



Planning & Development Services

YAKAMIA/LANGE STRUCTURE PLAN

Contents

This structure plan comprises three (3) parts being: an executive summary; a non statutory (explanatory) section; and a statutory (provisions) section.

Part 1 – Executive Summary

The executive summary gives an overview of the purpose of the plan, major influences that guided outcomes and principle components of the plan.

Part 2 – Non-statutory (explanatory) section

The non-statutory section provides a reference guide to interpret and justify the implementation of the statutory section.

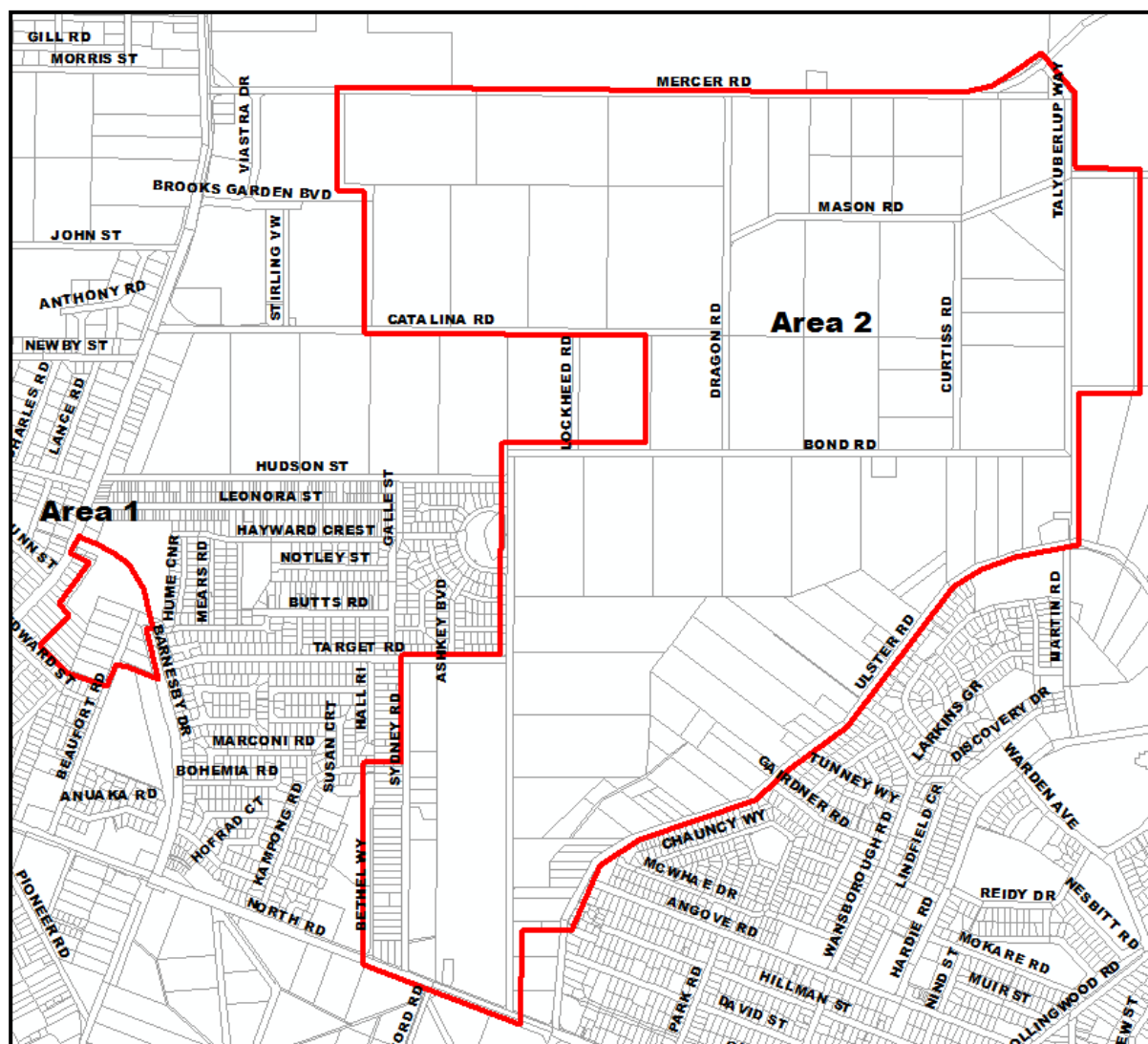
Part 3 – Statutory (provisions) section

The statutory section contains the structure plan map(s) and statutory planning provisions.

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1.2 Purpose of Structure Plan

The Yakamia/Lange structure plan provides guidance to the City of Albany and the Department of Planning in the exercising of discretion for the location and layout of land uses and management of environmental issues within the structure plan area.

It includes potential development areas, foreshore protection areas, vegetation protection areas and road networks. It also provides proposals for the implementation of the plan such as zoning mechanisms and management arrangements.

The study areas have been the subject of increasing development pressure over recent years and amendments and subdivisions have previously been considered within the structure plan areas.

1.3 Structure Plan Approval Process

The preparation of the structure plan was undertaken by the City of Albany with support of environmental consultants in developing a Water Management Strategy and Environmental Opportunities and Constraints Plan.

Preparation occurred under the direction of key stakeholders, which included; Councillors, landholders, Department of Planning, Department of Parks and Wildlife, Office of the Environmental Protection Authority, Department of Water, Main Roads WA and Water Corporation.

Preparation involved the following key steps:

- Identification of opportunities and constraints;
- Discussion and evaluation of options;
- Consultation; and
- Adoption of a preferred option.

1.4 Major Planning Influences

Major influences included the following:

- Local Planning Scheme 1 zones;
- Principles defined by Liveable Neighbourhoods (i.e. walkable (400m) neighbourhood, 10% POS, Conservation Category Wetlands);
- Areas adjacent to waterways (flood prone land, riparian vegetation, foreshores);
- Vegetation in excellent condition and identified as Priority Ecological Communities;
- Comments received from the Office of the Environmental Protection Authority;
- Fire management safety; and
- High densities in unconstrained areas adjacent to the Catalina shopping centre.

These issues have been investigated thoroughly with the help of key stakeholders, a steering committee and specialist consultants.

1.5 Vision

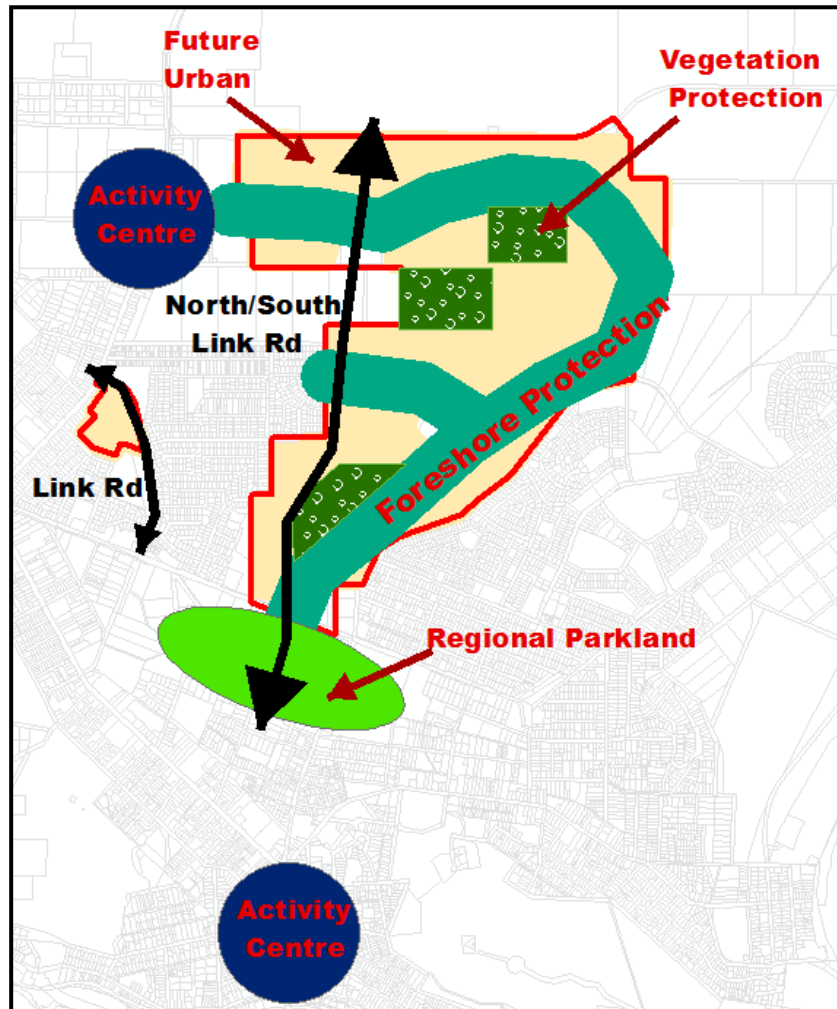
The ultimate vision for the area is:

“To establish an integrated urban and environmentally sustainable landscape that:

- *protects the foreshore areas adjacent to waterways that feed into Oyster Harbour;*
- *protects priority ecological communities;*
- *protects jarrah communities in excellent condition; and*
- *provides for diverse land development options; ranging from a high density node adjacent to the Catalina commercial precinct through to medium to large lots on the steeper slopes and adjacent to vegetation protection areas.”*

Plan 2 – Vision

(Source: COA)



1.6 Key Principles

Protect and enhance foreshore areas adjacent to waterways

A 'foreshore' is defined as; "land adjoining or directly influencing a body of water that is managed to protect waterway and riparian values" (Water and Rivers Commission Foreshore Policy 1, 2002).

- Maintain water quality and quantity to Oyster Harbour by managing land uses and redeveloping waterways (eg. developing sediment basins);

- Improve Biodiversity (diversity of life) adjacent to waterways by enabling uniform redevelopment and management of foreshores via a foreshore management plan;
- Seek funds via 10% POS provision for development of public open space facilities (formal and informal - pedestrian path/boardwalk) within foreshores.

Protect Vegetation as a means to maintain threshold, visual amenity and diversity of life.

- Protect possibly threatened vegetation (*Banksia coccinea*); and
- Protect remnant vegetation that is in excellent condition and that forms a natural corridor;

Residential

- Support high density (R30) residential on flat topography adjacent to major link roads and the Catalina commercial precinct;
- Support medium density (R25) in relatively unconstrained areas;
- Support low density (R2 or R5) adjacent to steep topographies, areas adjacent to a foreshore and in areas where the connection to deep sewer is constrained.

Transportation

Roads are to be developed in accordance with *Liveable Neighbourhood* principles (i.e. to follow contours).

A 30m wide road reserve is to be set aside and a 2 lane sealed road is to be developed to direct traffic to and from the CBD along two new North/South link roads - Range Rd and Barnesby Drive. Ultimately these routes will be developed with 4 lanes. The development of the north/south links will help alleviate congestion issues being experienced at the Chester Pass Roundabout.

Major intersection treatments will be required for intersection at Range Rd and Mercer Rd, Range Rd and North Rd; Range Rd and Catalina Rd and Barnesby Drive and Chester Pass Road.

School Sites

A primary school site has been identified as part of a previous consultation process with the Department of Education and a structure plan endorsed for the properties in the locality between Hudson and Catalina Roads. The site identified is located at the corner of Catalina Road and Lockheed Street. The Yakamia Primary School exists in the locality at Barnesby Drive.

Public Recreation Space

Public spaces for both passive (informal) and active (formal - sporting) recreation have been identified in the structure plan area in accordance with recommendations made in 'The Liveable Neighbourhoods' and by the Department of Sport and Recreation. In principle, larger/multi use spaces (>5000m²) have been encouraged. The locality is within short distance to the Centennial Park sporting precinct, which includes an aquatic centre and indoor and outdoor sporting facilities.

1.7 Objectives

The objectives of the structure plan are to:

1. Facilitate an urban form that provides for housing and associated infrastructure which is responsive to the character of the site and the locality, as depicted on the Plan;
2. Provide safe and convenient vehicle and pedestrian access to the activity centres at Chester Pass Road and the Central Business District;
3. Provide a stormwater system that minimises risk to public health and amenity, protects the built environment from flooding and water logging and that enhances the quality of water flowing to the Oyster Harbour;

4. Maintain vegetation where possible within road reserves, areas of public open space and foreshore areas and protect vegetation in excellent condition and where possibly threatened species exist;
5. Provide a range of public open spaces catering for recreational, sporting and nature use by the local community.

1.8 Implementation

Structure Plan

There are a number of steps to be taken before the implementation of the structure plan. Part of the process will involve the review of the structure plan by:

- Amending the Rural and Yakamia Creek zones on the Scheme maps to Future Urban or Residential and to include contribution plans;
- Contribution planning reviews;
- Urban Water Management Planning;
- Foreshore Management Planning;
- Fire Management Planning;
- Transport Management Planning;
- Local (detailed) area plans; and
- For areas vegetated and identified by the structure plan, referral to the Office of the Environmental Protection Authority and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) to determine a level of assessment under the EPBC Act.

Infrastructure Provisions

Applications for subdivision and development will need to demonstrate what, where and when supporting infrastructure (eg. deep sewerage) will be developed.

Management Planning

Management planning is to be undertaken at the subdivision stage to provide site specific detail.

A Water Management Strategy has already been prepared to support the structure plan. Key requirements of development relating to water management include:

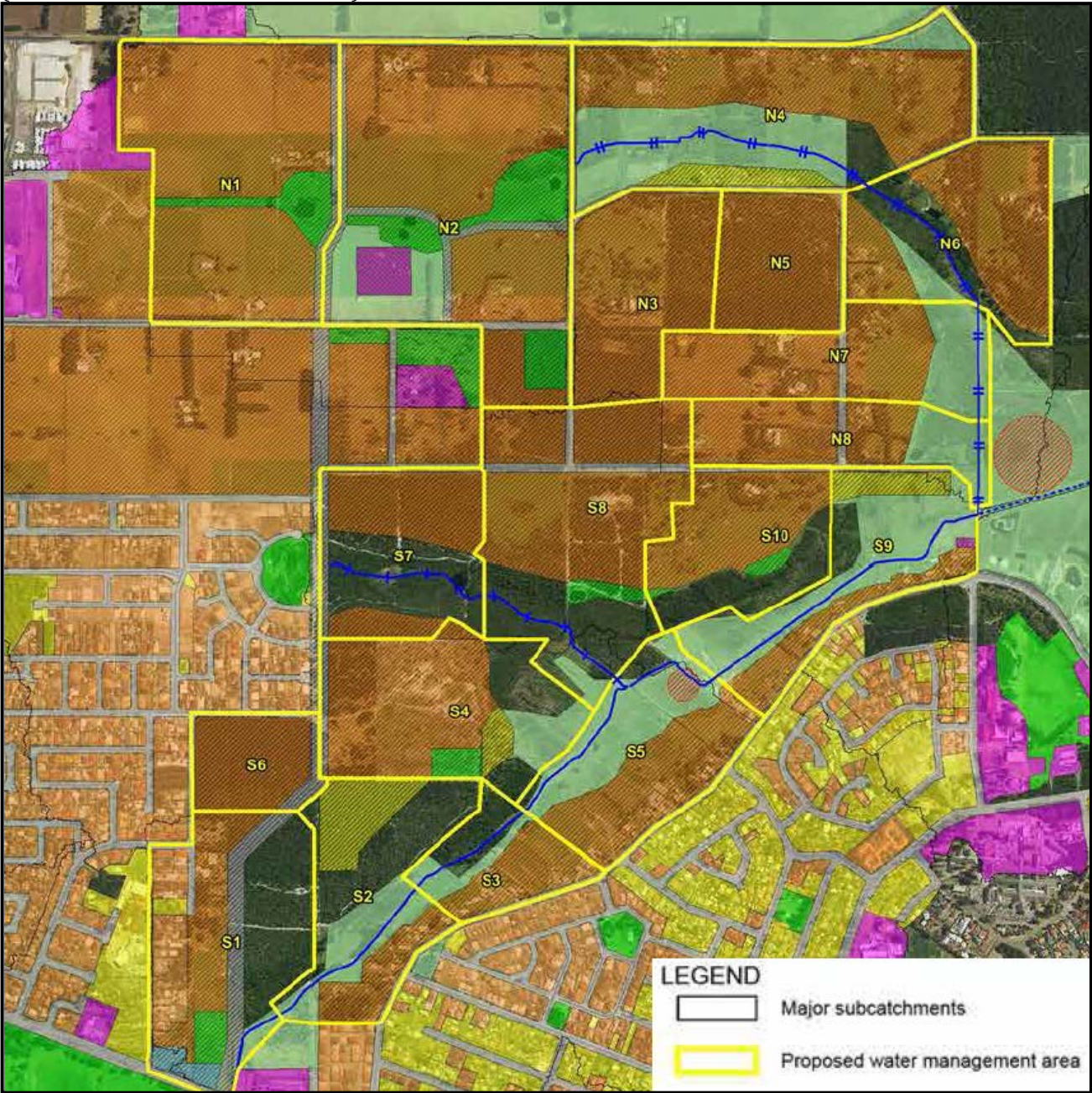
- Detention of surface water flows to ensure that development does not result in an increase to peak flow rates to downstream drainage systems or natural flow paths.
- Provide drainage infrastructure which provides conveyance of stormwater from upstream catchments without increases to upstream flood frequency.
- Control of sediment transport through management of flow velocities and provision of sediment control points prior to discharge and energy dissipation structures at discharge points.
- Development of land in the Barnseby Drive precinct should facilitate reconstruction of Yakamia Drain to the western side of Beauford Road and provide a defined floodway for safe passage of flows.
- Proposed future intersections at Barnseby Drive / Chester Pass Road and Range Road / North Road will need to be designed to facilitate safe passage of major flood events.

The model of the existing drainage system was modified to represent the future landuse scenario proposed by the structure plan, and development of other areas outside of the structure plan area. Preliminary modelling suggests that provision of detention storage at 19 locations can be effective in managing peak flow rates and therefore achieve the key requirements outlined above. Peak discharge rates and design storage volumes for each of the flood storage areas is outlined in the following Table 1 and Plans 3, 4 and 5.

