

February 2009

Swan Urban Growth Corridor

Sub-Regional Structure Plan



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Published by the
Western Australian Planning Commission
Albert Facey House
469 Wellington Street
Perth WA 6000

Published February 2009

ISBN 0 7309 9888 6

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Swan Urban Growth Corridor Sub-Regional Structure Plan

February 2009





Hon. John Day
Minister for Planning

This *Sub-Regional Structure Plan* covers 1100 hectares and includes the future urban cells of Albion, Henley Brook, West Swan and Caversham. It has been prepared to guide urban development within an urban growth corridor of almost 14 kilometres linking Midland/Guildford with Ellenbrook. Located 20 km from the Perth central business district (CBD) this urban corridor is planned to provide a home to more than 33 000 new residents and as such will accommodate a significant proportion of the demand for new dwellings and associated infrastructure within the Perth metropolitan region.

The historical significance of this area must be recognised too, being the farthest point upstream of the Swan River that was reached by Captain Stirling's 1827 exploration prior to his determination of the settlement site for the new colony in 1829.

This *Sub-Regional Structure Plan* aims to provide a strategic planning framework that addresses the key elements within the north-east growth corridor to inform and guide the preparation of strategic and statutory plans and policies via a broad set of policy principles looking forward to 2035.

The structure plan area enjoys a high level of environmental amenity, with a large proportion of the site being classified as high-value conservation bushland or wetland. In addition, this urban corridor is located between two sensitive environments, being Whiteman Park to the west and the area immediately adjacent to the upper reaches of the Swan River that is reserved for viticulture and horticultural activities in accordance with the Swan Valley Planning Act 1995.

This *Sub-Regional Structure Plan* comprehensively incorporates policy principles in support of the Network City and Liveable Neighbourhoods concepts and is an example for future sub-regional plans. In addition, the extensive stakeholder involvement, including landowners and developers, the community, and local and state government agencies has ensured high levels of agreement and wide support for planning fundamentals. One of the key fundamentals, as stipulated in this plan, is that the agreed minimum average density of 15 dwellings per urban hectare should apply for the entire structure plan area; that is, an average of 22 dwellings per site hectare.

As with any plan of this nature, the successful execution requires the collaboration and participation of government, local government, the private sector and the community. To realise the plan, it will be necessary to ensure that new urban land is released in a staged process.

Finally, this plan is the product of a cooperative effort by all the stakeholders who have reached a mutual understanding in developing this long-term vision for the corridor. In particular, I commend the council and staff of the City of Swan, the various landowners and developers committees, and the various state agencies including the Department for Planning and Infrastructure for their constructive involvement in the preparation of this *Sub-Regional Structure Plan* for the Swan urban growth corridor.



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1 Introduction

Since 2005, the Perth metropolitan region has experienced rapid growth and associated pressures in response to the state's economic prosperity driven by the mining boom. The Swan urban growth corridor between Midland and Ellenbrook (figure 1) has been identified to accommodate a portion of that growth, being relatively close to transport links and employment opportunities. Eventually, the region will provide a home to more than 33,000 new residents and in order to provide an appropriate level of amenity and comfort for those residents, sub-regional planning issues need to be addressed.

The Sub-Regional Structure Plan for the Swan urban growth corridor has been prepared in order to provide a strategic planning framework to guide future urban growth and more detailed planning, consistent with Network City objectives. The Sub-Regional Structure Plan should be read in conjunction with other Western Australian Planning Commission (WAPC) policies, and all other statutory documents and guidelines to provide for a holistic approach to the development of the corridor. Land development should be considered in a broader context to ensure consistency with the provision of regional infrastructure and services.

This plan has been prepared by the Department for Planning and Infrastructure (DPI) in close collaboration with the City of Swan and in consultation with key state government agencies and service providers and with the majority of landowners.

The Swan Urban Growth Corridor Sub-Regional Structure Plan provides a coordinated approach to sub-regional issues such as transport, residential density, community service provision, employment and open space. Policy principles for relevant issues affecting the Swan urban growth corridor are provided in order to guide subsequent planning.

The Swan Urban Growth Corridor Sub-Regional Structure Plan is not a statutory plan, but a strategic document that aims to guide growth and development via a broad set of principles. It has been adopted to guide decisions regarding the consideration of district structure plans for approval by the WAPC and City of Swan. The plan will provide a direction for growth in the corridor for the 28 years to 2035.



House on the water in adjacent Ellenbrook development



Midland city centre

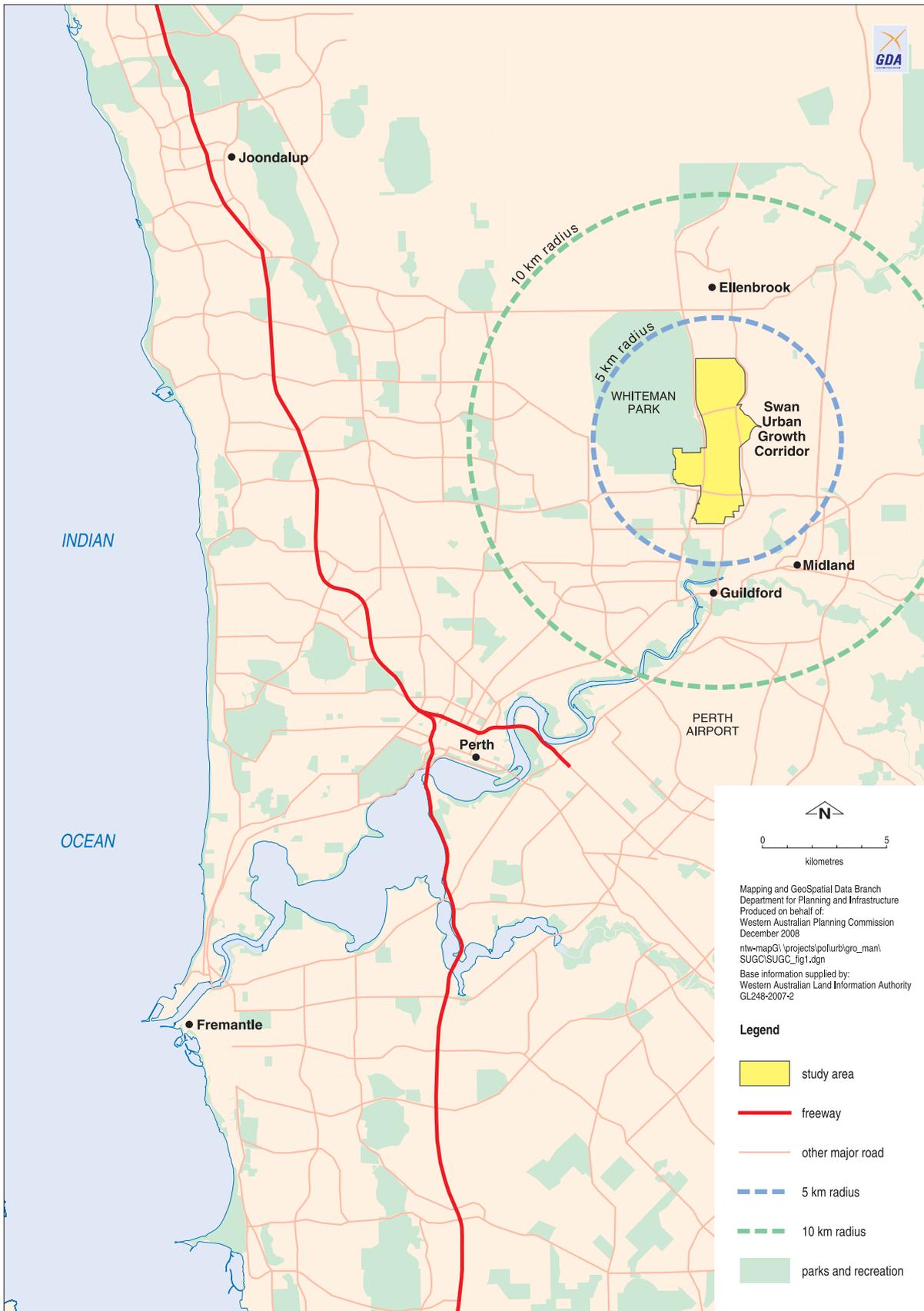


Figure 1: Contextual map showing the Swan urban growth corridor

2 Background

Purpose and site area

The Swan Urban Growth Corridor Sub-Regional Structure Plan has been prepared to cater for urban development and population growth in the City of Swan's urban growth corridor. It is complementary to existing WAPC policies and should be read in conjunction with these documents. The area encompasses the future urban cells of Albion, West Swan and Caversham and is expected to eventually accommodate approximately 33,000 residents.

The Swan Urban Growth Corridor Sub-Regional Structure Plan has been prepared to guide land development and the preparation of district structure plans for the Henley Brook (Albion), West Swan and Caversham areas (figure 2). A central aim of the Swan Urban Growth Corridor Sub-Regional Structure Plan is to provide a direction for corridor (or sub-regional) planning issues. In this regard economic development, road networks, transit stations, community facilities, district open space, urban densities, activity corridors and neighbourhood centres need to be planned for in a holistic manner commensurate with the needs of the community.

The DPI and the City of Swan have been working in partnership to coordinate the planning of the Sub-Regional Structure Plan and in this regard, the plan provides a set of policy principles to guide future development in the corridor (figure 3).

The Swan urban growth corridor has been identified as a critical development front to accommodate the growth of the Perth metropolitan region. The sub-regional structure plan has been developed in accordance with the principles of Network City, Liveable Neighbourhoods, and orderly and proper planning.

Site context

The Swan urban growth corridor is located 20 km (at its southern extent) from the Perth central business district (CBD) and 7 km from the Midland Regional Centre and encompasses Caversham, West Swan and Henley Brook (Albion). It will form an urban corridor stretching approximately 14 km from Midland/Guildford in the south to Ellenbrook in the north, encompassing 1,100 hectares.

The area is served by two primary regional roads identified under the Metropolitan Region Scheme (MRS), being Reid Highway, which traverses east-west through the area and the future Perth-Darwin Highway, which traverses north-south along much of the existing Lord Street alignment. A special purpose reserve, intended to be used as a transit corridor, is identified adjacent to the future Perth-Darwin Highway.

Whiteman Park, reserved for parks and recreation under the MRS, borders the urban growth corridor to the west. The eastern edge of the corridor is the boundary of the *Swan Valley Planning Act 1995* area; the urban growth corridor is wholly outside of the *Swan Valley Planning Act 1995* area.

The land use within the area varies widely, consisting of:

- land that is zoned and developed for urban purposes;
- undeveloped land that is zoned urban deferred in the MRS;
- rural land that is cleared and vacant resulting from past grazing activities undertaken over the land; and
- pockets of remnant vegetation listed as Bush Forever site 200 and protected through a parks and recreation reservation under the MRS.

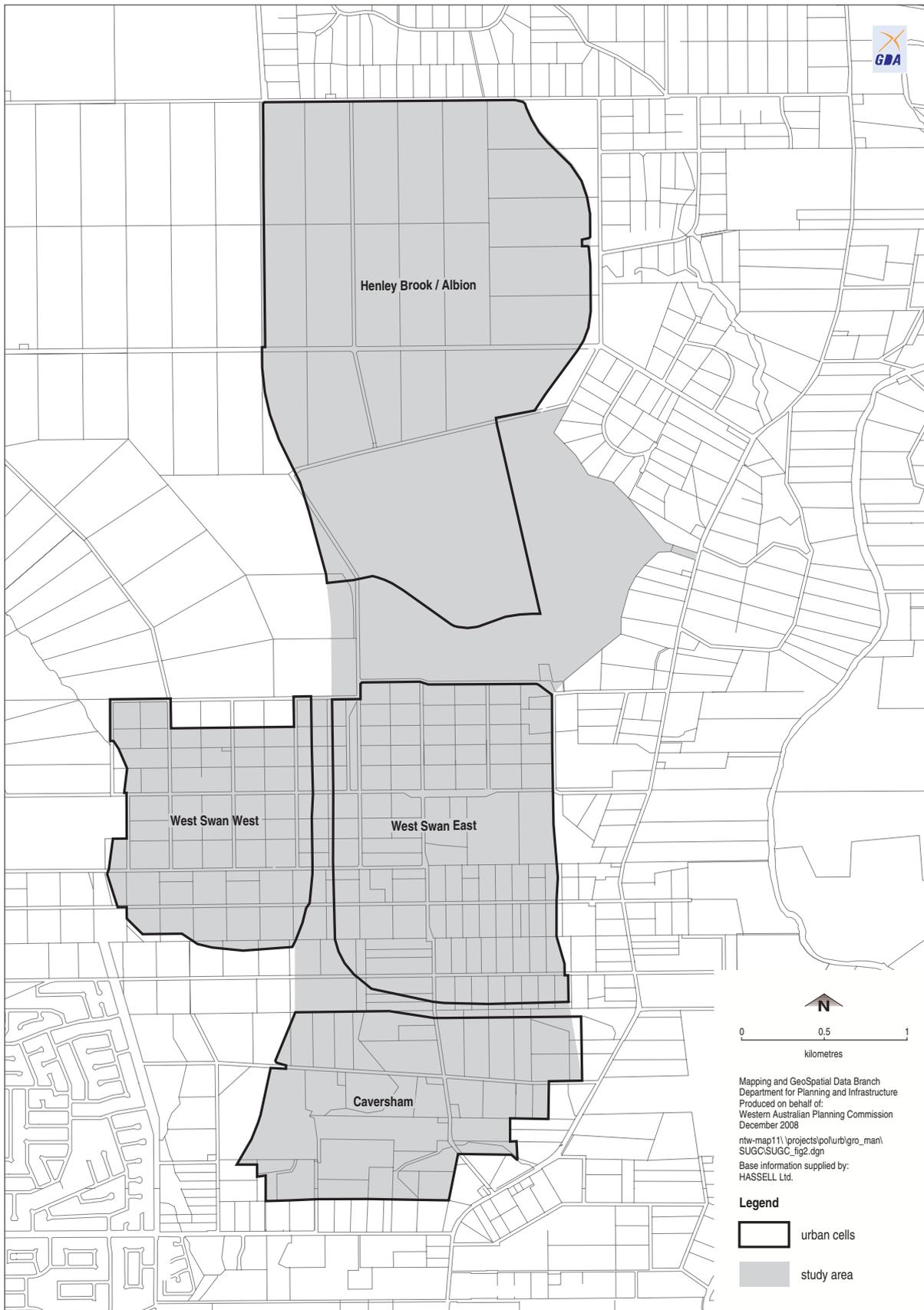


Figure 2: Urban cells within the Swan urban growth corridor

Infrastructure has been established to cater generally for the existing low level of population density. Several high-pressure gas pipelines exist through the site, transporting gas from the state's north to power stations in Kwinana and Bunbury. These pipelines are protected by easements, over which development is limited.

The Swan Urban Growth Corridor Sub-Regional Structure Plan has been prepared using information from landowners, developers and their consultants, state and local government agencies, state service providers, the Department for Planning and Infrastructure and the City of Swan.

Albion and West Swan (east) are zoned special use under the City of Swan's Town Planning Scheme No.17, which requires a district structure plan to be prepared prior to local structure plans. While part of Caversham is zoned residential development, the remainder of the cell is zoned Swan Valley rural and West Swan (West) is zoned general rural. While it is understood these areas are subject to scheme amendments, the Swan Urban Growth Corridor Sub-Regional Structure Plan does not seek to predict the ultimate zone, since this role is best fulfilled by the local planning scheme. However, the structure plan contains appropriately worded policy principles to indicate the required content and stage that particular reporting requirements are to be provided.

