THE SPRINGS | RIVERVALE
STRUCTURE PLAN

November 2009

prepared for: LandCorp

prepared by: **Taylor Burrell Barnett**
Town Planning and Design

in association with:
NS Projects
Hassell
Plan E
Cossill & Webley
Estill & Associates
Riley Consulting
Colliers International
Sinclair Knight Merz

Endorsement Page

This structure plan is prepared under the provisions of the City of Belmont Local Planning Scheme No. 15

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

18 DECEMBER 2009

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Date of Expiry: **19 OCTOBER 2030**

The Springs Structure Plan

November 2009

Prepared for
LandCorp

Taylor Burrell Barnett
Town Planning & Design

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PART ONE
STATUTORY PLANNING

TABLE OF CONTENTS – PART ONE

1 STATUTORY PLANNING 1

1.1 Structure Plan Area 1

2 STRUCTURE PLAN CONTENT 1

3 INTERPRETATION 1

4 OPERATION DATE 1

5 RELATIONSHIP WITH THE SCHEME 1

6 STRUCTURE PLAN 1

6.1 Precinct Development Requirements 1

6.2 Special Provisions 3

6.2.1 Development 6

6.2.2 Retail Floorspace 6

6.2.3 Detailed Area Plans 6

6.2.4 Design Guidelines 6

6.2.5 transport planning 7

6.2.6 Landscaping of POS and Streets 7

6.2.7 Developer Contributions 7

1 STATUTORY PLANNING

1.1 STRUCTURE PLAN AREA

The Structure Plan shall apply to the land contained within the inner edge of the red line on **Plans 1-3** forming The Springs Structure Plan.

The Structure Plan area comprises approximately 13.6709 ha.

2 STRUCTURE PLAN CONTENT

This Structure Plan comprises:

- Statutory Planning Section (Part One)
- Explanatory Report (Part Two)

3 INTERPRETATION

The words and expressions used in this Structure Plan shall have the respective meanings given to them in the City of Belmont Local Planning Scheme No. 14.

4 OPERATION DATE

This Structure Plan shall come into effect when it is adopted by the Council pursuant to sub-Clause 10.18.10.1 of the Scheme and endorsed by the Western Australian Planning Commission (WAPC) pursuant to sub-Clause 10.18.11.2 of the Scheme.

5 RELATIONSHIP WITH THE SCHEME

In the event of there being any inconsistencies or conflicts between the provisions, standards or requirements of the Scheme and the provisions, standards or requirements of the Structure Plan, then the provisions, standards or requirements of the Scheme shall prevail.

6 STRUCTURE PLAN

The Structure Plan comprises the plans outlined below.

- **Plan 1 – Precinct Plan**
  Identification of The Springs development precincts.

- **Plan 2 – Land Use**
  Outlines land use. All development should be generally in accordance with the density and land use as shown in Plan 2 and as described within **Table 1** and Section 6.0 of Part 2 of this report.

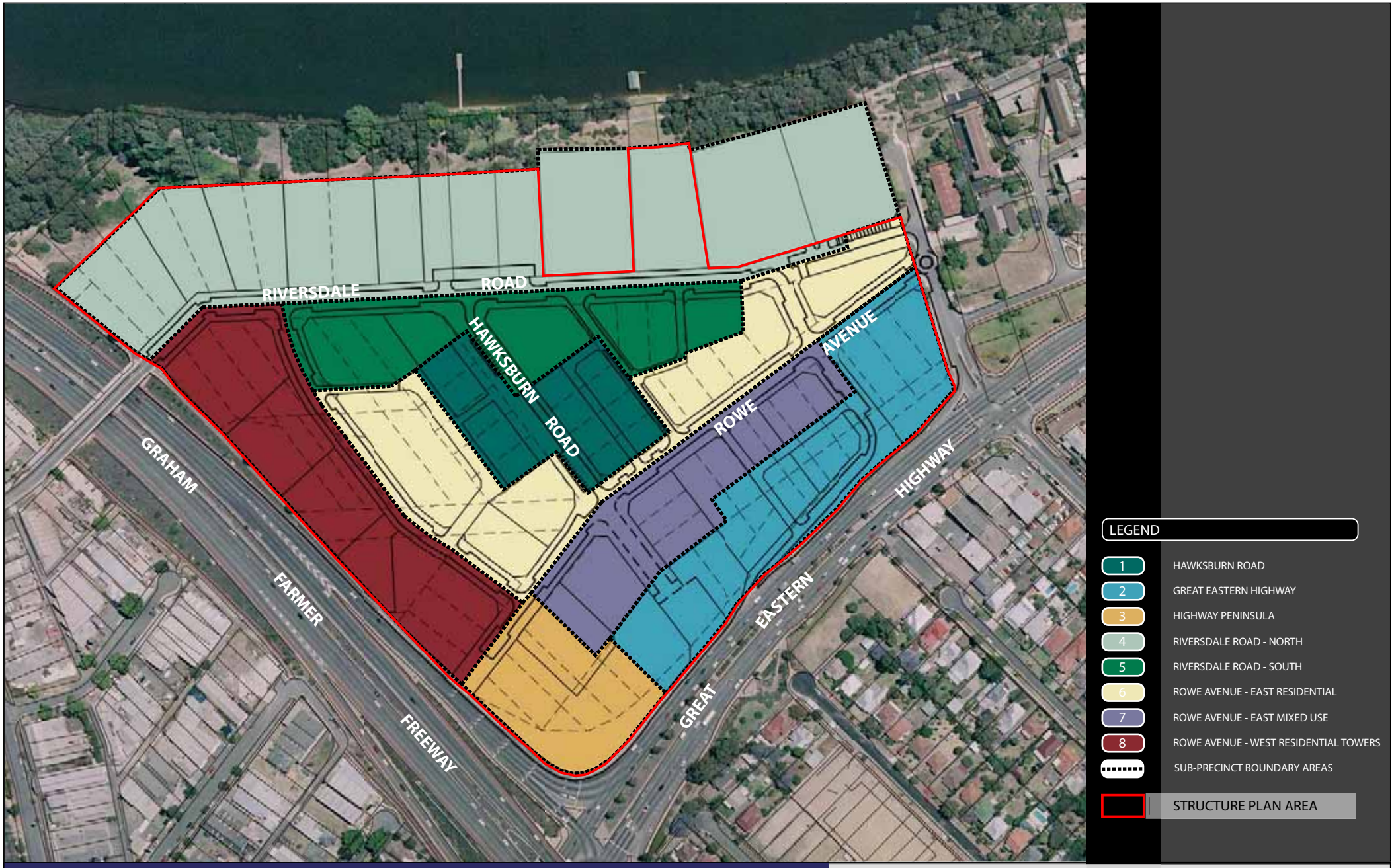
- **Plan 3 – Building Heights**
  Depicts the intended building heights within the Structure Plan area. All development should demonstrate consistency with the Building Heights Plan.

6.1 PRECINCT DEVELOPMENT REQUIREMENTS

Land within the Structure Plan shall be developed in conformity with Table 1.

TABLE 1: PRECINCT DEVELOPMENT TABLE

Precinct		RCode	Min. Height	Max. Height	Min. side setback	Min. front setback	Max. front setback	Proportion of max. 60m^2 plot ratio floor area	Proportion of max. 90m^2 plot ratio floor area
1	Hawksburn Road	R60	6 m	17 m and 4 storeys	nil	3 m	5 m	-	-
2	Great Eastern Highway	Mixed Use R80 and R100	6 m or 2 storeys	27 m and 6 storeys	RCodes/BCA	Podium: Nil Above podium: 4 m		15%	15%
3	Highway Peninsula	Mixed Use R250	30 m	Podium: 15 m Tower: As per Sched. 9, TPS 14	Podium adjacent to Rowe Ave: Nil 10 m all other boundaries	Rowe Avenue Podium: nil		15%	15%
4	Riversdale Road North	R100/160	As per Detailed Area Plans					15%	15%
5	Riversdale Road South	R60 and R80	East of Hawksburn: 6 m or 2 storeys West of Hawksburn: 6 m or 2 storeys	East of Hawksburn: 17 m / 4 storeys West of Hawksburn: 27 m and 6 storeys	RCodes/BCA	Rowe Ave: 2 m Cnr Rowe/Hawksburn: Rowe – nil Hawksburn – 2 m Cnr Hawksburn/ Riversdale: nil	Rowe Ave: 2 m Cnr Rowe/ Hawksburn: Hawksburn – 2 m Cnr Hawksburn/ Riversdale: 3 m	-	-
6	Rowe Avenue East - Residential	R60 and R80	6 m or 2 storeys	17 m and 4 storeys	RCodes/BCA	General: 3 m Rowe (mid-block): 2 m Cnr Rowe and Hawksburn: nil to Rowe Ave, 2 m to Hawksburn Road	General: 5 m Rowe (mid-block): 4 m Cnr Rowe and Hawksburn: 4 m to Hawksburn Road	-	-
7	Rowe Avenue East – Mixed Use	R 100 and Mixed Use R80	6 m or 2 storeys	17 m and 4 storeys	RCodes / BCA	Nil	3 m	15%	15%
8	Rowe Avenue West – Residential Towers	R160	Podium: 6m or 2 storeys	Podium: 15 m or 3 storeys	Podium: nil	Podium: nil	Podium: 5 m	15%	15%
			Tower 15 m and 3 storeys	Tower 30 m and 9 storeys	Tower: 25% frontage width (50% total)	Tower: 5 m	Tower: n/a		



THE SPRINGS STRUCTURE PLAN, RIVERVALE
PRECINCT PLAN

20m 0m 20 40 60m

september 2009 | 04/101

PLAN 1

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LEGEND

- PUBLIC OPEN SPACE
- R60
- R80
- MIXED USE R80
- RIVERSDALE ROAD NORTH R 100 / R160 (refer to design guidelines)
- ROWE AVENUE WEST R160 (refer to design guidelines)
- MIXED USE R100
- MIXED USE R250
- PUBLIC AND/OR PRIVATE LANEWAYS*

NOTES

POTENTIAL FOR RESTAURANT TYPE USE ON LOWER LEVEL

POTENTIAL FOR LOCAL SHOP /CAFE TYPE USE ON LOWER LEVEL (MAXIMUM RETAIL FLOORSPACE 80m^2)

HAWKSBURN ROAD RESERVE TO BE WIDENED TO CREATE LINEAR PARKLAND. ROAD ACCESS DESIGNED FOR LOCAL VISITOR ACCESS / PARKING ONLY. LINEAR PARKLAND TO BE DESIGNED IN ACCORDANCE WITH *LANDSCAPE MASTER PLAN.*

DRAINAGE SUMP TO BE LANDSCAPED AND DEVELOPED AS AESTHETIC, USABLE OPEN SPACE, IN ACCORDANCE WITH *LANDSCAPE MASTERPLAN.*

**ALL LANEWAYS IDENTIFIED ON THE PLAN ARE PUBLIC AND/OR PRIVATE ACCESS WAYS, THE SPECIFICATION OF WHICH IS TO BE DETERMINED AT THE DETAILED DESIGN PHASE.*

EASTERN END OF RIVERSDALE ROAD TO BE DISCONNECTED

MAXIMUM RETAIL FLOORSPACE 320m^2 WITHIN MIXED USE R80 FRONTING GREAT EASTERN HIGHWAY.

SERVICE ROAD TO PROVIDE LEGIBLE ACCESS & PARKING FOR COMMERCIAL USES FRONTING GREAT EASTERN HIGHWAY. CONNECTION THROUGH TO ROWE AVENUE REQUIRED TO PROVIDE SEMI DIRECT RETURN TO HIGHWAY. DESIGN OF SERVICE ROAD TO BE APPROVED BY CITY OF BELMONT.

NEW ROAD ENTRY FROM GREAT EASTERN HIGHWAY. PROVIDES MORE DIRECT ACCESS FOR COMMERCIAL TRAFFIC. ENTRY DESIGN TO BE APPROVED BY MRWA.

SOUTHERN END OF HAWKSBURN ROAD TO BE RE-LEVELLED AND PAVED TO INDICATE PEDESTRIAN PRIORITISATION, IN ACCORDANCE WITH *LANDSCAPE MASTERPLAN*. LOCAL VEHICLE ACCESS AND PARKING STILL PERMITTED.

THE SPRINGS SPECIAL DEVELOPMENT PRECINCT

STRUCTURE PLAN AREA

THE SPRINGS STRUCTURE PLAN, RIVERVALE
LAND USE

20m 0m 20 40 60m

october 2007 | 04/101

PLAN 2

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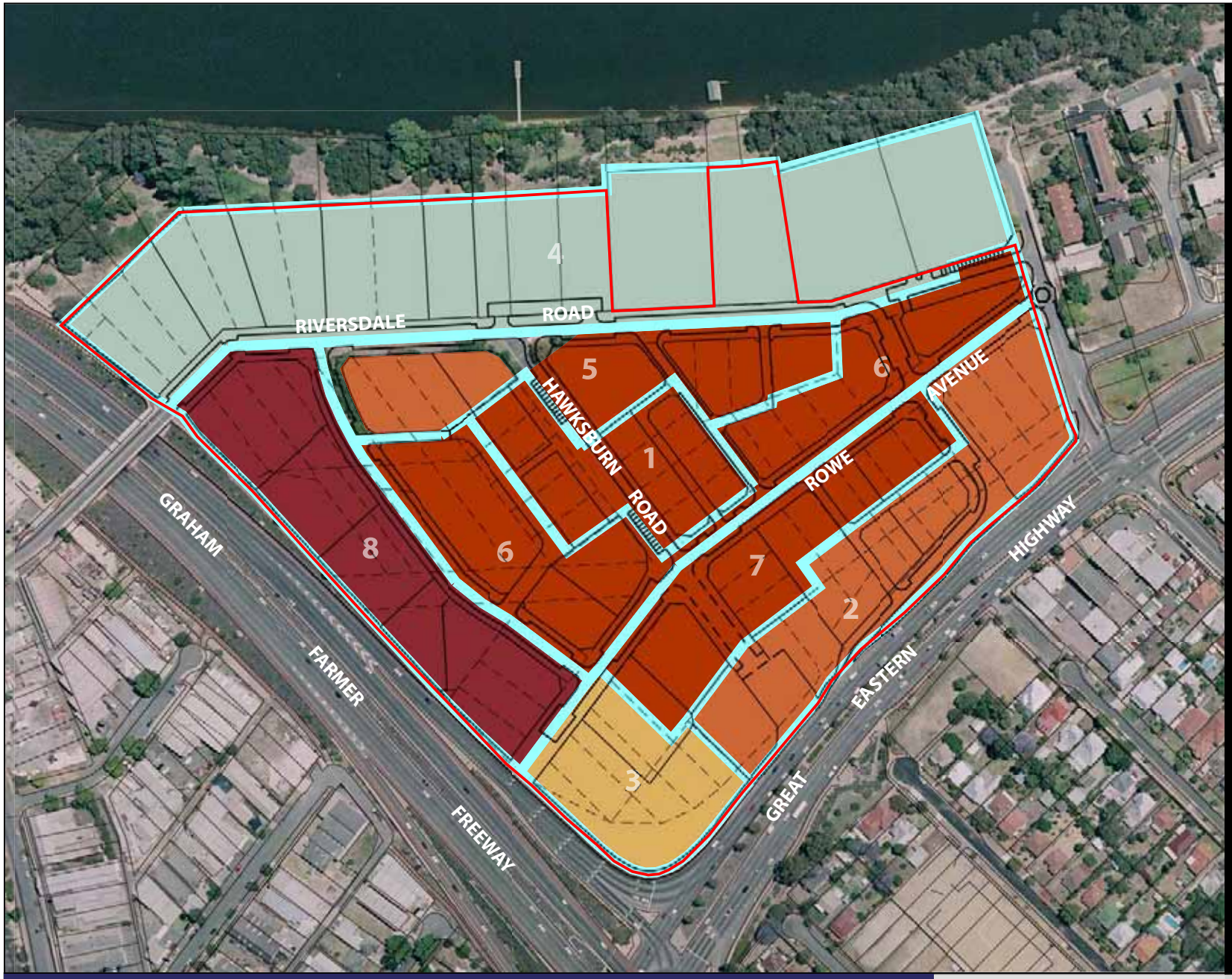

LEGEND

- MINIMUM HEIGHT 6m OR 2 STOREYS
  MAXIMUM HEIGHT 17m AND 4 STOREYS
- MINIMUM HEIGHT 6m OR 2 STORYS
  MAXIMUM HEIGHT 27m AND 6 STOREYS
- MINIMUM HEIGHT 30m
  MAXIMUM HEIGHT
  PODUIM 15m
  TOWER AS PER SCHEDULE 9,TPS 14
- MINIMUM HEIGHT
  PODUIM 6m OR 2 STOREYS
  TOWER 15m AND 3 STOREYS
  MAXIMUM HEIGHT
  PODUIM 15m OR 3 STOREYS
  TOWER 30m AND 9 STOREYS
- TO BE DETERMINED THROUGH DETAILED AREA PLANNING

PRECINCTS

1. HAWKSBURN ROAD
2. GREAT EASTERN HIGHWAY
3. HIGHWAY PENINSULA
4. RIVERSDALE ROAD - NORTH
5. RIVERSDALE ROAD - SOUTH
6. ROWE AVENUE - EAST RESIDENTIAL
7. ROWE AVENUE - EAST MIXED USE
8. ROWE AVENUE - WEST RESIDENTIAL TOWERS

STRUCTURE PLAN AREA

THE SPRINGS STRUCTURE PLAN, RIVERVALE
BUILDING HEIGHTS

20m 0m 20 40 60m

september 2009 | 04/101

PLAN 3

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6.2 SPECIAL PROVISIONS

6.2.1 DEVELOPMENT

In addition to the Precinct Development Table, the following provisions apply:

i) The RCode/densities are to be read as numerically proportional to dwellings and not floor space.

ii) For the whole structure plan area, in respect of single bedroom dwellings that are multiple dwellings, sub-Clause 6.1.3 A3 (i) of the Residential Design Codes (Variation 1) is varied by substituting the words "the minimum site area may be reduced by up to one third" with "the minimum site area per dwelling may be reduced by up to one half". This density bonus of 50% can be achieved on the basis that the additional dwellings will be less than or equal to 60 m^2.

iii) Within each of the Precincts 2, 3, 4, 7 and 8, a minimum of 15% of the total number of dwellings developed shall be a maximum of 60 m^2 in plot ratio area and a further 15% of the total number of dwellings shall be a maximum of 90 m^2 in plot ratio area, the number as calculated being rounded up or down as appropriate.

iv) This table is to be read in conjunction with the more detailed provisions of The Springs built form guidelines, regarding requirements for laneway/rear setbacks, facades, articulation, projections, fenestration and general built form character.

6.2.2 RETAIL FLOORSPACE

Retail floorspace within The Springs shall not exceed 400 m2 and shall be generally distributed in the locations as identified on Plan 2 Land Use and in accordance with Part 2, Section 6.3.4 of this report.

6.2.3 DETAILED AREA PLANS

Detailed Area Plans are required to be prepared prior to subdivision and/or development (except demolition of existing structures) in accordance with Clause 10.18.16 of the Scheme in the following circumstances:

1. For those lots adjacent to Cracknell Park and the Rowe Avenue Amphitheatre to address interface issues. The Detailed Area Plans are to address:

   - Minimum and maximum setbacks from the public open space;
   - Requirement for habitable rooms to overlook the public open space;
   - Visually permeable fencing; and
   - Acceptable intrusions into the setback area.

2. Riversdale Road North precinct. The Detailed Area Plan must address the following:

   - The whole precinct or if the City of Belmont and WAPC agree, a portion of the precinct;
   - Creation and preservation of significant sight lines (or view corridors) to and from the Swan River;
   - Overshadowing;
   - Control of building bulk via setbacks;
   - Response to topography;
   - Articulation of podium and tower elements;
   - Address to street and public realm.

In addition to Clause 10.18.16 of the Scheme requiring City of Belmont adoption, a Detailed Area Plan within the Riversdale North Precinct, or portion of the precinct as agreed to above, must be endorsed by the WAPC.

6.2.4 DESIGN GUIDELINES

The Springs Design Guidelines should be prepared and adopted as a Local Planning Policy pursuant to Clause 2.3 of the Scheme. The Guidelines should not be regarded as prescriptively as the Structure Plan, with the underlying intent being as important as the stated provisions. In cases where it can be demonstrated that the intent of the Guidelines can be more effectively achieved in a different way, then Council should have sufficient flexibility to consider such cases on their merit.

All subdivision and development should be generally in accordance with the Design Guidelines Policy.

6.2.5 TRANSPORT PLANNING

A Transport, Access and Parking report is to be prepared and adopted by the City of Belmont and the WAPC to support The Springs Structure Plan.

The report will be prepared based on the guiding principles mentioned in Section 6.3.7.1 of Part 2 of this report.

The appropriate provision of footpaths and shared paths is integral to The Springs development and shall be provided in accordance with Figure 21 of Part 2 of this report.

6.2.6 LANDSCAPING OF POS AND STREETS

No subdivision or development shall occur unless satisfactory arrangements have been made with the Council for the landscaping of adjacent streets and, where appropriate, POS, generally in accordance with Part 2, Sections 6.3.6.3-6.3.6.7.

6.2.7 DEVELOPER CONTRIBUTIONS

With the exception of demolition, no development or subdivision to create a lot shall occur in the Structure Plan Area until Amendment No. 53 is gazetted or an arrangement suitable to the WAPC and the Council is approved that would permit developer contributions towards shared costs.

ADOPTION OF STRUCTURE PLAN

THE SPRINGS STRUCTURE PLAN WAS ADOPTED BY RESOLUTION OF THE COUNCIL OF THE CITY OF BELMONT ON

..... (DATE)

AND THE SEAL OF THE MUNICIPALITY WAS PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE PRESENCE OF:

.....
Mayor, City of Belmont

.....
Chief Executive Officer, City of Belmont

..... (DATE)

AND 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 S.16 of Planning & Development Act 2005 for that purpose,
in the presence of:

..... Witness

..... Date

PART TWO
EXPLANATORY REPORT

TABLE OF CONTENTS – PART TWO

1 INTRODUCTION 11
1.1 Location 11
1.2 Study Team 11
1.3 Project Background 13
1.3.1 Site History 13
1.3.2 City of Belmont Town Planning Scheme No. 13 13
1.4 Public Consultation 15
1.4.1 Landowner Workshops 15
1.4.2 Public Meeting/Workshop 16
1.4.3 Consultation with the City of Belmont 16
1.4.4 Community Issues 16

2 PLANNING CONTEXT 17
2.1 Statutory Planning Context 17
2.1.1 former Metropolitan Region Scheme 17
2.1.2 City of Belmont Town Planning Scheme No. 14 18
2.2 Strategic Planning Context 18
2.2.1 State Government Level 18
2.2.2 Local Government Level 21
2.3 Current Provision of Public Open Space 21
2.3.1 History of Open Space Provision within The Springs and The City of Belmont 21

3 SITE ANALYSIS 24
3.1 Physical Description 24
3.2 Existing Tenure 24
3.3 Context Analysis 24
3.4 Opportunities and Constraints 24
3.4.1 Opportunities 24
3.4.2 Constraints 28

4 EXISTING SERVICE INFRASTRUCTURE 29
4.1 Roads 29
4.2 Drainage and Stormwater Management 29
4.3 Water and Sewer Services 29
4.4 Power Supply 29
4.5 Telecommunications 29
4.6 Movement Network 29
4.6.1 Existing Roads and Traffic Volume 29
4.6.2 Pedestrian and Dual Use Paths 31
4.6.3 Public Transport 31
4.6.4 Car Parking 31

5 EXISTING ENVIRONMENT 32
5.1 Topography 32
5.2 Existing Vegetation 32
5.2.1 The Springs Structure Plan Area 32
5.2.2 Swan River Foreshore Reserve 32
5.3 Heritage and Culture 34
5.3.1 Hawksburn Road Flame Trees 36
5.3.2 Aboriginal Heritage 36

6 STRUCTURE PLAN 37
6.1 Structure Plan Format 37
6.2 Design Philosophy 37
6.2.1 Development Objectives 37
6.2.2 Sustainability Objectives 41
6.3 Development Proposal 41
6.3.1 Design Principles 41
6.3.2 Visual Impact 42
6.3.3 Housing Choice and Lot Yield 44
6.3.4 Retail/Commercial/Mixed Use Development 44
6.3.5 Movement Network 44
6.3.6 Provision of Public Open Space 45
6.3.7 Transport, Traffic Safety and Management 54
6.3.8 Proposed Infrastructure Servicing 55

6.4 Design Guidelines/Detailed Area Plans 58
6.4.1 Hawksburn Road 59
6.4.2 Rowe Avenue 59
6.4.3 Rowe Avenue – West Residential Towers 60
6.4.4 Rowe Avenue – East Residential 60
6.4.5 Rowe Avenue – EAST Mixed Use 60
6.4.6 Great Eastern Highway 61
6.4.7 Riversdale Road – South 61
6.4.8 Riversdale Road – North 62
6.4.9 Highway Peninsula 62
6.5 Precinct Development Requirements 62
6.6 Relationship to Liveable Neighbourhoods Community Design Codes 65
7 IMPLEMENTATION 66
7.1 Structure Plan Adoption 66
7.2 Infrastructure Cost Sharing Provisions 66
7.2.2 Services 67
7.2.3 Landscaping 67
7.2.4 Associated Scheme Costs 68
7.3 Design Guidelines 68
7.4 Detailed Area Plans 68
7.5 Subdivision 69
7.6 Road Closure 69
7.7 Cracknell Park Public Open Space 69
8 CONCLUSION 70

FIGURES

Figure 1: Location Plan
Figure 2: Previous Springs Precinct Development Plan
Figure 3: Current Metropolitan Region Scheme
Figure 4: Proposed Metropolitan Region Scheme
Figure 5: Current Town Planning Scheme Zoning
Figure 6: Existing and Former Park Areas
Figure 7: Existing Land Use
Figure 8: Context Analysis and Walkable Catchments
Figure 9: Opportunities and Constraints
Figure 10: Existing Services
Figure 11: Existing Vegetation
Figure 12: Heritage Sites
Figure 13: Masterplan
Figure 14A: Structure Plan - Land Uses
Figure 14B: Structure Plan - Building Heights
Figure 15: Structure Plan Sub-Precincts
Figure 16: Proposed Areas of Public Open Space
Figure 17: Proposed Hawksburn Road Village Spine
Figure 18: Proposed Rowe Avenue Amphitheatre
Figure 19: Proposed Rowe Avenue Amphitheatre Cross-Section
Figure 20A: Landscape Concept Plan
Figure 20B: Landscape Concept Plan – Vegetation Plan
Figure 21: Proposed Footpath Plan
Figure 22: Precinct Locations
Figure 23: Hawksburn Road Reserve – Village Spine
Figure 24: Proposed Rowe Avenue Streetscape
Figure 25: West Residential Towers: New Road Reserve
Figure 26: Proposed Hawksburn Road Streetscape
Figure 27: Riverside Road Reserve and Hawksburn Intersection

APPENDICES

APPENDIX A Arboricultural Report

1 INTRODUCTION

In 1993, the City of Belmont commenced investigations pertaining to the proposed redevelopment of the dilapidated inner urban area colloquially known as The Springs. The City commenced preparation of Town Planning Scheme No. 13, a Guided Development Scheme, to facilitate the redevelopment. However, a lack of landowner support for the scheme resulted in the then Minister for Planning, on advice from the Western Australian Planning Commission (WAPC), rejecting the scheme in November 2003.

The Minister subsequently instructed the then Department for Planning and Infrastructure (DPI) to review the planning of The Springs and prepare a new scheme to be duly presented back to the Minister. The DPI, in turn, commissioned LandCorp to assume the role of project manager for The Springs redevelopment scheme, with a strict emphasis on ensuring that a coordinated approach be taken towards the master planning of the area, with close consultation with the DPI, City of Belmont (the City) and the site's landowners.

Since then, the project has been the subject of substantial negotiation, consultation, research and design, in an endeavour to deliver a Master Plan vision and implementation framework that optimises the unique and varied attributes of the site and its location, meets with the approval of the majority of the landowners, and satisfies the statutory and policy expectations of the City and the DPI.

This process has culminated in the preparation of a final Master Plan and Structure Plan which are presented in this report. The Master Plan is intended to visually convey the development vision for The Springs, to help provide the community with a clear understanding of the underlying intent of the formal Structure Plan. The Structure Plan will ultimately provide the regulatory guiding framework for the redevelopment of The Springs into a vibrant medium to high-density residential mixed-use development. The report represents the work of various consultants on all aspects of the proposal, the outcomes from the landowner workshops and consultation with the City, the DPI, and the broader community.

The Structure Plan has been prepared in accordance with the *Liveable Neighbourhoods Community Design Code*, and other relevant State and Local planning policies.

1.1 LOCATION

The Springs comprises approximately 13.6 ha of land, in fragmented ownership, bounded by Graham Farmer Freeway, Great Eastern Highway, Brighton Road and the Swan River foreshore, as shown in **Figure 1.**

The site is strategically located approximately 4 km east of the Perth CBD and 700-750 metres north-east of the Burswood Train Station. It is also approximately 700 metres from the Burswood Resort and Casino.

The main road access into the precinct is via the signal controlled intersection at Great Eastern Highway and Brighton Road, with secondary access available by Riversdale Road via a bridge over the Graham Farmer Freeway.

The precinct enjoys direct interface with the Swan River foreshore, and direct frontage onto Great Eastern Highway, albeit with limited vehicle access. Whilst the site directly abuts the Graham Farmer Freeway, there is a significant level differential over much of this frontage limiting any visual relationship.

1.2 STUDY TEAM

In order to achieve the most successful outcomes for the project, a multi-disciplinary consultant team was compiled, comprising:

LandCorp	Principal Developers/Project Director
NS Projects	Project Managers
Taylor Burrell Barnett	Town Planning and Urban Design
Hassell	Architecture/Urban Design
Plan E	Landscape Architects
Cossill & Webley	Civil Engineers
Estill & Associates	Community Consultation
Riley Consulting	Traffic Engineers
Colliers International	Valuations
Sinclair Knight Merz	Traffic Engineers

LOCALITY PLAN
THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

january 2007 | 04/101

FIGURE 1

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1.3 PROJECT BACKGROUND

1.3.1 SITE HISTORY

The land is zoned 'Special Development Precinct' under the City of Belmont Town Planning Scheme No. 14 (TPS 14).

Prior to the land's current zoning, a number of zonings and reservations have existed within the precinct. In particular, under Council's previous Town Planning Scheme No 11, the main zonings included Residential R80B and Business Enterprise Zone.

An amendment to the Metropolitan Region Scheme was undertaken in the early 1990's to allow for the relocation of the original Burswood Bridge reservation further east towards the Bunbury Rail Bridge. This effectively removed the divisive Controlled Access Highway reservation, which was positioned centrally through the subject site. The Controlled Access Highway reservation was subsequently relocated northwest of Orrong Road, and now forms the Graham Farmer Freeway.

As a result of the shift in the Controlled Access Highway reservation, The Springs urban precinct remained intact. The area was heavily blighted, and therefore offered significant redevelopment opportunities.

To promote an integrated approach to the area's redevelopment Council initiated Scheme Amendment No. 78 to its then Town Planning Scheme No. 11 in March 1995. The amendment sought to delete all existing zonings and reservations within the precinct (apart from three large strata unit complexes) and prescribe a blanket zoning entitled 'Special Development Precinct'.

Amendment No. 78 was gazetted on 4 April 1996.

The 'Special Development Precinct' zoning still remains under the current Town Planning Scheme No. 14. Further amendments have been undertaken by the City to introduce Development Areas and Structure Plan provisions, and these are discussed in more detail in Section 2.1.2 of the report.

1.3.2 CITY OF BELMONT TOWN PLANNING SCHEME NO. 13

In 1993 the City of Belmont advised the WAPC that a Guided Development Scheme was proposed over the subject site to assist in the redevelopment of the area in the most orderly planning manner.

To assist in the composition and development the Scheme, the City engaged the services of a private Scheme Manager.

The City instructed the manager that the redevelopment scheme could only proceed if a suitable participatory arrangement could be reached with all landowners within the precinct. The participatory arrangement was required due to the significant subdivision and scheme headworks costs involved in the development of the land.

In 1996, the City of Belmont progressed with the preparation of Town Planning Scheme No. 13, as a Guided Development Scheme.

The Scheme was prepared and initiated by the City as a means of facilitating the orderly and proper planning of the precinct and addressing issues regarding headworks and subdivisional costs associated with the sites redevelopment.

The aim of the Scheme, which was expressed in the Springs Precinct Development Plan **(Figure 2)** was to create an Urban Village, accommodating upwards of 850 people, consisting of a mix of high quality residential (R40-R100), office, resort and associated land uses. This development was proposed to be complemented by parkland, new roads, service infrastructure and other facilities. The plan is further discussed in Section 1.3.2.1.

The premise of the development plan was to allow for a mix of uses, high quality development, land-use compatibility, viable development, and achievement of the highest return.

