

Figure 17: Draft urban expansion plan

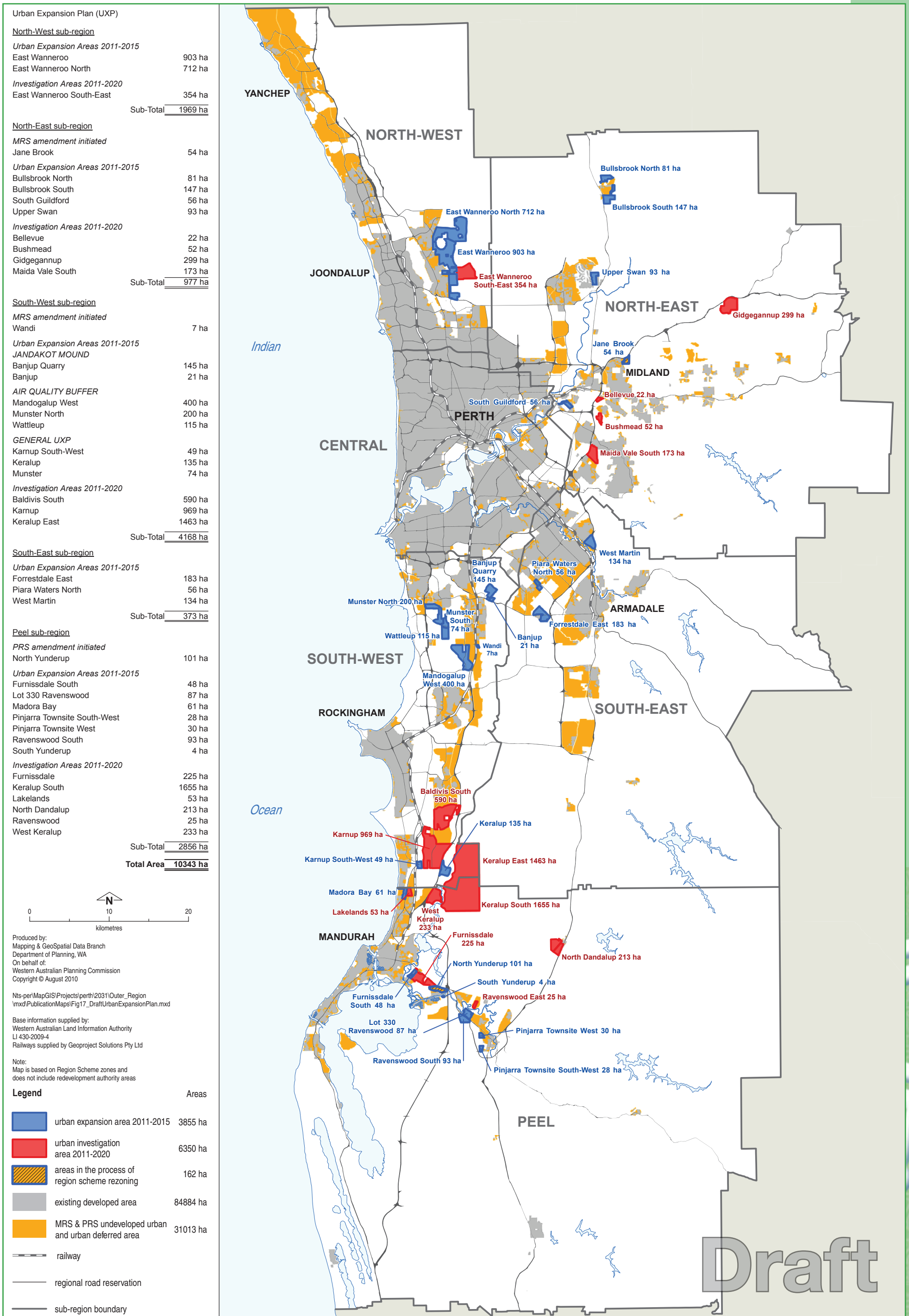
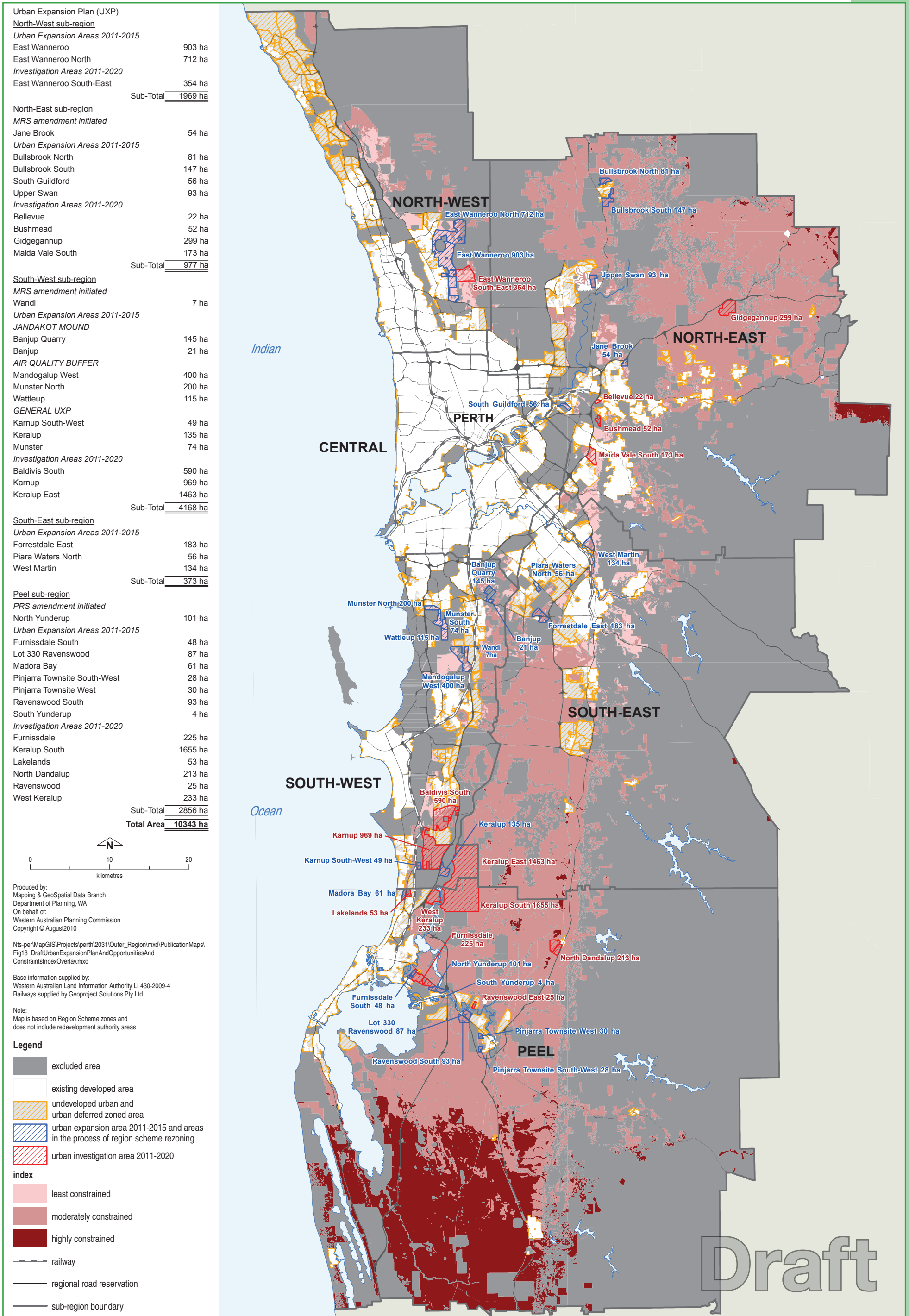


Figure 18: Draft urban expansion plan opportunities and constraints index overlay



Draft



Gidgegannup, Bullsbrook and Upper Swan are included as future urban areas, since these areas have been endorsed by strategic documents such as the North-east Corridor Extension Strategy (WAPC, 2003) and the North Eastern Hills Settlement Pattern Plan (WAPC, 2002), over the past six to eight years. The respective landowners currently have significant resources and effort focussed on these three areas to resolve concerns relating to waste water treatment, public transport, and traffic implications.

In addition, draft local planning strategies indicated the inclusion of Mundaring North, Bellevue, Swan and Maida Vale as urban investigation areas. In total, approximately 1,000 hectares of additional land for urban expansion and investigation is indicated on the draft urban expansion plan.

The **south-east** sub-region has approximately 5,000 hectares of land zoned urban or urban deferred. Based on structure planning that is close to finalisation, three areas of about 400 hectares in total are indicated as urban expansion areas on the draft urban expansion plan – namely West Martin, Piara Waters North and Forrestdale East.

