



PART TWO –
EXPLANATORY SECTION

SPIRES ESTATE
LOCAL STRUCTURE PLAN



SPATIAL
Property Group™

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PART TWO – EXPLANATORY SECTION

1 INTRODUCTION

1.1 Purpose

The purpose of this Structure Plan is to provide a statutory framework to guide future subdivision and development of Lots 312 and 313 Fifty Road, Lots 2, 4, 7, 8 Eighty Road & Lot 5 Baldivis Road, Baldivis generally for residential purposes. The Structure Plan identifies the pattern of development by depicting specific matters such as the location of roads, residential densities, public reserves, commercial land and pedestrian/cycle networks.

The Structure Plan represents a design and land use response to the principles and objectives of State and Local Government policy and guidance, including Directions 2031, Liveable Neighbourhoods and Baldivis (North) District Structure Plan.

The information contained in this section provides justification and support for the comprehensive and co-ordinated design response provided for the Structure Plan.

1.2 Background

The Structure Plan area has been recognised through both strategic and statutory planning, as part of a substantial residential cell within Perth's metropolitan south-west corridor. Forming part of the Baldivis North District Structure Plan, the Structure Plan represents an extension of the existing and proposed urban areas surrounding the site. The area surrounding the site has recently been the subject of various Structure Plan and subdivision approvals, with development of residential landholdings north and south of the site currently underway. Land east of the Structure Plan area is currently the subject of a conditional approval under the East Baldivis District Structure Plan and advancement of various Local Structure Plans.

1.3 Land Description

1.3.1 *Location*

The Structure Plan area is located ~40 kilometres south of the Perth Central Business District, ~6 kilometres east of the Rockingham City Centre and ~2 kilometres north of Baldivis District Centre (**Plan 2** refers). The Structure Plan is bisected by the future Nairn Drive reservation.

The Structure Plan area abuts Fifty and Eighty Roads to the north, Baldivis Road to the east, Ingram Road and existing development to the south, and a Parks and Recreation Reserve to the south and west. It is located opposite Baldivis North Estate to the north, and abuts the existing Spires Estate to the southeast.

1.3.2 *Ownership, Area and Legal Description*

The Structure Plan area comprises seven (7) landholdings totalling approximately 54.57 Ha in area.

The relevant Certificates of Title are attached in **Appendix 8**.

Table 1: Title Details and Land Ownership

| Lot Number | Owner | Certificate of Title | Area (Ha) |
|-------------------|-------------------------------|----------------------|--------------|
| 312 | Piperpoint Pty Ltd | 38/2A | 18.63 |
| 313 | Mainday Holdings Pty Ltd | 1955/395 | 14.97 |
| 2 | Arrowest Pty Ltd | 1282/475 | 4.05 |
| 4 | Arrowest Pty Ltd | 1324/476 | 5.76 |
| 5 | Finepoint Investments Pty Ltd | 1388/918 | 3.41 |
| 8 | Arrowest Pty Ltd | 1411/708 | 3.43 |
| 7 | Arrowest Pty Ltd | 2201/100 | 4.32 |
| Total Area | | | 54.57 |

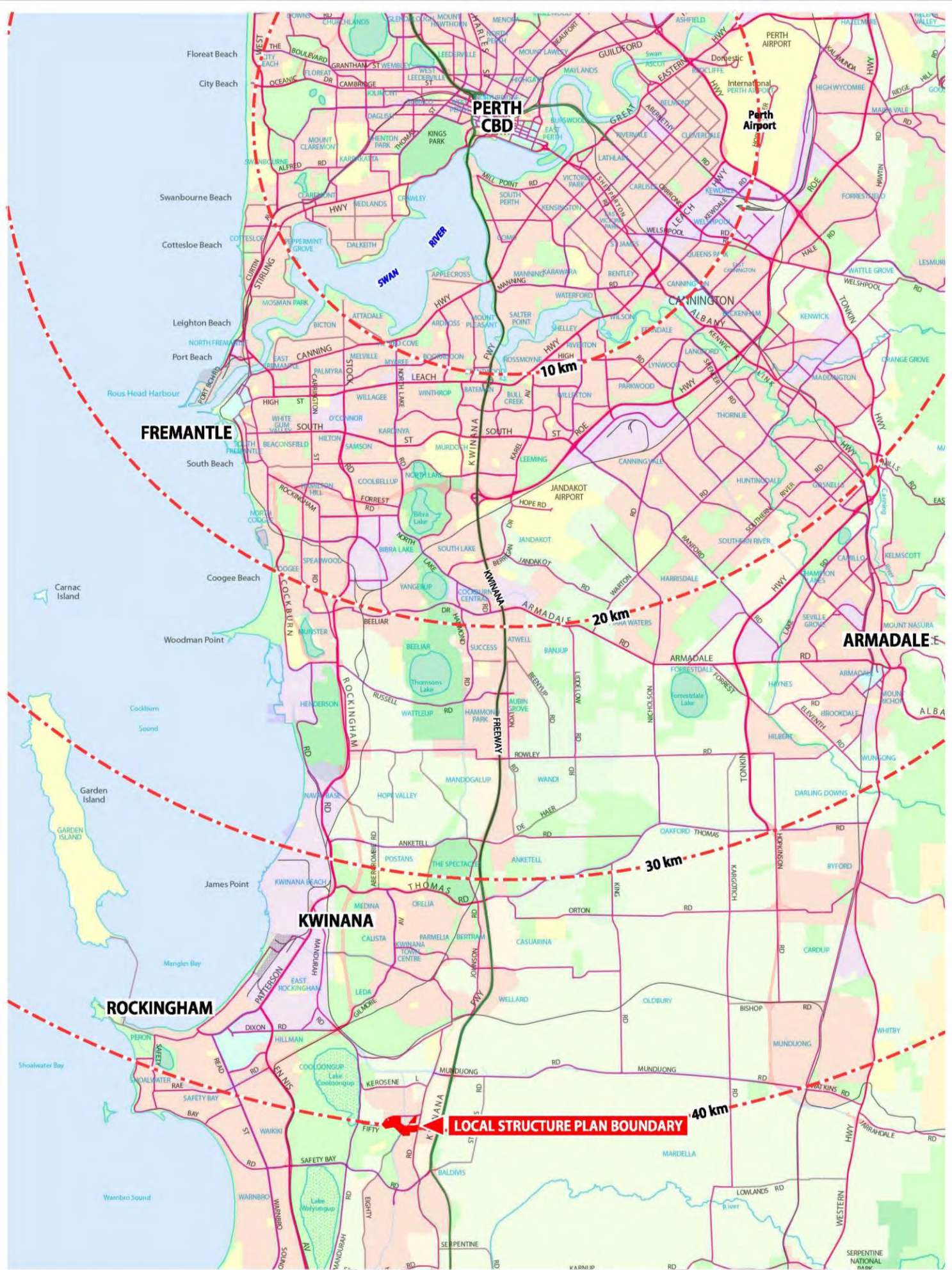
1.3.3 *Land Use*

The Structure Plan area is largely parkland cleared, with pockets of remnant vegetation remaining in some areas. There are two land uses in addition to vacant landholdings that are still currently active, these include:

- ❖ Lot 313 Fifty Road– market garden; and
- ❖ Lots 4, 7 and 8 Eighty Road– rural residential lifestyle properties.

Lot 3 Baldivis Road abuts the Structure Plan area, and currently operates as a Poultry Farm. Poultry farms have buffers associated with them due to the potential impacts on the surrounding land. Section 2.2.2 of this report outlines the State Government policy requirements relating to poultry farms and their buffers, with a Structure Plan response contained in Section 3.7. The poultry farm can continue until such time that the land owner decides to cease operation; thus in the interim, the land within the buffer will be subject to residential development restrictions. The Structure Plan nominates land uses that will be developed once the poultry farm ceases. Accordingly, development of the Structure Plan area will proceed on a staged basis.

Markets gardens located on land zoned 'Urban' under the MRS have no prescribed buffers, however the WAPC requires a number of actions to be implemented at the subdivision stage to manage the impacts of the market garden on residential land. The policy requirements are detailed in Section 2.2.3 of this report, and Section 3.7 contains the Structure Plan response.



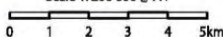
PLAN 2 - Location Plan

Various Lots Fifty and Eighty Road, BALDIVIS

for: Spatial Property Group



Scale 1: 200 000 @ A4



| | |
|---|--------------------|
| COMPILED: DPS | DRAWN BY: JNP |
| DATE: 22/11/2012 | REVISED: |
| GRID: MGA 50 | DATUM: AHD |
| DRAWING NUMBER: CARBD-5-007 | JOB CODE: CARBDLSP |
| FILE ID: M:\CARBD\Bases\Report Diagrams\CARBD-5-007.dgn | |



28 Brown St, East Perth WA 6004
 PO BOX 6697 EAST PERTH 6892
 T (08) 9268 7900
 F (08) 9268 7999
 E dps@dpswa.com.au



PLAN 3 - Site Plan and Orthophoto
 Various Lots Fifty and Eighty Road, BALDIVIS
 for: Spatial Property Group

NOTES:

- LOCAL STRUCTURE PLAN BOUNDARY
- AREAS AND DIMENSIONS SUBJECT TO SURVEY
- CARRIAGEWAYS ARE DIAGRAMMATIC ONLY
- BASE DATA SUPPLIED BY LANDGATE / DEPT OF PLANNING

Scale: 1:4000 @ A3
 0 25 50 75 100 125 150 metres

Legend: LOCAL STRUCTURE PLAN BOUNDARY

Metadata:

| | | |
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| COMPILED: DIS, NEARMAP | DRAWN BY: | JM/IR |
| DATE: 14/07/2014 | REVISED: | AHD |
| GRID: MGA 50 | DATUM: | CARBD/CP |
| DRAWING NUMBER: CARBD-5-008 | JOB CODE: | |
| FILE ID: M:\CARBD\Base\Report Diagrams\CARBD-5-008.dgn | | |

North Arrow: NORTH

Client: Spatial Property Group

Address: 28 Brown St, East Perth WA 6004
 PO BOX 6697 EAST PERTH 6892

Contact: T (08) 9268 7900
 F (08) 9268 7999
 E dps@spgwa.com.au

Logo: dps Development Planning Strategies

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2 STATUTORY, STRATEGIC AND POLICY CONSIDERATIONS

2.1 Zoning and Reservations

2.1.1 *Metropolitan Region Scheme*

Under the provisions of the Metropolitan Region Scheme the Structure Plan area is currently zoned 'Urban' (Figure 1 refers).

2.1.2 *City of Rockingham Town Planning Scheme No.2*

Lots 312 and 313 Fifty Road, Lots 2, 4, 7, 8 Eighty Road and Lot 5 Baldivis Road are zoned 'Development' under the provisions of the City of Rockingham Town Planning Scheme No.2 (TPS2) (Figure 2 refers).

Land zoned 'Development' under TPS2 is required an approved Structure Plan before the Council can recommend subdivision or approve the development of land within that development area.

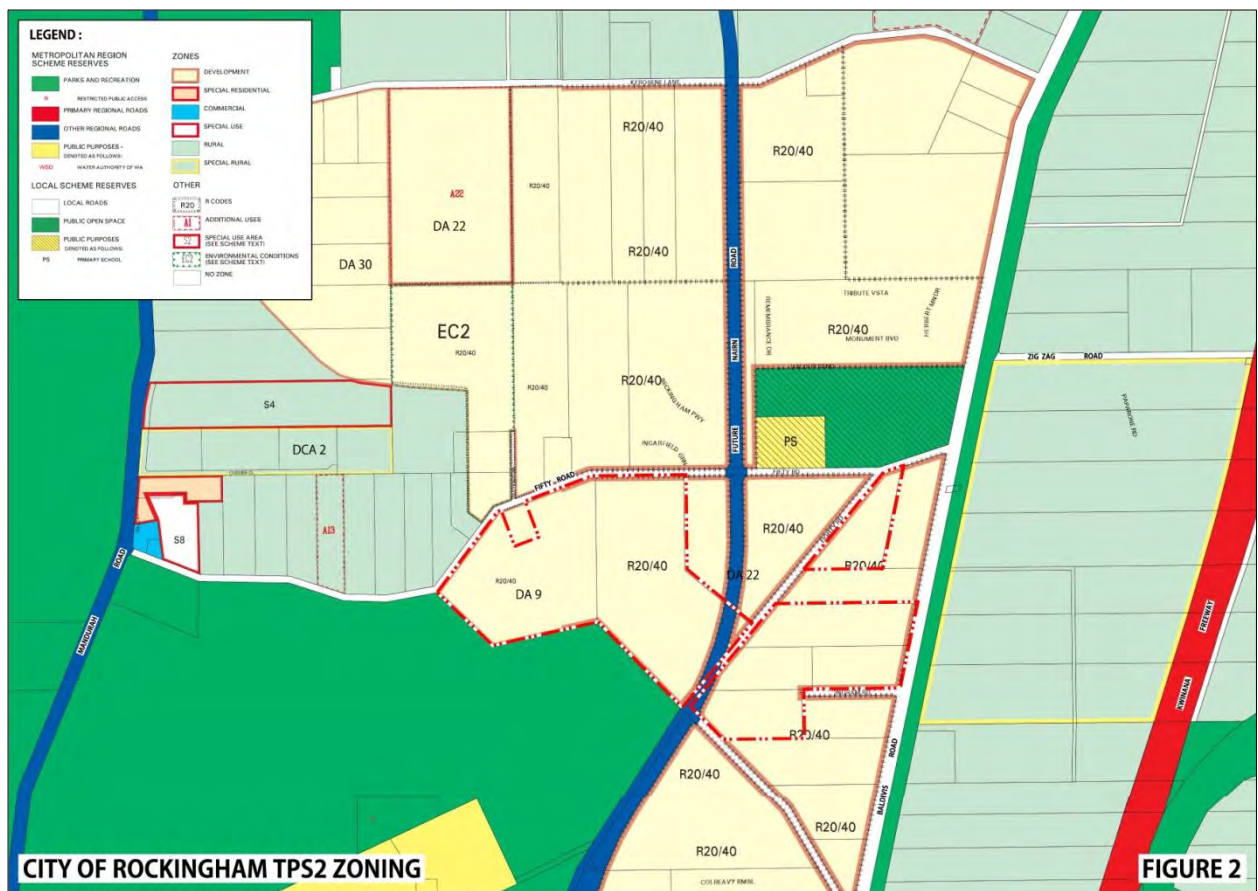
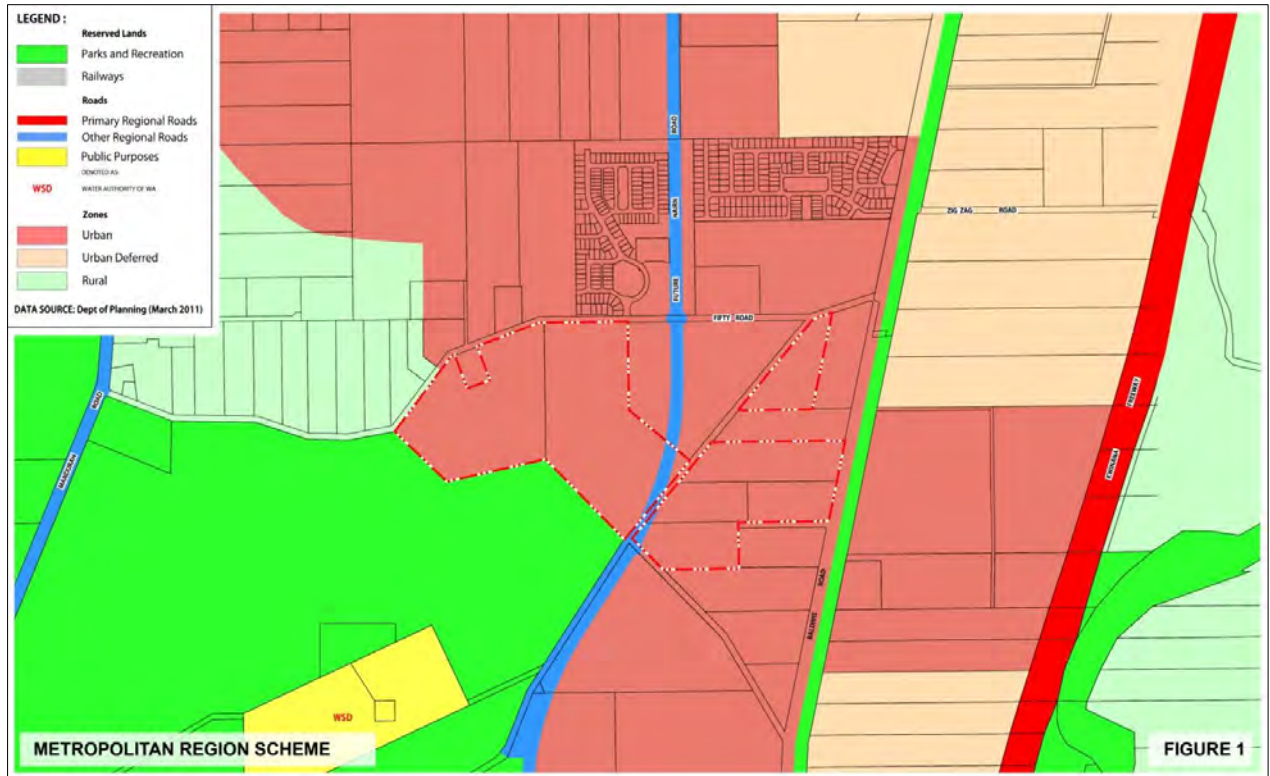
This Structure Plan area is contained within Development Areas No. 9 and 22 which is shown on the Scheme Map and contained within Schedule No. 9.