Table 1: Indicative Water Infrastructure Sizing

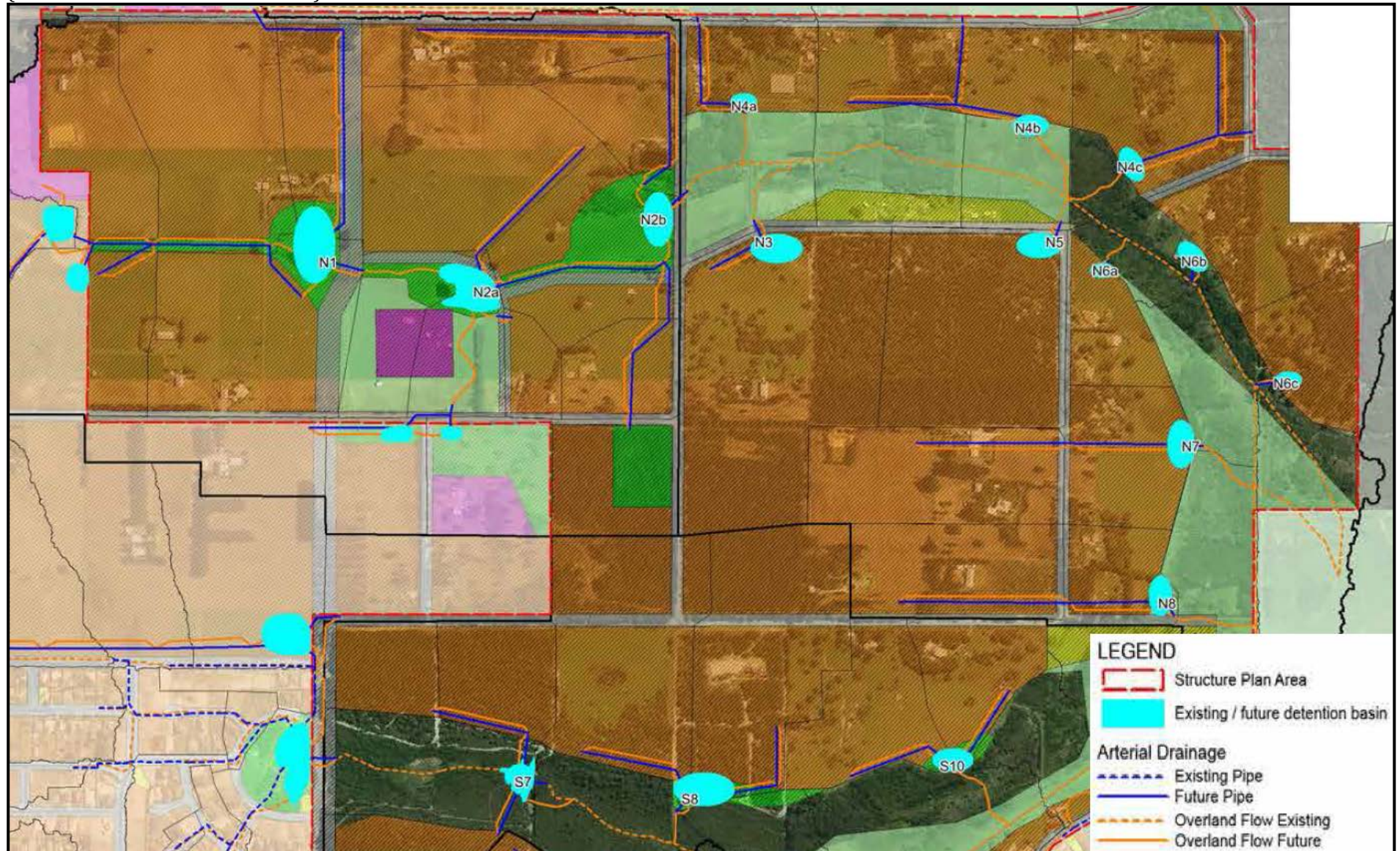
Location	Design Detention	Peak Discharge (m3/s)	Peak Discharge (m3/s) 10 Year
S1	2132	0.192	1.148
S4a	1000	0.087	0.118
S4b	491	0.091	0.295
S6	869	0.138	0.705
S7	1228	1.027	3.979
S8	3110	0.129	0.97
S10	1242	0.076	0.546
N1	8112	0.147	1.502
N2a	4333	0.172	1.379
N2b	4262	0.181	1.25
N3	2654	0.095	0.677
N4a	790	0.167	2.224
N4b	1287	0.07	1.305
N4c	1181	0.153	2.852
N5	1717	0.057	0.65
N6a	296	0.06	0.164
N6b	928	0.13	0.849
N6c	551	0.019	0.427
N7	1944	0.073	0.495
N8	1299	0.066	0.463

Plan 3 (Proposed Water Management Areas)
(Source: Essential Environmental)



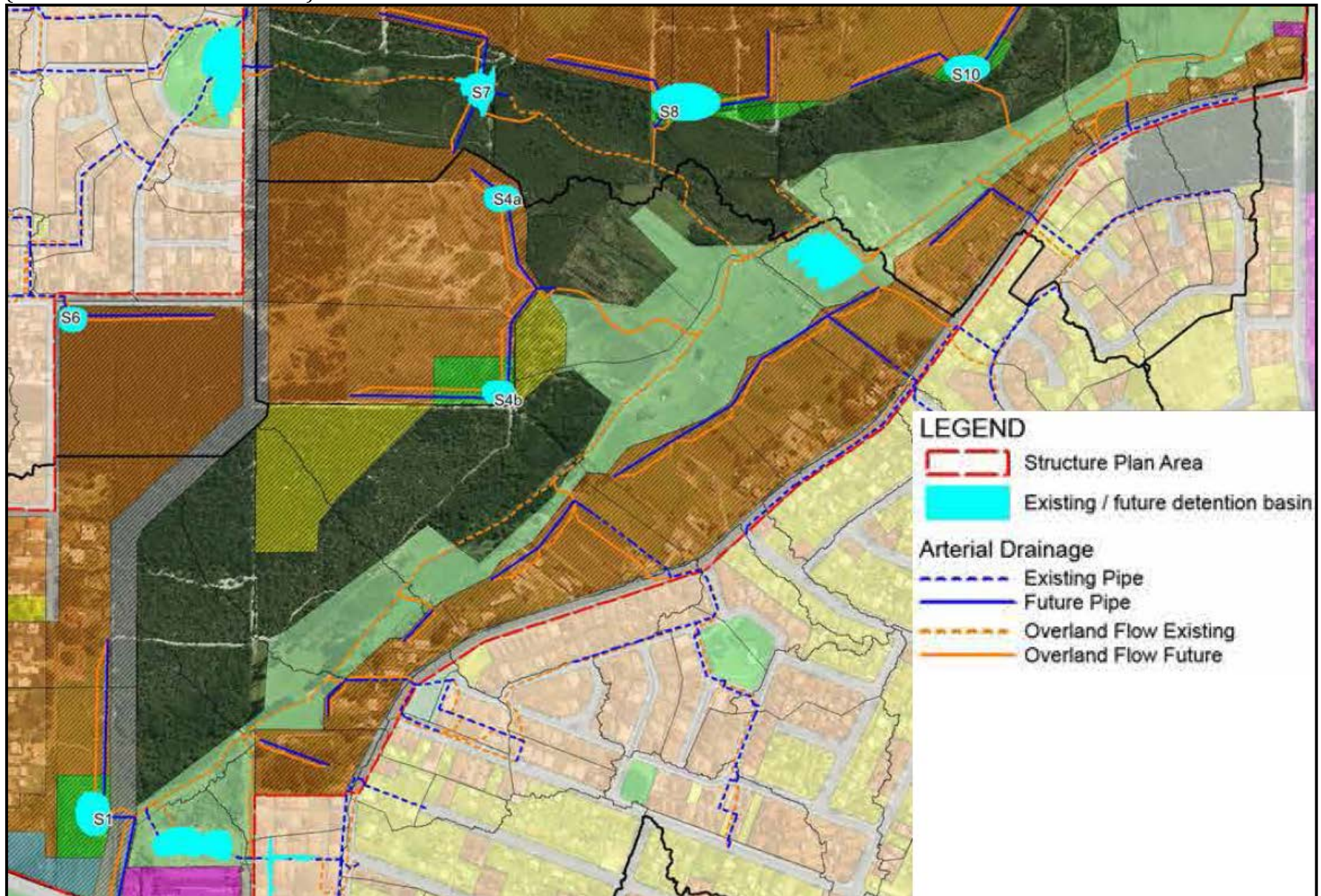
Plan 4 (Arterial Drainage Plan - North)

(Source: Essential Environmental)



Plan 5 (Arterial Drainage Plan - South)

(Source: Essential Environmental)



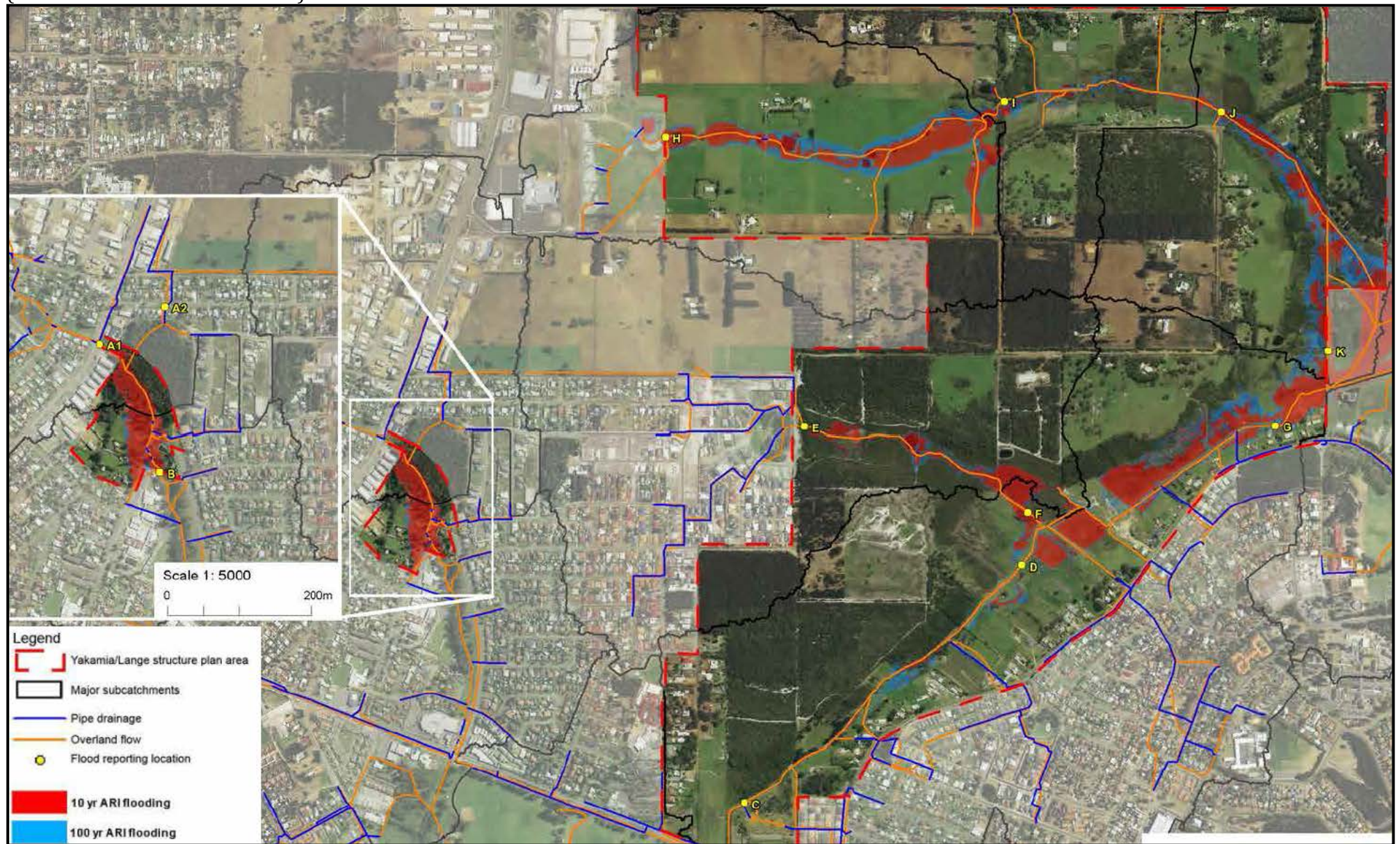
The impact of development using the proposed detention arrangements can be assessed by observing the predicted change in peak discharge rates at the key locations as presented in the following Table 2 and Plan 5. It can be seen that the proposed detention storages achieve protection of downstream systems by providing nominal reductions or manageable increases in peak flow rates during major and minor events.

Table 2: Surface water modelling results – peak flow (m³/s)

Loc	Existing		Post-development		Change %		Comment
	5 year	100 year	5 year	100 year	5 year	100 year	
A1	2.735	9.116	2.684	7.5	-1.9%	-17.7%	Reduction due to piping existing drain. Upstream impact to be assessed further during design.
A2	0.335	1.22	0.262	0.986	-21.8%	-19.2%	Assumed detention storage to be provided in upstream catchment reduces flow rates
B	3.466	7.856	3.583	9.189	3.4%	17.0%	Increase due to removal of localised flooding. Downstream impact to be assessed further during design.
C	8.19	16.88	8.3	17.08	1%	1%	Nominal increase due to local urbanisation
D	8.49	19.67	8.81	20	4%	2%	Nominal increase due to local and upstream urbanisation. Impact is offset by improved environmental performance along creek / drain.
E	1.32	5.62	1.01	3.45	-23%	-39%	Reduced peak flows due to better utilisation of existing detention storage.
F	0.99	7.4	1.16	5.25	17%	-29%	Increased catchment from S8. Increase in minor event flow expected and can be accommodated with construction of living stream.
G	9.8	31.23	10.08	27.15	3%	-13%	The impact of small increase in minor event flows is offset by improved environmental performance along creek / drain.
H	0.17	0.47	0.32	0.73	88%	55%	A piped outlet will be provided from existing upstream detention area to improve safety and amenity; this has resulted in increased flow rates.
I	0.2	3.15	0.18	1.25	-10%	-60%	Nominal reduction in minor flows due to pipe size increments
J	0.75	14.82	0.78	7.41	4%	-50%	Nominal increase due to local urbanisation.
K	0.78	6.39	0.9299	5.5211	19%	-14%	Moderate increase due to local urbanisation. Impact is offset by improved environmental performance along creek / drain.

Plan 6 (Existing Flood Extent and Key Reporting Locations)

(Source: Essential Environmental)



1.9 Acknowledgements

Key Stakeholders

Department of Planning
City of Albany
Department of Water
Department of Environment and Conservation
Main Roads WA
Water Corporation
Councillors
Landholders
Aurora Environmental
Essential Environmental

2. Explanatory Section

2.1 Introduction

Planning of the area evolved the result of landholders appealing to the City of Albany, the Department of Planning and the Environmental Protection Authority to support subdivision and development.

Structure planning is required prior to supporting rezoning, subdivision and/or development. For reasons including:

- achieving integrated and connected land use management; and
- as a requirement of the scheme (areas zoned 'Future Urban');

Factors that have dominated discussion for land use planning include the following:

1. There are three dominant valleys with foreshore areas at their base.

The Department of Water defines a 'foreshore' area as follows:

The land that adjoins or directly influences a 'waterway'. It is the area of transition between the edge of the waterway and the furthest extent of riparian vegetation, the floodplain and riverine landforms, or a negotiated area endorsed by the Department of Water.

A 'waterway' is defined as:

Any river, creek, stream or brook, including its floodplain and estuary. This includes systems that flow permanently, for part of the year or occasionally; and parts of the waterway that have been artificially modified (source: Operational policy 4.3: Identifying and establishing waterways foreshore areas)

The structure plan recommends that the areas identified as foreshore, are managed appropriately. The foreshore areas are important as they;

- Are of archaeological (Yakamia Creek - Aboriginal Heritage) significance;
- Support extensive areas of emergent and fringing foreshore vegetation;
- Help to manage water quality and quantity;
- Enhance biodiversity; and
- Constitute part of a linked natural system and destruction of these areas would impact on the biodiversity of life at Oyster Harbour.

2. There are remnant stands of vegetation in good to excellent condition in parts;

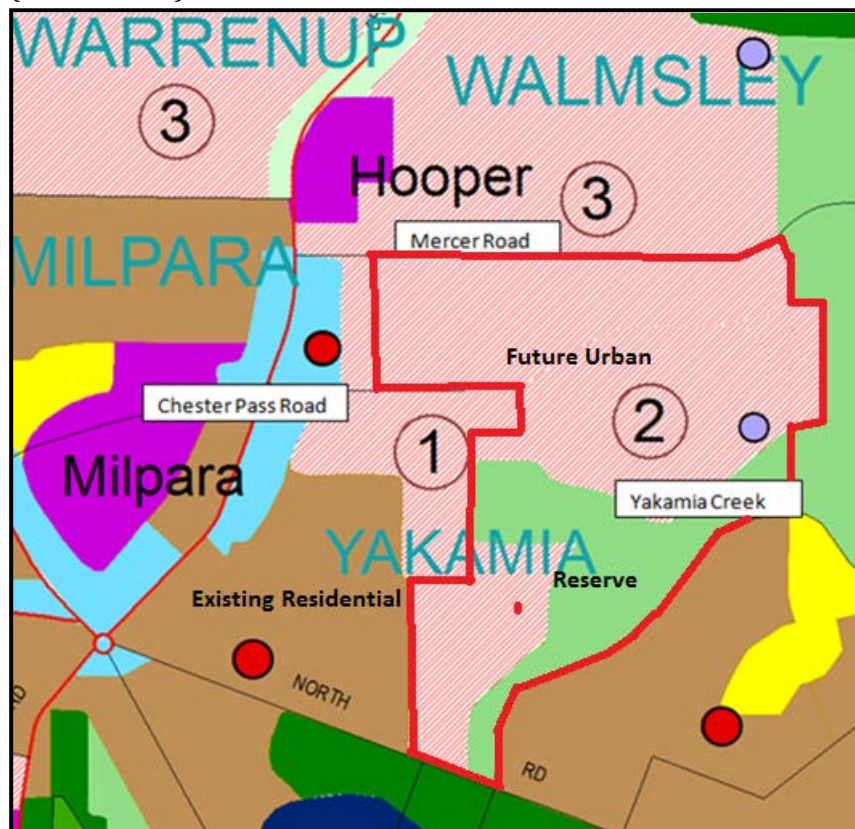
- Under the EPBC Act, a person who proposes to take an action which will have, or is likely to have, a significant impact on a matter of national environmental significance is responsible for referring the action to the Commonwealth Environment Minister for a decision as to whether an assessment is required.
 - Carnaby's Black-Cockatoo (white tail) are listed as endangered and Western Ringtail Possum are listed as threatened under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Both species exist within the locality.
3. There are Priority Ecological Communities identified (possibly threatened vegetation);
 4. Consideration of two new north/south roads (Range Rd and Barnesby Drive);
 5. An Arterial Drainage Plan, a Water Management Strategy and an Environmental Opportunities and Constraints Plan;
 6. Western Australian Planning Commission Structure Planning Guidelines and policies; and
 7. Comments received from key stakeholders, which includes the public/landholders;

There are approximately 140 different lots/landholdings identified within the structure plan area. The average lot size is 4.5ha with the largest lot being approximately 14ha. The land is either used for living purposes (single dwelling), market gardening, grazing or is vacant.