The **south-west** sub-region has approximately 4,600 hectares of undeveloped urban and urban zoned land. Several of the urban expansion areas indicated in the draft urban expansion plan are constrained as a result of the need for an air quality buffer and the need to protect a water resource water protection. Banjup can only be developed following the review of the Jandakot Ground Water Protection policy.

The development potential of Munster and Mandogalup is dependent on the successful resolution of air quality concerns through the review of the Kwinana Air Quality study. Forty per cent, or approximately 4,200 hectares of the total urban expansion and investigation areas indicated in the draft urban expansion plan has been allocated to the south-west sub-region and includes Keralup, Karnup and Baldivis.

The **Peel** sub-region has approximately 2,000 hectares of undeveloped urban and urban zoned land. The draft urban expansion areas around Pinjarra townsite, North Yunderup, Madora Bay, Keralup, North Dandalup, Furnissdale and Ravenswood – are already zoned or based on existing structure planning. The extent of future urban development in this sub-region is largely



dependent on the outcome of the Murray drainage and water management plan and the provision of a suitable regional road network.

While it is intended that there is an ongoing process of converting investigation areas to the draft urban expansion plan, it is possible that they could be rezoned for urban development in the short term as known environmental and infrastructure issues can be resolved. The WAPC would use the performance indicators to evaluate any proposal for development.

Urban expansion areas are still subject to all relevant statutory planning processes. It is expected that the rezoning process will generally be initiated by private sector proponents. In some cases, local or State Government involvement will be required to coordinate the structure planning process and establish infrastructure contribution schemes such as those required for the East Wanneroo development.

**It should not be assumed that urban expansion areas and investigation areas indicated in the draft urban expansion plan will be rezoned for urban or industrial development at anytime.**

Model urban expansion land requirements		Draft urban expansion plan land allocations		
Land classification	Land required based on model	Land classification	Areas indicated in the draft urban expansion plan	Balance of model land requirements for urban expansion at the discretion of the WAPC
2011-2015 Urban expansion areas	5,600 hectares	Urban expansion areas 2011-2015	3,800 hectares	1, 800 hectares
2011-2020 Investigation areas	5,000 hectares	Urban investigation areas 2011-2020	6,500 hectares	-900 hectares
<b>Total</b>	<b>11,200 hectares</b>		<b>10, 300 hectares</b>	<b>900 hectares</b>

## 7.2 Consideration of new proposals for urban expansion

New proposals for future short term urban expansion areas or short to medium term investigation areas may be considered by the WAPC. The draft urban expansion plan includes a provision for the WAPC to consider new applications for rezoning under the Perth Metropolitan Region Scheme and Peel Region Scheme for areas not currently indicated as urban expansion areas or investigation areas. This provision will also compensate for current urban expansion areas that may not be deemed suitable for rezoning, or that cannot be brought on in the required timeframe. New proposals will still be subject to opportunities and constraints analysis and the usual statutory rezoning processes.

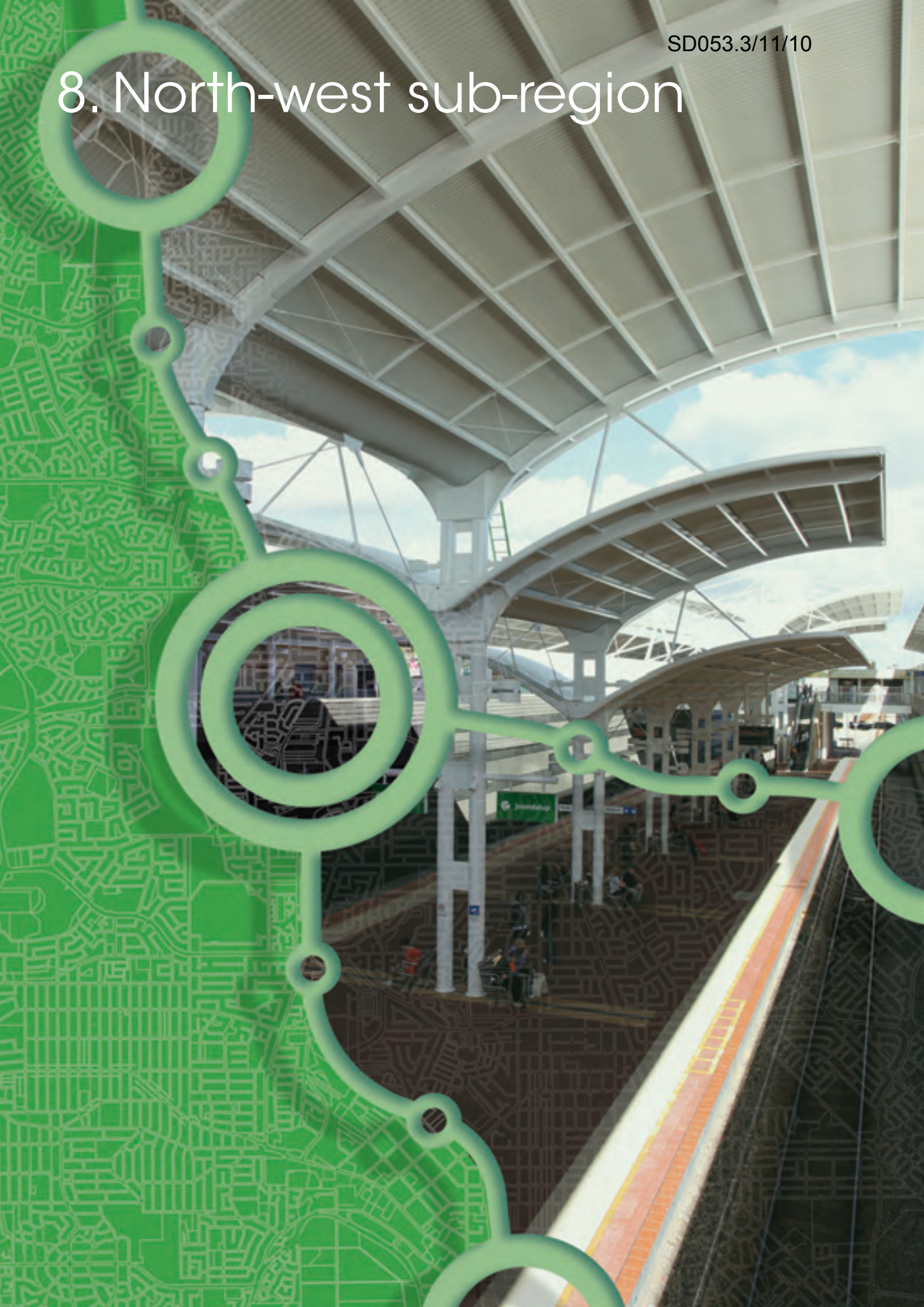
The total amount of land indicated in the current draft urban expansion plan is 10, 400 hectares. The balance of unallocated land for urban expansion is 800 hectares. The unallocated land for urban expansion allows for new proposals for rezoning under the Perth Metropolitan Region Scheme and Peel Region Scheme to be considered to be included in the future at the discretion of the WAPC.







# 8. North-west sub-region





The ABS 2009 estimated resident population in the north-west sub-region is approximately 306,300 residents. The sub-region comprises the City of Wanneroo and the City of Joondalup local government areas.

#### City of Wanneroo

The ABS 2009 estimated resident population in the City of Wanneroo local government area is approximately 144,100 people. The area comprises largely medium and low density residential areas, with some rural lifestyle lots. The diverse character of the area ranges from the beach style living in the west to rural lifestyle in the east.

#### City of Joondalup

The ABS 2009 estimated resident population in the City of Joondalup local government area is approximately 162,200 people. The area comprises largely low to medium density residential development, with higher densities located close to Joondalup city centre. This is a mature residential area with significant infill and redevelopment opportunities.

## 8.1 Population and household characteristics

Both the City of Wanneroo and the City of Joondalup demonstrate high proportions of the population representing family formation age groups. Wanneroo has higher proportions of younger children aged 14 years and under and parents aged 25-40 and Joondalup has older children aged 15-24 and older parents aged 40-60.

Both local governments, particularly Joondalup, contain lower proportions of young adults aged 15-25 compared to the rest of the metropolitan area. The proportions of older residents aged 65 and over reflect the general ageing of the population across the metropolitan area.



Strategic metropolitan centre	Secondary centre	District centre
Joondalup Yanchep*	Alkimos* Wanneroo Two Rocks North* Warwick Whitfords Clarkson	Alexander Heights Butler (Brighton)* Currambine Girrawheen Greenwood Madeley Neerabup (Banksia Grove)* Sorrento Woodvale Eglinton* Yanchep district structure plan area 'C', 'F' and 'K'*

\* denotes emerging centre

Figure 22: Hierarchy of activity centres within the north-west sub-region

On a metropolitan level, the outer sub-regions, at 89 per cent, have a higher percentage of single houses than the metropolitan average of 77 per cent. Dwelling trends from 1996 to 2006 have shown a two per cent increase in the number of separate houses across the entire metropolitan area and a one per cent decrease in the number of grouped, multiple, semi-detached, row or terrace housing and town houses. In the north-west sub-region, ninety per cent of households live in separate houses. The remaining ten per cent live in grouped, multiple semi-detached, row or terrace housing and town houses.