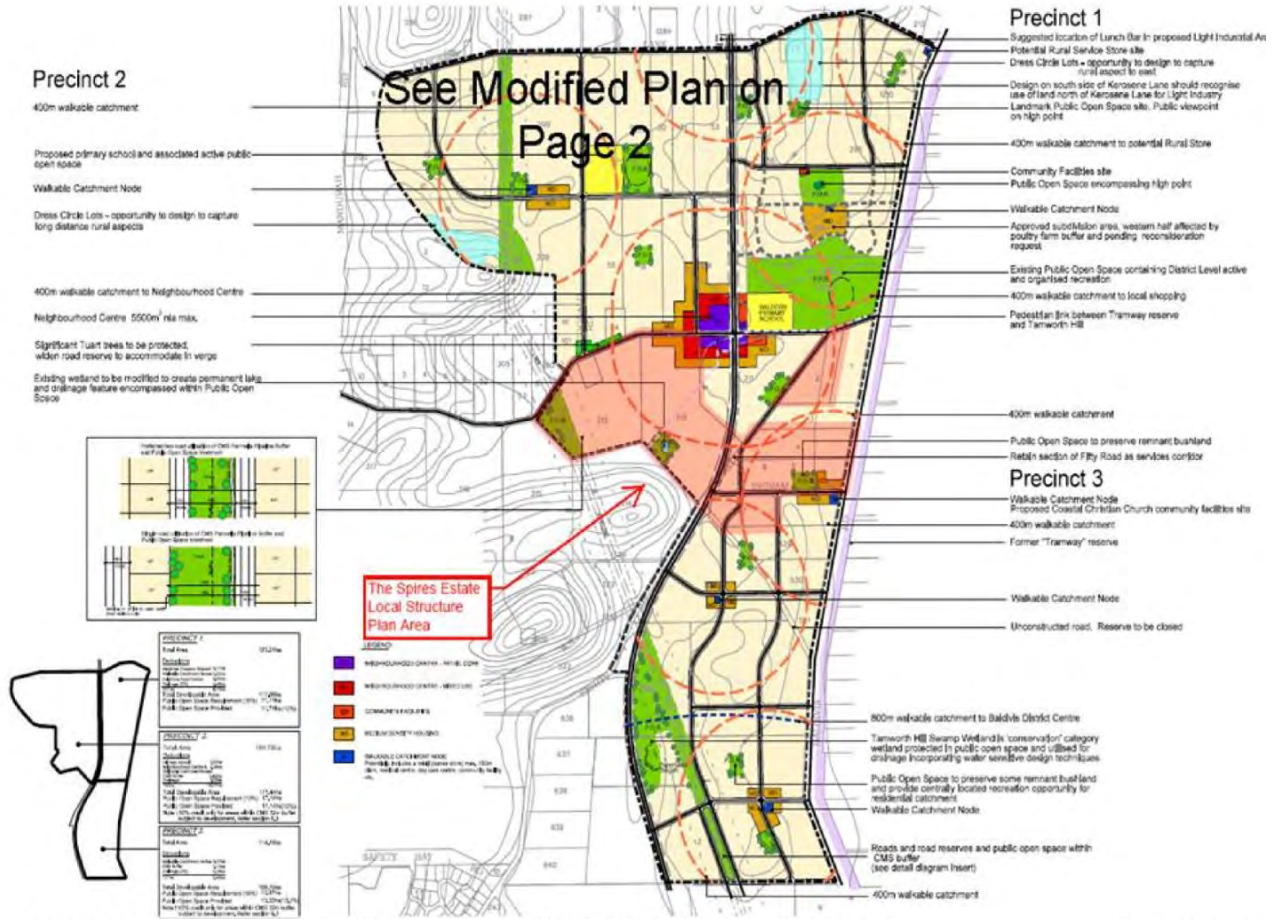
2.1.3 *Baldivis (North) District Structure Plan*

Endorsed by the Western Australian Planning Commission on 18th August 2000, the City of Rockingham's Baldivis (North) District Structure Plan (DSP) guides the preparation of Local Structure Plans by broadly defining preferred land uses and the district road network for the North Baldivis urban cell (Figure 3 refers). Figure 4 refers to Modification 1 adopted by the City on 26th September 2006.

The DSP establishes a development framework for the location of major land uses, public transport, road layout, schools, open space and major infrastructure with respect to the physical and contextual opportunities for the site and community aspirations.

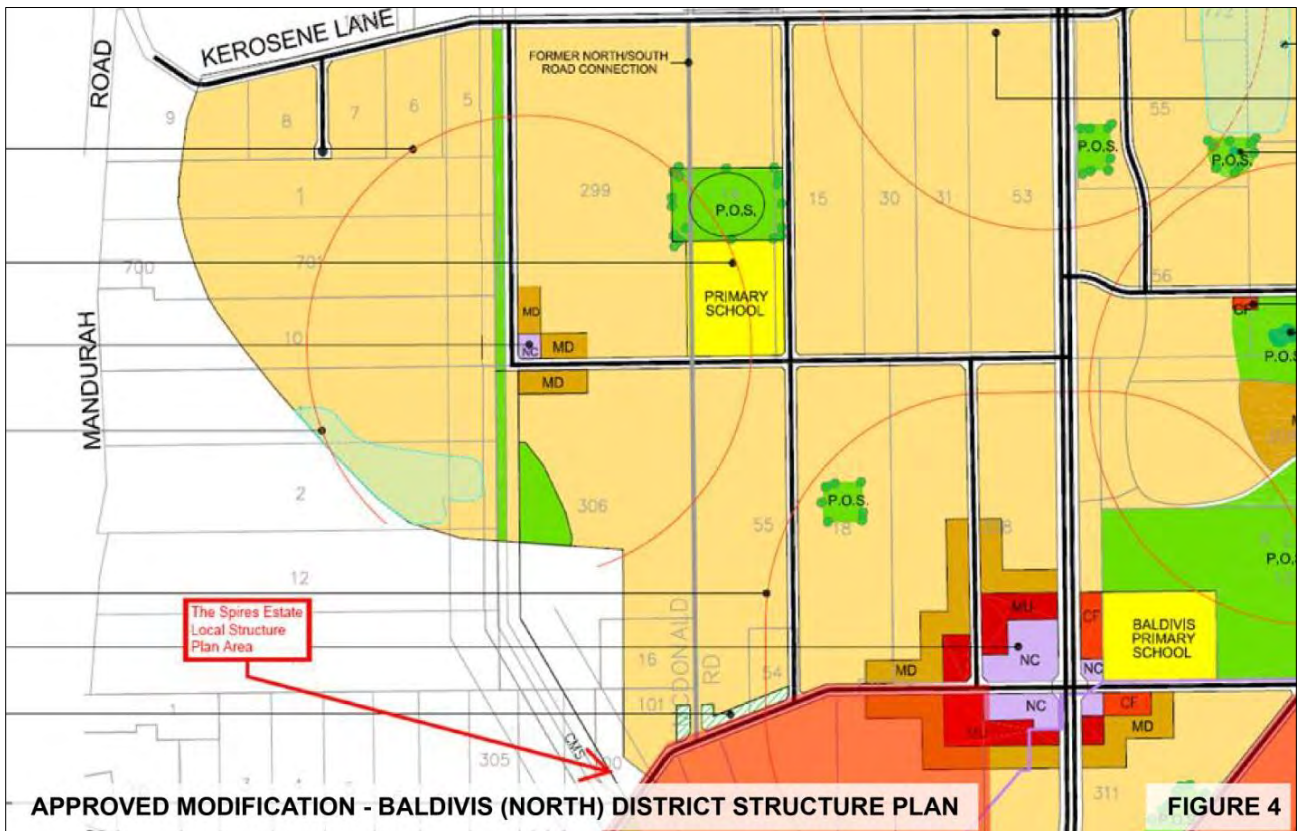
The DSP separates North Baldivis into three precincts, with the Structure Plan area located both in 'Precinct 1' and 'Precinct 2'. In accordance with the objectives of the DSP, this Structure Plan provides a greater level of detail in respect to the Structure Plan design. Development associated with urban land use is progressing across all three precincts identified in the DSP.





APPROVED BALDIVIS (NORTH) DISTRICT STRUCTURE PLAN

FIGURE 3

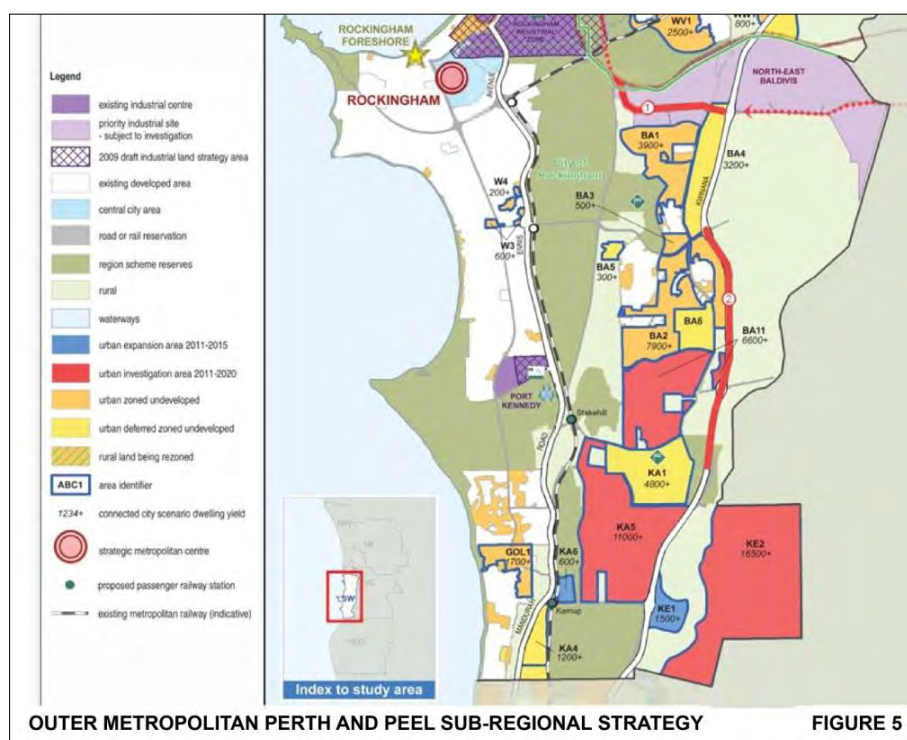


2.2 Government Strategies and Policies

2.2.1 *Directions 2031 – Spatial Planning Framework for Perth and Peel*

Directions 2031, the WAPC's strategic planning framework document for Metropolitan Perth and Peel, promotes the urban development of the Structure Plan area. Specifically, the Structure Plan area is identified as 'Urban Zoned – Undeveloped' under the associated '*Outer Metropolitan Perth and Peel Sub-Regional Strategy*' prepared by the Western Australian Planning Commission (WAPC). Encompassed by 'BA1' in *Directions 2031*, this broader cell is forecast to provide approximately 3,900+ dwellings by 2031 (Figure 5 refers).

The Structure Plan will create a framework for the future urban subdivision and development of an anticipated 800+ dwellings, which will ultimately house a new community in the vicinity of 2,240+ people and provision for a Neighbourhood Shopping Centre.



2.2.2 *State Planning Policy 4.3 – Poultry Farms*

SPP 4.3 seeks to appropriately plan for residential development in areas where poultry farms already exist, and mitigate any potential issues. A poultry farm is currently in operation within the Structure Plan area on Lot 3 Baldvis Road, and conducts hatchery operations and egg production.

The EPA's Guidance Statement No. 3 – *Separation Distances between Industrial and Sensitive Land Uses (2005)* recommends separation distances from industrial based land uses (including poultry farms) to sensitive based land uses such as residential. The Guidance Statement identifies a generic separation distance of 300m - 1000m from poultry farms to residential; with on-site investigations to determine the actual required buffer to prevent noise and odour impacts to residential development.

An Odour Assessment prepared for the Structure Plan prescribes a 100m buffer from the existing Poultry Farm (Appendix 1 refers). Section 3.7 outlines how this policy has been addressed by the Structure Plan.

2.2.3 *Planning Bulletin No.63 – Policy for Dealing with Potential Conflicts between Residential Subdivision and Markets Gardens in East Wanneroo*

This WAPC policy requires a number of measures to be implemented at the subdivision stage to protect residential land from impacts of market gardens. For residential subdivision and development in the vicinity of market gardens on land zoned 'Urban' or 'Urban Deferred' in the MRS, the WAPC will accept:

- ❖ for residential lots abutting a market garden, specially designed fencing of the type specified within Planning Bulletin No. 63, together with a protected and maintained vegetation buffer of one line of evergreen trees or bushed (minimum 1.5m high) for residential lots abutting a market garden;
- ❖ for roads and open space abutting a market garden, suitable rural fencing of good standard on the boundary of the market garden;
- ❖ prospective purchasers within 300m of the boundary of the market garden being advised of the existence of the market garden on the contract of sale; and
- ❖ memorials to be included on titles of all residential lots within 300m of the boundary of the market garden advising of the location and impacts of the market garden or amenity; or
- ❖ other measures which it can be demonstrated to meet the objectives of the policy to the satisfaction of the WAPC.

The Structure Plan has been staged to ensure there will be minimal impact from the market garden while it is still operational. **Plan 11** depicts the Indicative Staging Plan of the development. The Structure Plan response to this policy is addressed in Section 3.7.

2.2.4 *Planning Bulletin No.87 – High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region*

The Pamelia High Pressure Gas Pipeline runs through Lot 313 in a general north west to south east direction along the western portion of the Structure Plan.

Land uses on the pipeline easement, and within proximity to the easement are guided by both the EPA's conditions on the approval for Lot 313 under Town Planning Scheme Amendment No. 300, and in the Western Australian Planning Commission's Planning Bulletin No. 87 – *High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region* (refer **Appendix 10**).

The Structure Plan requires two land use setback alignments, the smaller at 32m (either side of the gas pipeline) generally prevents dwellings or any other buildings within this setback area. This effectively creates a 64m wide channel within which no physical development can take place. There is opportunity within the 32m setback area to utilise this land for provision of public open space and roads.

The EPA's Ministerial Statement 580 (**Appendix 11** refers) stipulates the minimum setbacks for land uses and developments from the centre of the high pressure natural gas pipeline shall be:

- ❖ 96 metres, in the case of sensitive development, as determined by the Local Government on advice of the Department of Environment and Conservation (DEC) and the pipeline operator, and including aged persons' accommodation, child care centres, schools and hospitals;
- ❖ 32 metres to the boundary of each residential lot, in the case of residential development; and

- ❖ at the Local Government's discretion, following consultation with the DEC and the pipeline operator, in the case of all other land uses and developments which facilitate the gathering of people, within 96 metres of the centre of the pipeline.

Section 3.8 addresses how this policy has been applied by the Structure Plan.

2.2.5 *Planning for Bushfire Protection Guidelines*

The primary focus of these guidelines is to ensure that bush fire hazards are considered in planning decisions at all stages of the planning process; to avoid increased fire risk to life and property.

Given that the Structure Plan area abuts a remnant bushland area to the south west, planning for bushfire protection requires a level of consideration during the Structure Plan and subdivision phases of the development. Consideration of bushfire management at the Structure Plan phase includes identifying potential bushfire hazards and providing adequate separation from these areas through the Structure Plan design.

The Structure Plan road and cell design has resultantly been influenced by a detailed Fire Management Plan (**Appendix 4** refers). The FMP will provide guidance for detailed subdivision design to ensure all fire mitigation strategies, such as appropriate building setbacks, landscaping and interface treatment of the zone between the bushland and residential development is achieved.

Section 5.7 addresses how this has been applied by the Structure Plan.

2.2.6 *City of Rockingham Urban Growth Programme (2009)*

The City of Rockingham *Urban Growth Programme* has been prepared by the City to assist in understanding the likely pattern of urban growth to 2031. The Urban Growth programme recognises the Structure Plan area as being developed for urban purposes, with commencement of development originally forecast between 2017 - 2026.

3 SITE CONDITIONS AND ENVIRONMENT

The Structure Plan has been subject to previous environmental assessments as part of Amendment No.300 of the City of Rockingham's Town Planning Scheme No.1, which was initiated to rezone the associated landholdings from 'Rural' to 'Development'. The rezoning application was addressed by the EPA's *Ministerial Statement No. 580* in 2001, which determined that the proposal could be implemented subject to conditions (**Appendix 11** refers).

Conditions relevant to the Structure Plan area include:

- ❖ Condition 1: Drainage a Nutrient Management Plan (now addressed as a Local Water Management Strategy in accordance with the Department of Water's Better Urban Water Management Guidelines);
- ❖ Condition 2: Soil and Groundwater Investigation and Remediation Plan;
- ❖ Condition 4: Spray Drift Investigation and Management Plan; and
- ❖ Condition 5: Vegetation Management Plan.

As part of the Structure Planning process, the abovementioned conditions have been addressed and are outlined in various sections below.

An Environment Assessment Report has been prepared by Coterra Environment for this Structure Plan (**Appendix 1** refers). All the relevant environmental details and response to environmental issues are detailed in this report. A summary of the environmental conditions of the site is provided below, with **Plan 4** illustrating opportunity and constraints mapping for the Structure Plan area. Elements of this plan are covered in further detail in the following sections.

3.1 Flora and Vegetation Assessments

Rural pursuits have rendered large portions of the Structure Plan completely cleared of vegetation. It is considered that urban development is an appropriate land use given the current environmental condition and the proposed management strategies outlined in this report. Areas of the site that remain vegetated are representative of the 'Cottesloe (Central and South)' and 'Karrakatta (Central and South)' complexes. These vegetation complexes are briefly described below:

- ❖ Cottesloe Complex (Central and South), described as a mosaic of woodland of *Eucalyptus gomphocephala* and open forest of *Eucalyptus gomphocephala* – *Eucalyptus marginata* – *Corymbia calophylla*; closed heath on the limestone outcrops; and
- ❖ Karrakatta Complex (Central and South), described as predominantly an open forest of *Eucalyptus gomphocephala* – *Eucalyptus marginata* – *Corymbiacalophylla* and woodland of *Eucalyptus marginata* – *Banksia spp.*

The Cottesloe Complex meets the State government target of at least 10% of the original extent proposed for protection (Bush Forever protection area of the Perth metropolitan region), however this figure is at 8% for the Karrakatta complex. Both complexes are locally well represented with a high percentage of the original extent remaining within the City of Rockingham.

Table 3: Regional and Local Conservation Status of Karrakatta and Cottesloe Complex (South and Central)

| | Description | Karrakatta Complex | | Cottesloe Complex | |
|---|---|--------------------|-----------------------------|-------------------|-----------------------------|
| | | Area | Percentage of Original Area | Area | Percentage of Original Area |
| Local Representation (City of Rockingham) | Original extent | 4,276 ha | - | 2,017 ha | - |
| | Remaining area | 1,552 ha | 36 % | 1,011 ha | 50 % |
| Regional Representation (Perth Metro Area of Swan Coastal Plain) | Original extent | 34,532 ha | - | 34,439 ha | - |
| | Remaining area | 6,275 ha | 18% | 12,362 ha | 36% |
| | Area proposed for protection (Bush Forever) | 2,590 ha | 8% | 6,085 ha | 18% |

A number of flora and vegetation surveys have been progressed over the Structure Plan area, by Bennett Environmental Consulting Pty Ltd in January, April and October 2011. The surveys confirmed that no Threatened Ecological Communities (TECs) or Declared Rare Flora were encountered within the Structure Plan area, nor any other significant flora or vegetation values. Vegetation condition ranged from 'Completely Degraded' to 'Good'.