The City of Albany Local Planning Strategy (2010) identifies the area as being suitable, in the short to medium term for 'Future Urban' expansion (refer to the following map and in particular, the areas coloured pink).

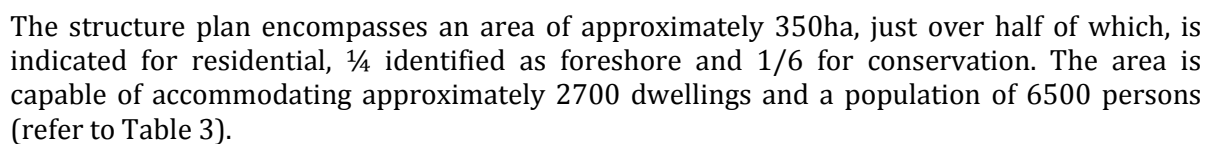
Plan 7 (Albany Local Planning Strategy Map 9B)

(Source: COA)



The *Local Planning Scheme 1* governs use and development of the localities. Other than for a 'Single Dwelling' and incidental uses, the scheme requires Structure Planning and in some instances rezoning prior to supporting intensification. Zonings for the localities include: 'Future Urban'; 'Yakamia Creek' and 'Rural' (Refer to following zoning diagram).

(Source: COA)



The structure plan recognises the need to request financial contributions for the development of infrastructure associated with recreation within areas of POS and the foreshore (refer to Table 4).

Table 3 Potential Land Use/Population/Dwellings

Use	Area	Ratio	Dwe/Pop (2.4p/d)
Western Power Substation	1.5ha		
Buffer to Substation	6.6ha		
Foreshore Area	97ha	27%	
Vegetation Protection Areas	42.8ha	15%	
Public Service Areas	2.5ha		
School Site	3.2ha		
Special Use Site	1ha		
Residential	198ha	56%	2700/6500
Total	352.6ha		

Table 4 Potential POS

Residential Land Use	Area
Residential R2	3.6ha
Residential R25 (350m ²)	74ha
Residential R30 (300m ²)	35ha
Residential R5/25	85ha
Total Residential	198ha
Approximate Potential POS based on total hectares and 10% calculation	198ha X10% of this equates to 19.8ha
POS Proposed	
10.2ha of formal and informal space is proposed to be developed via cash contribution in areas given up as 'foreshore'. Additional areas may eventuate once a foreshore management plan has been completed.	
2 x parks at 3000m ² , 2 x parks at 5000m ² , 1 x park at 6000m ² and 2 x parks at 1ha (developed with formal and informal facilities) proposed outside of foreshore (Total = 3.2ha)	
Total POS = 13.4ha	
Balance of 10% (6.4ha) to be used to develop recreation facilities within foreshore and parks outside of foreshore (eg. paths, play equipment, sporting fields).	

Having assessed various characteristics of the localities via an Environmental Opportunities Constraints Plan (refer to following plan), a Water Management Plan, an Arterial Drainage Plan and consultation with key stakeholders; a structure plan indicating preferred land uses, and the location of supporting infrastructure (roads and POS) has been formulated (refer to following plans).

The structure plan:

- 1) Indicates the general layout for land uses, the provisions of roads, pedestrian linkages and other urban design elements highlighted in 'Liveable Neighbourhoods';
- 2) Indicates areas worthy of conservation and resource enhancement;
- 3) Promotes a mix of housing types - low density (R2 5000m² and R5 2000m²), medium density (R25 350m²) to higher density (R30 300m²); and
- 4) Integrates the provision of Public Open Space with natural features (foreshore areas) to provide active and passive facilities and to include drainage management measures.

Plan 9 (Opportunities and Constraints Plan)

(source: Aurora Environmental)

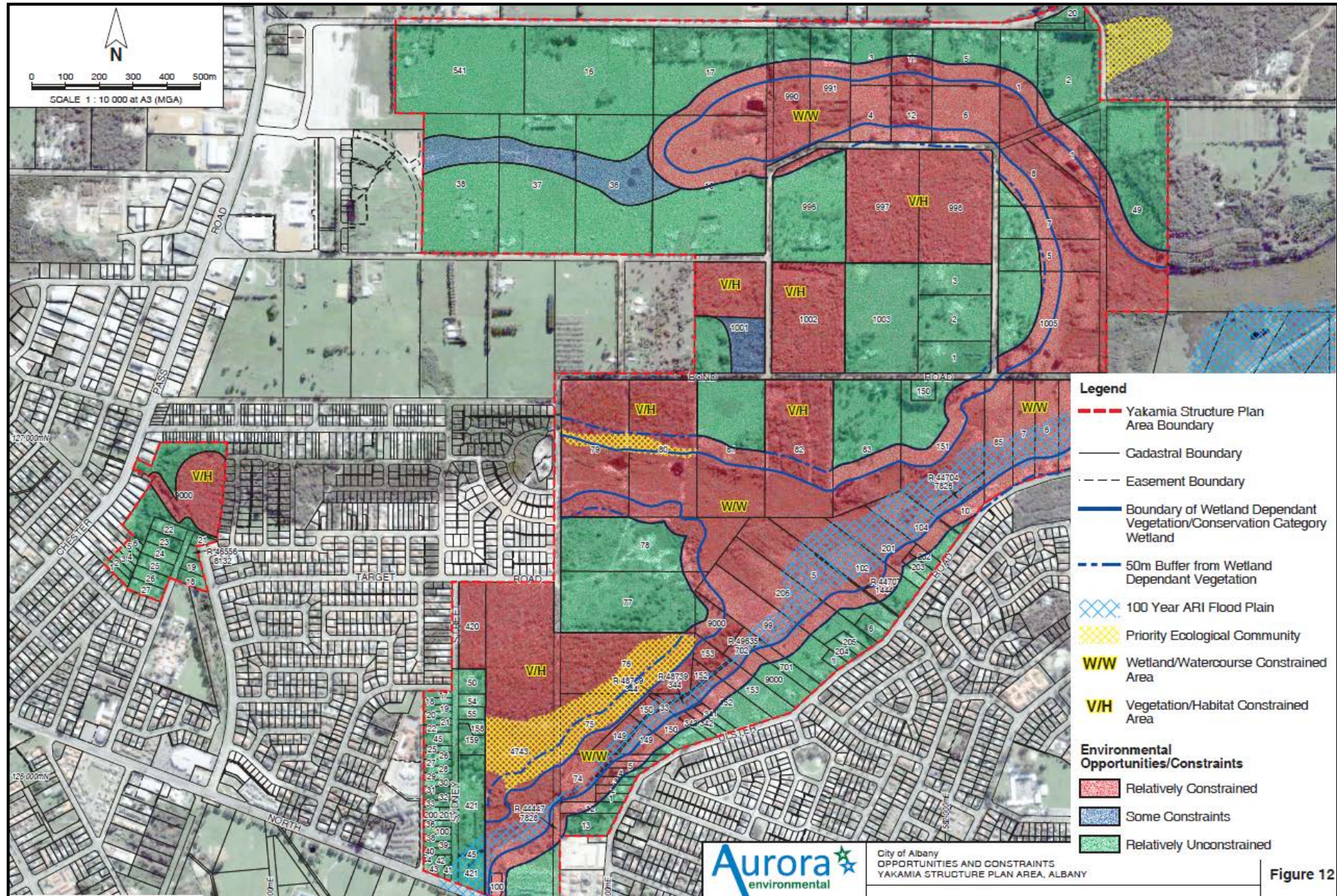


Figure 12

Plan 10 (Structure Plan)

(Source: COA)



2.2 Previous Reports and Studies

There has been a long history of consideration for residential expansion in the subject locality. The following documents have all played some part in recommending or guiding development and environmental management for the localities of Yakamia and Lange:

- The Albany Local Planning Strategy (City of Albany, 2010);
- The Draft Yakamia District Structure Plan prepared by Taylor Burrell (1999) to facilitate, guide and coordinate the urban development of Yakamia. More recently, the Allering Burgess (2004) draft structure plan;
- A Yakamia Creek Flood Study report published by Water and Rivers Commission (2001) to help provide an understanding of the hydrological behaviour of the creek;
- Coffey Environmental Report of wetlands and waterways (2008);
- The City of Albany rezoning documentation for Lot 4743 North Road from 'Future Urban' to 'Residential R20' and 'Parks and Recreation' (The EPA undertook preliminary assessment under Section 48(1) of the *Environmental Protection Act 1986*);
- A vegetation assessment for Lot 4743 North Road (Coffey Environments 2008);
- An opportunistic flora survey for Lots 79 and 80 Bond Street (Alan Tingay and Associates 1996);
- An opportunistic flora and vegetation survey (2000) to supplement 1996 survey for lots 79 and 80 Bond Street (ATA Environmental 2000);
- A flora survey for Location 4743 Yakamia (Sandiford 2005)
- Flora and fauna surveys for the previous Yakamia Structure Plan area (ATA Environmental 2005);
- An Environmental Opportunities Constraints Plan (Aurora Environmental 2013). This report reviews previous environmental reports and develops a consolidated environmental constraints plan; and
- A Water Management Strategy and Arterial Drainage Plan (Essential Environmental 2014).

2.3 Site Conditions/Constraints

1. Land Use

The Yakamia/Lange area is currently a mix of urban and rural land uses including; rural residential, some small scale horticulture and grazing.

Much of the area is cleared although pockets of vegetation remain, particularly within and fringing a flood plain in the lower catchment and foreshores in upper catchments. The urban uses are on the fringe and are mixed between residential, industrial and commercial. There is a large neighbourhood (Big W, fuel depot and Harvey Norman) shopping complex in the vicinity of the structure plan area (Corner of Catalina and Chester Pass Roads).

Due to the close proximity of the structure plan area to the activity centre at Chester Pass Rd, the predominant land use expected for the area is residential. The density of residential is expected to vary depending on constraints (i.e. high density adjacent to the existing activity centre and low density adjacent to foreshore areas (fire risk) and on steep slopes).

Land Use Recommendations

1. *It is recommended that the structure plan:*

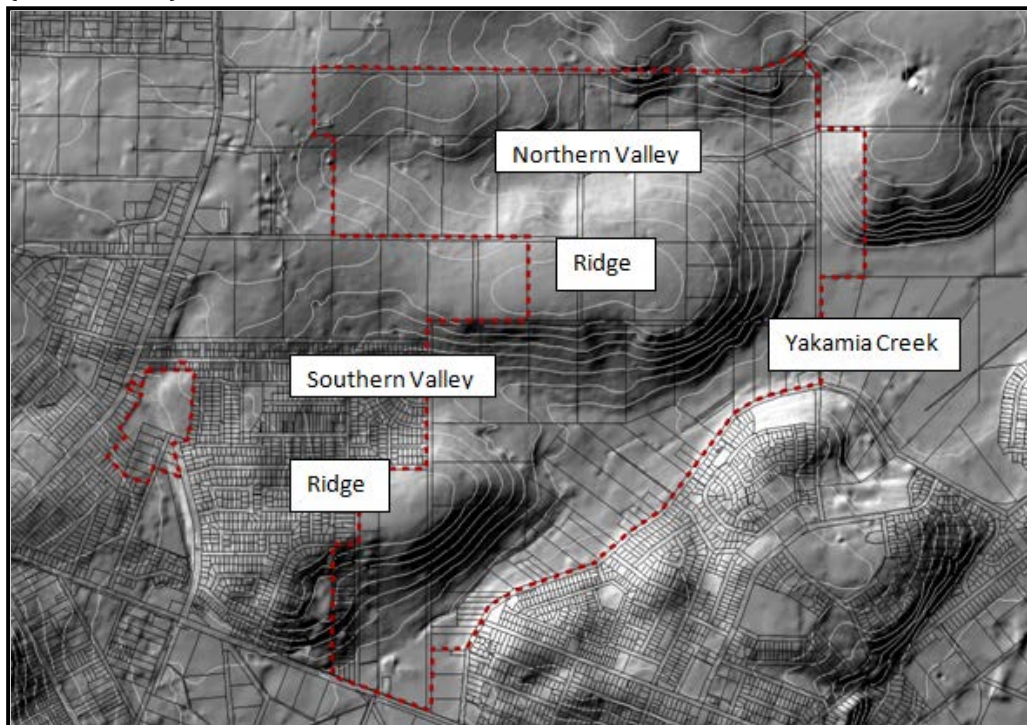
- *Supports higher densities adjacent to the commercial area at Chester Pass Rd;*
- *Supports lower density for steep gradient areas and for areas adjacent to arterial drains or areas subject to flooding and fire risk areas;*
- *Supports special uses (eg offices and medical clinic) adjacent to North Rd;*
- *Ensures no private development or uses in foreshore areas;*
- *Ensures a suitable setback between development and sensitive areas (vegetated, foreshores, rivers, wetlands etc);*
- *Considers development in relation to visual integrity (eg. discourage development that dominates the landscape, discourage development along areas of entry to the City);*
- *Ensures the protection of the natural resources such as water, soil and vegetation (i.e. encourage revegetation to stabilize and neutralise soil conditions);*
- *Utilizes existing infrastructure (roads, sewer, water, drainage);*
- *Considers fire risk;*
- *Maintain the integrity/function of the CBD (discourage development that will take this away);*
- *Provides safe access;*
- *Provides pedestrian access;*
- *Ensures orientation of lot for solar access (orientate lots east west);*
- *Ensures a minimum contribution of 10% of the gross subdivisional area for public parkland;*
- *Ensure surveillance measures.*

2. Landform

The structure plan area is characterised by undulating topography. There are two major valleys sloping east-west towards the Yakamia Creek, which floods during extended periods of rain. The northern most valley has a gentle gradient, is majority cleared and developed with some dams. The southern valley has steeper sides and is mostly vegetated. There are two ridges located between the valleys; they both have an aspect towards the south and are partly vegetated.

Plan 11 (Landform Plan)

(source: COA)



Landform Recommendations

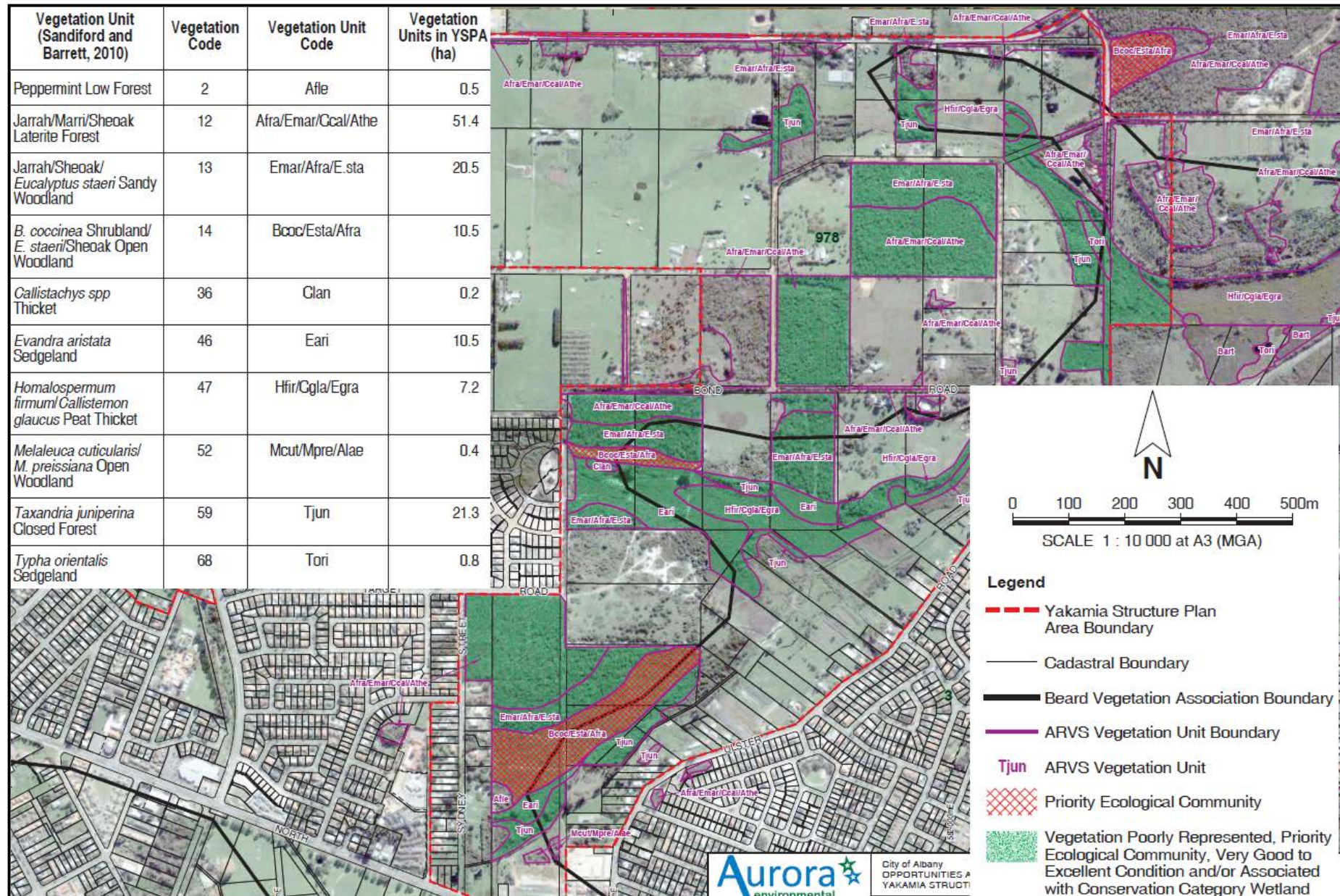
1. *The following provisions need to be included:*
 - *Roads should be located to follow the contour of the land where possible;*
 - *High retaining walls should be avoided on steep sites. Where retaining is necessary, this should be done within the dwelling walls or stepped and landscaped.*
2. *The structure plan designates development away from the valley floors where flooding may occur and where riparian vegetation exists.*
3. *The structure plan designates a lower density of development on the steeper slopes.*

3. Biodiversity

The 'Albany Regional Vegetation Survey' (2010); the 'Flora Survey for the Yakamia Structure Plan Area' (2006); the 'Fauna Survey for the Yakamia Structure Plan Area' (2006); and the 'Environmental Opportunities Constraints Report' (2013) together provide an assessment of the extent, rarity, diversity and reservation status of flora and fauna within and around the structure plan area (the following plan illustrates remnant vegetation).