In 2001 the City forwarded Scheme No. 13 to the Commission for final approval. However, there was significant landowner opposition, and opposition from Main Roads WA, to the proposed scheme. This opposition related to matters including the following:

- The requirement for a Planning Scheme, in particular one that required payment of contributions by landowners;

PREVIOUS SPRINGS PRECINCT DEVELOPMENT PLAN

THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

20m 0m 20 40 60m

january 2007 | 04/101 | scale 1:3000@A4

FIGURE 2

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- The lack of certainty or guarantee for participating landowners in relation to the cost of, and return from, development; and
- That the proposed development plan did not identify the 'optimum' land use and any deficiencies that might occur as a result of the Scheme process.

As a result of these uncertainties and concerns regarding the proposed Scheme, a number of landowners indicated that they would not make their land available for development as stipulated under the Scheme.

In October 2003 The Commission considered final approval of Town Planning Scheme 13 and recommended that the Minister not approve the Scheme, due to the lack of support indicated from landowners and the unlikelihood of the Scheme being able to be implemented.

1.3.2.1 THE SPRINGS PRECINCT DEVELOPMENT PLAN

The Springs Precinct Development Plan, shown in **Figure 2** was prepared to be used, in conjunction with the proposed Town Planning Scheme No. 13, in the assessment of development proposals within the precinct.

Proposed Town Planning Scheme No. 13 stated that "the proposals for the Scheme Area are that it be redeveloped in accordance with 'The Springs Precinct Development Plan'.

The plan proposed a mix of land uses, whilst incorporating as many of the existing features and infrastructure as possible.

The plan was never implemented given that the main vehicle for its implementation, Town Planning Scheme No. 13, was never promulgated.

1.4 PUBLIC CONSULTATION

Following the rejection of Town Planning Scheme No. 13 in 2003, it is understood that the subsequent direction of the Minister to prepare a new proposal emphasised the importance of attaining stronger community/stakeholder support through an effective consultation process, and the establishment of a working group involving the City and the DPI. Consequently, the strategy for producing a new development scheme for The Springs was structured around a process involving substantial consultation by the proponent with authorities and the precinct's private landowners, and continuous engagement between LandCorp, the City and the DPI through the working group.

Consultation for The Springs Rivervale recommenced in October 2004, and has been managed in two stages. In Stage One of the consultation a working group was established, comprising DPI, LandCorp, City of Belmont and private landowners, to coordinate the preparation of a concept plan and implementation strategy for the redevelopment. Stage Two of the consultation involved the development of the formal Structure Plan that would be used to facilitate development and determine landowner contributions.

The consultation has allowed the proponent to receive and consider a wide variety of viewpoints in the design process. LandCorp has worked collaboratively with the stakeholders in an endeavour to resolve all issues relating to the final design of the plan and the cost sharing arrangement.

1.4.1 LANDOWNER WORKSHOPS

The proponent issued an invitation to the private landowners of the precinct, as well as representatives from the City and the DPI, to be involved in the planning and design process for the redevelopment through a series of landowner workshops. The workshop structure was such that the workshops were designed to, firstly, inform the participants of the nature of the project, the government agreements etc. and secondly, to gain some broad indication of community expectations, concerns and desires in terms of the development vision.

Several individual meetings have been held with landowners to discuss their specific issues and circumstances.

A further landowner briefing was undertaken on the 13th February 2006. The purpose of this meeting is to introduce the landowners to the Structure Plan and to seek feedback on the proposal, prior to embarking on the next stage of defining development costs.

During the course of the workshops, a range of alternative development concepts were formulated as a result of the various outcomes reflecting both the diversity of community views and the parameters of the project team's vision and objectives.

The significance of the community workshop exercise was that it enabled the proponent, the project team and Council representatives to gain a first hand appreciation of the concerns and expectations of the community in relation to The Springs redevelopment.

1.4.2 PUBLIC MEETING/WORKSHOP

One informal public meeting/workshop was held with the wider community to seek feedback on the draft Structure Plan for The Springs.

The presentation of the draft Structure Plan was followed by a workshop whereby each table was able to review the plan in detail and provide feedback to a member of the project team.

1.4.3 CONSULTATION WITH THE CITY OF BELMONT

The City of Belmont was identified as a key stakeholder in the planning process and was regularly consulted throughout the course of the planning. Representatives of both the City and the then DPI met in Project Steering Committee meetings and participated in some of the project team meetings.

The City of Belmont was represented on the Belmont Springs Project Team by the Manager Planning and the Director Community and Statutory Services. The Project Team met throughout the consultation period to co-ordinate and plan the consultation process. The City's representatives provided considerable input into the consultative process and statutory planning processes and provided progressive updates to the elected members.

1.4.4 COMMUNITY ISSUES

Whilst the plan was designed within the normally required technical parameters concerning road design, servicing, urban design principles, etc, several matters were raised by the landowners in the Precinct during the consultation process. In particular, the ongoing key concerns were:

PLANNING ISSUES

- Public Open Space (including Clinic Park); whether or not any additional contribution should be required.
- Acceptable height and density throughout the area.
- Traffic management.

IMPLEMENTATION ISSUES

- Neglect of the area; the City should pay for upgrade works that should already have been undertaken through normal maintenance.
- Strata block involvement and equity; the extent to which owners in strata units will benefit from the scheme, which properties should contribute and how much.
- Cost apportionment and high headworks costs.
- Previous power up grade; landowners have already paid for underground power upgrade, why should they now be paying extra.

It was agreed by the project team that a final design review was required to respond to the planning concerns, and that a final review of the contribution scheme principles should be undertaken to address the implementation issues. The design review considered a range of alternative design options which were discussed by the project team, with the involvement of technical officers from the City and the DPI.

The review ultimately led to creation of the current Structure Plan.

The review of implementation issues was still in progress at the time of preparing this report.

2 PLANNING CONTEXT

2.1 STATUTORY PLANNING CONTEXT

2.1.1 FORMER METROPOLITAN REGION SCHEME

Under the Metropolitan Region Scheme the site is zoned 'Urban'.

The subject site abuts a 'Parks and Recreation' reserve, which extends along the northern boundary of the site, and a 'Primary Regional Roads' reserve for Great Eastern Highway and Graham Farmer Freeway along the south-eastern and south-western edges of the redevelopment area.

At the time of preparing the Structure Plan, portion of the Structure Plan extended into the Primary Regional Road reservation, as illustrated below in **Figure 3**.

Figure 3: Former Metropolitan Region Scheme

2.1.1.1 METROPOLITAN REGION SCHEME

During the processing of the Structure Plan, Main Roads (WA) sought a reduction in the width of the 'Primary Regional Roads' reservation (portion of Great Eastern Highway) as specified under the MRS. MRWA Internal investigations found that the reservation was excessive for the future traffic requirements for the area.

The existing MRS zoning is illustrated within **Figure 4** below.

Figure 4: Metropolitan Region Scheme

2.1.2 CITY OF BELMONT TOWN PLANNING SCHEME NO. 14

The subject land is currently zoned 'Special Development Precinct', pursuant to Clause 10.8 of the City of Belmont TPS 14 (refer **Figure 5**).

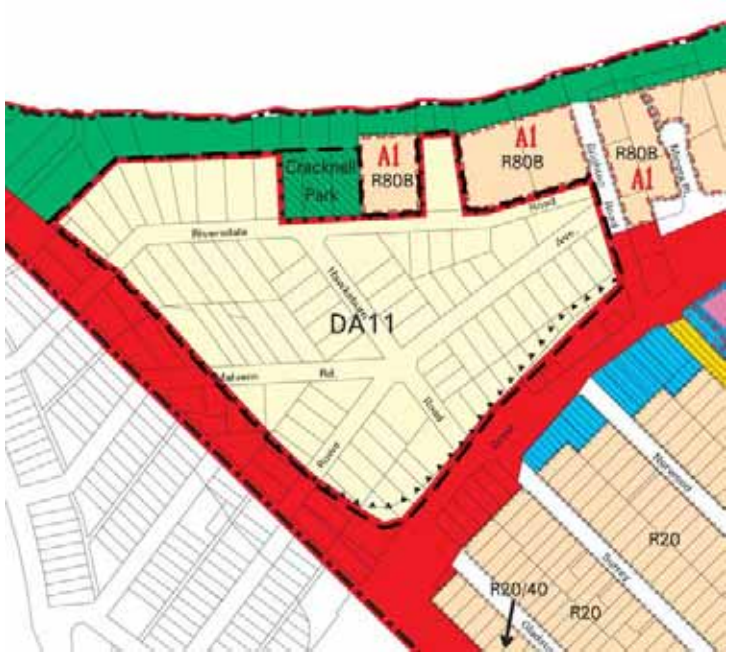


Figure 5: Current Town Planning Scheme Zoning

Clause 10.2.4 of the Scheme states that The Springs is one of four Special Development Precincts, with the other three being Ascot Waters, Nulsen Haven, and Belgravia Parklands.

Under the current zoning, all development, including single houses require Planning Approval of the Council. The provisions of the Residential Development Codes relating to front and rear setbacks, car parking and open space within this zone may be varied at the discretion of the Council provided a Local Planning Policy is adopted pursuant to Clause 2.3 of the Scheme.

During the processing of the Structure Plan, the City has introduced Development Areas. The Springs has now also been included within Schedule 14 – Development Areas DA11, which requires an Approved Structure Plan to guide subdivision and development.

2.2 STRATEGIC PLANNING CONTEXT

2.2.1 STATE GOVERNMENT LEVEL

2.2.1.1 LIVEABLE NEIGHBOURHOODS

Liveable Neighbourhoods sets out policies and practices that encourage a sustainable urban structure of walkable neighbourhoods clustering to support town centres with compactness of form, compatibility of mixed uses, reduced car dependence and ease of access to employment, retail and community facilities.

The principle aims of Liveable Neighbourhoods are listed as follows:

- To foster a sense of community and strong local identity in neighbourhoods and towns;
- To provide access generally by way of an interconnected network of streets;
- To ensure an active street-land use interface;
- To facilitate new development that supports efficiency of public transport systems and safe direct access to the system for residents;
- To facilitate mixed use development which is robust and can change over time;
- To provide a variety of lot sizes and housing types;
- Protection of environmental areas and the inclusion of significant cultural and physical features into designs;
- To provide a comprehensive open space and urban water management network; and
- To facilitate cost effective and resource efficient development.

The vital ingredients of neighbourhood design relevant to The Springs includes:

- Compactness so most people can walk to local centres and public transport in five minutes;
- Build streets where people are encouraged to walk, cycle or take public transport rather than drive;
- Connect the streets in a simple pattern so people can choose different routes and make short trips to local facilities;
- Locate windows and verandas overlooking streets to deter crime;
- Provide opportunities for local employment in shops and businesses close to people's homes;
- Offer a wide choice of housing and lot sizes and use a flexible layout so the area can be changed to meet future needs;
- Respond to physical characteristics of the site to reinforce local character and protect natural features;
- Provide neighbourhood parks of different sizes and types for a variety of uses and within a five-minute walk for most people; and
- Streets are laid out on a modified grid or connected network, so that there are alternate routes to every destination. This permits most streets to be of human scale, with slower traffic in a permeable and legible network. Streets become equitable for both vehicle and pedestrians.

Liveable Neighbourhoods requires detailed context and site analysis and compliance with Code requirements to enable proposals to be considered under the Code.

2.2.1.2 DC POLICY 1.6 PLANNING TO SUPPORT TRANSIT USE AND TRANSIT ORIENTED DEVELOPMENT (2005)

This policy seeks to maximise the benefits to the community of an effective and well used public transit system by promoting planning and development outcomes that will support and sustain public transport use, and which will achieve the more effective integration of land use and public transport infrastructure.

Amendments to the policy were adopted by the WAPC in 2005 to reflect the Government's vision for a sustainable future as outlined in Network City and the State Sustainability Strategy.

Within existing developed areas, there are clear opportunities to intensify existing activities and to promote new uses that will make better use of transit facilities and services. There are obvious benefits of a planning policy that encourages the integration of land use and transit facilities. High residential densities and mixed use development in the walkable catchments of transit facilities have the potential to reduce car dependence; to increase accessibility for those without access to private cars; to reduce congestion on the road network and the demand for new road space; to reduce fuel consumption and air pollution and to provide quality, diverse and affordable forms of housing and development. These benefits combine to produce an attractive and viable alternative to car-based suburban and urban fringe development.

The policy is an integral part of a range of policies directed towards greater sustainability, in accordance with the State Planning Strategy and Statement of Planning Policy 3 Urban Growth and Settlements (SPP3).

The policy contains the following main policy measures relevant to the subject land:

TRANSIT-SUPPORTIVE DEVELOPMENT PATTERNS

Urban structure is the foundation of a transit supportive environment. Effective transit is fostered by a more compact urban form, mixed uses, higher development densities and activity levels, and especially by spatial patterns of development that make it easier to plan and efficiently operate transit services, and for users to access those services once they are in place.

- Street pattern to be designed to enhance walkability and to facilitate pedestrian access to transit facilities;
- Street patterns should facilitate direct pedestrian connections;
- A diversity of lot sizes in subdivisions within transit precincts, together with a robust street layout, is encouraged as it provides greater flexibility of development options, and enhance the robustness of the urban structure, making it easier for the precinct to evolve over time though a progressive intensification of activities and changes to uses that will more effectively support transit uses; and

- A grid based street pattern is supported because it disperses general traffic more effectively to limit congestion that can impede bus services and provides permeability.

LAND USE TO SUPPORT TRANSIT

The level of transit patronage is closely linked to the quality and frequency of the service provided and, in turn, the service able to be provided is a function of the density and mix of land uses that generate potential transit users. An appropriate mix and balance of land uses can be a major contributor to the use and effectiveness of transit facilities. Within transit-oriented precincts, the emphasis should be on uses which are likely to promote transit use and which will benefit by being accessible to, and by, transit facilities. Key land use elements include:

- Residential development should be encouraged close to transit facilities to assist in creating a sense of place that makes a transit orientated development (TOD) precinct more than just a place where transit is available;
- Higher density residential development, places greater numbers of residents close to transit services, which correlates to an increase in transit patronage;
- Densities should be increased through a subdivision pattern which allows for the progressive intensification of activities;
- Other uses that are likely to be significant generators of transit trips should also be located close to transit facilities whenever possible. Relevant uses include offices and other higher density employment generating activities, intensive leisure facilities and retailing. Similar considerations apply to aged persons, schools and tertiary education uses, hospitals, community facilities and social services;
- Locating educational buildings within TOD precincts is appropriate where they include more intensive elements of the institution such as teaching facilities and indoor recreation facilities, however more land extensive/low intensity elements of schools and other similar public uses, i.e. playing field should not be dominant elements within the walkable catchment of transit facilities; and
- Desirable to locate major civic buildings in TOD precincts, where they can actively contribute to the amenity of the area and act as significant generators of transit use.

THE PUBLIC DOMAIN IN TOD PRECINCTS

Almost all transit users are pedestrians for at least part of their journey, even if it is only for a short walk. The amenity, quality and safety of the public domain within transit oriented precincts are therefore important factors in establishing and maintaining an environment that will encourage people to access transit facilities on foot, as well as promoting walking generally within these neighbourhoods.

TRANSIT SUPPORTIVE DESIGN

A key policy requirement is the importance of an appropriate framing urban structure in transit oriented precincts. Land use that promotes interest, interaction and activity should be used to animate frontages along the principal pedestrian routes leading to and from the transit facility.

INTEGRATING TRANSIT INFRASTRUCTURE

The design and operation of transit infrastructure should assist in integrating transit facilities with their surroundings.

2.2.1.3 WAPC DC 2.3 PUBLIC OPEN SPACE IN RESIDENTIAL AREAS (1998)

WAPC Policy DC 2.3, 'Public Open Space in Residential Areas', states that 10% of the gross subdivisible area of a subdivision shall be given up free of cost by the subdivider for public open space, which is consistent with Section 20A of the former Town Planning and Development Act 1928. DC 2.3 has been the basis of open space policy in the State for many years and emanates from the recommendations of the Metropolitan Region Scheme.

The policy outlines that the WAPC " is aware of the continuing debate about the validity of certain aspects of this policy in the light of such matters as restraints on local government expenditure (with consequent limiting effects upon its ability to develop and maintain open space), the need to ensure adequate open space in existing urban areas and the balance between passive and active recreational areas. This policy is subject to a comprehensive review."

The policy's main objectives are:

- Ensure adequate and well located areas of public open space that will enhance the amenity of the area;

- Facilitate the provision of community facilities in conjunction with land ceded for public open space; and
- Protect and conserve wetlands, water courses and foreshores adjacent to residential development.

This Policy has since been superseded by Liveable Neighbourhoods, the objectives are however consistent with Liveable Neighbourhoods.

2.2.2 LOCAL GOVERNMENT LEVEL

2.2.2.1 CITY OF BELMONT LOCAL PLANNING POLICY NO. 9 – BUILDING HEIGHT AND BULK ALONG GREAT EASTERN HIGHWAY

Pursuant to Clause 2.5 of TPS 14, the City of Belmont Local Planning Policy No. 9 was adopted to "*control the height and bulk of buildings on land abutting Great Eastern Highway within the City of Belmont".* All land abutting Great Eastern Highway within the City of Belmont is subject to this policy, including The Springs.

The policy's principal objective is to "ensure that the amenity of existing and future development along the highway is not compromised by the approval of development that is inappropriate in respect of its height and bulk".

2.2.2.2 CITY OF BELMONT LOCAL PLANNING POLICY NO. 17 – PUBLIC OPEN SPACE POLICY

The City of Belmont Local Planning Policy No. 17 outlines the requirements for the provision of public open space in residential areas.

The policy was prepared as a means of coordinating the provision of public open space within the City to reduce the number of unusable areas of open space being created as a result of small-lot subdivisions.

The policy allows Council to choose the most suitable option in relation to the provision of public open space arising from subdivisions, which may include the request for physical open space, a cash contribution in lieu of land, or a combination of a cash contribution and land in a ratio to be determined by the Council.

2.3 CURRENT PROVISION OF PUBLIC OPEN SPACE

2.3.1 HISTORY OF OPEN SPACE PROVISION WITHIN THE SPRINGS AND THE CITY OF BELMONT

Two areas of public open space were created subsequent to the original subdivision of the area, prior to 1956. These were:

1. Cracknell Park, acquired by the then Belmont Park Roads Board in 1927; and
2. Clinic Park, acquired by the Roads Board between 1933 and 1945.

No foreshore reserve existed along the northern boundary of the site until land was compulsorily acquired by the WAPC between 1982 and 2001 under the Metropolitan Region Scheme Act.

The land that was compulsorily acquired is now reserved as 'Parks and Recreation' under the Metropolitan Region Scheme.

An additional area of foreshore reserve, that has not been acquired by the WAPC, is the northern (foreshore) section of Cracknell Park. This land still remains primarily as freehold land in the City's ownership; however it sits within the Parks and Recreation Reserve that denotes the foreshore reserve for the purpose of the MRS. This is further explained in Section 2.3.2.

Figure 6 shows the location of the areas described above.

The history and current status of the two areas of POS and existing foreshore reserve are described below.

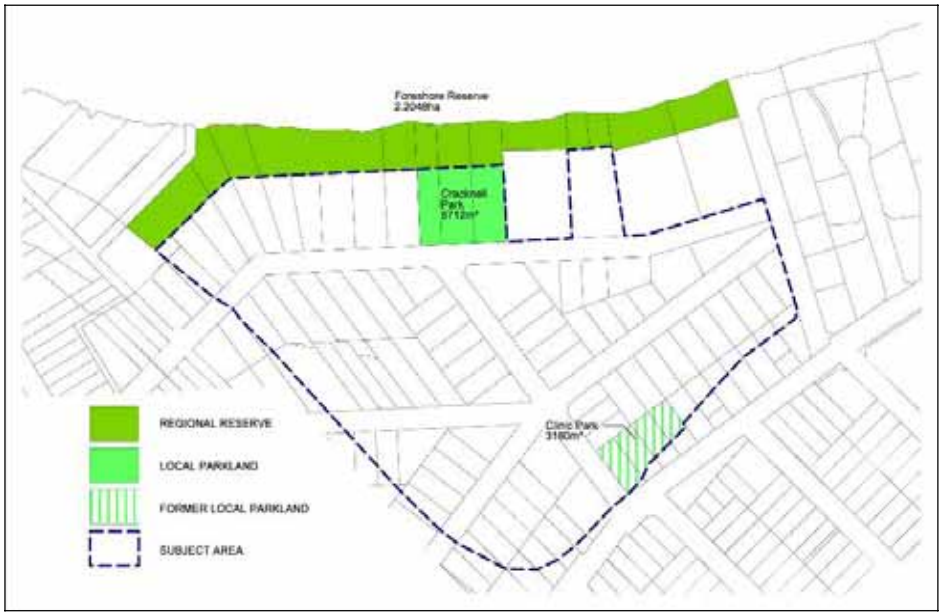


Figure 6: Existing and Former Park Areas

2.3.1.1 CRACKNELL PARK

Although not shown as part of the 'Special Development Precinct' Cracknell Park is encompassed by the redevelopment area and, for the purpose of the report, will be included within the redevelopment area.

Cracknell Park comprises Lots 27, 28 and Crown Reserve 45534 Riversdale Road, with a total area (excluding the foreshore reserve) of 0.6259 ha.

Cracknell Park abuts the foreshore reserve and is located along Riversdale Road. The Park was acquired by the City and created subsequent to the original subdivision of the area.

Portion of the lots that form Cracknell Park are situated within the foreshore recreation area as defined by the MRS Parks and Recreation Reserve. The portion of these lots within the foreshore reserve comprises 0.2765 ha.

Cracknell Park is currently reserved 'Parks and Recreation' under the City of Belmont Town Planning Scheme No. 14, is allocated as public parkland and is proposed to remain as this use in the future.

The park enjoys direct access to the Swan River and associated River Foreshore reserve and is well connected to the precinct.

Cracknell Park was originally purchased by the then Belmont Park Roads Board on 10 June 1927 from the 'Belmont Young Men's Club' for the purpose of a public park.

The land was purchased as part of a contract with the Club, stating that should the 'Belmont Young Men's Club' sell the land to the 'Belmont Park Road Board', that all debts owed by the Club must be relinquished.

Currently, Cracknell Park is well used for passive recreational uses by residents of the precinct, as well as workers whose businesses are located within, or in close proximity of, the precinct (refer to **Photos 1, 2 and 3**).

Photo 1

Photo 2

Photo 3

2.3.1.2 CLINIC PARK

Lots 100, 101, 102, 103 Gt Eastern Highway are located within The Springs precinct. They comprise a total area of 0.4013 ha and were, in the past, collectively referred to as Clinic Park (presumably referring to the infant health clinic that previously operated on the land).

Lot 100 was purchased by the City of Belmont on 14 March 1933 and Lots 101, 102, & 103 were resumed compulsorily by the City on 27 June 1945, for the purpose of creating a public park, under the Public Works Act.

The land was zoned 'Highway Development' under the City's earlier Town Planning Scheme, TPS No. 6. However, the land was effectively being used for the purpose of a public park and, as a consequence, was rezoned in 1988 to 'Parks and Recreation' under the City's Town Planning Scheme No. 11.

The land was subsequently rezoned to 'Special Development Precinct' as part of Amendment No. 78 on 13 March 1995. This zone embodied the entire Springs precinct.

The City has resolved to dispose of the land as the clinic no longer operates and the land is not well located for recreational use. The recent rezoning of the land now offers the opportunity to consider alternative development possibilities consistent with the overall precinct development objectives.

2.3.1.3 FORESHORE RESERVE

A portion of all privately owned lots fronting the Swan River was compulsorily acquired by the WAPC for the purpose of creating a foreshore reserve. This land is now reserved 'Parks and Recreation' under the Metropolitan Region Scheme.

The reserve is currently in a generally good condition and contains a dual use path and recently planted vegetation (refer to **Photos 4, 5, 6 and 7**). A more detailed description of the vegetation characteristics of the foreshore reserve is provided in Section 5.2.2.

Photo 4

Photo 5

Photo 6

Photo 7

The section of foreshore reserve directly abutting Cracknell Park is a smaller grassed area that contains several tables and chairs suitable for passive recreational use. (Refer to **Photos 8 and 9**).

Photo 8

Photo 9

3 SITE ANALYSIS

3.1 PHYSICAL DESCRIPTION

The subject site gently rises from Great Eastern Highway to an east-west ridge running centrally through the site; the land then gently falls northward towards Riversdale Road, and, north of Riversdale Road, slopes steeply towards the river. Site levels are described more specifically in Section 5.1.

Those lots located north of Riversdale Road enjoy extensive river views. Several view corridors also exist within the site created by the current road layout.

The site has contained a variety of land uses since its original subdivision, with the predominant land use being low-density single residential. Various other land uses still operate within the precinct and include a place of worship and various commercial land uses, which predominantly front Great Eastern Highway.

Much of the area is now severely degraded with a significant portion of the precinct comprising vacant land. The majority of dilapidated housing was demolished in 2005.

A plan outlining the existing land uses located on site is included at **Figure 7**.

3.2 EXISTING TENURE

The site currently comprises 93 separate allotments. LandCorp currently owns over 67% of the land. At the time of writing this report, there are 22 lots remaining in private ownership.

3.3 CONTEXT ANALYSIS

The Springs Precinct is positioned as a prime 'Gateway' development site to the Perth CBD, and to the City of Belmont, located at the axis of two major arterial transport routes; the Graham Farmer Freeway & Great Eastern Highway.

The site is located approximately 700-750 metres walk from the Burswood rail station, and provides good connectivity for pedestrians, cyclists and vehicles to the Station, via an existing bridge between The Springs and the neighbouring light industrial area to the west of Graham Farmer Freeway.

An existing pedestrian underpass is located at the southern corner of the site which allows pedestrians/cyclists direct access to existing retail facilities and other operational commercial land uses located along Great Eastern Highway.

The Burswood redevelopment area is located approximately 350 metres west of the subject site and the Casino/Hotel is located approximately 700 metres away.

Perth City is approximately 5 km west of the subject site, via the Graham Farmer Freeway.

The context analysis is depicted in **Figure 8.**

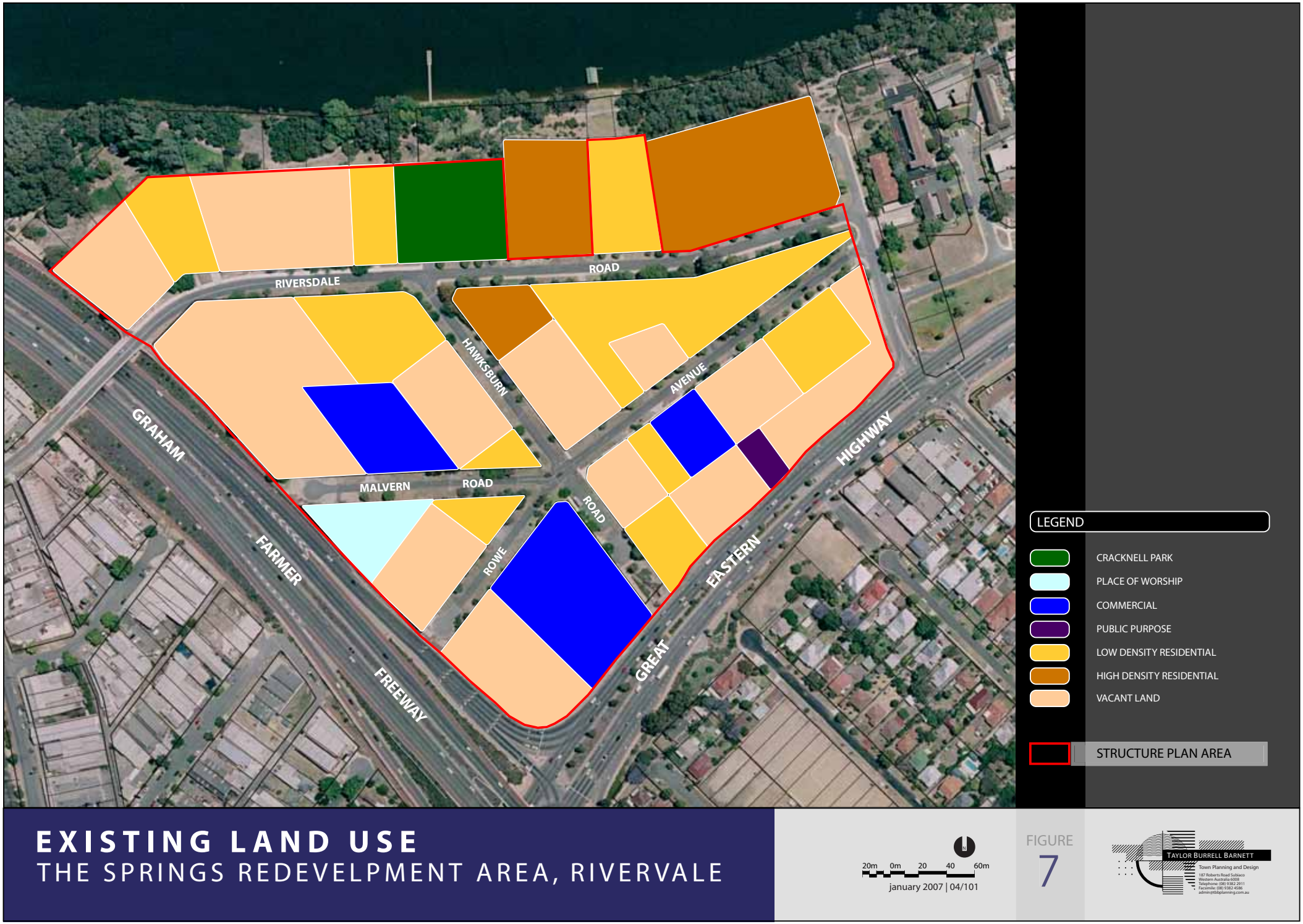
3.4 OPPORTUNITIES AND CONSTRAINTS

The sites key opportunities and constraints are depicted on **Figure 9**.

3.4.1 OPPORTUNITIES

Various opportunities were identified and, where possible, integrated into the design of the Structure Plan. Some of the identified opportunities are beyond the scope of this Structure Plan to fulfil; however, they should be recorded as possible future initiatives for Government consideration. The identified opportunities include:

- Good connectivity between the subject site to adjoining residential developments and arterial roads.
- Potential for a future bus route through the proposed development along Riversdale Road.
- Direct access to the Swan River and associated foreshore reserve via Cracknell Park and Brighton Road.
- An existing pedestrian connection (shared path) is located through foreshore reserve north of subject site.



EXISTING LAND USE
THE SPRINGS REDEVELPMENT AREA, RIVERVALE

20m 0m 20 40 60m

january 2007 | 04/101

FIGURE 7

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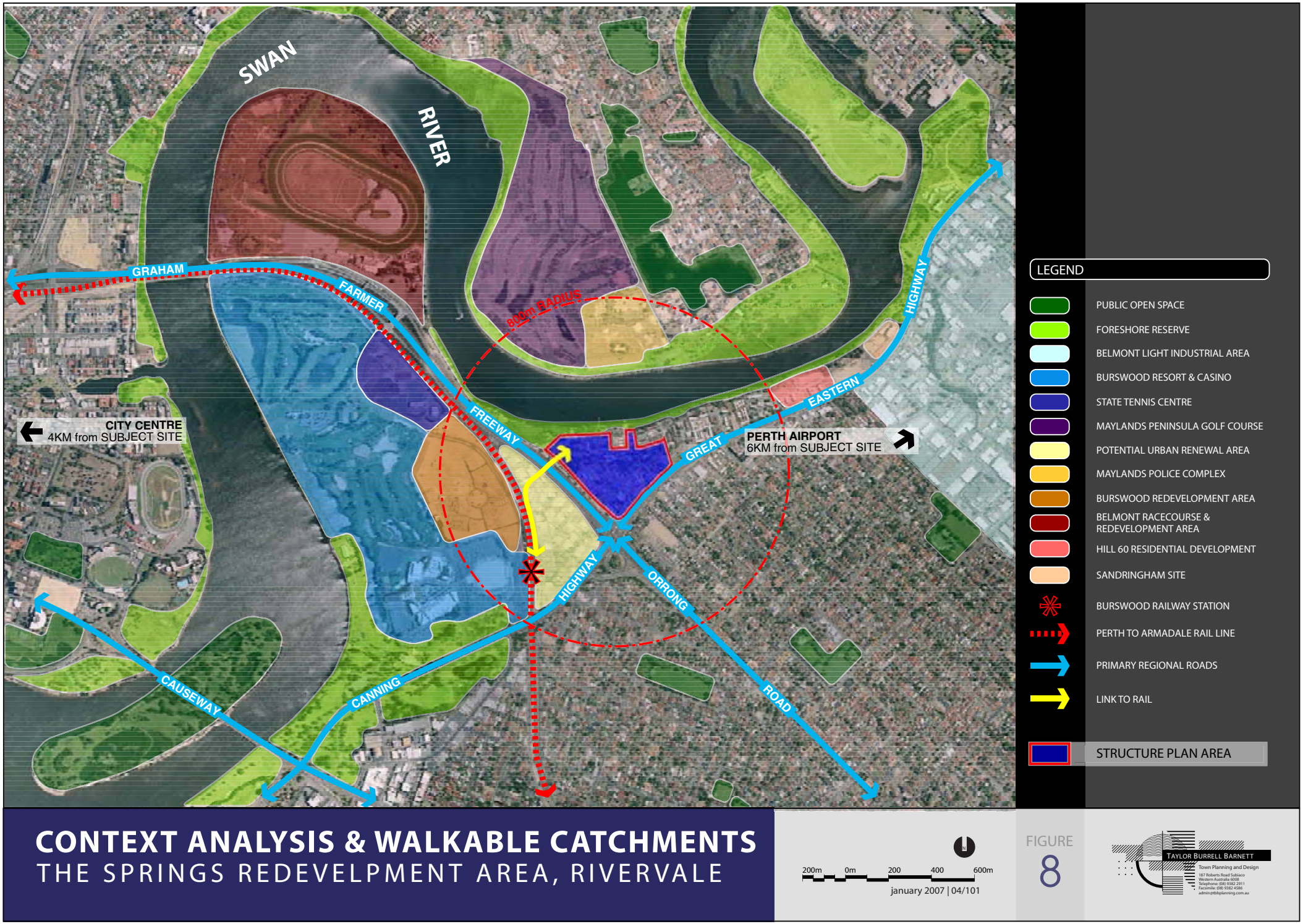

CONTEXT ANALYSIS & WALKABLE CATCHMENTS

THE SPRINGS REDEVELPMENT AREA, RIVERVALE

200m 0m 200 400 600m

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FIGURE 8

Taylor Burrell Barnett
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OPPORTUNITIES & CONSTRAINTS PLAN
THE SPRINGS REDEVELPMENT AREA, RIVERVALE

20m 0m 20 40 60m

january 2007 | 04/101

FIGURE 9

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- A pedestrian link (underpass) currently exists to existing residential areas, commercial uses and a shopping centre located south-east of subject site.
- The site is relatively flat, with a steep embankment down to river, which offers significant river views from land close to the River. Elevated development would also benefit from these opportunities.
- The site on the corner of Great Eastern Highway and Graham Farmer Freeway has the potential to benefit from the views to the skyline of Perth City, Swan River and the Darling Scarp. The site also enjoys good commercial exposure due to its corner location on Gt Eastern Highway and Graham Farmer Freeway.
- Existing services and infrastructure, including roads, are already located on site, reducing construction costs of the new development.