Lot 5 was subject to a later Botanical Assessment the findings of the survey are as follows (BEC, 2011):

- ❖ Approximately half of the Structure Plan area had remnant vegetation present, with the remainder being utilised as a salvage yard and residential property;

- ❖ The dominant vegetation across the Structure Plan area is:
 - Forest of *Eucalyptus marginata subsp. marginata*, *Allocasuarina fraseriana* and *Banksia attenuata* over Open Low Scrub B of *Acacia pulchella* and *Macrozamia riedlei* over Open Dwarf Scrub C dominated by *Hibbertia hypericoides* over Dense Tall Grass dominated by *Ehrharta calycina* over Very Open Herbs dominated by *Phlebocarya ciliata* in grey sand.
 - Vegetation condition: Good to Degraded, due to dense tree cover (up to 40%);
- ❖ Other major vegetation unit across the Structure Plan area is:
 - Forest of *Eucalyptus marginata subsp. marginata*, *Allocasuarina fraseriana* and *Banksia attenuata* over Open Scrub of *Kunzea glabrescens* and *Jacksonia furcellata* over Open Dwarf Scrub C of mixed taxa dominated by *Acacia pulchella* and *Gastrolobium capitatum* over Tall Grass dominated by *Ehrharta calycina* over Very Open Herbs dominated by *Phlebocarya ciliata* over Open Low Sedges dominated by *Desmocladius flexuosus* in grey sand. Occasional plants of *Lomandra hermaphrodita* and *Lomandra caespitosa* were recorded.
 - Vegetation condition: Good to Degraded;
- ❖ Along eastern boundary of the Structure Plan area is:
 - Open Tall Woodland of *Eucalyptus gomphocephala* (tuart) over dense weeds and bare ground in grey sand.
 - Vegetation condition: Completely Degraded.
- ❖ Vegetation condition was rated according to the vegetation condition scale used in Keighery (1994). The vegetation condition of the remnant vegetation at the survey site was degraded with some areas of good, with the salvage yard, including the tuarts on the eastern boundary, completely degraded. Rubbish had been dumped around the perimeter and throughout the bushland.
- ❖ Lot 5 had a large area of remnant vegetation remaining but the understorey appeared to have been largely replaced by the grass weed, perennial veldt grass (*Ehrharta calycina*). The tree cover was good, up to 40% cover, but there were many deaths of jarrah (*Eucalyptus marginata subsp. marginata*) and narrow-leaf Banksia (*Banksia attenuata*) recorded across the area.
- ❖ It was recommended that the tuarts along the road edge be considered for retention with any proposed development as the trees were of a good height and in reasonable condition. It is also recommended that a section of the remnant bushland along the northern boundary with the adjoining property be retained as public open space.

3.2 Fauna Assessments

A fauna survey completed in accordance with the EPA's Guidance Statement No. 56 – *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004) was undertaken across the Structure Plan area in February 2011. The survey identified that the presence of numerous large, potentially hollow-bearing trees may provide nest hollows for conservation significant fauna such as Carnaby's Black-Cockatoo. No Cockatoo's were encountered during several site visits.

Given the known presence of potentially suitable habitat for the Commonwealth and State listed Graceful Sun Moth (*Synemon gratiosa*), a Graceful Sun-Moth survey was also undertaken in accordance with the DEC's - *Survey Guidelines for the Graceful Sun-Moth (Synemon gratiosa) and site habitat assessments*. Following the completion of a Graceful Sun-Moth survey programme in March 2011 it was concluded that this species does not occur within the Structure Plan area.

3.3 Landform and Soils

The site is generally flat, with a gentle rise toward the north. The site elevation ranges from approximately 3m Australian Height Datum (AHD) to 15 m AHD near the central and southern portions of Lot 312.

The Structure Plan area contains three natural soil types of the Spearwood and Tamala soil systems consisting of:

- ❖ Sand (S8): which is described as - very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted, of eolian origin as relatively thin veneer over C2 (clay), M4 (silt) and Mc2;
- ❖ Sand (S7): which is described as - pale yellowish brown, medium to coarse grained, sub-angular to well-rounded quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin; and,
- ❖ Limestone (LS1): which is described as pale yellowish brown, fine to coarsegrained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin.

All of the soil types identified are suitable for urban development.

3.4 Acid Sulfate Soils

According to Acid Sulfate Soil (ASS) risk mapping sourced from the CSIRO Australian Soil Resource Information System (ASRIS) database, the site is identified as having a 'no known occurrence of AASS and PASS occurring'. This is consistent with the Perth Groundwater Atlas (DoW, 2004) which maps the site as 'Low to nil risk of acid or potentially acid sulphate soils >3m below the ground surface'. The DEC ASS Risk Map however indicates that the majority of the site has a moderate to low ASS risk.

The site is surrounded by area of high risk ASS associated with Lake Coogee Conservation Category Wetland (CCW) to the west and Resource Enhancement Wetland (REW) to the north. The closest high risk ASS area, the Opwin Swamp Dampland, is located approximately 100m to the north-west of Lot 313.

3.5 Groundwater

Regional groundwater mapping obtained from the Department of Water (DoW) *Perth Groundwater Atlas*, indicates that groundwater occurs at a depth of approximately 2m AHD across the site. Therefore, the separation distance to groundwater from the natural surface level would vary between 1m AHD and 13m AHD within the Structure Plan area. Regional groundwater information indicates that groundwater flow is generally in a westerly direction (DoW, 2004).

3.6 Heritage

A desktop investigation found that the Structure Plan area contains no indigenous heritage sites (DIA 2011). If Aboriginal artefacts or sites are uncovered during construction, works will cease and a suitably qualified expert will be brought in to survey the potential site, and if required, obtain approval under the *Aboriginal Heritage Act* 1972.

3.7 Adjacent Bush Forever Site

The Structure Plan area is located immediately adjacent to Bush Forever Site No. 356. Appropriate interface from the Structure Plan area to the Bush Forever site will consist of dedicated road reserves running the length of the Structure Plan's southern and western boundaries; this to minimise edge effects of development impacting on the Bush Forever Site.

3.8 Poultry Farm and Market Garden

An Odour Assessment was completed by 'The Odour Unit' (2010) to assess any potential odour impacts from the Poultry Farm to proposed development, adjacent to and nearby the poultry operation. It is attached to the Environmental Assessment Report (**Appendix 1** refers).

The Odour Assessment established site specific setbacks of 100m from the poultry farm based on on-site data and modelling of impacts from prevailing wind directions and likely worst case odour levels resulting from the operation (Appendix F under **Appendix 1** refers). The required buffer is relatively small and extends into Lots 2, 4 and 5 as illustrated under Figure 9.1 of the Odour Assessment and Structure Plan Map (**Plan 1**).

Development within the Structure Plan area will be staged so to avoid the established buffer areas while the poultry farm and market garden are still in operation. **Plan 11** depicts the Indicative Staging Plan of the development. When the land in the vicinity of the market garden is subdivided the measures recommended as per Planning Bulletin No. 63 – *Policy for Dealing with Potential Conflicts between Residential Subdivision and Market Gardens in East Wanneroo* and Section 2.2.3 above will be undertaken.

3.9 Parmelia Gas Pipeline

In consideration of the requirements of Planning Bulletin No. 87 *High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region* (**Appendix 10** refers) as outlined in Section 2.2.4 above, the Structure Plan has been designed to address the required setbacks, and proposes only those land uses permissible in and within proximity to the pipeline alignment. Accordingly, Public Open Space is identified on the Structure Plan over the pipeline easement with residential lot boundaries permitted up to the 32m buffer line.

The developer has undertaken several Pipeline Risk Management Plans for developments impacted by this corridor, and the proposed design and land mirror the findings of these. Consultation with the Parmelia Gas Pipeline operators have been undertaken, and with recognition that the Structure Plan has been prepared in accordance with Planning Bulletin 87 and the EPA's *Ministerial Statement No. 580*.

4 CONTEXT ANALYSIS

An 'Opportunities and Constraints Plan' (Plan 4) and a 'Context Plan' (Plan 5) provide illustration of the following section.

4.1 Surrounding Land Use

Surrounding land uses comprise the following:

- ❖ Market gardens and residential subdivision to the north;
- ❖ Baldivis Primary School to the north-east;
- ❖ Land recently zoned 'Urban' under the MRS to the east;
- ❖ Bush Forever site No. 356 to the south and west; and
- ❖ Residential 'Spires Estate' currently being developed to the south of Lot 7.

The Parmelia High Pressure Natural Gas Pipeline traverses Lot 313 in a general north-west to south-east direction along the western portion of the site.

The Structure Plan area is located less than one kilometre west of the Kwinana Freeway, and approximately five kilometres east of the Perth to Mandurah railway.

4.2 Movement Networks

The Structure Plan area is traversed by the unconstructed Nairn Drive reserve identified as an 'Other Regional Road' under the provisions of the Metropolitan Region Scheme. The Structure Plan area is bound by Fifty Road to the north, Baldivis Road to the east and centrally traversed by Eighty Road. Approximately 1 kilometre to the east lies Kwinana Freeway which provides direct access to all regional nodes including both the Perth Central Business District, Mandurah Town Centre and beyond. Alternatively, Mandurah Road is located 1.3 kilometres west of the Structure Plan area, providing excellent north-south access to the broader Perth and Peel Regions.

In terms of public transport, the Perth to Mandurah railway line is located approximately 5 kilometres west of the Structure Plan area. Bus feeder networks to supplement the train network are extending into the Baldivis locality as it urbanises.

4.3 Activity Centres and Employment Nodes

The Structure Plan area is located approximately 6 kilometres south-east of Rockingham Strategic Metropolitan Centre. Several important activity centres and employment generators also exist in close proximity. These include:

- ❖ Baldivis District Town Centre, ~2 kilometres south;
- ❖ Port Kennedy Business Park ~ 6 kilometres south-west;
- ❖ Rockingham Industrial Zone ~ 7 kilometres north-west;
- ❖ Kwinana Secondary Centre ~7 kilometres north; and
- ❖ Kwinana Industrial Area ~ 8.5 kilometres north-west.

As the Structure Plan area benefits from proximity to a strong regional and district road network this provides future residents direct connections to regional employment centres such as Rockingham, Mandurah, Kwinana, Fremantle, and Perth Central Business District.

Opportunities for local employment will be further enhanced by the development of future nearby industrial areas, including Latitude 32, Nambeelup and North-East Baldivis. These areas are earmarked by Directions 2031 and the Economic and Employment Lands Strategy for Perth and Peel for future expansion of employment land uses.

Consistent with the broad urban structure proposed by the North Baldivis DSP, a Neighbourhood Activity Centre is proposed within the Structure Plan. This site is to be relocated from the adopted North Baldivis Local Structure Plan to avoid conflict with competing land uses; refer Section 5.6 of this report.

4.4 Education

Several educational facilities exist in close proximity to the Structure Plan area.

Existing public primary schools in close proximity to the Structure Plan area include:

- ❖ Baldivis, located directly north;
- ❖ Makybe Rise, ~4.6 kilometres south; and
- ❖ Settlers Hill, ~4.8 kilometres south-west.

In addition, the Baldivis North DSP and East Baldivis DSP respectively identify future public primary schools to be located 1 kilometre north and north-east of the Structure Plan Area.

Public secondary educational needs will be accommodated by the recently opened Baldivis High School south of Safety Bay Road; with alternatives being Warnbro Community High School, and Safety Bay High School, both ~7.5km from the Structure Plan area. The East Baldivis DSP identifies a future high school site directly north-east of the Structure Plan area; this is to ultimately include the North and East Baldivis DSP student population within its catchment.

Several private schools exist within the locality, including:

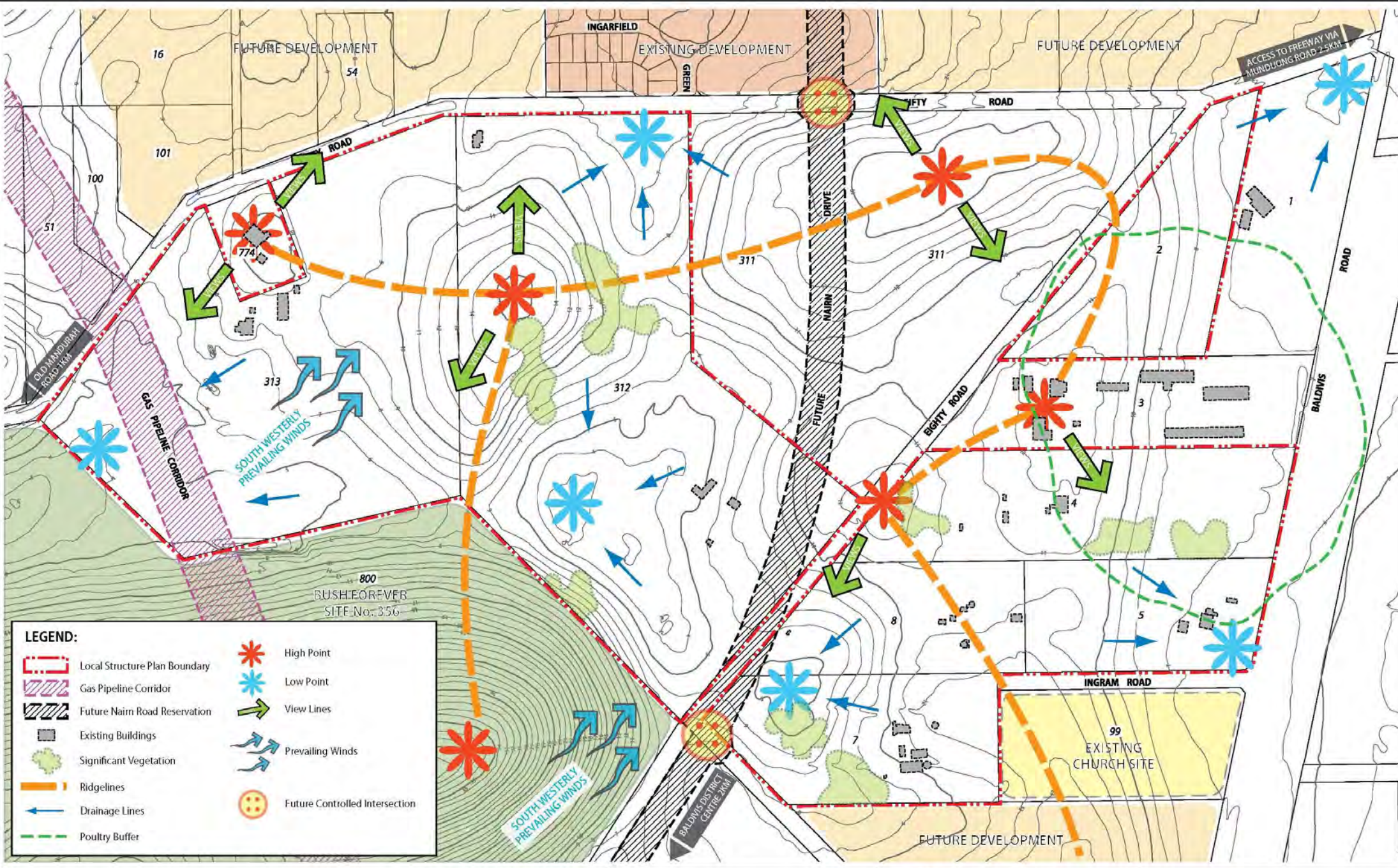
- ❖ Tranby College, located ~4.5 kilometres south;
- ❖ Marantha Christian Community School, ~5.6 kilometres south-west;
- ❖ Kolbe Catholic College, ~6.0 kilometres north-west; and
- ❖ Living Waters Lutheran College, ~6.6 kilometres south-west of the Structure Plan area.

The Rockingham and Mandurah campuses of Murdoch University and Challenger TAFE offer an expanding range of nearby tertiary institutions. The site's proximity to the regional road network and Mandurah rail line means that future residents will be able to access the wider variety of universities across the metropolitan region.

4.5 Regional Open Space

The site immediately abuts a large area of bushland protected by Bush Forever Site 356. Leda Nature Reserve, Rockingham Lakes Regional Reserve and Lake Coolongup are also all within 2 kilometres of the Structure Plan area.

The approved Baldivis North DSP also identifies district level playing fields to be located directly north of the Structure Plan area, being Baldivis Reserve and complemented by facilities earmarked with the East Baldivis cell adjacent to the High School site.



