

CITY OF ARMADALE

A G E N D A

**OF SPECIAL DEVELOPMENT SERVICES COMMITTEE TO BE HELD IN THE
FUNCTION ROOM, ADMINISTRATION CENTRE, 7 ORCHARD AVENUE, ARMADALE
ON TUESDAY 26 OCTOBER 2004, COMMENCING AT 5:00 PM**

PRESENT:

APOLOGIES:

OBSERVERS:

IN ATTENDANCE:

DISCLAIMER

The Disclaimer for protecting Councillors and staff from liability of information and advice given at Committee meetings to be read by the Chairman.

DECLARATION OF MEMBER'S INTERESTS

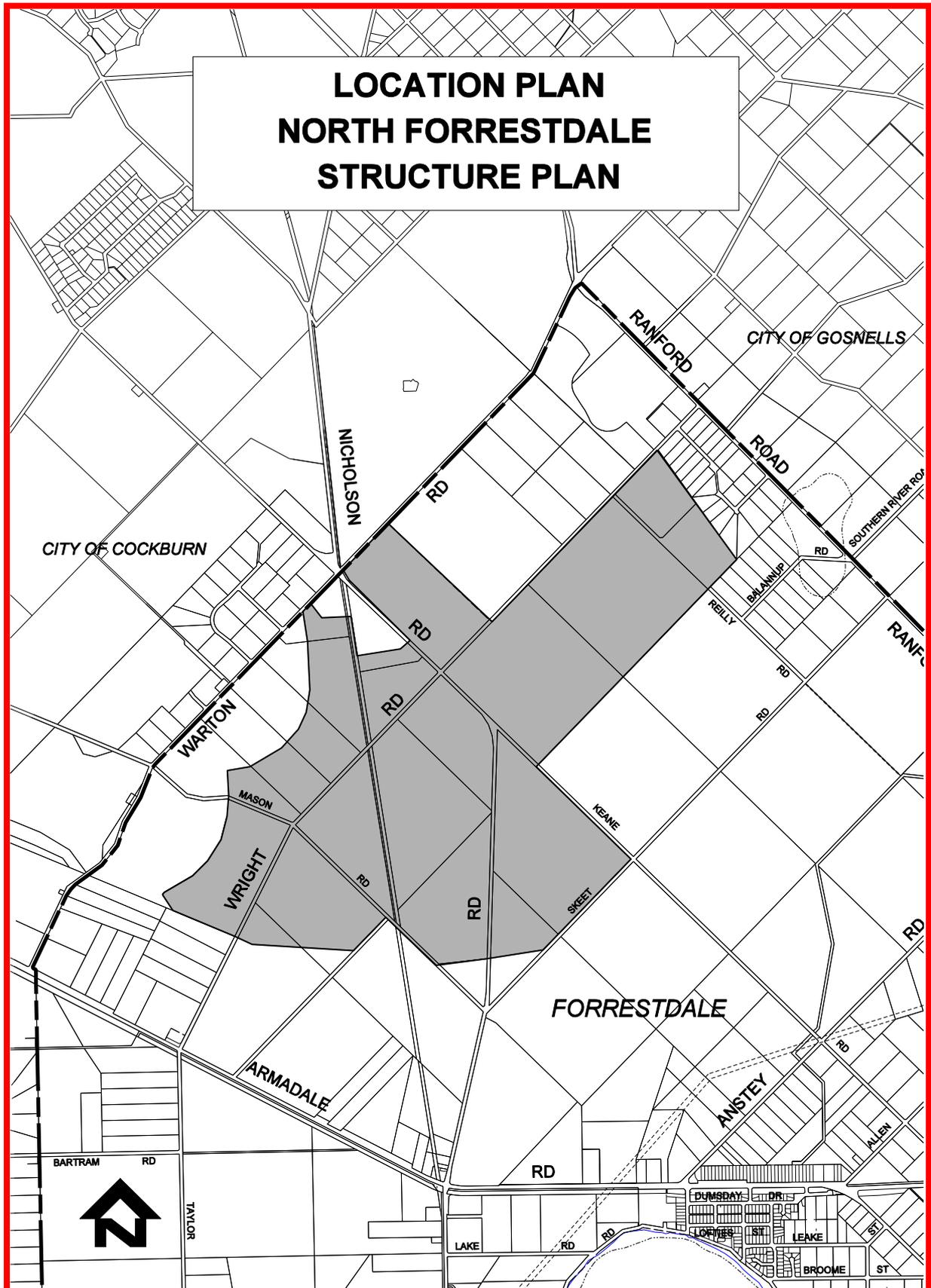
DEPUTATION

5:00pm North Forrestdale Structure Plan

Presentation by Mr Tony Lambert from Chappel Lambert Consultants and Mr Frank Arangio from Development Planning Strategies.

QUESTION TIME

Minimum time to be provided – 15 minutes (unless not required)



NORTH FORRESTDAL E STRUCTURE PLAN

WARD	:	FORREST
FILE REF	:	PSC/36 Vol 7
DATE	:	13 October 2004
REF	:	IM
RESPONSIBLE MANAGER	:	EDDS
APPLICANT	:	Joint proposal from: Roberts Day Town Planning & Design, Chappell & Lambert Planning Consultants, Development Planning Strategies and Dykstra & Associates.
LAND OWNER	:	Various landowners in North Forrestdale
SUBJECT LAND	:	452 hectares comprising: Part of Lots 2 and 48, and Lots 3, 4, 6, 13, 15 Nicholson Road, Part of Lots 10, 111, 112, 113, and 143 Warton Road, Part Lots 45 and 388 and Lots 14, 46, 49 50, 1000 and 1001 Wright Road.
ZONING MRS/TPS No.2	:	Rural (proposed Urban and Urban Deferred)/ General Rural (Proposed Development Area/ Development Contribution Area)

In Brief:-

- The North Forrestdale Structure Plan has been prepared for a 452 hectare area recently subject to amendments under the regional and local schemes.
- The structure plan addresses the necessary wide range of issues to facilitate the coordinated development of an area in multiple ownership where there are a number of significant environmental constraints that need to be overcome.
- While some matters will need to be addressed as conditions of subdivision, the structure plan and the associated studies have addressed the major issues identified through the planning process.
- Recommend that the Structure Plan be released for a 21 day public comment period and subject to the need to clarify various matters prior to its finalisation.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