3.4.2 CONSTRAINTS

Various constraints also influenced the planning of the site. Constraints affecting the land include:

- The limited vehicular access from Great Eastern Highway to lots fronting the road.
- Limited access to the corner 'landmark' site located on Great Eastern Highway and Graham Farmer Freeway.
- Although services and infrastructure are already located on site, they are not sufficient for the proposed density of the development.
- The existence of significant Moreton Bay Fig Tree centrally within a developable lot.
- Heritage listed trees and residences.
- The fragmented land ownership of the site.

4 EXISTING SERVICE INFRASTRUCTURE

4.1 ROADS

Primary access to the site is provided via a signalised intersection located at Great Eastern Highway and Brighton Road and via the Riversdale Road bridge which links the site with the adjoining Burswood Light Industrial Area.

A geotechnical investigation of the road pavements has indicated that the subgrade of the road is sound, however the wearing course will require rehabilitation and replacement.

4.2 DRAINAGE AND STORMWATER MANAGEMENT

The precinct falls predominantly within two drainage catchments. These catchments include Riversdale Road, which discharges to the Swan River via a 225 mm diameter outfall pipe located within Cracknell Park, and the Rowe Avenue infiltration basin, which serves the majority of the remainder of the site.

A preliminary review of these catchments indicates that the existing 225 mm diameter pipe is adequate for a 1 in 5 year storm event. However, water quality control may potentially become an issue, as at present there is no pollution control infrastructure installed within the precinct.

Generally, the drainage pipework within the road reserves is limited and would not meet Council's current minimum requirements. At present, all lots are required to retain stormwater on site

4.3 WATER AND SEWER SERVICES

Figure 10 details the size and location of the existing water and sewer services within The Springs Precinct.

All lots within the precinct are currently serviced by water. The majority of the lots are serviced by sewer, with the exception of lots located along the eastern portion of Riversdale Road.

4.4 POWER SUPPLY

The Springs Precinct is currently serviced by underground power and Western Power street lighting.

Existing Western Power substations include Riversdale Road, Brighton Road, Rowe Avenue and Hawksburn Road with associated High Voltage (HV) and Low Voltage (LV) underground cables distributed throughout the area. Whilst the existing system has the capacity to meet the demands of the existing land uses, it will not be sufficient when redevelopment of the land occurs.

4.5 TELECOMMUNICATIONS

Telecommunication cables, currently owned by Telstra, are located in all existing road reserves.

4.6 MOVEMENT NETWORK

4.6.1 EXISTING ROADS AND TRAFFIC VOLUME

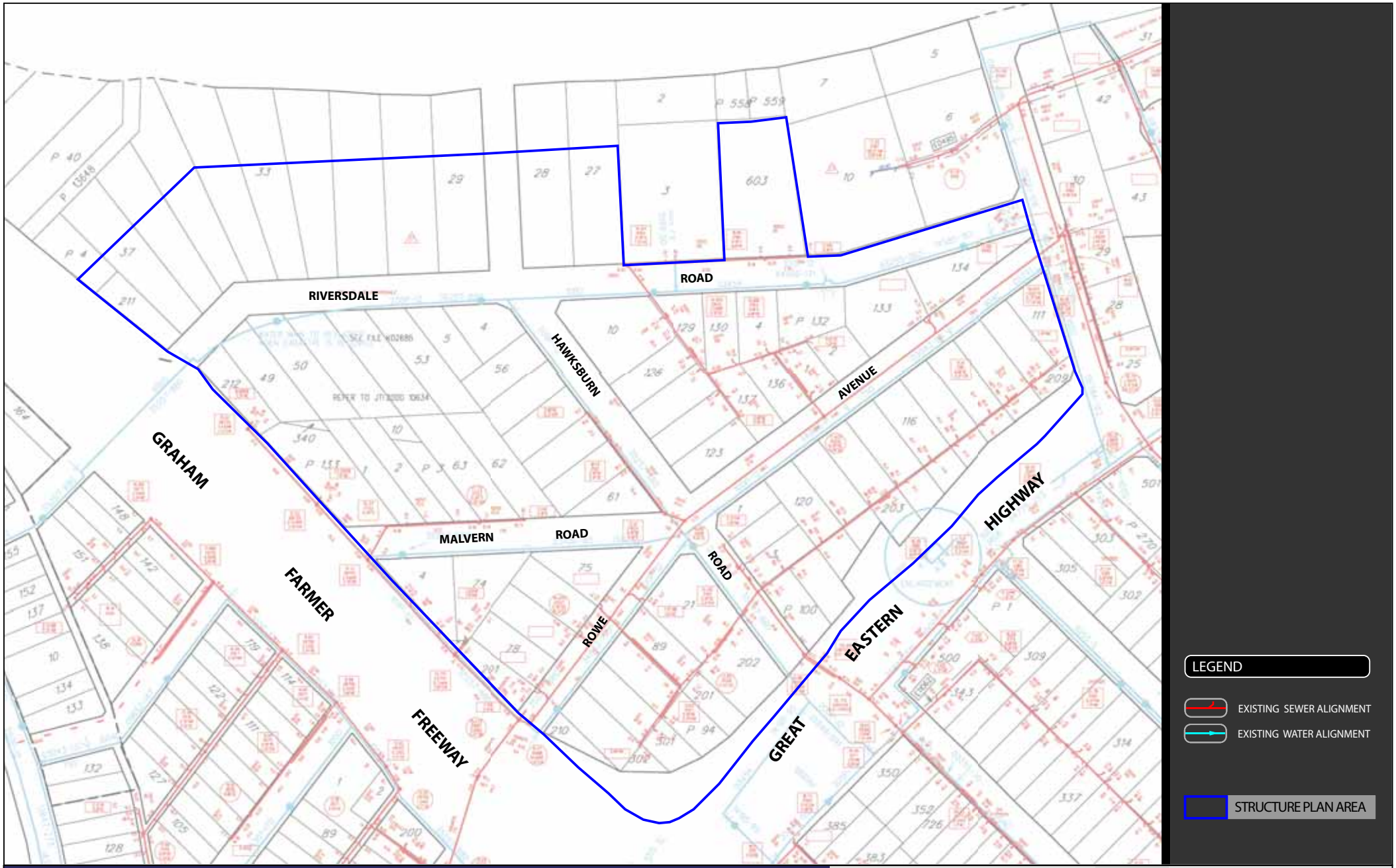
GREAT EASTERN HIGHWAY

The Great Eastern Highway is a primary distributor road and major service road for the Perth Metropolitan Region. It fronts the south eastern boundary of the subject land and comprises three lanes eastbound and four/five lanes westbound, and provides access onto the Graham Farmer Freeway.

At the time of preparing the report, current traffic volumes indicate a two-way movement of about 52,000 vehicles per day adjacent to the study area.

BRIGHTON ROAD

Brighton Road is a local access street marking the eastern boundary of the site. It comprises a standard 7.2 metre wide carriageway with widening at the Great Eastern Highway traffic signals to provide two approach lanes. Current traffic volumes indicate a two-way movement of about 3,000 vehicles per day.



EXISTING SERVICES
THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

20m 0m 20 40 60m

january 2007 | 04/101

FIGURE 10

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RIVERSDALE ROAD

Riversdale Road is a local access street that links the subject site with adjoining neighbouring localities and is constructed with a standard 7.2 metre wide carriageway.

At the time of initially preparing the Structure Plan report, traffic data stated an average traffic volume of 777 vehicles per day.

4.6.2 PEDESTRIAN AND DUAL USE PATHS

Footpaths are currently provided within road reserves throughout the site.

Pedestrian movement across the Great Eastern Highway is catered for by pedestrian signals at Great Eastern Highway/Brighton Road and by an underpass to Surrey Road.

The site is adjacent to district cycle routes to the localities of Perth CBD, Subiaco and Claremont. Easy access to recreational cycle routes is currently provided.

4.6.3 PUBLIC TRANSPORT

Burswood railway station is located approximately 700-750 metres walk from the subject site. A high frequency train service to Perth is provided. The estimated travel time between Burswood station and the City station is approximately eight minutes.

There are currently eight bus routes servicing Great Eastern Highway that provide access to the CBD. Bus services become more frequent during peak periods. The estimated travel time by bus from the subject site to the CBD is approximately 30 minutes.

4.6.4 CAR PARKING

There is parking available on-street within the existing Springs area that would appear to sufficiently cater for the every day uses.

Surveys of parking associated with the mosque have not been undertaken, however, it is understood that there is a considerable amount of spill over parking onto the street and adjacent vacant land during regular worship and other events. Visual inspection suggests that the scheme parking requirement for a "Place of Worship" would not be met on site.

The commercial properties fronting Great Eastern Highway have existing access to the highway and most parking occurs to the front of the buildings. Other commercial land uses have car parks to the rear, serviced by Rowe Avenue. Site inspections indicate that sufficient parking has been provided on site for most of the commercial land uses.

Residential properties within the study area are provided with sufficient on-site parking and parking on-street during the week was not noted to be high. During the weekend there is an increased demand for on-street parking for Cracknell Park. Site inspection did not indicate that the level of parking significantly affected adjacent streets, although local residents have raised this as an issue.

5 EXISTING ENVIRONMENT

5.1 TOPOGRAPHY

Directly adjacent the Swan River, the site rises steeply from the river foreshore at RL 4.0 to approximately RL 17.0 at Riversdale Road.

The precinct generally comprises an east-west ridge running centrally through the site. The site rises to a maximum RL of 19 and descends to RL 14 at the southern portion of the site, located at the corner of Great Eastern Highway and the Graham Farmer Freeway. Surface contours are shown in **Figure 11.**

5.2 EXISTING VEGETATION

5.2.1 THE SPRINGS STRUCTURE PLAN AREA

The site comprises a highly modified urban landscape.

A total of 323 'significant' trees have been identified on site (excluding Cracknell Park) as shown on **Figure 11**. Overall, the existing trees are in reasonable condition in both health and structure. A number of healthy and aesthetically pleasing specimens of Jacaranda, Spotted Gum, Lemon Scented Gum, Sugar Gum, Stone Pine and Hills Fig have been noted and are proposed to be retained as part of the development process.

A total of 148 trees within the precinct have been recommended for removal due to poor health and structural condition.

Cracknell Park and the residential and commercial areas within the site comprise mixed Australian native and exotic tree, shrub and grass species. No significant remnant indigenous vegetation remains within the park.

Photo 10: Mixed exotic and Australian native species to the existing Springs residential and commercial area.

5.2.2 SWAN RIVER FORESHORE RESERVE

The Swan River and its foreshore have been altered significantly over time through dredging and filling. No significant, intact remnant indigenous landscape vegetation remains on the river foreshore abutting the subject site; however indigenous reed and sedge species do exist on the Swan River's immediate shoreline.

While the foreshore reserve is highly modified, it does form an integral part of the Swan River riverine environment and provides links to important regional indigenous landscapes. As such, it has been identified as a 'Greenways Link' between identified Bush Forever Sites in the WAPC 'Bush Forever' Policy.

LEGEND

EXISTING TREE (S)

STRUCTURE PLAN AREA

EXISTING VEGETATION
THE SPRINGS REDEVLOPMENT AREA, RIVERVALE

20m 0m 20 40 60m

january 2007 | 04/101

FIGURE 11

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Photo 11: Indigenous reed and sedge species existing on the Swan Rivers water's edge

The Swan River foreshore includes a broad mix of indigenous and exotic plant species including invasive weed species. Tree species include Mature specimens of Eucalyptus sp. (Eucalypt), Platanus sp. (Plane Tree), Phoenix sp. (Date Palm) and Brachiochyton sp. (Flame tree).

Photo 12: Exotic species including Brachyiochyton sp. and kikuyu lawns to the existing Swan River foreshore at Cracknell Park

Photo 13: Exotic species including Phoenix and Oleander to the existing Swan River foreshore

5.3 HERITAGE AND CULTURE

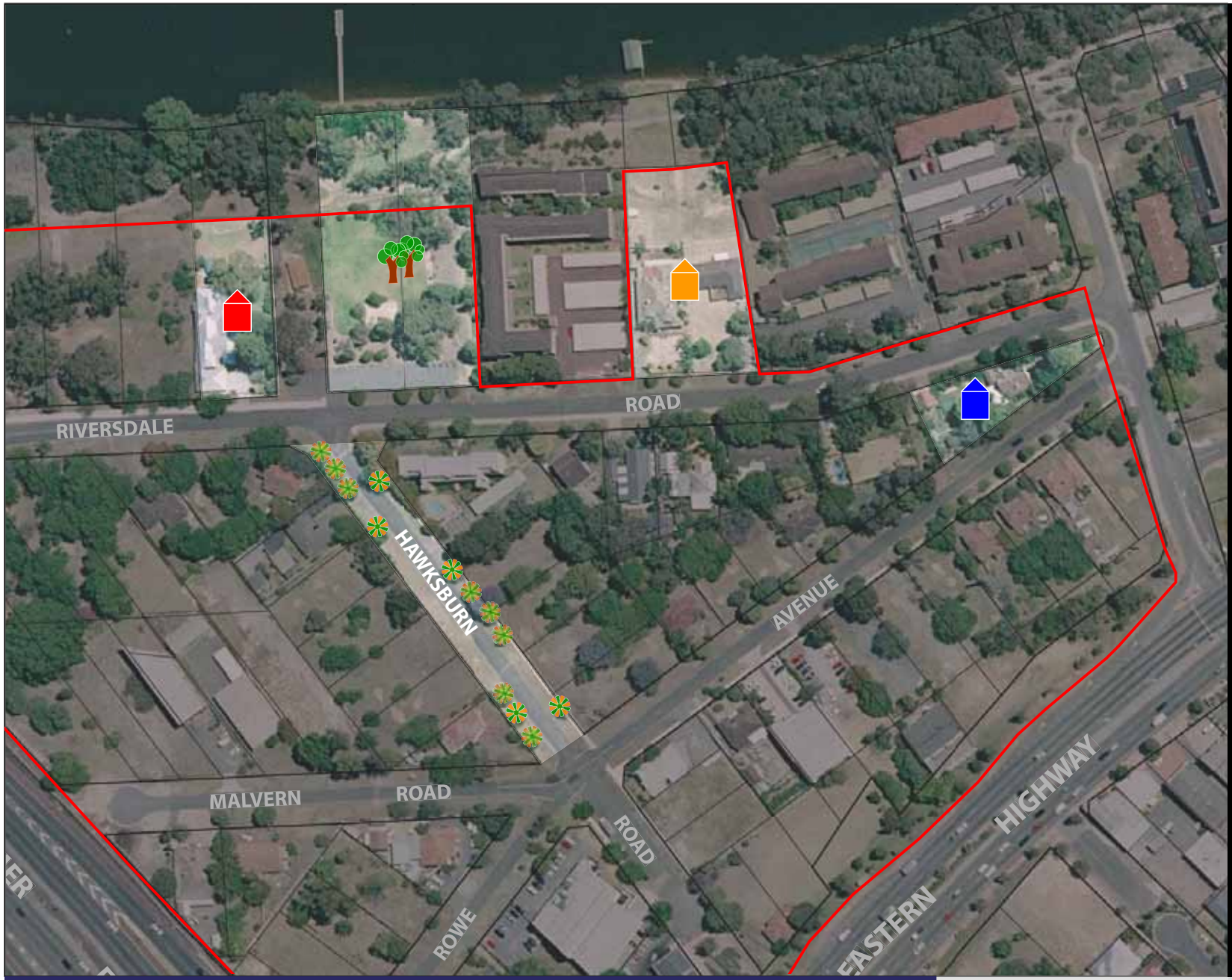
According to the City of Belmont 'Revised Municipal Heritage Inventory 2002' there are a number of sites of local heritage significance within the precinct.

These sites are depicted in **Figure 12.**

The inventory only addresses those sites that were historically significant from white settlement of the area to present. The directory does not consider aboriginal heritage.

Clause 7.4 of TPS 14 specifies that "notwithstanding any other provisions of the Scheme to the contrary, the approval of the Council is required for the following development on or in relation to any place or object on the Heritage List".

Therefore, planning approval will be required prior to the demolition or removal of any heritage listed sites with the precinct. It is noted that approval has been granted by Council to demolish the heritage listed building on Lot 80 Riversdale Road and clear the site, however, until such a time as the building is demolished the house cannot be delisted.



HERITAGE SITES

THE SPRINGS REDEVELPMENT AREA, RIVERVALE

(City of Belmont Municipal Inventory)

200m 0m 200 400 600m

january 2007 | 04/101

FIGURE 12

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5.3.1 HAWKSBURN ROAD FLAME TREES

The Flame Trees (*Erythrina indica*) located on Hawksburn Road are identified on the City's Municipal Inventory as being of heritage significance, with a recommendation of a high level of protection and conservation.

The trees are believed to have been planted by the Belmont Young Men's Club during or before 1926.

An arboricultural report prepared by Arbor Logic, arboricultural consultants (refer **Appendix A)** indicates that the existing trees are likely to be between fifty to seventy years old and have advised that they have concerns as to whether the existing trees are the original trees that were planted by the Belmont Young Men's Club.

Some trees are currently in decline and the majority, through continued poor management practices, have structural damage and acceptable to poor form which will jeopardize the viability of the street trees in the long term.

5.3.2 ABORIGINAL HERITAGE

Following a search of the Department of Aboriginal Affairs, Register of Aboriginal Sites, a number of Aboriginal Heritage sites have been identified in the general vicinity of the subject land as follows:

Site No.	Name	Type
16718	Riversdale Road	Artefacts/Scatters Archaeological Deposits
3536	Swan River	Mythological
17061	Old Campsite 1 (east of subject land)	
15916	Burswood Island	Artefacts/Scatters

From the information currently available on the register, it has not been possible to confirm if any of these sites directly impact on The Springs, although it is considered unlikely. Sites 16718 and 3536 are most closely located in relation to the subject land.

The register identifies the Swan River as a mythological site. The Aboriginal Heritage Act directs the Aboriginal Cultural Material Committee to give primary consideration to sacred beliefs (i.e. mythology) associated with a place and its ritual or ceremonial usage in the evaluation of any place. Therefore, as a mythological site, the Swan River is in the most significant category of Aboriginal site.

Given the heritage value associated with the Swan River, any modification to the River would require clearance under Section 18 of the Aboriginal Heritage Act and subsequent consultation with Aboriginal Elders of the area.

The development proposals identified for The Springs Precinct will not involve any modifications to the Swan River or its foreshores.

It is, however, recommended that further investigation be undertaken to determine, more precisely, the location of the registered sites. If appropriate a Section 18 clearance should be obtained for any development prior to commencement of works.

6 STRUCTURE PLAN

6.1 STRUCTURE PLAN FORMAT

The Springs offers exciting opportunities for urban redevelopment, as well as a number of significant challenges for both design and implementation. In formulating a planning framework to promote and successfully implement the design vision, it was considered that the controlling framework needed to be comprehensive, controlling development at a three dimensional level, and should visually communicate the ultimate design vision to the community, administrators, and future developers. For these reasons, the overall Structure Plan comprises a raft of interrelated components, including:

- **Master Plan (Figure 13)** – an informative plan intended to graphically convey the development vision, including roads and pedestrian movement, landscape and indicative built form; this plan is for guidance purposes only and does not have the formal status of the Structure Plan.
- **Structure Plan (Figures 14A & B)** – the controlling plan that identifies specific development requirements and controls, including land use, residential density, open space/drainage and new infrastructure (**Figure 14A**) and building heights (**Figure 14B**).
- **Design Guidelines** – a set of precinct-based standards to provide more comprehensive guidance to achieve the streetscape and built form objectives of the Structure Plan.

The following is an explanation of, firstly, the design philosophy and objectives underpinning the Structure Plan, and secondly, the key elements of the Plan.

6.2 DESIGN PHILOSOPHY

The Springs, as an urban renewal precinct, has experienced a protracted history of structure planning initiatives, which have been largely complicated by a multiplicity of land ownership. More recently, however, LandCorp has acquired a majority of the land, particularly in the more fragmented areas south of Riversdale Road, paving the way for a more flexible and comprehensive approach to the planning and development of the precinct.

With greater design flexibility, and the more recent community, local and state government input into the project, the design philosophy reflects a balanced planning solution, taking into account the following key influences:

- the State Government's vision for the successful redevelopment of the area in consultation with the landowners;
- the statutory and administrative requirements of the City of Belmont and State Government;
- the responses of the private landowners and the surrounding local community;
- a need to maintain independence for the remaining private landowners; and
- LandCorp's corporate commitment to producing sustainable communities, and contributing to broader regional sustainability goals.

The vision of The Springs is that of an attractive inner urban residential area containing a mix of medium to high density housing types and commercial uses, with high quality public spaces offering strong connections to the river, public transit and regional road and pedestrian systems.

New buildings in The Springs will complement the street character and public spaces. Housing density and architecture is intended to keep building height to a human scale at the street, to ensure that the streets and other public spaces will provide an appealing, liveable environment.

6.2.1 DEVELOPMENT OBJECTIVES

A series of development objectives were formulated early in the visioning process for The Springs. The development objectives recognise the background to the planning for the site, however, focus on the natural attributes and strategic location of the precinct to transform the area into a highly liveable, appealing urban setting and also creates a striking gateway to both the Perth CBD and the City of Belmont.

NOTES

1. CRACKNELL PARK LANDSCAPING POTENTIALLY TO BE UPGRADED.
2. NEW DEVELOPMENT TO PROVIDE VIEW CORRIDORS TO THE FORESHORE AND BUILDINGS RELATE WELL WITH CRACKNELL PARK AND THE FORESHORE.
3. RIVERSDALE ROAD IMPROVED WITH NEW STREETSCAPE FEATURES AND PEDESTRIAN-FRIENDLY DESIGN.
4. HAWKSBURN ROAD WIDENED TO PROVIDE A LINEAR PARK WITH PEDESTRIAN-PRIORITY STREET DESIGN.
5. TOWNHOUSE DEVELOPMENT IN A MEWS, WITH PEDESTRIAN LINK TO HAWKSBURN ROAD.
6. TALLER BUILDINGS ALONG FREEWAY EDGE, WITH LOW-SCALE BUILDINGS ALONG NEW STREET.
7. NEW STREET TO ENABLE EFFECTIVE DEVELOPMENT AND SUPPORT PEDESTRIAN-PRIORITY DESIGN OF HAWKSBURN ROAD.
8. HIGH QUALITY LANDSCAPING OF OPEN SPACE AND DRAINAGE AREA.
9. LANDMARK TOWER BUILDING AT KEY CITY GATEWAY.

10. EASTERN END OF RIVERSDALE ROAD TO BE DISCONNECTED. PARKING EMBAYMENTS WILL BE PROVIDED WITHIN PORTION OF DISCONNECTED ROAD.
11. HIGH QUALITY MEWS WITH A VARIETY OF HOUSING TYPES.
12. ROWE AVENUE UPGRADED AS A MIXED-USE STREET WITH NEW STREETSCAPE DESIGN.
13. MIXED USE SITE WITH REAR PARKING ACCESS.
14. SERVICE ROAD, CONNECTING TO ROWE AVENUE, PROVIDING FRONTAGE FOR COMMERCIAL DEVELOPMENT ALONG GREAT EASTERN HIGHWAY.
15. ROAD ENTRY FROM GREAT EASTERN HIGHWAY FOR DIRECT ACCESS TO COMMERCIAL USES.
16. THE SOUTHERN END OF THE HAWKSBURN ROAD ROAD RESERVE TO BE DEVELOPED AS A HIGHLY PEDESTRIANISED, URBANISED PLAZA WITH GOOD PASSIVE SURVEILLANCE OF THE ENTRY/EXIT POINT TO THE PEDESTRIAN UNDERPASS AND LINKAGES TO OTHER URBAN SPACES WITHIN THE STRUCTURE PLAN AREA.

STRUCTURE PLAN AREA

THE SPRINGS STRUCTURE PLAN, RIVERVALE
INDICATIVE MASTERPLAN

20m 0m 20 40 60m

december 2007 | 04/101

FIGURE 13

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LEGEND

- PUBLIC OPEN SPACE
- R60
- R80
- MIXED USE R80
- RIVERSDALE ROAD NORTH R 100 / R160 (refer to design guidelines)
- ROWE AVENUE WEST R160 (refer to design guidelines)
- MIXED USE R100
- MIXED USE R250
- PUBLIC AND/OR PRIVATE LANEWAYS*

NOTES

POTENTIAL FOR RESTAURANT TYPE USE ON LOWER LEVEL

POTENTIAL FOR LOCAL SHOP /CAFE TYPE USE ON LOWER LEVEL (MAXIMUM RETAIL FLOORSPACE 80m^2)

HAWKSBURN ROAD RESERVE TO BE WIDENED TO CREATE LINEAR PARKLAND. ROAD ACCESS DESIGNED FOR LOCAL VISITOR ACCESS / PARKING ONLY. LINEAR PARKLAND TO BE DESIGNED IN ACCORDANCE WITH *LANDSCAPE MASTER PLAN.*

DRAINAGE SUMP TO BE LANDSCAPED AND DEVELOPED AS AESTHETIC, USABLE OPEN SPACE, IN ACCORDANCE WITH *LANDSCAPE MASTERPLAN.*

**ALL LANEWAYS IDENTIFIED ON THE PLAN ARE PUBLIC AND/OR PRIVATE ACCESS WAYS, THE SPECIFICATION OF WHICH IS TO BE DETERMINED AT THE DETAILED DESIGN PHASE.*

EASTERN END OF RIVERSDALE ROAD TO BE DISCONNECTED

MAXIMUM RETAIL FLOORSPACE 320m^2 WITHIN MIXED USE R80 FRONTING GREAT EASTERN HIGHWAY.

SERVICE ROAD TO PROVIDE LEGIBLE ACCESS & PARKING FOR COMMERCIAL USES FRONTING GREAT EASTERN HIGHWAY. CONNECTION THROUGH TO ROWE AVENUE REQUIRED TO PROVIDE SEMI DIRECT RETURN TO HIGHWAY. DESIGN OF SERVICE ROAD TO BE APPROVED BY CITY OF BELMONT.

NEW ROAD ENTRY FROM GREAT EASTERN HIGHWAY. PROVIDES MORE DIRECT ACCESS FOR COMMERCIAL TRAFFIC. ENTRY DESIGN TO BE APPROVED BY MRWA.

SOUTHERN END OF HAWKSBURN ROAD TO BE RE-LEVELLED AND PAVED TO INDICATE PEDESTRIAN PRIORITISATION, IN ACCORDANCE WITH *LANDSCAPE MASTERPLAN*. LOCAL VEHICLE ACCESS AND PARKING STILL PERMITTED.

THE SPRINGS SPECIAL DEVELOPMENT PRECINCT

STRUCTURE PLAN AREA

THE SPRINGS STRUCTURE PLAN, RIVERVALE
LAND USE

20m 0m 20 40 60m

october 2007 | 04/101

FIGURE 14A

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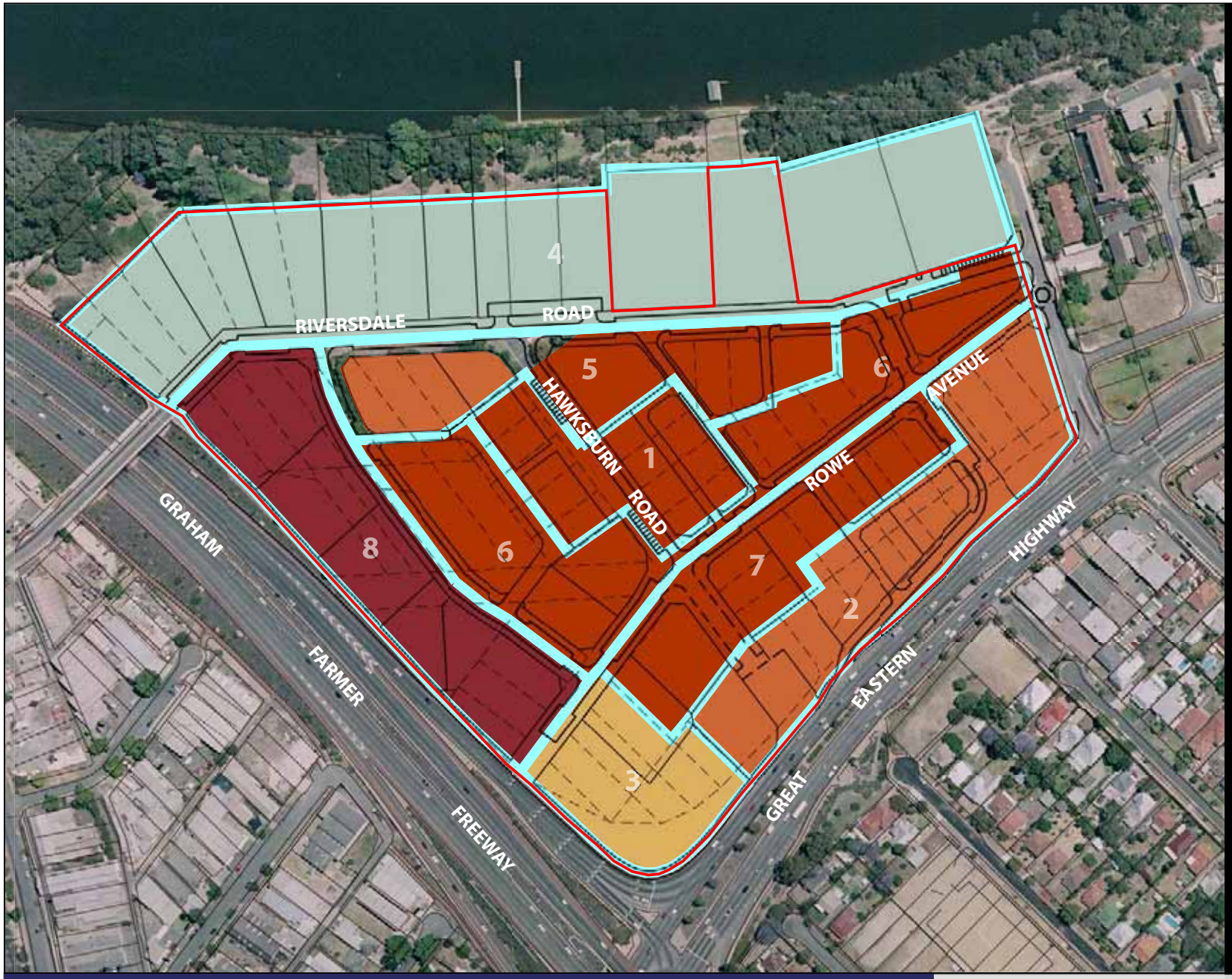

LEGEND

- MINIMUM HEIGHT 6m OR 2 STOREYS
  MAXIMUM HEIGHT 17m AND 4 STOREYS
- MINIMUM HEIGHT 6m OR 2 STORYS
  MAXIMUM HEIGHT 27m AND 6 STOREYS
- MINIMUM HEIGHT 30m
  MAXIMUM HEIGHT
  PODUIM 15m
  TOWER AS PER SCHEDULE 9,TPS 14
- MINIMUM HEIGHT
  PODUIM 6m OR 2 STOREYS
  TOWER 15m AND 3 STOREYS
  MAXIMUM HEIGHT
  PODUIM 15m OR 3 STOREYS
  TOWER 30m AND 9 STOREYS
- TO BE DETERMINED THROUGH DETAILED AREA PLANNING

PRECINCTS

1. HAWKSBURN ROAD
2. GREAT EASTERN HIGHWAY
3. HIGHWAY PENINSULA
4. RIVERSDALE ROAD - NORTH
5. RIVERSDALE ROAD - SOUTH
6. ROWE AVENUE - EAST RESIDENTIAL
7. ROWE AVENUE - EAST MIXED USE
8. ROWE AVENUE - WEST RESIDENTIAL TOWERS

STRUCTURE PLAN AREA

THE SPRINGS STRUCTURE PLAN, RIVERVALE
BUILDING HEIGHTS

20m 0m 20 40 60m

september 2009 | 04/101

FIGURE 14B

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The development objectives focus on:

- Strong river links – creation of high quality internal parks that create diversity and strong river linkages;
- Transportation linkages – developing strong transport linkages to the City, freeway, airport, cycle networks, bus and train network;
- Urban Village – creating a mixed use urban environment with a focus on the relationship between the street and built form;
- Urban renewal – voluntary redevelopment of underutilised landuse to facilitate sustainable urban development;
- Metropolitan gateway – urban form to recognise and identify/punctuate entrance to the Perth Central Area and City of Belmont; AND
- Market opportunity – create a diversity in housing produce through architectural diversity.