PLAN 4 - Opportunities and Constraints Plan

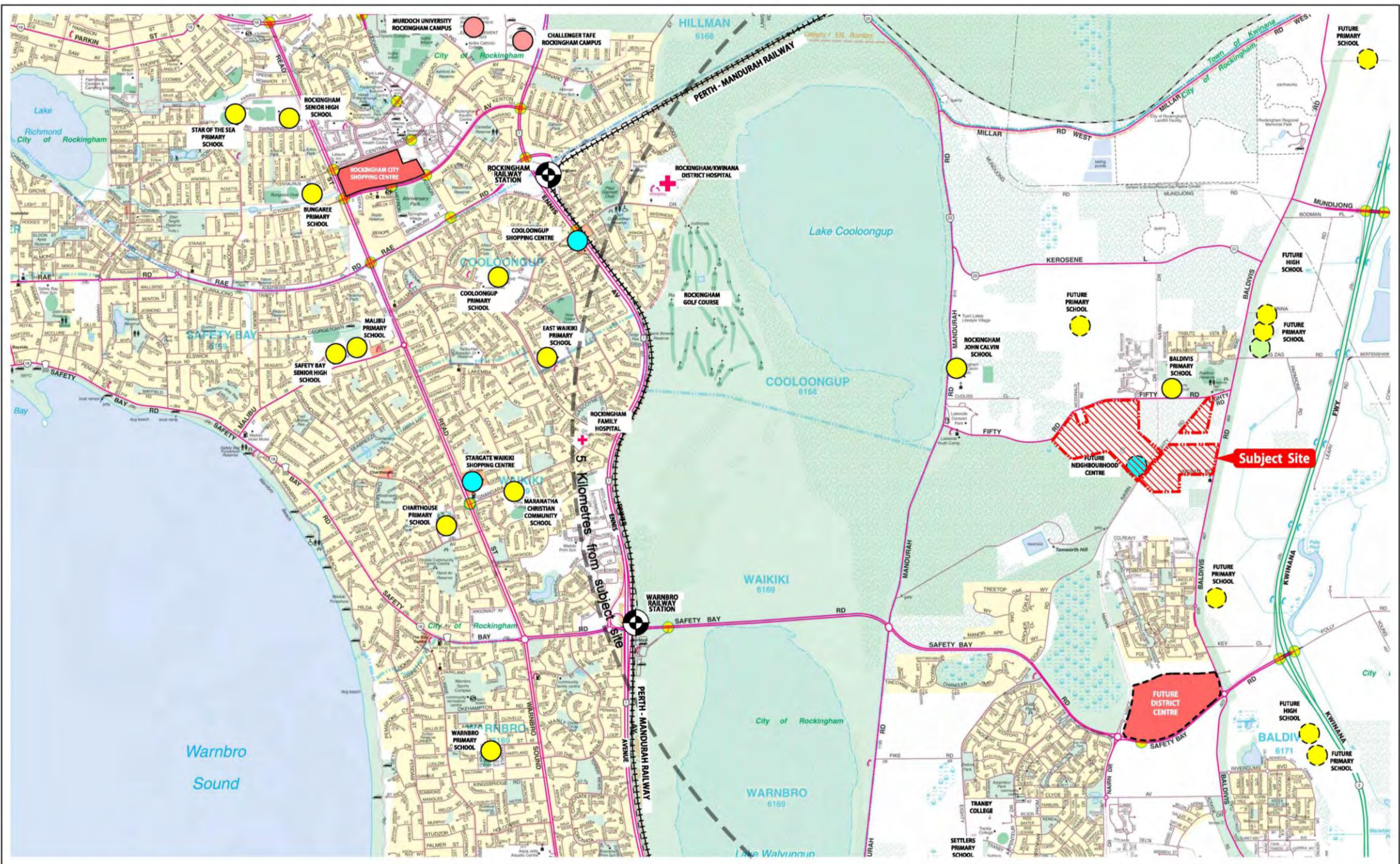
Various Lots Fifty and Eighty Road, BALDIVIS

for: Carcione Group of Companies

NOTES:

AREAS AND DIMENSIONS SUBJECT TO SURVEY
 BASE DATA SUPPLIED BY LANDGATE / DEPT OF PLANNING

| | | |
|---|--------------------|--|
| | | Scale 1: 4,000 @ A3 0 25 50 75 100 125 150 metres |
| COMPILED: DPS | DRAWN BY: MDH | |
| DATE: 20/6/2012 | REVISED: | |
| GRID: MGA 50 | DATUM: AHD | |
| DRAWING NUMBER: CARB0074 | JOB CODE: CARB0LSP | |
| FILE ID: M\CARB0074\Illustrator\Opps and Conns.ai | | |



PLAN 5 - Regional Context Plan

Various Lots Fifty and Eighty Road, BALDIVIS

for: Spatial Property Group

LEGEND :

 LOCAL STRUCTURE PLAN BOUNDARY



Scale 1:30 000 @ A3

0 250 500 750 1000 1250 1500 metres

| | |
|---|--------------------|
| COMPILED: DPS | DRAWN BY: JNP |
| DATE: 22/11/2012 | REVISED: |
| GRID: MGA 50 | DATUM: AHD |
| DRAWING NUMBER: CARBD-5-009 | JOB CODE: CARBDLSP |
| FILE ID: M:\CARBD\Bases\Report Diagrams\CARBD-5-009.dgn | |



28 Brown St, East Perth WA 6004
 PO BOX 6697 EAST PERTH 6892
 T (08) 9268 7900
 F (08) 9268 7999
 E dps@dpswa.com.au

5 LOCAL STRUCTURE PLAN

5.1 Design Philosophy

The Structure Plan proposes a design layout which fosters an efficient and permeable road network and corresponding residential development cells. This is notwithstanding the external challenges of the site, namely the constrained access arrangements and configuration of parent lots.

The design philosophy has been predicated upon the following objectives:

- ❖ Provision of a diverse range of residential densities according with the density targets of Directions 2031 to encourage diversity of lot product and affordability;
- ❖ Suitable interface with existing roads and future Nairn Drive, the Parmelia Gas Pipeline Corridor and Bush Forever Site 356;
- ❖ Creation of an attractive and viable Neighbourhood Activity Centre with suitable surrounding residential density to support its development;
- ❖ An integrated design over land in multiple ownership;
- ❖ Suitable connectivity to Fifty Road via seven access points, and connectivity to the future Nairn Drive, hence connecting and integrating with existing and future development of the surrounding land;
- ❖ Location and provision of public open spaces to ensure accessibility, diversity in types and usability, tree retention where practical, visual aesthetics and the integration of stormwater management;
- ❖ Implementation of a suitable engineering and drainage solution for the site;
- ❖ Delivery of a safe pedestrian and cyclist environment with pathways linking residential neighbourhoods and associated local parks as well as providing for external connectivity to areas outside of the site;
- ❖ Integration with existing and planned developments on adjacent land, particularly in relation to the Spire Estate to the South and Baldivis North Estate to the north; and
- ❖ Accommodation of stormwater drainage within public open space areas in accordance with accepted practice and Council/WAPC policy.

5.2 External Design Influences

5.2.1 *Planning for Bushfire Protection*

A Fire Management Plan (FMP) has been prepared by environmental consultants Strategen in support of the Structure Plan (**Appendix 4** refers).

The FMP provides guidance on how to plan for and manage the bush fire risk associated with the project area, in accordance with requirements of *Planning for Bushfire Protection* (PFBFP) Guidelines.

The responsibility to implement the FMP at the time of development applies to the developer, City of Rockingham and subsequently the perspective landowners, to ensure bush fire management measures are adopted and implemented on an ongoing basis to achieve bush fire management objectives.

The FMP is supported by a Bushfire Hazard Assessment (BHA) (Appendix 1 of FMP, **Appendix 4** refers). The FMP demonstrates that the bushfire threat and hazard will be restricted to vegetation surrounding the perimeter of the site, including the Bush Forever site to the south west, remnant vegetation on Lot 311 (future development site) and the historic tramline within Baldivis Road. The FMP provides an indication of the setback distance required between dwellings and bushfire hazards to achieve the Bushfire Attack Level (BAL)-29 or lower.

Guidance provided by the Department of Planning and FESA (2010) *PFBFP* Guidelines, BHA and FMP was used in preparing the Structure Plan design.

Wide road reserves have been incorporated adjacent to the retained remnant bushland to the south-west and east; thus the FMP demonstrates that the bushfire risk can be managed along with dwelling setbacks and construction standards (as required).

Bushfire hazard levels are determined based on the predominant vegetation and are identified as being either of low, moderate or extreme bush fire hazard risk (Figure 8 of FMP, **Appendix 4** refers). With staging of the development and as vegetation is removed in advance of development, the bushfire hazard will be reduced. Permanent hazards will remain around the perimeter, though they can be mitigated through a range of measures as detailed above.

Further, measures to manage bush fire risks will be required at the subdivision phase, and may include:

- ❖ Ensuring that water is available to the development to enable life and property to be defended from bush fire, including the availability of shared fire hydrants;
- ❖ The design and setback of dwellings within each lot in relation to bushfire hazard, to minimise the level of potential bushfire risks;
- ❖ Buildings within the development shall be designed and constructed in accordance with the Building Code of Australia, to ensure adequate compartmentalisation and separation for fire protection; and
- ❖ Development to be undertaken in accordance with AS3959-2009 as identified in Section 5.4.1 of the FMP Report.

5.2.2 *Noise Mitigation*

Herring Storer Acoustics was commissioned to carry out a road traffic noise assessment for the Structure Plan (**Appendix 9** refers). The traffic noise assessment has been carried out in accordance with the WAPC's Statement of Planning Policy 5.4 *Road and Rail Transportation Noise and Freight Consideration in Land Use Planning*. The purpose of this study was to assess noise received at future residence within the Estate from vehicles travelling on the surrounding road network, specifically Nairn Drive and Baldivis Road.

SPP 5.4 identifies a 'Noise Target' and 'Noise Limit', which sets out acceptable noise levels for residential use. The noise modelling indicates that without any noise amelioration, noise received at the residence located adjacent Nairn Drive would exceed the "Noise Limits". For this development a 2.2 metre high barrier located at the boundary of the Nairn Drive reserve is recommended. With this barrier, the lots requiring "Quiet House" design and Notifications on Titles (Figure E1, Appendix E of Acoustic Assessment, **Appendix 9** refers).

Modelling shows that noise received at the residence located adjacent to Baldivis Road would in the future marginally exceed the "Noise Targets". For these residences, our analysis indicates that compliance with the above internal noise levels would be achieved with standard construction. Hence, no upgrade in the

construction is required for these residences. It is also recommended that for those residence that either back on to or side on to Baldivis Road, that a 1.8m high barrier be constructed.

Finally, it is noted that under the policy, that for those residence where noise would exceed the "Noise Target", notification of vehicle noise will need to be stated on the titles.

Dwellings located in areas that exceed the 'target' and 'limit' will also have to comply with construction standards (glazing, fencing, fittings) as expanded upon in the Acoustic Assessment (**Appendix 9** refers).

5.3 Residential Densities and Dwelling Forecasts

5.3.1 Dwelling Forecasts- Directions 2031

The Structure Plan is encompassed by area 'BA1' of the *Outer Metropolitan Perth and Peel, Sub-Regional Strategy (OMSRS)*; the total site (south of Mundijong Road) is projected to yield approximately 3,900+ dwellings, based on a 'Connected City' development model of 15 dwellings per gross urban zoned hectare; or 3,100 dwellings based on a 'business as usual' scenario of 10 dwellings per gross urban zoned hectare.

A dwelling yield projection prepared by the project team and based on *generic* lot sizes prescribed by the *Residential Design Codes (R-Codes)* suggests a yield of ~950+ dwellings. This figure includes landholdings immediately adjacent however excluded from the Structure Plan boundary (i.e. Lots 311 Fifty Road and 1 and 3 Baldivis Road).

The current Structure Plan boundary comprises 54.57ha. Excluding the ~1.01ha land parcel designated as 'Other Regional Roads', the *gross urban zone* area equates to 53.56ha. Based on the dwelling targets of *Directions 2031* and accompanying OMSRS, the Structure Plan area is projected to generate the following dwelling yields:

Table 4 – Directions 2031 Dwelling Targets:

| Directions 2031 Scenario | Projected Dwellings: |
|---|----------------------|
| 'Connected City' @ 15 dwellings per gross urban zone | 804 dwellings |
| 'Business as usual' @ 10 dwellings per gross urban zone | 536 dwellings |

The Structure Plan proposes in the order of 600+ lots, however inclusive of several Grouped Housing sites planned (ranging between R25 – R60), the total dwelling yield will be in the order of 800+ dwellings. The dwelling yield projections thus address the 15 dwellings per gross urban zone targets of *Directions 2031*, and will potentially accommodate a population in the order of 2,240+ people, at a rate of 2.8 persons per household.

The projections are subject to the final design for respective subdivision stages; this based on detailed drainage and environmental constraints, including landowner preference for retention of remnant native vegetation. Preferred lot mix and market demand at the time of land release will also influence final dwelling yields.

5.3.2 Dwelling Forecasts- Liveable Neighbourhoods

The majority of the Structure Plan area has been assigned a R25 Residential Density Coding; with medium density R30 - R40 development proposed in proximity to Public Open Space and primary roads and nodes. Higher density (R60) residential development is proposed in proximity to (and potentially within) the future Neighbourhood Activity Centre adjacent the future Nairn Drive.

The R25-R60 density codings offer a minimum and average lot product considered suitable for this location within the outer-metropolitan area of Perth; being a combination of lot product $\sim 120\text{m}^2 - 600\text{m}^2$ in area as prescribed the R-Codes. Estimated dwelling yields based on average lot sizes are in the order of:

- ❖ Residential R25: $\sim 480+$ dwellings
- ❖ Residential R30: $\sim 80+$ dwellings
- ❖ Residential R40: $\sim 140+$ dwellings
- ❖ Residential R60: $\sim 100+$ dwellings

Based on the *Liveable Neighbourhoods* 'Site Hectare' definition, the overall density for the Structure Plan equates to ~ 25 dwellings per site hectare; thus exceeding the 22 dwellings per site hectare target of this document.

5.4 Streetscape and Built Form Environment

5.4.1 Density

The following provides a summary of locational criteria for residential land uses within the Structure Plan area, and offers rationale for the density codings (R-Codings) provided.

5.4.1.1 'LOW DENSITY' - RESIDENTIAL R25 (BASE)

- ❖ Residential R25 will be the minimum base coding over the Structure Plan area; thus allowing for the provision of traditional single dwelling lots from minimum 300m^2 , averaging minimum 350m^2 .

5.4.1.2 'MEDIUM DENSITY' – RESIDENTIAL R30-R60

Generally surrounding, but not limited to:

- ❖ areas of high amenity, such as Public Open Space, major public transport routes, primary connector roads and/or Neighbourhood Activity Centre; and
- ❖ locations that enhance passive surveillance of public spaces

The proposed R30 and R40 pockets are generally located in close proximity to public open space and on the major transport corridor, with densities of R40 and R60 proposed in close proximity to the *Commercial* zoned area. This is consistent with *Liveable Neighbourhoods Elements 3* requirements which states that smaller lots and lots capable of supporting higher density should be located close to town and neighbourhood centres, public transport routes and adjacent high amenity areas such as parks.

5.4.2 Housing Typologies

A diversity and flexibility of housing products will be provided that are appropriate to the variations in lot sizes and proposed densities presented in the Structure Plan.

The housing typologies envisaged will include Single and Double-Storey; Traditional Loaded and Rear Loaded Cottages; Terraces – Attached and Semi-Detached and potential Multi-Storey dwellings in the *Commercial* zoned land.

The character of these typologies will differ depending on the nature of the lot and surrounding environment.

5.4.3 *Public Open Space Interface*

The standard treatment for all lots directly abutting POS will include elevation preferably 0.5 metres above park level, as well as uniform open style Estate fencing along the POS boundaries. Importantly, the POS areas will all be developed to a high standard to ensure high levels of amenity for all residents, and will include suitable built form surveillance measures to enhance the use of these spaces.

5.4.4 *Solar Orientation*

When the orientation of the lot makes it possible, dwellings will be orientated north to achieve good solar passive design. However, where contours and landform have taken priority in determining lot orientation, northern orientation cannot always be achieved. In this instance, lot orientation is predominantly north-south/east-west (or within 15 degrees thereof) where practical to facilitate solar passive design of homes.

5.4.5 *Variations to Residential Design Codes*

Part One of the Structure Plan facilitates variations to 'Deemed to Comply' provisions of the R-Codes, this is namely with respect to private open space and primary street setback provisions, including:

Table 1 – 6. Open Space (min total % of site)

| Current R-Codes Provision (2013) | Proposed Structure Plan Variation |
|----------------------------------|-----------------------------------|
| R25 – minimum 50% | R25 – minimum 45% |
| R30 – minimum 45% | R30 – minimum 40% |
| R40 – minimum 45% | R40 – minimum 40% |

Table 1 – 7. Minimum Setbacks (Primary Street)

| Current R-Codes Provision (2013) | Proposed Structure Plan Variation |
|----------------------------------|-----------------------------------|
| R25 – 6m | R25 – 4m |

The variations sought within this Structure Plan are considered minor, however address the needs of the demographic and target market with the Baldivis locality, whilst also facilitating housing affordability, and are a sound resolution to comprehensive consultation with the building and development industries. Furthermore, the variations sought are based on existing trends and current housing designs within other Baldivis Estates and broader municipality; namely those with a similar demographic to the target market as the Structure Plan area.

Clause 7.3.2 of the R-Codes states:

Notwithstanding clause 7.3.1, the local government may, with the approval of the WAPC, amend any other deemed-to-comply provision within the R-Codes by means of a local planning policy, local structure plan, or local development plan where it can be demonstrated to the satisfaction of the WAPC that the proposed amendment requires any variations to be justified in accordance with three criteria, these being:

- ❖ *Is warranted due to a specific need related to that particular locality or region;*
- ❖ *Is consistent with the objectives and design principles of the R-Codes; and*
- ❖ *Can be properly implemented and audited by the decision-maker as part of the ongoing building approval process.*

The proposed development addresses the above criteria by means as justified below:

5.4.5.1 SPECIFIC NEEDS OF THE PARTICULAR LOCALITY

The variations being sought within the Structure Plan are warranted due to specific needs and market demand related to the Baldivis locality. 'Market demand' is not commonly considered appropriate planning justification by State and Local government authorities, however as the State Government have set dwelling targets under guidance of *Directions 2031*, which will be met through understanding and providing housing opportunities that meet demand.

In Baldivis (North), *profile.id* (2014) sourced statistics identify that:

- ❖ up to 90% of dwellings are Single Houses;
- ❖ up to 90% of dwellings are owner occupied; and
- ❖ 88% of dwellings are 3 or more bedrooms.

This strongly suggests family orientated homes are being built in the locality, identifying a specific demand in the locality of Baldivis.

In green field sites such as the Structure Plan area where there is no established character, the market demand is the driving factor behind lot and house product being developed, and this is ever increasingly being closely linked with affordability.

Further to this, the private open space and minimum setback provisions have been reduced in an attempt to deal with the limitations of the R-Codes which in many circumstances require 2-storey development on smaller residential lots; this due to the restrictive nature of some provisions that challenges opportunities for affordable housing options.

This is an ongoing issue that has been observed by the building and development industries, and a variation to open space has become 'the norm' to enable greater flexibility in developing 'functional' single storey dwellings on lots that are steadily declining in size.

Recognising the affordability issues, the City has consistently granted similar R-Codes variations to Estates throughout the municipality, including the original part of the Spiers Estate encompassed by Spiers LSP No. 1. Accordingly, the variations sought will not adversely affect the built form, streetscapes or amenity of residents in adjoining residential Estates, nor any future development within the Structure Plan area based on the prevailing and perpetual R-Codes variations already granted elsewhere in the locality.