During the period 2001–2006, the average household size in the north-west sub-region declined from 2.78 to 2.62 persons per household. Across the metropolitan region there has been an increase in lone person households and a reduction in family households. This pattern is forecast to continue with a decreasing trend in household size forecast for the north-west sub-region.

The trend toward declining average household size is due to a number of factors including the increasing number of people choosing to live alone; declining fertility rate; and increasing numbers of single parent families. Other factors contributing to these changes are the ageing population combined with the longer life expectancy of women over men.

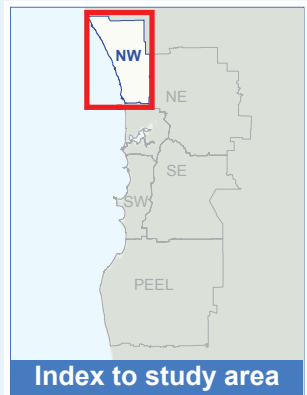
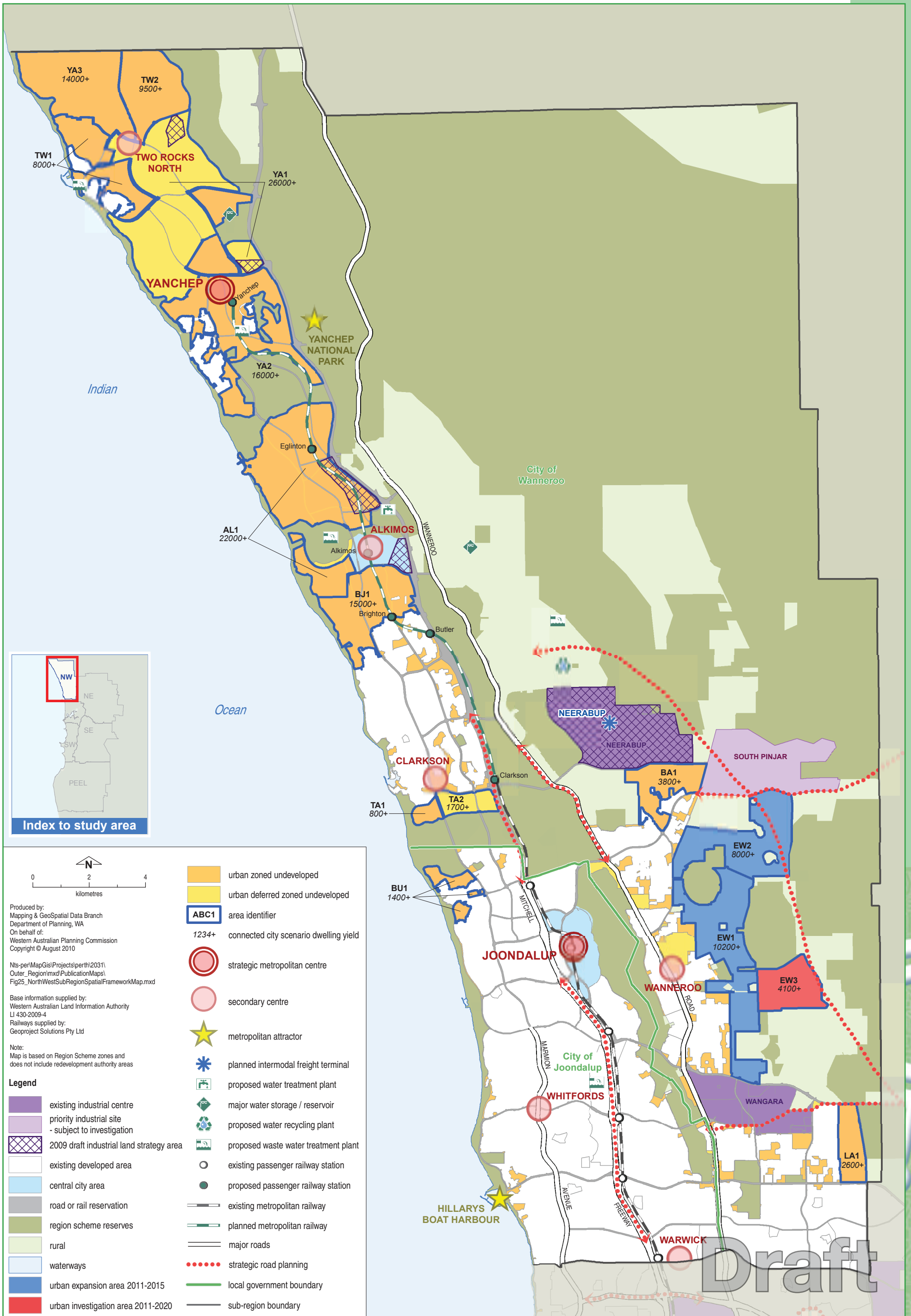
## 8.2 Activity centres

In recent times there has been significant investment by State and local government and the private sector into Joondalup and these assets will need to be built on in the future. A new city centre structure plan is currently being developed by the City of Joondalup to guide future commercial and residential development.

A new strategic metropolitan city centre will be developed at Yanchep to support longer term urban growth in the north of the sub-region (see Figure 22). Yanchep will be planned to provide a full range of services, facilities and activities necessary to support its catchment, thereby reducing the requirement for travel outside of the area. The centre will offer local employment opportunities and is intended to be well connected to public transport services with the future extension of the Joondalup railway line.



Figure 23: North-west sub-region spatial framework map



Produced by:  
Mapping & GeoSpatial Data Branch  
Department of Planning, WA  
On behalf of:  
Western Australian Planning Commission  
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Base information supplied by:  
Western Australian Land Information Authority  
LI 430-2009-4  
Railways supplied by:  
Geoproject Solutions Pty Ltd

Note:  
Map is based on Region Scheme zones and does not include redevelopment authority areas

**Legend**

- existing industrial centre
- priority industrial site - subject to investigation
- 2009 draft industrial land strategy area
- existing developed area
- central city area
- road or rail reservation
- region scheme reserves
- rural
- waterways
- urban expansion area 2011-2015
- urban investigation area 2011-2020
- urban zoned undeveloped
- urban deferred zoned undeveloped
- ABC1 area identifier
- 1234+ connected city scenario dwelling yield
- strategic metropolitan centre
- secondary centre
- metropolitan attractor
- planned intermodal freight terminal
- proposed water treatment plant
- major water storage / reservoir
- proposed water recycling plant
- proposed waste water treatment plant
- existing passenger railway station
- proposed passenger railway station
- existing metropolitan railway
- planned metropolitan railway
- major roads
- strategic road planning
- local government boundary
- sub-region boundary

Metropolitan attractor	Description
Joondalup: Hillarys Boat Harbour	Hillarys Boat Harbour is a diverse destination containing boat pens, shops, bars, clubs, restaurants and accommodation.
Wanneroo: Yanchep National Park	Yanchep National park is noted for its caves, native bush and koala colonies. It also offers cultural educational programs offered in partnership with the local people.

Figure 24: Metropolitan attractors in the north-west sub-region

## 8.3 Metropolitan attractors

Directions 2031 identified metropolitan attractors as places that attract tourists and are highly valued by local and regional residents. They are often key centres of employment, serving to stimulate the economy (see Figure 24).

## 8.4 Future growth areas

There are approximately 9,600 hectares of greenfields land identified for development in the north-west sub-region. This land comprises approximately 7,600 hectares of existing urban and urban deferred zoned land not yet developed, and approximately 2,000 hectares of areas indicated in the draft urban expansion plan (see Figure 25).

### 8.4.1 Planned urban growth areas

The following areas are identified to accommodate growth in the sub-region over the next 20 years, through the development of land currently zoned urban and urban deferred (see Figure 23).

**Alkimos–Eglinton:** is on the verge of the coastal urban front and is expected to be developed in the medium term. The area is zoned urban under the Metropolitan Region Scheme and district structure plan has recently been finalised and approved by the WAPC.

**Yanchep–Two Rocks:** is zoned urban and urban deferred under the Metropolitan Region Scheme. The district structure plan has recently been finalised and approved by the WAPC.

Local government area	Land in undeveloped urban zoned areas	Land in undeveloped urban deferred zoned areas	Urban expansion areas 2011-2015	Urban investigation areas 2011-2020	Total
Joondalup	100 ha	-	-	-	100 ha
Wanneroo	5,800 ha	1,700 ha	1,600 ha	400 ha	9,500 ha
<b>Total</b>	<b>5,900ha</b>	<b>1,700 ha</b>	<b>1,600 ha</b>	<b>400 ha</b>	<b>9,600 ha</b>

Figure 25: Estimated greenfields land for development in the north-west sub-region  
(numbers rounded to the nearest hundred)



### 8.4.2 Draft urban expansion plan

This sub-regional strategy has indicated urban expansion areas and investigation areas, which could potentially be recommended to undergo statutory rezoning processes in the short to medium term of one to ten years (see Figure 23).

