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

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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

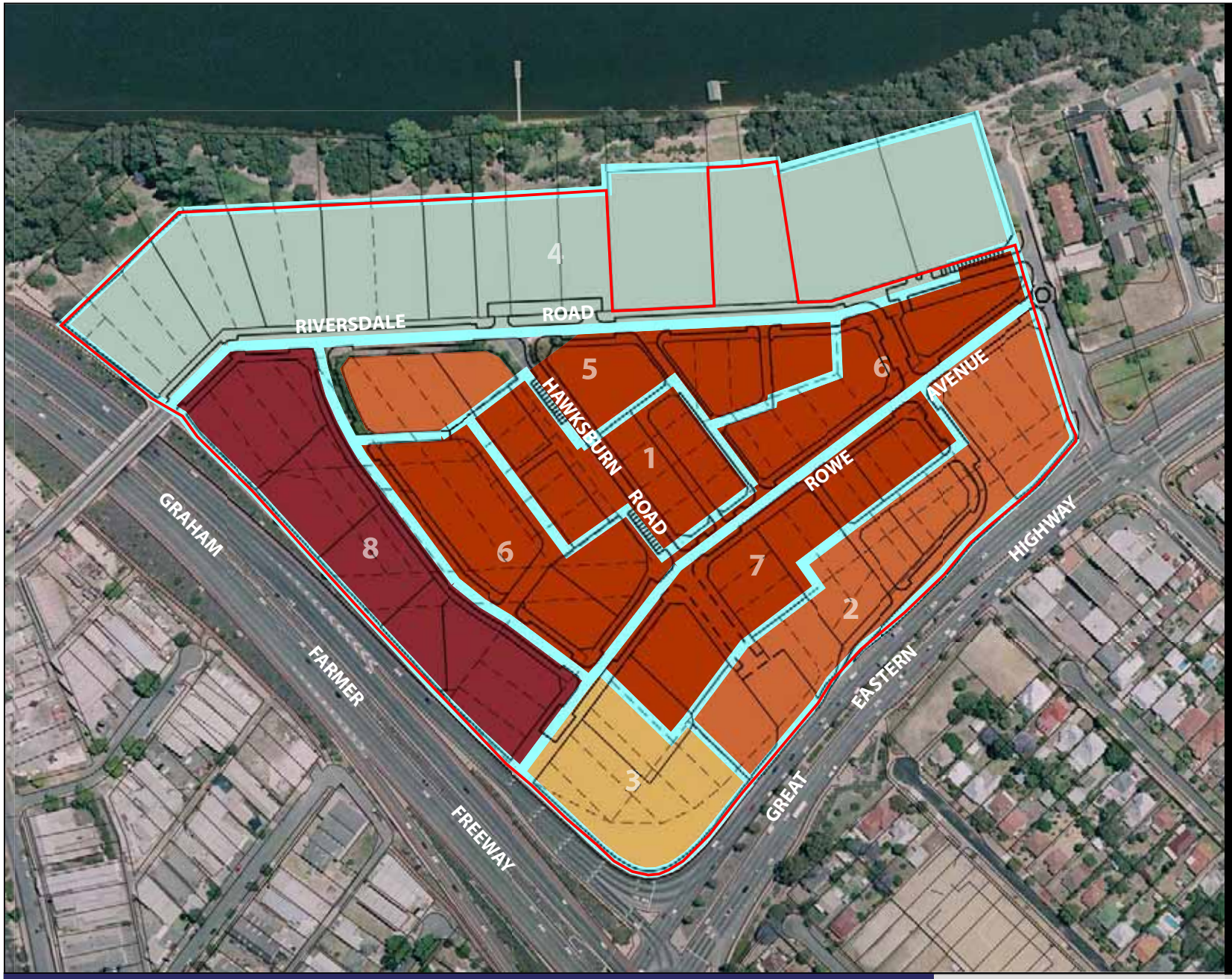
THE SPRINGS STRUCTURE PLAN, RIVERVALE
LAND USE

20m 0m 20 40 60m

october 2007 | 04/101

FIGURE 14A

Taylor Burrell Barnett
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au



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

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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.