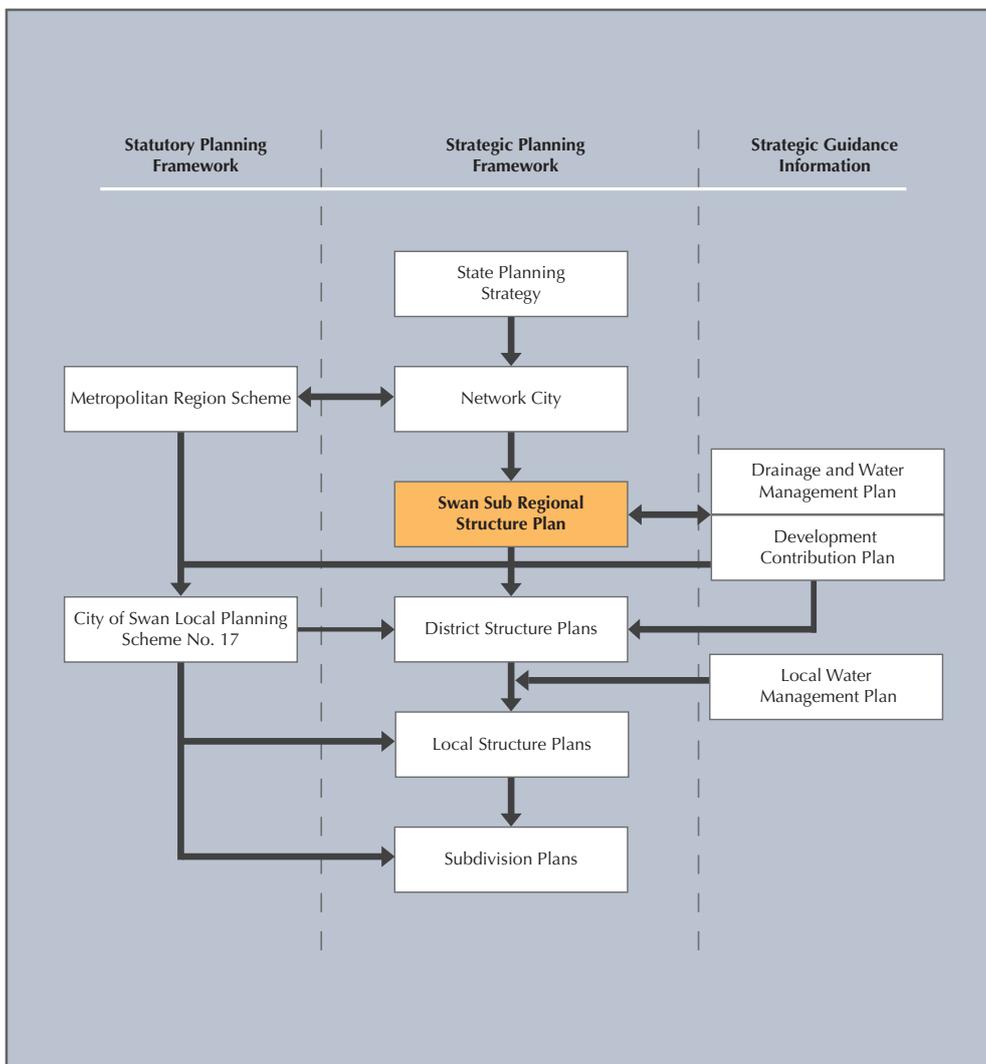
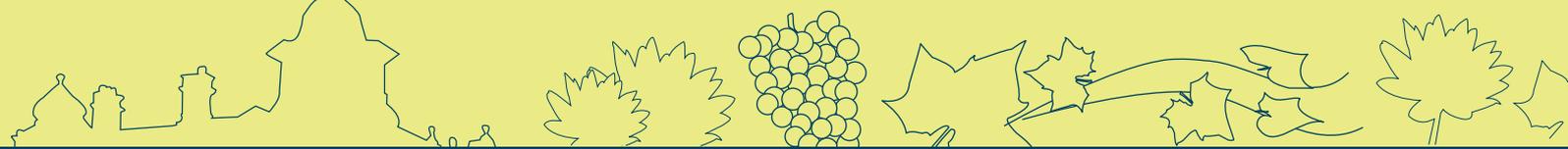


Figure 3: Policy framework
 The Swan Urban Growth Corridor Sub-Regional Structure Plan will be in the form of a WAPC interim policy statement to inform the preparation of proceeding planning instruments. The above diagram demonstrates the hierarchy of planning instruments that will be applicable to the Swan urban growth corridor.



3 The planning context

The Metropolitan Region Scheme

The MRS is the statutory land use planning scheme for the Perth Metropolitan Region (refer figure 4). The principal functions are to reserve and zone land and control development on reserved and zoned land. The MRS reflects the agreed strategic direction for land within the metropolitan region and is a catalyst for changes to planning controls at the local level and subsequent local area planning.

Being large in size, the Swan urban growth corridor encompasses several zones as prescribed by the MRS. The subject land is mainly zoned either urban or urban deferred, with land also reserved for regional open space, primary regional roads and other regional roads. A relatively small area in Henley Brook and Caversham is zoned rural. The important features identified within the MRS that affect the Swan urban growth corridor are: the Perth-Darwin National Highway (primary regional road); Henley Brook Avenue (other regional road); special purpose reserve adjacent to the Perth-Darwin Highway intended as a fast transit corridor; and Bush Forever site 200 (parks and recreation reservation).

Amendments to the MRS will be required in order to rezone the urban deferred and rural land to urban in order to allow for the development of the Swan urban growth corridor. Any amendments to the MRS would be initiated only once the WAPC is satisfied that any existing constraints are addressed.

Network City

Network City is a state government community planning strategy for the Perth and Peel regions. It aims to provide a direction for urban growth and allow for an improvement in the urban realm for the benefit of the community. Network City identifies 40 per cent of Perth's future population

being provided for in newly developed areas that are connected to existing centres of employment and activity. The Swan urban growth corridor is identified as a future community that will be designed around new networks and centres. It is to be serviced by an activity corridor with excellent public transport.

“Activity corridors are connections between activity centres that provide excellent, high-frequency public transport to support the land uses that will occur along the activity corridors and at the activity centres. Activity corridors are not designed to be high speed through traffic routes.” (WAPC, 2004)

Sectors throughout the metropolitan region have been identified within Network City, with each being allocated a number of new dwellings to cater for Perth's projected population growth.

Liveable Neighbourhoods

Liveable Neighbourhoods (2007, WAPC) operates as a neighbourhood design code, to facilitate the development of sustainable communities. Its major aims are:

- to provide for an urban structure of walkable neighbourhoods, clustering to form towns of compatible mixed uses in order to reduce car dependence for access to employment, retail and community facilities;
- to provide for access by way of an interconnected network of streets which facilitate safe, efficient and pleasant walking, cycling and driving;
- to foster a sense of community and strong local identity in neighbourhoods and towns;
- to facilitate mixed use urban development which provides for a wide range of living, employment and leisure opportunities; which is capable of adapting over time as

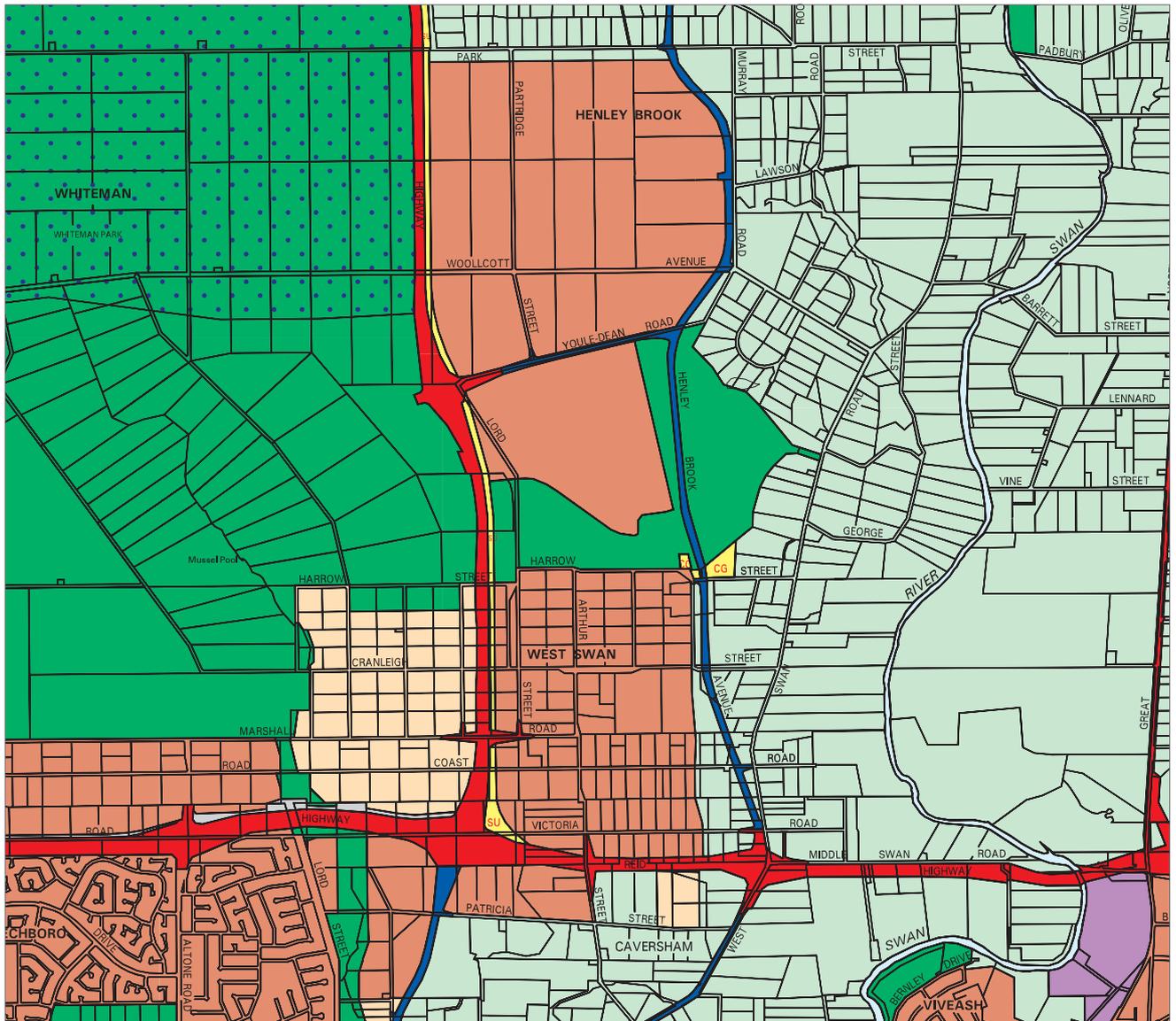


Figure 4: Metropolitan Region Scheme showing the areas of West Swan, Henley Brook and Caversham (Source: WAPC)

the community changes; and which reflects appropriate community standards of health, safety and amenity; and

- to provide an innovative approach to sustainable urban development in a bid to create 'better neighbourhoods'.

State planning policies

State planning policies (SPPs) are prepared and adopted by the WAPC under the provisions of the *Planning and Development Act 2005*. The WAPC and local governments must have 'due regard' to the provisions of state planning policies when preparing or amending local planning schemes and when making decisions on planning matters. The following SPPs are relevant to the Swan Urban Growth Corridor Sub-Regional Structure Plan.

SPP 2

Environment and Natural Resources

This SPP outlines the key implications that planning can have in promoting sustainability and sustainable development following the release of the State of the Environment Report (1998) and the State Sustainability Strategy (2002). The main objectives of the policy are:

- to integrate environment and natural resource management with broader land use planning and decision-making;
- to protect, conserve and enhance the natural environment; and
- to promote and assist in the wise and sustainable use and management of natural resources.

SPP 2.7

Public Drinking Water Source Policy

The objective of this policy is to ensure that land use and development within public drinking water source areas is compatible with the protection and long-term management of water resources for public water supply.

SPP 2.8

Bushland Policy for the Perth Metropolitan Region (draft)

The aim of this policy is to provide a statutory policy and implementation framework that will ensure bushland protection and management issues in the Perth metropolitan region are appropriately addressed, and integrated with broader land use planning and decision-making

to secure long-term protection of biodiversity and associated environmental values.

SPP 2.9

Water Resources

Western Australia's water resources are among its most valuable, yet diverse assets. Water resources include natural or modified features such as wetlands, waterways (rivers, streams and creeks), floodplains, foreshores, estuaries, groundwater aquifers and the wider marine environment. The water resources policy is a 'second-tier' state planning policy providing additional guidance for the consideration of water resources in land use planning processes and is directly related to the over-arching sector State Planning Policy 2 Environment and Natural Resources Policy.

SPP 3

Urban Growth and Settlement

This policy provides guiding principles and a direction for the planning of urban growth within Western Australia. As such, it provides guiding principles for development within the Swan urban growth corridor. The objectives of the policy are:

- to promote a sustainable and well-planned pattern of settlement across the state, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space;
- to build on existing communities with established local and regional economies, concentrate investment in the improvement of services and infrastructure and enhance the quality of life in those communities;
- to manage the growth and development of urban areas in response to the social and economic needs of the community and in recognition of relevant climatic, environmental, heritage and community values and constraints;
- to promote the development of a sustainable and liveable neighbourhood form which reduces energy, water and travel demand while ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing and creates an identifiable sense of place for each community; and
- to coordinate new development with the efficient, economic and timely provision of infrastructure and services.

SPP 4.1

State Industrial Buffer Policy

The purpose of the State Industrial Buffer Policy strives first and foremost to provide a consistent statewide approach for the definition and securing of buffer areas around industry, infrastructure and some special uses. Its purpose is to protect industry, infrastructure and special uses from the encroachment of incompatible land uses. Simultaneously it provides for the safety and amenity of land uses surrounding industry, infrastructure and special uses and recognises the interests of existing landowners within buffer areas who may be affected by residual emissions and risks, as well as the interests, needs and economic benefits of existing industry and infrastructure which may be affected by encroaching incompatible land uses.

The State Industrial Buffer Policy subscribes to the following principles:

- 1 Industries, infrastructure and special uses requiring off-site buffer areas are an important component of economic growth in Western Australia and are essential for the maintenance of our quality of life. These facilities and associated buffer areas must be planned for.
- 2 Off-site buffer areas shall be defined for new industry, infrastructure and special uses where necessary to comply with accepted environmental criteria. Off-site buffer areas shall also be defined for established industry and infrastructure to comply with accepted environmental criteria where there are existing land use conflicts or where there is the potential for land use conflicts to occur.
- 3 Once an off-site buffer area is defined, the boundary should not be varied unless justified in a scientifically-based study (eg the impacts of industry/infrastructure should be maintained within the buffer and it should not be encroached upon by sensitive uses).
- 4 It is essential that once an off-site buffer area is defined, it must be recognised in a town planning scheme.
- 5 Where a buffer area is included as part of a town planning scheme, all issues relating to restrictions on land use and development, and the effect on landowners and existing industry, shall be addressed by the scheme.



The Midland train station

SPP 4.2

Metropolitan Centres Policy

The Metropolitan Centres Policy Statement for the Perth Metropolitan Region provides a broad regional planning framework to coordinate the development of retail and commercial activities in the metropolitan region. Under the policy, local governments are encouraged to develop local commercial strategies that are complementary to the policy. As such the City of Swan's Commercial Strategy reflects the principles of SPP 4.2. SPP 4.2 identifies Midland as the strategic regional centre, Ellenbrook town centre as a regional centre, with the possibility of a future district centre in Albion.

SPP 4.3

Poultry Farms

This policy guides the WAPC and local governments in determining rezoning, subdivision and development applications for land in the vicinity of poultry farms and for the development of poultry farms. Conflicts can arise between poultry farms and residential, rural-residential and other developments because of the odours, noise, dust and visual impacts associated with poultry farms.

The policy also sets out the process and matters to be taken into account in dealing with residential and other forms of development in the vicinity of poultry farms.

The objectives of this policy are:

- to ensure that new poultry farms are established in locations suitable to their operational requirements;

- to minimise the impact of poultry farms on residential, rural-residential and other potentially incompatible uses;
- to protect the interests of existing poultry farms in the face of encroaching development; and
- to encourage the relocation of poultry farms on land required for residential or rural-residential development.

SPP 5.1

Land Use Planning in the Vicinity of Perth Airport

Perth Airport is fundamental to the continued development of the Perth Metropolitan Region and the state as a whole. Investment in airport infrastructure and the economic opportunities associated with the operation of the airport are now recognised as an important, and perhaps critical element in the prosperity of a city such as Perth. Accordingly, the airport and its ongoing development need to be recognised in the planning of the region, and its operation protected as far as practicable from development with the potential to prejudice its performance. One of the main issues to be addressed in the planning of areas in the vicinity of the airport is aircraft noise, which is the focus of this policy.

The objectives of this policy are to:

- protect Perth Airport from unreasonable encroachment by incompatible (noise-sensitive) development, to provide for its ongoing development and operation; and
- minimise the impact of airport operations on existing and future communities with reference to aircraft noise.