**East Wanneroo:** is currently the subject of investigations to determine its future urban potential. Proposed urban expansion boundaries depicted in this document are in the process of being defined and are therefore only notionally indicated in the draft expansion plan. It is anticipated that the East Wanneroo Structure Plan when finalised will clearly identify any urban expansion areas and the criteria that are required to be addressed prior to rezoning of any land for urban purposes.

## 8.5 Estimated dwelling supply

**Dwelling supply** is the number of dwellings that can be developed or supplied in a particular location, based on known constraints and urban planning preferences such as housing density and diversity.

The north-west sub-region has significant capacity for residential development from existing urban and urban deferred zoned land as well as the urban expansion areas and investigation areas. The estimated dwelling supply for the north-west sub-region is based on currently identified infill opportunities, existing urban and urban deferred zoned land and urban expansion and investigation areas. The potential dwelling yield is expected to range from approximately 132,000 dwellings under the business as usual scenario to 167,000 dwellings under the connected city scenario (see Figure 26).

See Appendix 2 for a detailed breakdown of the estimated dwelling supply of known areas within each local government area.

Local government area	Development type	Estimated dwelling supply	
		Business as usual low density	Connected city medium density
Joondalup	Greenfield	900	1,400
	Infill/redevelopment	10,900	12,700
	<b>Sub-total</b>	<b>11,800</b>	<b>14,100</b>
Wanneroo	Greenfield	110,100	141,700
	Infill/redevelopment	10,000	11,600
	<b>Sub-total</b>	<b>120,100</b>	<b>153,300</b>
North-west	Greenfield	111,000	143,100
	Infill/redevelopment	20,900	24,300
	<b>Total</b>	<b>131,900</b>	<b>167,400</b>

Figure 26: Estimated dwelling supply from infill and greenfields development in the north-west sub-region (numbers rounded to the nearest ten)

## 8.6 Economic development and employment growth

### 8.6.1 Distribution of employment by industry sector

The main employment industry sectors in the north-west sub-region are retail and construction. The construction industry has experienced the highest share of employment growth in Wanneroo (see Figure 27).

### 8.6.2 Employment self-sufficiency targets

Perth's employment is concentrated in the inner and middle suburbs, while population growth continues to occur in the outer suburbs. The outer sub-regions comprise 51 per cent of the employed residents but only 30 per cent of the jobs. Locally available employment is essential to creating self-contained and vibrant communities with diverse employment choices. It also reduces the need for long journeys to work and alleviates pressure on the transport system.

**Employment self-sufficiency** is the number of jobs within a defined area as a proportion of the labour force of that area. Therefore, a 75 per cent employment self-sufficiency rate for an area means that there are 75 jobs located in that area for every 100 residents there, that work or are actively seeking employment.

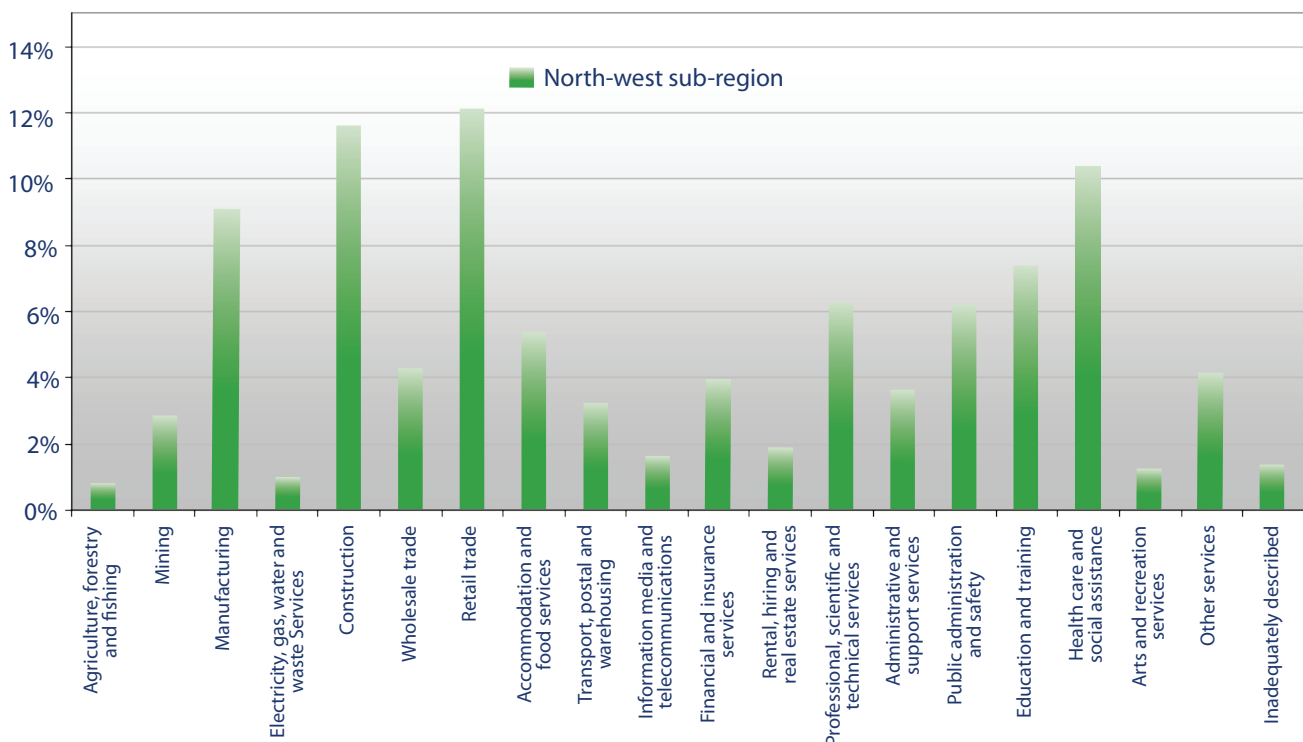


Figure 27: Distribution of employment by industry sector in the north-west sub-region  
(Source: 2006 ABS Census of Population and Housing)



	Directions 2031 (20 year horizon)	Business as usual (25 year horizon)	Connected city (25 year horizon)
Additional dwellings	65,000	134,200	167,400
<b>Employment</b>			
Additional labour force at 1.3 working people per household	85,000	174,000	218,000
<b>Additional local jobs to achieve 60% employment self-sufficiency</b>	<b>77,200*</b>	<b>131,000</b>	<b>157,000</b>

\* The ABS 2009 estimated resident population is used as base data for the recalculation of the Directions 2031 employment self-sufficiency target

Figure 28: Employment self-sufficiency in the north-west sub-region

Employment self-sufficiency in the north-west sub-region is currently 41 per cent. In order to achieve the Directions 2031 employment self-sufficiency target of 60 per cent, an estimated 131,000 to 157,000 additional jobs will need to be provided in the north-west sub-region over the next 25 years (see Figure 28).

The Directions 2031 employment self-sufficiency target should guide the extent of commercial and retail development, activity centres and the provision of industrial and employment land in the north-west sub-region. Achieving the employment self-sufficiency target in the north-west sub-region however, will be a major challenge. There is no major physical infrastructure such as a port or airport and the majority of employment available to the labour force is in manufacturing, retail and the service sector. Many working residents in the north-west sub-region must travel to the CBD or the central sub-region for work resulting in peak hour congestion on the road system and negative externalities such as pollution, lost productivity and increasing travel costs and time for the commuting worker.

### 8.6.3 Industrial and employment land

The north-west sub-region has the potential to significantly improve its level of employment self-sufficiency while providing its growing population with high level access to goods and services.

Centres that will play a major role in achieving increased levels of employment self-sufficiency and employment diversity in the sub-region include the existing centres of Wanneroo, Whitfords and Warwick; and the network of existing and planned district, neighbourhood and local centres. There are also plans for a new industrial estate at Neerabup and another industrial centre at Wangara.

The draft Industrial Land Strategy (WAPC 2009) audited known existing, planned or anticipated industrial developments that are to be released between 2009 and 2025. Four strategic industrial centres were identified as key industrial nodes in the Perth and Peel metropolitan. In addition six priority industrial sites (for investigation) and another 20 possible future industrial sites were identified as potential areas for future rezoning. These priority and possible future industrial sites provide a land bank for industrial land supply over the short to medium term.

The draft Industrial Land Strategy (WAPC 2009) identifies one priority industrial site at South Pinjar identified for investigation; and several areas with the potential as future industrial sites (see Figure 29).