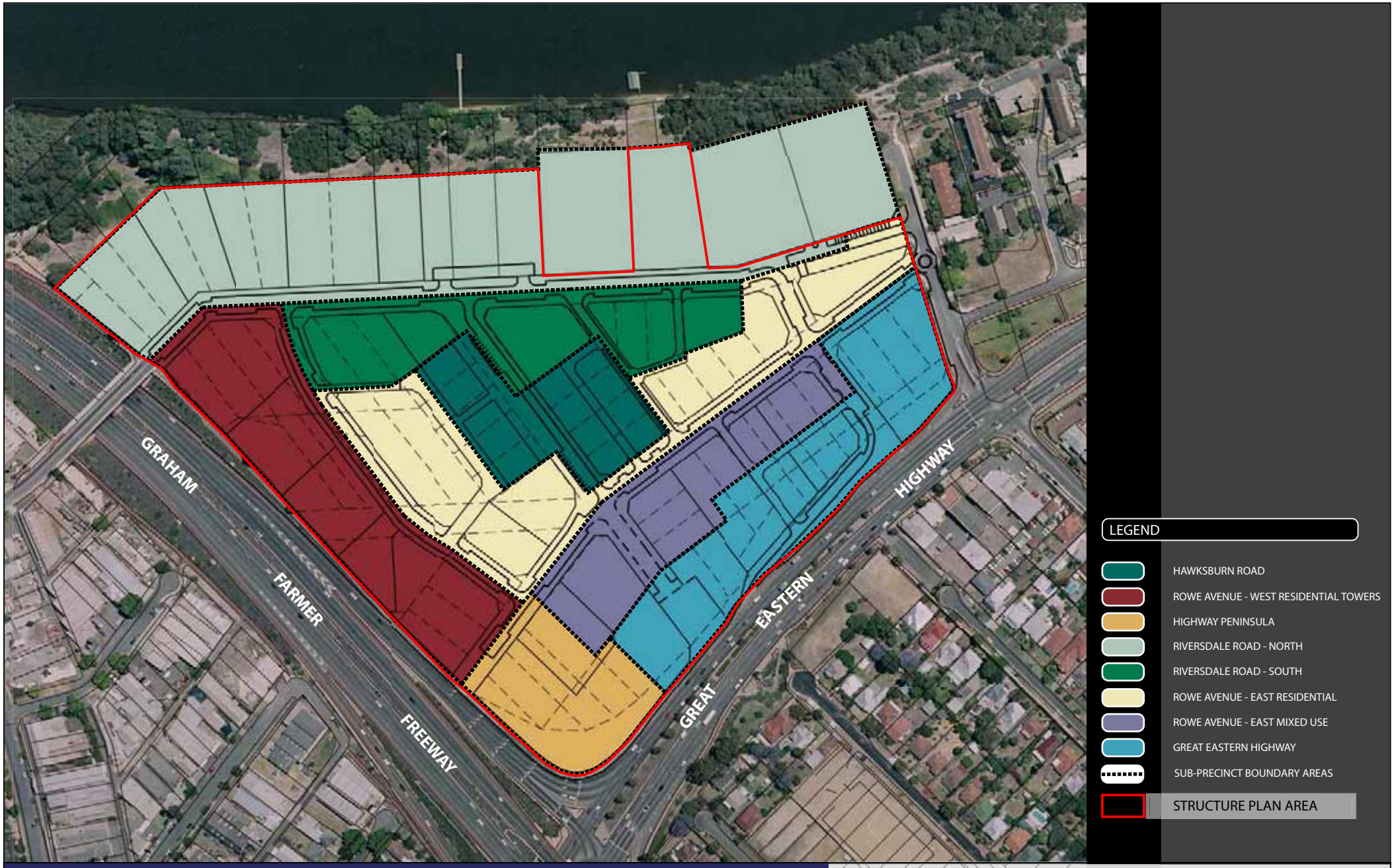
6.3.2 VISUAL IMPACT

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

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FIGURE
15

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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.