Plan 12 Vegetation

(source: COA)



The 'Albany Regional Vegetation Survey' (2010) assessed and mapped the following vegetation units for the Yakamia locality:

Banksia Coccinea Shrubland/Eucalyptus
Staeri/Sheoak Open Woodland;



Callistachys spp Thicket



Evandra Aristata Sedgeland
Peat Thicket



Homalospermum Firmum/Callistemon Glaucus



Jarrah/Marri/Sheoak Laterite Forest



Jarrah/Sheoak/E.Staeri Sandy Woodland



Melaleuca Cuticularis/M. Preissiana
Open Woodland



Peppermint Low Forest



Taxandria Juniperina Closed Forest



Typha Orientalis Sedgeland



Of the species identified for the Yakamia locality:

- **Banksia coccinea Shrubland/Eucalyptus staeri/Sheoak Open Woodland** has been identified as a Priority 1 Ecological Community (possibly threatened) and therefore is worthy of protection. There are two areas where these communities exist. These areas are illustrated on the Environmental Opportunities and Constraints Map (cross hatch – orange).



- Remnant **Jarrah/Marri/Sheoak** and **Jarrah/Sheoak/E.Staeri** vegetation exists throughout the area. While all naturally vegetated areas have environmental and amenity values, the EPA is primarily concerned with the protection of regionally significant natural areas.

The EPA has developed criteria for the identification of regionally significant natural areas which can be used across Western Australia. The criteria are (EPA, 2003, 2006, 2008):

- adequate representation of the range of ecological communities
 - areas with a high diversity of landforms, flora and /or fauna species or communities
 - areas containing rare or threatened species or communities maintaining ecological processes or natural systems
 - areas of scientific or evolutionary importance, and
 - areas of wetland, streamline and estuarine fringing vegetation and coastal vegetation.
- No threatened flora has been identified in the structure plan area.
 - Carnaby's Black-Cockatoo (white tail) and Western Ringtail Possum are likely to be found at different times throughout the locality. Carnaby's Black-Cockatoo (white tail) are listed as endangered and Western Ringtail Possum are listed as threatened under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

(source: Aurora Environmental)



Biodiversity Recommendations

The following is recommended:

1. *Enforce the development of a foreshore management plan(s) in anticipation of rehabilitating foreshores;*
2. *Identify Priority Ecological Community and vegetation in excellent condition that's large enough to sustain habitats as being suitable for protection;*
3. *Identify the need to refer applications involving the clearing of vegetation to the Office of the Environmental Protection Authority and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC);*

4. Soils

The Yakamia catchment is steep and has relatively thin layers of sand and sedimentary rocks overtopping granite. This geology, coupled with high rainfall distributed throughout the year means that there is limited water retention capacity within the catchment and results in almost continual base flow within drains and watercourses. While this presents challenges for retention of nutrients it may provide opportunities for stormwater harvesting and can deliver watercourses that offer high amenity and environmental assets.

The subject locality comprises of three different soil characteristics being:

- Dc unit - Gravelly yellow duplex soils;
- S7 unit - Deep leached sands; and
- S7f unit - Humus podzols.

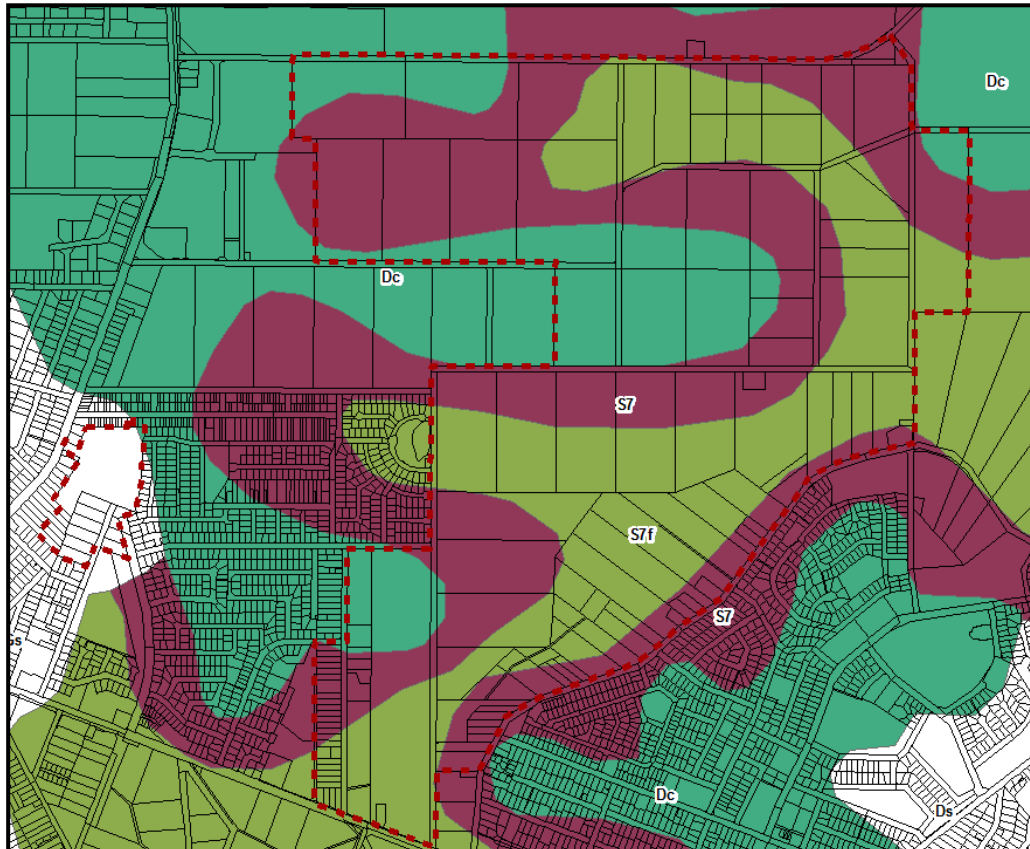
The Dc unit forms the ridges between the valleys and is made up of gravelly yellow duplex soils and some lateritic boulders. The flood risk for these areas is 'low' and the foundation soundness is 'fair' (source: *Environmental Report 1992 – AGC Woodward-Clyde Pty Ltd*).

The S7 unit forms the valleys and is made up of deep leached sands. The flood risk for these areas is 'Medium' and the foundation soundness is 'Good' (source: *Environmental Report 1992 – AGC Woodward-Clyde Pty Ltd*).

The S7f unit can be described as being humus podzols. The flood risk for these areas is 'Medium to High' and the foundation soundness is 'Good' (source: *Environmental Report 1992 – AGC Woodward-Clyde Pty Ltd*).

Plan 14 (Soil Association Mapping)

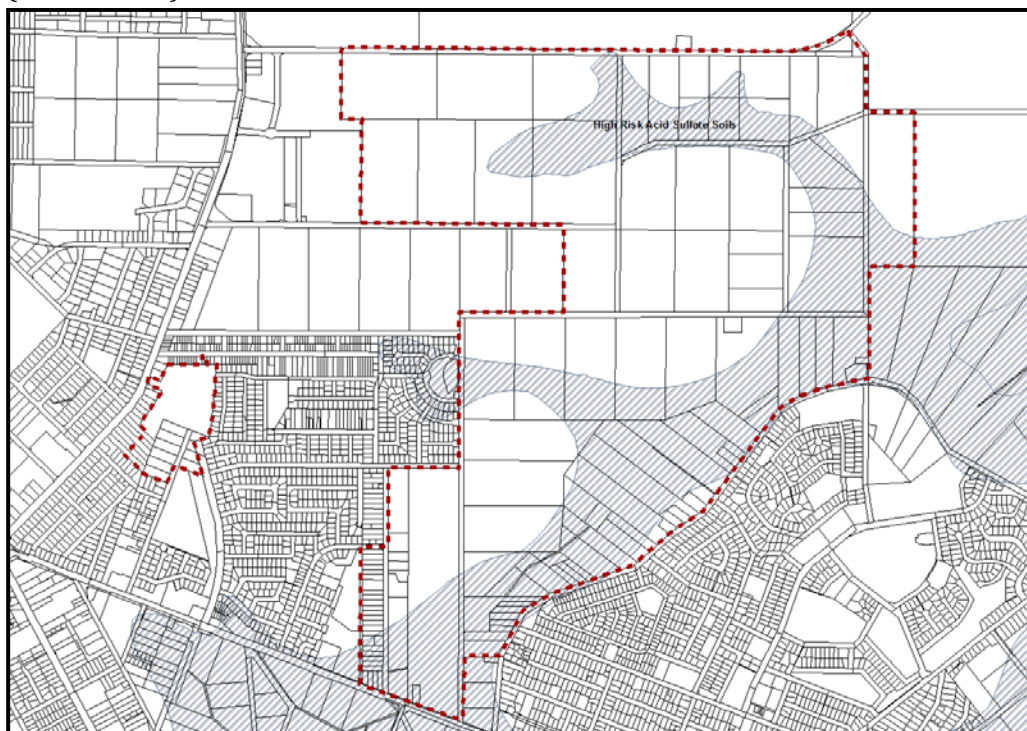
(source: COA)



Geographical mapping indicates a 'high risk' of acid sulfate soils in the valley areas.

Plan 15 (Acid Sulfate Soils)

(source: COA)



Soil Recommendations

1. *The following provisions need to be included:*
 - *For the areas indicated as acid sulphate, prior to subdivision and development, an acid sulphate soil management plan needs to be written and implemented.*
 - *Development should be located in accordance with a Water Management Strategy.*

5. Groundwater and Surface Water

Groundwater in the Yakamia area comprises a sedimentary aquifer with intergranular porosity, which is part of an extensive regional groundwater resource (Government of Western Australia, 2007a). There is some evidence that perched water tables develop within the area during the winter months and the groundwater discharges into Yakamia Creek via the perched winter groundwater tables (Government of Western Australia, 2007b).

Surface drainage of the Structure Plan area is determined by two east-west ridges. The valleys adjacent to the ridges drain to the Yakamia Creek, which in turn drains into Oyster Harbour.

Because a large part of the developed and developing catchment is steep, the run-off generated within overland flow paths, drains and watercourses is fast moving and can represent a hazard. It is important to consider the accessibility and depth of high velocity flows in planning and designing drainage infrastructure.

A significant impact of high velocity flows is that overland flow paths, drains and watercourses are susceptible to erosion. Where erosion occurs, large amounts of sediment can be generated and subsequently deposited in downstream parts of the catchment causing blockages and environmental impacts. It is necessary to design drainage infrastructure to withstand high velocity flows where they occur to minimise erosion and generation of sediment. It is also important to consider placement of sediment control structures and/or systems in critical locations through the catchment.

Oyster Harbour is known to be susceptible to high nutrient loads from its contributing catchments. The use of sediment control structures and/or systems will help to reduce nutrient and other pollutant loads to Oyster Harbour. Consideration should also be given to other structural and non-structural water sensitive urban design strategies to both reduce applied and discharged nutrient and other pollutant loads in the catchment.

During 2011 a stormwater snapshot was conducted in the Albany Harbours Catchment by the Department of Water. Eleven sites were sampled with eight sites on the Yakamia creek (YAK001-YAK1). Overall the nutrients exceeded the recommended trigger value on most occasions. Heavy metals including aluminium, Copper, Iron and Zinc were detected at various sites. Pathogens exceeding recommended guideline values were also detected. Land-uses within the catchment areas and adjacent to floodways and drains are clearly impacting on the quality of water being distributed to our harbours.

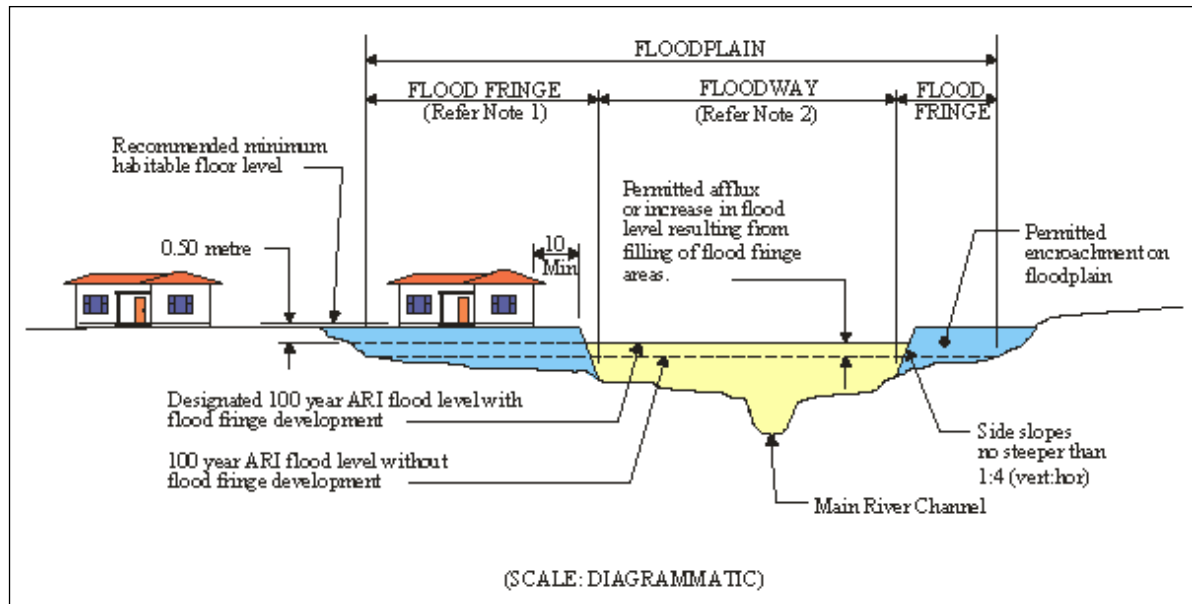
The Department of Water, in carrying out its role in floodplain management, provides advice and recommends guidelines for development on floodplains with the object of minimising flood risk and damage. The Department of Water uses the following guiding principles to ensure proposed development in flood prone areas is acceptable with regard to major flooding:

- proposed development has adequate flood protection from a 100 year ARI flood; and
- proposed development does not detrimentally impact on the existing 100 year ARI flooding regime of the general area.

The Department of Water's recommended floodplain development strategy includes the following provisions which are graphically represented by the figure below.

Plan 16 Floodplain Development Plan

(source: DOW)



Department of Water's provisions:

1. Proposed development (ie, filling, building, etc) that is located within the flood fringe is considered acceptable with respect to major flooding. However, a minimum habitable floor level of 0.5 metre above the adjacent 100 year ARI flood level is recommended to ensure adequate flood protection.
2. Proposed development (ie, filling, building, etc) that is located within the floodway and is considered obstructive to major flows is not acceptable as it would increase flood level upstream. No new dwellings are acceptable within the floodway.
3. A failure to properly adhere to these recommendations will result in a greater exposure to risks of flood damage. This advice is related to major flooding only and other planning issues, such as environmental and ecological considerations, may also need to be addressed.

Water Recommendations

1. The structure plan is to make reference to the Water Management Strategy and Arterial Drainage Plan developed for the Yakamia Catchment.
2. The structure plan is to indicate foreshores and flood-ways and include the following provisions:
 - Proposed development (ie, filling, building, etc) that is located within the flood fringe is considered acceptable with respect to major flooding. However, a minimum habitable floor level of 0.5 metre above the adjacent 100 year ARI flood level is recommended to ensure adequate flood protection.
 - Proposed development (ie, filling, building, etc) that is located within the floodway and is considered obstructive to major flows is not acceptable as it would increase flood level upstream. With the exception of the flood area indicated on the western side of Range Rd, no new dwellings are acceptable within the floodway.
 - The structure plan supports development (special uses) within the floodway at the western side of Range Rd subject to appropriate flood management works.
3. The structure plan needs to locate sediment control structures and/or systems in critical locations through the catchment.
4. The following provisions need to be included:

- *Direct drainage from any future subdivision areas into the creek system is not to occur;*
 - *Nutrient and flood mitigation measures (detention or infiltration swales, filter strips, and nutrient stripping features) to be incorporated for primary treatment of stormwater before discharge;*
 - *Design drainage infrastructure to withstand high velocity flows where they occur to minimise erosion and generation of sediment.*
 - *Urban and foreshore water management planning is required prior to supporting subdivision;*
 - *Suitable management is required to minimise the extent and spread of weed infestations;*
 - *The use of Alternative Effluent Treatment systems where deep sewer is not capable of being developed;*
 - *Maintain overland flow paths;*
 - *Enforce the development of rainwater tanks to help harvest potable water and attenuate stormwater;*
 - *A monitoring program will be required to gather information and monitor post-development impacts. The program should include monitoring of the following:*
 - *Water quality of the creek system;*
 - *Groundwater in the local vicinity where possible;*
 - *Changes in vegetation within the creeks, flood plains and buffers;*
 - *Rehabilitation success.*
5. *Development of land in the Barnseby Drive precinct should facilitate reconstruction of Yakamia Drain to the western side of Beauford Road and provide a defined floodway for safe passage of flows.*
6. *Proposed future intersections at Barnseby Drive / Chester Pass Road and Range Road /North Road will need to be designed to facilitate safe passage of major flood events.*

6. Bushfire Hazard

Vegetated areas exist in pockets on the ridges and in strips adjacent to some valley/foreshore areas.