Local scheme policies and local planning schemes

City of Swan Local Planning Scheme No. 17

Under the scheme, this land has generally been identified for special use, with structure plans required to provide for more detailed planning. Land within West Swan West is zoned for general rural while land in Caversham is zoned for residential development and Swan Valley rural (figure 5). Amendments to Local Planning Scheme No. 17 are required within the West Swan West and Caversham areas in order to facilitate urban development on any rural zoned land.

It is noted that the *Swan Valley Planning Act* was amended to excise the Caversham Area D, which was subject to studies to support urbanisation. Following any amendment to the MRS, and under the provisions of s. 126(3)(b) of the *Planning and Development Act 2005*, it may be possible to amend the local planning scheme without necessitating a formal process.

City of Swan Commercial Centres Strategy

The vision for the City of Swan is for a hierarchy of centres that complements the existing scale and character of the City and the needs of its varied communities. The key elements of this vision are:

- centres that are conveniently located in terms of the catchment population and accessible via a range of transport modes, including walking, cycling and public transport;
- centres that are well-designed in terms of the interrelationship between uses, access by pedestrians, cyclists and motor vehicles, architecture, landscaping and water resource management;
- centres that provide a range of services and facilities commensurate with the needs of their catchment population, including where appropriate shops, offices, health and welfare services, entertainment, recreation and community facilities;
- centres that are safe, vibrant and efficient in relation to the shared use of facilities and synergies between uses, and that provide a focus for community activity and interaction; and
- mixed business areas with safe and convenient access via the regional road network and which provide for the sale and distribution of bulky goods and associated services.

The City of Swan has a commercial hierarchy with five levels of centres, being based generally on that used in the Metropolitan Centres Policy. It comprises the following centre types:

- strategic regional centre;
- regional centre;
- district centre;
- neighbourhood centre; and
- local centre.

In addition to the above centres, mixed business areas are proposed to complement the hierarchy, in accordance with the Metropolitan Centres Policy.

City of Swan urban growth policies

As a means of supporting the proposed urban growth strategy in a holistic manner, the City of Swan has prepared and adopted an urban growth policy package, incorporating the urban growth policy, the neighbourhood planning policy, the environmental planning policy and the community and economic planning policy. In summary, these policies contain objectives for structure plans including (though not restricted to):

- responding to the social and economic needs of the community;
- encouraging innovation and best practices in urban design and environmental management;
- taking a partnership approach with government, non-government and other landowners in the urban growth corridor in respect to land use and water management;
- providing choice and affordability in housing;
- creating safe and convenient access;
- encouraging an identifiable sense of place;
- minimising the impact on the natural environment;
- minimising energy, infrastructure and water costs; and
- ultimately ensuring that the urban growth contributes to sustainable urban communities.

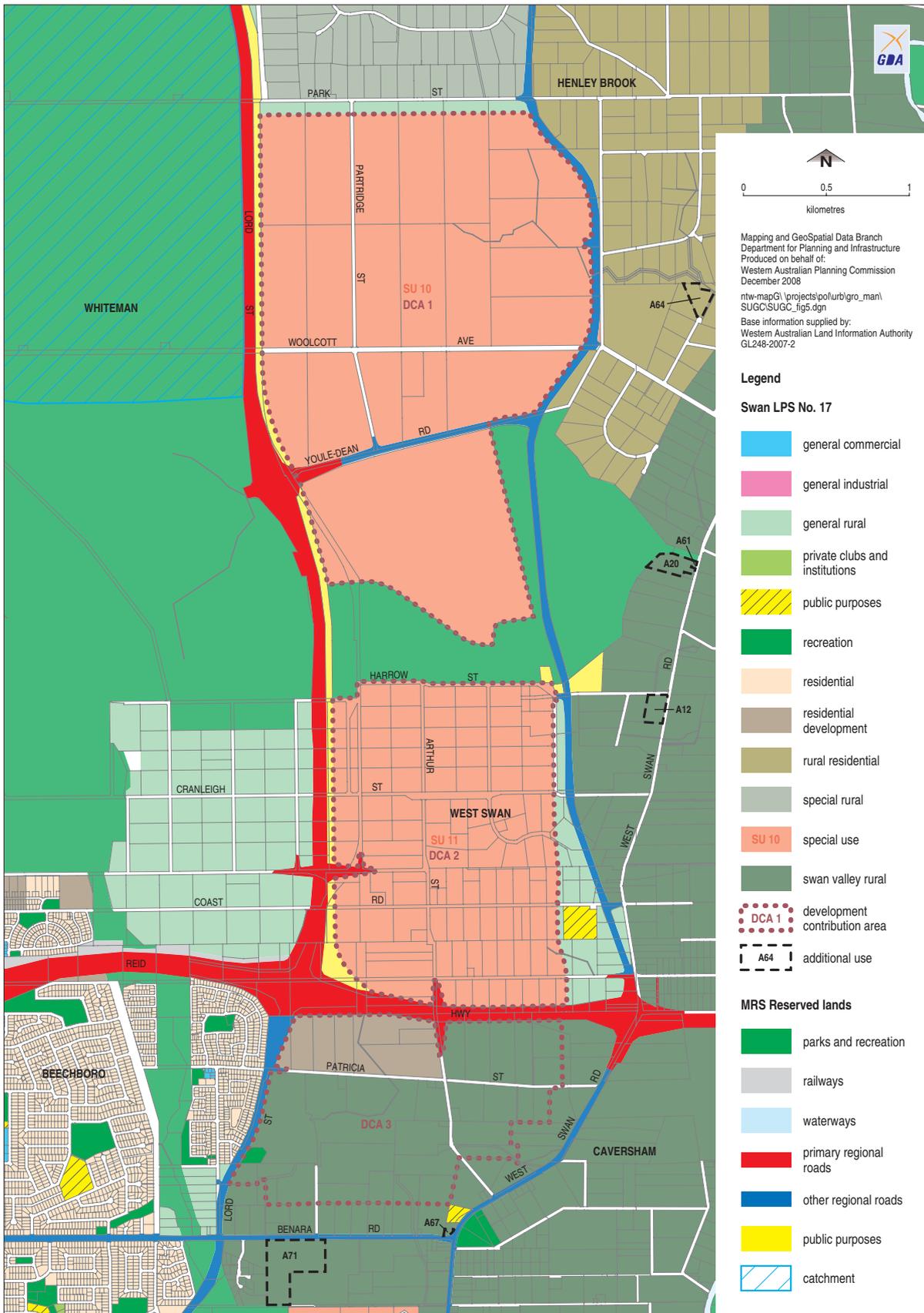
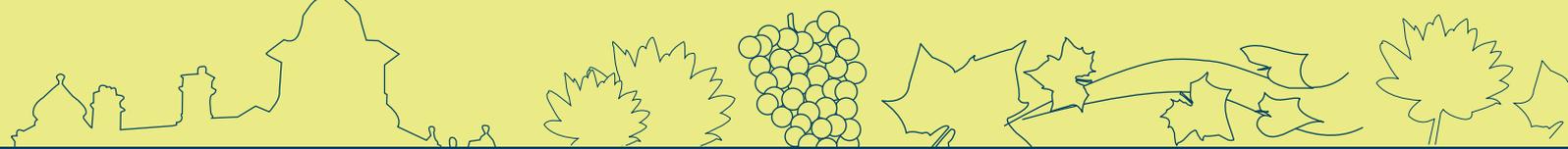


Figure 5: Local Planning Scheme No. 17 (Source: City of Swan)



4 Objectives

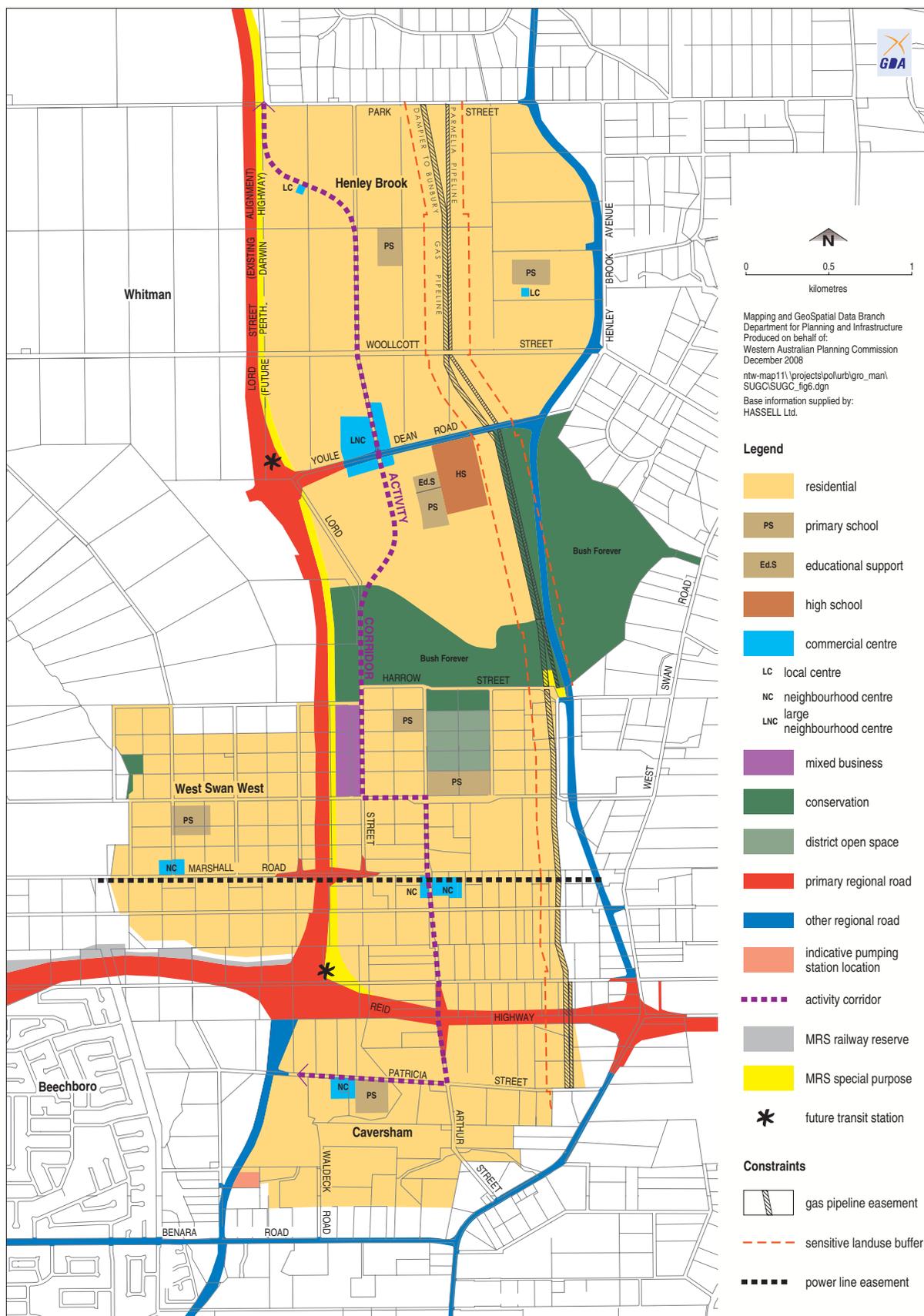
The strategic objectives of the Swan Urban Growth Corridor Sub-Regional Structure Plan are to:

- provide coordination of development, including regional infrastructure within areas of the Swan urban growth corridor marked for urbanisation;
- provide for key transport links throughout the sub-regional structure plan area;
- ensure appropriate provision and equitable access to community facilities, open space areas and employment centres for future residents;
- recognise the importance of environmentally-sensitive and important agricultural areas;
- promote an appropriate range of residential densities to suit the needs of the community; and
- provide for development in a manner consistent with Network City principles.

These objectives have been embodied in the Swan Urban Growth Corridor Sub-Regional Structure Plan (figure 6).



Aerial photo of adjacent Ellenbrook development



GDA

0 0.5 1
kilometres

Mapping and GeoSpatial Data Branch
Department for Planning and Infrastructure
Produced on behalf of:
Western Australian Planning Commission
December 2008
ntw-map11\projects\polurbi\gro_man\
SUGC\SUGC_fig6.dgn
Base information supplied by:
HASSELL Ltd.

- Legend**
- residential
 - PS primary school
 - Ed.S educational support
 - high school
 - commercial centre
 - LC local centre
 - NC neighbourhood centre
 - large neighbourhood centre
 - LNC neighbourhood centre
 - mixed business
 - conservation
 - district open space
 - primary regional road
 - other regional road
 - indicative pumping station location
 - activity corridor
 - MRS railway reserve
 - MRS special purpose
 - * future transit station
- Constraints**
- gas pipeline easement
 - sensitive landuse buffer
 - power line easement

Figure 6: Swan Urban Growth Corridor Sub-Regional Structure Plan

5 Population

The population of the Swan urban growth corridor as at the 2006 census was 6,867 (a 97 per cent increase since 2001) with this growth predominantly being made up of 25-49 year-olds.

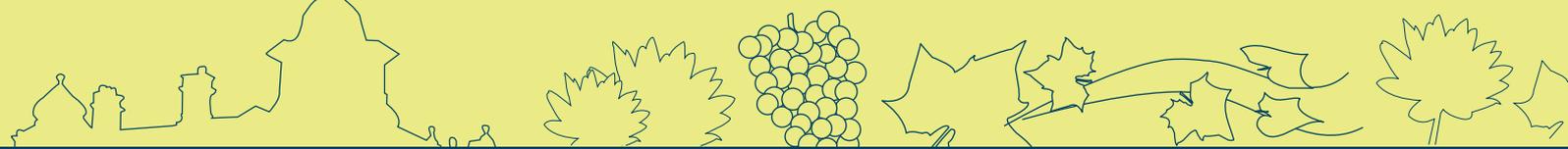
Current City of Swan projections for the urban growth corridor estimate that 12,500 dwelling units and approximately 33,000 residents (at 2.7 persons per dwelling) will eventually be accommodated within the few decades leading up to 2035 in accordance with the Land Use and Economic Workshop Report: Appendix B Focus Papers – Economics and Job Diversity and Employment Targets, October 2007. The population is predicted to grow to approximately 11,800 in 2012 and approximately 26,300 in 2021.

Projected population age breakdowns show growth across all service age categories, but predominantly in the 35-49 and 25-34 age groups. Also notable is the increase in 5-11 year-olds. This indicates that population growth will primarily consist of older couples with or without dependent family members. The strong 35-49 age group in tandem with the growth in 5-11 year-olds will likely be younger couples with young families.

These forecasts are based on anticipated changes to natural increase, immigration and interstate and intrastate migration. Local economic intelligence and multiplier effects from known development projects are then used to adjust the underlying assumptions. Any future change in these underlying conditions will affect the time taken for the Swan urban growth corridor to reach the expected population of 33,000.



Midland Town Hall



6 Employment

The City of Swan's Community and Economic Planning Policy seeks higher economic development and employment outcomes within new developing structure planning areas.

Neighbourhood centres are to be provided for within each urban cell, which will provide some employment. Access is available to other employment centres within the eastern corridor, including the Midland and Morley strategic regional centres, Ellenbrook regional centre, Muchea, Swan Valley, Perth Airport and the Malaga, Bassendean and Hazelmere industrial zones. The Swan urban growth corridor will therefore primarily function as a catchment support area for these established centres.

The following breakdown is provided to demonstrate likely employment numbers throughout the Swan urban growth corridor:

Albion	1,900 jobs
Caversham	700 jobs
West Swan East	1,200 jobs
West Swan West	480 jobs

Total 4,280 jobs

Much of the corridor's employment will be found within the activity centres, with retail, office and other mixed uses being located there. These uses will be for local and corridor level activities, with regional functions being found in Midland, and to an extent, Ellenbrook. The background report that informed this section took into account the areas in the eastern sector of the Perth Metropolitan Region. In this regard, the corridor will act in the manner envisaged by Network City, with the activity corridor/centres providing the more intense employment land, with good connections through to other employment and activity centres. These employment centres will be complemented by home-based businesses, which will be encouraged through the provision of quality infrastructure, including high speed broadband internet access.