5.4.5.2 OBJECTIVES AND DESIGN PRINCIPLES OF THE R-CODES

The minor variations provided are '*consistent with the objectives and design principles of the R-Codes*' pursuant to Clause 5.1.4 of the R-Codes, as detailed below.

- ❖ The minor reduction in private open space provision is consistent with other green field Estates developed in the broader Rockingham municipality, with variations of 5-15% to private open space having been approved locally, including nearby The Chimes, Spiers – No.1, Baldivis North, and Baldivis Central Estates.
- ❖ Sunlight and ventilation would be obtainable and protection of privacy is facilitated through the design of the outdoor living areas. Well-articulated building facades also enable building bulk to be managed and maintained. The built form can still adequately offer compliance (or in fact exceedence) of minimum outdoor living areas prescribed by the R-Codes, and in doing so provide functional outdoor spaces at the design discretion of the homebuyer and ultimately the City via Planning or Building Licence approvals.

- ❖ The streetscape will not be detrimentally affected by the reduced private open space provision, with the frontage of the dwelling not reliant on or visible to the depth/overall footprint of the dwelling.
- ❖ The reduced private open space provision and incorporation of dedicated outdoor living areas or other 'courtyard' spaces ensures utilisation of the outdoor spaces and access around the lots as required by the R-Codes.
- ❖ The built form resultant of the 4m primary street setback variation (in lieu of 6m for R25 density coding) is somewhat controlled by other R-Codes provisions, including garages that maintain a minimum setback of 4.5m. This will assist to control building setbacks, averaging of the building line and ensure articulation of buildings for the benefit of the broader streetscape.

The requirement to have the dwelling adhere to current provisions of the R-Codes (i.e. 50% open space for R25 density coding) will not increase the usability of these outdoor spaces, but will simply be detrimental to the homebuyer's 'preferred' usability of the internal spaces of the residential dwelling at the expense of a larger outdoor living area. *Within reason*, this should be at the discretion of the first occupants of the dwelling; and acknowledging any future purchasers of said dwelling have the choice to buy this property with a smaller area of private open space, or seek a smaller dwelling with larger private open space by means of other properties available on the market.

5.4.5.3 IMPLEMENTATION

Clause 7.3.2 of the R-Codes requires that variations sought '*can be properly implemented and audited by the decision-maker as part of the ongoing building approval process*'.

Under a Structure Plan – Part 1 process, inclusion of R-Codes variations to 'General Development Standards' will negate the need for numerous Detailed Area Plans to be prepared and implemented.

Building Licence, or Planning Applications as applicable, are required to be submitted to the City for approval, at which time assessment against the requirements of Part One of the Structure Plan would be undertaken.

5.5 Detailed Area Plans

The objective of Detailed Area Plans is to protect and enhance the amenity of the residents, provide for an attractive streetscape and to ensure that small lot developments have a coordinated approach to achieve good urban design outcomes.

In addition to the R-Codes variations granted under Part One of the Structure Plan, Detailed Area Plans (DAPs) are to be prepared in accordance with Clause 4.23 of the Scheme in the following instances:

- ❖ Lots with rear-loaded garage access;
- ❖ Lots with direct boundary frontage (primary or secondary) to an area of Public Open Space;
- ❖ Lots with a direct boundary frontage (primary or secondary) to Fifty Road and Nairn Drive;
- ❖ Land zoned *Commercial*;
- ❖ Lots impacted by Nairn Drive and Baldivis Road in respect of noise mitigation; and
- ❖ Lots within a 100 metre catchment of a Bushfire Hazard Zone thus deemed at risk from bushfire pursuant to the Planning for Bushfire Protection Guidelines (2010).

DAPs may be prepared as part of a subdivision application or imposed as a condition of subdivision approval.

Lots affected by noise mitigation are identified spatially in Appendix E of the accompanying Acoustic Assessment, under **Part Three – Appendix 9** of the Structure Plan.

Lots affected by the Bushfire Hazard Zone are identified spatially in Figures 9a and 9b of the accompanying Fire Management Plan, under **Part Three – Appendix 4** of the Structure Plan.

5.6 Neighbourhood Activity Centre

The Baldivis (North) District Structure Plan (DSP) prepared in 2000 identified the need for Neighbourhood and Local Activity Centres in the North Baldivis area. The DSP (as amended) identified a Neighbourhood Activity Centre (NAC) situated at the future intersection of Nairn Drive and Fifty Road. The Spiers Estate Structure Plan proposes to relocate the NAC site ~500m further south, and to be situated at the future intersection of Nairn and Amazon Drives. The Structure Plan Map (**Plan 1**) identifies ~2.8 hectares of *Commercial* zoned land abutting the north-western side of the intersection.

A modification to the *Baldivis North Local Structure Plan* was approved in March 2014, to address the proposed relocation of the NAC to the Spiers Estate Structure Plan. The relocation of the NAC and departure from the DSP was justified on the following grounds:

- ❖ The City's *Local Commercial Strategy* recognises that there are planned NAC in the City which have not eventuated, nor reached their predicted size, thus the planning, size and location for such centres is important to ensure their viability. The relocation of the NAC further south along Nairn Drive is a sound outcome as the site will be more central to the expanding North and East Baldivis residential communities. This will significantly increase the commercial catchment in the Baldivis cell and assist both the short and long term viability of the NAC;
- ❖ Early development of the original NAC site would have been ahead of much of the surrounding residential area, thus suggesting the large landholding would be kept vacant for many years until considered commercially viable to develop. It is considered an unreasonable impost to require the proponent to land bank such a large landholding for 5 – 10 years before the development of a large NAC became commercially viable and attractive to investors;
- ❖ The proposed NAC site has the same high standard and opportunities for access and connectivity to the surrounding area as that originally allocated in the DSP. The site retains a Nairn Drive frontage and will continue to have exposure to high volumes of passing trade. The residential catchment for the proposed relocated NAC is also comparative;
- ❖ The owner of the land upon which the NAC was originally planned on the DSP has agreed to relocate the site to the proposed location within Lot 312, as illustrated by the Structure Plan Map (**Plan 1**). A written agreement between the land owners is attached under **Appendix 3** ; and
- ❖ The proponent of the Structure Plan undertakes that the NAC will provide similar land uses as intended by the Baldivis North DSP. A letter of undertaking signed by the proponent as land owner of Lot 312 outlining the use has been prepared (**Appendix 3** refers).

The proposed ~2.8ha of *Commercial* zoned land will be provided across two landholdings on the western side of Nairn Drive. In accordance with development intentions under the Baldivis North Local Structure Plan, a projected Nett Lettable Area (NLA) of ~5,500m² will be provided, and with potential for the *Commercial* zoned land to accommodate residential and/or mixed use development.

Should portions of the *Commercial* zoned land be developed exclusively for residential purposes, then additional Public Open Space may need to be provided in accordance with the 10% requirement prescribed in WAPC's *Liveable Neighbourhoods*. Notwithstanding the above, retention of the *Commercial* zoning across any residential development is imperative to ensure an adequate landholding is available for expansion of commercial or mixed use purposes in the long term.

The built form outcomes of the *Commercial* zoned land will require careful consideration by the developer, particularly in relation to the interface and relationship with Nairn Drive, adjacent internal road network and residential land uses.

5.7 Movement Network

A Transport Assessment has been prepared by Transcore (**Appendix 6** refers); and the key findings are summarised in the following section. Detailed cross sections have been prepared to correspond with the overall design philosophy of the Structure Plan area. These road cross-sections accompany the 'Internal Road Hierarchy' Plan (**Plan 6**).

The movement network proposed by the Structure Plan is consistent with the Baldivis (North) District Structure Plan and all documentation and supporting traffic studies associated with this approved DSP. In addition, the proposed movement network links well with that proposed by the East Baldivis District Structure Plan.

5.7.1 Structure Plan Access

Transcore has developed a comprehensive EMME/3 transport model for the Structure Plan, which was used to investigate various access system options for the area in order to design an optimal solution. The future scenario modelled in this area reflects the land use aspirations of *Directions 2031* as detailed in the *Outer Metropolitan Perth and Peel Sub-regional Strategy*.

The proposed access system was developed to achieve the following outcomes:

- ❖ Balance the internal traffic flows;
- ❖ Distribute the impact from traffic to minimise the traffic load onto Baldivis Road and Nairn Drive;
- ❖ Ensure alternative access/egress options are available for safety reasons; and
- ❖ Enable ease of access (and egress) to the proposed Neighbourhood Activity Centre.

The Structure Plan design fosters an interconnected and legible road network with six access points provided along Fifty Road and one additional access to future Nairn Drive in the southern portion of the Structure Plan. Existing Eighty Road will be reconfigured to integrate with the proposed road network of the Structure Plan.

A detailed SIDRA Intersection Analysis and layout plans are included in **Appendix B** of the Transport Assessment Report; key findings are summarised in the following section:

5.7.1.1 NAIRN DRIVE

The main access points of the Structure Plan area will be provided via by future 4-way signalled intersections at Nairn Drive/Fifty Road to the north, and Nairn Drive /Amazon Drive south of the proposed NAC. Whilst other 4-way intersections along Nairn Drive have been constructed as two-lane roundabouts, these two 4-way signalled intersections will potentially have significant pedestrian demand because of the adjacent Primary School and NAC sites respectively.

Traffic signals provide better opportunity for pedestrians and cyclists to cross such intersections, thus traffic signals would be the preferred intersection treatment. Should roundabouts be ultimately constructed, it is recommended that additional facilities be provided to assist pedestrians and cyclists to safely cross Nairn Drive nearby to the Primary School and NAC sites.

The NAC intersection would at least require appropriate pram ramps and grab rails at suitable locations, however could ultimately be upgraded to a signalised pedestrian crossing should the volume of pedestrian movements and future traffic flow warrant it. Further information regarding suitable crossing infrastructure for the above two locations is provided in **Appendix 6**.

5.7.1.2 BALDIVIS ROAD

The future planning for Baldivis Road includes upgrading to a two-lane boulevard (i.e. one lane each way with a central median island), thus consistent with road upgrades for established development south of the Structure Plan. This is the typical cross-section identified in *Liveable Neighbourhoods* for *Integrator B* or *Neighbourhood Connector A* roads) Future traffic volumes of 9,000 – 10,000 vpd adjacent to the Structure Plan area, as modelled in the transport assessment, is consistent with this road standard.

Two intersections are proposed on Baldivis Road within the Structure Plan area; these being the existing T-junctions at Fifty Road and Ingram Road. Initially these will function satisfactorily as priority-controlled T-junctions.

Structure planning within the East Baldivis development cell (east of Baldivis Road) indicates that both the Baldivis Road / Ingram Road and Baldivis Road / Eighty Road intersections will become 4-way roundabout intersections; with planned Neighbourhood Connector road connections extending east into this development cell. Subdivision development to the east will be the trigger for intersection upgrades at these two intersections.

5.7.1.3 FIFTY ROAD

The Structure Plan proposes several new intersections along Fifty Road and most will operate satisfactorily as priority-controlled T-junctions (i.e. Stop or Give Way sign control). The proposed 4-way intersection at McDonald Road is recommended to be constructed as a single-lane roundabout given the higher traffic volumes forecast at this location.

5.7.2 *Road Configuration and Hierarchy*

The projected traffic volumes prepared under the EMME/3 strategic transport model for the internal Structure Plan road network were used to determine the road hierarchy and the generic road reservations. Traffic modelling indicates traffic volumes of approximately 6,400 vehicles per day (vpd) for the residential component and 5,600 vehicles per day generated by the NAC.

The general road hierarchy and traffic volumes are represented under **Plan 6** and **Table 4**. The road hierarchies are guided by *Liveable Neighbourhoods*.

The proposed road configuration is based on a 'modified grid' system of circulation which responds to the natural topography of the Structure Plan area. Road reserves proposed are 15.0 m for 'Access Roads' and 18.0 m for 'Neighbourhood Connector' roads. The 'Internal Road Hierarchy' Plan is generally based on the *Liveable Neighbourhoods* standard cross sections. Reduced verge widths are permitted by *Liveable Neighbourhoods* where adjacent to Public Open Space.

Table 4: Road Hierarchy

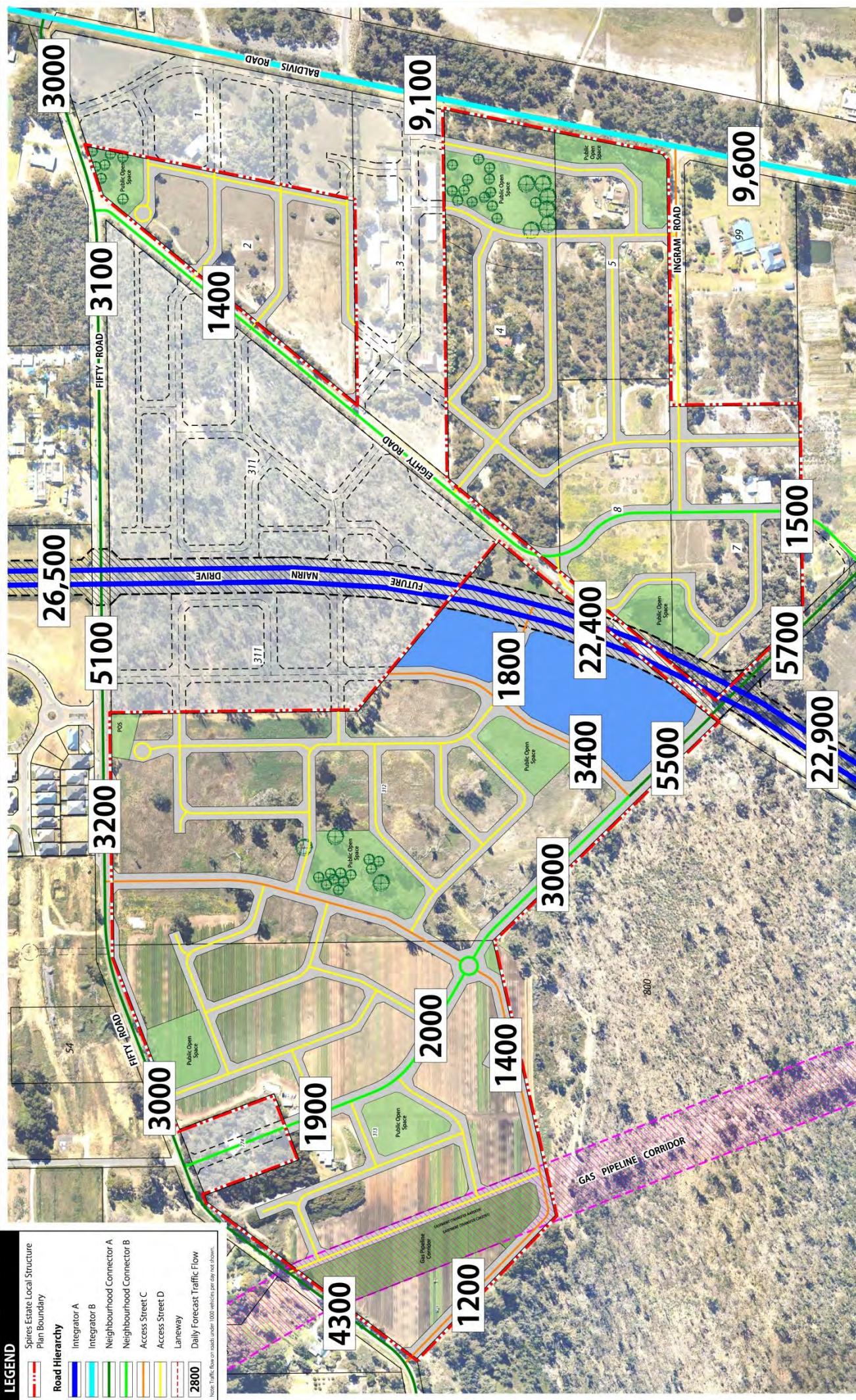
| Road Classification | Indicative upper volume (vehicles per day) | Indicative road reserve width | Indicative road pavement width |
|---------------------------|---|----------------------------------|-----------------------------------|
| Integrator A | 35,000 | 40m | 2 x 8.5m |
| Integrator B | 15,000 | 29m | 2 x 5m |
| Neighbourhood Connector A | 7,000 | 23m - 24m | 2 x 5m |
| Neighbourhood Connector B | 3,000 | 18m – 20m | 7.4m |
| Access Street C | 3,000 | 14m – 16m | 6m |
| Access Street D | 1,000 (D) | 13m – 15m | 6m |
| Laneway | 300 | 6m | 6m |

** All road reserve widths comply with Liveable Neighbourhoods, and in most circumstances exceed the specified reserve widths.*

The distribution and assignment of the development-generated traffic was based on the actual location of the subject development, the existing road network and the location of various district attraction nodes. As a result, the resultant external distribution used in this analysis is as follows:

- ❖ ~7% Baldivis Road (north);
- ❖ ~28% Nairn Drive (north);
- ❖ ~5% McDonald Road & subdivision roads (north);
- ❖ ~12% Fifty Road (west);
- ❖ ~29% Nairn drive (south);
- ❖ ~2% Subdivision roads (south);
- ❖ ~10% Baldivis Road (south); and
- ❖ ~7% East of Baldivis Road (future subdivision).

Forecast traffic volumes for the Structure Plan area are illustrated in **Plan 6**.



LEGEND

- Spire Estate Local Structure
- Plan Boundary
- Road Hierarchy**
 - Integrator A
 - Integrator B
 - Neighbourhood Connector A
 - Neighbourhood Connector B
 - Access Street C
 - Access Street D
 - LaneWAY
- Daily Forecast Traffic Flow

Notes: Traffic flow on roads under 1000 vehicles per day not shown.

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Scale 1:4000 @ A3

0 25 50 75 100 125 150 metres

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| COMPILED BY: | DPS, TRANSCORE | DRAWN BY: | RF |
| DATE: | 28/6/2012 | REVISED: | 22/09/2014 |
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| DRAWING NUMBER: | CARBD-5-001b | JOB CODE: | CARBDLSP |
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NOTES:

- AREAS AND DIMENSIONS SUBJECT TO SURVEY
- CARRIAGEWAYS ARE DIAGRAMMATIC ONLY
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PLAN 6 - Internal Road Hierarchy
 Various Lots Fifty and Eighty Road, BALDIVIS
 for: Spatial Property Group

5.7.2.1 NEIGHBOURHOOD CONNECTOR ROADS

Traffic volumes will be highest around the future NAC. The *Neighbourhood Connector B* is proposed to be 18 metres in width with a standard 7.4m carriageway and verge width of 4.5– 6.1m subject to landscaping and potential embayed parking (**Cross Section 1** refers). *Liveable Neighbourhoods* stipulates an indicative road reserve width of 19.4m, albeit this can be reduced to 18m if certain criteria are met, including embayment parking.