The Western Australian Planning Commission and Fire and Emergency Services Authority of Western Australia endorsed the '*Planning for Bush Fire Protection Guidelines (edition 2)*' in May 2010 to outline a range of matters that need to be addressed at various stages of the planning process. In March 2010, the '*Australian Standard 3959-2009: Construction of buildings in bushfire-prone areas (AS3959-2009)*' was approved nationally to ensure that new buildings in bush fire prone areas are built to standards that improve their performance when subject to burning debris, radiant heat and flame contact.

The City developed a *Bushfire Hazard Mitigation Strategy, June 2014*. The fire strategy has been prepared to facilitate the integration of specified bush fire management measures into local government planning, development and land management processes on the basis of the current bush fire hazards and risk levels assessed across the municipality.

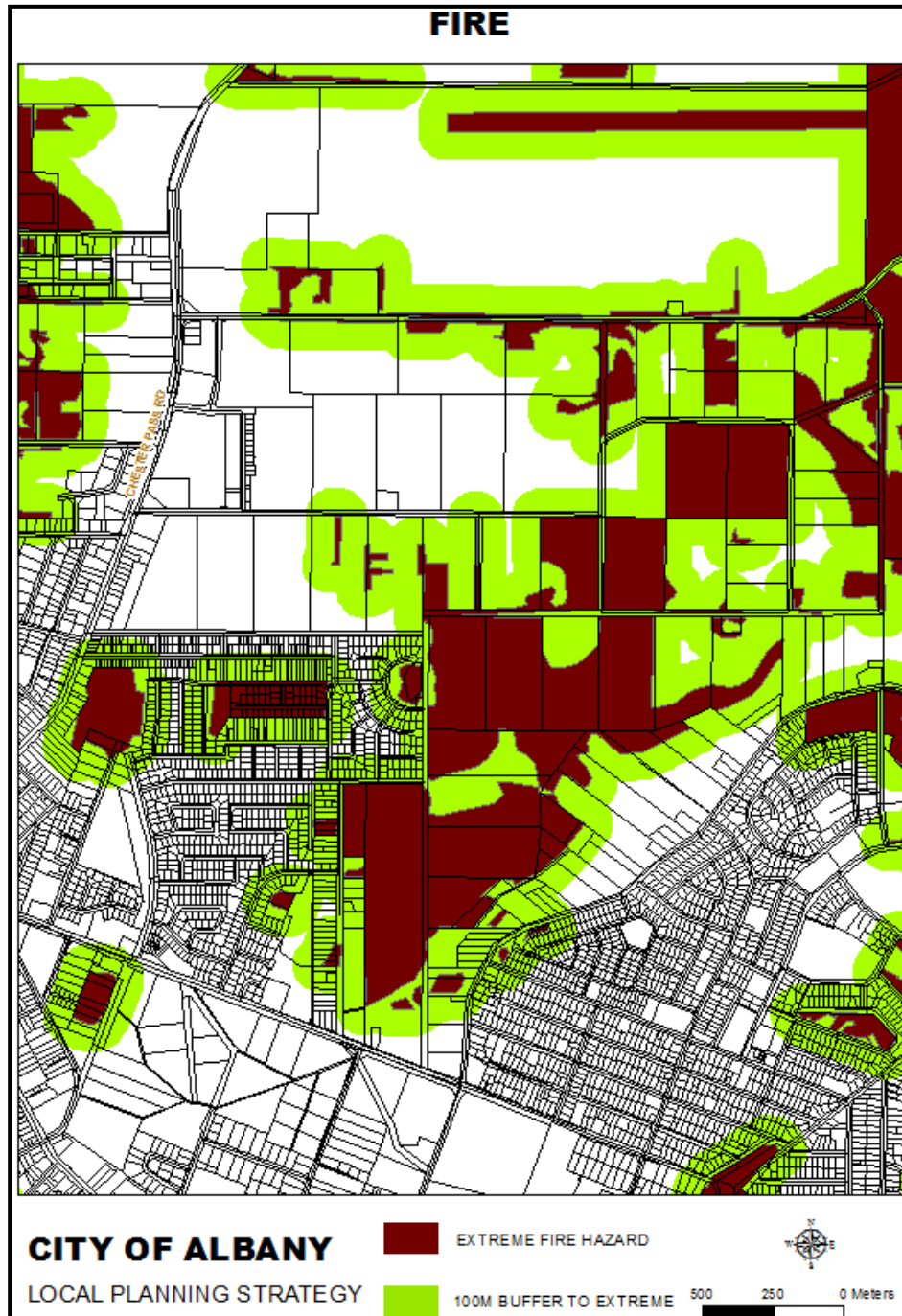
The CoA BFHMS classifies bush fire prone areas throughout the CoA. The City's *Local Planning Scheme 1* requires all land use and development proposals to incorporate appropriate fire protection requirements by:

- *Implementing Western Australian Planning Commission Bushfire Protection policies;*
- *Implementing the City's Bushfire Hazard Mitigation Strategy;*

- *The provision of adequate fire fighting water supply and equipment;*
- *the provision of fire access tracks; and*
- *incorporation of construction standards for buildings including those in AS 3959 – Construction of Buildings in Bushfire Prone Areas.*

Plan 17 Fire Mapping

(Source: COA)



Bushfire Recommendations

1. *A provision needs to be included to ensure that development adjacent to fire risk areas is designed, constructed and maintained to mitigate loss of property and life.*

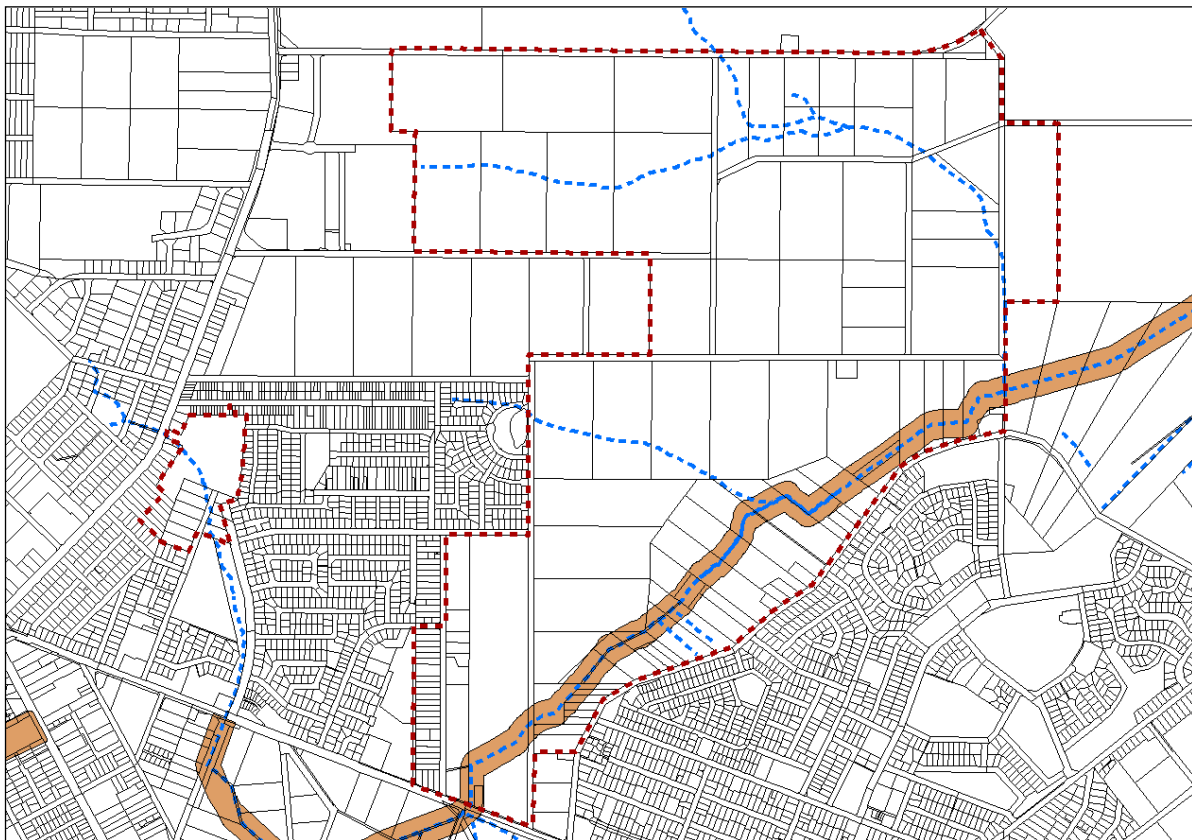
7. Heritage

An Aboriginal heritage survey was undertaken for the Yakamia Structure Plan area by Brad Goode and Associates in (2007). A search of archival records indicated that no Aboriginal heritage sites (archaeological or ethnographic) had been previously recorded within the Structure Plan area (*Goode and Associates, 2007*).

During the 2007 assessment, consultation was undertaken with ten members of the Aboriginal Heritage Reference Group Aboriginal Corporation (AHRGAC). The members identified Yakamia Creek as a place of importance for the gathering of resources, travel and association with spiritual beliefs in the *Marchant* (water snake). As a result, the group recommended that that Yakamia Creek be registered with the Department of Indigenous Affairs (DIA) as a site under Section 5(b) of the '*Aboriginal Heritage Act 1972*'. The Group requested that provisions be made so that Yakamia Creek has a buffer zone (30m) where no urban development takes place and that the creek line be rehabilitated with local native plant species.

Plan 18 (Aboriginal Heritage Sites)

(source: COA)



Heritage Recommendations

1. The structure plan needs to identify a minimum 30m setback/buffer area to the Yakamaia Creek.
2. The structure plan needs to highlight a need for referral to the DIA prior to supporting any development within the 30m setback area.

8. Transport

There are existing sealed and gravel roads constructed within the structure plan area, which provide access to the existing rural/residential landholdings.

Major developed roads either within or bordering the structure plan area include Catalina Road, Mercer Road, Barnesby Drive, North Road and Chester Pass Road.

Traffic on these roads feed to and from the Chester Pass Roundabout. Safety and congestion concerns have been raised as a result of the existing and estimated future volume of traffic feeding to and from the roundabout.

The City of Albany in partnership with the Department of Planning and Main Roads WA indicated existing major roads (highlighted in red on the following plan) and potential future roads (highlighted in blue on the following plan) within and around Albany's urban area. North Road, Mercer Road, Catalina Road, Barnesby Drive, Chester Pass Road and Range Road (Future Rd) were all identified as roads in the Yakamia/Lange areas, capable of acting as major distributors. All of these roads will need some attention (i.e. road widening, extensions, intersection treatments) in order to support additional traffic, the result of new residential growth.

Plan 19 Existing and Potential Future Major Roads

(Source: COA)

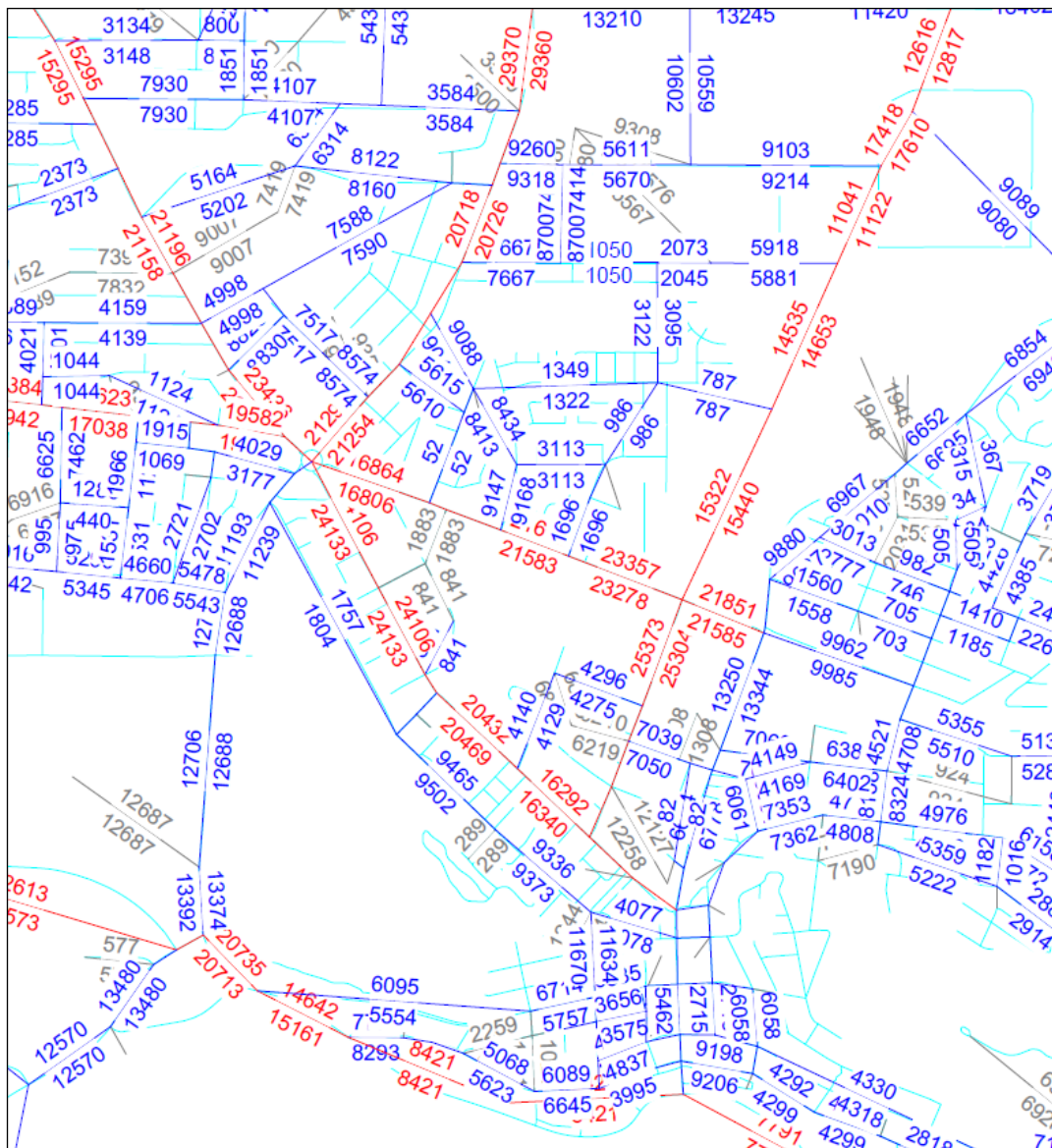


If Albany is developed to its full potential in accordance with outcomes considered by the Albany Local Planning Strategy, the following vehicle movements are estimated:

- Approximately 80,000 vehicles are expected at the Chester Pass Road roundabout (refer to following plan), a substantial increase from the current approximate 55,000vpd;
- Approximately 15,000 vehicles are expected to use an indicative Range Rd (north/south link); and
- Approximately 9000 vehicles are expected to use Barnesby Drive if connected through to Chester Pass Road.
(refer to following plan)

Plan 20 Department of Planning Estimated – Built out Scenario – Transport

(Source: DOP)



Range Road

The development of a new north south link called Range Rd will help to relieve traffic congestion at the Chester Pass Roundabout. Treatments may be necessary at various intersections along major roads.

Preliminary design drawings for Range Rd and intersection treatments at Range Rd and North Rd have been undertaken as seen in plan below:

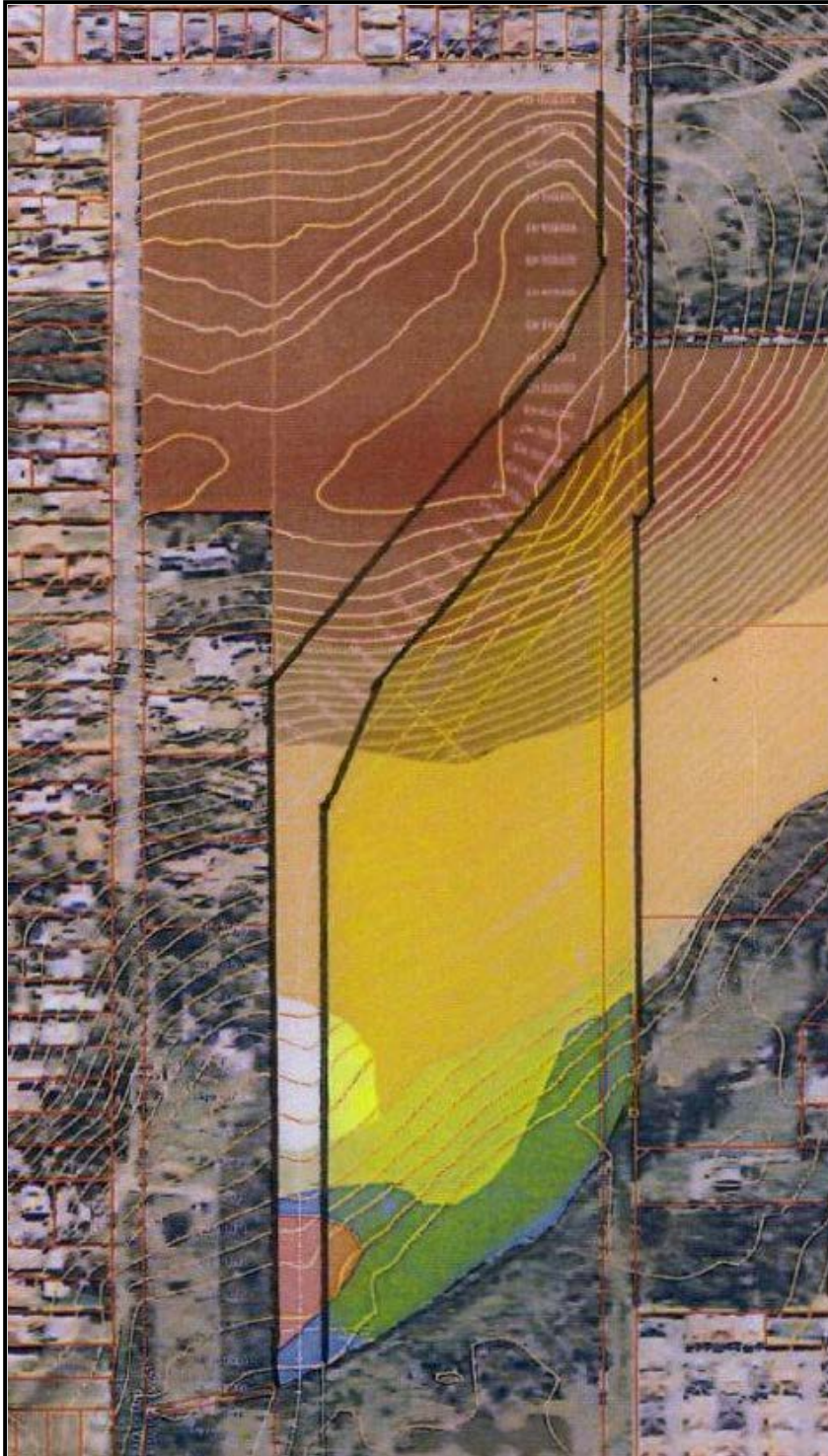
Plan 21 Range Rd to North Rd - Intersection Design

(source: COA)



The Department of Environment and Conservation has supported in principle the following road alignment for Range Rd through Lot 4743 North Rd.

