul style="list-style-type: none"> <li>Develop, in conjunction with local government, an economic development and employment strategy for the Peel sub-region.</li> <li>Undertake a local demand assessment to determine the staging requirements for the release of land in line with population growth.</li> </ul>
LandCorp Department of Planning Peel Development Commission Department of Environment and Conservation Department of Water Main Roads of Western Australia Water Corporation Office of Energy Alinta Gas Wester Power Heritage Council	<ul style="list-style-type: none"> <li>Undertake feasibility studies with respect to the identified medium term sites in the Peel sub-region and determine most appropriate delivery models and level of government involvement in this sub-region to facilitate industrial land development.</li> </ul>
Water Corporation	<ul style="list-style-type: none"> <li>Investigation into alternative water sources.</li> <li>Long-term waste water treatment capacity and options for the Greater Mandurah area.</li> </ul>
Proponent/s and/or landowner/s Department of Planning Department of Environment and Conservation	<ul style="list-style-type: none"> <li>Consultation required for sites with buffers for conservation and resource enhancement wetlands.</li> <li>Assessment of any environmental investigations undertaken for reclassification of conservation and resource enhancement wetlands, if appropriate.</li> <li>Undertake acid sulphate soil investigations.</li> <li>Flora and fauna investigations.</li> <li>Ascertain if any buffers to sensitive land uses are required.</li> <li>Murray Drainage and Water Management Plan.</li> </ul>
Alinta Gas Western Power	Infrastructure provision to facilitate development of the sites.
Main Roads Western Australia	Key east-west connectors such as Lakes Road and Greenlands Road to be considered for future widening. Consideration to Greenlands Road being upgraded to a primary regional road.
Proponent/s and/or landowner/s Department of Indigenous Affairs Heritage Council of Western Australia	Facilitate the undertaking of Indigenous and European heritage and ethnographic studies where necessary and required.
Proponent/s and/or landowner/s Department of Water	Water management investigations and documents to be prepared in accordance with the Better Urban Water Management Strategy (WAPC, 2008).