A 23m wide *Neighbourhood Connector A* is proposed on Amazon Drive between Nairn Drive and Eighty Road, and adjacent the NAC. Verge width abutting the Bush Forever site may be reduced by 3 metres subject to detailed design. *Liveable Neighbourhoods* stipulates an indicative road reserve width of 24.2m, however this can be reduced to 23m if certain criteria are met; in this case relaxation of the verge width adjacent the Bush Forever site given this land is not developable and will not include service infrastructure.

Neighbourhood Connector B roads are proposed along Fifty Road, Eighty Road and Amazon Drive, these forming the main roads linking residential cells to the NAC site and broader District Road network.

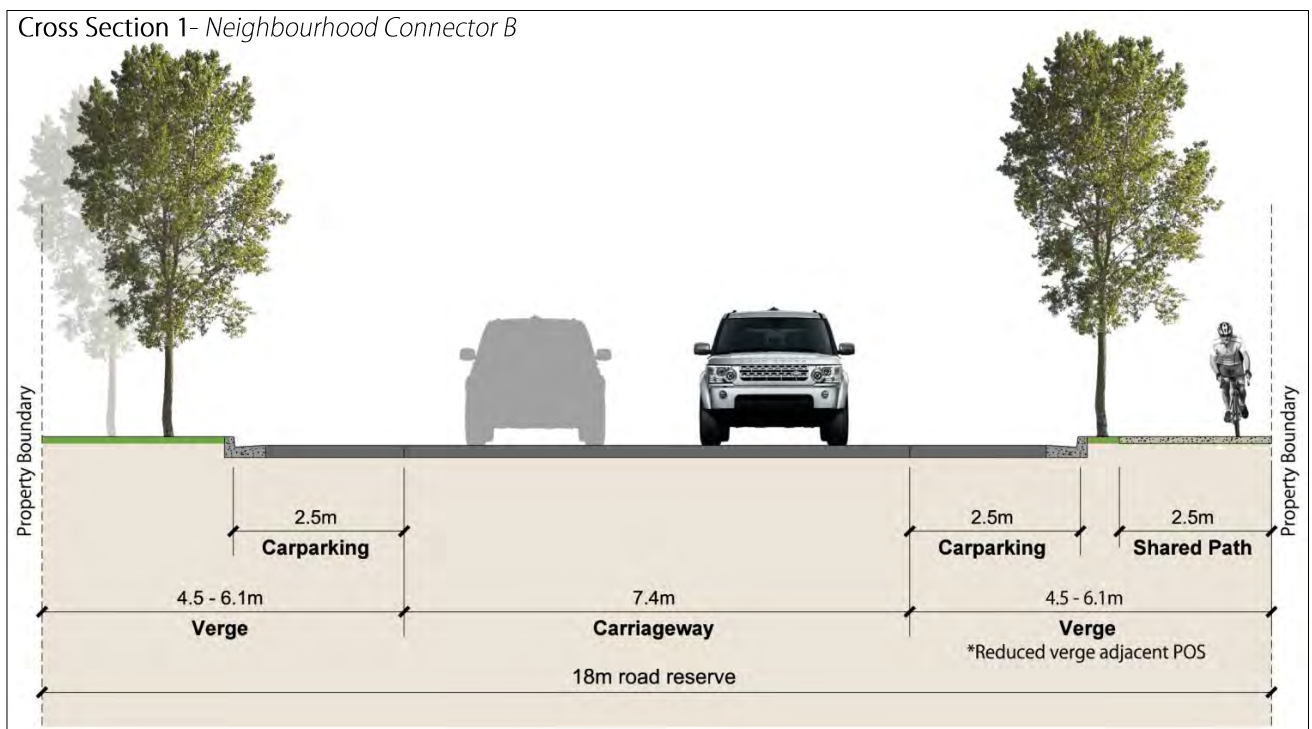
5.7.2.2 ACCESS STREETS

Access Street C roads are proposed adjacent to the NAC, high density R60 residential lots, western boundary fronting the Bush Forever site and section of Ingram Road. These roads may vary from 15 – 16.4m wide subject to the treatment of the road carriageway and verges. Verges of 4.1 – 4.5m verge width may be provided, the latter to include possible parking embayment. Where fronting the Bush Forever Site, an *Access Street C* may be reduced by 2m subject to detailed subdivision design.

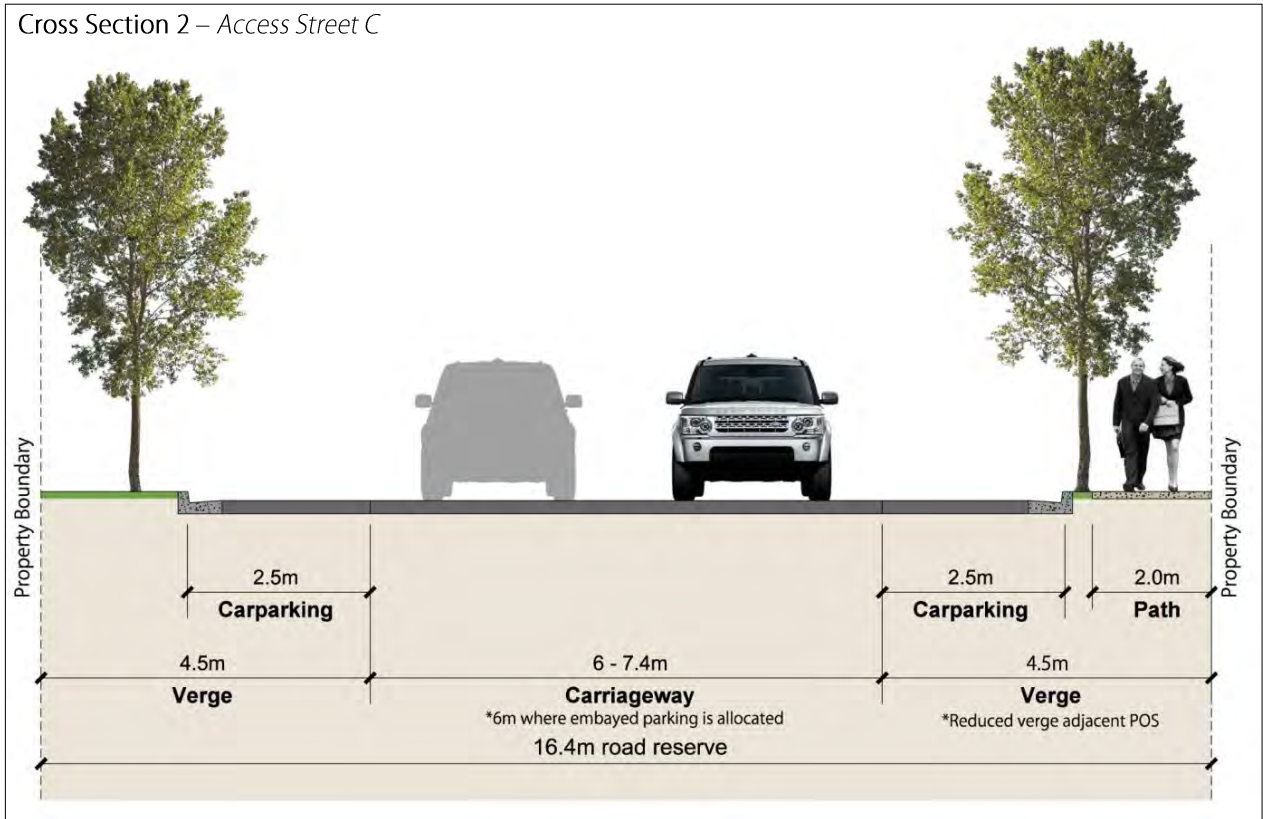
Liveable Neighbourhoods stipulates an indicative road reserve width of up to 15.4m, and with a reduced verge permitted where fronting public parkland.

Access Street D roads area proposed as 15m wide reservations, comprising 6m carriageway and 4.5 metre verges. *Liveable Neighbourhoods* stipulates an indicative road reserve width of up to 15.4m, and with a reduced verge permitted to 1.0m when fronting public parkland.

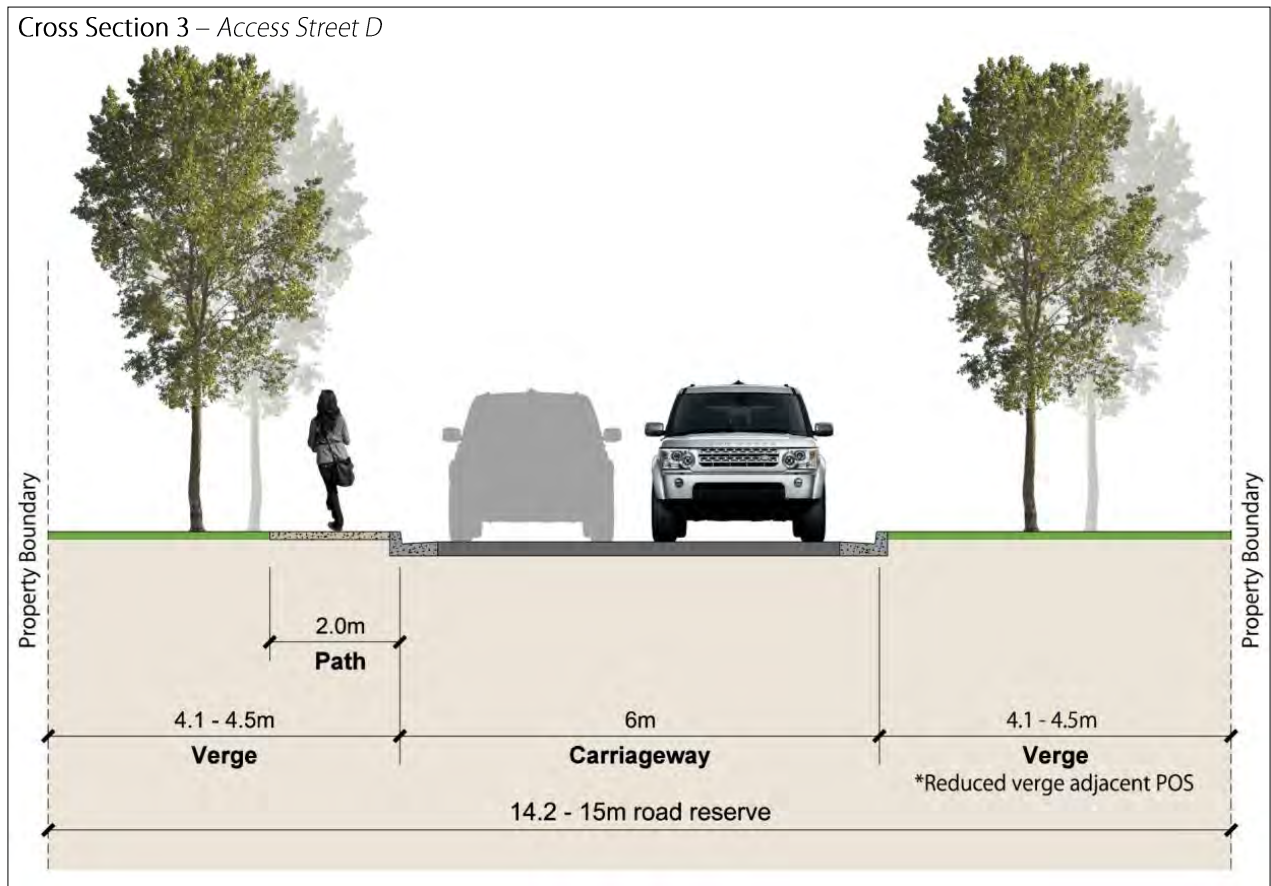
Cross Section 1- *Neighbourhood Connector B*



Cross Section 2 – Access Street C



Cross Section 3 – Access Street D



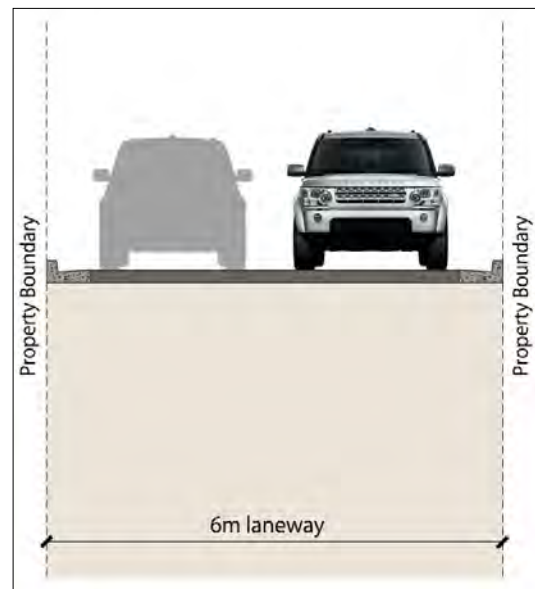
5.7.2.3 LANEWAYS

The typical road reserve for Laneways entails a 6m wide trafficable pavement sufficient to allow two-way movements, rubbish collection, vehicle access into garages located on the rear of properties, flush kerbing and central drainage.

Maximum desirable traffic flow for a laneway is 300vpd.

Visitor parking for all rear-loaded lot product is proposed to be provided to the front or side of the lots, depending on the location.

Cross Section 4 – Laneway



5.7.2.4 INTERNAL INTERSECTIONS

The Structure Plan area proposes several four-way intersections, with roundabouts suggested along Amazon Drive and an internal road between the two *Commercial* zoned sites; *Figure 9* within the Transport Assessment Report **Appendix 6** refers. Roundabout intersections at these points will help manage crossing traffic flows and assist with speed management at strategic locations.

Several four-way intersections are proposed on low-traffic-volume Access Streets; these are recommended to be constructed as priority-controlled intersections with Give-Way signs on the minor road approaches, as guided by *Liveable Neighbourhoods*. Established threshold treatments on side roads intersecting with Amazon Drive, west of Baldivis Road, are good examples of the type of treatment that could be implemented at these 4-way intersections.

Three other 4-way intersections are indicated in the internal road network as a result of the conceptual layout for future development on adjoining landholdings excluded from this Structure Plan. Two are located on Eighty Road and one on Nairn Drive, as illustrated in *Figure 9* of the Transport Assessment Report. In consultation with the City, one intersection on Eighty Road has been identified as a future left in / left out intersection, with the other 4-way intersection on Eighty Road recommended to be constructed as a priority-controlled intersection with Give-Way signs and appropriate threshold treatments on the minor road approaches.

The cost of all upgrades/road works on Eighty Road will be met by the developer.

5.7.3 *Pedestrian and Cycle Network*

The reasonably flat topography of the area and the proposed 'permeable grid' road network creates an excellent opportunity for provision of highly useable pedestrian and cyclist facilities to maximise non-motorised transport modes.

Pedestrian footpaths will be distributed throughout the Structure Plan area in conformance with the 'Indicative Path Network' Plan (refer **Plan 7**). The path network provides for a legible and accessible system of pedestrian access to focal points such as Public Open Space and the proposed Neighbourhood Centre. 'Shared Paths' (Dual Use Paths) are proposed within all *Neighbourhood Connector* roads and specific *Access Street* Roads, and standard footpaths are proposed within all other lower order roads.




All roads will have a footpath or shared path on at least one verge throughout the Structure Plan area.

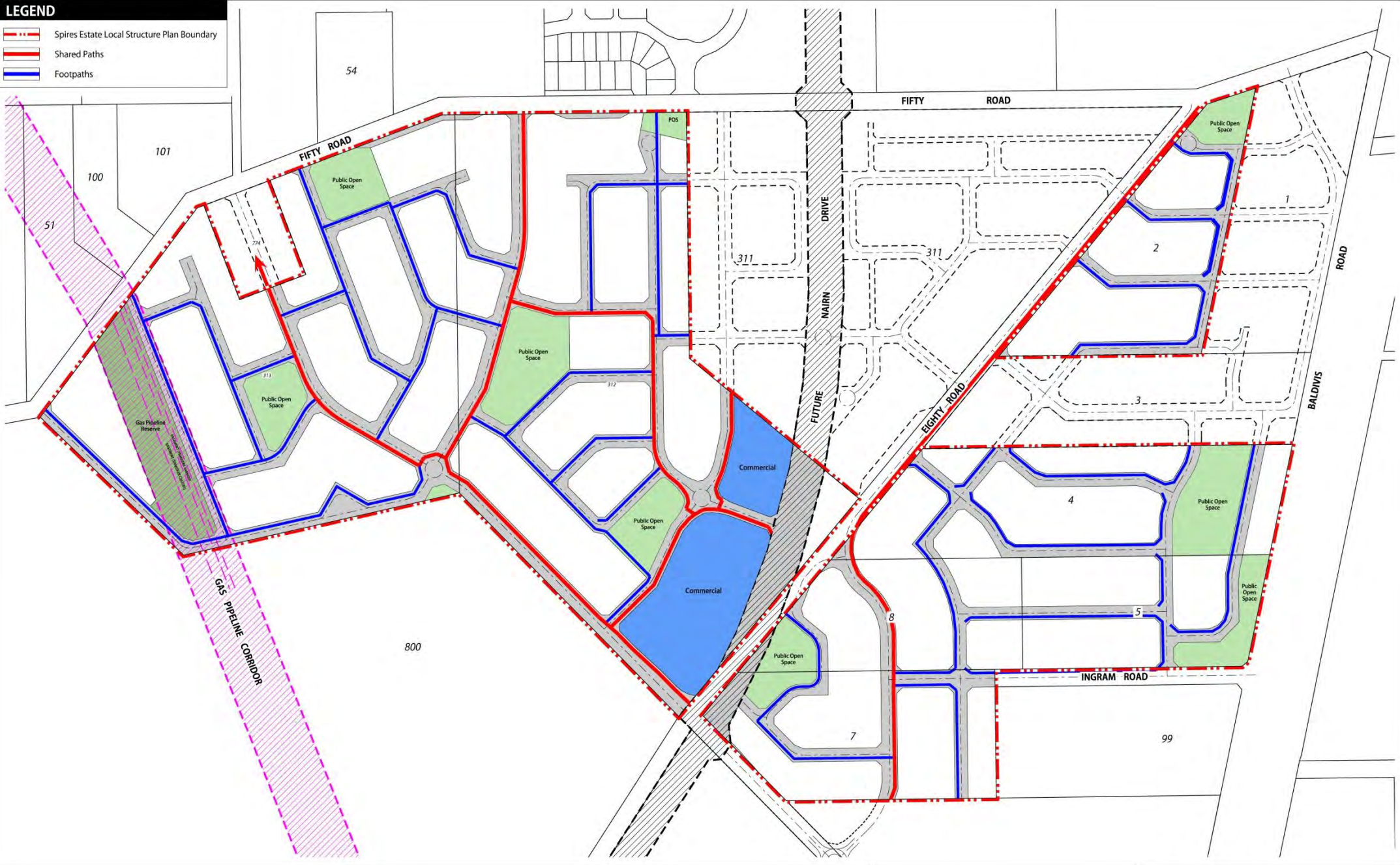
5.7.4 *Public Transport*

The Public Transport Authority has indicated a preference to run a bus service north along future Nairn Drive to connect to Kerosene Lane to the west and potentially continue to Rockingham Station in the long term future.