6.2.2 SUSTAINABILITY OBJECTIVES

Consistent with LandCorp's commitment towards providing 'sustainable' developments to the community, The Springs Structure Plan has endeavoured to fulfil the State Government's objectives to create communities that balance social, environmental and economic outcomes, not only to those persons residing within the redevelopment area, but also that of the wider community.

Key sustainability principles have been applied within the overall design of the precinct, to the extent possible within the confined nature of the site. In an urban renewal environment, many of the most effective tools in achieving sustainable outcomes will actually appear in the design of the built form. It is envisaged that a set of indicators will be prepared to measure and report the development's progress towards achieving key sustainability objectives in relation to the overall planning for the site and the development of new buildings.

The Structure Plan provides for a mix of housing types, size and density in a medium to high-density urban environment. The Springs will be well provided for in terms of access, open space and public transport.

Development will have a high regard for environmentally sustainable outcomes through management of energy, water, indoor air quality, landscape and construction. It is envisaged that The Springs will embrace the requirements for energy rated buildings and appliances and demonstrate achievement of a 'five-star' rating against a recognised sustainability performance rating system.

6.3 DEVELOPMENT PROPOSAL

6.3.1 DESIGN PRINCIPLES

The final Structure Plan design represents the culmination of an extensive design process that has sought to embody the design philosophy, LandCorp's sustainability objectives, and the feedback from landowners and the broader public. All of these influences are interwoven into the design principles, which are broadly summarised as follows:

- The modification, where appropriate, of the original road system to create a more legible and permeable movement network to manage an increase in vehicular, cyclist and pedestrian traffic within the precinct once redeveloped.
- The provision of a variety of densities and lot sizes, to enable a broad choice of housing styles and types, including more affordable housing options.
- The delivery of an overall residential density to take advantage of the precinct's good proximity and accessibility to the Swan River, rail and bus transit, and the Perth Central Business District, contributing to the regional sustainability goals of improving walkability, density around transit and reduced car dependency.
- The promotion of diversity in built form and scale, distributing building mass in a manner that accentuates the natural riverfront landform, concentrates height and density at the fringes, and leaves the interior to enjoy a more open, human scale of medium density development.
- The application of a master planning approach, employing three dimensional design, and design guidelines to guide the planning of land use, built form and product mix in keeping with the vision.

- The provision, where appropriate, of building frontages with active uses (such as commercial and home based business) to encourage an increased interaction between private buildings and the public realm.
- Promotion of sustainable design and building practices including building-performance design guidelines for energy, water efficiency and greywater usage, and passive solar design.
- The identification, enhancement and development of key public spaces around points of concentrated development to offer convenient access to communal space and enable the integration of the landscape qualities of the river foreshore, natural topography and existing infrastructure.
- Recognising the visual and locational prominence of the southern corner of the site at the Graham Farmer Freeway and Great Eastern Highway corner, promoting the development of an iconic landmark building, to punctuate this site as the 'gateway' to the City.
- Protecting the longer term planning objectives of the private landowners within the precinct, by designing to ensure the broader development will, as far as possible, not compromise their independence.

The Springs Master Plan (Figure 13) and Structure Plan (Figures 14A & 14B) collectively illustrate the preferred pattern of land use and development for the precinct. The key elements of the Master Plan include:

- A mix of land uses, comprising predominantly medium to high density residential and commercial mixed use, offering high development potential for property on the river front and along the Freeway, and protecting amenity for existing owners wishing to remain.
- The reconfiguration of the existing road network, in particular:
  - The closure of Malvern Road to remove the five way intersection at Hawksburn Road and Rowe Ave; and
  - The discontinuance of Riversdale Road at the eastern end to reduce traffic and provide a more pedestrian-friendly interface with the river.
- The inclusion of a 'landmark' building site on the corner of Great Eastern Highway and Graham Farmer Freeway.
- The development of new areas of public open space, including:
  - The creation of a 'green street' on Hawksburn Road with access to the Swan River;
  - A landscaped 'amphitheatre' style drainage area;
  - The proposed urbanised plaza at the southern end of the Hawksburn Road road reserve.

The Springs has been divided into a number of precincts, shown in **Figure 15,** for the purpose of applying more specific design provisions. As previously stated, design guidelines have been developed for each precinct, to establish the individual character of each region.

The design guidelines form a separate document, suitable for adoption by the City as a Local Planning Policy. The general guideline requirements of each of the precincts are summarised in Section 6.4 of this report.

The following is a description of the key elements of the Structure Plan.

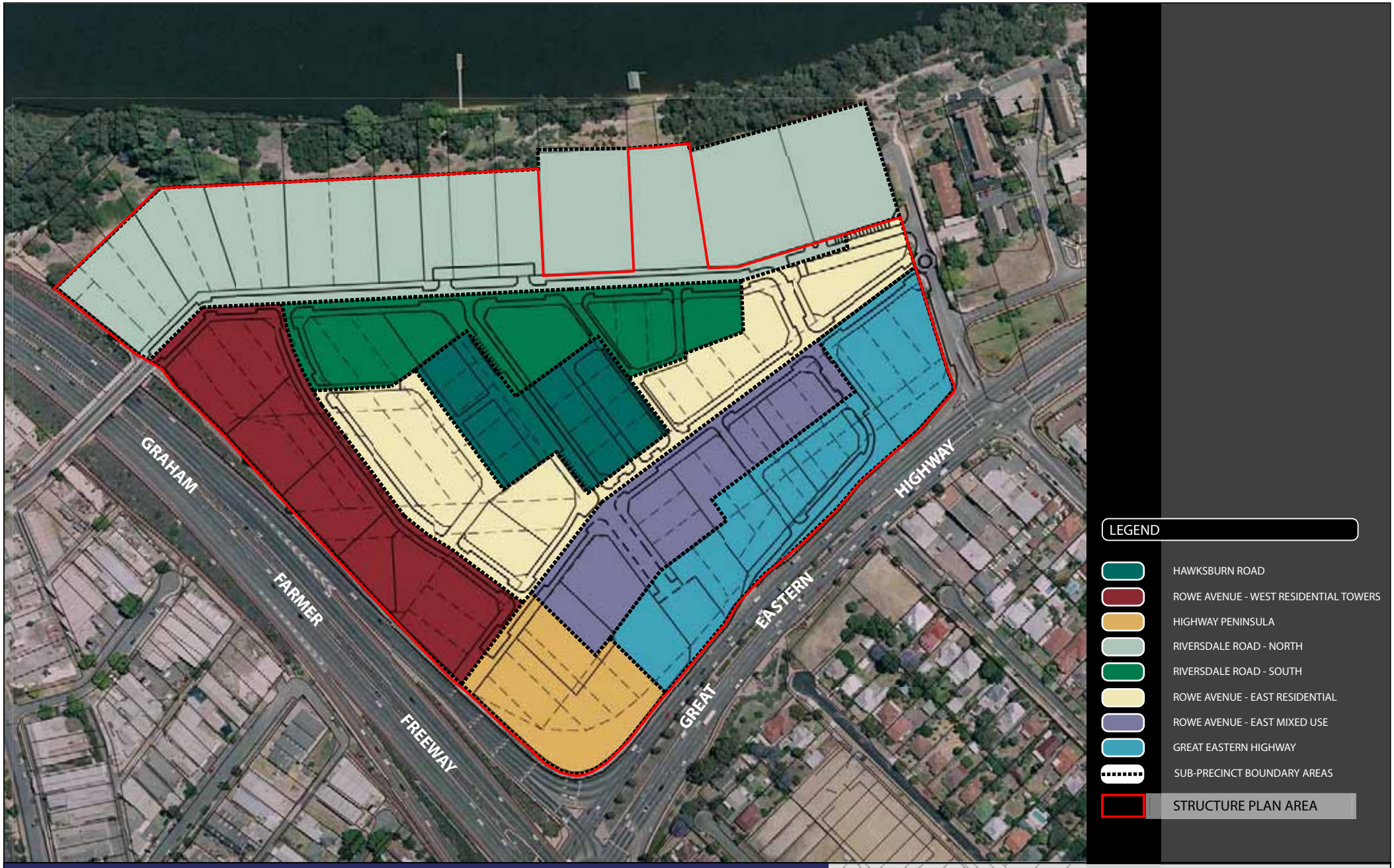
6.3.2 VISUAL IMPACT

Throughout the precinct, the built form configurations have been designed to enhance the natural topography of the site and optimise views and vistas from key locations within The Springs.

The form of the site is structured to reflect the prominence of the south-east corner of the site as a regional landmark, the sharp rising Swan River foreshore escarpment, and the structural relationship of the streets and spaces within The Springs.

A perforated 'line' of high-rise development will border the eastern perimeter as a frame, linking The Springs with Burswood Casino and redevelopment area and the Perth CBD.

This three dimensional design approach filters through the various elements of built form, land use and movement described in the following sections.



PRECINCT PLAN
THE SPRINGS REDEVELPMENT AREA, RIVERVALE

20m 0m 20 40 60m

october 2007 | 04/101

FIGURE
15

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6.3.3 HOUSING CHOICE AND LOT YIELD

Housing diversity will be provided through varying densities (refer Figure 14A) and resultant housing type. The precinct's built form will include two/three storey single dwellings, three storey medium density town house style dwellings, medium/high density apartment buildings, and high-rise residential towers. The maximum heights are illustrated in Figure 14B. Minimum heights have also been identified on Figure 14B to enable some overall design flexibility.

The densities applied to The Springs have been selected after a critical review of the development opportunities of the various specific locations. The higher densities and building heights along the western edge of the development, and particularly on the corner of the Graham Farmer Freeway and Great Eastern Highway, relate to the obvious landmark qualities at the regional entrance to the City of Belmont and more widely the Perth City Centre. The lower density and building heights are proposed more centrally within the development to create a more intimate residential character.

It is estimated that The Springs will potentially provide for the development of up to 700 dwelling units and 40,000 m^2 of commercial floorspace.

To punctuate corners and in key locations, taller buildings are identified such as the corner of Brighton Road and Great Eastern Highway, and Riversdale Road and Hawksburn Road.

The proposed maximum number of residential units is unlikely to be achieved in the short or medium term given the number of lots under private ownership. A number of existing properties will possibly remain undeveloped for a number of years.

6.3.4 RETAIL/COMMERCIAL/MIXED USE DEVELOPMENT

The City of Belmont Local Commercial Strategy Final Report identifies The Springs as a Local Centre with an upper limit of 400 m^2 of retail floorspace. It is intended that this floorspace is divided between two areas within The Springs, as follows:

- 80% or 320 m^2 along the frontage to Great Eastern Highway; and
- 20% or 80 m^2 on the corner of Riversdale Road and Hawksburn Road.

This will service the local retail needs of the future Springs community.

In the event that the retail floorspace of 80 m^2 is not integrated into the development on the corner of Riversdale and Hawksburn Roads, this may in the future be amalgamated with the retail floorspace along the frontage to Great Eastern Highway.

Commercial uses will dominate along the Great Eastern Highway frontage, benefiting from a high level of exposure, with the potential for upper level residential apartments in mixed-use development.

The uses proposed within The Springs are consistent with the description of mixed use development described in the City of Belmont Mixed Use Study Part Two December 2005 being "uses that mix vertically with office or retail uses on the ground floor and residential apartments above. In the case of The Springs, the office development may be located on the lower floors, not just the ground floor, with residential above. This will be best dictated by market demands.

Mixed-use development located south of Rowe Avenue will comprise predominantly residential dwellings, with the integration of proposed compatible commercial/retail and home occupation type uses present at the lower levels. Some commercial buildings are proposed for selected key corner locations.

6.3.5 MOVEMENT NETWORK

The design is consistent with 'Liveable Neighbourhoods' objectives for a highly interconnected and legible road system. This is assisted by the relative compatibility of the existing road layout in this regard.

In line with the Western Australian Government's State Sustainability Strategy, the proposed redevelopment of The Springs has sought to create more efficient street reserves, which includes narrower pavement widths to those that currently exist, and reduced lane widths, which concurrently promotes reduced vehicle speeds to create a highly pedestrianised streetscape.

A comprehensive pedestrian network system has also been incorporated into the design, through the provision of footpaths and dual use paths throughout the precinct. The pedestrian environment will be further enhanced through the inclusion of street trees that will provide shade and a separation from the vehicular environment.

6.3.6 PROVISION OF PUBLIC OPEN SPACE

The amount and location of public open space provision within The Springs has been a result of ongoing consultation between the former DPI, City of Belmont, private landowners and LandCorp.

6.3.6.1 PROPOSED AREAS OF PUBLIC OPEN SPACE

The strategy for open space provision has been based on the following key principles:

- capitalise on the on the site's attractive position adjacent to the Swan River and foreshore;
- provide strong connection and attractive journey to the river from both within The Springs and through the site from the pedestrian connection to the south; and
- provide a variety of experiences in the public realm, suited to the needs of a broad range of age groups and family structures, through the provision of versatile internal public spaces and well landscaped streets.

Four key areas of open space have been identified in, or abutting, the Structure Plan area (**Figure 16**). These are:

- The Swan River Foreshore;
- Cracknell Park;
- Hawksburn Road Village Spine; and
- Rowe Avenue Public Open Space.

The philosophy for the treatment and use of these spaces is summarised below.

SWAN RIVER FORESHORE (REGIONAL RESERVE)

Whilst the Swan River Foreshore is not included within the Structure Plan area; however, its importance and character should be recognised in the design process for the precinct, providing a strong riverine character with many indigenous plant species.

While the existing character should be retained, passive recreational uses should also be maximised. Pedestrian path networks should be reviewed and invasive weed control undertaken.

CRACKNELL PARK (LOCAL RECREATION RESERVE)

The objectives for Cracknell Park are to enhance its existing urban parkland character and maximise its passive recreational use.

Mature indigenous and exotic vegetation (including trees and Kikuyu lawns) should be retained.

Existing public infrastructure (such as ablutions and play equipment) should also be retained. It is recognised that the existing access path should be upgraded.

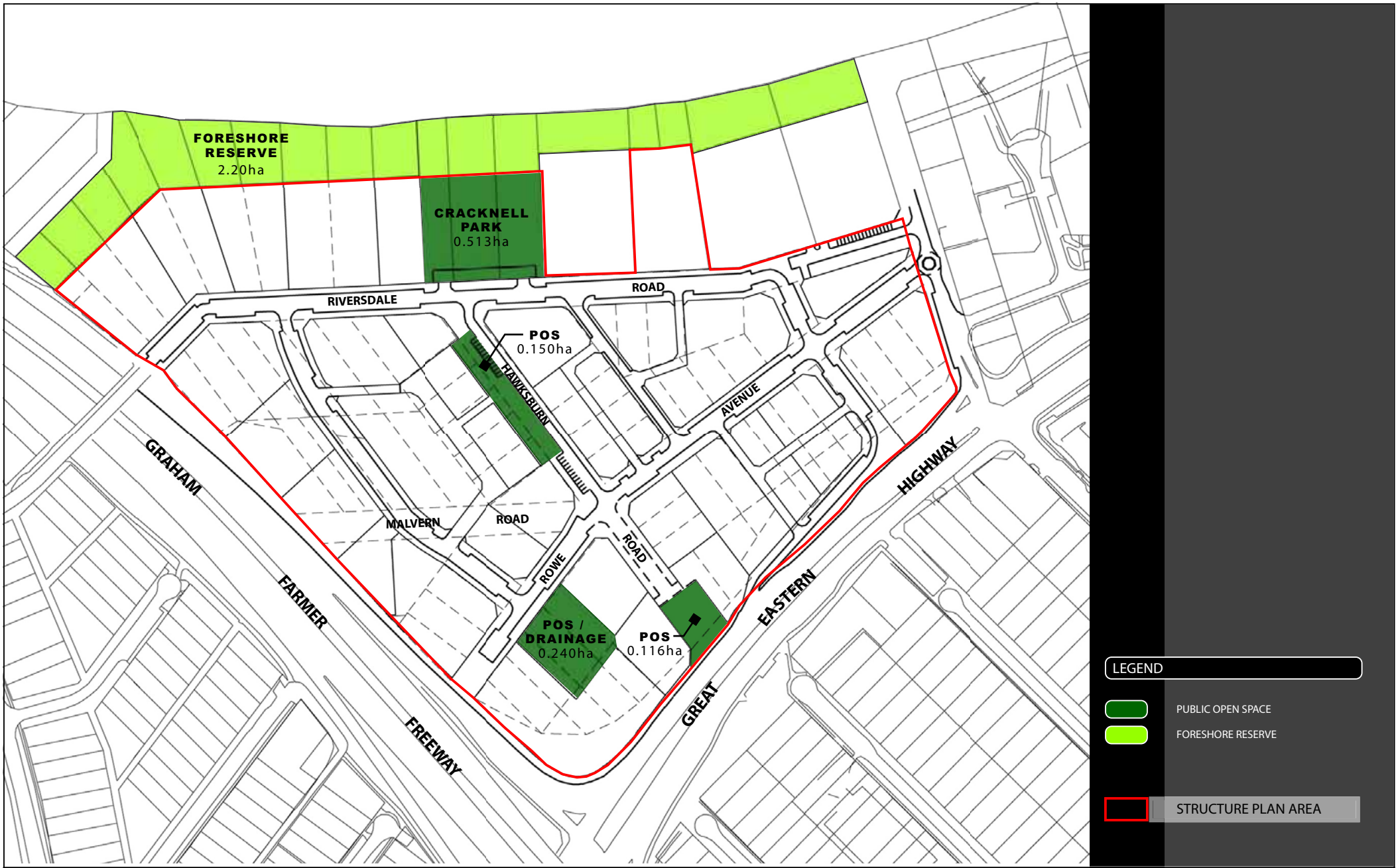
Car parking facilities should be upgraded, through the use of landscape and paving design, to provide a strong functional and visual link between Cracknell Park and Hawksburn Road village spine.

HAWKSBURN ROAD PUBLIC OPEN SPACE LINK (LOCAL RECREATION RESERVE)

Hawksburn Road Public Open Space link will be developed for passive recreation in the form of a linear park and will act as a pedestrian link between the existing Great Eastern Highway pedestrian underpass and Cracknell Park/Swan River. It will offer a central focus to the redevelopment and comprise seating, pavement, lawn and shade trees. An interactive community artwork is also recommended for the open space area.

A stand of mature Flame Streets is located in Hawksburn Road. In light of the age and condition of the trees, it is recommended that they be removed; however due to the ease with which Flame trees can be propagated from existing stock, the developer proposes to propagate new street trees and trees for the POS reservation from the existing material. This will be supported by interpretive material integrated into the streetscape to tell the story of the historical significance of the site and the trees.

Street lighting and street furniture shall comprise contemporary 'one off', pieces reinforcing the special nature of the central green spine.



PROPOSED AREAS OF PUBLIC OPEN SPACE
THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

20m 0m 20 40 60m

october 2009 | 04/101

FIGURE 16

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A proposed draft design concept is shown below in **Figure 17**.

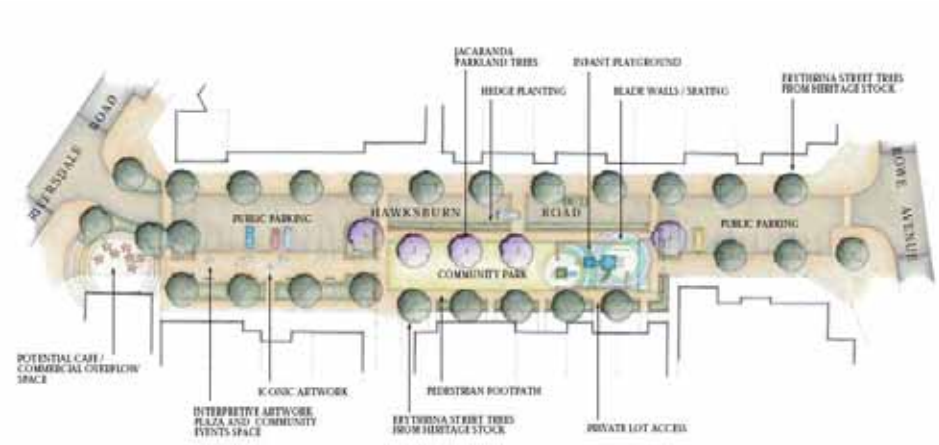


Figure 17: Proposed Hawksburn Road Village Spine

ROWE AVENUE (LOCAL RECREATION RESERVE)

Rowe Avenue will be developed as an urban park and multi-purpose passive recreation facility. The current size of the POS area is suitable for passive and active recreation, including non-structured ball sports. The area can also act as a central meeting point for the community, and for both formal and informal functions.

Elements will include the provision of stepped limestone retaining walls to create a minor amphitheatre, and also functioning as a stormwater retention structure.

The base of the amphitheatre will be grassed and planted with a mixture of Australian native and exotic shade trees to define the perimeter of the space.

A proposed design concept is shown at **Figures 18 and 19**.

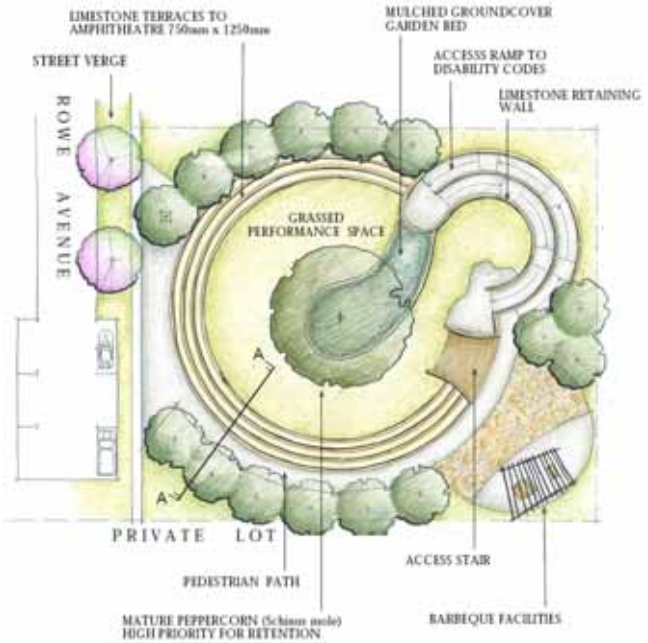


Figure 18: Proposed Rowe Avenue Amphitheatre

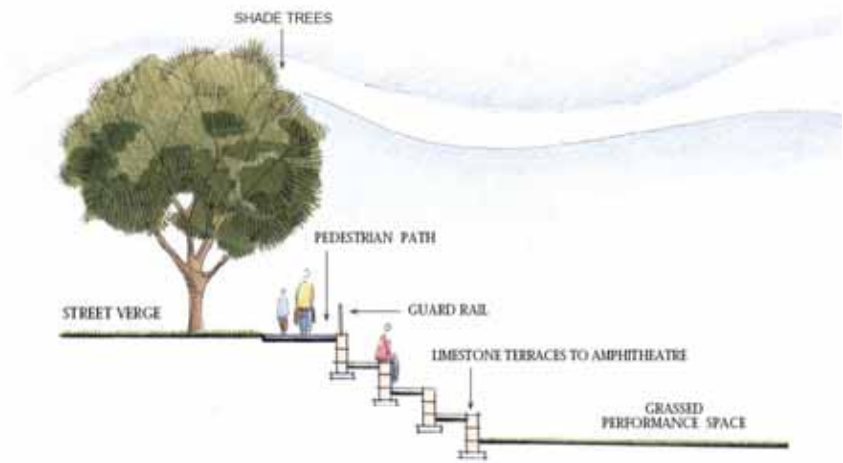


Figure 19: Proposed Rowe Avenue Amphitheatre Cross-Section

HAWKSBURN ROAD SOUTH – PUBLIC OPEN SPACE

The southern end of the Hawksburn Road road reserve located adjacent to Great Eastern Highway will be developed as a highly pedestrianised, urbanised plaza with good passive surveillance and linkages to other urban spaces within the Structure Plan area. The 1161 m^2 area currently includes an entry/exit point to the pedestrian underpass and can be subject to surveillance problems. Upgrading the area and incorporation of Crime Prevention Through Environmental Design (CPTED) principles will provide a more inviting POS and complement the rest of the linear pedestrian pathway to the Swan River.

6.3.6.2 RATIONALE FOR DETERMINATION OF PUBLIC OPEN SPACE PROVISION WITHIN THE SPRINGS

Four areas of open space are proposed to service The Springs; the existing Cracknell Park, the proposed open space/amphitheatre area at Rowe Avenue, the proposed linear park located on Hawksburn Road, and the proposed urbanised plaza at the southern end of the Hawksburn Road road reserve. In addition, the Swan River foreshore reserve also abuts the northern boundary of the area.

The foreshore reserve in this locality is well utilised by the public and contributes to the local recreational values for the area, particularly where it abuts Cracknell Park. Element 4, Requirement 7 of Liveable Neighbourhoods states that *"the WAPC may accept part of the regional open space as part of the subdividers 10% public open space contribution",* subject to management agreements for the land and demonstration that the area can be used for long term appropriate local open space purposes.

As the reserve is contiguous with the local reserve of Cracknell Park and forms part of that overall parkland area, there is a sound basis for considering the portion that effectively forms part of Cracknell Park when calculating the public open space provided for the precinct. For the purpose of determining overall POS requirements for The Springs development, no part of the foreshore reserve has been included in the technical calculation of actual POS provision; however, its contribution to local recreational values should be acknowledged.

As the precinct is a brownfields development, it is submitted that only the developable land area, and not existing roads, should be included in the calculation of gross subdivisible area. On this basis, the total gross subdivisible area would be 9.82 ha.

Three strata sites are not included within the redevelopment area. As these sites would comprise 10% of the total area of the precinct, the extent to which the Cracknell Park is credited towards the redevelopment area is discounted accordingly. Therefore, only 90% of the total area of the park is included in the open space calculation.

The total POS provision is calculated as follows:

Location	Area	Amount of POS
'The Springs' Gross Subdividable Area*	= 9.82 ha (98,199 m^2)	100%
10% POS Requirement	= 0.98 ha (9819.9 m^2)	10%
Cracknell Park Contribution Towards POS 90% of 5712 m^2 = 0.51 ha	= 0.51 ha (5137 m^2)	5.1%
New POS Provided - Hawksburn Road Linear Park - Rowe Avenue POS/Amphitheatre - Hawksburn Road South POS (underpass park)	 = 0.1509 ha (1509 m^2) = 0.2400 ha (2400 m^2) = 0.1161 ha (1161 m^2)	 1.5% 2.5% 1.2%
TOTAL POS PROVIDED	**= 1.02 ha (10,207 m^2)**	**10.3%**

Total Existing Roads: 2.785 ha
Total Proposed Roads (Inc Laneways): 4.05 ha

* *Gross subdivisible area is the total Structure Plan area less existing roads to remain open and non-residential component of mixed use and commercial land (assumed at 50%).*

Whilst LandCorp and the City of Belmont provide the public open space within The Springs, the proportional landowner contribution has been calculated in the table below.

TABLE 2: PRIVATE LOTS AND THE LAND REQUIRED FOR PUBLIC OPEN SPACE

Zoned	Street	Lot No.	Certificate of Title	Area of Land Owned m²	POS Allocation m² (10.3 %)	POS Provided by LandCorp (5.2 %)	POS Provided by CoB (5.1%)
Residential	Riversdale Road	35	150/80	1486	153.1	77.3	75.8
Residential	Riversdale Road	34	2210/608	1610	165.8	83.7	82.1
Residential	Riversdale Road	133	1999/338	1602	165.0	83.3	81.7
Residential	Riversdale Road	132	1999/337	1594	164.2	82.9	81.3
Residential	Riversdale Road	131	1999/336	2144	220.8	111.5	109.3
Residential	Riversdale Road	130	1999/335	2144	220.8	111.5	109.3
Residential	Riversdale Road	80	2221/121	2144	220.8	111.5	109.3
Residential	Riversdale Road	603	2132/908	3720	383.2	193.4	189.7
Residential	Riversdale Road	134	1689/392	1416	145.8	73.6	72.2
Residential	Riversdale Road	132	371/180A	1316	135.5	68.4	67.1
Residential	Riversdale Road	4	371/179A	971	100.0	50.5	49.5
Residential	Riversdale Road	130	1282/356	943	97.1	49.0	48.1
Mixed use	Rowe Avenue	120	1977/731	506*	52.1	26.3	29.8
Mixed use	Hawksburn Road	21	1827/669	996*	102.6	51.8	50.8
Residential	Rowe Avenue	77	1981/824	1012	104.2	52.6	51.6
Residential	Rowe Avenue	78	1415/247	1012	104.2	52.6	51.6
Residential	Malvern Road	4	2610/473	1289	132.8	67.0	65.7
Residential	Malvern Road	3	1473/973	801	82.5	41.7	40.9
Residential	Malvern Road	63	1921/485	1571	161.8	81.7	80.1
Residential	Hawksburn Road	4	1304/438	1052	108.4	54.7	53.7
Mixed use	Rowe Avenue	119	Strata A16632	506*	52.1	26.3	25.8
Residential	Hawksburn Road	10	Strata S10071	2315	238.4	120.4	118.1
		TOTAL		**32150**	**3311.2**	**1671.7**	**1643.5**
		(Ha)		**3.2150**	**0.33112**	**0.16717**	**0.16435**

** The total area of land shown for Mixed Use lots is 50% of total lot area, reflecting the proportion of overall mixed use area included in calculating POS required.*

6.3.6.3 LANDSCAPE DESIGN

The Springs is flanked by the Great Eastern Highway and the Graham Farmer Freeway to the southeast and southwest, respectively.

Recognising that the land is very much 'contained', the landscape design should respond to these qualities and not only be tailored to offer local identity, but also provide recreational opportunities for the resident population.

With functionality as a key objective, landscape design will enable open spaces to yield:

- a diversity of indigenous plant communities and fauna habitats;
- a variety of environmental features and practices; and
- a diversity of opportunities and experiences to accommodate informal play, and the needs of both active & passive users.

The incorporation of sustainability imperatives will also be a foundation for the design of landscape spaces. The following initiatives should be considered during the detailed design of landscape spaces in both the public realm, and for freehold land as appropriate:

- permeable pavements and decking to allow on site stormwater infiltration;
- water wise garden techniques and low water use plants;
- sub surface irrigation;
- soil ameliorants to improve water and nutrient retention;
- mulches to garden beds to retain water and promote healthy garden biota;
- slow release fertilisers on plants and garden beds, to minimise leaching of nutrients into the ground water;
- low phosphorous fertilisers on all lawns, to minimise phosphate loading to the environment;
- Landscape and irrigation contractors shall adopt waste minimization practices throughout construction;
- The use of recycled and renewable materials in construction;
- Installation of water tanks to harvest roof water for the purposes of landscape reticulation (State Government rebate applies); and
- Installation of grey water recycling systems for the purposes of landscape reticulation (State Government rebate applies).

These broad objectives will underpin the Landscape Concept Plan (refer to **Figures 20A and 20B**). It is presently envisaged that a Landscape Master Plan will be prepared prior to commencement of the subdivisional phase of works.

6.3.6.4 STREETSCAPE DESIGN

A holistic approach will be applied to streetscape design. Sufficient flexibility will exist however, to ensure that 'precinct' character can be achieved, thus ensuring streetscapes are compatible with the range of land uses to be developed across the site. Minor variation in streetscape design will add variety and interest.

Linear open space provided adjacent to road reserves will form an important part of the overall open space provision. Particular emphasis should therefore be placed on designing for safe, highly pedestrianised streets.

Paving, street furniture and green stock will be selected to:

- provide a high level of amenity;
- complement the characteristics of the built environment; and
- minimise long-term maintenance costs.

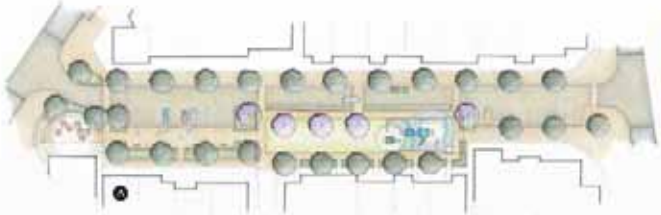
INTERNAL STREETS

Internal streets will be designed to be 'traditional', meaning the inclusion of pedestrian footpaths adjacent to lot boundaries, street trees and grassed verges.