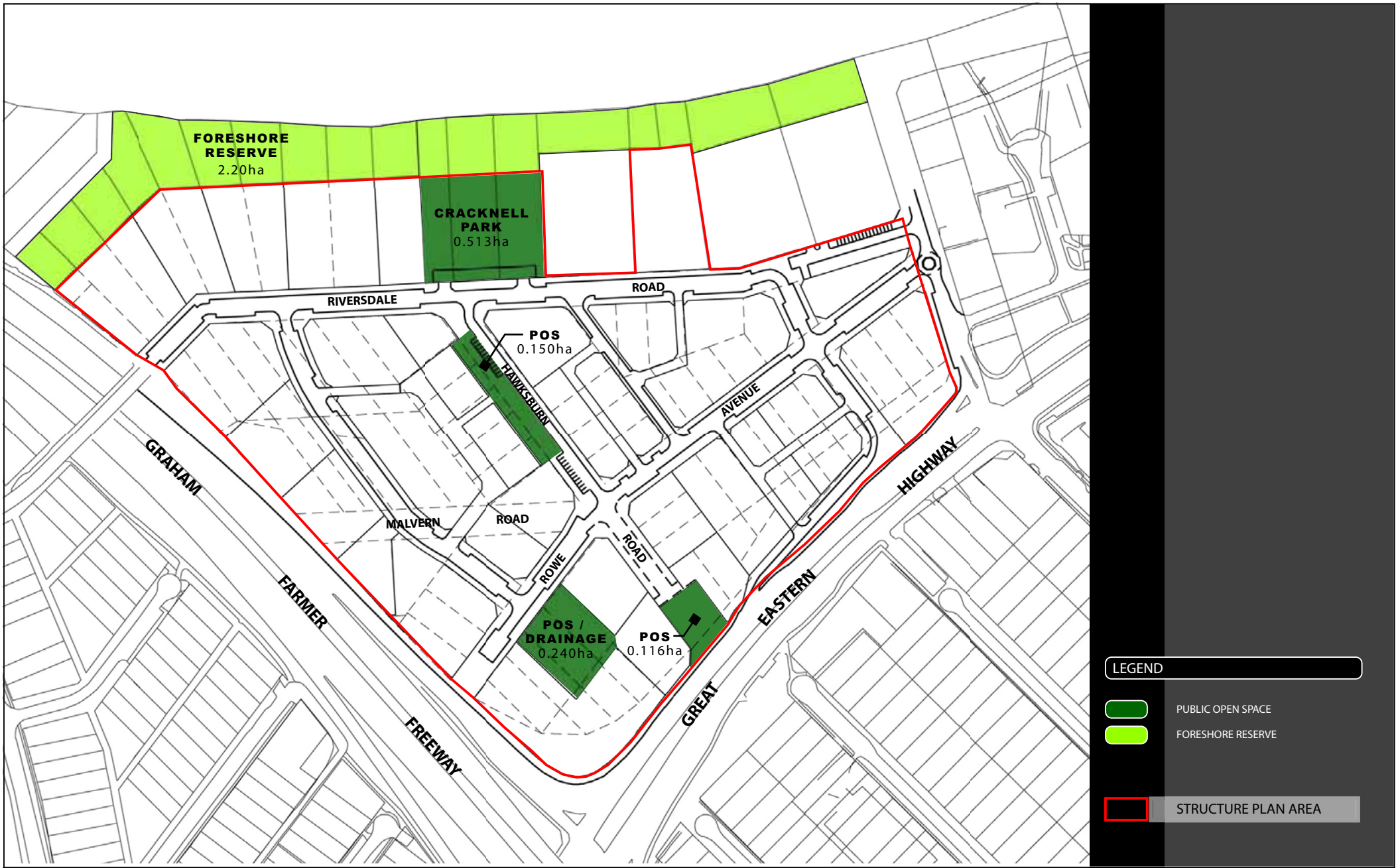
Car parking facilities should be upgraded, through the use of landscape and paving design, to provide a strong functional and visual link between Cracknell Park and Hawksburn Road village spine.

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

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FIGURE 16

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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

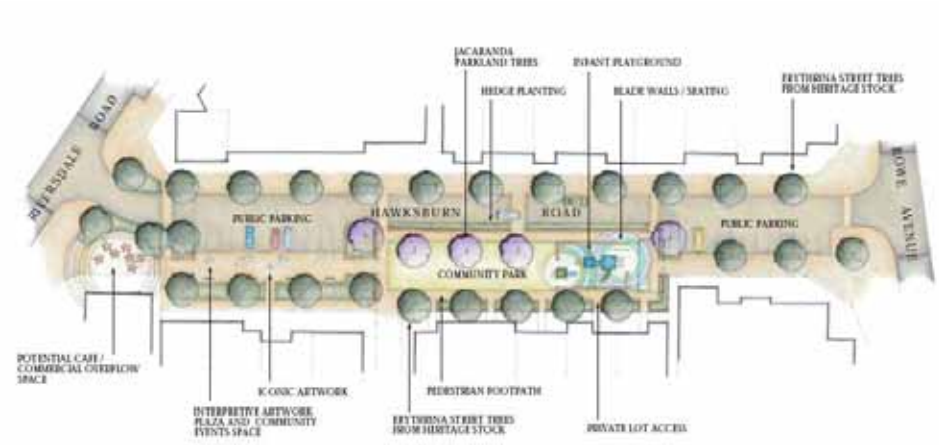


Figure 17: Proposed Hawksburn Road Village Spine

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**.