Development – “To balance the need of development with sustainable economic, social and environmental objectives”.

Legislation Implications

Town Planning Scheme No. 2
Draft Town Planning Scheme No. 4
Metropolitan Region Town Planning Scheme Act 1959
Town Planning and Development Act 1928
Environmental Protection Act 1986

Council Policy / Local Law Implications

Water Sensitive Urban Design.

Budget / Financial Implications

While the structure plan itself has no direct financial implications to the City, the development of the subject land has significant financial implications arising from the additional rate base on one hand and from the need to manage infrastructure provision and provide for the maintenance of public areas on the other.

Consultation

- ◆ Water Corporation, Department of Environment, Education Department, Department for Planning and Infrastructure, CALM, and Transperth.
- ◆ Officers within the City’s Development Services, Technical Services and Community Services Divisions.
- ◆ North Forrestdale Steering Group.

BACKGROUND

North Forrestdale was identified in the 2001 Southern River, Forrestdale, Brookdale, Wungong District Structure Plan as future Urban. 450 hectares has been subject to MRS Amendment No. 1072 (to zone the land Urban and Urban Deferred) and TPS No. 2 Amendment No. 190 (to zone the area Urban Development zone and identify it as a “Development Area/Development Contribution Area”).

Under Clause 5.8.4 of TPS No. 2 land within a Development Area requires a structure plan as a prerequisite to subdivision. Clause 5.9 also requires the preparation of a Development Contribution Plan for infrastructure items to be incorporated into the scheme via a scheme amendment. The structure plan and Development Contribution Plan will be dealt with as separate processes.

Following receipt of the structure plan (if prepared by a landowner) the City is required to advertise the structure plan for at least 21 days for public submissions. Following this the City is required to consider the submissions and adopt, modify or refuse to adopt the structure plan which in turn is required to be adopted by the Commission.