**Note: All future industrial areas will be subject to further investigation to evaluate their suitability and ensure that any environmental impacts can be appropriately managed.**

Existing industrial stock			Future industrial land		
Strategic industrial centre	Industrial centre	Current industrial land release areas	Extension industrial site	Priority industrial area (subject to investigation)	Possible future industrial sites
	Neerabup* Wangara	Neerabup St Andrews North Yanchep/Two Rocks Alkimos/Eglinton	Wangara extension	South Pinjar	Carabooda Gnangara Jandabup Nowergup Pinjar Yanchep

\* Undeveloped industrial zoned sites

Figure 29: Industrial land distribution in the north-west sub-region  
(Source: Draft Industrial Land Strategy, WAPC 2009)

Future industrial areas will be identified as notional and subject to future investigation in the East Wanneroo Structure Plan.

#### Way forward

In response to strategic employment and economic issues, the Department of Planning in partnership with local government, will develop a metropolitan Perth and Peel region economic development and employment strategy to address

- increasing employment opportunities in the north-west sub-region to support resident population;
- improving passenger rail linkages to employment areas;
- creating employment opportunities through appropriate infrastructure investment;
- investing in the development of industrial and employment land; and
- diversifying local employment opportunities.

## 8.7 Planned and required infrastructure

### 8.7.1 Water

Initial consultation with the Water Corporation has identified the current status of water infrastructure projects in the north-west sub-region as set out in Figure 30.

### 8.7.2 Energy

#### Network capacity mapping tool

Additional energy infrastructure will be required to service the growing population. Western Power and the Department of Planning, through the Urban Development Program, have initiated a project to develop a geospatial tool to show electricity capacity and utilisation as a result of land and building development and the future planned capacity of electricity infrastructure. This network capacity mapping

Facility	Status
<b>Metropolitan waste water treatment plants (WWTP)</b>	
Beenyup WWTP	Existing – major ongoing upgrading, maintenance and expansion planned. 2011–2020
Eglinton WWTP	To be constructed adjacent to the western side of the Mitchell Freeway extension
Alkimos WWTP including possible reuse of treated water	First module currently under construction.
<b>Metropolitan water storage</b>	
Carabooda Reservoir and associated inlet and outlet works	2010–14
Eglinton groundwater scheme development	2014–15 onwards
Yanchep north elevated tank	2016
Gnangara Mound groundwater replenishment trial	Possibly developed into a full scheme if current trial is successful and funding is secured.
<b>Potential water recycling plants (WRP)</b>	
Neerabup WRP	Subject to demand for local treated waste water re-use and feasibility study.
Gnangara water mound	Potential water trading

Figure 30: Water infrastructure projects in the north-west sub-region

(Source: Water Corporation, 2009)

tool will identify areas of underutilised capacity as well as areas where network upgrades are a priority to service future growth. It is anticipated that this tool will be available online through the Shared Land Information Platform (SLIP) planning portal ([www.landgate.wa.gov.au](http://www.landgate.wa.gov.au)).

### 8.7.3 Public transport network

The State Government has appointed an independent panel to provide advice on a public transport network and to prepare a public transport plan for Perth to guide the next generation of investment in public transport infrastructure and identify opportunities to increase public transport use.

The proposed vision of the public transport network, when fully developed, will allow for a more effective means of travelling across and within suburbs, linking key activity centres and nodes and significantly improving integration, efficiency and patronage. The network components of the 20 year public transport plan will feature rail, other rapid transit and high-frequency bus services.

Transformational projects include the extension of the Northern Suburbs Railway from Clarkson to Butler. The extension of the Joondalup passenger railway line to Yanchep with new stations at Alkimos, Eglinton and Yanchep will support the development of Yanchep city centre.



Road/route	Project
<b>Recently completed projects by Main Roads WA (2009)</b>	
Mitchell Freeway	Extension of Mitchell Freeway from Hodges Drive to Burns Beach Road.
Marmion Avenue	Extension of Marmion Avenue to Yanchep Beach Road.
Wanneroo Road	Dualling of Wanneroo Road from Wallawa Street to Joondalup Drive.
<b>Main Roads WA projects in progress or funded (2009)</b>	
Lancelin Road	Upgrade of Lancelin Road to Cervantes as it is likely to impact on traffic through the north-west.
<b>Strategic road planning</b>	
Mitchell Freeway	Extension of Mitchell Freeway from Burns Beach Road to Neerabup and Hester Avenue.
	Widening of Mitchell Freeway to 4 or 6 lanes from Hepburn Road to Hodges Drive.
	As Marmion Road, Connolly Drive and Wanneroo Road become congested and are unable to meet the transport demand being generated from residential and industrial land use development – an extension north of Hester Avenue will be required as a parallel road network.
Wanneroo Road	Dualling of Wanneroo Road from Joondalup Drive to Hall Road
	Grade separation required at various intersections of Wanneroo Road such as Joondalup Drive, Ocean Reef Road, Whitfords Avenue and Hepburn Avenue as a result of urban development and to accommodate increased north-south and east-west movements.
East Wanneroo north-south expressway	A new north-south connection to East Wanneroo from Reid/Tonkin interchange will be required as the northern development progresses. The design and construction needs to be synchronised with the development of the Hepburn Avenue extension.
Gnangara Road and Neaves Road	Gnangara Road and Neaves Road, while not main roads at this stage, will require future consideration for upgrade, as these roads function as important east-west links between the north-west and north-east sub-regions in the medium to long-term.
Marmion Avenue and Connolly Drive	A second carriageway for both these roads will be required to cater for the Alkimos–Eglinton development.

Figure 31: Strategic road planning in the north-west sub-region

## 8.7.4 Road network

Figure 31 shows proposed, completed or strategic road planning projects in progress, which have been identified from initial consultations with Main Roads WA, local government authorities and other agencies.

### Way forward

This audit of projects and other essential service infrastructure projects will be monitored, reviewed and updated as part of ongoing consultations between the Department of Planning, local government and State Government infrastructure agencies and public utilities.

### 8.7.5 Freight network

The freight network and existing and planned intermodal freight terminals are indicated in Figure 23.

The identification and development of new urban growth areas along key public transport routes or urban corridors will require clear principles and guidelines derived from analysis of the functional role of these routes as part of the city's transport network. Those roads with a predominant freight function are identified in *State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*. This policy aims to ensure that the land use and transport functions of roads are mutually compatible by focussing on environmental standards for abutting noise-sensitive development and protecting major freight corridors from incompatible urban encroachment.

The Neerabup structure plan indicates the potential of an intermodal freight terminal and it will require a suitability and feasibility investigation. Intermodal terminals represent strategically situated points in the transport distribution network that enable freight to be transferred from road to rail and visa versa. Their location and efficiency significantly affects the entire intermodal freight transport chain. It is also possible that inland facilities can act as staging points for containers moving by rail to and from sea ports. In the future it will be advantageous to maximise the use of rail transport, particularly in urban areas where congestion and fuel pricing can work against road transport.

### 8.7.6 Social infrastructure

Growth in the sub-region will require significant investment in social infrastructure. These requirements will need to be developed by considering the estimated range of dwelling yields; WAPC Liveable Neighbourhoods policy standards; consultation with the relevant service providers and local government authorities and existing levels of social infrastructure provision.

## 8.8 Sub-regional planning actions

Key planning actions required in the north-west sub-region are outlined in Figure 32.

Local government area	Action	Stakeholder
City of Joondalup City of Wanneroo	Develop an economic development and employment strategy for the north-west sub-region.	City of Joondalup City of Wanneroo Department of Planning Landowners/developers
	Finalise structure plan for the north-west sub-region, informed by the outer metropolitan and Peel sub-regional strategy final report.	City of Joondalup City of Wanneroo Department of Planning Department of Transport Department of Water Fire Emergency and Services Public Transport Authority Water Corporation Main Roads WA
City of Wanneroo	Implementation strategy for the northern railway line including financial models for project delivery	City of Wanneroo Department of Planning Public Transport Authority Department of Treasury and Finance Commonwealth Government Landowners/developers
	Finalise East Wanneroo structure plan, informed by the outer metropolitan and Peel sub-regional strategy final report.	City of Wanneroo Department of Planning and other State government agencies
	Prepare transport studies including identification of alignment and road reservations to improve primary and other regional roads in East Wanneroo.	City of Wanneroo Department of Planning Main Roads WA
	Implement Alkimos-Eglinton District Structure Plan.	City of Wanneroo Department of Planning Land owners
	Implement Yanchep District Structure Plan.	City of Wanneroo Department of Planning Land owners
	Implement housing strategy and redevelopment projects.	City of Wanneroo Department of Education Department of Housing
	Undertake a feasibility study for a potential airport in the north-west sub-region.	City of Wanneroo Department of Planning Commonwealth Government
City of Joondalup	Implement housing strategy and redevelopment projects.	City of Joondalup Key government departments

Figure 32: Planning actions required in the north-west sub-region







# 9. North-east sub-region





The ABS 2009 estimated resident population in the north-east sub-region is approximately 203,000 people. The north-east sub-region comprises the Shire of Kalamunda, Shire of Mundaring and the City of Swan local government areas.