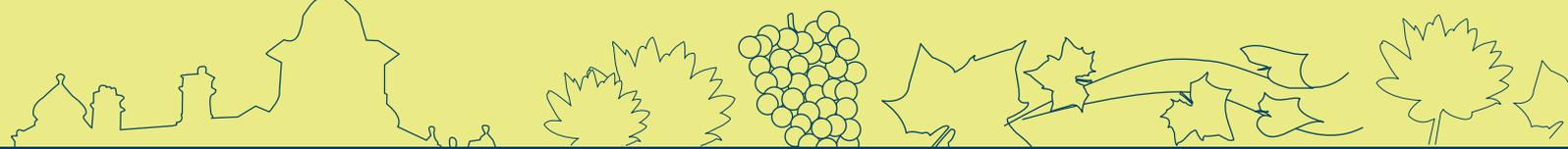
Given an estimated population over time within the corridor of 33,000 people by 2035 in accordance with the Land Use and Economic Workshop Report: Appendix B Focus Papers – Economics and Job Diversity and Employment Targets, October 2007, the estimated 4,280 jobs will provide for a 21 per cent self-sufficiency. Studies indicate that a 60 per cent self-sufficiency target should be provided for throughout the eastern corridor consistent with Network City principles. While not all the jobs that contribute to the 60 per cent target will be provided within this Swan Urban Growth Corridor Sub-Regional Structure Plan area, they are likely to be provided within the major employment centres of the Metropolitan Perth's eastern sector, such as Midland, Bassendean, Malaga, Muchea and Perth Airport.

Policy principle 6.1 Employment targets

The achievement of the employment targets is to be demonstrated at the district and/or local structure planning phase (whichever is relevant to each urban cell).



Shopping precinct in Guildford



7 Environmental issues

Acid sulfate soils

Planning Bulletin 64/2009 Acid Sulfate Soils provides advice and guidance on matters that should be taken into account in the rezoning, subdivision and development of land that contains acid sulfate soils. The entire site area of the sub-regional structure plan contains soil conditions which range between no known risk and high risk of acid sulfate soils occurring within three metres of the surface. The WAPC requires that this risk is properly assessed and mitigated.

Policy principle 7.1 Acid Sulfate Soils

At the district and/or local structure plan stage (whichever is relevant for each urban cell), preliminary site assessments are to be prepared and submitted for approval that provides a greater understanding of the risk of acid sulfate soils.

Contaminated and constrained sites

A search of the Department of Environmental Conservation's contaminated sites database has revealed no known contaminated sites within the area the subject of the sub-regional structure plan. However, given the history of agricultural, horticultural and military land uses throughout the region, there is potential that areas of contamination exist. The onus is on individual landowners to demonstrate that sites are not contaminated or constrained in any way and suitable for urban development. The following potentially contaminated/constrained sites within their respective areas are indicated as part of identified constraints on development in figure 7:

West Swan - West
operational poultry farm

Albion:

former poultry farm on Park St
Aboriginal heritage site on Lot 351 Park St.
Aboriginal heritage - located artefacts on Lots 17 and 18 Park St
Potential threatened ecological community (TEC)

West Swan East:

Aboriginal heritage - well

Caversham

Mushroom farm
ANEF contours

Policy principle 7.2 Contaminated sites

Contaminated sites must be identified and aspects of rehabilitation and mitigation must be addressed in accordance with Department of Environment and Conservation guidelines and in terms of the Contaminated Sites Act.

Natural environment

Generally the urbanzoned portion of the corridor is substantially cleared and degraded following many years of agricultural use and is not worthy of conservation, aside from identified wetland and creek line areas. The parks and recreation reserve central to the sub-regional structure plan area is identified as a Bush Forever site, comprising a total of approximately 60 hectares within the corridor (figure 8).

The management of resource enhancement wetland environments is generally addressed in the district and local structure plan stages. The existence of environmental constraints may only become evident during a later stage in the planning process when it may become necessary to either relocate a previously identified land use

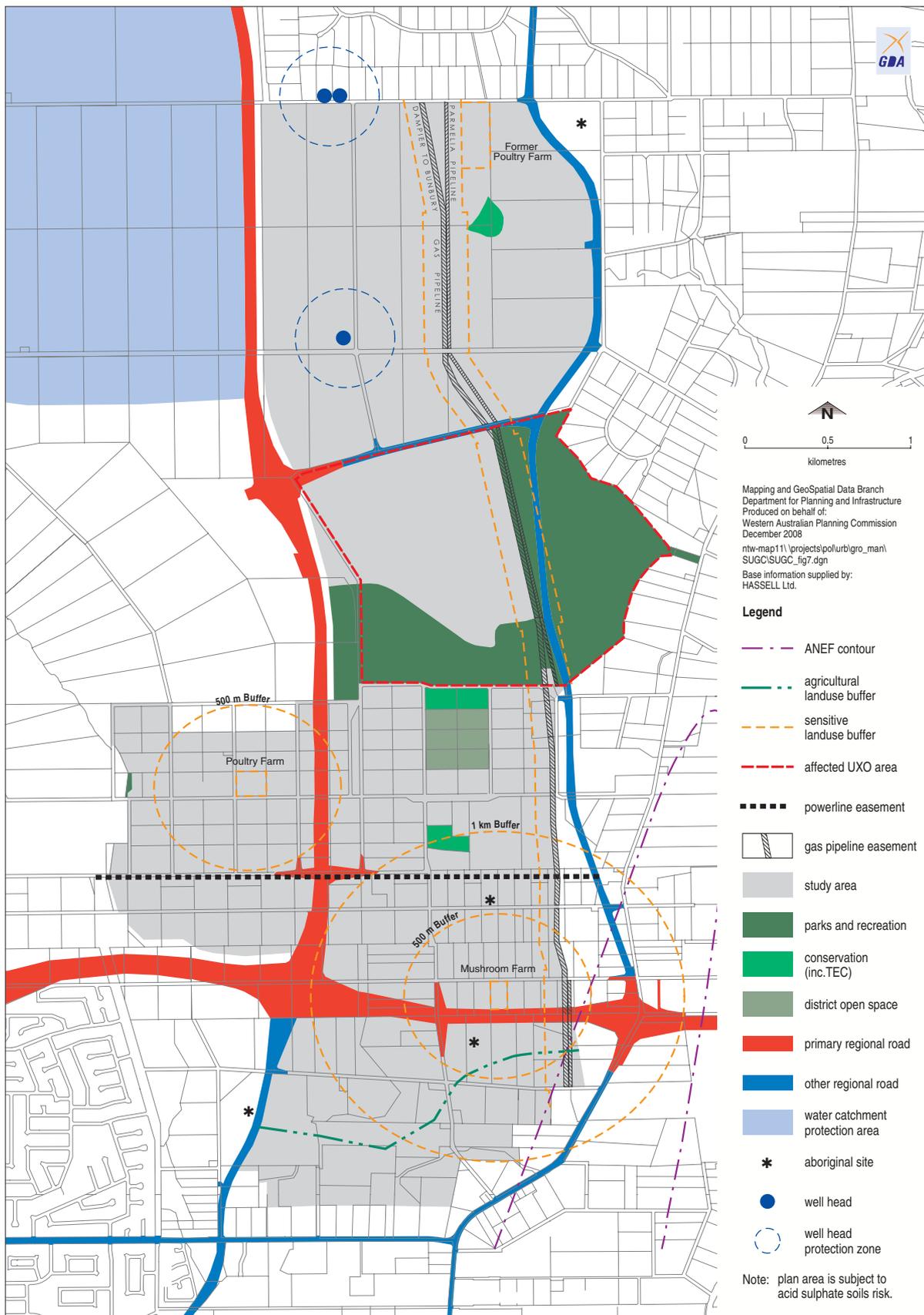


Figure 7: Constraints within the region

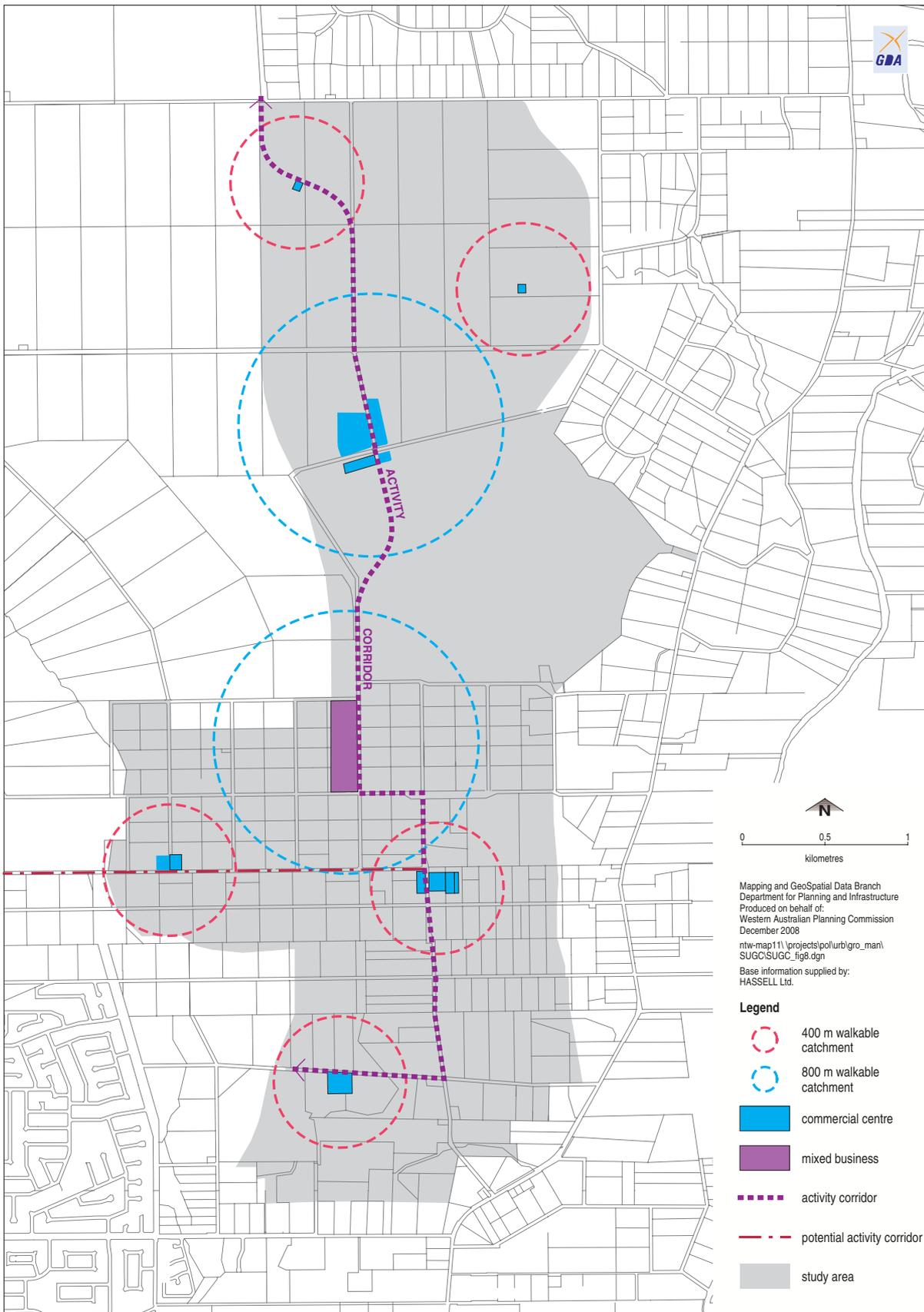


Figure 8: Neighbourhood and employment centres within the Swan urban growth corridor, noting walkable catchment areas

such as a school site or to seek the Department of Environmental Conservation’s approval to manage the constraints such as the removal or infill of topographical features *in situ*.

Policy principle 7.3
Natural environment

Areas of important vegetation, habitat areas for threatened ecological communities, areas of visual amenity, wetlands and water courses need to be taken into account in the planning for each individual urban cell, and studies will need to be undertaken at the district and/or local planning stage to identify areas that require particular conservation and/or management.

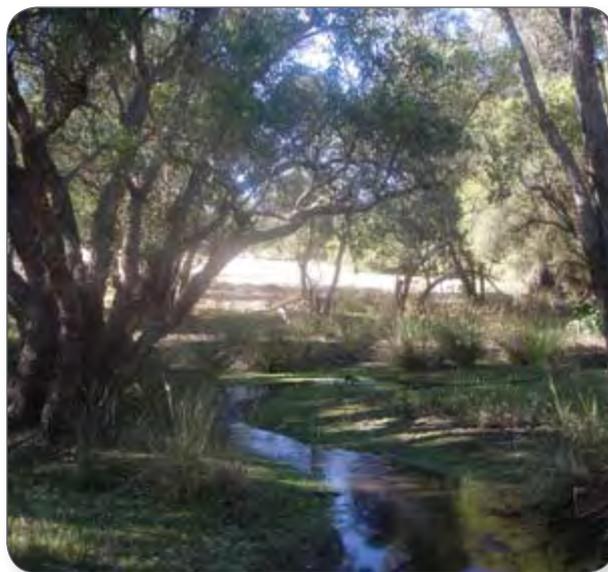
Ground, surface water and drainage

Drainage and water management planning, notwithstanding detailed flood management, has been taken into account by the Department of Water through the preparation of a draft drainage and water management plan for the sub-regional structure plan area, which informs the land use planning element of the sub-regional structure plan. Land use planning is the key element impacted by the drainage and water management plan, or more specifically land requirements for surface and ground water management including flood management and protection.

No new urban development will be considered unless accompanied by a fully integrated assessment of the impact of the development in respect of urban water management, including plans at the appropriate scale to manage drainage in accordance with water-sensitive urban design principles. To ensure consistency between the sub-regional structure plan and the drainage and water management plan, the land use plan contained within the sub-regional structure plan was provided to Department of Water as key input information at the commencement of the flood management study and the drainage and water management plan. A draft drainage and water management plan has been prepared in consultation with the City of Swan and the results are supportive of the land use plan provided to Department of Water and shown in the sub-regional structure plan. Detailed structure plans for growth corridor will require detailed local water management strategies to be prepared, and will be instructed by the adopted drainage and water management plan.

Policy principle 7.4
Ground, surface water and drainage

Any development of land is to be accompanied by a water management strategy/plan appropriate to the level of planning approval required as described in *Better Urban Water Management* (DPI, Department of Water, Western Australian Local Government Association and Department of Environment, Water, Heritage and the Arts, 2008) and the City of Swan Local Planning Scheme No. 17.



The Drainage and Water Management plan will seek to mitigate the impacts of flooding in the region

8 Transport

Regional transport issues and traffic requirements for the Swan urban growth corridor have been addressed through a regional transport study using traffic volumes previously modelling in the area. The study identified pertinent issues and informed the resolution of concerns relating to issues of traffic flows and volumes, regional road network, fly-overs, a public transport strategy and transport infrastructure staging.

Staging

Further work to identify the staging of infrastructure is required to be undertaken to inform the sequential planning and development of infrastructure and development of a developer's contribution plan. An indicative transport staging plan is included in appendix A. This illustrates the broad sequencing based on the preliminary traffic volumes and initial stakeholder discussion, including government agencies. The development of the staging plan considered development fronts (shown in appendix B) and the broad rate of development while aiming to achieve the following objectives:

- to develop a transport system sequentially; and
- to move seamlessly from the current to the future system.

The drivers for the staging were:

- to continue to provide capacity, connectivity and level of service for regional and sub-regional traffic flows;
- to continue to provide access to existing and future areas; and
- to continue to enable the public transport system to function efficiently.

The indicative staging of infrastructure is based on the logical sequencing of transport to fulfil the objectives listed above.

Further work is required to establish the distribution of 'need', and the triggers which will drive the construction of each regional transport infrastructure item. The preparation of this staging plan should be led by the City of Swan in collaboration with Main Roads WA and the Public Transport Authority. This staging plan should consider ultimate population densities identified for the urban growth corridor and staging of development. More specifically, the study is required to identify:

- the relative proportion that each cell/development contributes toward the need for each regional transport infrastructure item;
- factors within the planning area that should trigger the construction of key regional transport infrastructure, specifically population / dwelling numbers and corresponding traffic volumes;
- critical traffic volumes on the surrounding transport infrastructure, such as West Swan Road, that will trigger the need to the construction of transport infrastructure; and
- any other factors that rely on the transport network and will drive the staging of transport infrastructure.

The staging plan will be developed alongside a development contributions plan, which will be prepared separately to the sub-regional structure plan and ensure the development of the Swan urban growth corridor is progressed in a proper and orderly planning manner.

Policy principle 8.1 Staging

The preparation of this sub-regional structure plan has been undertaken separately to a development contributions plan for the urban growth corridor, which will consist of the City of Swan's determination of costs relating to the staged

development and provision of infrastructure, including road transport. In order to prepare the development contributions plan, further work in regards to staging of transport infrastructure is required.