Plan 22 – DEC Preferred Location for Range Rd
(Source: COA)



Plan 23 Design Layout for Range Rd (Source: COA)



A structure plan with the Range Rd alignment has been endorsed for the land between Hudson and Catalina Rd's.

(Source: COA)



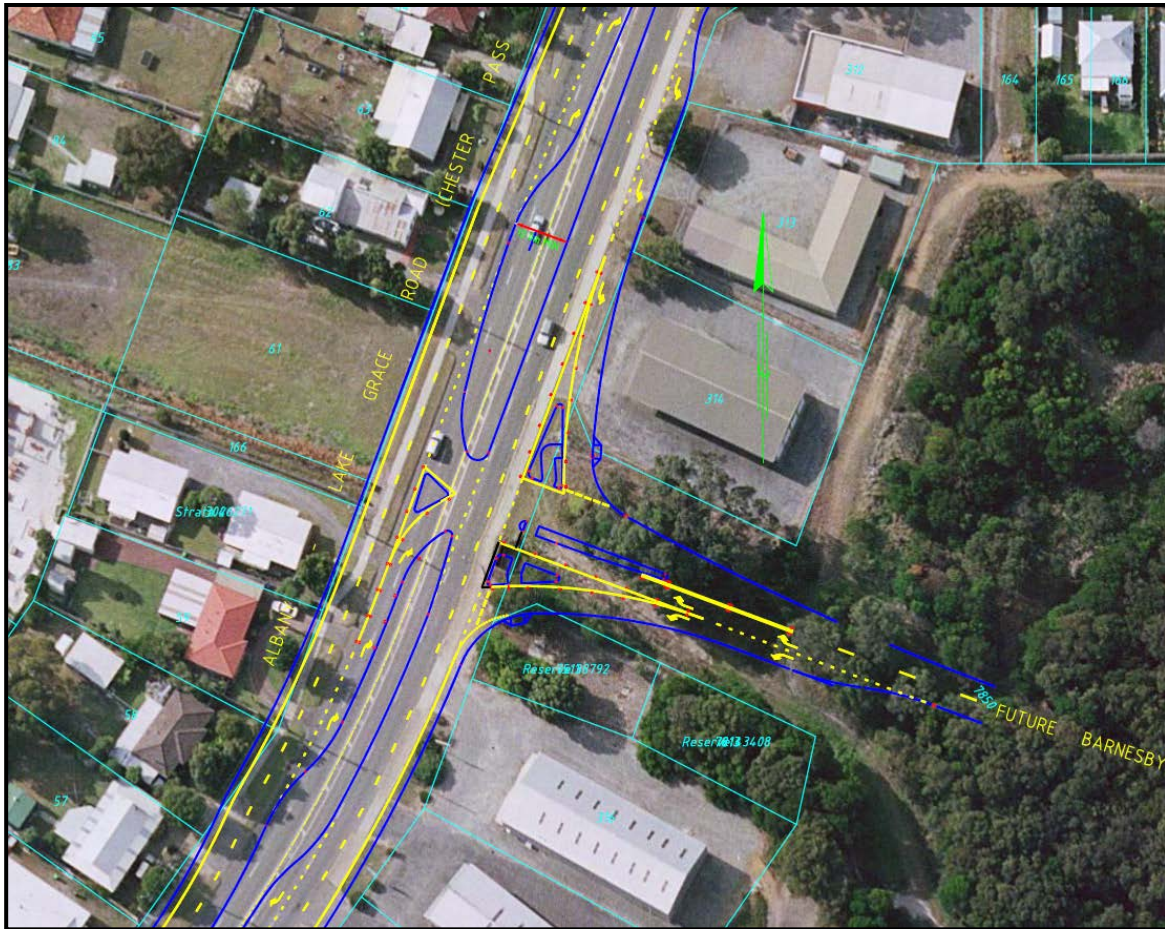
- The DOP futuristic model;
- The DEC preferred route;
- What has been endorsed for the area between Hudson and Catalina Roads;
- The constraints the result of the Western Power Lot to the north of Catalina Road; and
- Linkage to the north of Mercer Road.

The connection of Barnesby Drive through to Chester Pass Rd will in addition to the Range Rd connection take pressure off the main Chester Pass Rd roundabout. The connection of Barnesby Drive directly onto Chester Pass Rd is not without difficulty given the intersection location at the bottom of a crest curve on a Restricted Access Vehicle route.

Access on and off Barnesby Drive will need to be restricted to left in and left out only. A preliminary design drawing for intersection treatments at Barnesby Drive and Chester Pass Rd has been undertaken as seen in plan below:

Plan 25 Chester Pass Rd and Barnesby Drive – Intersection Design

(source: COA)



Transport Recommendations

As a means to safely distribute vehicles the result of future development, the following is recommended:

1. The structure plan indicates a new 4 lane north/south link road (Range Rd) between Mercer Rd and North Rd;
2. The Structure plan indicates a need for the development of a section of Barnesby Drive linking through to Chester Pass Rd;
3. The structure plan indicates a need for intersection treatments at:
 - Range Rd and Mercer Rd;
 - Range Rd and Catalina Rd;
 - Range Rd and North Rd; and
 - Barnesby Drive and Chester Pass Rd.
4. The structure plan indicates a need for the upgrading of the following Rd's:
 - Mercer Rd; and
 - Catalina Rd.
5. The structure plan indicates suitable road alignments to cater for surveillance to public parklands and to act as hazard separations for areas of fire risk.

9. Utilities

Deep sewer, electricity and gas mains are all developed in the vicinity of the structure plan areas.

Western Power

Western Power own Lot 36 Catalina Rd, which is situated within the structure plan area. Western Power plan to develop (2030) this lot in the future (15-20 years) as a substation. A flat, sandy and dry area of 1.5ha (120m x 120m) with proximity to roads is required to support the development of the substation.

Western Power advised that:

“Scope exists for the proposed major north-south link road to be incorporated into Western Power land. Agreement to this is dependent upon most suitable site for substation being protected, also that there are suitable developer contribution arrangements to be established in relation to its reservation and development.”

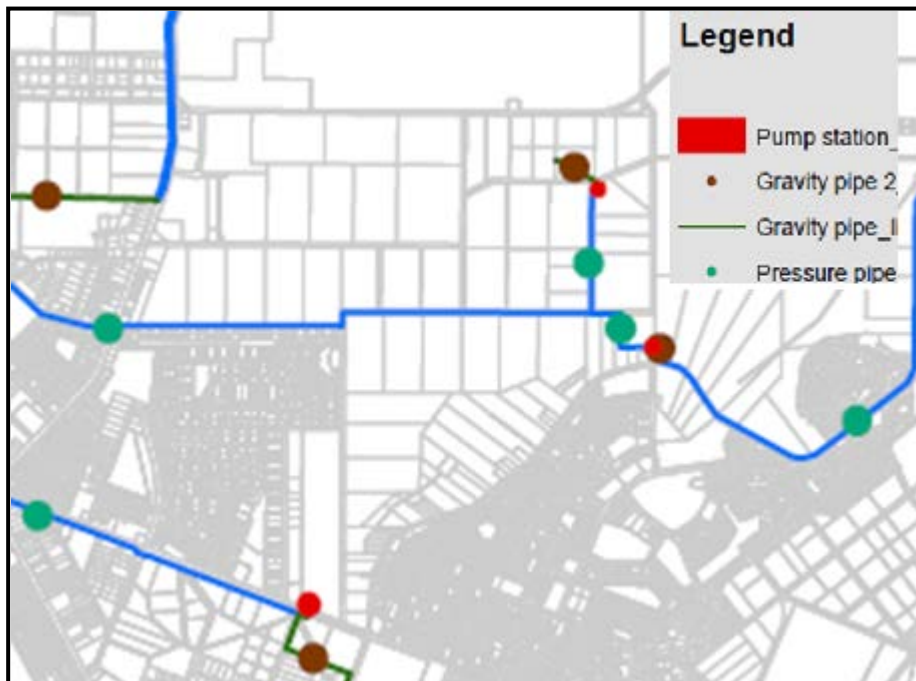
Water Corporation

The Water Corporation has provided a plan illustrating the location and type of possible future infrastructure. The plan illustrates a pressure pipe running east/west along Hudson Rd and north/south adjacent to Chester Pass Rd.

The Water Corporation advised that sewer is not available to the areas located between the Yakamia Creek and Ulster Road.

Plan 26 Water Corporation – Strategic Infrastructure Development

(source: Water Corporation)



Utility Recommendations

1. *It is recommended that the structure plan recognises proposals within the Western Power lot and plans development accordingly. Measures need to be established to ensure an interface with adjoining development and to mitigate safety, visual, nuisance and security impacts. For the substation, a provisions needs to be included to identify a 100m visual screening to adjoining sensitive land uses.*
2. *Road connections should be coordinated throughout the area to allow for future transmission lines.*

3. Statutory Section

3.1 Introduction

The structure plan outlines various land uses and reserves applicable within the structure plan area.

In the event of there being any variations or conflict between the provisions, standards or requirements of this structure plan, then the provisions, standards or requirements of the Scheme shall prevail. This is the case for areas that are currently zoned 'General Agriculture'.

Prior to enacting standards of the structure plan that contradict standards of the scheme, amendments will need to be made to the scheme. For example, the 'General Agriculture' zone will need to be changed in the scheme to 'Future Urban' to reflect recommendations of the structure plan.

3.2 Structure Plan Area

The structure plan area has been established taking into consideration recommendations made by a Water Management Strategy for the catchment area and in the City's Local Planning Strategy (ALPS). The ALPS recommends that areas south of Mercer Road should be considered for urban development in the short to medium term. The structure plan encompasses two different areas:

Area 1:

- Adjacent to Barnesby Drive; and

Area 2:

Bound by the following:

- Northern Boundary – Mercer Rd;
- Western Boundary – Chester Pass Rd and existing residential development;
- Eastern Boundary – Areas designated in the Albany Local Planning Strategy Map 9b as being suitable for 'Regional Reserve'; and
- Southern Boundary – North Rd and Ulster Rd.

3.3 Land Use and Subdivision Requirements

1. Objectives

- a) Development and subdivision is to occur in accordance with the following objectives:
 - 1. Facilitate an urban form that provides for housing and associated infrastructure which is responsive to the character of the site and the locality, as depicted on the Plan;
 - 2. Provide safe and convenient vehicle and pedestrian access to the activity centres at Chester Pass Road and the Central Business District;
 - 3. Provide a stormwater system that minimises risk to public health and amenity, protects the built environment from flooding and water logging and that enhances the quality of water flowing to the Oyster Harbour;
 - 4. Maintain vegetation where possible within road reserves, areas of public open space and foreshore areas and protect vegetation in excellent condition and where possibly threatened species exist;
 - 5. Provide a range of public open spaces catering for recreational, sporting and nature use by the local community.

2. Land Use Permissibility

- a) The structure plan identifies different areas to accommodate different uses or to achieve specific purposes. For example, areas delineated as 'Residential' are intended for urban development at the nominated density, areas delineated as 'Foreshore' are intended for recreation, drainage management and fauna habitat and areas delineated as 'Environment Protection and Biodiversity Conservation' are intended for flora and fauna habitat and visual amenity.
- b) Ultimately the different areas will be zoned or reserved in accordance with the *Local Planning Scheme 1* to reflect the land use or purpose. For example, an area delineated as 'Residential' will be zoned 'Residential' and areas delineated as 'Foreshore' or 'Environment Protection and Biodiversity Conservation' will be reserved as 'Parks and Recreation'.
- c) Proposals to develop an area that is delineated as 'Environment Protection and Biodiversity Conservation' will require referral to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) to determine a level of assessment under the EPBC Act.
- d) The Office of the Environmental Protection Authority has supported in principle development of some areas that are vegetated. The structure plan has indicated development potential for these areas subject to referral to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) to determine a level of assessment under the EPBC Act.
- e) The structure plan has illustrated the potential for a single house for some areas that are vegetated as of right in accordance with the *Local Planning Scheme 1*.

3. Local Development Plans

- a) Local Development Plans (detailed area plans) are to be prepared prior to any subdivision and/or development of properties with a density >R25.

4. Design

- a) The design of development and/or subdivision is to be considerate of the Western Australian Planning Commission Liveable Neighbourhoods document (i.e. lot layout, conservation category wetlands, POS).

5. Management Plans

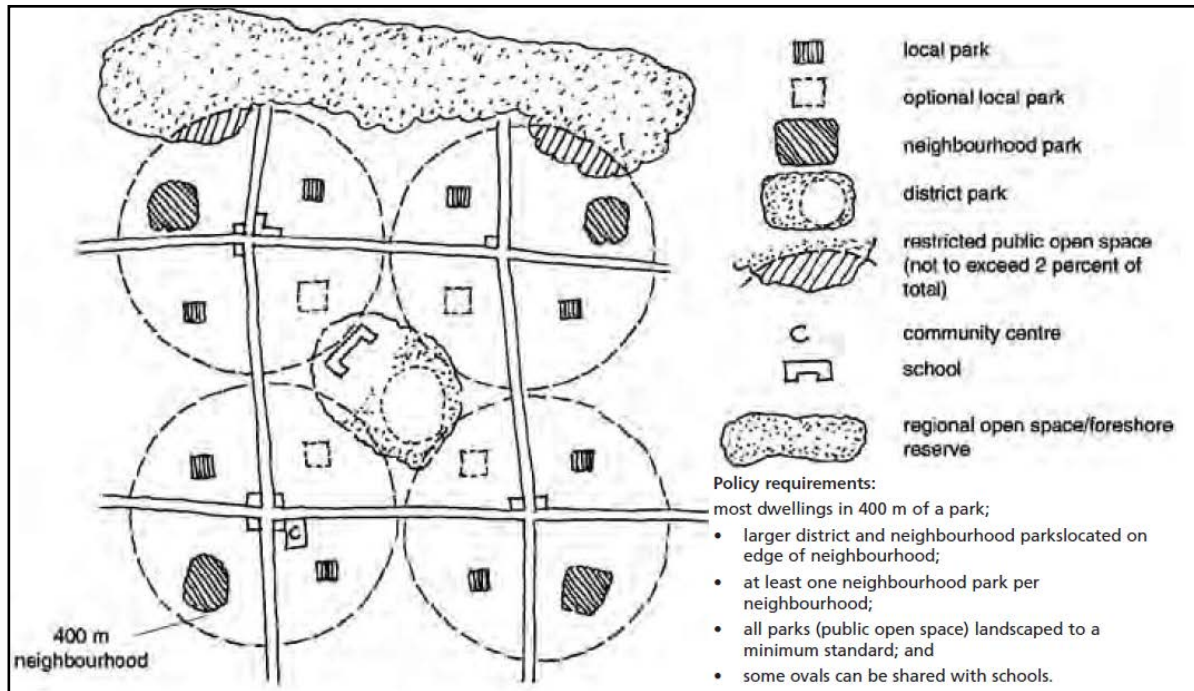
- a) The City may request that the following management plans are developed and implemented to accompany the subdivision or the development of more than one dwelling or lot:
 - Foreshore management plan(s);
 - Acid sulphate soil management plan;
 - Urban water management plan;
 - Fire management plan;
 - Weed Management plan(s);
 - Monitoring Management plan(s);
 - Traffic Management plans; and
 - Contribution Plans.

6. Public Parkland

- a) The main objective for the provision of POS is to:
 - ensure POS is large enough, located within walking distance (400m) and has a variety of facilities (eg. informal and formal) to attract people of all ages and aspirations.
- b) A minimum contribution of 10% of a gross subdivisional area must be given up free of cost by the developer/subdivider as land for public parkland and/or as cash to be used to develop public parkland and associated facilities.
- c) Where on advice of the Local Government, sufficient open space is provided in the locality, an open space contribution will not generally be required for a lot with the potential to subdivide 5 lots or less.
- d) Subdivision or development applications giving up land for POS that is in excess of 10% of the gross subdivisional area of the Lot are to be financially reimbursed at the time of subdivision or development.
- e) A foreshore is to be provided free of cost where subdivision abuts a watercourse, such as a river or creek, or a body of water such as a lake, or the coast in accordance with State Planning Policy 2.6 State Coastal Planning Policy and State Planning Policy 2.9 Water Resources. A foreshore is to be given up in addition to the 10% POS contribution.
- f) The WAPC will be guided by the local government to ensure that active and passive recreation needs of future residents will be adequately catered for before it will agree to the inclusion of natural or cultural areas in the 10% POS contribution.
- g) At the time of subdivision, the developer is to provide an open space schedule detailing the amount, distribution and staging of the delivery of open space.
- Location
- h) Public parkland is to be located:

- central to neighbourhood;
- within 400m of dwelling(s);
- to take advantage of natural features (foreshore, beach, creek, vegetation);
- in accordance with the structure plan; and
- in accordance with the following WAPC Model.