### **Shire of Kalamunda**

The ABS 2009 estimated resident population in the Shire of Kalamunda local government area is approximately 54,700 people. Kalamunda has a distinct and unique rural character which is strengthened by the Darling Range.

### **Shire of Mundaring**

The ABS 2009 estimated resident population in the Shire of Mundaring local government area is approximately 38,300 people. Similar to Kalamunda, the Mundaring local government area has a distinct and unique rural character which is strengthened by the Darling Range.

### **City of Swan**

The current population of the City of Swan is approximately 110,100 residents (ABS 2009 estimated resident population). The area is characterised by the diversity of its landscapes and communities and the diversity of land uses. The Swan Valley is a major agri-based tourism destination and is significant attractor of local, interstate and international visitors.





Strategic metropolitan centre	Secondary centre	District centre
Midland	Ellenbrook	Forrestfield Kalamunda Mundaring Albion*

\* denotes emerging centre

Figure 33: Hierarchy of activity centres in the north-east sub-region

## 9.1 Population and household characteristics

The north-east sub region contains a higher proportion of children aged under 14 years than the Perth metropolitan area as a whole. This is most evident in the local government areas of Mundaring and Swan.

Mundaring has a higher proportion of adults aged 35 to 70 years compared to both the Shire of Kalamunda and the Perth metropolitan area as a whole.

The City of Swan has the youngest population overall with higher proportions of the population constituting young family formations (young children and parents aged 25-40 years). All local government areas in the north-east sub-region contain slightly lower proportions of the population in older age group of 75 years and above than the total Perth metropolitan area.

On a metropolitan level, the outer sub-regions, at 89 per cent, have a higher percentage of single houses than the metropolitan average of 77 per cent. Dwelling trends in the period from 1996 to 2006 have shown a two per cent increase in the number of separate houses across the entire metropolitan area and a one per cent decrease in the total number of semi-detached, row or terrace housing and town houses.

The north-east sub-region contains the highest proportion of separate houses (91 per cent) compared to other outer sub-regions with the remaining 9 per cent of the housing stock comprising grouped, multiple dwellings semi-detached, row or terrace housing and town houses.

The average household size decreased from 2.89 persons in 2001 to 2.74 persons in 2006 – a decline that is forecast to continue, albeit at a slower rate than other sub-regions. The trend toward declining average household size is due to a number of factors including the increasing number of people choosing to live alone, declining fertility rate and an increase in single parent families. Other factors contributing to these changes are the ageing population combined with the longer life expectancy of women over men.

## 9.2 Activity centres

Midland will continue to be the principal centre for the provision of retail, commercial, community, entertainment, residential and employment opportunities to a large hinterland catchment. Midland is directly connected to the Perth city centre via the passenger rail network and is linked to the wider metropolitan area along the Great Eastern Highway, Roe Highway and the Great Northern Highway (see Figure 33).





Metropolitan attractor	Description
City of Swan: Swan Valley	The Swan Valley is the oldest wine region in WA, containing an array of restaurants, breweries, wineries, cafes, distilleries and accommodation.
Perth Hills	The Perth Hills run through the north-east and south-east sub-regions. The hills are largely natural area, with many reserves, cycle trails, and part of the Bibbulmun Track.

Figure 35: Metropolitan attractors in the north-east sub-region

## 9.3 Metropolitan attractors

Directions 2031 identified metropolitan attractors as places that attract tourists and are highly valued by local and regional residents. They are often key centres of employment, serving to stimulate the economy. The Swan Valley and Perth Hills are two metropolitan attractors in the north-east sub-region that provide a range of tourism opportunities and rural lifestyles (see Figure 35).

## 9.4 Future growth areas

Approximately 3,700 hectares of greenfields land is currently identified for development in the north-east sub-region. This land comprises approximately 2,700 hectares of existing urban and urban deferred zoned land not yet developed and approximately 1,000 hectares of land indicated in the draft urban expansion plan (see Figure 36).

### 9.4.1 Planned urban growth areas

In Figure 34 the following areas are identified to accommodate growth in the sub-region, through the development of land currently zoned urban and urban deferred.

Local government area	Land in undeveloped urban zoned areas	Land in undeveloped urban deferred zoned area	Rural land in the process of region scheme rezoning	Urban expansion areas 2011-2015	Urban investigation areas 2011-2020	Total
Kalamunda	200 ha	-	-	-	200 ha	400 ha
Mundaring	-	300 ha	-	-	-	300 ha
Swan	1,800 ha	300 ha	100 ha	400 ha	400 ha	3,000 ha
<b>Total</b>	<b>2,000 ha</b>	<b>600 ha</b>	<b>100 ha</b>	<b>400 ha</b>	<b>600 ha</b>	<b>3,700ha</b>

Figure 36: Estimated greenfields land available for development in the north-east sub-region (numbers rounded to the nearest hundred)

**Swan urban growth corridor:** includes the future urban cells of Albion, West Swan and Caversham and are identified as undeveloped urban zoned areas on the draft urban expansion plan. It is estimated that the corridor will ultimately house 33,000 residents in 12,500 dwellings. A sub-regional structure plan has been prepared to guide further detailed planning and development of the corridor.

**Midland Redevelopment Authority:** Midland has benefited from State Government investment via the Midland Redevelopment Authority, which operates in the Swan local government area with a focus on the Midland town centre. The Midland Redevelopment Authority area has four precincts totalling 41 hectares, which are being progressively revitalised with predominantly mixed use development.

The proposed development of the Midland Health Campus will transform the centre as a result of public and private hospitals, medical facilities and a major private university at the former Railway Workshops.

A vision for Midland City in 2041 is being developed that would deliver a strong inner city population and make Midland an employment hub and destination of choice. Midland has the capacity to accommodate 30,000 people over the next thirty years and become a major employment centre generating 50,000 jobs. The envisaged intensification would establish Midland as a significant city within the metropolitan network and the heart of the eastern region. The synergy of development and employment in Midland and Swan will increase the sustainability, attractiveness, affordability and relative economic performance of Midland and the region.

The City of Swan, Midland Redevelopment Authority and key stakeholders continue to work together to secure additional investment for supporting infrastructure in order to revitalise and grow the Midland centre.

### 9.4.2 Draft urban expansion plan

This sub-regional strategy has indicated urban expansion areas and investigation areas that could potentially be recommended to undergo statutory rezoning processes in the short to medium term of one to ten years (see Figure 34).

**Bullsbrook and Upper Swan:** the Draft Bullsbrook Townsite and Rural Strategy prepared by the City of Swan is currently being considered. It represents an overall strategic vision and land use management plan for Bullsbrook. In addition, industrial development potential to the south of the RAAF air base, together with the eventual construction of the Perth-Darwin Highway, could potentially provide a catalyst for employment generation. Bullsbrook and Upper Swan are indicated as urban expansion areas on the draft urban expansion plan. There is currently a concerted effort being undertaken by the respective landowners to resolve constraints relating to waste water treatment, public transport, traffic implications and basic raw materials.

**Gidgegannup:** Gidgegannup is indicated as an urban investigation area on the draft urban expansion plan. Gidgegannup is currently constrained by matters relating to waste water treatment, and water supply, quarrying, public transport and traffic implications and that these matters will need to be resolved before any urban expansion will be supported.

The draft local planning strategy of the Shire of Mundaring indicates the inclusion of several areas considered as minor incremental urban growth and these areas not shown on the draft urban expansion plan.

**Forrestfield:** Several areas around the Shire of Kalamunda have potential for increased residential development to accommodate the expected high growth associated with the expansion and development of the adjacent airport, freight rail and container handling facility development. Forrestfield is indicated as an urban investigation area on the draft urban expansion plan.

The draft local planning strategy of the Shire of Kalamunda informed the inclusion of several areas such as High Wycombe, Helena Valley, Bushmead and Maida Vale as urban investigation areas indicated the draft urban expansion plan. Wattle Grove has potential for future consideration as an urban investigation area due to its proximity to the urban front and employment opportunities around the airport.

## 9.5 Estimated dwelling supply

The estimated dwelling supply for the north-east region is based on currently identified infill opportunities, existing urban and urban deferred zoned land and urban expansion and investigation areas. The potential dwelling yield is expected to range from approximately 43,000 dwellings under the business as usual scenario to approximately 55,000 dwellings under the connected city scenario (see Figure 37).

See Appendix 3 for a detailed breakdown of the estimated dwelling supply of known areas within each local government area.

## 9.6 Economic development and employment growth

### 9.6.1 Distribution of employment by industry sector

The main employment industry sectors in the north-east sub-region are manufacturing, retail and the service sector (see figure 38).