Regional road network

The primary roads through the corridor are the Reid and Perth-Darwin Highways. These are primary regional roads under the MRS and will be constructed to a freeway standard in the long term. Key connections to these intra-regional roads will be at Henley Brook Avenue, Youle Dean Road and Lord Street.

A north-south distributor road (activity corridor) has been identified in the Swan urban growth corridor (figure 6) on the following alignment:

- a The distributor road follows Partridge in the north on the basis of:
 - The connection through to Lord Street supports traffic movements through to Ellenbrook public transport station.
 - The distributor road alignment is supported by higher densities to the west of Albion, is centrally located to the 'walkable catchment'.
 - The environmentally-sensitive land/creeks and gas pipeline to the east favour the higher densities being located to the west.
 - Public transport can be expanded to service the area as development progresses (see comments on public transport strategy in section 3.4).
- b The distributor road utilises the existing Lord Street alignment through the Bush Forever site on the following basis:
 - The negative impacts on land use from the construction of a second road access through the Bush Forever site outweighed the benefits. The key benefit for such an alignment was that of straightening the north south distributor road; however, retaining the existing alignment also has positive implications for traffic movement. These include:
 - the right angles provide for better traffic calming; and.
 - the number of right angle turns is minimal given the length of the road;

this was an acceptable outcome from the PTA's perspective.

- c The distributor road diverts from Lord Street across to the existing Arthur Street alignment just south of the Bush Forever site; Arthur Street serves the West Swan East cell and crosses Reid Highway (also refer to section 8.3 Fly-overs) to serve the Caversham cell. The alignment is considered appropriate on the following basis:
 - Using part of Marshall Road as the Activity Corridor would result in unacceptable conflicts with Western Power easements.
 - The route provides for a better distribution of traffic than would be achieved by use of the existing Lord Street alignment.
 - The right angles provide for better traffic calming.
 - The number of right angle turns is minimal given the length of the road, which serves the needs of the Public Transport Authority.

The north-south distributor road will function as an activity corridor. The activity corridor functions to service the neighbourhood centre destinations, rather than acting as a high-speed thoroughfare, with associated public transport and supportive land uses. This is in accordance with Network City principles.

The activity corridor will be supported with neighbourhood connector roads in strategic locations throughout the corridor. To the east of the corridor, Henley Brook Avenue will be extended to form the eastern border and is designated as an other regional road under the MRS. This will provide an alternative north-south route to the future Perth-Darwin Highway. It will also allow West Swan Road to function as a tourist route through the Swan Valley, rather than carrying commuter and other traffic. Youle Dean Road will form an east-west link between the Perth-Darwin Highway and Henley Brook Road and provide an important link to the large neighbourhood centre and activity corridor. Lord Street will be extended south from Reid Highway and will form the southern link from the regional road network to the activity corridor and Benara Road.

Policy principle 8.2 *Regional road network*

District and local structure plans are to provide for the regional road network and allow for the activity corridor and other important connections as identified on the Swan Urban Growth Corridor Sub-Regional Structure Plan.

Fly-overs

A fly-over is required where Arthur Street crosses Reid Highway linking Caversham with West Swan and Albion. The Arthur Street fly-over is critical:

- to ensure local connectivity allowing residents to travel north/south without being forced to use the busier intersections; and
- for bus services to operate effectively along the activity corridor.

An additional fly-over is to be provided across the Perth-Darwin Highway at Marshall Road as these form an important east-west link, providing an alternative to Reid Highway for local traffic movement. At the point in time that the Marshall Road fly-over is established, the existing connection of Lord Street to Reid Highway will cease to exist. This is not likely to occur until the long term, with funding arrangements for the Perth-Darwin Highway currently unknown.

Policy principle 8.3 *Fly-overs*

Fly-overs are required to be constructed over Reid Highway and the future Perth-Darwin Highway as important links to support local traffic movement and create connectivity between each cell, and to support public transport services throughout the region.

Public transport strategy

Transperth currently runs an all-day bus service to Morley and a peak hour service to Bassendean, originating from Ellenbrook. Both of these services operate along Lord Street between Gnangara Road and Marshall Road. However, in the future such services would operate along the activity corridor and support the activity centres and higher densities planned along the activity corridor. The following key elements relate to public transport in the urban growth corridor:

- While the road network is robust enough to support public transport routes to either Guildford or Bassendean, the public

transport services would predominantly support Midland as a regional transport node.

- The Public Transport Authority requires buses to move through without significant congestion. Points of potential congestion along the activity corridor would be reviewed at design stage to provide bus movement priority.
- As the population increases in the area, bus services will change from a rapid service to a slower, more frequent service along the activity corridor.
- The special purpose reserve adjacent to the Perth-Darwin Highway will provide for a fast 'through' public transport alternative.
- Light rail is not appropriate along the activity corridor, given population densities and the future Perth-Darwin Highway public transport alternative.
- As the population increases, bus services will expand to service areas further from the activity corridor such as East Albion.
- The 'activity corridor' is the primary public transport (eg bus) route.
- The two transit stations identified in figure 6 are indicative locations to support a proposed rail link to Ellenbrook. The alignment of the rapid public transport route (eg rail) adjacent to the Perth-Darwin Highway will be the subject of more detailed investigation in the future.

Policy principle 8.4 *Public transport: bus service*

In accordance with the agreed public transport strategy, the Swan urban growth corridor must provide for the operation of an efficient bus service along the designated activity corridor, connecting to Ellenbrook and Midland (via Bassendean Train Station), and the Public Transport Authority requires that such services be generally unimpeded by stop-start traffic.

Policy principle 8.5 *Public transport: integration with existing and alternative modes of transport*

It is important that public transport networks are designed not to conflict with, but complement the existing road network and facilitate alternative modes of transport to the private automobile.

Policy principle 8.6

Public transport: future transit route and stations

As the population within the vicinity of the corridor increases throughout the area, the bus route is likely to be complemented by a fast public transport route along or adjacent to the Perth-Darwin Highway and the location and operation of future transit stations are to be accommodated within the development as designated in the sub-regional structure plan.



Buses will form the public transport provision along the activity corridor

9 Land use and density considerations

The urban form proposed in the sub-regional structure plan is described as a corridor forming an extension to the existing pattern of development linking Ellenbrook with Midland. While development will be relatively continuous throughout the corridor, it will be separated into four distinct urban villages comprising Albion, West Swan East, West Swan West and Caversham.

Each urban village will have a community focus, in the form of a neighbourhood centre, with residential densities surrounding these centres capitalising on walkable catchments. Each activity centre will be located along the central spine or activity corridor. This will provide good public transport to surrounding centres and form a key transport route through the corridor.

Similarly, each urban village will cater for the needs of the community in terms of public open space and access to community facilities. These will be equitably located throughout the corridor, maximising access for future residents, while also taking into account environmental and recreation priorities. The form of each urban village will be geared towards supporting pedestrian movement and encouraging public transport usage. A high degree of accessibility and permeability will be provided in the local street network, representing a modified grid pattern.

The corridor will contain a range of housing types and densities in order to meeting the needs of the community. Lower densities will be facilitated at the edges of the corridor, providing a transition to the Swan Valley rural land holdings.

Density and housing diversity

The level of detail conveyed in the sub-regional structure plan is intended to be at the regional level. The detailed arrangement of land uses, including any refinements to the boundaries

of densities (within the principles discussed in this report), will be subject to future district and local structure planning. The WAPC Liveable Neighbourhoods policy requires urban densities of at least 15 dwellings per urban hectare and an average of 22 dwellings per site hectare (ie net area of land to be developed for residential purposes and excludes non-residential uses including streets, laneways, open space and centres).

Policy principle 9.1 *Density*

The residential densities within the structure plan area must be consistent with that articulated in Liveable Neighbourhoods, Network City and the City of Swan's Urban Growth Policy, ie a minimum average of 22 dwellings per site hectare (ie net area of land to be developed for residential purposes and excludes non-residential uses including streets, laneways, open space and centres) throughout the structure plan area.)

Policy principle 9.2 *Housing diversity*

The quality and diversity of the housing provided must strive to match the changing housing needs of the City of Swan's population, in locations that provide equitable access and lifestyle opportunities, through best practice urban design, architecture and building that creates and maintains diverse, more attractive, safer and more liveable urban environments.

Activity corridors, centres and place making

Activity corridor

An activity corridor is proposed to provide connectivity between the various activity centres; that is, pedestrian, private and public transport

and cycling and be a focus for activity through the Swan urban growth corridor. The activity corridor will link with Ellenbrook to the north and connect to Midland in the south and is consistent with the direction provided for by Network City. The Liveable Neighbourhoods policy requires that residential densities should be significantly higher in strategically located areas such as in and close to centres and railway stations and along key activity corridors such as high frequency bus routes. The city's Neighbourhood Planning Policy requires a minimum net density of 30 du/ha in and around centres. In such areas residential densities should be 30 to 40 dwellings per hectare.

Centres

Centres are to be located so as to provide equitable access throughout the structure plan area and will vary in size and composition depending on their accessibility and the characteristics and extent of their catchments. In particular, activity centres (mixed uses) should be connected by activity corridors to ensure maximum accessibility by public transport (refer to figure 7).

Policy principle 9.3

Activity corridor: focus point of densities

Higher densities must be achieved in proximity to activity centres, transit stations and along activity corridors in line with environmental and social sustainability principles, while the balance of the residential area may exhibit a correspondingly lower than average density, particularly in those areas adjacent to agricultural activities within the Swan Valley.

Policy principle 9.4

Activity corridor: increase densities over time

Scope must be built into the district and local structure plans to enable the density of residential areas to increase over time as warranted. This will include provisions that allow for an increase in the intensity of development such as the subdivision of corner lots and provisions that allow for the increase in residential densities conditional to the establishment and proximity of certain infrastructure such as that associated with a rapid bus or light rail.

Policy principle 9.5

Activity corridor: central spine

The activity corridor is to form the central spine for movement and activity throughout the Swan urban growth corridor. It will function as a public transport route as well as provide transport

options to the various activity centres throughout the region. In order to capitalise on the services provided through the corridor, dwelling densities must be higher along the activity corridor, thus improving sustainability and accessibility, as detailed within WAPC's Liveable Neighbourhoods Policy.



Variety of potential housing examples throughout the Swan urban growth corridor as shown in Ellenbrook

Policy principle 9.6**Activity corridor: equitable access**

The activity corridor is to be located to provide for equitable access for residents throughout the corridor except where site constraints such as the gas easements means the activity corridor is not centrally located, but biased towards the western side of the corridor, taking into account higher densities.

Policy principle 9.7**Centre: focus point**

Each urban cell within the Swan urban growth corridor must be provided with a centre that will provide a non-residential focus point for the local community, which will act as a catchment support complementing larger neighbouring centres such as the regional centre at Ellenbrook (as stated in the SPP 4.2. Metropolitan Centres Policy (2000), the city's Commercial Centres Strategy (2004), the adopted Ellenbrook Town Centre Plan (2005)) and the Midland Regional Centre. The centres are to be spaced equitably throughout the region in order to afford a good level of accessibility to services for residents of the corridor. Further, densities immediately surrounding these centres must be maximised in order to improve the walkable catchment.

Policy principle 9.8**Centre: size**

Neighbourhood Centres are to be provided in Caversham, West Swan East and West Swan West while Albion is to be ultimately supported by a larger centre with two local centres, representative of its larger population catchment



Centres will form key community focal points within the Swan urban growth corridor.



Quality urban form and public spaces will be important to provide for a functioning activity corridor

and site constraints such as the gas easements. The ultimate development of a district centre in Albion is dependent on nett density targets being achieved and should be staged to enable neighbouring centres to mature. Structure plans must outline and justify a retail area component and a proportional floor area of non-retail uses commensurate with the relevant state and local strategies and policies.

Policy principle 9.9**Centre: location**

Each neighbourhood centre and the larger Albion Centre are to be located along the activity corridor, thus taking advantage of the public transport routes through the region.

Policy principle 9.10**Centre: community facilities**

Appropriate community facilities will be required within or immediately adjacent to each neighbourhood centre and the larger Albion Centre.

Policy principle 9.11**Centre: design**

The design of the centres is to be based on 'main street' design principles, with buildings addressing and fronting onto adjacent streets. The centres are not intended to be designed as or to function merely as shopping centres, but must provide for a mix of commercial, residential and community uses, consistent with transit oriented design principles. An urban design framework must be developed for each of the centres at the local structure planning phase to establish

the general design principles for each centre and promote activity, surveillance, appropriate scale of development, indicative layouts and massing, consistent with state and local policy requirements.

Mixed business zone

The mixed business zone will provide some employment for the region, with land uses catering for light industry and service businesses. Uses will focus on the needs of the local population, rather than providing district or regional showroom type uses.

Policy principle 9.12

Mixed business zone: location

A mixed business area is to be located within West Swan East adjacent to the Perth-Darwin Highway, to take advantage of the excellent visibility to passing trade while also providing a buffer between the highway and adjacent residential areas. In addition, the Albion large neighbourhood centre has been identified as being suitable for the location of some mixed business.

Transition zones

The importance of transition zones is particularly evident in order to mitigate any negative side effects relating to residential land abutting rural land such as irrigation drift or mechanical noise or odours from rural land holdings. The lot layout should provide an effective transition between the urban villages of the Swan urban growth corridor and surrounding rural land, such as a buffer and / or a gradual increase in density as the distance from the rural land increases.



House on West Swan Road, Henley Brook.

Interface with existing agricultural activities

The Swan Valley has traditionally accommodated a number of agricultural activities including viticulture and poultry farms. These existing agricultural activities place a constraint on the time frame in which the proposed residential development can occur.

There are existing non-conforming use rights in the form of agricultural uses within the Swan urban growth corridor that will require mitigation measures to be applied. State planning policies 4.1 State Industrial

Buffer (mushroom farms); 4.3 Poultry Farms and Department of Environment and Conservation policies provide some direction on this matter. This policy has adopted an approach, which requires the impact of existing farms on nearby proposals for residential and rural-residential development to be assessed on a case-by-case basis. It also suggests a combination of measures to address the potential conflicts associated with residential development in the vicinity of farms.

The approach recommended is to examine the specific impacts of farming and the implications of adjacent development having regard to the type of production, management of the farms and prevailing conditions. This will lead to a range of measures, which can be taken to address the particular impacts in a given location and manage development in the vicinity of existing or proposed farms. They basically allow for impacts of existing poultry farms and similar facilities to be ameliorated/managed while providing time for these activities to be relocated and ultimately for the sites to be decontaminated.



The Swan Valley is an important agricultural land resource

The buffers mentioned in SPP 4.1 and SPP 4.3 recommend a buffer distance from residential development of 500 metres to 1000 metres to existing mushroom farms and 500 metres to poultry farming facilities, respectively. Developers should address adverse impacts of the adjacent uses at the time of subdivision.

Policy principle 9.13

Interface with existing agricultural activities: buffers

District and local structure plans must provide for a transition zone such as buffers between the urban villages of the Swan urban growth corridor and surrounding rural land to accommodate impacts on existing agricultural activities, and prepare management plans to mitigate any negative side effects.

Policy principle 9.14

Interface with existing agricultural activities: Whiteman Park

Residential lots must be separated from Whiteman Park by road reserves and areas of public open space.

Interface with gas pipeline

Two high-pressure gas transmission lines pass through the Swan urban growth corridor transporting gas from the north-west to the south-west of the state. These pipelines are the Dampier-Bunbury Gas Pipeline and the Parmelia Gas Pipeline. Planning Bulletin 87 – High Pressure Gas Pipelines in the Perth Metropolitan Region provides guidance on matters to be taken into account in considering development near the pipelines. In addition, Local Planning Scheme No. 17, Clause 4.7, Schedule 4 special use zones (applicable to Albion and West Swan East of Lord Street) requires the preparation of a quantitative risk assessment plan for the gas pipeline. Where setbacks and land uses vary from those contained within the Planning Bulletin, a quantitative risk assessment is to be prepared consistent with the proposal.

Policy principle 9.15

Interface with gas pipeline

The high-pressure pipelines are protected by easements that guarantee access at all times to permit any necessary construction, maintenance or repair. Furthermore, the specified setback distances that are applied to land uses depending upon their relative sensitivity to the pipelines, must be adhered to. A pipeline risk management plan is required when development that is not

in accordance with the recommended setbacks is proposed. Such risk management is to be provided at the district structure planning stage to understand and mitigate risks to land uses to demonstrate that the risk from the pipeline is within acceptable levels and to recommend any necessary actions.

Well heads (water bores)

The location of water bore well heads is shown in figure 7.