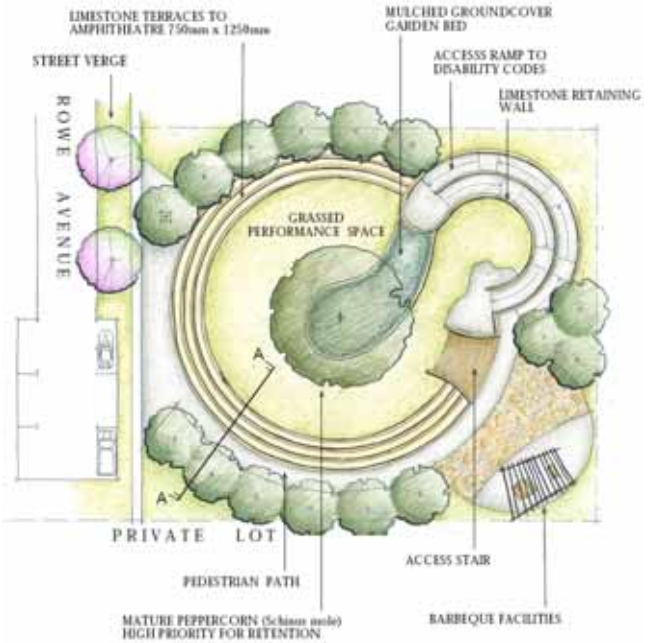


Figure 18: Proposed Rowe Avenue Amphitheatre

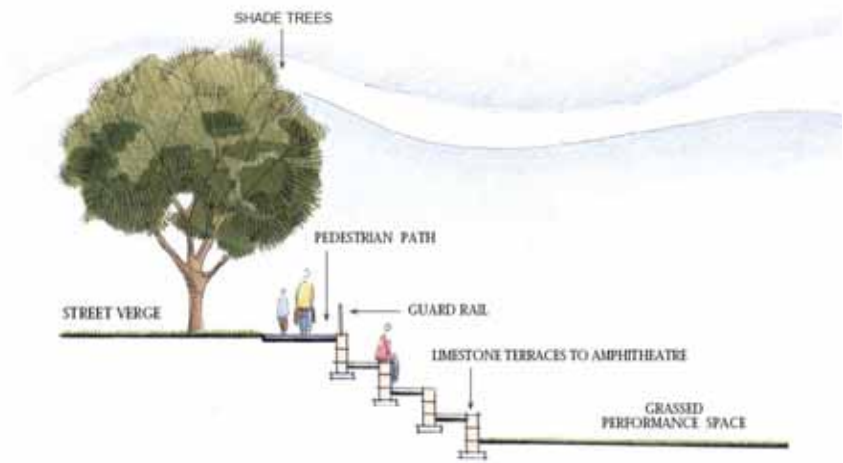


Figure 19: Proposed Rowe Avenue Amphitheatre Cross-Section

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.

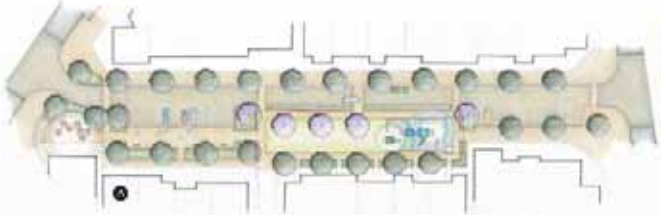
INTERNAL STREETS

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

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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

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FIGURE 20B

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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.