Plan 27 - WAPC POS Model



i) The following characteristics are to be considered when analysing if appropriate spaces and facilities are available or proposed within walking distance (400m) or within a locality:

- Encourage the development of larger rather than smaller spaces to provide a combination of functions - drainage, active, passive and conservation, and to make more attractive/user friendly to community.
- Careful thought needs to be given towards cost of maintaining parks. The developer should maintain a park for the first few years. Drainage, vegetation and infrastructure should be developed with a view to minimise maintenance cost.
- Informal and formal recreation developed adjacent to foreshores is highly valued.
- Paths adjacent to foreshores are highly valued and currently lacking. Paths should be designed as a circuit.
- Native vegetation is a valuable component for informal recreation.
- Parks should be developed with play equipment that educates kids about nature.
- Important to consider safety associated with persons (kids) and roads adjacent to parks.
- Parks need to have flat areas for recreating.
- The provision of POS and facilities should align with the City of Albany:
 - a. Asset Management Policy and Strategy; and
 - b. Bike strategy.
- Consider creating a theme for each park.
- The following facilities are highly valued: Barbeque; Shelter; Reticulated grass; Quiet places; Seating; Toilets; Drinking water; Paths, bush walk trails and multi use

trails (eg. mountain bikes); Open space; Parking; Child play equipment; Shade; and Waste disposal facilities and dog poo bags.

- The demographics of a locality should be considered when determining the design of POS (eg. old age persons prefer informal recreation).
- Need to feel safe (surveillance) walking within a POS area.
- POS should be located adjacent to other high use facilities such as cafe, shops or a school.
- POS needs to cater for the need to walk a dog.
- Consider designing parks to accommodate events (eg. develop with amphitheatre).
- Consider developing Yakamia Creek (through to Oyster Harbour) as a future Regional recreational facility.
- Areas of bushland (eg. vegetation areas proposed for conservation) and drainage management areas that have little or no recreational value are not to be ceded to the City of Albany as POS.
- POS should be provided as a priority over cash in lieu.
- Where cash in lieu is provided, the following use of the cash should apply (listed in priority of order):
 - To purchase land for POS;
 - To develop informal and formal recreation facilities within POS;
 - To compensate developers contributing in excess of the 10%;
 - To develop recreation facilities within foreshore areas;
 - To purchase and/or develop areas for community recreation (eg. library);

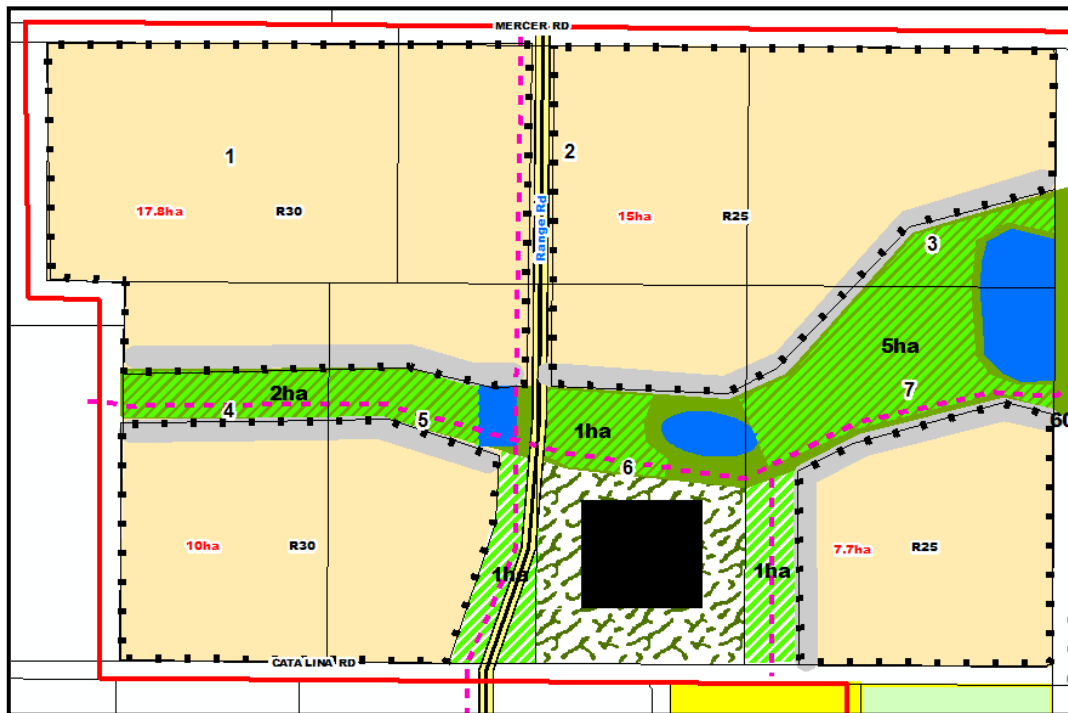
Precincts

- j) Public open space is to be provided generally in accordance with the structure plan and the following provisions relating to specific precincts.

Precinct 1 (17.8ha, 15ha, 10ha and 7.7ha)

1. For this precinct, the plan proposes to utilise the foreshore area for formal (sporting) and informal (passive) recreational use. The foreshore is central to the precinct, reasonably flat and capable of being developed as a large recreational space facilitating a combination of activities. The foreshore areas are given up free of cost and in addition to any POS contributions.
2. For this precinct, the plan also proposes the development of parkland adjacent to a proposed electricity transfer station. The purpose is to provide a buffer (100m) between residential development and a proposed electricity transfer station.
3. Subdivision and development within this precinct is to be given up as follows:
 - Areas 1, 2, 3, 4 and 6 are to provide a cash contribution based on 10% of a gross subdivisible area;
 - Areas 5 and 7 are to cede approximately 1ha each to provide a 100m buffer between residential development and a proposed electricity transfer station.
4. Financial contributions are to be used to develop formal (sporting) and informal (passive) activities (eg. Paths, landscaping, play equipment) within the foreshore areas, within the parks located adjacent to a proposed electricity transfer station and to reimburse any landholders (areas 5 and 7) giving up more than a 10% land contribution.

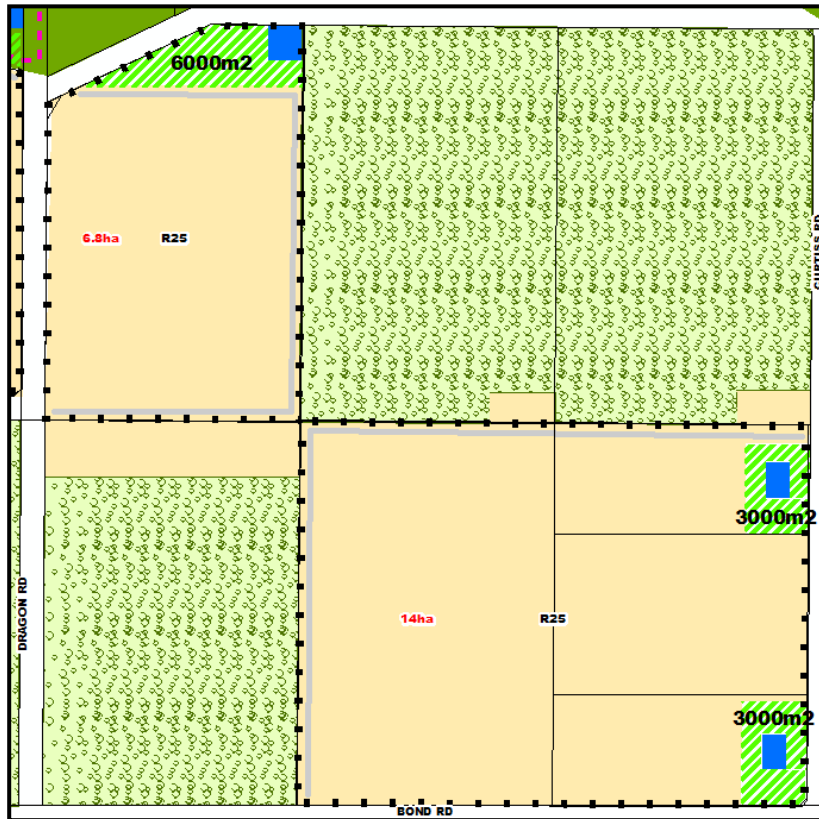
Plan 28 – Precinct 1
(Gross area approx = 50ha)
 (Source: COA)



Precinct 2 (6.8ha and 14ha)

5. For this precinct, the plan proposes the development of three parks (3 x neighbourhood Parks) in strategic locations that support drainage management. The total area of which amount to approximately 1.2ha. The land in these areas is reasonably flat and adjacent to a foreshore or prime access routes.
6. Subdivision and development within this precinct is to be given up as follows:
 - Areas 2 and 4 are to provide a cash contribution based on 10% of a gross subdivisible area;
 - Areas 1, 3 and 5 are to cede areas as indicated in the following plan for sporting and passive use.
7. Financial contributions are to be used to develop facilities within the parks (eg. Paths, landscaping, play equipment) and to reimburse any landholders (areas 3 and 5) giving up more than a 10% land contribution.

Plan 29 – Precinct 2
(Gross area approx = 20ha)
 (Source: COA)



Precinct 3 (16ha, 10ha and 10ha)

8. For this precinct, the land is constrained by steep slopes. Development is expected to be of a low density. Parkland to accommodate sporting type activities is not expected as a result of low density or suitable as a result of the gradients.
9. For this precinct, the plan proposes the use of a pedestrian links developed within the foreshore to provide passive recreation and to provide access to spaces nearby for sporting recreation.
10. Subdivision and development proposed within this precinct is to provide cash contributions to construct paths as shown on the following plan.

Plan 30 – Precinct 3

(Source: COA)

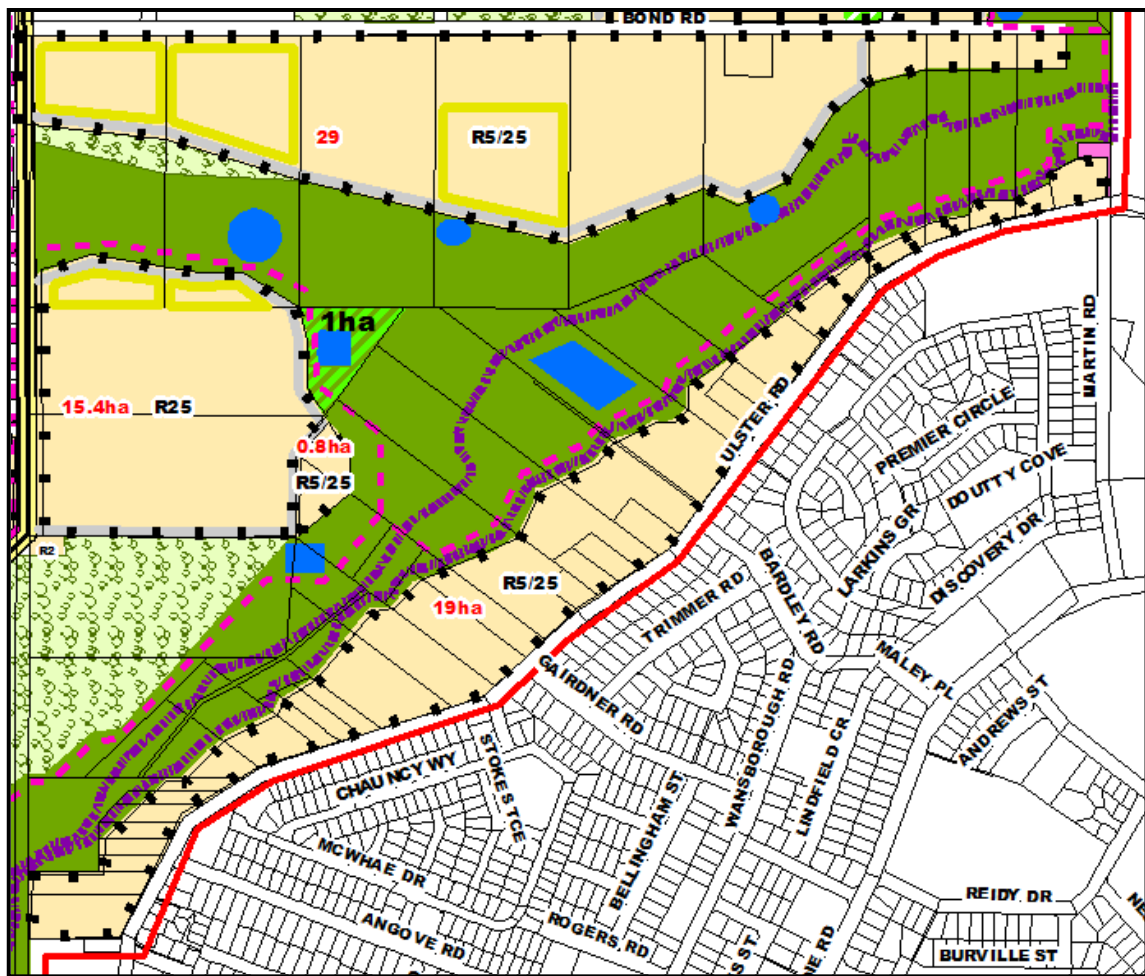


Precinct 4 (29ha and 19ha)

11. For this precinct, the land is constrained by steep slopes. Development is expected to be of a low – medium density. Parkland to accommodate sporting type activities is not expected as a result the density or suitable as a result of the steep gradients.
12. For this precinct, the plan proposes the use of a pedestrian link developed within the foreshore to provide passive recreation and to provide access to spaces nearby for sporting recreation.
13. Subdivision and development proposed within this precinct is to provide a cash contribution to construct paths as shown on the following plan.

Plan 31 – Precinct 4

(Source: COA)

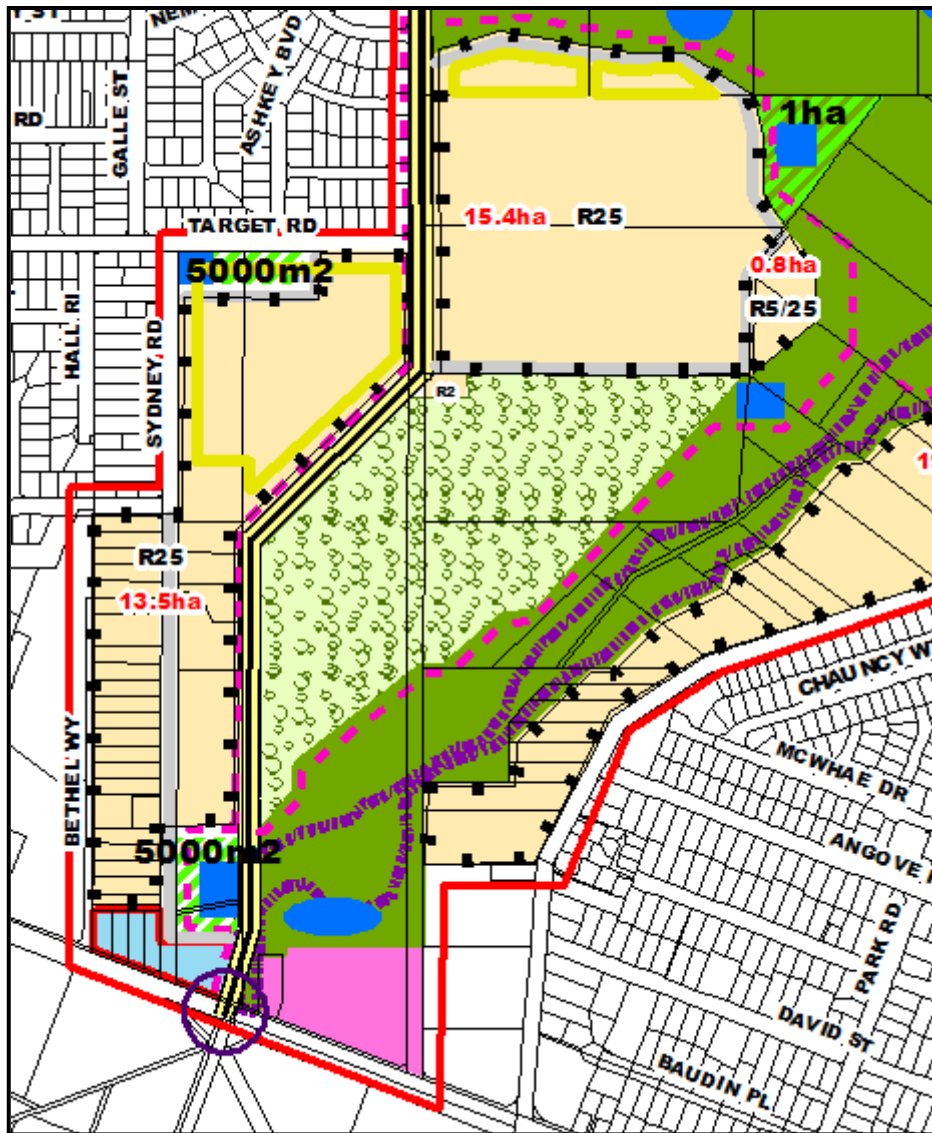


Precinct 5 (13.5ha and 15.4ha)

14. For this precinct, the plan proposes the development of three parks (3 x neighbourhood Parks) in strategic locations that support drainage management. The parkland identified in these areas is reasonably flat and adjacent to a foreshore or prime access routes.
15. Subdivision and development within this precinct is to be given up as follows:
 - Areas 1 and 2 are to provide a cash contribution based on 10% of a gross subdivisible area. Financial contributions are to be used to develop facilities within the park identified in the foreshore, which is to be given up free of cost;
 - Areas 3, 4 and 5 are to cede land as indicated in the following plan for sporting and passive use.
16. For lots with the potential to subdivide more than 5 lots, a financial contribution is to be provided based on 10% of the gross subdivisible area. The contribution is to be used to develop facilities within the parks (eg. Paths, landscaping, play equipment) and to reimburse any landholders giving up more than a 10% land contribution.