Policy principle 9.16

Well heads (water bores)

Well heads are protected by well head protection zones that guarantee access at all times to permit any necessary construction, maintenance or repair.

Interface with primary regional roads and train lines

Two primary regional road reserves traverse the Swan urban growth corridor – Reid Highway and the planned Perth-Darwin Highway as well as a public purpose reserve intended as a rapid transit route. The Reid and Perth-Darwin Highways will eventually be constructed to freeway standard, meaning access is limited and controlled by Main Roads WA. There is limited opportunity for development to front onto these high traffic roads, with landscape buffers and noise attenuation walls generally providing the best outcome. The mixed business zone, while gaining access from the activity corridor, will also front onto the Perth-Darwin Highway, gaining exposure and providing surveillance opportunities. Houses designed to ‘quiet house’ principles may also be required for lots adjacent to the primary regional roads.

Policy principle 9.17

Interface with primary regional roads and train lines

The urban designers of the Swan urban growth corridor should explore opportunities at both a district and local planning scale to treat the interface between the high traffic roads and urban land uses, while not impacting on principles of good urban design.

Interface with overhead transmission lines

Western Power transmission lines traverse the West Swan component of the urban corridor.

A new 132kV transmission line is required to service the Swan urban growth corridor. A preliminary alignment has been proposed along the special purpose reserve (transit corridor), adjacent to the future Perth-Darwin Highway. A condition of this alignment is that the transmission line design should address key design considerations (including the integrity and function of this reserve) identified through a preliminary technical feasibility undertaken in collaboration by the Public Transport Authority and Western Power Corporation. Where required, an inter-governmental agency memorandum of understanding should be developed in order to ensure the transportation corridor is optimally utilised. The purpose of this 132kV line is to connect the required electricity substations to provide power throughout the urban growth corridor.

Policy principle 9.18

Interface with overhead transmission lines: intended built form

In determining the final transmission line alignment, the 132kV transmission line, which requires an 18 metre easement, should not disturb the intended built form and activities along the activity corridor, being a range of higher-density residential areas, public transport route and neighbourhood centres designed around main street principles.

Policy principle 9.19

Interface with overhead transmission lines: location

Where the special purpose reserve (transit corridor) is considered inappropriate, the location of the 132kV line may traverse/co-locate with the following, but should not impact on the integrity or function of the activity corridor; the Bush Forever site; the district open space; all privately owned land; or regional roads.

Policy principle 9.20

Interface with overhead transmission lines: utilisation of easements

Transmission line corridors may be considered for use as open space for recreation activities or neighbourhood connector roads other than the activity corridor subject to the approval of the transmission line operator and City of Swan, provided that the community benefit thereof can be proved at the district/local structure plan stage. Such open space areas should be of sufficient dimensions to be useable for their intended purpose and balanced against other location criteria for open space such as conservation,



Overhead transmission lines travelling across West Swan Road, Caversham

allowing equitable access to open space for the entire urban corridor and ensuring appropriate distribution of active and passive open space areas.

Policy principle 9.21

Interface with overhead transmission lines: design

In order to minimise any impact on intended built form and urban design outcomes, the 132kV transmission line will not be located along the activity corridor, except where it traverses the Bush Forever site along the Lord Street alignment, and will avoid private property, and where existing lines are located along a part of the activity centre route.

Policy principle 9.22

Interface with overhead transmission lines where the special purpose reserve is inappropriate

To enable orderly planning and to ensure that the transmission line does not undermine planning objectives, the following principles are considered non-negotiable in respect to defining the ultimate alignment:

- 1 The alignment will travel along the western edge of the Lord Street through the Bush Forever site.

- 2 Depending on the West Swan substation location, if required, the alignment will cross the Perth-Darwin National Highway within the future road reserve for Marshall Road.
- 3 Notwithstanding point 1 above, the alignment should where ever possible not be located within the activity corridor.
- 4 Design should attempt to minimise the width of easements located in private property.
- 5 Generally, the 132kV transmission line should not disturb the intended built form and activities along the activity corridor.

Alternative options which could include locating the transmission line within the existing reserves for Perth-Darwin Highway or the transit corridor should be investigated further. If issues which currently surround those alternatives are addressed prior to on-ground works, those alternatives will be considered on their relative merits.

Unexploded ordnances area

A large area within the plan area was used by the Department of Defence since World War II.

Policy principle 9.23

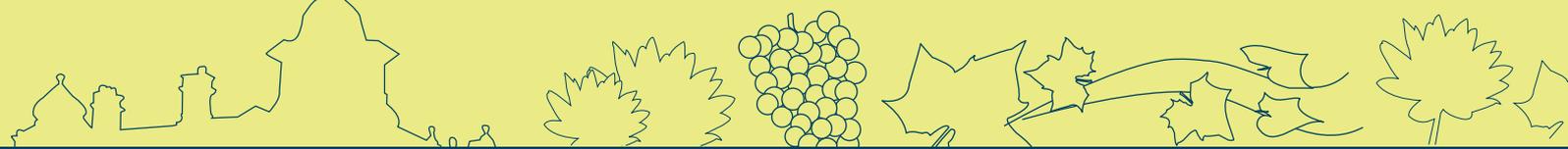
Unexploded ordnance area

Where an area of land is believed to contain or have contained unexploded devices, an unexploded ordnance remediation plan is required prior to final subdivision in terms of Schedule 4, section 10, condition 6.2.3 of Local Scheme TPS 17.



Open space will be integral to the development throughout the corridor

The interface between residential uses and constraints is an important consideration



10 Public utilities

Services to the Swan urban growth corridor will need to eventually cater for a population of approximately 33,000 as well as the local centres, neighbourhood centres and mixed business zone. Early stages of development within the corridor will be able to use existing infrastructure (up to a maximum of 500 lots).

The following major works are required during the first stages of development:

- 2,600 metres of DN600 water distribution main from Altone Rd to Caversham North;
- a minimum of 2,000 metres of DN250 water distribution main from Gngangara Road to the Albion cell;
- major pump station (Ultimately type 90) and 3,500 metre rising main from the Albion cell to Gngangara Road; and
- construction of the Henley Brook Western Power sub station.

The following key infrastructure is required to allow development to continue:

- regional pumping station (ultimately type 180) and rising main 5,500 metres west to Hollett Road;
- approximately 3,600 metres of DN400 water distribution main from Bennett Springs Drive in Beechboro along Marshall Road to Lord Street within the West Swan (West) cell and the extension of the DN600 main from Arthur Street northwards into the West Swan East cell; and
- construction of regional power substations within West Swan (East) and Albion cells including network connection to 132kV transmission lines.

Water supply

The Swan urban growth corridor will be supplied from the Gngangara water supply scheme and the East Yokine Morley water supply scheme. The Water Corporation has confirmed that a water supply can be provided to the Caversham and West Swan cells through a series of staged construction.

The initial infrastructure into the area will be via a pre-funded water distribution main approximately 2,600 metres long. This will be constructed from an existing connection point at the intersection of Altone and Benara Roads. A reticulated water supply will be made available to Caversham North via construction of a developer-funded water main. This will also provide West Swan East with a connection point to allow for future development in this urban cell. This work is required to be completed prior to water supply becoming available.

Policy principle 10.1

Water supply: minimum requirement

In order to supply the West Swan West cell with water supply, a further 3,100 metres of pre-funded water distribution main will be required from the intersection of Silver Swan Road and Bennett Springs Drive in Beechboro. This is a minimum requirement prior to the development of this cell.

Policy principle 10.2

Water supply: additional requirement

With regard to the Albion urban cell, the existing water main at the intersection of Gngangara Road and Lord Street will serve as an initial connection point for development. A developer-funded main will be required along Lord Street to provide water to the north-west section of Albion. In order to supply the greater component of Albion, two additional mains will be required, concurrent with development.

Wastewater

The Swan urban growth corridor will be serviced by the West Swan wastewater scheme and the Eden Hill wastewater scheme. The Water Corporation has confirmed that there is sufficient capacity in the existing temporary Bennett Street pumping station for the development of approximately 500 lots within Caversham and West Swan. Based on current projections, it is likely that the existing supply capacity will be consumed by the Caversham and West Swan East developments. As such, the current wastewater supply would last for approximately 2.5 years. The Water Corporation has advised that tankering will not be permitted and that further development above this allocation of 500 lots is likely to be subject to the regional pumping station and pressure main being commissioned. Notwithstanding, the appropriate service provision is required to be demonstrated in the more detailed planning stages.

Tankering will be phased out when the proposed DN375 gravity sewer is constructed through the Caversham cell to the proposed type 180 wastewater pumping station. The route for this sewer is proposed to follow the existing creek line, terminating near the corner of Bennett Street and Benara Road.

The need for specific wastewater infrastructure is continually under review by the Water Corporation. It is currently envisaged that the regional pumping station will provide a wastewater supply to the entire Caversham, West Swan West and West Swan East cells. In order for this infrastructure to be commissioned, a site is required to be provided for within the sub-regional structure plan and an indicative location is shown in figure 6. A pumping station is to be provided for within the large public open space adjacent to the Lord Street activity corridor, with a pressure main connection to the existing Barrambie Way pumping station. This will require pre-funding as the site is remote from existing sewerage infrastructure, with the work required to be completed prior to development of lots within Albion.

Once the regional pump station is operational, expected to be in 2011, development can continue over and above the 500-lot capacity. Further development of the Caversham and West Swan East cells will require the construction of additional sewer mains.

Policy principle 10.3

Wastewater: regional pump station

A regional pumping station is to be provided within the south-west corner of the Caversham cell with a 50-metre odour buffer incorporated on-site. An indicative location has been designated in the Swan Sub -Structure Plan shown on figure 6. Any alternative location for this pump station should be to the satisfaction of the Water Corporation and the City of Swan. It should seek to minimise impacts on surrounding landowners and not be detrimental to the intended design or character of the area.

A pumping station is to be provided for within the large public open space adjacent to the Lord Street activity corridor, with a pressure main connection to the existing Barrambie Way pumping station. This will require pre-funding as the site is remote from existing sewerage infrastructure. The work is required to be completed prior to development of lots within Albion. Following construction of this infrastructure, little constraint exists for development to continue throughout the Albion urban cell. An additional three pumping stations will be required as development continues throughout Albion, coming on-line as demand requires. These pumping stations are planned for where servicing demand is envisaged.



Wastewater pump station along Gnangara Road

Policy principle 10.4***Wastewater: location***

The following principles are considered non-negotiable in respect to defining the ultimate location of pumping stations and surrounding land uses.

- 1 New pumping stations should be located to reduce their visual impact at major intersections and public spaces.
- 2 New pumping stations should be located appropriately to service their ultimate catchment (in consultation with the Water Corporation)
- 3 New pumping stations should be located away from the activity corridor and areas of higher density development.
- 4 Land identified for ultimate wastewater locations should be owned by the proponents of the district structure plan which first identifies their ultimate location. Alternative locations will be considered where it is determined as such by engineering constraints.
- 5 The final location of pumping stations should be determined by negotiation with the City of Swan and the Water Corporation and will ultimately be determined during subsequent planning stages.

Electricity supply and transmission

A large amount of electrical infrastructure exists in the area which can be utilised to provide the initial development front with a connection to the grid. Further upgrades to the network will be required as demand increases. The capacity of the existing high voltage power lines has been assumed to provide sufficient capacity to initiate development. There is capacity to provide a power supply for approximately 200 residential lots from the existing infrastructure within the Albion urban cell without upgrade.

A 132kV transmission line, connecting substations to the network throughout the corridor will be required in a north-south alignment. A preliminary alignment has been proposed along the transit corridor, adjacent to the future Perth-Darwin Highway contingent on further co-location issues being considered in a technical feasibility study and final endorsement by key stakeholders including the Public Transport Authority and Western Power Corporation. Key non-negotiable

design aspects for the 132kV line and substation locations are provided for in section 9. In the absence of proven alternatives, the general alignment should follow local roads and provide appropriate connection between cells. The exact alignment through the urban cells will be subject to change during district structure planning.

Policy principle 10.5***Electricity supply and transmission: 132kV transmission line***

The north-south 132kV transmission line is to be taken into account in the development of the Albion, West Swan East and Caversham urban cells, noting the requirements set out in section 9.

Substation locations

The existing Henley Brook substation at the intersection of Gngangara Road and Lord Street (outside the Swan urban growth corridor) will provide power to the Albion area during the first stages of development. This has released capacity from the existing Beechboro substation, which could be used to provide development opportunities in Caversham and West Swan.

Two new substations are also required to service the ultimate development of the corridor, the location of which is contingent on the 132kV alignment. The exact location of substations can be the subject of change during district and/or local structure planning; however, to ensure the locations are appropriate from a technical perspective and to ensure that the substations do not undermine planning objectives a set of design principles has been established.

Policy principle 10.6***Electricity supply and transmission: required substations***

In order to provide power to the corridor in its fully developed state, two new substations will be required. These are proposed within the West Swan East and Albion cells. Timing of these substations is dependent upon the rate of development throughout the corridor.

Policy principle 10.7***Electricity supply and transmission: substation location***

The following principles are considered non-negotiable in respect to defining their ultimate location and surrounding land uses.

- New substations should be located to reduce their visual impact at major intersections and public spaces.

- New substations should be located central to their ultimate catchment (in consultation with Western Power),
- New substations should be located adjacent to or as close as reasonably practical to existing transmission lines located within the load area. These locations should also be accessible for future transmission lines, if required.
- New substations should be located away from the activity corridor and areas of higher density development.
- Land identified for ultimate substation locations should preferably be owned by the proponents of the district structure plan which first identifies their ultimate location. Alternative locations will only be considered where it is determined as such by engineering constraints.
- Final location of substations, transmission lines and any related infrastructure should be determined by negotiation with the City of Swan and Western Power.

Gas transmission

Existing high-pressure gas supply pipelines in the district consist of the following mains:

- the aforementioned Dampier and Parmelia high pressure gas pipelines; and
- the Marshall Road 350 Steel high-pressure gas pipeline, which traverses the entire West Swan West cell along Marshall Road into West Swan East before heading north and terminating at the northern end of Malvern Street.

A medium-pressure distribution system currently services the land to the south-west of the Reid Highway/Lord Street interchange. Development near this existing infrastructure would minimise the need for head works.

Gas supply to West Swan West is able to be provided from the Marshall Road high pressure gas pipeline; however, a pressure reducing station will be required. This infrastructure would require a capital contribution from the developer. Gas supply to Albion is able to be provided from the high-pressure main from a point close to the junction of Pinaster Parade and Woodlake Boulevard in Ellenbrook.

Policy principle 10.8

Gas transmission

Future upgrades in relation to the provision of a gas service to the corridor will need to be addressed as development progresses.

Telecommunications

A telecommunications service will be made available to the corridor with the nearest Telstra exchanges being Gnangara Road to the north and from the existing infrastructure in Beechboro to the south. Potential exists for the corridor to be supplied with fibre optic infrastructure, which provides for telephone, high speed internet, Foxtel and digital free-to-air services.

11 Social and cultural considerations

The Swan urban growth corridor is located central to the existing urban development within the City of Swan but is immediately surrounded by the rural land of Whiteman Park in the west and the Swan Valley in the east and south. The majority of the catchment has little or no residential development and therefore does not have an existing stock of community facilities capable of servicing the future needs of the Swan urban growth corridor.

There are a number of significant existing facilities within this catchment accessible from the corridor. The majority of these facilities are used to their capacity by existing communities and would be unable to support an additional approximately 26,000 residents. Further, although parts of the proposed urban cells have access to some of these facilities, it would be unrealistic for future residents of the region to travel up to, or greater than 6 km to what should be provided on a local neighbourhood level.

Policy principle 11.1

Social and cultural consideration: minimum provision levels

The urban growth corridor needs new facilities to cater for its future population and the community facility requirements outlined in this report should be considered as minimum or initial levels of provision to meet the needs of the projected population. As the actual community develops, the need for additional facilities may emerge.

Schools

The number of schools proposed must meet Department of Education and Training requirements, although the exact location may alter slightly during more detailed levels of planning. Caversham residents are expected to fall under the catchment of existing high schools south of the urban growth corridor; however,

school boundaries have not been set at this time. The determination of school sites has taken into account proposed catchments and expected residential densities within the urban growth corridor.