Local government area	Development type	Estimated dwelling supply	
		Business as Usual low density	Connected city medium density
Kalamunda	Greenfields	2,900	4,400
	Infill/redevelopment	8,200	9,700
	<b>Sub-total</b>	<b>11,100</b>	<b>14,100</b>
Mundaring	Greenfields	2,550	3,350
	Infill/redevelopment	1,400	1,620
	<b>Sub-total</b>	<b>3,950</b>	<b>4,970</b>
Swan	Greenfields	24,200	31,700
	Infill/redevelopment	3,240	3,810
	<b>Sub-total</b>	<b>27,440</b>	<b>35,510</b>
North-east	Greenfields	29,650	39,450
	Infill/redevelopment	12,840	15,130
	<b>Total</b>	<b>42,490</b>	<b>54,580</b>

Figure 37: Estimated dwelling supply as a result of infill and greenfields development in the north-east sub-region  
(numbers rounded to the nearest ten)



## 9.6.2 Employment self-sufficiency targets

Perth's employment is concentrated in the inner and middle suburbs while population growth continues to occur in the outer suburbs. The outer sub-regions comprise 51 per cent of the employed residents but only 30 per cent of the jobs. Locally available employment is essential to creating self-contained and vibrant communities with diverse employment choices. It also reduces the need for long journeys to work and alleviates pressure on the transport system.

Employment self-sufficiency in the north-east sub-region is currently 63 per cent. In order to achieve the Directions 2031 employment self-sufficiency target of 75 per cent, an estimated 53,000 to 64,000 additional jobs will need to be provided in the sub-region over the next 25 years (see Figure 39).

The Directions 2031 employment self-sufficiency target should guide the extent of commercial and retail development, activity centres and the provision of industrial and employment land in the north-east sub-region.

## 9.6.3 Industrial and employment land

The draft Industrial Land Strategy (WAPC 2009) audited known existing, planned or anticipated industrial developments that are to be released between 2009 and 2025. Four strategic industrial centres were

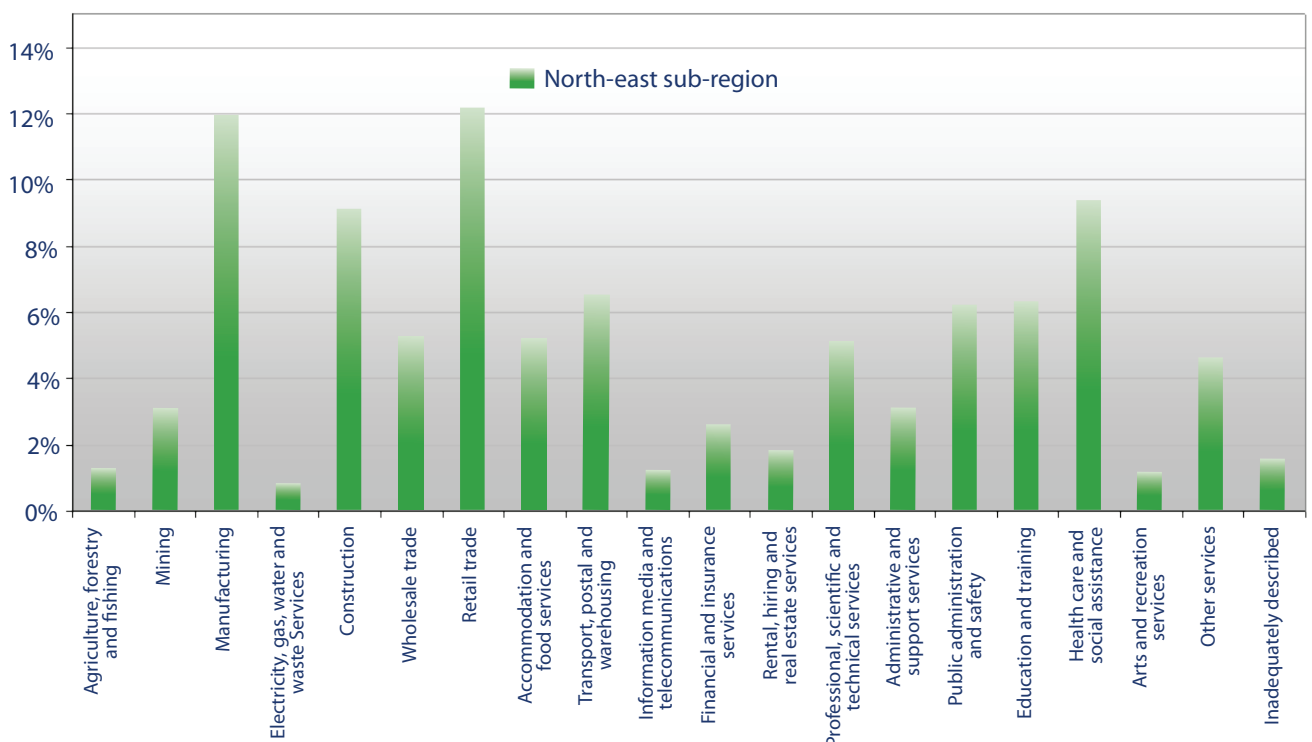


Figure 38: Distribution of employment by industry in the north-east sub-region  
(Source: 2006 ABS Census of Population and Housing)

	Directions 2031 (20 year horizon)	Business as usual (25 year horizon)	Connected city (25 year horizon)
Additional dwellings	40,000	43,300	54,580
<b>Employment</b>			
Additional labour force at 1.3 working people per household	52,000	56,000	71,000
<b>Additional local jobs to achieve 75% employment self-sufficiency</b>	<b>49,750*</b>	<b>53,000</b>	<b>64,000</b>

\* The ABS 2009 estimated resident population is used as base data for the recalculation of the Directions 2031 employment self-sufficiency target.

Figure 39: Employment self-sufficiency target in the north-east sub-region

identified as key industrial nodes in the Perth and Peel metropolitan. In addition, six priority industrial sites (for investigation) and another 20 possible future industrial sites were identified as potential areas for future rezoning. These priority and possible future industrial sites provide a land bank for industrial land supply over the short to medium term (see Figure 40).

**Kewdale-Welshpool:** A small portion of the Kewdale-Welshpool strategic industrial centre is located in the north-east sub-region. Kewdale-Welshpool combined with the Perth Airport specialised centre, provide a significant employment hub for the north-east sub-region.

The draft Industrial Land Strategy (WAPC 2009) identifies two priority sites south of Bullsbrook, with potential intermodal transfer facilities, and an area in Cullacabardee, south east of Whiteman Park. Although shown in the draft strategy, the northern half of the Cullacabardee area is excluded due to a recent zoning amendment of to parks and recreation.

The Hazelmere south industrial extension is a structure plan process to provide employment land in the area and is a joint endeavour by the City of Swan and the Department of Planning.

**Note: All future industrial areas will be subject to investigation to evaluate their suitability and ensure that any environmental impacts can be appropriately managed.**

Forrestfield is also identified as a possible future industrial site as a result of the Kewdale–Hazelmere Integrated Master Plan; and of being located in close proximity to Perth Airport and the Kewdale-Welshpool industrial centre.

#### Way forward

In response to strategic employment and economic issues the Department of Planning in partnership with local government, will develop a metropolitan and Peel region economic development and employment strategy to address:

- providing residential land in Kalamunda to accommodate anticipated airport employment growth;
- providing increased local employment in Mundaring;
- identifying more employment land in the City of Swan; and,
- identifying additional industrial and employment land and the potential for increased tourism opportunities across the north-east sub-region.

Existing industrial stock			Future industrial land		
Strategic industrial centre	Industrial centre	Current industrial land release areas	Extension industrial site	Priority industrial area (subject to investigation)	Possible future industrial site
Kewdale-Welshpool (eastern portion is in City of Swan)	Malaga Midvale South Guildford Viveash Hazlemere	Perth Airport Hazlemere South	Hazlemere South	Bullsbrook South Cullacabardee	Bullsbrook North Forrestfield North Ellenbrook

Figure 40: Industrial land distribution in the north-east sub-region

(Source: Draft Industrial Land Strategy, WAPC 2009)

## 9.7 Planned and required infrastructure

### 9.7.1 Water

Initial consultation with the Water Corporation has identified the current status of water infrastructure projects in the north-east sub-region as set out in Figure 41.

### 9.7.2 Energy

#### Network capacity mapping tool

Additional energy infrastructure will be required to service the growing population. Western Power and the Department of Planning, through the Urban Development Program, have initiated a project to develop a geospatial tool to show electricity capacity and utilisation as a result of land/building development and the future planned capacity of electricity infrastructure. This network capacity mapping tool will identify areas of underutilised capacity as well as areas where network upgrades are a priority to service future growth. It is anticipated that this tool will be available online through the Shared Land Information Platform (SLIP) planning portal ([www.landgate.wa.gov.au](http://www.landgate.wa.gov.au)).