Current public transport planning anticipates a future bus route through the Structure Plan area, and a potential bus stop within walking distance of the Neighbourhood Activity Centre. This is however dependent on staging of residential development, the road network and the availability of resources. Accordingly, both long term and short term bus routes are illustrated in **Plan 8**.

LEGEND

-  Spires Estate Local Structure Plan Boundary
-  Shared Paths
-  Footpaths



PLAN 7 - Indicative Path Network

Various Lots Fifty and Eighty Road, BALDIVIS

for: Spatial Property Group

NOTES:

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NORTH

Scale 1:4000 @ A3







0 25 50 75 100 125 150 metres

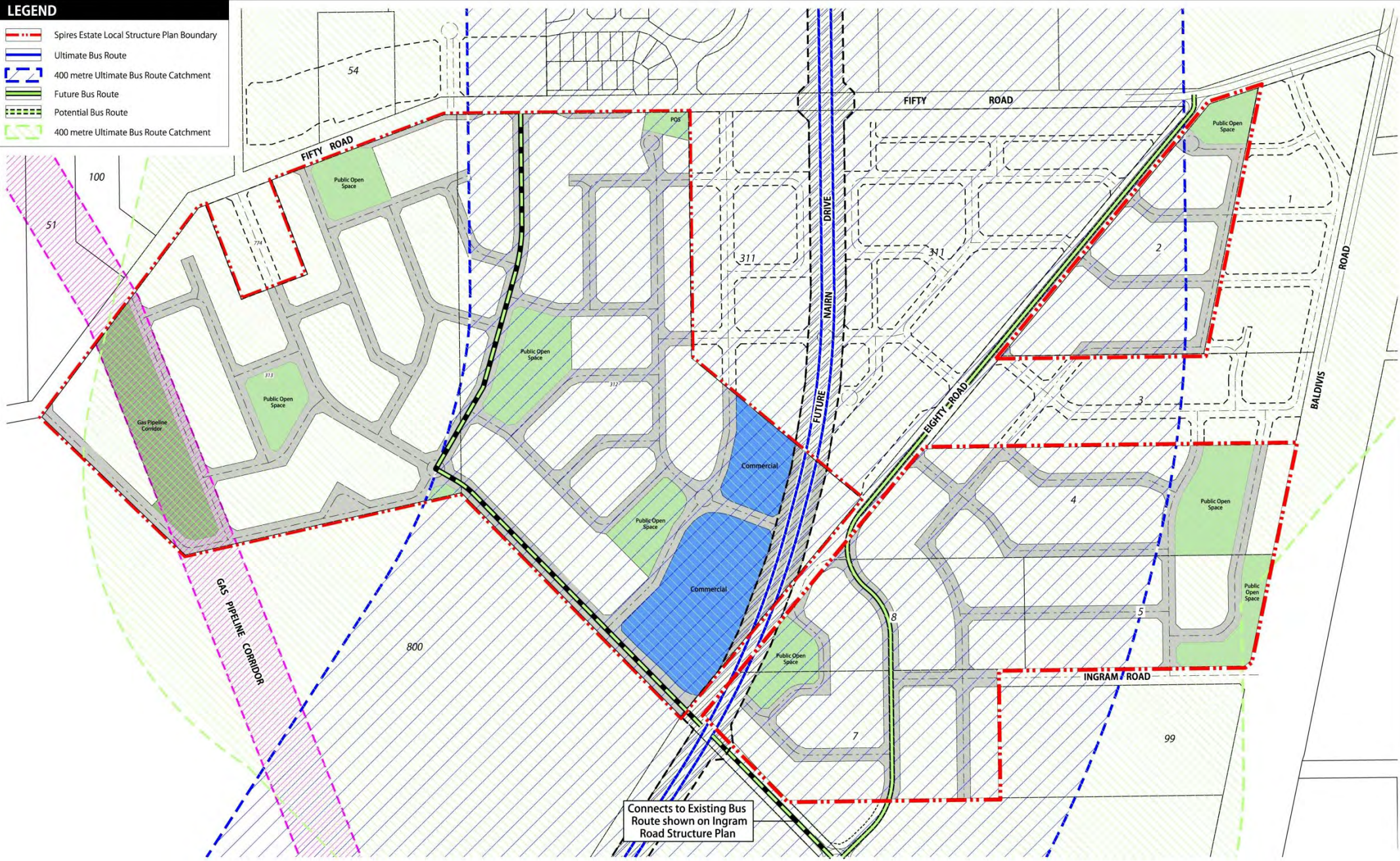
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F (08) 9268 7999
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LEGEND

-  Spires Estate Local Structure Plan Boundary
-  Ultimate Bus Route
-  400 metre Ultimate Bus Route Catchment
-  Future Bus Route
-  Potential Bus Route
-  400 metre Ultimate Bus Route Catchment



PLAN 8 - Bus Routes Plan

Various Lots Fifty and Eighty Road, BALDIVIS

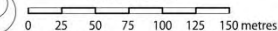
for: Spatial Property Group

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5.8 Public Open Space

The provision of a minimum of 10% Public Open Space (POS) is provided in accordance with the WAPC's *Liveable Neighbourhoods*. POS is to be provided generally in accordance with **Plan 1** under Part One of the Structure Plan; with specific drainage detail and open space credits including relationship to Council Policy Provisions demonstrated in **Plan 9 – Landscape Strategy** and **Plan 10 – Public Open Space** below. All figures are rounded up for the purpose of Structure Plan calculations and will be reviewed in detail at the Subdivision Design phase.

5.8.1 Overview

The Structure Plan proposes a total of eleven areas of 'green space', of which nine are to be classified and credited as Public Open Space (POS). The POS areas are evenly distributed and will be designed so as to create amenity and walkable recreation opportunities for future residents within all subdivision stages. Specific POS areas will accommodate urban stormwater drainage, albeit of varying basin sizes; whilst other POS areas will retain native mature trees where practical based on further detailed survey, design and engineering.

The total POS 'green space' of 5.881ha proposed equates to ~12% of the gross subdivisible area. POS calculations provided under **Plan 10** demonstrate that 10% (4.986ha) of the Structure Plan area is provided as creditable Public Open space area in accordance with *Liveable Neighbourhoods* requirements. All POS areas will be developed and landscaped to a high standard by the proponent for the benefit of the future community.

In addition to this, the environmental objectives underpinning the location and configuration of open space within the Structure Plan include:

- ❖ to preserve areas of highest conservation value;
- ❖ to conserve examples of different natural areas on site and preserve biodiversity;
- ❖ to create sustainable conservation areas;
- ❖ to incorporate natural areas into new urban fabric;
- ❖ to interpret existing landscape and site memory in development areas;
- ❖ to incorporate the natural local landscape character within new public domain planting; and
- ❖ to develop community awareness and involvement.

Importantly, POS areas have been located and configured to ensure the conservation of several stands of mature Tuart trees throughout the Structure Plan area. Where possible Tuart trees have been identified for retention based on their ecological value, suitability for retention and fauna habitat potential.

Consistent with current practice, the POS system has been designed to accommodate stormwater drainage in the form of 'dry' shallow basins (swales). Drainage credits and calculations have been undertaken in accordance with Council Policy and *Liveable Neighbourhoods*.

5.8.2 Design and Drainage Rationale

In addition to the design rationale provided in **Plan 9 – Landscape Strategy**, the Public Open Space areas and location have been influenced by the following design attributes:

'**PARK A**'- This ~0.45ha 'Neighbourhood Active' POS is located in the western portion of the site will cater for residents within a 200m walkable catchment. The POS may offer a shelter and barbeque facilities and a turf kick-about area. There is no drainage within this park, or any significant trees to be retained.

'PARK B'- This ~0.5ha 'Neighbourhood Active' POS fronts Fifty Road and incorporates a drainage area, with passive recreational use and internal paths connecting to the street path network.

Residential lots directly abutting the eastern boundary of this open space will be elevated above the base of any drainage basin, noting that the 1:10yr ARI drainage component of ~0.117ha equates to 24% of the site.

This open space provides an appropriate size for a basketball court, tennis hit-up wall or skate bowl, and an area for turf kick-about.

'PARK C' – This POS at ~0.13ha will primarily serve a drainage function, and accordingly no open space credit is sought for this park.

'PARK D'- This ~0.89ha 'Neighbourhood Passive' is located centrally to the western portion of the Structure Plan area, and will cater for residents within a 200m walkable catchment. This POS provides no drainage function.

A number of mature Tuart trees are situated within this POS and every effort will be made by the developer to retain these trees at the request of the City; this subject to final detailed engineering and subdivision design, with particularly emphasis on adjacent road grades.

A number of recreational facilities are earmarked within this centrally located park including a shelter, barbeque and playground facilities.

'Park E' – This ~0.5ha 'Neighbourhood Active' POS is located to the south of the western portion of the Structure Plan area, provided adjacent to the *Commercial* zoned land. This POS will serve a strategic drainage function, with compensation for 1:10yr ARI events projected to occupy up to 46% of the site. Notwithstanding this, the remainder of the site provides ample space recreational facilities including playgrounds, shade structures and turf kick-about areas.

'PARK F'- This ~0.49ha 'Neighbourhood Passive' POS fronting the eastern side of Nairn Drive provides a strategic drainage function with compensation for 1:10yr ARI events projected to occupy up to 37% of the site. A number of mature Tuart trees are also located in this park and every effort will be made by the developer to retain these trees at the request of the City. Retention of the remnant vegetation is subject to final detailed engineering and subdivision design including grade of adjacent roads as well as serving the required drainage function.

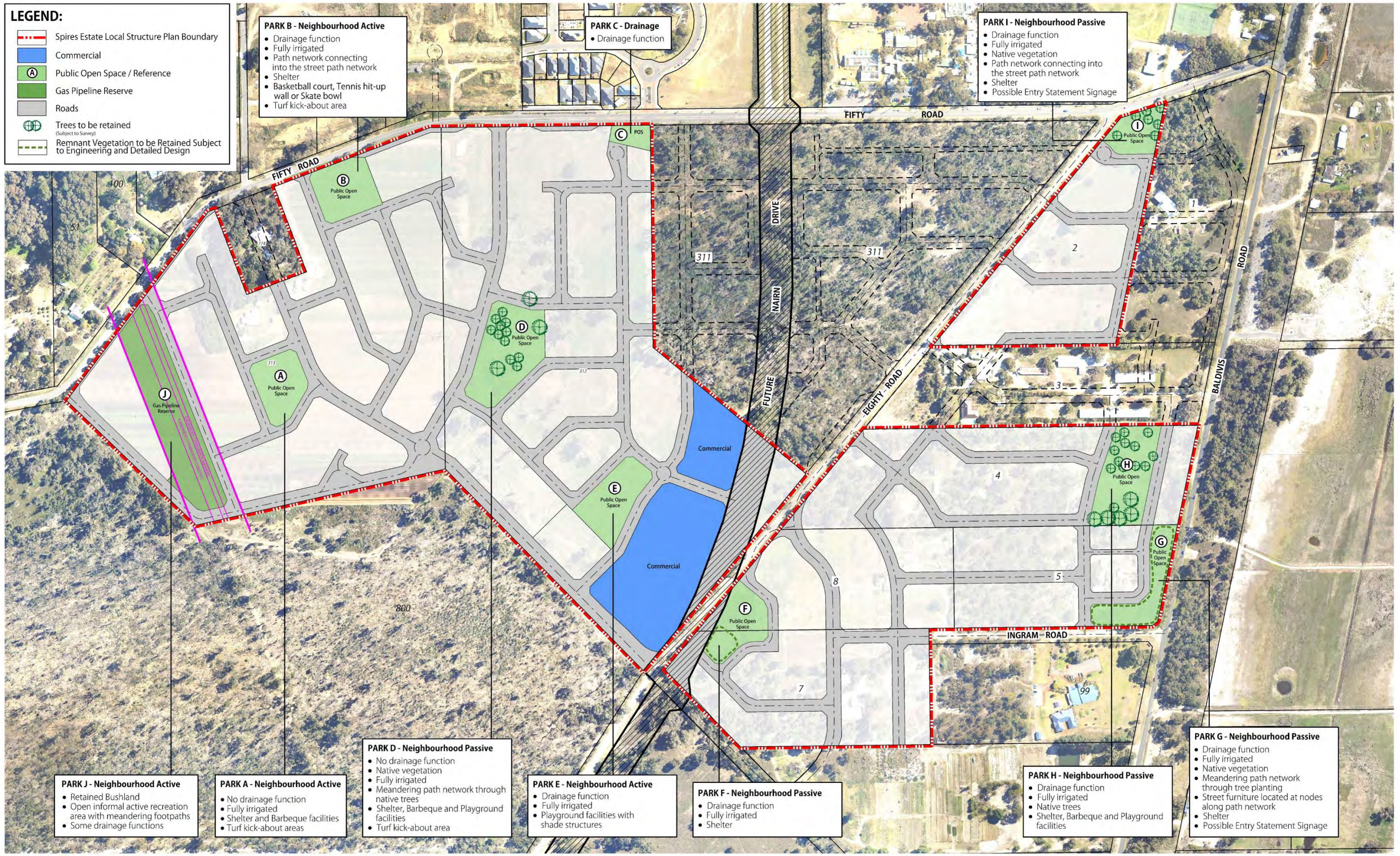
'PARK G'- This ~0.43ha 'Neighbourhood Passive' POS forms the eastern entrance into the Structure Plan area, on the north-western corner of the Ingram and Baldivis Roads intersection. Accordingly, this park will serve as an entry statement into the Structure Plan area and may accommodate future Estate signage by the developer.

Along with a minor drainage function, this linear configured park also serves to retain good quality remnant vegetation, including stands of mature Tuart trees fronting both Ingram and Baldivis Roads; this at the request of the City. Retention of the remnant vegetation is subject to final detailed engineering and subdivision design including adjacent road grades as well as serving the required drainage function.

'PARK H'- This large 0.85ha 'Neighbourhood Passive' POS will retain a large number of stands of mature Tuart trees; this again dependent on final detailed engineering and subdivision design, particularly the grades of roads adjacent.

This POS will serve a minor drainage function and will cater for residents within a 200m walkable catchment.

'PARK I'- This 0.32ha 'Neighbourhood Passive' POS is located at the northern extremity of the Structure Plan area, at the intersection of Eighty and Fifty Roads. This POS will ultimately form part of a larger POS area (~0.6ha) with the adjoining Lot 1. This POS will serve a strategic drainage function with up to 39% of the Spiers Estate Structure Plan portion of the site providing compensation for 1:10yr ARI events.