Street lighting will comprise Western Power fittings from their standard decorative range, while street furniture will also be selected from a standard decorative commercial range.

THE SPRINGS

SIMPLE CONTEMPORARY URBAN DESIGN IN THE PUBLIC REALM USING NATURAL MATERIALS.



HAWKSBURN ROAD P.O.S FOR PASSIVE RECREATION & COMMUNITY EVENTS.

RESPONSE TO THE PROXIMITY OF RIVERINE LANDSCAPE TYPE & CRACKNELL PARK.

Public open space with facilities that encourage local community use and passive recreation.

Simple, practical and pedestrian friendly shaded streets.

Dynamic pedestrian focused 'village centre' to Hawksburn Road.

Interpretation of areas of cultural & historical significance through community artwork and information signs.

Contemporary design theme including robust and ergonomic street and park furniture using natural materials.

Plant selection reflecting the adjacent Swan River riverine environment.

Water sensitive urban design principles in streets and public open space.

Standard Western Power street lighting.

Practical and affordable maintenance regimes.

The colour texture palette is a guide to the desirable range of materials and finishes for hard and soft landscape elements in the public domain.

INFORMATION SIGNS, & INTERACTIVE ARTWORK TO CRACKNELL PARK.

COMMUNITY ARTWORK LOCATED ON HAWKSBURN ROAD & ROE AVENUE.

STREET TREES AND GRASSED VERGES WITH STREET PARKING & LOT BOUNDARY FOOTPATHS TO INTERNAL STREETS.

STANDARD WESTERN POWER STREET LIGHTING.

ICONIC ARTWORK TO HAWKSBURN ROAD P.O.S.

ROE AVENUE P.O.S. FOR PASSIVE RECREATION & STORMWATER MANAGEMENT.

CUSTOM DESIGNED STREET FURNITURE TO HAWKSBURN ROAD.

PLAN E

LANDSCAPE CONCEPT

AGONIS FLEXUOSA

CONCRETE

BITUMEN ROADS

CORYMBIA FICIFOLIA

TURF

TIMBER

JUNCUS PAUCIFLORUS

STEEL GRATES

VILLAGE SPINE ROAD SURFACE

MELALEUCA RHAPHIOPHYLLA

BAUMEA JUNCEA

STEEL

TACTILE PAVING

JACARANDA MIMOSIFOLIA

ISOLEPIS NODOSA

TREES

MULCH

PLANTING

MASONRY

FURNITURE

CONCRETE FOOTPATHS

PAVEMENTS

LANDSCAPE MATERIALS PALETTE

THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

december 2007 | 04/101

FIGURE 20A

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THE SPRINGS

LANDCORP

EXISTING TREES

1. EXISTING NORFOLK ISLAND PINES

2. EXISTING NORFOLK ISLAND PINES.

3. EXISTING LEMON SCENTED GUM.

4. EXISTING PEPPERCORN

5. MATURE FIG

6. TREES IN EXISTING VERGES (5 no.)

PROPOSED STREET TREE SPECIES

AGONIS FLEXUOSA.

CORYMBIA FICIFOLIA.

MELALEUCA RAPHIOPHYLLA.

JACARANDA MIMOSIFOLIA.

INDICITIVE PLANT SPECIES

KIKUYU TURF.

JUNCUS PAUCIFLORUS.

BAUMEA JUNCEA.

BOLEPIS NODOSA.

PLANTING CONCEPT

THE SPRINGS REDEVELOPMENT AREA, RIVERVALE

december 2007 | 04/101

FIGURE 20B

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GREAT EASTERN HIGHWAY

The northern verge of the Great Eastern Highway will be designed to match in with the existing streetscape to the northeast and southwest of the development site. Specific elements include a shared use path and street trees. Street lighting and furniture will also be selected to match the existing suite.

HAWKSBURN ROAD

A contemporary streetscape character will link Great Eastern Highway (from the underpass), Rowe Avenue and Cracknell Park. Design features will include street trees and paved footpaths. The footpaths in particular will be designed to include an 'at grade' pedestrian pavement flush with the road carriageway.

Street lighting will comprise standard Western Power decorative fittings to match internal streets, while street furniture will be custom designed to provide a high degree of functionality and amenity.

6.3.6.5 RETENTION OF VEGETATION

Where possible, healthy mature trees will be retained within the redevelopment area.

Existing mature trees within redevelopment lots will be assessed on a lot by lot basis, with each tree's retention dependent upon development strategy, geotechnical investigations and the requirement for environmental remediation works.

6.3.6.6 LANDSCAPE DESIGN AND CONSTRUCTION

Public open space and streetscapes will employ a combination of indigenous and exotic plant species with selection based on a response to the proximity to the adjacent riverine environment, sustainability, suitability for purpose and visual amenity.

Individual plant selection will be from species lists focusing on proven performance under the prevailing environmental conditions, pests and disease resistance, non invasive or weed forming nature and requiring a low level of ongoing maintenance during and after establishment, including fertilizer application.

It is envisaged that each precinct of the development will have an individual landscape character and species list, including street trees, that meet the environmental and urban design requirements of each precinct while forming an integral part of the landscape of the whole development.

Grassed verges will only be developed where broad acre turf management practices can be employed and fertilizer and pest and disease control applications can be controlled and minimized.

The use of annual and herbaceous plants will be minimized throughout the development, and in consultation with the City of Belmont.

Prepared soils, soil conditioners and mulches will be used throughout the works to minimize water use and provide nutrient buffers to planted and grassed areas.

6.3.6.7 IRRIGATION DESIGN AND CONSTRUCTION

All public open space within the site, excluding street verges, will be irrigated from a licensed bore or preferably recycled greywater. The possibility of using grey water will be considered, subject to gaining support from relevant government agencies.

All irrigation within private lots will be via either a licensed bore or scheme water supply from individual lot supply points.

Environmental protection, water wise principals, and the minimization of ongoing maintenance costs, will be inherent in the design and operation of all irrigation systems.

All irrigation will be designed and installed to City of Belmont standards.

Landscape and irrigation works within public open spaces will be maintained by the developer for a period, to be agreed with the City, after the completion of the main redevelopment project, at which time the works will become the responsibility of the City of Belmont.

All areas will be designed to allow maintenance to be continued by the City to a high level of amenity and to maximize sustainability, including the minimization of irrigation, runoff and the use of pesticides, herbicides and fertilizers.

6.3.6.8 PUBLIC ART

Public art will form an integral part of the redevelopment, assisting in the creation of a unique sense of place through the expression of the site's history, proximity to the Swan River, and culture. Artworks can provide numerous benefits to the community, including:

- enrichment of the built environment;
- contribution to local identity;
- development of community ownership and pride;
- interpretation and expression of unique site characteristics; and
- landmarks and points of reference for orientation.

Public art will be incorporated within public open space at the discretion of the developer.

Opportunities and theming for the use of public art will be explored in conjunction with the detailed design of landscaped spaces. During this process, opportunities will be explored to celebrate indigenous heritage as appropriate; and to involve the community as well as local and/or indigenous artists.

6.3.7 TRANSPORT, TRAFFIC SAFETY AND MANAGEMENT

6.3.7.1 DEVELOPMENT PRINCIPLES

The Springs is being planned as a Transit Oriented Development and accordingly, the proposed transport network reflects the following principles:

- Plan the development to be highly walkable (i.e. safe, legible, connected and appealing to pedestrians).
- Provide high activity (mixed use) intensities to encourage local trips and facilitate the precinct's function as both an origin and destination.
- Ensure there are walkable links to rapid transit and secondary transit (i.e. metropolitan bus) services.
- Plan for internal streets to function as shared spaces and for the public realm to be inviting and active.
- Restrain car traffic and vehicle speeds so as not to undermine pedestrian and cycling amenity and permeability.
- Supply and manage car parking to reduce incentives for discretionary car ownership and trips; support a fairer 'pay-as-you-use' system for vehicle access and use; and in reflection of the excellent non-car mode choices available.

6.3.7.2 ROADS

Traffic analysis indicates that the greatest impacts of development will occur at the Brighton Road/ Great Eastern Highway/ Kooyong Road intersection. Nevertheless, the assessment shows that this intersection could operate acceptably given its function as a busy arterial and inner city location.

Ingress to The Springs will be improved through the construction of a left in slip lane from Great Eastern Highway southwest of the Brighton Road/ Great Eastern Highway/ Kooyong Road intersection. Support for the slip lane has been received from Urban Transport Systems (Department of Planning), Main Roads WA and the Public Transport Authority.

Other external intersections, including Griffiths Street/ Great Eastern Highway/ Graham Farmer Freeway off ramp and Graham Farmer Freeway ramps/ Great Eastern Highway, have been assessed as able to function adequately with the addition of development traffic.

Within the precinct, it is intended that all roads will be constructed to appropriate standards for low speed vehicle movement and high pedestrian movement. The majority of streets within The Springs development will operate with daily traffic flows of less than 3,000 vehicles per day (vpd), with the exception of Rowe Avenue and Brighton Road, and function as local access streets (residential streets). Brighton Road and Rowe Avenue are likely to have daily flows between 5,000 and 7,000 vpd and will function as slow-speed Neighbourhood Connectors. Hawksburn Avenue is intended to be a highly pedestrianised environment and will be designed as a 'village spine'. Concepts for this street are indicated in the landscape report.

As stated in Section 4.6.1, Brighton Road already carries approximately 3,000 vpd. To ensure the continuity of the road network, it is proposed that a Neighbourhood Connector link is aligned from Brighton Road to Griffiths Street in Burswood via Rowe Avenue, the westernmost internal link through to Riversdale Road, Riversdale Road and Goodwood Parade.

6.3.7.3 ROAD SAFETY AND MANAGEMENT

The internal road network has been designed to limit traffic speeds and all street blocks are generally less than 200 metres long. A posted speed limit of 30-40 kilometres per hour would be appropriate within The Springs to support the shared use of streets.

6.3.7.4 PUBLIC TRANSPORT

Public transport is very accessible from the subject site. There are a number of bus routes that operate along Great Eastern Highway and have 10-15 minute and about five minute headway in the morning and afternoon peaks, respectively. There is a stop for eastbound services immediately adjacent to The Springs while a stop for westbound services can be accessed via an existing underpass spanning Great Eastern Highway. Burswood railway station, which is on the Perth-Armadale/ Thornlie line, is about 700-750 metres walk from The Springs. The station can be accessed via two pedestrian routes, which are earmarked for enhancement as part of the development proposal. Train services operate about every 15 minutes in both directions throughout the day. Current journey time to the City by public transport is eight minutes by train and about 20 minutes by bus.

6.3.7.5 PARKING

The City of Belmont and the Residential Design Codes require that car parking is supplied at a rate of at least 0.35 bays per apartment plus 0.015 bays per square metre of plot ratio area and two bays per green title residence (i.e. townhouse). Visitor parking at a rate of one bay per 10 tenant bays is also required. Non-residential parking is generally required to comply with the City of Belmont Town Planning Scheme No. 14.

The Transport, Access and Parking report being prepared to support the Structure Plan proposes a car parking supply and management plan that is suited to the site and development characteristics. In particular, it recommends a reduced level of car parking supply, which reflects the Transit Oriented Development principles that underpin the Structure Plan. The report will be prepared based on the guiding principles mentioned in 6.3.7.1 above.

6.3.7.6 FOOTPATHS

Existing streets incorporate footpaths and all new streets will be designed with footpaths on both sides. While on-street cycling would be expected with the low traffic volumes forecast, shared paths will be provided through the site as shown in **Figure 21**. Shared paths will not be provided along roads with dedicated cycle lanes.

6.3.7.7 UNIVERSAL ACCESS DESIGN

All footpaths and access ramps will be designed within The Springs to accord with current universal access standards. In particular, the underpass providing access to the southern side of Great Eastern Highway will be improved.

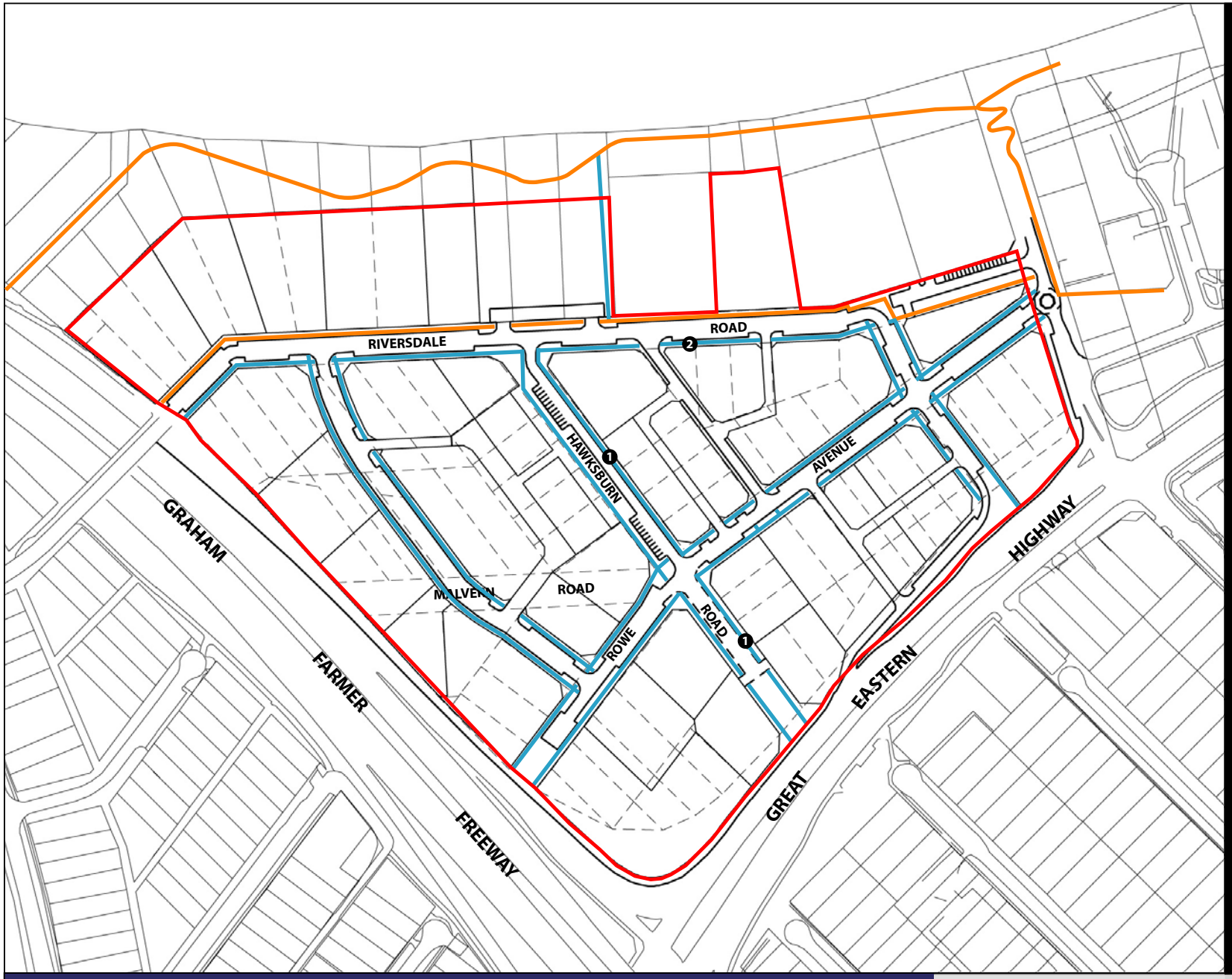
6.3.8 PROPOSED INFRASTRUCTURE SERVICING

6.3.8.1 ROADWORKS

A geotechnical investigation has been undertaken on the existing road pavements. The investigations concluded that all existing roads within the precinct require profiling of the existing wearing course, tyne and compaction of the base course and the placement of a new wearing course consisting of a 25 mm thick asphalt layer.

With the proposed increase in residential density there will also need to be an allowance for embayed parking bays to the existing carriageways to accommodate visitors and occasional parking. Additional concrete footpaths will also be required such that footpaths will be available on each side of the existing roads.

All proposed new roads will be constructed to Council standard and include embayed parking bays and footpaths.



LEGEND

FOOT PATH

SHARED PATH

NOTES

1. THE MATTER OF BICYCLE SAFETY AND CONNECTIVITY ON THE EAST SIDE OF HAWKSBURN ROAD EXTENDING FROM GREAT EASTERN HIGHWAY TO RIVERSDALE ROAD TO BE ADDRESSED AT DETAILED DESIGN STAGE.

2. PEDESTRIAN AND BICYCLE SAFETY AND CONNECTIVITY ON RIVERSDALE ROAD BETWEEN HAWKSBURN AND THE UNNAMED ROAD TO THE EAST TO BE ADDRESSED AT THE DETAILED DESIGN STAGE.

STRUCTURE PLAN AREA

PROPOSED FOOTPATH PLAN
THE SPRINGS REDEVELPMENT AREA, RIVERVALE

20m 0m 20 40 60m

october 2007 | 04/101

FIGURE 21

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6.3.8.2 DRAINAGE AND STORMWATER MANAGEMENT

A preliminary review of the existing drainage catchments indicates that the 225 mm diameter pipe to the Cracknell Park Reserve will require an upgrade to include stormwater treatment and retention. The Rowe Avenue basin currently appears undersized and will need to be increased in volume to accommodate extreme storm events. This will be achieved by removing the existing carpark which is currently leased by Council to the adjoining commercial premises and enlarging the volume of the basin. It is proposed that this basin will incorporate an underground soakage cell to accommodate minor storm events such that the area can form an attractive and usable public open space (as described in Section 6.3.6.1).

Advice from the Belmont Council is that all proposed lots should retain stormwater on site and that they would require the existing street drainage network to be enhanced. This enhancement would include pipe work upgrades and extensions and the introduction of gross pollutant traps at all drainage outfalls.

6.3.8.3 WATER SUPPLY

Although all lots currently have access to water, the existing smaller diameter pipe sizes are considered inadequate for the demands which will be generated from the proposed increases in residential density. Hence upgrading of existing pipework will be necessary. The following sections of pipework will require upgrading:

- 100 mm diameter pipework in Riversdale Road to 200 mm diameter.
- 90 mm/100 mm diameter pipework in Brighton Road to 200 mm diameter.
- 75 mm/100 mm diameter pipework in Rowe Avenue to 150 mm diameter.

6.3.8.4 SEWER

As part of the redevelopment of the area it will be necessary to ensure all lots have access to sewer. A suitable strategy to service the currently un-sewered areas adjacent to Riversdale Road would be an extension of the existing gravity sewer system. Lots on the north side of Riversdale Road are proposed to be serviced via private pump stations to be individually provided by landowners/developers when sites are developed. This strategy would need approval from the Water Corporation but preliminary advice is that it would be accepted.

In terms of timing of these works, given that all streets in the precinct are to be reconstructed, it would be logical to undertake the sewer upgrade works (except the private pump stations) at the same time, minimising disruption and cost.

6.3.8.5 UNDERGROUND POWER AND STREET LIGHTING

Any redevelopment of the area which will increase power demands will necessitate significant upgrading of the existing infrastructure. This upgrade will include new high and low voltage cable, switchgear and transformers.

Western Power has also indicated that a new high voltage feeder from the Rivervale Zone Substation may be required for the proposed development; however, no formal feasibility study has been undertaken. This work is off-site, and will have no physical impact on the precinct, but may represent a cost to the development.

6.3.8.6 TELECOMMUNICATIONS

As part of the existing communications infrastructure within The Springs Precinct, Telstra has optic fibre cables in the Great Eastern Highway road reserve. These optic fibre cables have the capacity to service the proposed development.

6.3.8.7 SITEWORKS

The site is generally level and ranges from a high of 19m AHD to 15m AHD adjacent to the existing stormwater disposal basin in Rowe Avenue. The lots between Riverdale Road and the Swan River fall steeply from 17m AHD to 1m AHD.

Regional soil maps indicate the site is characterised by sand derived from Tamala Limestone. This sand is generally pale yellow, coarse grained, free draining and well suited for urbanisation.

The Regional Groundwater Atlas indicates that the groundwater regime falls from east to west with levels ranging from 6m AHD at Great Eastern Highway to 3m AHD at the River. The general sandy nature of the soils and separation to groundwater over the site indicates the suitability of stormwater disposal via on site soakage.

Geotechnical site investigations at various vacant lots have indicated the presence of uncontrolled fill material to a depth of 2m which is associated with past land uses.

The removal, screening and replacing these fill materials will be necessary to achieve an A site classification under Australian Standard AS 2870 1996.

6.4 DESIGN GUIDELINES/DETAILED AREA PLANS

The Built Form Design Guidelines document is an illustrative supporting document of the Structure Plan for The Springs. It is expected that the City will adopt the Guidelines as a Local Planning Policy and that Council will use the Guidelines as one of a raft of measures, including the Structure Plan and TPS 14 to control development in the precinct to achieve the desired outcomes.

The role of the Design Guidelines is to guide the development of built form in The Springs using the principles as supported by illustrative diagrams and photographs. The Guidelines are a tool for both developers, to understand in more specific terms the development vision, and for the City, to provide clear criteria against which development proposals can be assessed.

The Guidelines document defines the proposed character of the precinct's varied streetscapes and open spaces and illustrates how the interface between the built form should be treated in order to create pleasant public spaces in the streets and parks.

The intention of the guidelines is to also establish a framework for achieving quality built form, prescribing the nature of the architecture. Imaginative and varying architectural responses are supported within the document. A variety of architectural styles that respond to the public realm, the climate of the area and the natural landscape of The Springs is encouraged.

Where proposals do not conform to the requirements of the Design Guidelines, additional justification would be required to demonstrate how the proposal meets the principles of the guidelines and the merits of any alternative approach.

The key principles of the Guidelines are described in detail in the Guidelines document. In summary, these principles include:

- Building Height – should aim to create a three dimensional form reflecting the prominence of the south-east corner of the site as a regional landmark, the sharp rising of the Swan River escarpment and the relationship of streets and spaces in the Precinct; a border of high rise development along the eastern perimeter will frame the area and provide visual relationship with Burswood and the City;
- Street Edge Alignment – buildings to generally align with lot frontages to define the public realm of streets, public open spaces and semi-private courtyard spaces;
- Maximum Setbacks – street setback zones (or 'projection' zones) provide an area between building and street that allows for landscaping, terraces, balconies, entry porches, and other building and roof projections to be located;
- Public Art – encourage private development to incorporate public art through free-standing artworks, and in the detailing of built and landscape elements such as fencing, street furniture, paving etc;
- Corner Treatments – encourage articulated buildings that reinforce corner locations;
- Material Usage – promote innovative use of building materials, discouraging use of reflective glass, superficial and superfluous detailing, and excessive colour palettes;
- Noise Attenuation – building design should allow residents to maintain access to views, breezes and external amenity without being impacted by noise; and
- Sustainability – provide a mix of housing types, size and density, as well as good access to open space and transport; design should promote management of energy, water quality and quantity, indoor air quality and landscape.

The following is a description of the main characteristics of each of the proposed precincts, supported by some sectional details. The location of the sections is indicated in **Figure 22.**

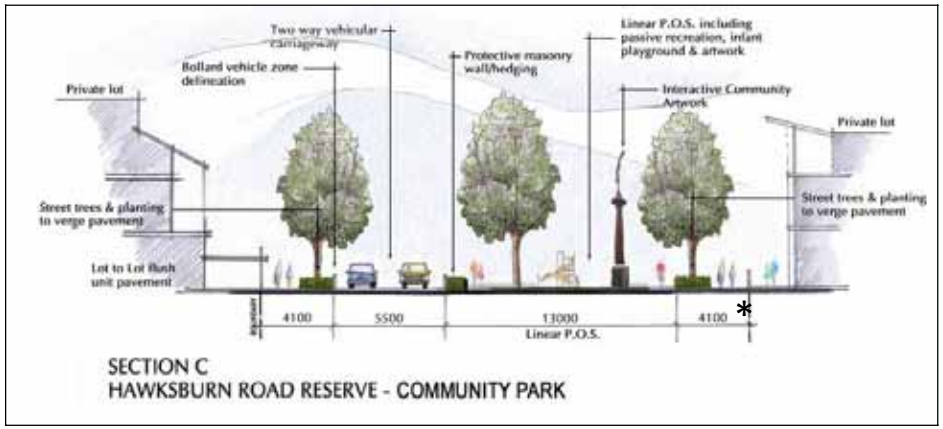
Figure 22: Plan Showing Sectional Views

6.4.1 HAWKSBURN ROAD

The desired street character for the section of Hawksburn Road between Riversdale Road and Rowe Avenue is for an intimately scaled, tree-lined residential promenade characterised by a 3 to 4 storey streetscape of townhouse type units.

Individually demarcated dwelling units are encouraged through a predominantly vertical articulation along the street. Each unit is proposed to have an individual entry directly off the street and a front garden separated from the public realm by a low garden wall.

A typical cross-section of the proposed Hawksburn Road is shown at **Figure 23.**



** The matter of bicycle safety and connectivity on the east side of Hawksburn Road extending from Great Eastern Highway to Riversdale Road to be addressed at the detailed design stage.*

Figure 23: Section AA - Hawksburn Road Reserve – Community Park between Rowe Avenue and Riversdale Road

Recognising that the proposed local recreation reserve directly abuts land earmarked for redevelopment under the Structure Plan, it will be important to ensure that such development is designed so that its interface with the park provides a high standard of visual amenity, safety and surveillance, particularly through the use of visually permeable fencing and positioning of doorways, windows and balconies addressing the park. This will be reinforced by specific reference in the Design Guidelines. Given that the abutting sites have yet to be created through amalgamation/subdivision, more detailed requirements may also be specified through the requirement for Detailed Area Plans as a condition on the WAPC Approval.

6.4.2 ROWE AVENUE

Rowe Avenue will perform a 'main street' role within The Springs, by connecting abutting urban areas, through The Springs to key internal destinations. Refer to **Figure 24** for the proposed cross-section of Rowe Avenue.

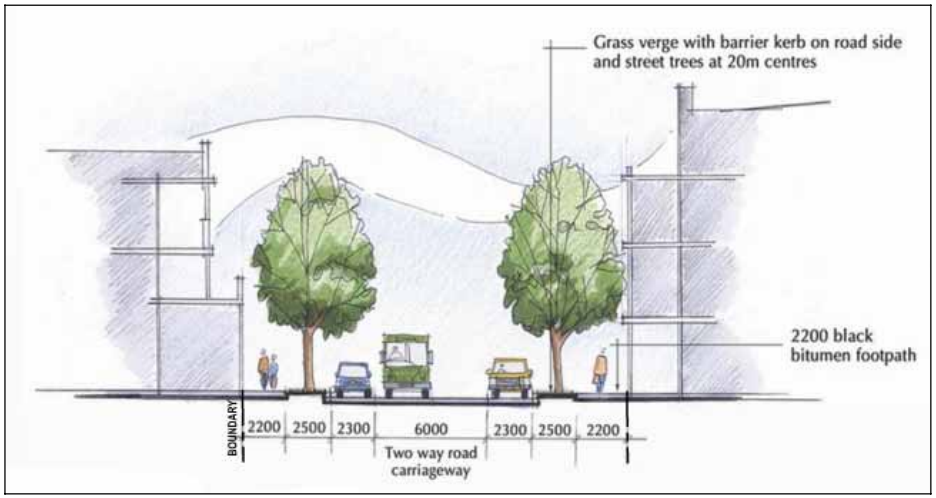


Figure 24: Section BB - Proposed Rowe Avenue Streetscape

6.4.3 ROWE AVENUE – WEST RESIDENTIAL TOWERS

This is a new street section which will form a western extension of Rowe Avenue. The western perimeter of The Springs is proposed to support up to 9 storey apartment buildings in a landscape setting. Refer **Figure 25**.

The proposed 9 storey height limit of the buildings is likely to create a well articulated and visually interesting internal edge to The Springs.

Special attention is required in regard to the design of these buildings as the development will become the external presentation of The Springs.

The eastern edge of Rowe Avenue will provide a consistent podium of up to 3 storeys that will reduce scale at the street activate the street edge with terrace type housing units.

This new street is proposed to be a generously scaled, tree lined residential avenue, with each unit providing an individual entry directly off the street, separated from the public edge by a subtle variation in height and a 3m deep 'projection zone' – i.e. a front setback to the front boundary designed to allow for landscaping, balcony, roof and other projections.

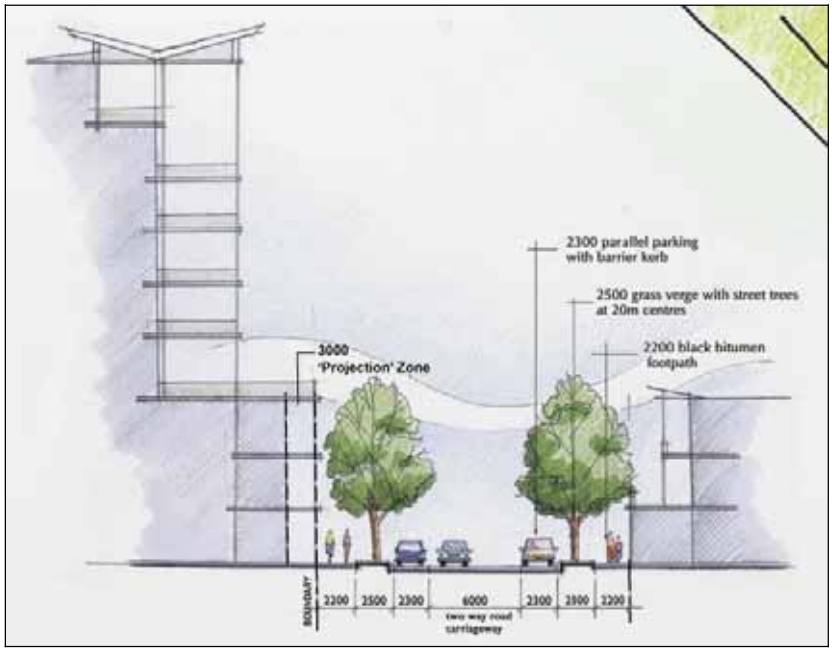


Figure 25: Section CC - West Residential Towers – New Road Reserve

6.4.4 ROWE AVENUE – EAST RESIDENTIAL

Terrace and walk-up housing in landscaped courtyard setbacks provide a distinct residential frontage to a prominent local access road.

This region will predominately comprise residential housing up to 4 storeys of demarcated building units.

6.4.5 ROWE AVENUE – EAST MIXED USE

The eastern portion of Rowe Avenue is proposed act as a 'transitional' area from the commercial uses located along Great Eastern Highway and the more moderately scaled internal residential streets.

Predominantly residential in character, this area will comprise building units of up to four storeys.

At the intersection of Hawksburn Road, Rowe Avenue will be designed as a 'shared' pedestrian and vehicle street environment, with commercial uses occupying the southern corners.

Residential units will contain either shared access for upper level apartments or individual access for ground level and live/work office frontages. Commercial buildings will comprise entry directly off the street. Parking will be accessed from side boundary crossovers and garaging away from the street.

The street scale along Rowe Avenue primarily will support three and four storey mixed-use buildings.

The treatment of Hawksburn Road will be of a different character, being more commercial in nature, with additional height, up to six storeys, to punctuate the junction. Paving on Hawksburn Road will signify a shared pedestrian/vehicular environment, to offer a more open and appealing approach to the pedestrian underpass. **Figure 26** shows a typical cross-section illustrating this treatment.

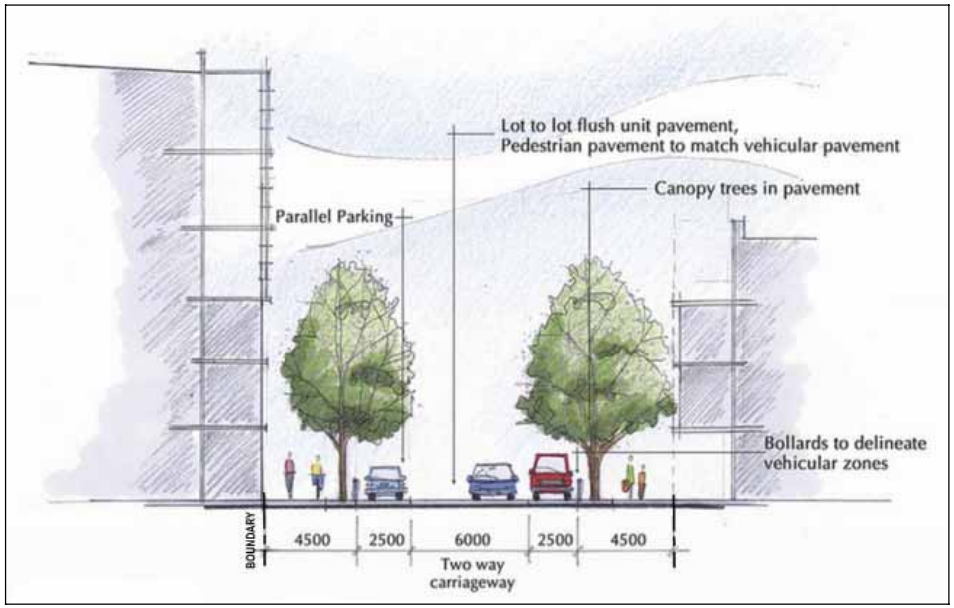


Figure 26: Section DD - Proposed Hawksburn Road Streetscape- Mixed Use south of Rowe Avenue

Recognising that the proposed local recreation reserve directly abuts land earmarked for redevelopment under the Structure Plan, it will be important to ensure that such development is designed so that its interface with the park provides a high standard of visual amenity, safety and surveillance, particularly through the use of visually permeable fencing and positioning of doorways, windows and balconies addressing the park. This will be reinforced by specific reference in the Design Guidelines. Given that the abutting sites have yet to be created through amalgamation/subdivision, more detailed requirements may also be specified through the requirement for Detailed Area Plans as a condition on the WAPC Approval.