Facility	Status
<b>Metropolitan waste water treatment plants (WWTP)</b>	
Mundaring WWTP	Existing – planned to double capacity. 2012–2013
Bullsbrook WWTP	Existing – planned for expansion from 2017
<b>Metropolitan water storage and water treatment plant (WTP)</b>	
Bullsbrook Storage Tank Stage 1	Planned for 2014
Gnangara Reservoir	Planned for 2015
Mundaring Weir WTP	Planned for 2011–12
<b>Potential Water Recycling Plants (WRP)</b>	
Ellenbrook WRP	Subject to demand for local treated waste water reuse and feasibility study.
Gnangara water mound	Potential water trading

Figure 41: Water infrastructure projects in the north-east sub-region

(Source: Water Corporation, 2009)

### 9.7.3 Public transport network

Midland metropolitan passenger railway line provides a high volume of public transport service for the sub-region. Several long distance passenger services traverse through the north-east such as the Prospector, MerredinLink and AvonLink Regional passenger train services accessible from Midland station. They are operated by TransWA and run from East Perth to Kalgoorlie with stops at Toodyay, Northam, Merredin and others. The Indian Pacific major inter-state railway service runs between Perth to Sydney, through the Avon Valley, wheat belt, Kalgoorlie, Nullarbor Plain, Adelaide and the Blue Mountains to Sydney.

The Directions 2031 conceptual public transport network indicates a link to Perth Airport. Feasibility studies are currently underway, to investigate a new Spur line from Bayswater linking the Midland line along Tonkin Highway to a station at the new Airport Business Park, then underground to the new Airport Terminal.

Connections to major centres projects include the development of a rapid transit service to Ellenbrook, with the projected number of passengers justifying a road based priority service. An option of running a Bus Rapid Transit (BRT) service between Ellenbrook and Bassendean and across to Morley is feasible.

### 9.7.4 Road network

Figure 42 shows proposed, completed or strategic road planning projects in progress, which have been identified from initial consultations with Main Roads WA, local government authorities and other agencies.

Road/route	Project
<b>Recently completed projects by Main Roads WA (2009)</b>	
Great Northern Highway	Upgrade of various sections of Great Northern Highway.
Abernethy Road	Dualling of Abernethy Road from Tonkin Highway to the bridge near the shopping centre on Wittenoom Road.
Reid Highway	Reid Highway extension from West Swan to Great Northern Highway.
<b>Main Roads WA projects in progress or funded (2009)</b>	
Roe Highway/Eastern Highway	Grade separation is required at the Roe Highway and Great Eastern Highway intersection.
Abernethy Road	An upgrade is required at the Abernethy Road and Tonkin Highway intersection.
Reid Highway/Alexander Drive	Grade separation is required at the Reid Highway and Alexander Drive intersection.
Great Eastern Highway	An upgrade of Great Eastern Highway to a four-lane road is required between Roe Highway and the Lakes Roadhouse east of Sawyers Valley.
<b>Strategic road planning</b>	
Reid Highway	Dualling of Reid Highway from Beechboro Road to Middle Swan Road. Increased development in Albion, West Swan and Caversham will place transport pressure on Reid Highway, which may require the need to duplicate the section between Beechboro Road and West Swan to a four-lane dual carriageway.
Perth-Darwin National Highway	Construction of the Perth-Darwin National Highway/Swan Valley Bypass from Reid Highway northwards. There are a number of areas proposed for development such as Albion, West Swan, Ellenbrook, Bullsbrook that will require significant improvements to the existing road network. The Perth-Darwin National Highway will provide critical transport infrastructure to support future growth in the north-east sub-region and it may be necessary to review the timeframe for funding in order to bring its construction forward.
Henley Brook Avenue	Construction of Henley Brook Avenue (Regional Road)
Lord Street	The extension of Lord Street south of Reid Highway to Benara Road is one of the key triggers to access the residential areas of Caversham and West Swan East as an implementation outcome from the Swan Urban Growth Corridor
East-west links – Gnangara Road and Neaves Road	Gnangara Road and Neaves Road, while not main roads at this stage, will require future consideration for upgrade as they are envisaged to function as an important east-west links between the north-west and north-east sub-regions in the medium to long-term.
Great Northern Highway	A number of proposed developments along the existing Great Northern Highway, such as Bullsbrook and Upper Swan, will increase traffic demand. The Great Northern Highway will need to be upgraded to a high standard two-lane road.
Perth-Adelaide National Highway Toodyay Road (Orange Route)	Construction of Henley Brook Avenue (Regional Road). Any new developments along this road will require improvements. Consideration will need to be given as to the extent of upgrading required as it may be many years before the future Perth-Adelaide National Highway replaces the existing regional role of the Great Eastern Highway.
Tonkin Highway	The Hale Road/Tonkin Highway intersection will require upgrading.

Figure 42: Strategic road planning in the north-east sub-region (continued overleaf)

Road/route	Project
<b>Strategic road planning</b>	
Roe Highway	Roe Highway is an important strategic freight route that provides linkages between the major routes to the north and east and major freight destinations in the metropolitan area. There are many developments proposed on either side of Roe Highway and these will have traffic impacts on the highway and transport the surrounding network. Most of the intersections along Roe Highway in the north-east sub-region are traffic signalised and there is a need to grade separate these to provide a much better level of service. The Berkshire Road/Roe Highway intersection in particular, will require upgrading.
Abernethy Road	Dualling of Abernethy Road is required from the bridge near the shopping centre on Wittenoom Road, northwards to the Abernethy/Kalamunda intersection.
East-west Perth Hills spine road	If urban development proceeds in Northern Parkerville and Northern Stoneville – an east-west spine road will be required in the hills between Roland Road and Stoneville Road.
Lloyd Street extension	The Lloyd Street extension from Great Eastern Highway to the Great Eastern Bypass is of strategic importance to the development of Hazelmere Industrial area and of the Midland Redevelopment Authority area..

Figure 42: Strategic road planning in the north-east sub-region

### 9.7.5 Freight network

The freight network and existing and planned intermodal freight terminals are indicated in Figure 34.

The identification and development of new urban growth areas along key public transport routes or urban corridors will require clear principles and guidelines derived from analysis of the functional role of these routes as part of the city's transport network. Those roads with a predominant freight function are identified in *State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*. This policy aims to ensure that the land use and transport functions of roads are mutually compatible by focussing on environmental standards for abutting noise-sensitive development and protecting major freight corridors from incompatible urban encroachment.

The narrow gauge rail network, which extends from Geraldton–Mullewa to Perth and services the Mid-west and north-western Wheatbelt regions, is one of three private freight railway networks in Western Australia. The rail carries a significant freight task and

its main uses are the transport of grain and minerals to Geraldton Port at its northern end and Fremantle Ports at its southern end. This open access railway is privately operated by WestNet Rail under a lease that extends to 2049.

#### Way forward

A realignment of the freight rail through Hazelmere and Midland is crucial to unlock the potential in both areas and is one of the critical challenges faced by Hazelmere structure planning process.

Intermodal terminals represent strategically situated points in the transport distribution network that enable freight to be transferred from road to rail and visa versa. Their location and efficiency significantly affects the entire intermodal freight transport chain. It is also possible that inland facilities can act as staging points for containers moving by rail to and from sea ports. In the future it will be advantageous to maximise the use of rail transport, particularly in urban areas where congestion and fuel pricing can work against road transport. An investigation of the suitability of intermodal freight terminals at Bullsbrook and Kewdale Port Shuttle, will be required.



### 9.7.6 Social infrastructure

Growth in the sub-region will require significant investment in social infrastructure. These requirements will need to be developed by considering the estimated range of dwelling yields; WAPC Liveable Neighbourhoods policy standards; consultation with the relevant service providers and local government authorities and existing levels of social infrastructure provision.

#### Way forward

This audit of projects and other essential service infrastructure projects will be monitored, reviewed and updated as part of ongoing consultations between the Department of Planning, local government and State government infrastructure agencies and public utilities.

## 9.8 Sub-regional planning actions

Key planning actions required in the north-east sub-region are outlined in Figure 43.

Local government area	Action	Stakeholder
Shire of Mundaring Shire of Kalamunda City of Swan	Finalise north-east sub-region structure plan, informed by the Outer Metropolitan and Peel Sub-regional Strategy final report.	Local government authorities Department of Planning Servicing agencies and departments
Shire of Mundaring	Prepare a local planning strategy and Town Planning Scheme No. 4, informed by the Outer Metropolitan and Peel Sub-regional Strategy final report.	Shire of Mundaring WAPC Department of Planning
City of Swan	Finalise the various district and local structure plans and associated developer contribution plans as determined by the Swan Sub-regional Structure Plan.	City of Swan WAPC Servicing agencies and departments Department of Planning
Shire of Kalamunda	Prepare a local planning strategy, informed by the Outer Metropolitan and Peel Sub-regional Strategy final report.	Shire of Kalamunda WAPC Department of Planning

Figure 43: Planning actions required in the north-east sub-region