PLAN 9 - Landscape Strategy

Lots 312 & 313 Fifty Road, Lots 2, 4, 7, 8 Eighty Road, and Lot 5 Baldivis Road, Baldivis
for: Spatial Property Group



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| NORTH | | NTS @ A3 | |
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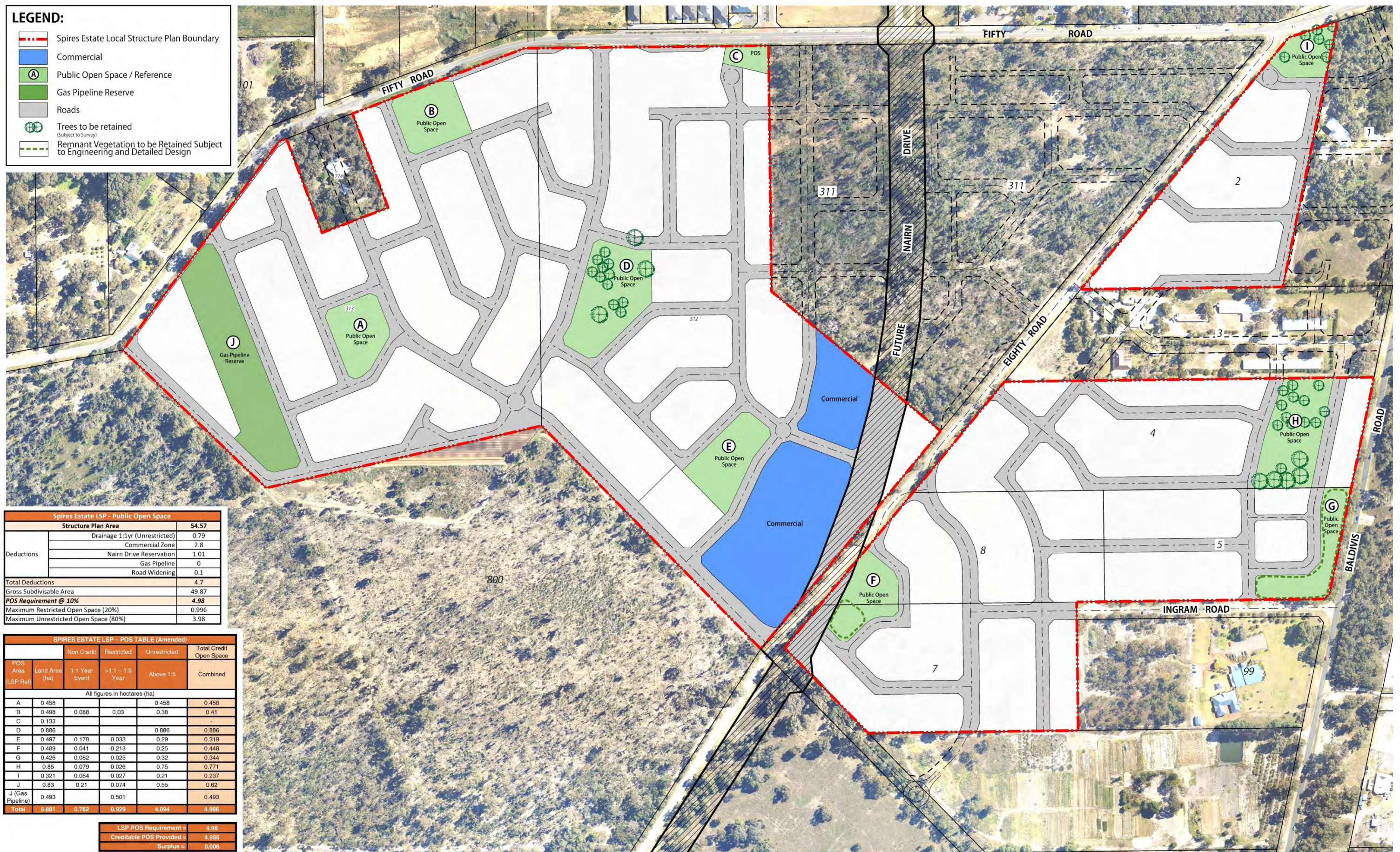
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LEGEND:

-  Spires Estate Local Structure Plan Boundary
-  Commercial
-  Public Open Space / Reference
-  Gas Pipeline Reserve
-  Roads
-  Trees to be retained (Subject to Survey)
-  Remnant Vegetation to be Retained Subject to Engineering and Detailed Design



| Spires Estate LSP - Public Open Space | |
|---------------------------------------|-------------|
| Structure Plan Area | 54.57 |
| Deductions | |
| Drainage 1:1yr (Unrestricted) | 0.79 |
| Commercial Zone | 2.8 |
| Nairn Drive Reservation | 1.01 |
| Gas Pipeline | 0 |
| Road Widening | 0.1 |
| Total Deductions | 4.7 |
| Gross Subdivisible Area | 49.87 |
| POS Requirement @ 10% | 4.98 |
| Maximum Restricted Open Space (20%) | 0.996 |
| Maximum Unrestricted Open Space (80%) | 3.98 |

| SPIRES ESTATE LSP - POS TABLE (Amended) | | | | | |
|---|----------------|----------------|-----------------|------------------------|----------------------------------|
| POS Area (LSP Ref) | Land Area (ha) | Non Credit | | | Total Credit Open Space Combined |
| | | 1:1 Year Event | >1:1 - 1:5 Year | Unrestricted Above 1:5 | |
| All figures in hectares (ha) | | | | | |
| A | 0.458 | | | 0.458 | 0.458 |
| B | 0.498 | 0.088 | 0.03 | 0.38 | 0.41 |
| C | 0.133 | | | | |
| D | 0.886 | | | 0.886 | 0.886 |
| E | 0.497 | 0.178 | 0.033 | 0.29 | 0.319 |
| F | 0.489 | 0.041 | 0.213 | 0.25 | 0.448 |
| G | 0.426 | 0.082 | 0.025 | 0.32 | 0.344 |
| H | 0.85 | 0.079 | 0.026 | 0.75 | 0.771 |
| I | 0.321 | 0.084 | 0.027 | 0.21 | 0.237 |
| J | 0.83 | 0.21 | 0.074 | 0.55 | 0.62 |
| J (Gas Pipeline) | 0.493 | | 0.501 | | 0.493 |
| Total | 5.881 | 0.762 | 0.929 | 4.094 | 4.986 |

| | |
|---------------------------|-------|
| LSP POS Requirement = | 4.98 |
| Creditable POS Provided = | 4.986 |
| Surplus = | 0.006 |

PLAN 10 - Public Open Space

Lots 312 & 313 Fifty Road, Lots 2, 4, 7, 8 Eighty Road, and Lot 5 Baldvis Road, Baldvis
for: Spatial Property Group



| NORTH | | | |
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| PROJECTION: | MGA 50 | CHECK: | MS |
| DATUM: | AHD | PLAN NUMBER: | CARBD-5-005D |

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Catering for residents within a 200m walkable catchment, 'Park I' will also serve to retain a number of stands of mature Tuart trees subject to final detailed engineering and subdivision design. The positioning of this POS provides opportunity as the northern 'entry statement' into the Structure Plan area.

'PARK J'- This ~1.32ha 'Neighbourhood Active' POS is situated over the Parmelia Gas Pipeline easement and associated setbacks (buffers).

The gas pipeline corridor itself contributes to only ~0.5ha of the total POS area with this portion treated as 'restricted' open space; and the balance of the pipeline buffer area designated as 'unrestricted' open space.

Facilities located within this open space area and associated landscaping will be restricted to that permitted by the gas pipeline proprietor; with anticipated bush retention in between turf and landscaping areas consistent with other development encompassing the pipeline corridor. It is recognised that drainage is permitted within the setback (buffer) area, with up to 35% of the 'unrestricted' POS area providing compensation for 1:10yr ARI events.

5.9 Urban Water Management

A Local Water Management Strategy (LWMS) has been prepared by Coterra Environment (**Appendix 5** refers).

A total water cycle management approach to water management across the Structure Plan area has been developed based on detailed site-specific investigations, industry best-practice and relevant state and City of Rockingham policies relating to water management.

The LWMS is in accordance with the *Better Urban Water Management Guidelines*, and addresses the following:

- ❖ Identification of the sites current hydrological regime and existing environment;
- ❖ Identification of proposed water supply (including irrigation requirements) and wastewater disposal;
- ❖ Identification of the constraints within the development area which may affect the design of the development with respect to urban stormwater drainage;
- ❖ Provides a description of the stormwater management strategy for minor and major events, including details on the proposed water sustainable urban design best management practices to be employed;
- ❖ Identification and description of mechanisms to protect the water regime, including water quality and water levels. This will include a discussion of the overarching design principles that will be employed to mitigate any impact from run-off and water issues, and ensure that the environment and the development will not be adversely impacted on;
- ❖ Identification of monitoring requirements and agreed performance targets for the urban stormwater and drainage treatment system; and
- ❖ Identification of contingency measures to be implemented in the event that pollution and nutrient removal, and stormwater detention are not achieving agreed performance targets.

The overall objective for water management is to replicate the hydrological regime that currently exists prior to development of the Structure Plan area.

The LWMS has been prepared with the intention of not only demonstrating that the Structure Plan is spatially able to accommodate the water management approaches proposed, it also intends to guide the future detailed designs for the site by providing clear, auditable criteria that will ensure that overall objectives are met.

An 'Urban Stormwater Drainage Catchment' Plan is provided in **Appendix 5**.

6 INFRASTRUCTURE CO-ORDINATION, SERVICING AND STAGING

An Engineering Service report has been prepared by Development Engineering Consultants (DEC) to support the Structure Plan (**Appendix 2** refers). The following section represents a summary of the report findings.

6.1 Road works

All roads will be constructed to City of Rockingham standards.

As part of subdivision works, Baldivis Road is required to be upgraded to an urban standard; in this case a single lane boulevard design consistent with the upgrading commensurate with subdivision development to the south. This will include reconstruction where required plus kerbing, sheeting, drainage and underground services.

Portions of Naim Drive within the Structure Plan area will be constructed by the developer, although in the interim period, connection with Eighty Road is proposed subject to land issues being resolved with adjoining owners.

It is envisaged that Fifty and Eighty Roads will also be upgraded to urban standard during the development, including reconstruction (or supplementing), kerbing, sheeting and drainage, plus underground services as required for the development. Fifty Road is also proposed to be upgraded to a "Boulevard" design, which includes two single lane carriageways in accordance with the existing sections already upgraded.

Where roadways cross the pipeline easement, the profile of the road will be lifted to ensure that the required minimum cover over the pipeline is maintained to the specification/satisfaction of the gas pipeline operator/regulator and in accordance with the Pipeline Risk Management Plan.

6.2 Water

Reticulated water will be supplied to the Structure Plan area from the existing/new development abutting the land to the south, currently under construction. Water Corporation planning for this area is to link into and augment the existing supply by extending a new feeder main along Eighty Road from their Tamworth reservoir immediately south of the Structure Plan area. This feeder main is to link into the 300mm Main being extended along Baldivis Road, thus providing capacity for all developments between Baldivis Road and Eighty Road, and is to be installed in the near future.

At present there is reticulated water supply past the Structure Plan area in Fifty Road. An existing 250mm water Main abuts the northern verge of Eighty Road for the whole length of the Structure Plan frontage; this serving the existing developments of *Baldivis North* and *The Chase* from the Water Corporation's Tamworth reservoir immediately south of the Structure Plan area. A planned 300mm distribution Main, proposed along Baldivis Road, will be constructed as far as Ingram Road concurrent with development of the Structure Plan area. The 250mm Main also links along Fifty Road to Baldivis Road.

Water Corporation Planning requires a 600mm distribution Main along Baldivis Road to be extended to Fifty Road. Planning also requires a 500mm Main to be extended along Eighty Road between Tamworth Reservoir and Fifty Road, which will boost both the capacity and pressure in the area.

It is anticipated that both these sections of Main will need to be constructed as part of the Spiers development, although the timing of the various upgrades will depend on the timing and staging of this development relative to others. Case in point, if a cross connection was made between Baldivis Road and Eighty Road, the boost from that cross connection may increase the number of lots that can be immediately serviced.

6.3 Sewerage

The site falls within the catchments of three existing wastewater pumping stations (WWPS) being McDonald Road to the north, Baldivis Road to the north-east and Tamworth Boulevard to the south.

The 'Catchment Plan', together with the required fill levels is shown in *Drawing S100* in DEC Servicing Report (**Appendix 2** refers).

At present, the only portion of the catchment that is relatively unconstrained by capacity is the Tamworth Boulevard Pumping Station; this discharging south to the Rivergums Estate then west to the Point Peron Waste Water Treatment Plant (WWTP). The existing system has sufficient capacity for the designated Spiers catchment.

The Water Corporation has now achieved approval for linking of Mains to the East Rockingham WWTP, and consequently has agreed to development in the immediate area.

Connections can be made directly into existing sewers to the north, east and south catchments, and partially for the northern catchment as described below:

- ❖ Northern areas - McDonald Road and Baldivis WWPS's are severely limited by capacity. Currently the McDonald Road Station has been sized for an interim capacity of 15 litres per second (l/s), this equivalent to ~1500 lots, and Baldivis Road Pumping Station with suitable upgrade that can cater for a capacity of ~24 l/s (~2400 lots).
- ❖ Western areas – relating to the northern catchment, west of Eighty Road. This area is separated into two sub catchments, although they both connect ultimately to the McDonald Road WWPS.
 - The eastern sub catchment area connects to the existing 375mm sewer at the junctions of Fifty Road and Ingerfield Gardens. As part of the Spiers development, a 225mm diameter sewer is proposed to be extended from Fifty Road (Ingerfield Gardens) through the subdivision to Eighty Road to serve the proposed *Commercial* zoned land. There is a need for site fill on the southern portion of Lot 312 adjacent to Eighty Road to provide suitable cover for the sewer.
 - The western sub catchment area will need a 225mm extension from the McDonald Road WWPS along McDonald Road to Fifty Road. There is a need to fill the southern portion of this sub catchment to allow for the sewer to be constructed over the top of the gas pipeline and the low are along the southern boundary.

6.4 Power

Sufficient power supply exists within the area to service the Structure Plan area; 22Kv aerial lines are located in Baldivis Road, Fifty Road and Eighty Road.

Existing aerial powerlines will be relocated underground in line with current Western Australian Planning Commission approval guidelines at the cost of the developer. Transformer locations will be determined during the detailed subdivision design stage.

6.5 Telephone and Gas

Telephone and gas services are available to the site, and will be extended throughout the Structure Plan area during construction from Fifty and Baldivis Roads.

7 IMPLEMENTATION

7.1 Earthworks and Retaining Walls

The Structure Plan area requires filling in the southern and western areas to facilitate sewerage into the existing infrastructure. The fill levels vary, depending on the proximity of the site to the relevant pumping station, but in general the western portion of the site will be filled some 2.5 to 3.0m and retained on the boundary where necessary.

All lots will be finished level, with erection of retaining walls to suit. Retaining wall heights are proposed to be restricted to 1.5m in height on side boundaries, with a maximum height of 3m to rear boundaries; this ensuring maximum amenity to lots without excessive overshadowing. Earthworks are proposed to be designed on a 'cut to fill' balance as per levels illustrated in **Appendix 7**.

The City has prepared a preliminary design for future Nairn Drive which sets localised levels. Although this may have to be varied when the detailed design is undertaken, the preliminary design will need to be confirmed at Fifty Road and Eighty Road to coincide with existing road levels.

Where roads connect landholdings under separate ownership, it is likely that the boundary levels will need to be either matched to existing level or co-ordinated to ensure that a staged development approach can be accommodated.




7.2 Staging

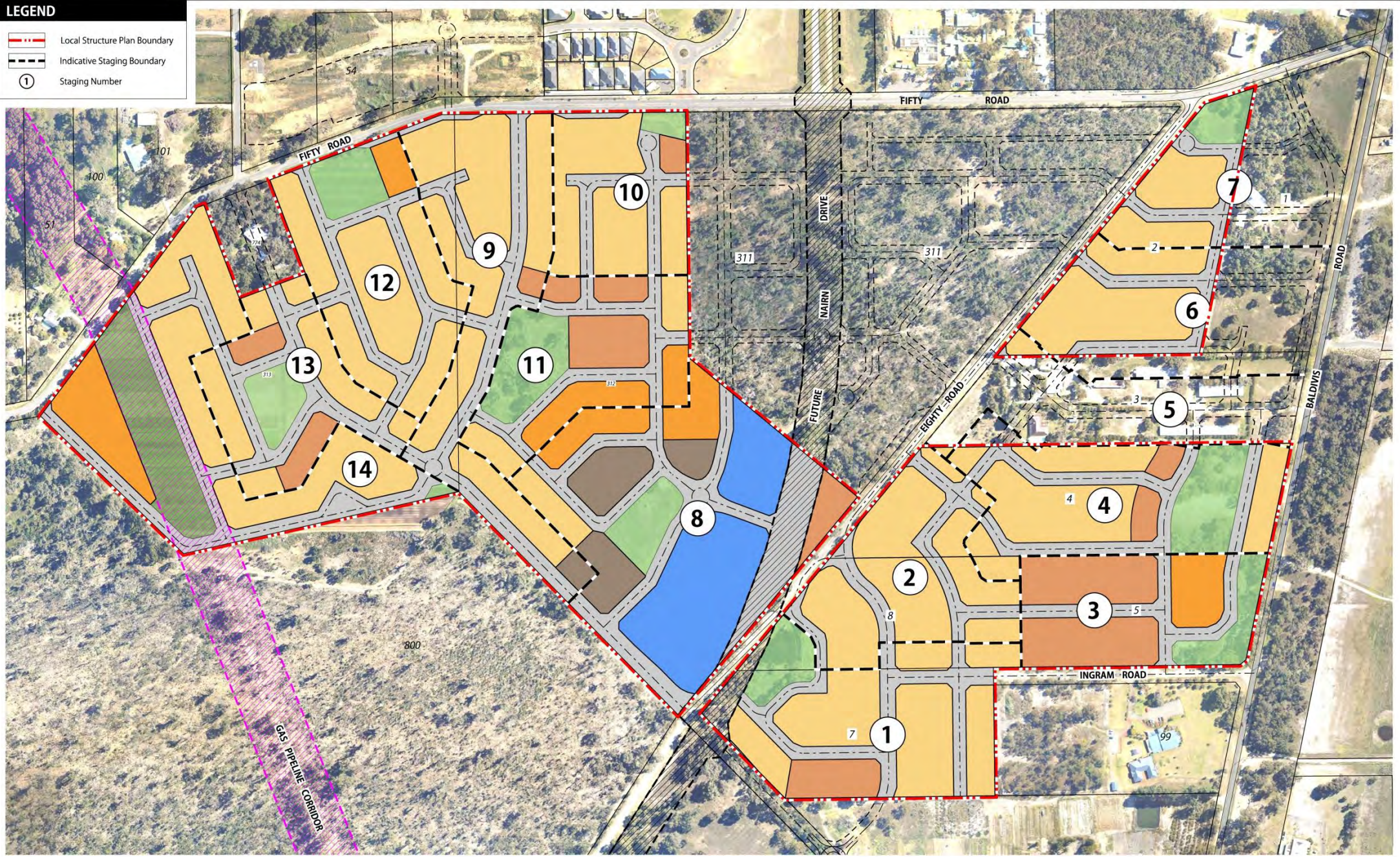
Development of the Structure Plan area requires detailed subdivision design and subdivision approval from the Western Australian Planning Commission.

Development is envisaged to commence central-east in the Structure Plan area, this commensurate with the final staging within The Spiers Estate encompassed by LSP No. 1. Development will then extend north and then in an anti-clockwise direction in the western portion of the Structure Plan. An Indicative Staging Plan is provided under **Plan 11**.

Development within the Structure Plan area will be staged so as to avoid established buffers associated with the adjacent poultry farm and market garden operations; with development staggered until such time that these operations cease.

LEGEND

-  Local Structure Plan Boundary
-  Indicative Staging Boundary
-  Staging Number



PLAN 11 - Indicative Staging Plan

Various Lots Fifty and Eighty Road, BALDIVIS

for: Spatial Property Group

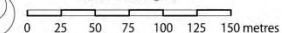


NOTES :

- AREAS AND DIMENSIONS SUBJECT TO SURVEY
- CARRIAGEWAYS ARE DIAGRAMMATIC ONLY
- BASE DATA SUPPLIED BY LANDGATE / DEPT OF PLANNING



Scale 1: 4000 @ A3



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| COMPILED: DPS | DRAWN BY: | RF |
| DATE: 23/11/2012 | REVISED: | 22/09/2013 |
| GRID: MGA 50 | DATUM: | AHD |
| DRAWING NUMBER: CARBD-5-012b | JOB CODE: | CARBDSLSP |
| FILE ID: M:\CARBD\Base\Report Diagrams\CARB-5-012b.dgn | | |



28 Brown St, East Perth WA 6004
 PO BOX 6697 EAST PERTH 6892
 T (08) 9268 7900
 F (08) 9268 7999
 E dps@dpswa.com.au