6.4.6 GREAT EASTERN HIGHWAY

The Great Eastern Highway will present itself as a strong, unified commercial and mixed-use edge for the precinct, characterised by commercial activities at lower levels in buildings with a four-storey height limit. Upper level residential units will be setback from the building edges.

6.4.7 RIVERSDALE ROAD – SOUTH

The south portion of Riversdale Road will act as a local through road linking the Hawksburn Road 'parkway' with Cracknell Park as illustrated in the cross-section in **Figure 27**.

The land uses are proposed to comprise primarily residential punctuated with corner shop/café/restaurant opportunities at the Hawksburn Road intersection.

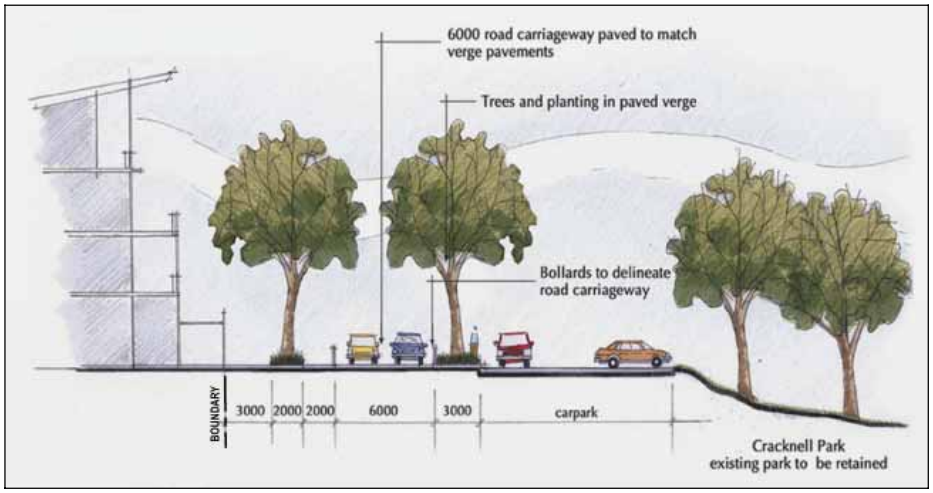


Figure 27: Section EE - Riversdale Road Reserve adjacent to Cracknell Park and Hawksburn Road Intersection

6.4.8 RIVERSDALE ROAD – NORTH

The northern portion of Riversdale Road is proposed to be a leafy boulevard with an activated residential street edge comprising apartment blocks, in a well-landscaped riverfront setting.

The leafy street will provide a shared vehicle pedestrian space, leading individuals through the 'heart' of The Springs via the proposed Hawksburn Road linear park to Cracknell Park and the river.

Riverfront buildings will be spaced well apart, with varied setbacks and heights that reflect the steep foreshore escapement.

Recognising that the western boundary of Cracknell Park abuts private land earmarked for redevelopment under the Structure Plan, it will be important to ensure that such development is designed so that its interface with the park provides a high standard of visual amenity, safety and surveillance, particularly through the use of visually permeable fencing and positioning of windows and balconies overlooking the park. This will be reinforced by specific reference in the Design Guidelines. More detailed requirements may also be specified through the requirement for a Detailed Area Plan to be approved prior to Council considering a development approval or, if subdivision or amalgamation is proposed, as a condition on the WAPC Approval.

It is proposed that Cracknell Park edges should contain visitor activities such as a restaurant, cafe, kiosk, and/or visitor accommodation.

6.4.9 HIGHWAY PENINSULA

The land on the corner of Great Eastern Highway and Graham Farmer Freeway is referred to as the Highway Peninsula because of its strategic position at the gateway to both the Perth CBD and the City of Belmont.

The proposed landmark Highway Peninsula site provides a key marker for The Springs redevelopment area as well as the City gateway. Visible from all directions, the proposed form of development on the Highway Peninsula is intended to highlight the corner location and provide a distinctive identity for The Springs. The Guidelines promote a strong, iconic structure, up to 16-17 storeys in height overlooking the abutting private open space area and addressing the more intimate internal streets and open spaces with a 2-3 storey residential interface.

Recognising that the proposed local recreation reserve directly abuts land earmarked for redevelopment under the Structure Plan, it will be important to ensure that such development is designed so that its interface with the park provides a high standard of visual amenity, safety and surveillance, particularly through the use of visually permeable fencing and positioning of doorways, windows and balconies addressing the park. This will be reinforced by specific reference in the Design Guidelines. Given that the abutting sites have yet to be created through amalgamation/subdivision, more detailed requirements may also be specified through the requirement for Detailed Area Plans as a condition on the WAPC Approval.

6.5 PRECINCT DEVELOPMENT REQUIREMENTS

The principles described in Section 6.4, together with the intended landuse and height described in 6.3, have been utilised to formulate the following Precinct Development Table. Development should be undertaken in conformity with the table.

TABLE 3: PRECINCT DEVELOPMENT TABLE

	Precinct	RCode	Min. Height	Max. Height	Min. side setback	Min. front setback	Max. front setback	Proportion of max. 60m^2 plot ratio floor area	Proportion of max. 90m^2 plot ratio floor area
1	Hawksburn Road	R60	6 m	17 m and 4 storeys	nil	3 m	5 m	-	-
2	Great Eastern Highway	Mixed Use R80 and R100	6 m or 2 storeys	27 m and 6 storeys	RCodes/BCA	Podium: Nil Above podium: 4m		15%	15%
3	Highway Peninsula	Mixed Use R250	30 m	Podium: 15 m Tower: As per Sched. 9, TPS 14	Podium adjacent to Rowe Ave: Nil 10 m all other boundaries	Rowe Avenue Podium: nil		15%	15%
4	Riversdale Road North	R100/160	As per Detailed Area Plans					15%	15%
5	Riversdale Road South	R60 and R80	East of Hawksburn: 6 m or 2 storeys West of Hawksburn: 6 m or 2 storeys	East of Hawksburn: 17 m / 4 storeys West of Hawksburn: 27 m and 6 storeys	RCodes/BCA	Rowe Ave: 2 m Cnr Rowe/Hawksburn: Rowe – nil Hawksburn – 2 m Cnr Hawksburn/ Riversdale: nil	Rowe Ave: 2 m Cnr Rowe/ Hawksburn: Hawksburn – 2 m Cnr Hawksburn/ Riversdale: 3 m	-	-
6	Rowe Avenue East - Residential	R60 and R80	6 m or 2 storeys	17 m and 4 storeys	RCodes/BCA	General: 3 m Rowe (mid-block): 2 m Cnr Rowe and Hawksburn: nil to Rowe Ave, 2 m to Hawksburn Road	General: 5 m Rowe (mid-block): 4 m Cnr Rowe and Hawksburn: 4 m to Hawksburn Road	-	-
7	Rowe Avenue East – Mixed Use	R 100 and Mixed Use R80	6 m or 2 storeys	17 m and 4 storeys	RCodes / BCA	Nil	3m	15%	15%
8	Rowe Avenue West – Residential Towers	R160	Podium: 6 m or 2 storeys	Podium: 15 m or 3 storeys	Podium: nil	Podium: nil	Podium: 5 m	15%	15%
			Tower 15 m and 3 storeys	Tower 30 m and 9 storeys	Tower: 25% frontage width (50% total)	Tower: 5 m	Tower: n/a		

For each precinct, the following requirements shall apply:

i) The RCode/densities are to be read as numerically proportional to dwellings and not floor space

ii) For the whole structure plan area, in respect of single bedroom dwellings that are multiple dwellings, sub Clause 6.1.3 A3 (i) of the Residential Design Codes (Variation 1) is varied by substituting the words “the minimum site area may be reduced by up to one third” with “the minimum site area per dwelling may be reduced by up to one half”. This density bonus of 50% can be achieved on the basis that the additional dwellings will be less than or equal to $60m^2$.

iii) Within each of the Precincts 2, 3, 4, 7 and 8, a minimum of 15% of the total number of dwellings developed shall be a maximum of $60m^2$ in plot ratio area and a further 15% of the total number of dwellings shall be a maximum of $90m^2$ in plot ratio area, the number as calculated being rounded up or down as appropriate.

iv) This table is to be read in conjunction with the more detailed provisions of The Springs built form guidelines, regarding requirements for laneway/rear setbacks, facades, articulation, projections, fenestration and general built form character.

6.6 RELATIONSHIP TO LIVEABLE NEIGHBOURHOODS COMMUNITY DESIGN CODES

The Springs has been designed in accordance with the principles of the Liveable Neighbourhoods (LN) Community Design Code, as far as possible, given that the site is largely constrained. The precinct is a unique redevelopment site with excellent access to major arterial transport routes and public transport, being in close proximity to the Perth CBD and abuts the Swan River.

LN emphasise the need for Context Analysis, Site Analysis and responsive design rationale. In the case of The Springs the 'Context and Walkable Catchments' plan (shown previously as **Figure 8**) demonstrates the opportunities for the proposed inner-city urban village, for all residents and visitors whether on foot, riding a bicycle or bus, or driving a car. Almost all the residents of the proposed development will be located within 400 m of shopping facilities and 700-750 m walk to the Burswood rail station.

The principles of Liveable Neighbourhoods have been employed to both the existing and proposed modified grid layout of streets and the pedestrian/cycle network. The layout as a result, is highly permeable and connected with good legibility for both the proposed local residents and visitors to the redevelopment area. Transport and traffic management is described in detail in this report and further traffic and safety management techniques will be presented at the time of detailed subdivision design. Environmental impacts to the existing environment have been significantly minimised as specified within this document.

The provision of public open space has been discussed extensively with the Council and then DPI. Streetscapes within the precinct have also been given high landscape priority as they form a large part of the open space for this highly urbanised area.

7 IMPLEMENTATION

The Springs Structure Plan provides a clear planning framework as a basis to guide and control the redevelopment of the precinct.

The implementation of the development proposal is substantially assisted by the fact that the majority of the land is already suitably zoned Special Development Precinct under the City of Belmont TPS 14. This is the appropriate base zoning to facilitate structure planning and integrated development for the precinct.

There are, however, a number of further actions required to put in place all of the necessary guiding and regulatory framework to ensure that the vision is properly delivered. The following is a description of the key actions.

7.1 STRUCTURE PLAN ADOPTION

During the time of consideration of the Structure Plan, the City has undertaken Amendment No. 43 to introduce Structure Plan provisions into the Scheme. The Structure Plan should therefore be adopted by the City in accordance with Clause 10.18.10.2 of the Scheme.

7.2 INFRASTRUCTURE COST SHARING PROVISIONS

When land ownership within a development area, such as The Springs, is fragmented, it can often result in an inequitable distribution of the costs of development – initial developers are often required to bear considerable cost to provide 'up-front' infrastructure from which subsequent developers may then derive the benefit with little or no additional contribution. Also, some owners may find their land to be significantly burdened with public use requirements such as POS and drainage, which is intended for the use and benefit of the broader area. In such circumstances, the various costs and benefits of development can be more equitably distributed through the implementation of a cost sharing arrangement.

Such an arrangement is not integral to the implementation of the Structure Plan, and the ultimate delivery of the planning vision; however it is seen as advantageous, firstly, in helping initial developers to recover the high up-front costs, and secondly, in providing more equitable distribution of the cost of infrastructure provision.

In formulating Scheme Amendment No 43, Council considered including development contribution provisions, acknowledging that some development areas would need some form of cost sharing arrangement; however, the City opted not to include such provisions at that stage, choosing instead to wait until individual development areas define their own preferred cost sharing arrangements. In making this decision, the City recognised that a further amendment would be required at some later date, to introduce development contribution provisions. Such provisions may be important in areas where land ownership is fragmented, as is the case with The Springs.

Whilst Amendment 43 did not include generic cost sharing provisions, it did introduce new schedules for Development Contribution Areas (DCAs) (Schedule 14) and the Developer Contribution Plan (Schedule 15) for the purpose of listing those areas subject to development contribution arrangements, and including the area-specific cost contribution requirements. Provisions to be detailed in the Schedule would include details of the infrastructure works and other matters that are to be included as shared cost items, as well as the method of apportionment between landowners.

Amendment No. 53 has been initiated by the City and will introduce the Developer Contribution Plan for The Springs DA11. The actual costs will not be included in the schedule, as these need to be periodically reviewed and adjusted, without necessitating a scheme amendment.

A number of cost sharing options for integrating development were canvassed in consultation with the City and the then DPI, including Guided & Resumptive Development Schemes, Improvement Plans and developer contribution arrangements. After thorough analysis, the recommended approach is to introduce a cost sharing arrangement into TPS 14, modelled on the Draft Model Scheme Text provisions for Developer Contributions published in WAPC Planning Bulletin 41. This approach is favoured by both the City and the DPI.

This approach introduces a statutory framework to enable the equitable sharing of the various costs of development. The Draft Model Scheme provisions, and associated Planning Bulletins 18 and 41, identify the various matters that may be included as developer contributions, as well as method of apportionment, valuation etc.

Shared costs may cover infrastructure such as roads, services, POS and other public facilities normally required to be provided by the developer, as well as the costs associated with creating and implementing the contribution scheme (including professional fees, administration costs, interest, statutory fees, auditing etc.).

With the exception of demolition, no development or subdivision to create a lot shall occur in the Structure Plan Area until Amendment No. 53 is gazetted or an arrangement suitable to the Western Australian Planning Commission and the Council is approved that would permit developer contributions towards shared costs.

The complete detail of the proposed cost sharing arrangement for The Springs will be comprehensively described in the relevant scheme amendment, and considerable attention is currently being given to this issue. The specific detail of the infrastructure items to be included as shared costs has yet to be settled. As an indication, the following is a summary of the various infrastructure works which may typically be considered as shared costs in a contribution scheme. It should be noted that these items may not necessarily be included as shared costs, and final funding responsibility is to be negotiated between the City and State Government servicing authorities.

7.2.1.1 ROADWORKS TO EXISTING ROADS

ROAD PAVEMENTS

Existing roads of Riversdale, Rowe, Hawksburn and Malvern require rehabilitation.

PARKING

Embayed parking to be provided to all existing streets to define visitor-parking areas. Footpaths are proposed on both sides of existing and new roads.

7.2.1.2 DRAINAGE TO EXISTING ROADS

PIPEWORK

The drainage within existing roads does not meet current design standards. Additional pipework and pits are likely to be required within these roads.

GROSS POLLUTANT TRAPS (GPTS)

There is no control of pollutants at disposal locations and as a minimum GPTs should be installed at the Cracknell Park outfall and the Rowe Avenue basin.

STORM WATER STORAGE

An analysis of the current storage indicates that some minor flooding of the roads could occur in extreme storm events. Some additional storage will be required at both Cracknell Park and the Rowe Avenue basin. This could be achieved via soakwells at Cracknell Park and additional excavation at Rowe Street.

LAND REQUIREMENTS

The existing infiltration basin at Rowe Avenue will need to be extended to accommodate extreme storm events. This will require an additional area of land beyond the current site boundaries.

7.2.2 SERVICES

The following service upgrade requirements may be included as shared cost items:

SEWER

The existing lots fronting Riversdale Road south of Hawksburn Road do not currently have access to sewer. It is proposed that the cost to sufficiently sewer this area should be a shared cost for the precinct.

WATER

Some existing pipework in the area does not meet the standard necessary for the increased zonings and will require upgrading.

POWER

With the projected increased density of development, significant upgrades to the existing power infrastructures will be required. This will include additional transformers, switchgear and HV cabling.

7.2.3 LANDSCAPING

Landscaping to the precinct should form part of the shared costs and would consist of the following key elements:

- Streetscapes of fully automatic irrigation, soil preparation and turf grassing.
- Street trees.

- Great Eastern Hwy verge tree planting and street furniture.
- Street furniture of bollards, seats and bins.
- Improvements to Cracknell Park including the upgrade of Cracknell Park facilities, comprising of the access path and car parking.
- Great Eastern Hwy Entry Statement with feature wall, shrub/tree planting and lighting.
- Revision and implementation of the 1998 Foreshore Management Plan, for that portion of the foreshore which immediately abuts the Springs Redevelopment Area (applying to the Riversdale Road precinct abutting the Swan River).

7.2.4 ASSOCIATED SCHEME COSTS

These are costs directly associated with the facilitation of the development and ongoing management of the project by the City of Belmont. The shared costs for The Springs, in this regard may include:

- All costs associated with the administration and management including bank charges; audit fees; fees for certification of estimated costs; office and sundry costs; legal expenses; valuation fees; caveat and conveyancing fees; officer time costs; cadastral survey costs and other technical consultant fees associated with the design and implementation of infrastructure items.
- Any other professional and statutory costs incurred in preparing and administering the Town Planning Scheme provisions including, if appropriate, funding of a Scheme Manager, periodic reviews of the Cost Contribution Schedule.

These costs typically represent only a minor proportion of the total shared cost requirement.

7.3 DESIGN GUIDELINES

The Guidelines are an important component of the overall Structure Plan guiding framework; however, they should not be regarded as prescriptively as the Structure Plan, with the underlying intent being as important as the stated provisions. In cases where it can be demonstrated that the intent of the Guidelines can be more effectively achieved in a different way, then Council should have sufficient flexibility to consider such cases on their merit.

It is therefore recommended that The Springs Design Guidelines be adopted as a Local Planning Policy pursuant to Clause 2.3 of the Scheme.

Under Clause 2.3, a Local Planning Policy can include:

- Policy Area
- Policy Objectives
- Application of Policy
- Policy Statement
  - Site requirements (energy efficiency, geotechnical
  - Residential density
  - Building setbacks
  - Building forms
  - Access and parking
  - Private open space
  - Materials and colours
  - Fencing/retaining walls
  - Services
  - Special precinct requirements

The Design Guidelines for The Springs have been drafted in a format which can be readily adopted as a Local Planning Policy.

7.4 DETAILED AREA PLANS

Detailed Area Plans are required to be prepared prior to subdivision and/or development (except demolition of existing structures) in accordance with Clause 10.18.16 of the Scheme in the following circumstances:

1. For those lots adjacent to Cracknell Park and the Rowe Avenue Amphitheatre to address interface issues. The Detailed Area Plans are to address:

   - Minimum and maximum setbacks from the public open space;
   - Requirement for habitable rooms to overlook the public open space;
   - Visually permeable fencing; and
   - Acceptable intrusions into the setback area.

2. Riversdale Road North precinct. The Detailed Area Plan must address the following:

   - The whole precinct or if the City of Belmont and WAPC agree, a portion of the precinct;
   - Creation and preservation of significant sight lines (or view corridors) to and from the Swan River;
   - Overshadowing;
   - Control of building bulk via setbacks;
   - Response to topography;
   - Articulation of podium and tower elements;
   - Address to street and public realm.

In addition to Clause 10.18.16 of the Scheme requiring City of Belmont adoption, a Detailed Area Plan within the Riversdale North Precinct, or portion of the precinct as agreed to above, must be endorsed by the WAPC.

7.5 SUBDIVISION

Following finalisation of the Amendment No. 53 and adoption of the Structure Plan, subdivision and amalgamation applications can be lodged with the WAPC in the normal manner. Initially, subdivision is likely to occur to enable land rationalisation, particularly in relation to the various properties acquired by LandCorp, prior to the commencement of the major infrastructure works.

The subdivision/amalgamation process will actually be necessary to create some key elements of the project, such as the new road connection from Great Eastern Highway and the new subdivisional roads between Rowe Avenue and Riversdale Road

To expedite approval procedures, subdivision applications are likely to be lodged concurrently with Council's consideration of the Structure Plan and Amendment No. 53.

7.6 ROAD CLOSURE

Following conditional subdivision approval, it is necessary to undertake the closure and acquisition of a portion of Hawksburn Road to be created as a Reserve for Recreation.

7.7 CRACKNELL PARK PUBLIC OPEN SPACE

Following endorsement of the Structure Plan, the City of Belmont is to prepare and register a restrictive covenant in favour of the Western Australian Planning Commission over Cracknell Park restricting its use for recreational and related purposes.

8 CONCLUSION

The vision of The Springs is that of an attractive inner urban residential area containing a mix of medium to high density housing types and commercial uses, with high quality public spaces offering strong connections to the river, public transit and regional road and pedestrian systems.

New buildings in The Springs will complement the street character and public spaces. Housing density and architecture is intended to keep building height to a human scale at the street, to ensure that the streets and other public spaces will provide an appealing, liveable environment.

The Springs redevelopment project has been the subject of considerable discussion and consultation over a protracted period of time. Over that time, the development concept has undergone various changes in design and direction. The Structure Plan design has evolved as a result of the extensive consultative process with the local community, State Government planning, and the local authority.

The Structure Plan reflects the uniqueness of the site as an important urban renewal area, which has direct frontage and access to the Swan River and is in close proximity to the Perth CBD. It also considers the fragmented landownership within the precinct and addresses the staging of the redevelopment.

The extensive research and consultation that has been undertaken in exploring the various design concepts means that the current Structure Plan is supported by a thorough and comprehensive information base.

The various components of the Master Plan, Structure Plan, and Design Guidelines, collectively provide a clear guide for future development of The Springs to ensure that the objectives for this exciting vision are achieved to the highest standard.

The Springs Structure Plan is commended to the City and the WAPC for formal adoption as a basis for supporting the various implementation actions necessary to deliver the vision.

APPENDIX A
ARBORICULTURAL REPORT

Arboricultural Assessment

The Springs

Prepared for

Plan E

February 2006

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Insurance Details:

Public Liability	CGU Insurance Ltd	$20 million
Professional Indemnity:	CGU Insurance Ltd	$5 million
Workers Compensation:	GIO Australia	as per Western Act

CONTENTS

Purpose of Report ____ Page 1

Overview ____ Page 2

Tree Assessment Criteria ____ Page 3

Tree Assessment Results ____ Page 4 - 7

Potential Transplants ____ Page 8

Tree Preservation ____ Page 9

Design Guidelines for Tree Preservation ____ Pages 10 – 13

Tree Preservation Strategies During Construction ____ Pages 14 & 15

Opinion ____ Page 16

Recommendations ____ Page 17

Appendix ~ Tree Data Inventory

PURPOSE OF THE REPORT

A site inspection (3rd February 2006) of the area of proposed development known as 'The Springs' to:

- Assess the overall health, vigour and structural form of the identified specimens on site,
- Provide general comments on the suitability of retention of the vegetation present (in view of inclusion within a development),
- Provide purposeful and practical recommendations for any design implications that will apply in an effort to minimise the impact of the development on any tree identified to be retained, and
- Provide purposeful and practical recommendations for tree preservation strategies to be adopted during the construction phases of the development to minimise the impact on any tree identified to be retained.
- Provide recommendations for any remedial canopy works required in view of risk management responsibilities.

OVERVIEW

Tree preservation is an important part of responsible development and ecological sustainability.

Whilst not all trees are good candidates for retention, and while preserving every tree on site may not be feasible, those that are identified for incorporation into the design become valuable assets and require a comprehensive strategy to help ensure their survival.

It is important to note that it is the tree's absorbing root zone (generally found in the initial 300 – 500 mm of the soil profile) that is primarily responsible for the health, vigour, and overall aesthetic appearance of the trees canopy. It is therefore essential that the treatment of a trees root-zone becomes the primary concern when designing and constructing an area of development adjacent existing trees.

Selecting specimens for retention within an area of proposed development will be governed by a number of criteria:

i. Current tree health conditions, with a view to the likelihood of the specimen(s) tolerating and surviving long term root zone disturbance generally associated with development activities.

ii. Current structural form, with a view to risk management responsibilities, and the potential for an increased amount of potential targets (i.e. people, structures etc.) within the trees 'fall line'.

iii. Species suitability for inclusion into an area of urban environment, and the propensity for the given species to cope with the parameters that are created in an urban environment (i.e. decreased soil oxygen due to compaction, increased un-seasonal watering from irrigation, increased pollution, increased radiated heat/light from urban infrastructure (roads, walls, buildings etc.).

NOTE: An "opinion category" has been allocated to each tree based on the above mentioned criteria, the results of which can be found in the appendix of this report.

Trees are amazing organisms which can adapt to numerous scenarios and changes in their environment. However, with their inclusion into an area of increased potential targets there must be a focus towards risk management responsibilities. This may in some instances be at the detriment of an individual, or group of, specimen trees.

Inclusion of high risk poor quality structured trees and/or trees in a poor health condition will lead to an increased likelihood of future tree related issues to arise, and a potential for unnecessary expense to occur due to maintenance requirements and/or potential litigation.

es existing health/structural characteristics, and the suitability of the inclusion of the specimen into the proposed development based on known species characteristics (in view of risk management responsibilities).

TREE ASSESSMENT CRITERIA

Tree hazard assessment incorporates a wide variety of criteria to assess the viability of retaining and successfully managing any given tree in an area of potential target (public, property, structures etc.) in view of risk management responsibilities.

Unless the tree is of particular note for its species and/or has significance with the history/heritage of the local area, site safety must become the primary criteria especially in areas with a large number of potential 'targets' (people, structures, property etc.).

HEALTH CONDITION ~ Each tree has been visually assessed to determine its current health from inspection of the leaf and canopy condition and the presence (or absence) of any pests/disease which may have an adverse effect on tree health.

Good: Favourable foliage and leaf characteristics, comparatively low volume of deadwood material. Good development of wound wood. It may include isolated minor cavities, decay, and minor insect attack.

Average: Modest volume of deadwood material. Various lesions and stem damage. Foliage may be light in cover and various decay portions. Canopy may have a high proportion of epicormic regrowth.

Poor: Lacking foliage cover, poor leaf and foliage characteristics, high volume of canopy deadwood material and associated decay.

Declining: Canopy shows indications of defoliation, indicative of a decline in health and vigour.

Dead: Canopy shows <20% live/photosynthetic material in its entire canopy.

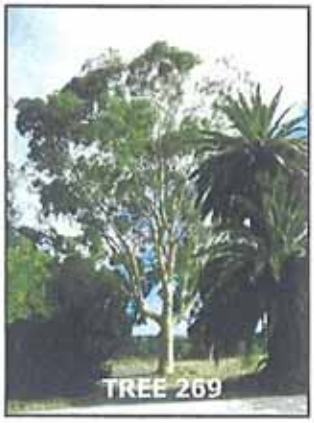
STRUCTURAL CONDITION ~ Structural integrity was determined from a visual inspection of the main stem, branch unions, and root zone of the specimen.

Good: No major visible structural disorders, acceptable branch attachments stem extension and taper. May include minor stem cavities but indicate healthy, strong wound response tissue.

Acceptable: Some structural disorders present, but they can be managed through remedial tree surgery. It may also include undesirable stem designs that are within a scope of Arboricultural care and tree surgery applications.

Poor: Multiple structural disorders present in the canopy. It may also include trees that are recommended for removal based on individual requirements, have a high proportion of cavities, and/or associated decay. Severely/repeatedly lopped specimens will often be included in this category. Specimens displaying visible indications of root plate movement, 'heave,' and/or soil cracking.

TREE ASSESSMENT RESULTS



A total of **323** 'significant trees' were inspected against the previously mentioned criteria.

Overall the tree population present on site is seen to be in a reasonable condition in both health and structure. There are some fine specimens of semi-mature Jacaranda along Rowe Avenue which given the correct Arboricultural care during the construction phases of the development could continue to mature and provide a valuable amenity for the area for many decades to come.

There are also a number of mature Spotted Gum, Lemon Scented Gum, Sugar Gum, Jacaranda, Stone Pine, and Hills Fig which are all good specimens of the species.

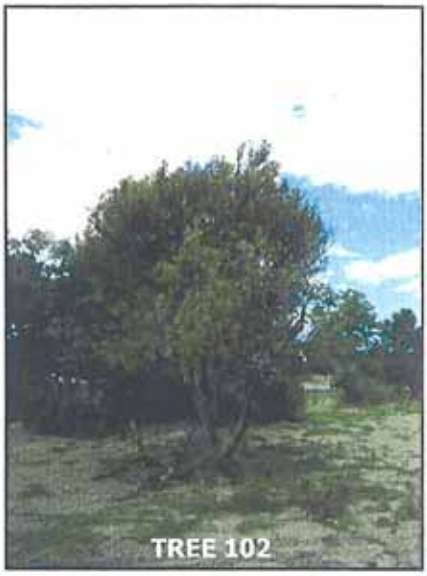
Due to their size, stature, and current condition, these specimens should be considered for retention within the proposed development (which may come at the detriment of other specimens nearby) providing preservation guidelines to be detailed in this report can be adhered to during all planning and construction phases of the development.

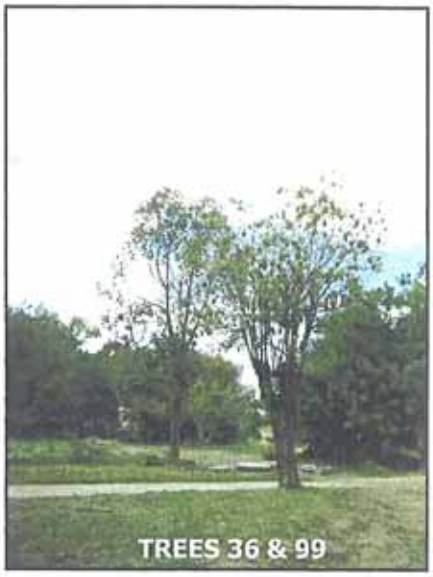
A total of **57 'Category 1'** trees were noted on site, (based on the previously mentioned criteria as specified on pages 2 & 3 of this report). These trees all currently show good health, vigour, structural form, and are of a suitable species for inclusion into the proposed development.

23 of these were seen as particularly good specimens of their species. This includes trees; 94, 142, 149, 150, 169, 188, 200, 220, 229, 235, 239, 243, 245, 247, 251, 253, 255, 257, 267, 268, 309, & 314.

An additional 3 of these 57 category specimens are of particular note (trees 64, 212, and 269), and they are strongly recommended to be retained and preserved.

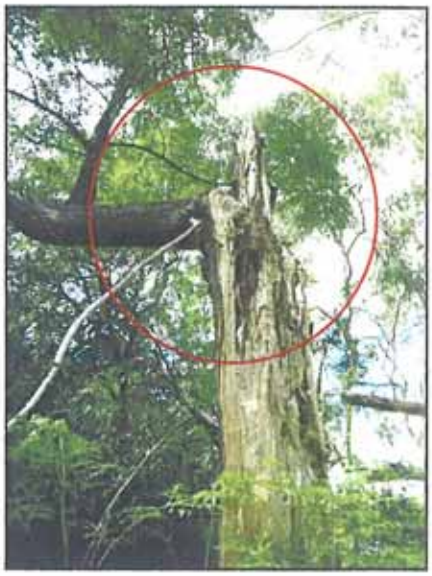
TREE ASSESSMENT RESULTS





As with any tree population there are a number of dead and declining specimens which are strongly recommended for removal.

Flame Tree (*Erythrina indica*)
Previously lopped, poor stem attachment, potential future issues



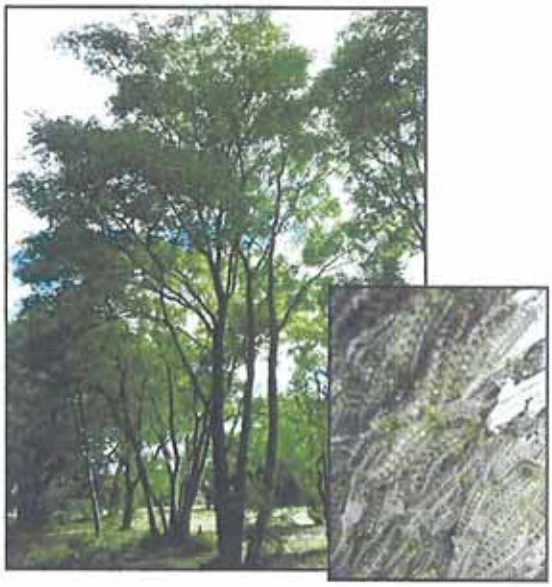
White Cedar (*Melia azedarach*)
Top has snapped out.

There are also a number of specimens with poor structural form (as seen in the above images). Retention of trees with a poor structural form has long proven to lead to an increased potential for future tree related issues to arise (i.e. stem failures).

As such these specimens are also recommended for removal.

TREE ASSESSMENT RESULTS

Brazilian Pepper (*Schinus terebinthifolius*)
Seen as an undesirable species due to their natural growth characteristics, potential for suckering, and canopy management issues.



White Cedar (*Melia azedarach*)
Although there are some fine specimens on site, they are also seen an undesirable species due to suckering issues, litter issues, and the presence of the White Cedar Moth.