Plan 32 – Precinct 5

(Source: COA)

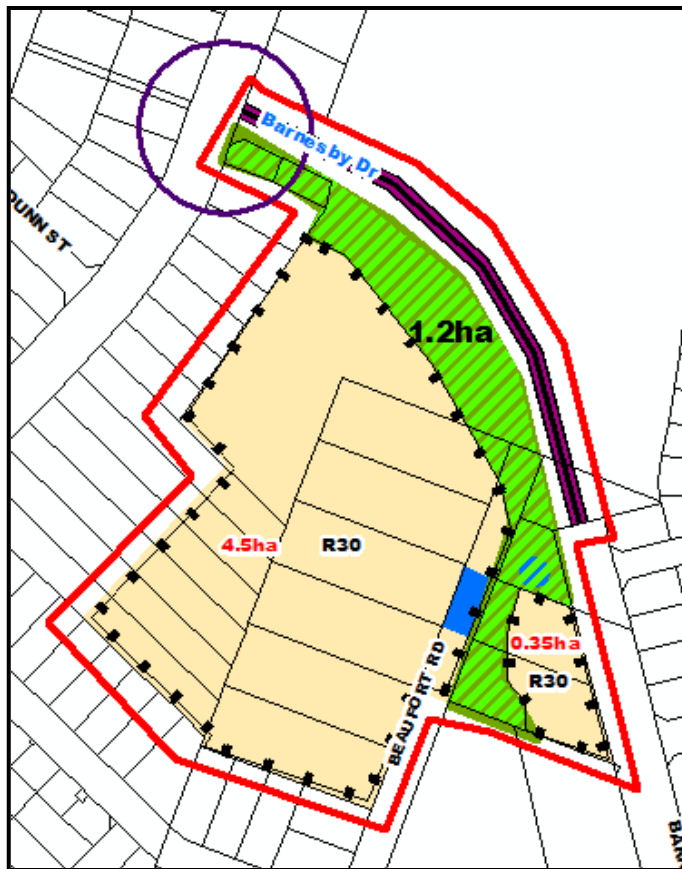


Precinct 6 (4.5ha and 0.35ha)

17. For this precinct, the plan proposes to utilise the foreshore area for informal (passive) recreational use. The foreshore areas are given up free of cost and in addition to any POS contributions.
18. For lots with the potential to subdivide more than 5 lots, a financial contribution is to be provided based on 10% of the gross subdivisible area. The contribution is to be used to develop recreational facilities (path) within the foreshore.

Plan 33 – Precinct 6

(Source: COA)



7. Retaining Walls

- a) High (>1m) retaining walls should be avoided where possible and in particular where they are exposed to public view (i.e. adjacent to roads and areas of POS).
- b) Where retaining (>1m) is necessary, this should be done within the dwelling walls or stepped and landscaped.

8. Drainage

- a) Water management is to occur in accordance with recommendations made in the Yakamia/Lange Water Management Strategy and Arterial Drainage Plan. Recommendations include the development of stormwater basins in specified locations to accommodate development in identified precincts.
- b) As a means to manage nutrient inputs; design and development is required to retain the post development hydrology as close as possible to the pre-development hydrology.
- c) Drainage should be designed to accommodate one in five year average recurrence interval (ARI).
- d) Nutrient and flood mitigation measures such as detention or infiltration swales, filter strips and nutrient stripping features are to be incorporated for primary treatment of stormwater before discharge into creeks. These areas are to be landscaped. Avoid locating drainage management infrastructure in wet boggy areas.

- e) Drainage management measures are to be designed such that maintenance is kept to a minimum.
- f) Direct drainage from any future subdivision areas into the creek system is not to occur.
- g) Design drainage infrastructure to withstand high velocity flows where they occur to minimise erosion and generation of sediment.
- h) At the time of subdivision, the first developer in a drainage catchment area shall undertake an urban water management plan in accordance with the Yakamia Water Management Strategy. This plan shall incorporate a contribution plan for drainage infrastructure common to the catchment to the satisfaction of the City and DOW.
- i) Where disturbance to vegetation protection areas occurs during construction, rehabilitation is to occur.
- j) Suitable management is required to minimise the extent and spread of weed infestations.
- k) Alternative Effluent Treatment units being developed in areas where deep sewer is not capable of being developed.
- l) Water tanks being developed at lots adjacent to foreshores to attenuate stormwater and to store potable water.
- m) A monitoring program will be required to gather information and monitor post-development impacts. The program should include monitoring of the following:
 - a) Water quality of the creek system;
 - b) Groundwater in the local vicinity where possible;
 - c) Changes in vegetation within the creeks, flood plains and buffers; and
 - d) Rehabilitation success.
- n) The arterial drain (open drain) running adjacent to the new section of Barnesby Drive is to be re-aligned and re-developed to avoid flooding of the residential lots. This is to be done in accordance with Better Urban Water Management Principles.
- o) Proposed future intersections at Barnseby Drive / Chester Pass Road and Range Road /North Road will need to be designed to facilitate safe passage of major flood events.

9. Vehicle and Pedestrian Infrastructure

- a) Traffic Impact Assessments being undertaken to the satisfaction of the City prior to supporting subdivisions and developments that have the potential to substantially (eg. 44 vehicles/day) increase the amount of vehicles to a local area.
- b) Road alignments (Range Rd and Barnesby Dr) are to be located in accordance with the structure plan. Variations to the locations may occur where local circumstances dictate in order to protect existing vegetation, provide a better traffic management outcome, refine lot orientations, increase public access to public open space and foreshore areas, etc.
- c) Properties adjoining an unconstructed road are to provide a contribution to the satisfaction of the City. The City generally requires a contribution for the cost of

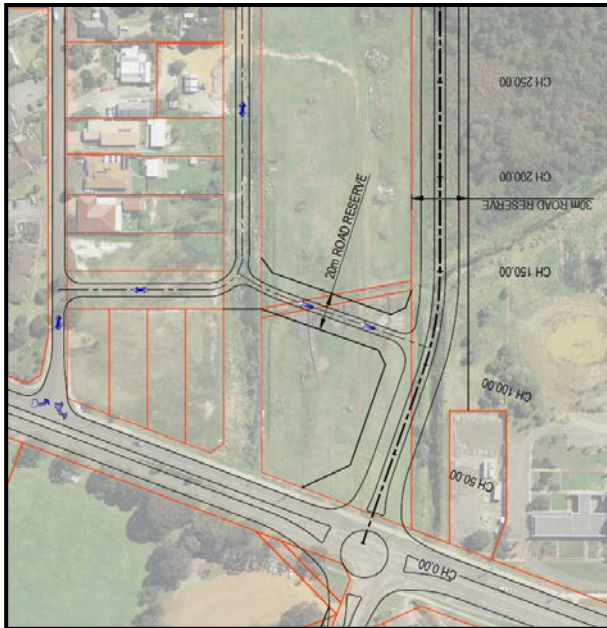
constructing half the width of the road for the section of lot fronting the unconstructed road.

- d) At the time of subdivision or development of a property where Range Road or Barnesby Drive dissect, a 30m road reserve is to be ceded to the Crown and a two lane sealed road constructed to the satisfaction of the City. Considering these roads will benefit users outside of the structure plan area, the City will seek alternative funds for the development of these roads to their full potential (4 lanes).
- e) The section of Range Rd dissecting City owned land is to be developed with contributions obtained from the sale of the section of land that's owned by the City and located just north of Range Rd.
- f) At the time of development or subdivision, per lot contribution (for all lots located in structure plan areas) is to be made for intersection treatments proposed at locations illustrated on the structure plan. The method for contribution is as follows:
 - o Cost of treatments, divided by lot potential in structure plan area equals cost per lot. A cost schedule of necessary infrastructure is to be developed and updated annually.
 - o Mercer/Range Rd intersection ~ \$300,000;
 - o Catalina/Range Rd intersection ~ \$700,000;
 - o North/Range Rd intersection \$1million;
 - o Total - \$2million

$\$2000,000 \text{ divided by } 2700 \text{ dwellings (} 198 \text{ha} \times 14 \text{dw/ha)} = \$740/\text{dwelling entitlement.}$
- g) The Barnesby/Chester Pass Rd intersection (approximate value - \$1.5million) is to be funded by Main Roads WA and the City of Albany.
- h) Road alignments submitted as part of a subdivision or development application are to be located such that they follow the contour of the land, where possible and consider vegetation protection and fire risk reduction measures.
- i) 2.5m Dual Use paths are to be constructed along strategic routes by lot owners as a condition of subdivision or development to the satisfaction of the City.
- j) Crossovers to Range Rd and Barnesby Drive are to be restricted. All access must be via internal subdivisional road(s).
- k) The section of land fronting Mercer Rd has in places - poor line of site due to the alignment of the road. Access via developments to Mercer Rd needs to be minimised and strategically located to maintain safe movement.
- l) An east west road link is to be developed at the time of development or subdivision between Bethel Way, Sydney St and Range Rd. The following indicative road plan has been provided as an example:

Plan 34 Properties adjacent to Sydney St – Indicative Road Design

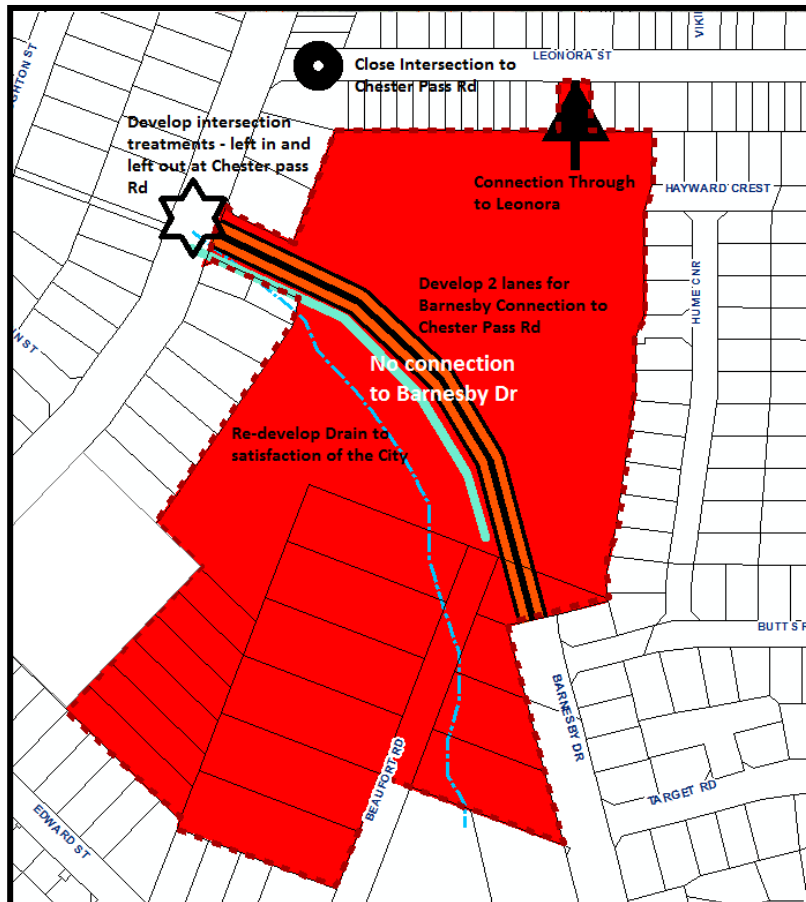
(source: COA)



- m) As a condition of subdivision/development, lots adjacent to Sydney Street are to be designed to incorporate access on to Sydney St.
- n) As a condition of subdivision/development, lots fronting Sydney St are to:
 - provide a financial contribution to the satisfaction of the City for the upgrading/development of Sydney St; or
 - Develop Sydney St to the satisfaction of the City.
- o) Crossovers to Sydney Street are to be shared as a means to limit crossovers onto Sydney St.
- p) As a condition of subdivision/development, Lot 9000 Beaufort Rd is required to:
 1. Develop Barnesby Drive through to Chester Pass Rd (2 lane Rd); and
 2. Relocate and develop the arterial drain to the satisfaction of the City.

Plan 35 Area 1 - treatments

(source: COA)



10. Setbacks

- a) A 7.5m clearance between the boundary of the commercial lots in the vicinity of Barnesby Drive and residential development is to be achieved.

11. Sewer, Water, Electricity and Telecommunications Infrastructure

- a) All future development and subdivision within the structure plan area is to be connected to reticulated water, sewer, electricity, gas and telecommunications.

12. Geotechnical Investigation and Acid Sulphate Soils Management

- a) A Geotechnical Survey will be required for subdivision or development proposals to determine acidity, contamination and building capability. Areas defined as having acidity present will need to demonstrate adequate management and treatment measures during the subdivision or development phases.

13. Aboriginal Heritage

- a) At the time of subdivision or development, a minimum 30m setback/buffer area to the Yakamaia Creek is to be reserved for the purpose of Aboriginal Heritage Protection.

14. Residential Density

- a) Development and subdivision is to be in accordance with the density depicted on the structure plan map.

Residential – R2 (min 5000m²/Lot)

There is one area coded R2. This area is isolated and potentially too costly to connect to deep sewer. This area is also low lying and on the fringe of a foreshore. Intensification of this area may require landfill, which may inherently affect water flow and quality. Alternative Effluent Treatment Systems developed to the satisfaction of the State Health department and the City of Albany may be necessary for any additional development in this area.

Residential - R5/25

Development of these areas is constrained by high costs due to steep topographies and separation distances to deep sewer infrastructure as forecast by the Water Corporation.

The structure plan is proposing to support subdivision and development within these areas at a density of either R5 or R25. Development at the R5 density will not require connection to deep sewer.

Residential – R25 (350m²) Areas

These areas should be developed at an R25 density.

Residential – R30 (300m²) Areas

These areas are unconstrained and within close distance to commercial nodes. These areas should be developed at an R30 density.

15. Special Use Area

- a) The following special uses may be supported within this area:
- Medical Clinic;
 - Offices;
 - Residential R30;
 - Aged Persons Village (R50); and/or
 - Holiday Accommodation (R50).
- b) As a means to limit access to North Rd, an east west road link is to be developed at the time of development or subdivision between Bethal Way, Sydney St and Range Rd.
- c) Flood and drainage management measures being implemented to the satisfaction of the City.

16. Easements – access to reserves

- a) An easement or road reserve may need to be provided as part of a development to enable access to Conservation Category Wetlands, arterial drains or floodways.

17. Steep Topographies

- a) Development is to be undertaken such that earthworks and retaining is minimised. This can be done by stepping a building with the contour of the land.

18. WAPC Residential Design Codes

- a) Development and subdivision is to be in accordance with the Residential Design Codes.

19. WAPC Liveable Neighbourhoods

- a) Development and subdivision is to be in accordance with the WAPC Liveable Neighbourhoods Document.

20. Buffer to Western Power Substation

- a) Development proposed adjacent to the proposed Western Power Substation is to achieve a separation distance to the satisfaction of the City (100m).
- b) Development of electrical infrastructure is to be located central to the western power lot boundaries. Vegetation capable of screening electrical infrastructure is to be developed surrounding.

21. Foreshore Areas.

- a) Areas designated as 'foreshore' are to be ceded to the Crown for its intended purpose (eg. drainage reserve or recreation) at the time of subdivision or development, free of cost and without payment of compensation by the Crown.
- a) No development will be permitted in the 'foreshore' areas other than for conservation, recreation or stormwater management.
- b) Rehabilitation of these areas is to occur as a condition of subdivision and development in accordance with a foreshore management plan.
- c) Habitable development (ie, filling, building, etc) proposed adjacent to a foreshore area is to have a minimum floor level of 0.5 metre above the adjacent 100 year ARI flood level.

22. Environment Protection and Biodiversity Conservation Areas

- a) At the time of subdivision or development, areas designated for Environment Protection and Biodiversity Conservation are to be protected without payment of compensation by the Crown. The protected areas are to be kept in private ownership and protected via a conservation notice on title.
- b) A 'Single House' may be developed (as of right – Local Planning Scheme 1) on a per Lot basis to the satisfaction of the City.
- c) The following areas noted on the structure plan require a protection notice:
- Portion of Lot 4743 south of the proposed link road and adjoining property's east of Range Road (Lots 75 and 76);
 - Vegetation on Lots 997, 998, 1001 and 1002 north of Bond Road.
- d) Fencing and fire break development of these areas is not permitted as this will diminish the purpose which is to protect the vegetation. Bollards may be permitted to demarcate lot boundaries.

23. Monitoring

- a) A monitoring program will be required to gather baseline information and monitor post-development impacts. The program should include monitoring for a period of two years of the following:
- Water quality of the creek system.
 - Groundwater in the local vicinity where possible.
 - Changes in vegetation within the creeks, flood plains and buffers.
 - Rehabilitation success.

24. Public Use

- a) Public use areas are to be dealt with in accordance with corresponding provisions within the relevant scheme.

Area designated as Western Power Substation

Within the Western Power Lot 36 Catalina Rd, support subdivision and development in accordance with the structure plan, which designates portions for:

- Range Rd;
- 'Public Use' reserve (western power substation); and
- Residential R30.

- b) Landscaping to occur in the buffer area to the substation to the satisfaction of the City of Albany.

25. Fire Risk

- a) A detailed Fire Management Plan shall be prepared for any subdivision and development in areas within 100m of vegetation.
- b) Development shall accord with an approved Fire Management Plan in accordance with FESA/WAPC Planning for Bush Fire Protection Edition 2, and any City of Albany Fire Management requirements.
- c) Development abutting areas within which remnant vegetation is to be retained shall provide an adequate (20m) Building Protection Zone (which may include road reserve, foot or dual use path and setback area) and appropriate dwelling construction standard in accordance with AS 3959-2009.

3.4 Structure Plan
(source: COA)



CERTIFIED THAT THIS STRUCTURE PLAN
WAS ADOPTED BY RESOLUTION OF THE
WESTERN AUSTRALIAN PLANNING COMMISSION ON

..... Date

Signed for and on behalf of the Western Australian Planning Commission

.....

an officer of the Commission duly authorised by the Commission pursuant to
section 16 of the *Planning and Development Act 2005* for that purpose, in the
presence of:

..... Witness

..... Date

And by
RESOLUTION OF THE COUNCIL OF THE CITY of Albany ON

..... Date

And
PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE
PRESENCE OF:

.....
Mayor, City of Albany

.....
Chief Executive Officer, City of Albany

..... Date

This Structure Plan is prepared under the provisions of the
City of Albany Town Planning Schemes 1A and 3

Document Approval			
Document Development Officer:		Document Owner: <i>(Member of EMT)</i>	
Manager Planning Services		Executive Director Planning and Development Services	
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		To Office of the Environmental Protection Authority for informal comment	March 2014
		To landholders for 'Question Period'	Sept/Oct 2014
		Council support for advertising	

		Advertising	
		Final City of Albany adoption	
		WAPC endorsement	