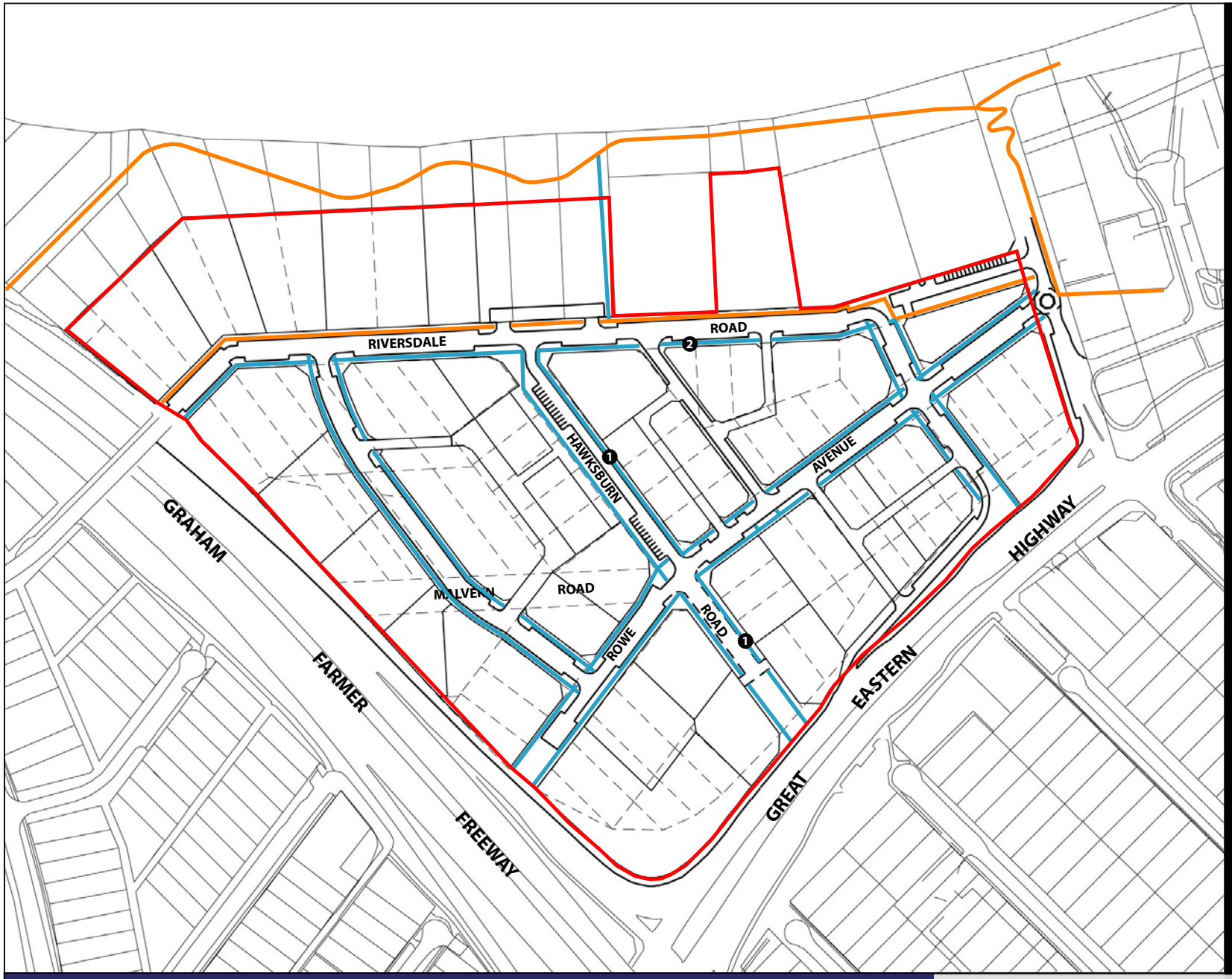
6.3.8 PROPOSED INFRASTRUCTURE SERVICING

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

TAYLOR BURRELL BARNETT
Town Planning and Design
187 Roberts Road Subiaco
Western Australia 6008
Telephone: (08) 9382 2911
Facsimile: (08) 9382 4586
admin@tbbplanning.com.au