There are also a number of 'undesirable' species, and specimens, which if retained are expected to cause an increased extent of future tree related issues (i.e. site safety, litter, pest/disease issues), which will undoubtedly lead to increased maintenance (expense) requirements, and an increased potential for litigation issues to arise.

In total, **148** trees are **recommended for removal.**

NOTE: Although this number may seem excessive, removal of these specimens will address not only current and potential risk management and the relevant legal responsibilities as a 'tree owner', but also allow the remaining tree population present to further mature unimpeded.

64 of these trees are situated in areas of road reserve, and have been previously and repeatedly lopped to provide necessary clearances for overhead powerlines (before they had been relocated underground).

Lopping (also referred to as 'topping') is a very destructive form of tree pruning, which encourages potentially dangerous regrowth with inherently weaker stem attachment points.

Poor pruning practices can also lead to an increased risk of decay occurring at the pruning points due to a continual breach in the walls of compartmentalisation (the trees natural process of sealing off wounds and potential decay), and stem failures also often occur due to the pressure from adjacent stems as they expand over time as part of their natural growth process.

Due to the breakdown of the wood structure occurring from the decay activity the risks of stem failure will undoubtedly increase. This factor will be compounded when consideration is given to the expected increase in canopy mass over time (as part of the natural growth process) on top of weaker and decaying stem unions, and gravitational/environmental factors.

As such trees that have been repeatedly lopped (generally speaking) are always recommended for replacement. NOTE: Replacement of these trees can occur in stages over a number of years if desired in an effort to minimise the potential for a public 'outcry' whilst addressing the relevant risk management and legal responsibilities as a tree owner.

The majority of the remainder of the trees that are recommended for removal are located in areas of proposed block development, where tree preservation would undoubtedly impact on the development potential of the block.

The remaining trees present on site (**175** individual trees) all show to have good health, vigour, and structural form at this time. Inspections of their respective root-zones showed no noticeable indications of any heaving, cracking, or root plate movement, and as such they all appear to be root stable at this time.

Retention of these trees should be considered providing the tree preservation guidelines to be detailed in this report can be adhered to during all design and construction phase of the development.

CANOPY MANAGEMENT

The majority of these remaining trees do however require an extent of minor canopy works to remove any major deadwood, attend to any manageable structural defects, regulate canopy mass/branch foliage loads, and /or to encourage future structural form.

All tree works are to be undertaken by suitably qualified and experienced tree surgeons, and must comply with Australian Standards 4373 (1996) ~ *Pruning of Amenity Trees.*

A full table of the assessment results, with the recommended preservation zones has been provided in the appendix of this report.

POTENTIAL TRANSPLANTS



During the inspection, it was noted that there is a reasonable number of potential transplant specimens on site.

This includes a number of Jacaranda's, Norfolk Island Pines, Brachychiton species, Date Palms, Olives, Loquats, a Liquidambar and a number of smaller White Cedars.

Consideration should be given to their use for relocation to suitable areas on site in the event they are currently located in an area which may impede on the development.

Approximately **40** trees have been identified as **suitable transplant specimens**.

In many instances a degree of root zone preparation works will be required prior to the relocation of tree, and as such further discussions with a reputable transplant company will be required to ascertain the budgetary requirements and any time frame constraints that will apply.

A full table of the assessment results, with the recommended preservation zones has been provided in the appendix of this report.

TREE PRESERVATION

In an effort to ensure that any tree on site is able to continue to mature and provide the desired amenity, preservation strategies will need to be implemented during all planning and construction phases of the development.

Successful retention of any of the trees on site will require a measured response to any construction activities that could result in root loss/damage, which in turn can result in having an adverse effect on future tree health. The extent of the effect will be proportionate to the extent of the root loss/damage occurring. Severe root loss/damage may also cause stability issues to arise.

Each individual tree must therefore be given a zone of protection (during all phases of the design and construction) based on existing tree dimensions. There must be a focus towards protecting an appropriate root mass. This area must be treated as a 'Tree Preservation Zone' throughout all phases of the development, from site clearance works through to soft landscaping. NOTE: Recommended preservation zones provided for each tree in the appendix of this report are in metres radius of the trees main stem.

Design implications as outlined in this report on an individual tree basis will be crucial to their successful retention, as it has proven to become a difficult, potentially expensive, and time consuming exercise to implement tree preservation strategies once site plans have been finalised.

With this in mind, it is important to take into consideration all construction methods, materials and design when in proximity to trees to be retained.

Further arboricultural input at the design and planning stages will be required to discuss;

i. Proposed resulting levels in the vicinity of trees to be retained.
ii. Drainage delineation and installation.
iii. Underground services delineation and installation.
iv. Building restrictions in the vicinity of trees to be retained.
v. Landscaping restrictions (including irrigation design and installation) within preservation root zones.
vi. Erosion and siltation control (if applicable).
vii. Watering requirements during construction (supplementary watering volumes to be determined on a specimen specific basis).
viii. Specific root zone protection requirements prior to and during construction phases.
ix. Extent of canopy works required to facilitate construction works and building clearances.

The following pages provide guidelines for designing and constructing around any tree highlighted for retention.

An extent of further Arboricultural input will however be required throughout the development design process to make comment on individual trees 'earmarked' for retention and any specific individual requirements during the construction phases.

NOTE: In the event site design parameters do not allow for the adoption of the recommended tree preservation measures in a trees recommended preservation zone, then further Arboricultural input would be pertinent to discuss the development measures required and the future retention of the specimen(s) in question.

DESIGN GUIDELINES FOR TREE PRESERVATION

1. GROUND LEVELS

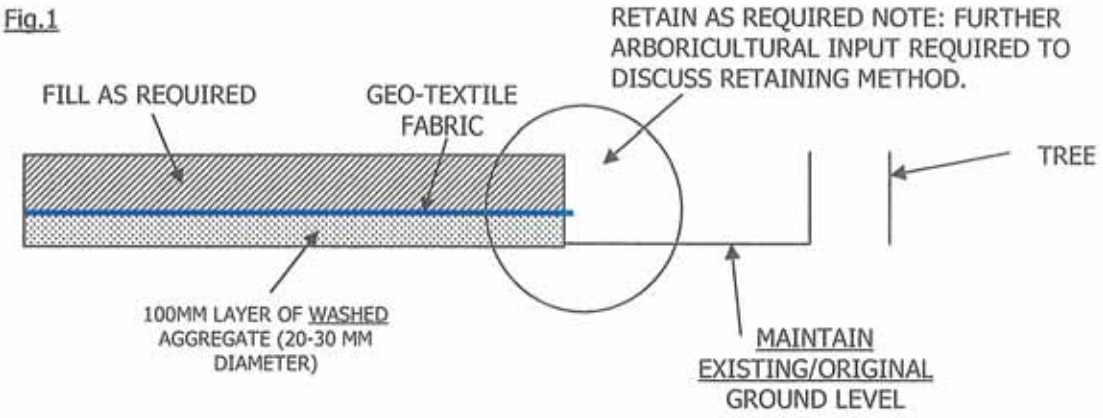
As previously mentioned in this report, the majority of 'feeding' roots can be found in the top 300 – 500mm of the soil profile, where the soil oxygen, water, and nutrient levels are high. Retention of this soil profile will be vital for future tree health and vigour. To this extent, the retention of existing ground levels within a prescribed preservation zone during all stages of the development will be required to ensure successful preservation of a specimen.

In the event of ground level alterations (i.e. lowering) occurring immediately outside of the preservation zone, root pruning will need to be undertaken using approved Arboricultural methods and equipment along the perimeter of the preservation zone.

Raising ground levels can also affect the long-term health and vigour of a tree due to a reduction in gas exchange and water levels.

If soil levels are to be raised by a large amount (i.e. more than 300mm) over extensive areas of a trees root-zone (i.e. 40% or more) then consideration must be given to the use of an aggregate layer to allow for gas exchange to continue to occur (refer Fig 1.) whilst the tree adapts to the new environment and attempts to develop a new absorbing root system within the areas of fill.

Fig.1



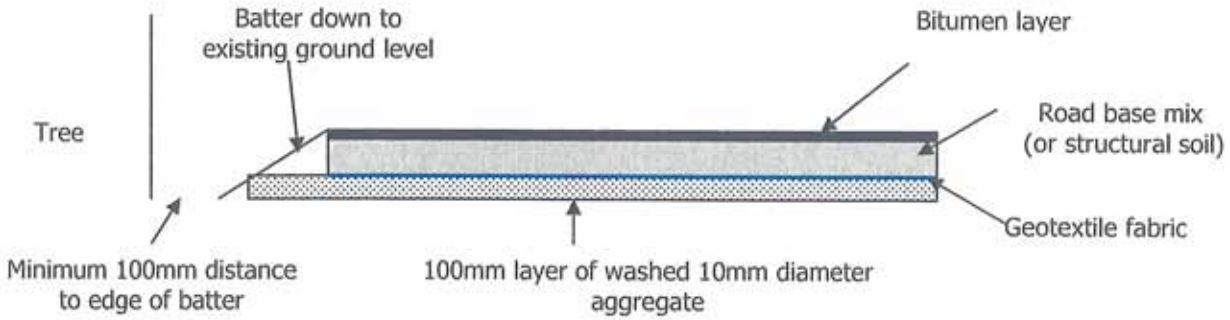
It is also important not to allow for any build up of fill to occur around a trees main stem as this can cause collar rot to occur, effectively ring barking the tree (albeit long-term).

Any required alterations to the ground level within a preservation zone will therefore require a degree of further Arboricultural input to discuss extent of excavation permissible and any required remedial/compensatory actions to be undertaken.

2. ROAD DELINEATION/CONSTRUCTION

In the event of a road being delineated through a trees' preservation zone, general road construction methods will often result in an unacceptable level of root loss/damage. To this extent any proposed road to be delineated through a trees preservation zone is to be constructed on top of existing ground level (i.e. no excavations/boxing out). *NOTE: To prevent fill around base of trees (which will lead to the onset of decay), either grade down from back of kerbing to existing ground level, or use of a washed aggregate (30-40mm diameter) for this area.*

FIG. 1.

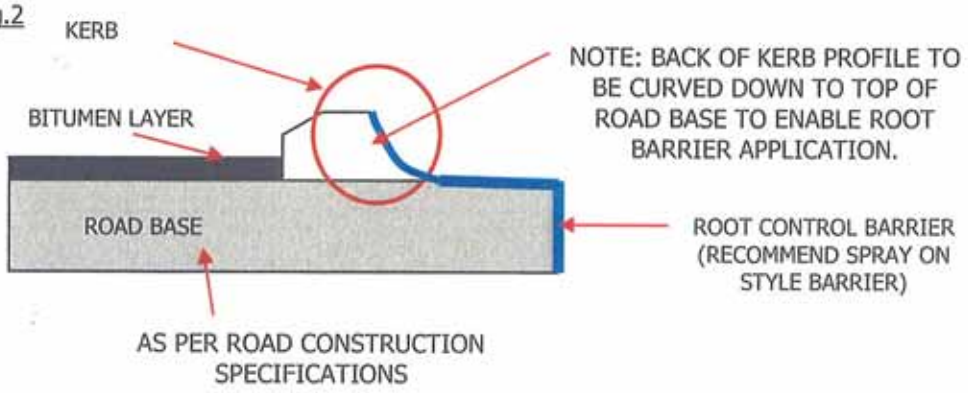


NOTE: Alternatively a structural soil mix can be used as a road base, which is considered the preferable option as this material will not require the use of an additional aggregate layer.

The use of a structural soil mix for the construction of roads becomes important when the road passes through the preservation zone of a tree which is known to have a fibrous root system (i.e. over the zone where the trees hair roots (which are utilised for the uptake of water /nutrients essential for tree health, vigour and overall aesthetic appearance of the tree) are found. Tuarts are however of species of tree which are known to have an extensive arterial root system with the majority of hair (feeding) roots being located at the end of these major roots (i.e.). In these instances, where the road can effectively 'bridge over' the major lateral root growth, general road base material can be used. The treatment of the verge areas on the opposite side of the road will however become important to the future of the tree.

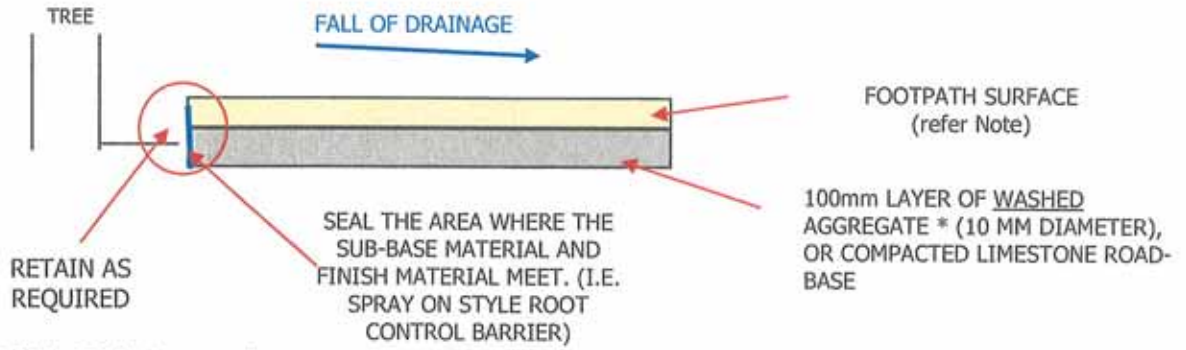
Consideration should also be given to the installation of kerb protection measures to prevent future disturbance occurring through surface root 'invasion' (Refer Fig.2)

Fig.2



Alternative design and construction methods will also be required in the event of footpaths being constructed within a given preservation zone. (Refer Fig.3), with the footpath constructed on top of existing ground level.

Fig. 3



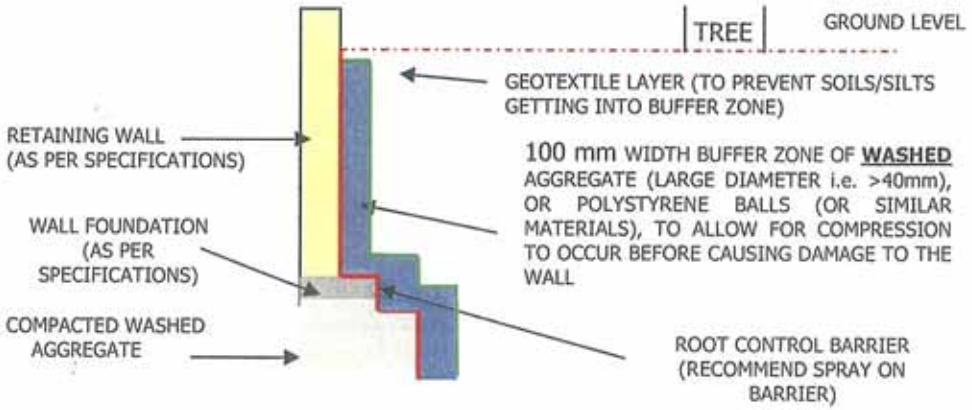
* Note: In instances wher er a trees preservation zone, alternative surface materials (i.e. porous paving on an aggregate sub-base) for the footpath will need to be considered to allow for water and gaseous exchange to occur. Furthermore, the footpath may need to be narrowed or delineated around the main stems of trees to allow for main stem and structural root expansion to occur without causing disruption to the 'urban infrastructure' (i.e. path).

3. RETAINING WALLS

Preferably, all retaining walls on site are to be constructed outside of prescribed preservation zone(s). In the event a retaining wall is required to be constructed within a prescribed preservation zone a degree of further Arboricultural input will be pertinent to discuss wall delineation and extent of excavation permissible within a preservation zone and provide any remedial/compensatory actions required to be undertaken prior to wall construction commencing.

Further to this wall design may require a degree of protection measures to prevent future disturbance occurring through surface root 'invasion'. (Refer Fig. 4)

FIG. 4



4. DRAINAGE/SEWERAGE DELINEATION/CONSTRUCTION

Drainage installation (stormwater, sewerage etc.) will often require major excavations which can also cause excessive root loss/damage. In an effort to preserve the appropriate root mass **all stormwater/sewerage required are to be delineated outside of prescribed preservation zones, unless drainage can be installed utilising bore/underground drilling methods.**

NOTE: Root pruning will need to be to be undertaken using approved Arboricultural methods and equipment along the perimeter of the preservation zone, in the event of drainage/sewer installation occurring immediately outside of a prescribed preservation zone.

Road stormwater and gully traps are to be installed at furtherest point from the tree (i.e. on the opposite side of the road to a tree where applicable, or in the middle of the road in the event of trees being on both sides of the road), with the fall of drainage for the road to be away from the tree to be retained.

5. UNDERGROUND SERVICES DELINEATION/INSTALLATION

Preferably all services (i.e. telecom, gas, power, water and other telecommunications) are to be delineated/installed outside of a prescribed preservation zone. In the event of services being required to pass through a preservation zone, all services are to be installed utilising underground drilling/boring methods. NOTE: **This includes all services required for the buildings** (i.e. Telstra, power, gas, water, Foxtel, irrigation etc.).

In the event of such methods becoming impractical, further Arboricultural input will be required to discuss extent of excavation permissible within a preservation zone and any required remedial/compensatory actions to be undertaken.

6. EROSION CONTROL

In the event of retained trees being located in or adjacent to a slope of greater than 25 degrees, it is recommended that an approved erosion control or silt barriers be installed outside the preservation zone to prevent erosion/silting within a preservation zone.

7. SOFT LANDSCAPING

Any soft landscaping works required within previous preservation zones are to be subject to the approval of the consulting Arborist, and all soft landscaping works required within a tree preservation zone are to be completed in a tree sensitive manner, without the use of heavy impact machinery (excavators, bobcats etc.)

Permanent irrigation design and watering program for the area will also need to be subject to the opinion and approval of the consulting Arborist to prevent unnecessary root loss/damage occurring prior to installation.

PRESERVATION GUIDELINES DURING CONSTRUCTION

8. SITE CLEARING

The location of trees to be retained is to be marked on site maps and provided to all contractors/sub-contractors utilised on site with details of regulations specific to tree preservation.

Physical fencing of the prescribed preservation zone area is recommended with minimum 1.8 metre cycle fencing (or similar), in conjunction with clear identifiable flagging tape on posts. NOTE: In instances where trees are directly adjacent each other, treating the entire area as a single preservation zone is seen as a more practical and economical approach.

These preservation zones are to be clearly marked as NO-GO zones during construction works without prior written consent from the consulting Arborist. During demolition/site clearing works, ensure contact does not occur with the canopy/main stem of the specimen from plant machinery.

In the event of trees requiring removal adjacent a specimen to be retained, the removal must be undertaken by hand (i.e. without the use of heavy impact machinery) to avoid any possibility of unnecessary damage occurring.

9. TREE CANOPY WORKS

Minor canopy works to remove major deadwood material (for site safety reasons), and to raise canopies (only where required to accommodate plant machinery) is recommended for any tree retained on site.

Once major civil works have been completed, selective pruning works to thin canopies and enhance the aesthetics of the trees, and to provide greater clearances over the buildings can also be undertaken if desired.

All tree works are to be undertaken by suitably qualified and experienced tree surgeons, and must comply with Australian Standards 4373 (1996) ~ *Pruning of Amenity Trees.*

A degree of site supervision by a consulting Arborist is pertinent to ensure appropriate standards are utilised.

10. WATERING REQUIREMENTS

To compensate for any root loss and site disturbance during development construction, compensatory watering regimes will need to be implemented.

Water volumes and frequency are to be determined on a specimen specific basis and/or pending results of any root pruning undertaken.

Water volumes are to be broadcast evenly over given preservation zones via conventional irrigation methods or hand watering methods.

11. SPECIFIC PRESERVATION ZONE PROTECTION REQUIREMENTS

At all stages of the development measures must be undertaken to protect any prescribed preservation zone. This will need to include:

- Maintain protective fencing (recommend 1.8metre cyclone or similar) to prevent access/egress. NOTE: This also enables the clear delineation of preservation zones. NOTE: Fencing is not to be removed or altered without prior consent from the consulting Arborist.
- Use of 100mm layer decomposed wood chip mulch (to aid in water retention and to act as a protective barrier against tree related issues e.g. compaction, possible toxin spills (if risk of contamination, then replenish in a tree sensitive manner i.e. without use of heavy impact machinery such as bobcats, excavators, loaders etc.) in areas directly adjacent the development.
- Maintain vehicular, plant and construction equipment outside of prescribed preservation/protected zones.
- Building materials are not to be stored within the protection zone.
- Signage to clearly identify that the area is for tree preservation purposes only

12. ACCOUNTABILITY

All contractors/sub-contractors utilised on site are to be made aware of location of preserved specimen trees and general preservation guideline requirements (suggest include in the site induction process), and are to 'sign off' that they have read and understood tree preservation zone guideline requirements. (To be provided.)

To ensure a degree of accountability from all contractors/sub-contractors utilised on site, penalties (amounts to be agreed) must be implemented for any damages (wilful or other wise) caused to any tree clearly situated in a prescribed preservation zone.

All damages to retained specimens with dates, offender and extent of damaged caused must be documented and reported to the consulting Arborist at the time of damage occurring, and any damaged specimen is to be inspected by the consulting Arborist, with details of extent of damage caused and remedial actions required.

During the periodic inspections, any discrepancies noted occurring in a preservation zone will, be documented and reported on accordingly. Discrepancies are to be rectified to the consulting Arborist's specifications within 24 hours of notice. All costs incurred for re-instating preservation zones and site inspections will be at the contractors own expense.

Repeated offences should incur increasing penalties (amounts to be determined).

13. MONITORING

Periodic inspections (suggest fortnightly) by the consulting Arborist throughout the development process are recommended to comment on the trees progress/preservation zone maintenance. *NOTE: Frequency of the inspections will be subject to the consulting Arborist's discretion depending on the maintenance of the tree preservation zone, and the co-operation of the civil/building works contractor.*

Pending the result of inspections remedial/preservation measures can be provided as necessary.

OPINION

There is a relatively large tree population within the area of proposed development, and although there are a number of good specimens, retention of all of these trees may not be feasible due to other site design parameters.

As with any existing and aging tree population, a number of specimens will require removal in view of risk management responsibilities.

Successful preservation of any tree on site will be dependent on site design and construction activities adopting the recommended tree preservation strategies as detailed in this report, and a number of specimens of note as detailed in this report must be considered for retention within the proposed development. Special consideration must be given to the retention of tree**s 64, 212, 269.**

In the event of other site design parameters not permitting the adoption of the recommended preservation measures, then the future of the specimen in question will need to be re-assessed in conjunction with a degree of further discussions with the consulting Arborist.

SUMMARY OF RECOMMENDATIONS

i. Remove 148 specimens as detailed in this report to ground level. NOTE: 64 are located in road reserve, and will require permission from the tree owner.

ii. In the event of tree removal occurring in the vicinity of a tree to be retained, then the tree being removed is to be removed in a manner as not to cause any damage to the adjacent tree(s).

iii. Consider all site design implications as detailed in this report to allow the retention of as many of the remaining specimens as practicable, with priority given to the category '1' trees. Particular attention should be given to the retention of trees 64, 212, 269 (which may come at the detriment of a number of the other remaining trees nearby).

iv. In particular the following site **design guidelines** are recommended:

(a) **Retain the existing ground level** (as seen during site inspection) in a prescribed Tree Preservation Zone.

(b) All services are to be delineated outside of prescribed preservation zones (unless they are to be installed using underground bore methods).

(c) Construct roads on top of existing ground level (i.e. no boxing out) in the event they pass though a prescribed preservation zones.

(d) Engage a consulting Arborist to review and provide comment on all plans (for the areas in the vicinity of the trees) prior to being submitted for final approval.

vii. Implement Tree Preservation Zones and protection measures as detailed in this report **during** all phases of the **construction** of the proposed development. In particular:

(a) Treat areas where trees are in close proximity together as a single tree preservation zone.

(b) **Physically fence off recommended preservation areas**, with signage to clearly identify that the area is for tree preservation purposes only **prior to any site clearing or construction works** being undertaken.

(c) Maintain vehicular, plant and construction equipment outside of prescribed preservation/protected zones.

(d) Building materials are not to be stored within the protection zone.

(e) Pending extent of works required in the vicinity of any given specimens, additional protection measures and watering programs may also need to be facilitated.

(f) Periodic inspections (suggest fortnightly) by the consulting Arborist during the development process to monitor the trees progress and maintenance of their preservation zones is also strongly recommended.

v. Consider use of suitable specimens (as detailed in the appendix of this report) as mature tree transplants for relocation to suitable areas on site in the vent they are currently situated in an area where they impede on the development.

vi. Undertake minor canopy works any tree retained to remove major deadwood and to regulate canopy mass/branch foliage loading.

vii. All tree works are to be undertaken by suitably qualified and experienced tree surgeons, and must comply with Australian Standards 4373 (1996) ~ *Pruning of Amenity Trees.*

viii. A degree of site supervision by the consulting Arborist would also be pertinent to discuss with the nominated contractor the desired outcomes.

APPENDIX I ~ TREE DATA INVENTORY

GLOSSARY OF TERMS

- **Tree Number;** Provides an identification number corresponding to the survey plan provided.

  NOTES:

  - Trees 113 & 277 were not located (possibly removed since the survey had been undertaken).
  - Two trees numbered 95 were located; one Brazilian Pepper near tree 96 and one Kaffir Plum near tree 78.
  - Tree 322 was allocated to a Liquidambar adjacent tree 241, and
  - Tree 323 has been allocated to a Jacaranda on Rowe Avenue (nr tree 186).

- **Species;** Identifies the tree species, providing both common and botanical name.

- **Estimated Height;** Provides an estimated of the health of the tree (in metres)

- **Estimated Trunk Calliper;** Provides an estimation of the trunk diameter (in mm) measured at 1.3 metres above ground level (industry standard).

- **Health Condition;** Provides information on the current existing health condition of the tree based on the predetermined criteria as detailed on page 3 of this report.

- **Structural Form;** Provides information on the current existing health condition of the tree based on the predetermined criteria as detailed on page 3 of this report.

- **Recommended Preservation Zone;** Provides the radius of the recommended area (in metres) which should be treated as a tree preservation zone.

- **Comment;** Provides any additional comment when deemed pertinent to the future management of the tree.

- **Opinion;** Provides an overall 'category rating' as to the trees significance within the area and proposed development. This is based on previously mentioned criteria (refer pages 2 & 3), tree age, species, habitat use, expected propensity to 'cope' with proposed development, overall stature of the specimen etc.

  1 ~ Denotes a good specimen or a specimen of particular note and efforts must be spent during the design and construction process to retain such specimens. A total of **57** fall into this category.

  2 ~ Denotes a reasonably good specimen and efforts should be made during the design/construction process to incorporate such specimens into the proposed development. A total of **42** fall into this category.

  3 ~ Denotes a fine specimen. Incorporating these specimens into the proposed development will be seen as a positive approach to tree retention where design/construction allows. A total of **74** fall into this category.