Policy principle 11.2

Social and cultural consideration: number of schools

One public and one private primary school currently exist within the Swan urban growth corridor, and the sub-regional plan proposes to retain these facilities and develop the following additional educational facilities:

- 3 public primary schools within Albion;
- 1 public primary school within West Swan West;
- 1 public primary school within West Swan East;
- 1 public primary school within Caversham;
- 1 private primary School (West Swan East);
- 1 public High School (Albion); and
- 1 education support school within Albion, co-located with the high school and primary school.

Location of school sites

The position on education facilities in the Swan Urban Growth Corridor Sub-Regional Structure Plan has been developed following consultations with the Department of Education and Training. An important aspect to be considered relates to the location of co-located public open spaces so they can achieve their intended active/passive functions. A primary consideration is the need to demonstrate that an unconstrained site of at least 2.6 ha can be provided for playing field and open space purposes. The site will need to be of appropriate form to support the intended function (ie playing fields), although not all sites

are supported by way of co-location. The general locations of the primary schools presented within the sub-regional structure plan are acceptable, while the north-western and north-eastern primary school locations may require refinement to accommodate stronger linkages to other open space opportunities.

Policy principle 11.3

Social and cultural consideration: high school

The high school site is to be co-located with a primary school and education support facilities and will have a catchment which extends to cover Albion and West Swan.

A number of the education facilities will share open space with the City of Swan. However, the extent to which open space is shared, and the suitability of school locations for open space, are subject to detailed analysis during the district and local structure planning phase of development. In this regard, school locations and active open space areas may be modified to reflect requirements of the urban cell, the City of Swan and Department of Education and Training. The co-location of primary schools with public open space can facilitate the achievement of improved access between the active and passive open space areas.



The Ellenbrook Secondary College administration building

Policy principle 11.4

Social and cultural consideration: primary schools

Primary schools should be co-located with public open space where possible so as to provide good linkage between the active and passive open space areas.

Open space

The public open space within the urban growth corridor is intended to respond to conservation requirements (bushland, creek systems and other wetlands), drainage requirements (as directed by the drainage and water management plan), passive and active public open space requirements (that may be associated with the proposed schools as agreed with the Department of Education and Training). These public open space categories make up the core provision of open space in the corridor with neighbourhood parks making up the balance.

It is not appropriate to designate local open space within the sub-regional structure plan, with this being resolved at the local structure planning phase. The location of district open space adjacent to a wetland or proposed conservation site provides benefits such as acting as an effective buffer to the wetlands and enabling the development of district sporting infrastructure to be less constrained by proximity to residential land use.

There is a scarcity of groundwater in the sub-region and therefore the availability of groundwater resources (or alternative resources) for support of active recreational open space should be identified as early as possible within the planning process.

Sub regional level

To plan for a distribution of open space that meets the needs of the City of Swan community, a public open space hierarchy has been developed that classifies sites by their intended purpose and size as follows:

- Regional open spaces are large-scale areas and are the focal points for active sport, are capable of intense, frequent use by large numbers of people and will absorb the majority of adult sport.
- District open spaces cater mainly for junior sport competition and senior training. Generally these sites will be co-located with other community facilities such as schools or shopping precincts.

Policy principle 11.5
Open space: diversity

The location and distribution of regional and district open space must include a combination of bushland, open parkland, activity spaces for casual play and developed spaces which allow for regular sporting events, festivals or carnivals and should conform to the characteristics that relate to the criteria listed in table 1.

Policy principle 11.6
Open space: district open space characteristics

The selection of district open space should be guided by the characteristics listed in table 2. A site that meets these requirements has been designated on the Swan Urban Growth Corridor Sub-Regional Structure Plan (figure 6).

Criteria	Regional	District
Size	18-30 ha	5-15 ha
Catchments	12 km radius	6 km radius
Purpose	Major adult sport competitions and active recreational pursuits	Junior sporting competitions and senior training
	State level competitions and major sporting events	Non-sporting recreational activities
Location	Major access roads and sporting events	Major roads, close to other community facilities
Residential Impact	Located away from residences to minimise noise, traffic and light impact	Located within neighbourhoods
Accessibility	Public transport and private vehicles	Pedestrian, bicycle and private car

Table 1: Criteria and Characteristics of Regional and District Open Space

1	The site needs to be of uniform shape, with preference given to square or rectangular and 200m wide.
2	The site needs access to a water supply suitable for the irrigation of up to 10 ha of turf and developed landscape.
3	Fill may be required on this site to ensure appropriate levels.
4	Drainage will be permitted on to the site; however, it will need to be designed so as not to impact on proposed developments. Therefore, it is assumed it will not affect the playing surfaces in any year of normal rainfall and would only be affected if a 40-year or greater event occurs.
5	The site should be free of the following constraints (except where specifically permitted by the relevant authority): <ul style="list-style-type: none"> a easements and buffers (pipeline, power line, incompatible land use) b wetland/ water courses c significant historical sites – either Indigenous or European, which will prevent the development of the site as previously indicated d any transport or other feature that intersects the site or detracts for development potential e soil contamination.

Table 2: Characteristics to Guide Development of District Open Space

Site selection

The site identified for the district open space within the sub-regional structure plan is the result of detailed analysis and consideration and is considered to be the most appropriate location for district facilities for the following reasons:

- Accessibility – the site is located in close proximity to Arthur Street which is a proposed public transport route and connects to the Caversham area south of Reid Highway with the future provision of a road bridge.
- Location – the site is located in West Swan East due to its central location relative to the remainder of the growth corridor. Being adjacent to the Bush Forever site enhances the unstructured passive recreation potential of the site.
- Resident impact – being located on major traffic routes and adjacent to a large bushland reserve ensures that buffers can be established to neighbouring residences.
- Environmental – the site allows for the retention of wetlands and necessary buffers.

The approach adopted has been to assess the urban growth corridor independent of existing ownership to identify the most appropriate spatial location and distribution of facilities. A wide range of alternative sites were evaluated in the course of this investigation against the criteria and characteristics detailed in tables 1 and 2.

In respect of those affected land owners aggrieved by the location selected, the issue needs to be approached in line with the state government policy. Moreover, the draft State Planning Policy for Development Contributions has been reviewed by the City of Swan. The city has provided assurance that land owners will be fairly compensated for the land holdings regardless of the proposed future usage. The selected district open space site is a key aspect of open space provision within the urban growth corridor and should not be compromised in location, size or function.

District level

District playing field

An area of district playing field for recreation is required within the sub-regional plan. The proposed location should be central to the corridor to be accessible to the community within

the Swan urban growth corridor. As such, the district open space should be near to the activity corridor and proposed public transport routes.

Policy principle 11.7

Open space: district playing field

A 15 ha district playing field is to be located south of the Bush Forever site between Arthur and Blundell Streets. It will take advantage of access to public transport and the activity corridor. Location requirements for the district open space are identified above.

District sporting pavilion

Given the likely future need for youth facilities, it will be beneficial to construct a district sporting pavilion facility as a joint pavilion and multi-purpose youth centre of district significance at the district playing fields. Such a facility will take advantage of good accessibility and provide cost efficiencies due to co-location of services.

Policy principle 11.8

Open space: district sporting pavilion

A district sporting pavilion and youth facility is to be appropriately located and constructed within the district open space area.

Community facilities

The following provision of community facilities is proposed for the Swan urban growth corridor. This proposal has been derived from the City of Swan's standards for community infrastructure provision and takes into account the city's community facilities analysis.

District community centre

The 1993 City of Swan policy prescribes the provision of one district level community centre for every 20,000 people. Although it is anticipated that population will exceed this number, there is a similar district facility proposed in Ellenbrook that will attract some of the catchment. Therefore, only one facility of this nature is considered necessary.

Policy principle 11.9

Open space: district community centre

One district community centre will be provided. It is intended to be a large, multi-purpose facility which will provide opportunity for a variety of community activities. A site of at least 5,000 square metres is required and should be located within or adjacent to the large neighbourhood

centre at Albion. This centre may also act as a neighbourhood community centre within Albion.

Neighbourhood level

Neighbourhood community centres

Standards prescribe one facility per 4,000 people. By developing larger multi-purpose facilities, catchments can be increased. Sites of 3,000 to 4,000 square metres are required and it is proposed that these be located within or adjacent to the North East Albion local centre, West Swan (East) neighbourhood centre, and the Caversham neighbourhood centre.

Policy principle 11.10

Open space: neighbourhood community centre

Three neighbourhood community centres to be located within or adjacent to the North East Albion local centre, West Swan (East) neighbourhood centre, and the Caversham neighbourhood centre are to be provided for within the Swan urban growth corridor to the above standards.

Public open space/playing field pavilions

Open space which is identified for active use will require a pavilion which incorporates change room and toilet facilities as a minimum standard. The amount of pavilions provided for within the urban growth corridor will be further determined at the time of finalising the development contributions plan. However, it is considered at least three will be required as a minimum. Notionally these areas should be centrally located within their service catchments.

Policy principle 11.11

Open space: playing field pavilions

At least three playing field pavilions are to be developed to the required standards, at each area of open space identified for active recreation use throughout the Swan urban growth corridor.

Aboriginal and European heritage

Retention and assessment

Various sites throughout the sub-regional structure plan area are identified as having heritage value, either by the Department for Indigenous Affairs, Heritage Council of Western Australia or by the City of Swan. Known Indigenous sites are to be retained and protected within areas of open space or other appropriate areas as approved by the WAPC and City of Swan. Full consultation of the Aboriginal community will be required at the time of district and local structure planning, except in respect to lands where pursuant to the *Aboriginal Heritage Act 1972*, section 18 clearance has been obtained. Suitably qualified consultants will be required to conduct ethnographic and archaeological surveys of the development area in accordance with the provisions of the *Aboriginal Heritage Act 1972*. Assessment of sites of European heritage is to similarly occur at this time to determine the appropriateness of conservation, adaptation or demolition.



The community resource centre in Ellenbrook exemplifies multi-purpose facilities by accommodating the library and performing arts centre

Policy principle 11.12

Open space: heritage protection

Developers of each urban cell are to consult with the relevant government bodies responsible for heritage protection during the preparation of district and local structure plans. Areas needing protection are to be identified on each plan as required by the relevant government body. Where heritage sites are identified to be located within areas of public open space, this shall be to the satisfaction of the DPI, City of Swan, Department of Indigenous Affairs (DIA) and the Heritage Council of Western Australia. Appropriate management and maintenance plans for the heritage sites are to be prepared at the applicant's cost for implementation as determined by the DPI, City of Swan, DIA and Heritage Council of Western Australia.

12 Implementation

As with any plan of this nature, successful implementation requires the cooperation and involvement of government, local government, the private sector and the community. The sub-regional structure plan is not a statutory or zoning plan. It does not change the existing uses permitted on a site, or allow for new uses. This can only occur after amendments to the relevant statutory planning schemes. Local Planning Scheme No. 17 and proposed amendments to the MRS will generally provide for the necessary zoning to implement the sub-regional structure plan and allow assessment of more detailed local structure plans. Some amendments will be required; however, to rezone rural land to an appropriate zone within Local Planning Scheme No. 17 and the MRS.

District and local structure plans are an essential element in the development process of the Swan urban growth corridor. They will provide for more detailed analysis and land use planning over the areas of Albion, West Swan and Caversham. The sub-regional structure plan allows for a coordinated approach across these urban cells of regional planning issues, which the district and local structure plans should adopt where necessary. The diagram on the following page demonstrates how the Swan Urban Growth Corridor Sub-Regional Structure Plan will guide the preparation of proceeding planning instruments and provide a broad direction for sub-regional issues within more localised areas.

The sub-regional structure plan does not have a definite time scale for completion; however, it is intended to remain valid for a period of 30 years. The actual timing depends to some degree on development pressures and demand locally and regionally, landowners' intentions and the priorities of servicing agencies. To implement the plan, it will be necessary to ensure that new urban land is released in a logical sequence from a servicing point of view and that an adequate supply of land is continuously available.

Development contributions plan

A comprehensive development contributions plan/s is/are to be prepared in order to ensure the adequate provision of services (community facilities and key infrastructure) to cater for the expected population growth within the region. A final comprehensive developer plan will be implemented prior to the wider development of the corridor. The City of Swan will lead preparation of development contributions plan/s for the urban growth corridor.

Note: the provision of utilities shall be the subject of separate agreements with individual utility providers.

Policy principle 12.1

Implementation: funding

Developments within the Swan urban growth corridor will fund the provision and maintenance of sub-regional scale community facilities and infrastructure as identified by this plan.

Policy principle 12.2

Implementation: applicable contributions

Sub-regional scale contribution items shall include but will not be limited to:

- 1 provision of adequate land for, and construction of, any drainage and water management infrastructure determined necessary by the Department of Water's drainage and water management plan;
- 2 provision of adequate land for and construction of significant transport infrastructure items, including:
 - a Henley Brook Avenue from Park Street to Reid Highway
 - b Youle Dean Road from Perth Darwin Highway to Henley Brook Avenue

- c staged realignments to Lord Street prior to the construction of the Perth Darwin Highway
 - d Lord Street from Reid Highway to Benara Road
 - e fly-over of Arthur Street with Reid Highway
 - f fly-over of Marshall Road with Perth Darwin Highway
- 3 provision of adequate land for and construction of district open space and associated infrastructure;
 - 4 provision of adequate land for and construction of a district community centre and associated infrastructure; and
 - 5 ongoing costs associated with preparation and maintenance of the sub-regional contributions scheme, including associated studies or design.

Policy principle 12.3

Implementation: development contributions plan

A development contributions plan is required to be prepared and adopted for each urban cell as defined by the City of Swan Local Planning Scheme No. 17. Each plan is to incorporate contributions toward sub-regional scale contribution items, servicing infrastructure and other local and district scale items in consultation with the City of Swan, relevant government agencies and service providers. All contributions shall be determined on an equitable basis.