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.**

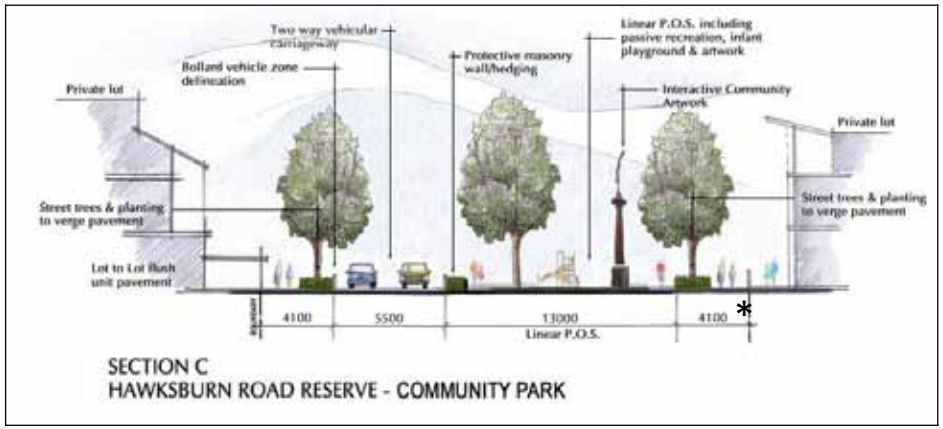
Figure 22: Plan Showing Sectional Views

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.

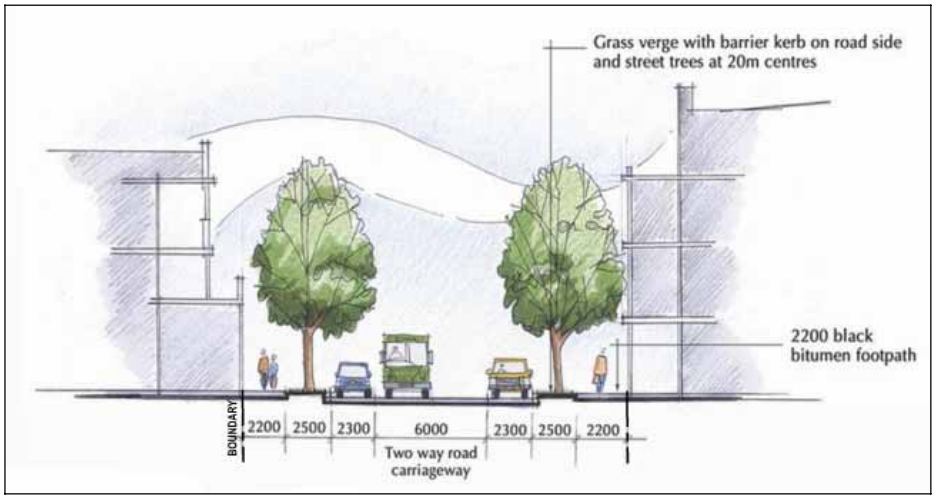


Figure 24: Section BB - Proposed Rowe Avenue Streetscape

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.

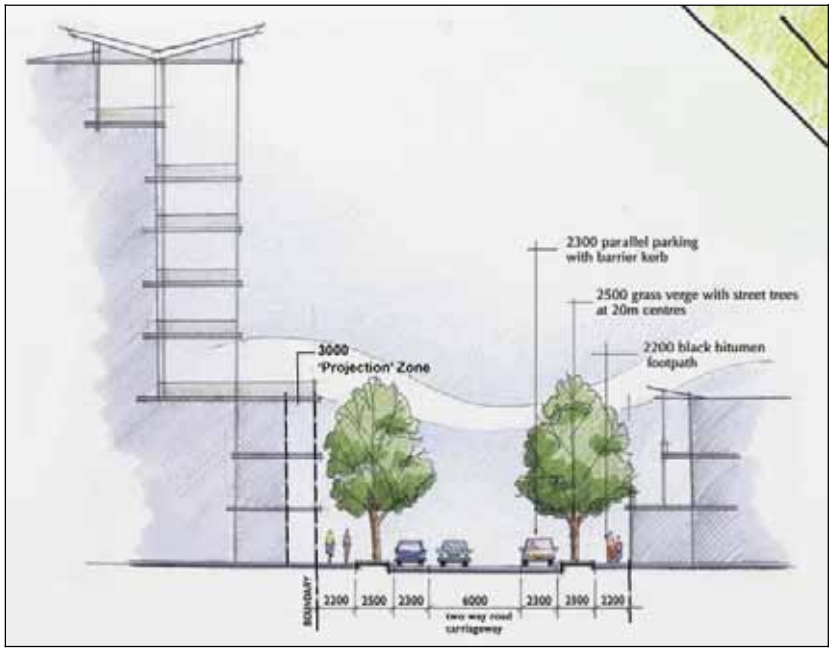


Figure 25: Section CC - West Residential Towers – New Road Reserve

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.