  0 ~ Denotes specimens not recommended for retention due to poor health and/or structural characteristics. A total of **148** fall into this category.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
1	Black Tea-tree	*Melaleuca bracteata 'revolution gold'*	4	300	Average - Good	Poor		0	Previously lopped, evidence of stem failure.
2	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable	3	0	Refer report; 2nd February 2006
3	Flame Tree	*Erythrina indica*	7	500	Average - Good	Acceptable	3	0	Refer report; 2nd February 2006
4	Flame Tree	*Erythrina indica*	7	500	Average - Good	Acceptable	3	0	Refer report; 2nd February 2006
5	Flame Tree	*Erythrina indica*	6	500	Average - Good	Acceptable	3	0	Refer report; 2nd February 2006
6	Spotted Gum	*Corymbia maculata*	10	300	Good	Acceptable	2	2	Structural defects within the canopy.
7	Silver Princess	*Eucalyptus caesia*	4	150	Good	Good	2	2	
8	Queensland Box	*Lophostemon confertus*	8	600	Good	Good	4	2	
9	Queensland Box	*Lophostemon confertus*	7	500	Average - Good	Good	4	2	Early indications of canopy decline.
10	Queensland Box	*Lophostemon confertus*	7	500	Dead	Poor		0	Recommended removal.
11	Bottlebrush	*Callistemon viminalis*	3	200	Good	Good	1	3	
12	Paperbark/Myrtle	*Melaleuca species*	5	300	Dead	Poor		0	Recommended removal.
13	Bottlebrush	*Callistemon viminalis*	5	300	Average	Good	2	3	
14	Bottlebrush	*Callistemon viminalis*	3	200	Good	Good	2	3	
15	Bottlebrush	*Callistemon viminalis*	4	200	Average - Good	Acceptable		0	Damage has occurred to the main stem during site clearing
16	Rottnest Island Tea-Tree	*Melaleuca lanceolata*	4	500	Good	Acceptable	5	2	Damage to root zone has occurred during site clearing
17	Hong Kong Orchid	*Bauhinia x blakeana*	6	300	Average	Acceptable	3	3	
18	Red Flowering Gum	*Corymbia ficifolia*	4	250	Good	Good	2	2	
19	White Cedar	*Melia azedarach*	10	400	Good	Acceptable		0	Previously lopped.
20	Kurrajong	*Brachychiton acerifolia*	5	300	Noticeable decline	Acceptable		0	Recommended removal.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
21	Red Flowering Gum	*Corymbia ficifolia*	6	500	Noticeable decline	Poor		0	Recommended removal.
22	Kurrajong	*Brachychiton acerifolia*	6	300	Good	Good	2	1	Transplantable specimen.
23	Brazilian Pepper	*Schinus terebinthifolius*	8	700	Good	Acceptable		0	Previously lopped. Undesirable species.
24	Brazilian Pepper	*Schinus terebinthifolius*	7	800	Good	Acceptable		0	Previously lopped. Undesirable species.
25	SA Yellow Gum	*Eucalyptus leucoxylon*	4	200	Good	Acceptable		0	Multiple stemmed specimen.
26	Jacaranda	*Jacaranda mimosifolia*	9	500	Good	Acceptable	3	2	Transplantable specimen, but has been previously lopped.
27	Spotted Gum	*Corymbia maculata*	12	500	Good	Good	5	1	
28	Spotted Gum	*Corymbia maculata*	14	500	Good	Poor		0	Relatively poor structural form - Recommend removal.
29	Spotted Gum	*Corymbia maculata*	10	300	Good	Poor		0	Stump regrowth - Recommended removal.
30	Rubber Tree	*Ficus elastica*	4	700	Average	Poor		0	Stump regrowth - Recommended removal.
31	Fiddlewood	*Citharexylum spinosum*	9	400	Good	Acceptable	3	3	Previously lopped.
32	Red Flowering Gum	*Corymbia ficifolia*	7	400	Good	Poor		0	Relatively poor structural form - Recommend removal.
33	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
34	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
35	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
36	Queensland Box	*Lophostemon confertus*	4	300	Noticeable decline	Poor		0	Previously lopped. Recommend removal.
37	Queensland Box	*Lophostemon confertus*	5	300	Noticeable decline	Poor		0	Previously lopped. Recommend removal.
38	Queensland Box	*Lophostemon confertus*	6	300	Average - Good	Poor		0	Previously lopped. Recommend removal.
39	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
40	Queensland Box	*Lophostemon confertus*	4	300	Average - Good	Poor		0	Previously lopped. Recommend removal.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
41	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
42	Spotted Gum	*Corymbia maculata*	15	400	Good	Good	5	1	
43	Queensland Box	*Lophostemon confertus*	10	400	Average - Good	Good	4	2	
44	Tuart	*Eucalyptus gomphocephala*	15	500	Good	Good	5	1	
45	Ironbark	*Eucalyptus sideroxylon*	17	500	Good	Good	5	1	
46	Queensland Box	*Lophostemon confertus*	7	350	Good	Good	3	2	
47	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
48	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
49	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
50	Queensland Box	*Lophostemon confertus*	4	200	Average	Acceptable - Poor		0	Relatively poor structural form - Recommend removal.
51	Jacaranda	*Jacaranda mimosifolia*	4	250	Good	Good	2	1	Transplantable specimen.
52	White Cedar	*Melia azedarach*	15	700	Dead	Poor		0	Recommended removal.
53	Brazilian Pepper	*Schinus terebinthifolius*	5	400	Noticeable decline	Poor		0	Recommended removal.
54	White Cedar	*Melia azedarach*	5	400	Poor	Poor		0	Recommended removal.
55	White Cedar	*Melia azedarach*	5	400	Noticeable decline	Poor		0	Recommended removal.
56	Flooded Gum	*Eucalyptus rudis*	24	1000	Good	Good	8	1	
57	Turkey Oak	*Quercus cerris*	4	300	Average - Good	Acceptable	2	1	Transplantable specimen.
58	Canary Island Date Palm	*Phoenix canariensis*	7	900	Good	Good	2	1	Transplantable specimen.
59	Flame Tree	*Erythrina indica*	6	350	Average - Good	Good	2	1	Transplantable specimen.
60	Jacaranda	*Jacaranda mimosifolia*	6	400	Good	Good	2	1	Transplantable specimen.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
61	Bottlebrush	*Callistemon viminalis*	7	500	Good	Good	3	1	Good specimen of the species.
62	Rubber Tree	*Ficus elastica*	8	700	Average - Good	Acceptable		0	Undesirable species - Recommended removal.
63	Umbrella	*Schefflera actinophylla*	4	200	Good	Good	1	3	Transplantable specimen.
64	Peppercorn	*Schinus molle*	18	1400	Good	Good	6	1	Exceptional specimen tree.
65	Cotton Palm	*Washingtonia robusta*	10	400	Good	Good	2	3	Transplantable specimen.
66	White Cedar	*Melia azedarach*	5	400	Average	Poor		0	Recommended removal.
67	Kurrajong	*Brachychiton acerifolia*	8	400	Good	Good	2	2	Transplantable specimen.
68	White Cedar	*Melia azedarach*	18	800	Noticeable decline	Acceptable	6	3	Pest/disease present.
69	White Cedar	*Melia azedarach*	8	300	Average	Poor		0	Recommended removal.
70	Coojong	*Acacia saligna*	4	400	Noticeable decline	Acceptable		0	Recommended removal.
71	Coojong	*Acacia saligna*	6	400	Average	Acceptable		0	Recommended removal.
72	Coojong	*Acacia saligna*	4	400	Average	Acceptable		0	Recommended removal.
73	Port Jackson Fig	*Ficus rubiginosa*	12	800	Good	Acceptable		0	Recommended removal - potential to cause damage to
74	Jacaranda	*Jacaranda mimosifolia*	6	400	Average	Poor		0	Previously lopped - Recommended removal.
75	Kaffir Plum	*Harpephyllum caffrum*	6	300	Good	Acceptable		0	Undesirable species - Recommended removal.
76	Umbrella	*Schefflera actinophylla*	4	200	Good	Good		0	Previously lopped.
77	Almond	*Prunus dulcis*	5	200	Noticeable decline	Acceptable		0	Doubtful it would survive development process.
78	Jacaranda	*Jacaranda mimosifolia*	17	600	Good	Acceptable	5	1	
79	WA Peppermint	*Agonis flexuosa*	17	900	Dead	Poor		0	Recommended removal.
80	White Cedar	*Melia azedarach*	10	400	Good	Poor		0	Recommended removal.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
81	White Cedar	*Melia azedarach*	17	800	Good	Acceptable		0	Previously lopped. Recommend removal.
82	Marri	*Corymbia calophylla*	20	500	Good	Good	6	1	
83	WA Peppermint	*Agonis flexuosa*	9	300	Good	Acceptable		0	Recommended removal. Multiple stems.
84	Jacaranda	*Jacaranda mimosifolia*	12	400	Good	Acceptable	4	3	
85	White Cedar	*Melia azedarach*	12	400	Good	Acceptable	4	2	Transplantable specimen.
86	White Cedar	*Melia azedarach*	8	400	Dead	Poor		0	Recommended removal.
87	White Cedar	*Melia azedarach*	20	800	Good	Acceptable		0	Previously lopped. Recommend removal.
88	Camphor laurel	*Cinnamomum camphora*	7	300	Good	Acceptable	2	3	Relatively poor structural form - Recommend removal.
89	Fiddlewood	*Citharexylum spinosum*	8	300	Average	Acceptable	3	3	Relatively poor structural form - Recommend removal.
90	White Cedar	*Melia azedarach*	15	600	Noticeable decline	Acceptable	4	3	Pest/disease present.
91	Umbrella	*Schefflera actinophylla*	5	300	Good	Acceptable	1	3	Transplantable specimen.
92	Cocos Palm	*Syagrus romanzoffiana*	8	400	Good	Good		0	Transplantable specimen.
93	Kurrajong	*Brachychiton acerifolia*	5	250	Average - Good	Good	2	2	Transplantable specimen.
94	Jacaranda	*Jacaranda mimosifolia*	17	700	Good	Good	5	1	Good specimen tree.
95	Kaffir Plum	*Harpephyllum caffrum*	6	300	Good	Acceptable		0	Undesirable species - Recommended removal.
96	Hong Kong Orchid	*Bauhinia x blakeana*	5	400	Average - Good	Good	3	2	
97	Rottnest Island Pine	*Melaleuca lanceolata*	7	300	Average	Acceptable - Poor		0	Relatively poor structural form - Recommend removal.
98	Brazilian Pepper	*Schinus terebinthifolius*	5	500	Average - Good	Acceptable		0	Previously lopped. Undesirable species.
99	Umbrella	*Schefflera actinophylla*	7	500	Good	Acceptable	2	3	Transplantable specimen.
100	Umbrella	*Schefflera actinophylla*	7	500	Good	Acceptable	2	3	Transplantable specimen.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
101	Pencil Pine	*Cupressus sempervirens 'Stricta'*	17	400	Good	Good	2	3	Damage to main stem evident.
102	Mock Orange	*Pittosporum rhombifolium*	4	300	Noticeable decline	Acceptable		0	Recommended removal - doubtful it would survive
103	Queensland Box	*Lophostemon confertus*	6	300	Noticeable decline	Acceptable		0	Recommended removal.
104	Brazilian Pepper	*Schinus terebinthifolius*	8	500	Good	Acceptable		0	Previously lopped. Undesirable species.
105	Brazilian Pepper	*Schinus terebinthifolius*	8	1000	Good	Acceptable		0	Previously lopped. Undesirable species.
106	WA Peppermint	*Agonis flexuosa*	5	1000	Average - Good	Acceptable	3	2	
107	Camphor laurel	*Cinnamomum camphora*	8	800	Good	Acceptable	5	3	Relatively poor structural form - Recommend removal.
108	Umbrella	*Schefflera actinophylla*	5	400	Good	Acceptable	2	3	Transplantable specimen.
109	WA Peppermint	*Agonis flexuosa*	8	1200	Average - Good	Good	3	2	
110	Mulberry	*Morus alba*	4	300	Good	Acceptable	3	3	
111	Brazilian Pepper	*Schinus terebinthifolius*	5	600	Noticeable decline	Poor		0	Recommended removal.
112	Queensland Box	*Lophostemon confertus*	7	400	Noticeable decline	Acceptable		3	Monitor health.
113	UNABLE TO LOCATE								
114	Queensland Box	*Lophostemon confertus*	6	300	Noticeable decline	Poor		0	Recommended removal.
115	Jacaranda	*Jacaranda mimosifolia*	8	400	Good	Good	4	1	Transplantable specimen.
116	Flooded Gum	*Eucalyptus rudis*	7	500	Average	Acceptable	3	3	
117	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
118	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
119	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
120	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
121	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
122	Flame Tree	*Erythrina indica*	5	400	Noticeable decline	Acceptable	2	0	Refer report; 2nd February 2006
123	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
124	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
125	Jacaranda	*Jacaranda mimosifolia*	15	400	Good	Good	4	1	
126	White Cedar	*Melia azedarach*	15	400	Average - Good	Acceptable	4	3	Pest/disease present.
127	Lillypilly	*Acmena smithii*	10	500	Good	Good	4	1	
128	Mulberry	*Morus alba*	4	400	Good	Poor		0	Relatively poor structural form - Recommend removal.
129	Mulberry	*Morus alba*	6	400	Good	Acceptable	3	2	
130	Flame Tree	*Erythrina indica*	8	600	Average - Good	Poor		0	Previously lopped. Recommend removal.
131	Bangalay	*Eucalyptus botryoides*	22	1000	Good	Acceptable	7	2	Remove adjacent Brazilian Pepper.
132	Jacaranda	*Jacaranda mimosifolia*	9	400	Good	Acceptable	4	3	Relatively poor structural form - Recommend removal.
133	Stone Pine	*Pinus pinea*	15	900	Good	Good	6	2	
134	Brazilian Pepper	*Schinus terebinthifolius*	5	200	Average	Poor		0	Recommended removal.
135	Camphor laurel	*Cinnamomum camphora*	12	700	Noticeable decline	Acceptable		0	Declining in health/vigour.
136	Flame Tree	*Erythrina indica*	7	400	Average	Poor		0	Recommended removal.
137	Cotton Palm	*Washingtonia robusta*	17	500	Good	Good	2	3	Transplantable specimen.
138	Brazilian Pepper	*Schinus terebinthifolius*	9	600	Average - Good	Acceptable		0	Recommended removal. Undesirable species.
139	White Cedar	*Melia azedarach*	9	400	Average - Good	Acceptable - Poor		0	Relatively poor structural form - Recommend removal.
140	White Cedar	*Melia azedarach*	9	400	Average - Good	Acceptable	4	3	Pest/disease present.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
141	White Cedar	*Melia azedarach*	10	600	Average - Good	Acceptable	4	3	Pest/disease present.
142	Jacaranda	*Jacaranda mimosifolia*	15	400	Good	Good	4	1	Good specimen tree.
143	Marri	*Corymbia calophylla*	4	300	Good	Acceptable	2	3	Multiple stems - undesirable structure for this species.
144	White Cedar	*Melia azedarach*	3	100	Good	Good	1	3	Transplantable specimen.
145	White Cedar	*Melia azedarach*	5	300	Good	Good	2	3	Transplantable specimen.
146	Sugar Gum	*Eucalyptus cladocalyx*	5	300	Good	Acceptable - poor	3	3	Undesirable structural from for the species.
147	Flame Tree	*Erythrina indica*	5	400	Average - Good	Acceptable	2	0	Refer report; 2nd February 2006
148	Sugar Gum	*Eucalyptus cladocalyx*	15	500	Noticeable decline	Poor		0	Recommended removal.
149	Bald Island Marlock	*Eucalyptus conferruminata*	18	600	Good	Good	6	1	Good specimen tree.
150	Sugar Gum	*Eucalyptus cladocalyx*	20	600	Good	Good	6	1	Good specimen tree.
151	White Cedar	*Melia azedarach*	3	200	Good	Acceptable	2	3	Transplantable specimen.
152	Narrow-leaved Paperbark	*Melaleuca linariifolia*	4	300	Average	Acceptable	2	3	
153	Narrow-leaved Paperbark	*Melaleuca linariifolia*	4	200	Average	Acceptable	2	3	
154	Plum Pine	*Podocarpus elatus*	4	200	Average	Poor		0	Recommended removal.
155	White Cedar	*Melia azedarach*	4	300	Good	Acceptable	2	3	Transplantable specimen.
156	White Cedar	*Melia azedarach*	7	500	Noticeable decline	Poor		0	Recommended removal.
157	Flooded Gum	*Eucalyptus rudis*	10	500	Good	Good	5	2	
158	Flooded Gum	*Eucalyptus rudis*	4	300	Good	Poor		0	Recommended removal. Undesirable structural form.
159	Honey Box	*Eucalyptus melliodora*	18	600	Good	Acceptable	5	2	
160	Fidus hillii	*Hills Fig*	17	600	Good	Good	6	1	Transplantable specimen. Good specimen.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
161	White Cedar	*Melia azedarach*	9	400	Average - Good	Acceptable	4	3	Pest/disease present.
162	White Cedar	*Melia azedarach*	6	300	Average - Good	Acceptable	3	3	Pest/disease present.
163	Illawara Flame Tree	*Brachychiton populneus*	6	300	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
164	Brazilian Pepper	*Schinus terebinthifolius*	12	700	Noticeable decline	Acceptable		0	Recommended removal. Undesirable species.
165	Brazilian Pepper	*Schinus terebinthifolius*	4	300	Noticeable decline	Acceptable		0	Recommended removal. Undesirable species.
166	White Cedar	*Melia azedarach*	12	500	Average - Good	Acceptable	6	3	Pest/disease present.
167	Coojong	*Acacia saligna*	5	400	Average - Good	Good		3	
168	Lillypilly	*Acmena smithii*	7	350	Good	Acceptable	4	3	Structural defects within the canopy.
169	Stone Pine	*Pinus pinea*	24	900	Good	Good	7	1	Good specimen tree.
170	Queensland Box	*Lophostemon confertus*	7	400	Average - Good	Poor		0	Previously lopped. Recommend removal.
171	Queensland Box	*Lophostemon confertus*	5	300	Average - Good	Poor		0	Previously lopped. Recommend removal.
172	Brazilian Pepper	*Schinus terebinthifolius*	6	400	Average	Poor		0	Recommended removal. Undesirable species.
173	Jarrah	*Eucalyptus marginata*	8	600	Average - Good	Acceptable	5	2	Some basal damage has occurred during site clearing.
174	Rubber Tree	*Ficus elastica*	12	700	Good	Good		0	Undesirable species - Recommended removal.
175	Fiddlewood	*Citharexylum spinosum*	10	400	Good	Acceptable	2	3	
176	Lombardy Poplar	*Populus nigra 'Italica'*	9	300	Average	Good	2	3	Undesirable species - Recommended removal.
177	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable	2	3	Transplantable specimen.
178	White Cedar	*Melia azedarach*	10	400	Noticeable decline	Acceptable		0	Declining in health/vigour.
179	Fiddlewood	*Citharexylum spinosum*	10	400	Good	Acceptable	3	3	
180	Lombardy Poplar	*Populus nigra 'Italica'*	9	300	Average	Good	2	3	Undesirable species - Recommended removal.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
181	Hibiscus species	*Hibiscus species*	3	300	Average - Good	Acceptable	2	3	
182	Jacaranda	*Jacaranda mimosifolia*	5	350	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
183	Jacaranda	*Jacaranda mimosifolia*	7	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
184	Jacaranda	*Jacaranda mimosifolia*	4	200	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
185	Kurrajong	*Brachychiton acerifolia*	3	300	Noticeable decline	Acceptable		0	Previously lopped. Recommend removal.
186	New Zealand Christmas Tree	*Metrosiderous excelsus*	8	1000	Average - Good	Acceptable	4	2	Previously lopped.
187	Jacaranda	*Jacaranda mimosifolia*	8	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
188	Jarrah	*Eucalyptus marginata*	7	600	Good	Good	4	1	Good specimen tree.
189	White Cedar	*Melia azedarach*	6	500	Average - Good	Acceptable	4	3	Pest/disease present.
190	White Cedar	*Melia azedarach*	7	500	Average - Good	Good	4	3	Pest/disease present.
191	Marri	*Corymbia calophylla*	15	500	Good	Good	5	2	
192	White Cedar	*Melia azedarach*	12	500	Noticeable decline	Poor		0	Recommended removal.
193	White Cedar	*Melia azedarach*	15	500	Noticeable decline	Acceptable - Poor		0	Relatively poor structural form - Recommend removal.
194	White Cedar	*Melia azedarach*	17	900	Average	Acceptable		0	Previously lopped. Recommend removal.
195	White Cedar	*Melia azedarach*	17	900	Noticeable decline	Acceptable		0	Previously lopped. Recommend removal.
196	Brazilian Pepper	*Schinus terebinthifolius*	9	500	Average - Good	Poor		0	Recommended removal. Undesirable species.
197	Umbrella	*Schefflera actinophylla*	6	400	Good	Acceptable	2	2	Transplantable specimen.
198	White Cedar	*Melia azedarach*	8	500	Average - Good	Poor		0	Previously lopped. Recommend removal.
199	White Cedar	*Melia azedarach*	20	700	Good	Good	4	2	
200	White Cedar	*Melia azedarach*	22	800	Good	Good	6	2	Good specimen tree.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
201	White Cedar	*Melia azedarach*	20	500	Good	Poor		0	Relatively poor structural form - Recommend removal.
202	White Cedar	*Melia azedarach*	20	700	Average - Good	Poor		0	Previously lopped. Recommend removal.
203	White Cedar	*Melia azedarach*	20	500	Good	Acceptable	5	3	Structural defects within the canopy.
204	White Cedar	*Melia azedarach*	22	700	Good	Acceptable	5	3	Structural defects within the canopy.
205	White Cedar	*Melia azedarach*	15	500	Good	Good	5	2	
206	White Cedar	*Melia azedarach*	12	400	Good	Good	3	2	
207	Almond	*Prunus dulcis*	6	300	Good	Acceptable	3	2	
208	White Cedar	*Melia azedarach*	15	300	Average - Good	Acceptable - Poor		0	Relatively poor structural form - Recommend removal.
209	White Cedar	*Melia azedarach*	17	400	Good	Acceptable	4	3	
210	White Cedar	*Melia azedarach*	17	400	Good	Acceptable	4	3	
211	White Cedar	*Melia azedarach*	17	400	Good	Acceptable	4	3	
212	Moreton Bay Fig	*Ficus macrophylla*	20	3000	Good	Good	9	1	Exceptional specimen tree.
213	Flooded Gum	*Eucalyptus rudis*	17	900	Average - Good	Good	6	1	
214	Flooded Gum	*Eucalyptus rudis*	10	400	Good	Good	4	1	
215	Flooded Gum	*Eucalyptus rudis*	7	400	Good	Poor		0	Relatively poor structural form - Recommend removal.
216	White Cedar	*Melia azedarach*	8	400	Good	Good	2	3	Transplantable specimen.
217	Olive	*Olea europa*	5	300	Good	Good	2	2	Transplantable specimen.
218	Illawara Flame Tree	*Brachychiton populneus*	10	900	Noticeable decline	Acceptable		0	Declining in health/vigour. Doubtful it would survive
219	White Cedar	*Melia azedarach*	18	400	Good	Acceptable	3	3	
220	White Cedar	*Melia azedarach*	22	1000	Good	Good	5	1	Good specimen tree.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
221	White Cedar	*Melia azedarach*	22	600	Good	Poor		0	Relatively poor structural form - Recommend removal.
222	White Cedar	*Melia azedarach*	20	500	Good	Acceptable	4	3	Structural defects within the canopy.
223	White Cedar	*Melia azedarach*	18	500	Good	Acceptable	5	3	Structural defects within the canopy.
224	Brazilian Pepper	*Schinus terebinthifolius*	12	600	Average - Good	Acceptable		0	Recommended removal. Undesirable species.
225	Brazilian Pepper	*Schinus terebinthifolius*	10	400	Average - Good	Acceptable		0	Recommended removal. Undesirable species.
226	White Cedar	*Melia azedarach*	18	400	Good	Poor		0	Relatively poor structural form - Recommend removal.
227	Brazilian Pepper	*Schinus terebinthifolius*	8	600	Average - Good	Acceptable		0	Recommended removal. Undesirable species.
228	Jacaranda	*Jacaranda mimosifolia*	15	400	Good	Acceptable	4	1	Transplantable specimen.
229	Lemon Scented Gum	*Corymbia citriodora*	25	1000	Good	Good	8	1	Good specimen tree.
230	Norfolk Island Hibiscus	*Lagunaria pattersonii*	10	400	Good	Good	3	2	
231	White Cedar	*Melia azedarach*	18	400	Good	Poor		0	Relatively poor structural form - Recommend removal.
232	White Cedar	*Melia azedarach*	18	700	Good	Poor		0	Relatively poor structural form - Recommend removal.
233	Flame Tree	*Erythrina indica*	5	400	Noticeable decline	Poor		0	Recommended removal.
234	Jacaranda	*Jacaranda mimosifolia*	15	400	Good	Acceptable	4	1	Transplantable specimen.
235	Jacaranda	*Jacaranda mimosifolia*	20	600	Average - Good	Good	5	1	Good specimen of the species.
236	White Cedar	*Melia azedarach*	18	500	Average	Poor		0	Previously lopped. Recommend removal.
237	White Cedar	*Melia azedarach*	18	400	Average	Poor		0	Previously lopped. Recommend removal.
238	Brazilian Pepper	*Schinus terebinthifolius*	8	400	Average	Poor		0	Previously lopped. Recommend removal.
239	Fidus hillii	*Hills Fig*	17	600	Good	Good	6	1	Good specimen tree.
240	Mulberry	*Morus alba*	4	400	Good	Good	3	1	

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
241	Brazilian Pepper	*Schinus terebinthifolius*	5	300	Average - Good	Acceptable		0	Recommended removal. Undesirable species.
242	White Cedar	*Melia azedarach*	10	500	Noticeable decline	Acceptable		0	Declining in health/vigour. Recommend removal.
243	Fidus hillii	*Hills Fig*	17	600	Good	Good	6	1	Good specimen tree.
244	Norfolk Island Pine	*Araucaria heterophylla*	12	400	Good	Good	3	1	Transplantable specimen.
245	Stone Pine	*Pinus pinea*	12	500	Good	Good	4	1	Good specimen tree.
246	WA Peppermint	*Agonis flexuosa*	5	200	Good	Good	2	2	Transplantable species
247	WA Peppermint	*Agonis flexuosa*	10	800	Good	Good	5	1	Good specimen tree.
248	Flooded Gum	*Eucalyptus rudis*	18	600	Good	Acceptable	6	2	Multiple stemmed specimen.
249	Flooded Gum	*Eucalyptus rudis*	12	400	Noticeable decline	Acceptable		0	Declining in health/vigour.
250	Flooded Gum	*Eucalyptus rudis*	18	1000	Good	Acceptable	6	1	Old specimen. Some structural defects within the canopy.
251	Lemon Scented Gum	*Corymbia citriodora*	20	900	Good	Good	6	1	Good specimen tree.
252	Flooded Gum	*Eucalyptus rudis*	22	1000	Good	Good	6	1	Good specimen tree.
253	Stone Pine	*Pinus pinea*	20	1000	Good	Good	7	1	Good specimen tree.
254	Common Sheoak	*Allocasuarina fraseriana*	5	300	Noticeable decline	Acceptable		0	Recommended removal.
255	Fidus hillii	*Hills Fig*	17	600	Good	Good	6	1	Good specimen tree.
256	Fidus hillii	*Hills Fig*	10	600	Good	Acceptable	5	1	Previously lopped.
257	Flooded Gum	*Eucalyptus rudis*	17	700	Good	Good	5	1	Good specimen tree.
258	Queensland Box	*Lophostemon confertus*	8	500	Good	Acceptable	2	3	Structural defects within the canopy.
259	Flooded Gum	*Eucalyptus rudis*	15	400	Good	Acceptable	3	3	
260	Flooded Gum	*Eucalyptus rudis*	15	400	Good	Acceptable	3	3	

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
261	Sugar Gum	*Eucalyptus cladocalyx*	17	1000	Average - Good	Acceptable	6	2	Structural defects within the canopy.
262	Bangalay	*Eucalyptus botryoides*	25	900	Good	Good	6	1	Structural defects within the canopy.
263	Flooded Gum	*Eucalyptus rudis*	15	1000	Good	Acceptable	6	2	
264	Bangalay	*Eucalyptus botryoides*	25	900	Good	Acceptable		0	Previously lopped. Recommend removal.
265	Tamarisk	*Tamarix aphylla*	15	500	Good	Acceptable		0	Undesirable species - Recommended removal.
266	Sugar Gum	*Eucalyptus cladocalyx*	12	400	Average	Acceptable	3	3	Relatively poor structural form - Recommend removal.
267	Tuart	*Eucalyptus gomphocephala*	22	600	Good	Good	7	1	Good specimen tree.
268	Sugar Gum	*Eucalyptus cladocalyx*	22	600	Good	Good	7	1	Good specimen tree.
269	Lemon Scented Gum	*Corymbia citriodora*	25	1000	Good	Good	9	1	Exceptional specimen tree.
270	Canary Island Date Palm	*Phoenix canariensis*	15	1000	Good	Good	2	1	Transplantable specimen.
271	Canary Island Date Palm	*Phoenix canariensis*	8	1000	Good	Good	2	1	Transplantable specimen.
272	White Cedar	*Melia azedarach*	4	300	Good	Acceptable - poor	2	3	Relatively poor structural form - Recommend removal.
273	Flame Tree	*Erythrina indica*	5	350	Average	Poor		0	Recommended removal. Previously lopped.
274	Flame Tree	*Erythrina indica*	5	350	Average	Poor		0	Recommended removal. Previously lopped.
275	Flame Tree	*Erythrina indica*	8	600	Average - Good	Acceptable		0	Recommended removal. Previously lopped.
276	Fiddlewood	*Citharexylum spinosum*	9	500	Average	Acceptable	2	3	Previously lopped.
277	UNABLE TO LOCATE								
278	Flame Tree	*Erythrina indica*	8	600	Average - Good	Acceptable		0	Recommended removal. Previously lopped.
279	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable		0	Refer report; 2nd February 2006
280	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable		0	Refer report; 2nd February 2006

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
281	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable		0	Refer report; 2nd February 2006
282	Flame Tree	*Erythrina indica*	6	400	Average - Good	Acceptable		0	Refer report; 2nd February 2006
283	Fiddlewood	*Citharexylum spinosum*	9	300	Average	Acceptable	2	3	Previously lopped.
284	Fiddlewood	*Citharexylum spinosum*	10	500	Average	Acceptable	2	3	Previously lopped.
285	Queensland Box	*Lophostemon confertus*	12	500	Average - Good	Acceptable	3	3	Previously lopped.
286	Queensland Box	*Lophostemon confertus*	15	500	Noticeable decline	Acceptable		0	Previously lopped. Recommend removal.
287	Queensland Box	*Lophostemon confertus*	12	500	Average - Good	Acceptable	3	3	Previously lopped.
288	Flooded Gum	*Eucalyptus rudis*	12	400	Good	Acceptable	3	3	Self sown.
289	Flooded Gum	*Eucalyptus rudis*	12	400	Good	Acceptable	3	3	Self sown.
290	New Zealand Christmas Tree	*Metrosiderous excelsus*	6	300	Good	Acceptable	3	2	Transplantable specimen.
291	Edible Fig	*Ficus carica*	4	300	Good	Acceptable	2	2	Transplantable specimen.
292	Norfolk Island Pine	*Araucaria heterophylla*	15	450	Good	Good	4	1	Transplantable specimen.
293	Lemon Scented Gum	*Corymbia citriodora*	15	500	Good	Acceptable	5	2	
294	Bottlebrush	*Callistemon viminalis*	4	300	Good	Acceptable	3	2	
295	Queensland Box	*Lophostemon confertus*	4	350	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
296	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
297	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
298	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
299	Queensland Box	*Lophostemon confertus*	4	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
300	Bottlebrush	*Callistemon viminalis*	4	200	Good	Good	2	2	

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
301	Queensland Box	*Lophostemon confertus*	4	350	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
302	Queensland Box	*Lophostemon confertus*	4	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
303	Queensland Box	*Lophostemon confertus*	4	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
304	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
305	Queensland Box	*Lophostemon confertus*	6	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
306	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
307	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
308	Queensland Box	*Lophostemon confertus*	5	400	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
309	Norfolk Island Pine	*Araucaria heterophylla*	30	700	Good	Good	5	1	Good specimen tree.
310	Jacaranda	*Jacaranda mimosifolia*	18	600	Good	Acceptable	5	1	
311	Lillypilly	*Acmena smithii*	15	600	Good	Acceptable	4	3	Previously lopped.
312	White Cedar	*Melia azedarach*	6	300	Good	Acceptable - poor	2	3	Undesirable structural form.
313	Ironbark	*Eucalyptus sideroxylon*	15	400	Good	Acceptable	3	2	Leaning over road.
314	Spotted Gum	*Corymbia maculata*	22	700	Average - Good	Good	5	2	Good specimen tree.
315	Cootamundra Wattle	*Acacia baileyana*	6	300	Dead	Acceptable		0	Recommended removal.
316	Queensland Box	*Lophostemon confertus*	18	500	Good	Acceptable	3	3	
317	Queensland Box	*Lophostemon confertus*	18	500	Good	Acceptable	3	3	
318	Queensland Box	*Lophostemon confertus*	7	350	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
319	Cootamundra Wattle	*Acacia baileyana*	3	300	Noticeable decline	Acceptable	2	3	Declining in health/vigour.
320	WA Peppermint	*Agonis flexuosa*	3	300	Noticeable decline	Acceptable	2	3	Declining in health/vigour.

TREE NO.	COMMON NAME	BOTANICAL NAME	EST. HEIGHT (metres)	EST. CALLIPER (mm)	HEALTH CONDITION	STRUCTURAL FORM	RECOMMENDED PRESERVATION ZONE (metres radius)	OPINION	ADDITIONAL COMMENTS
321	Flame Tree	*Erythrina indica*	5	350	Average - Good	Acceptable		0	Previously lopped. Recommend removal.
322	Sweet Gum	*Liquidambar styracciflua*	8	300	Good	Good	2	1	Transplantable specimen.
323	Jacaranda	*Jacaranda mimosifolia*	6	350	Good	Good	2	1	Transplantable specimen.

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The advice contained herein has been provided in good faith and based upon the material information available, provided, and pertinent at the time the advice was given.

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- The provision of misleading or incorrect information to Arbor logic upon which this advice was founded.
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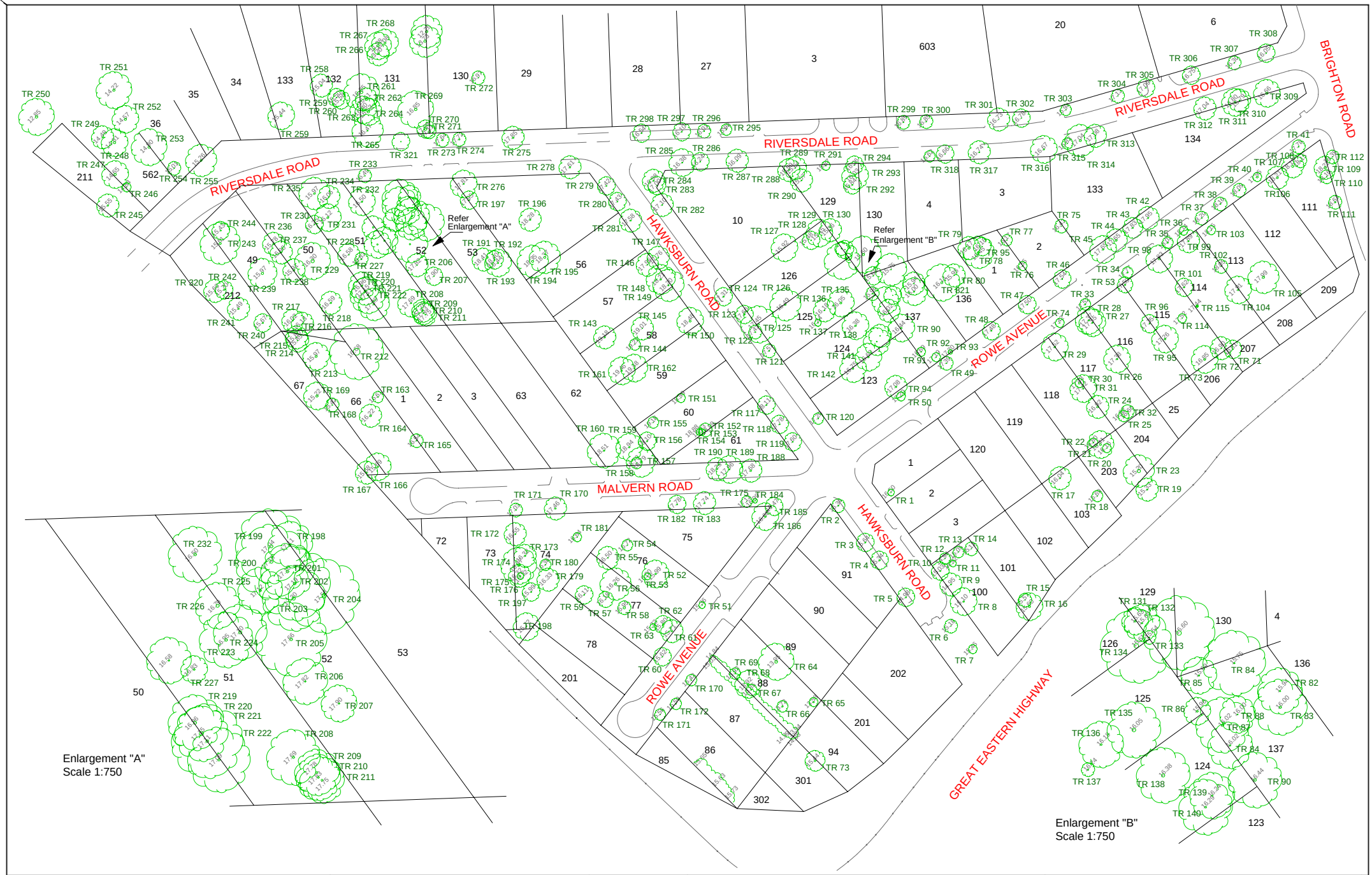
- Failure by the client to follow this advice.
- The action(s) or inaction(s) of the client or any other party that gives rise to loss or damage to the subject of this advice.



Rev.	Description	Drawn	Date	Checked
A	Initial Issue	CJL	20/04/2007	

SCALE 1:1500 @ A3 - 1:750 @ A1

15 0 60

ALL DISTANCES ARE IN METRES

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons wishing to utilise this data should satisfy themselves of this plans currency by contacting McMullen Nolan and Partners Surveyors.

FILES
mapCOGO~
Ustation~ 94609sk-003a.dgn

NORTH

The boundaries depicted on this plan were not re-established as part of this survey, therefore this plan does not guarantee their accuracy.

Re-establishment of the cadastral boundaries is recommended for any proposed works on or near existing boundaries.

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THE SPRINGS RIVERVALE TREE SURVEY

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Land Survey Hydrographic Survey 3D Laser Scanning 3D Visualisation Mapping Solid Terrain Models Cartographics GIS

Scale	1:1500 @ A3	Date	20/04/2007
Datum	PCG94	Job No.	94609
Drawn	CJL	Drawing	94609-003
Project Mgr.	SJA	Revision	A

A3 ORIGINAL