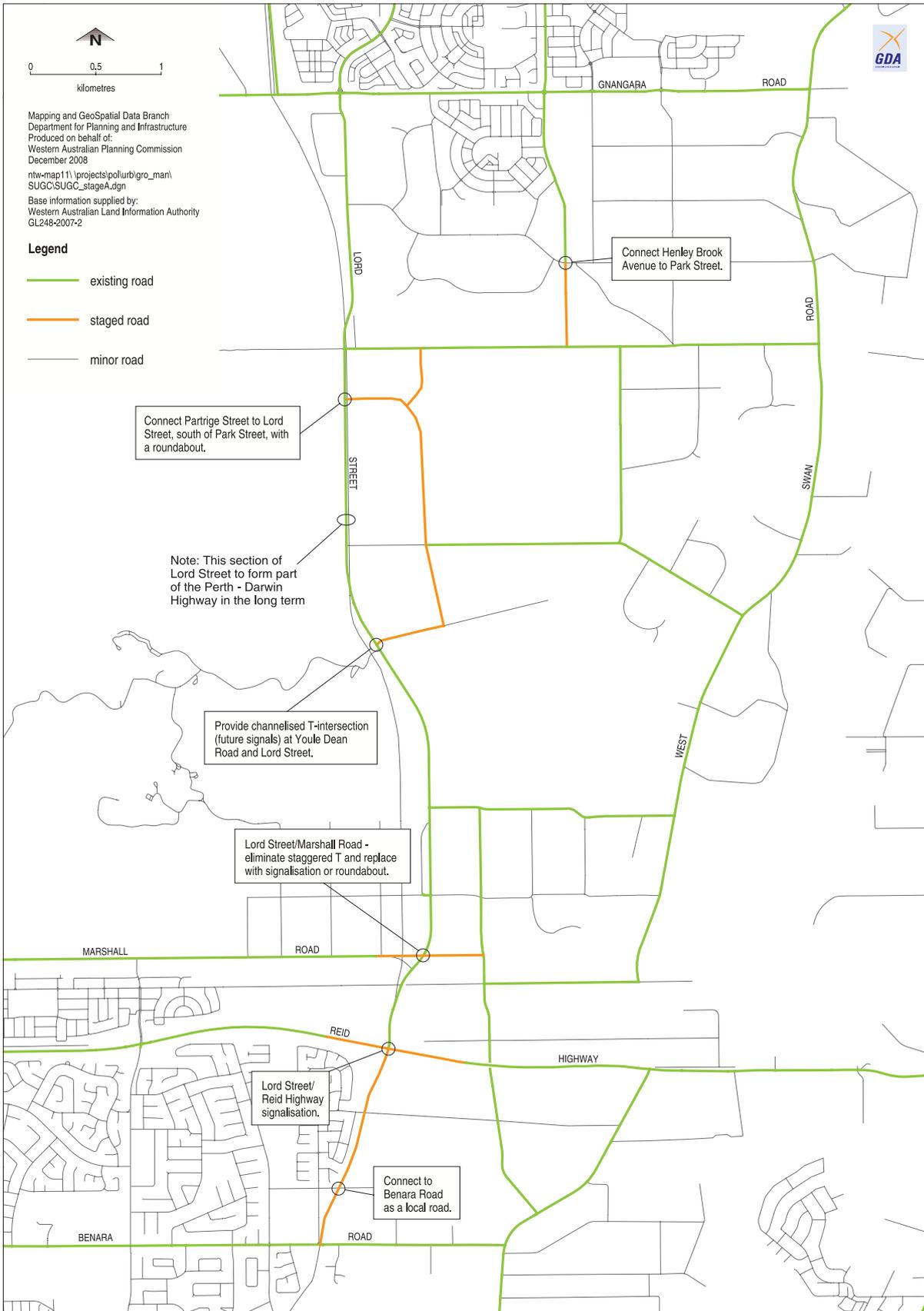


13 References and appendices

References

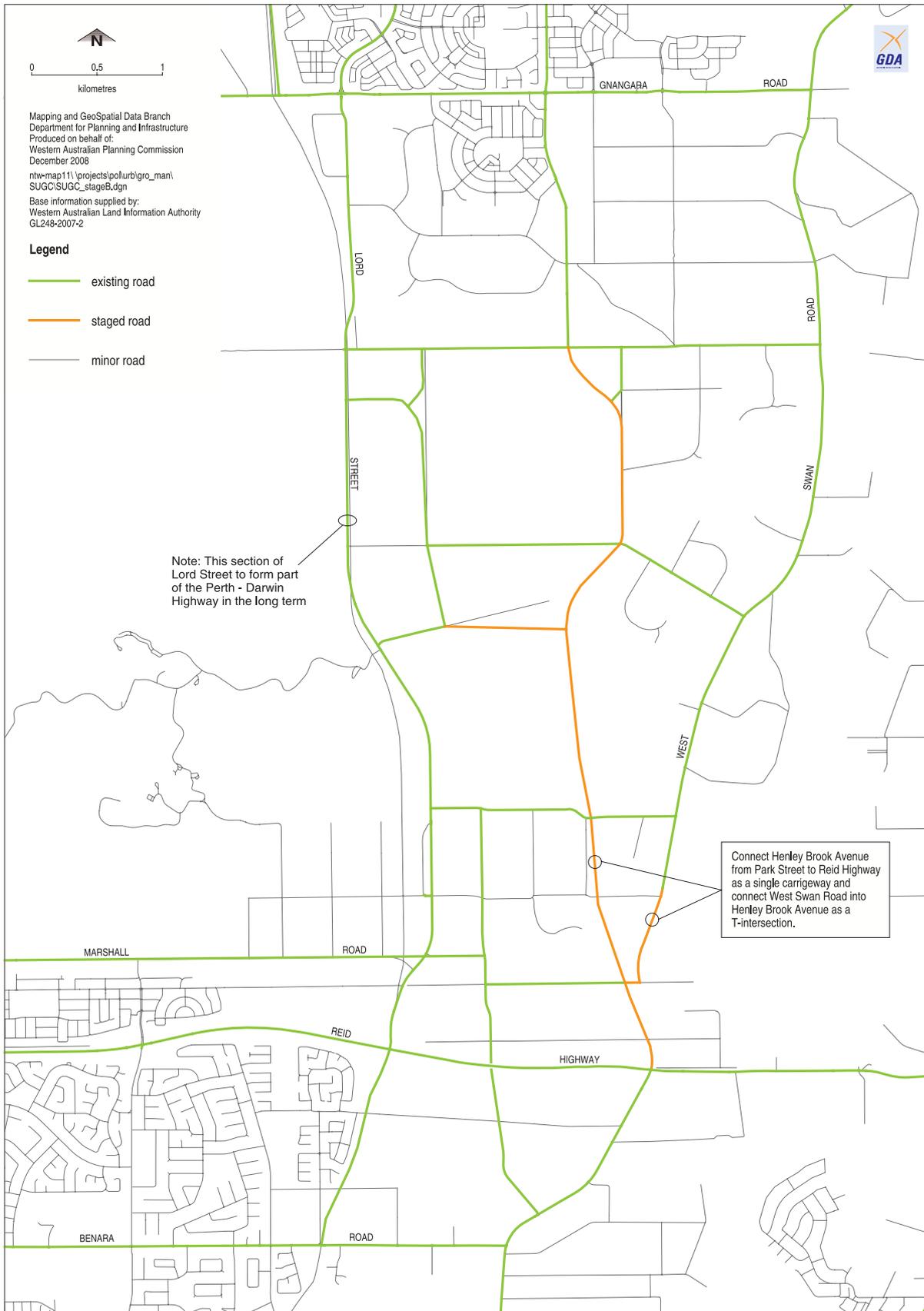
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Appendix A: Potential road staging plans



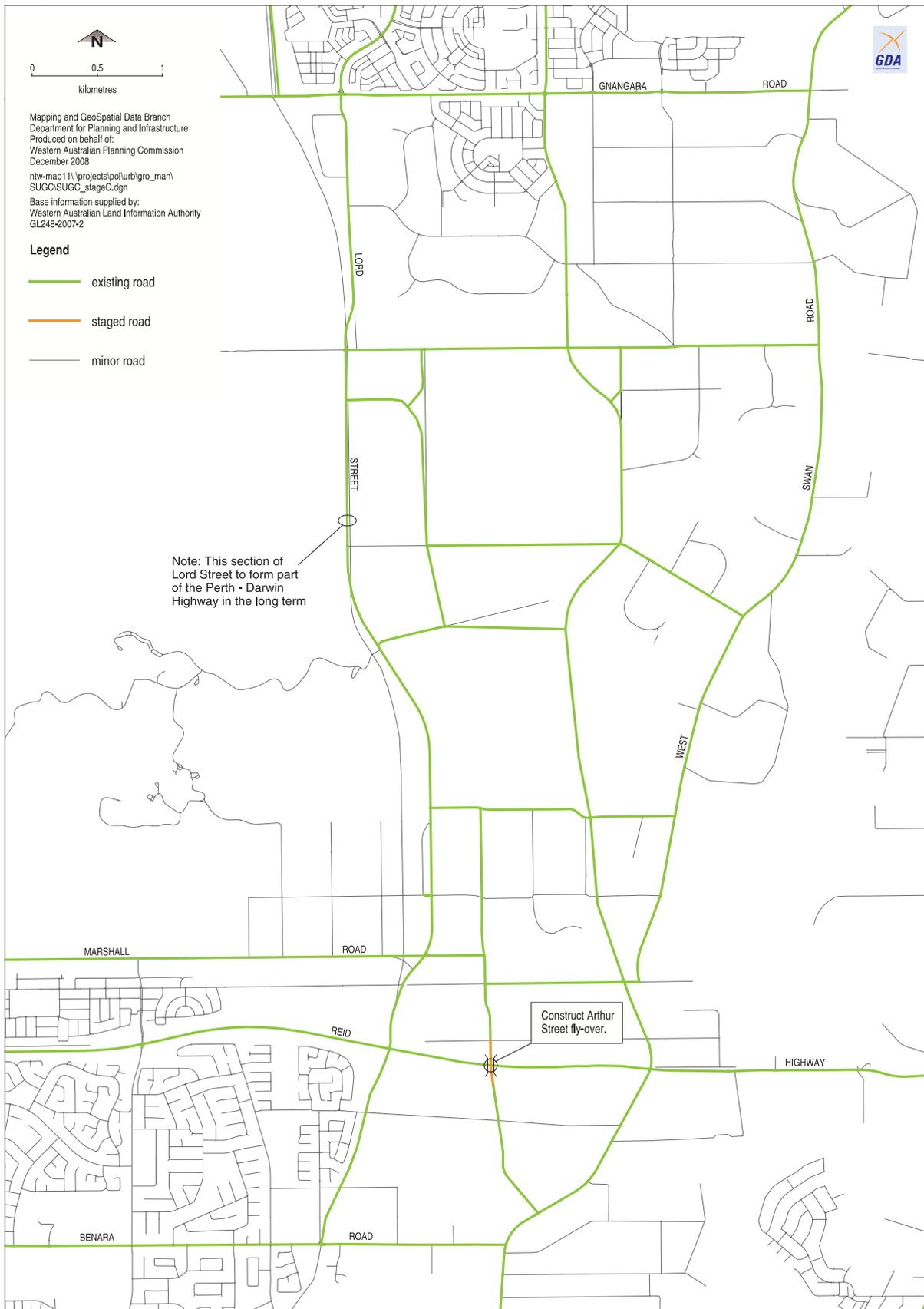
Stage A

Appendix A: Potential road staging plans



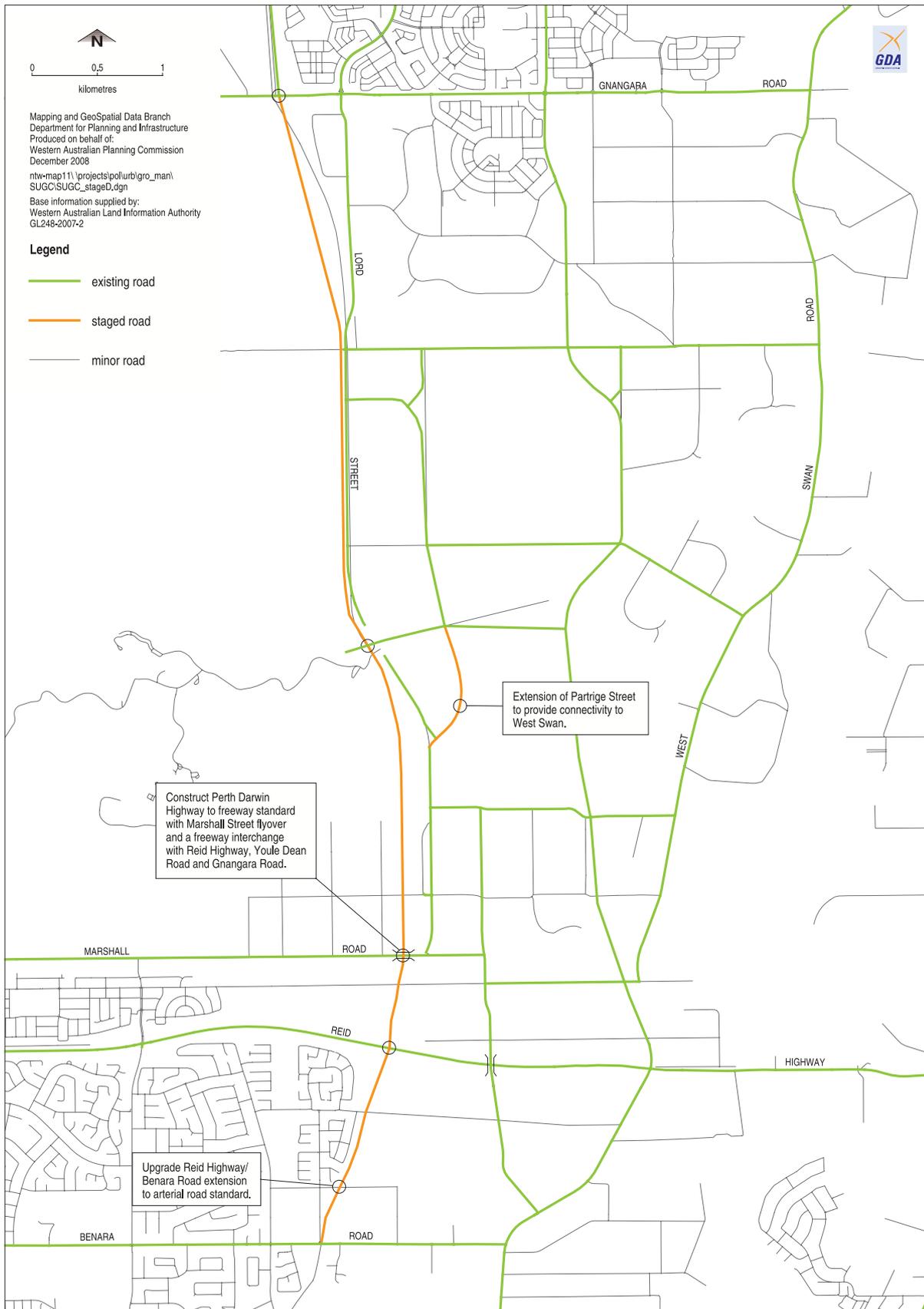
Stage B

Appendix A: Potential road staging plans



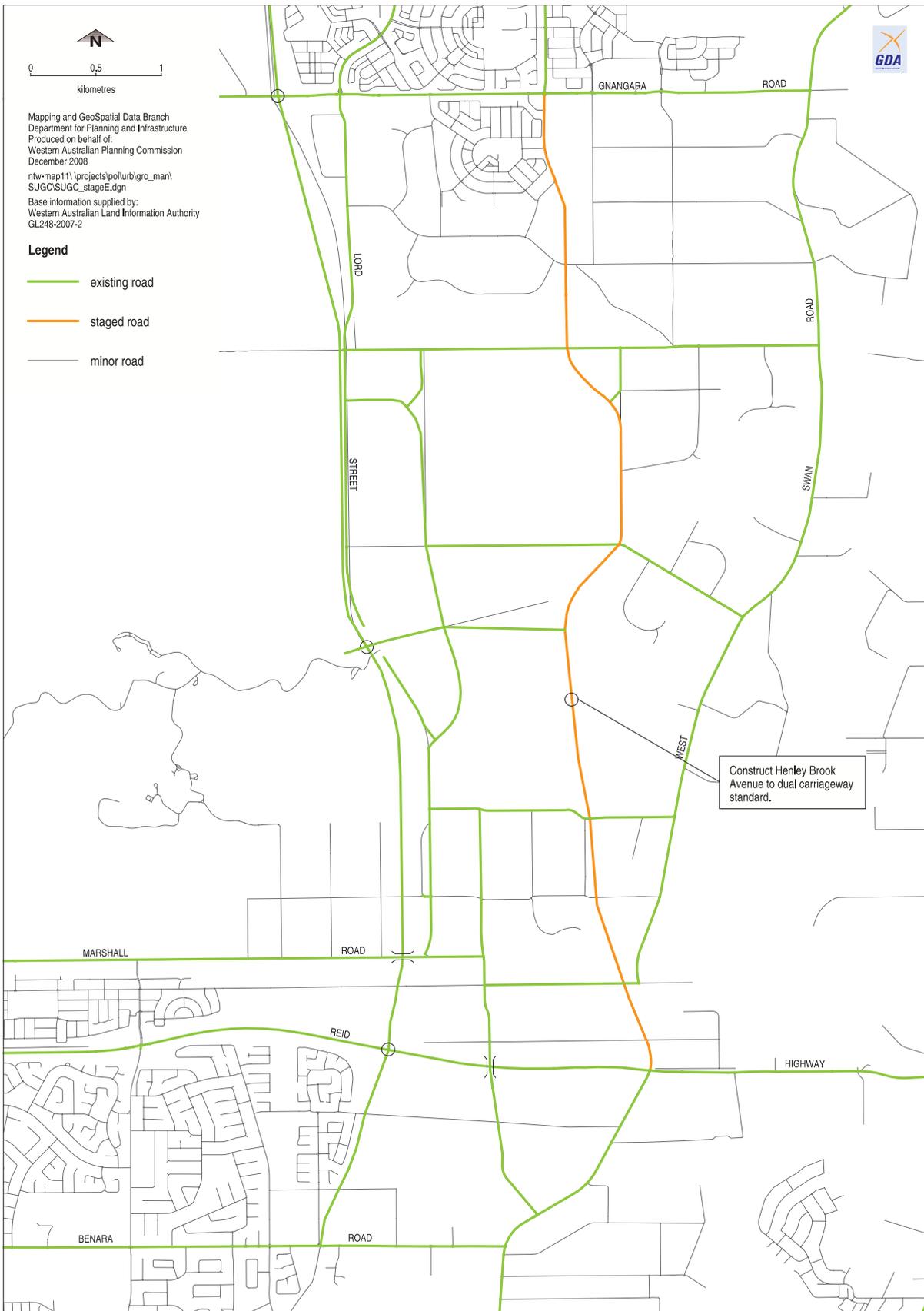
Stage C

Appendix A: Potential road staging plans



Stage D

Appendix A: Potential road staging plans



Stage E

Appendix B: Staging fronts