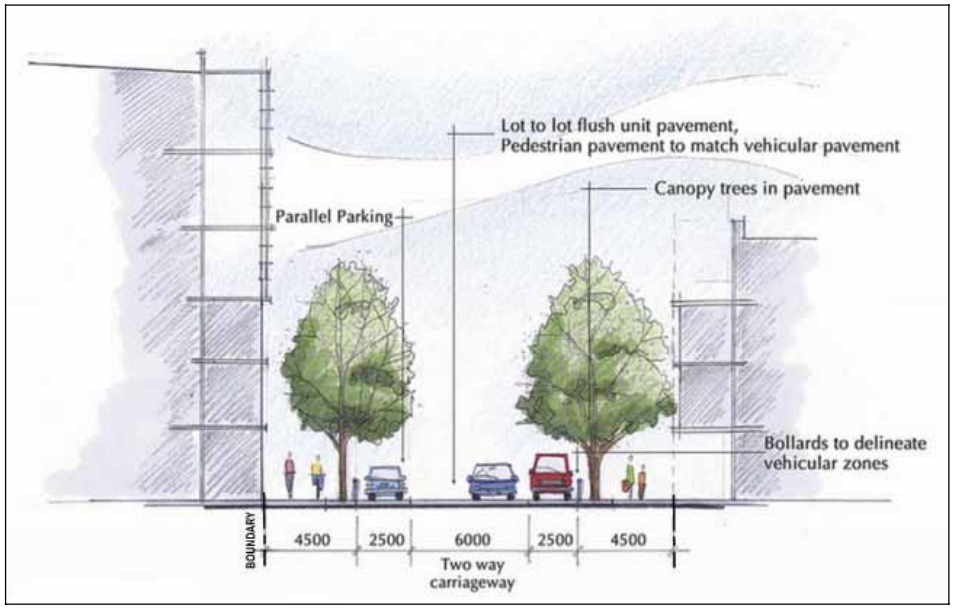


Figure 26: Section DD - Proposed Hawksburn Road Streetscape- Mixed Use south of Rowe Avenue

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.

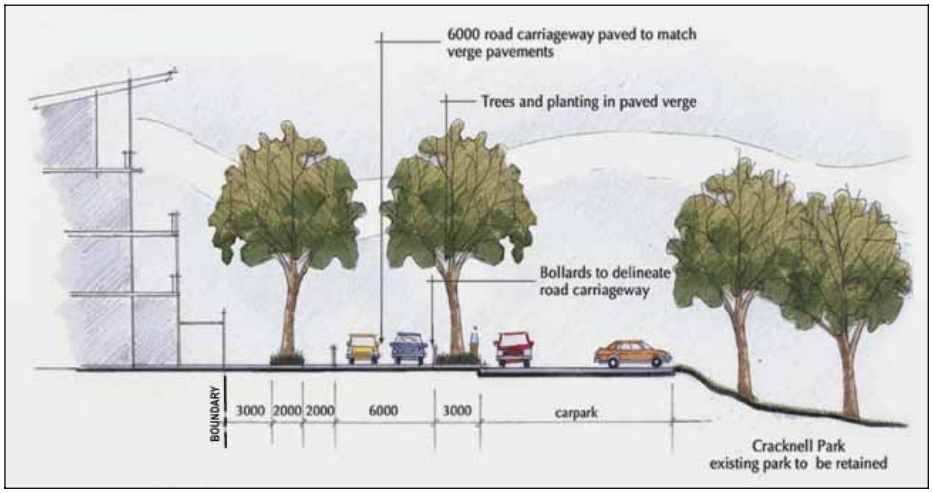


Figure 27: Section EE - Riversdale Road Reserve adjacent to Cracknell Park and Hawksburn Road Intersection

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

PO Box 66, SUBIACO WA 6904

Lemnos Business Park,

37 Lemnos Street, Shenton Park 6008

Phone (08) 9382 3433 * Fax (08) 9382 4922

COMPANY INFORMATION

Company Name:	ARBOR logic
A.C.N.:	107 194 061
A.B.N.:	66 566 369 687

Street Address:

Lemnos Business Park, 37 Lemnos Street, Shenton Park, Perth, WESTERN AUSTRALIA 6008

Postal Address:

PO Box 66, SUBIACO, WESTERN AUSTRALIA 6904

Contact Details:

Consultant:	**JASON ROYAL**
Mobile:	0409 105 745
Phone:	+61 8 9382 3433
Facsimile:	+61 8 9382 4922
Email:	jason@arborlogic.com.au

Insurance Details:

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

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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.