The Scheme sets out what the structure plan should contain in terms of information, maps and analysis.

The North Forrestdale Structure Plan has been prepared by a consortium of planning consultants and specialist consultants on behalf of the landowners. The consultants have been guided through the process by the North Forrestdale Planning Steering Group (chaired by the Executive Director Development Services). The Structure Plan was submitted on 11 October 2004. The Executive Summary including the Structure Plan Map is attached (*see Attachment "A1" of the Agenda*). The full report – which includes appendices detailing the specialist consultants reports on the environmental assessment (including reports on ethnography and contamination), traffic assessment, engineering and the urban water management plan is available on request.

DETAILS OF PROPOSAL

The Structure Plan is required under clause 5.8.6.1 of the Scheme to provide information with respect to physical, social, environmental and cultural planning matters. The main structure plan report summarises the studies undertaken and the components of the plan in respect of its design elements, layout and main land uses. The way in which development will be staged and implemented is also described. In providing the information a number of separate investigations have been undertaken which are attached to the structure plan – including environmental assessment, traffic assessment, engineering report and urban water management plan.

The key elements of the Structure Plan are:

- ◆ The indication that 4500 lots would be provided offering a range of sizes under Codes R25 and R40.
- ◆ An open space network offering many linkages between wetland and natural areas. 10% of the area is allocated for POS and 2-4% for drainage.
- ◆ A neighbourhood centre on the southern side of Nicholson Road.
- ◆ A major community centre to be located at the Neighbourhood Centre and two smaller centres in conjunction with local schools.
- ◆ Two (possible three) primary school sites.
- ◆ A modified grid road network consistent with current standards.
- ◆ A bus route to be located north-south through the area.
- ◆ Regional dual use paths on the major road network and on lesser roads and open spaces.
- ◆ A linear arterial drainage system with flood detention and hydrological regime in accordance with the Urban Water Management Strategy.
- ◆ All urban services to be made available by the development.

COMMENT

There are a number of issues identified by officers that need to be addressed.

While the EPA provide a “Not Assessed – Advice Given” designation to the rezoning it was noted that environmental investigations would be required. These include the possible impacts from:

- ◆ poultry farms and kennels, - operations have either ceased, or legal safeguards will be in place or buffers will be retained.
- ◆ water quality, - adoption of the principles of the Urban Water Management Strategy will ameliorate the risk of deteriorating water quality.
- ◆ three conservation category wetlands – protected in open space.
- ◆ multiple use wetlands – incorporated into the stormwater management system.
- ◆ the need to plan the interface between development and areas of regionally significant vegetation.
- ◆ the need for a detailed flora and vegetation survey – undertaken in September 2004 finding no Declared Rare Flora.
- ◆ protection of fauna – vegetated corridors connecting native vegetation provided in plan.
- ◆ soil and groundwater contamination – groundwater bore to be installed to monitor contamination.

An anthropological survey has been undertaken and concluded that the area is devoid of any recorded cultural heritage sites.

Lots are generally not orientated E-W or N-S. This is explained as being due to the existing road pattern and while every effort has been made to design for maximum solar orientation many lots will not accord with traditional views on solar orientation.

The open space network provides sufficient open space in total, however there is a question as to whether there is adequate open space to allow for the active recreational needs of the future population. It would be desirable to locate a large strategic open space area within the structure plan to allow for the development of a range of active recreational pursuits. While larger active areas have been provided adjacent to schools and elsewhere in the structure plan and it is proposed that the area adjacent to Carey Baptist College be co-acquired by the Structure plan and the College for active recreation, it is likely that some of the demand for organised sport will be unmet. In any event it would be useful for the Structure Plan to include an open space plan indicating what the functions of the different open spaces are proposed to be. This is a difficult issue to address as the locality is blessed with large areas of regional open space which will be an asset for passive users.

While the location of the Neighbourhood Centre accords with Council’s retail strategy, there was an expectation that there would be a range of smaller local centres in North Forrestdale. The report argues that these are not commercially viable and therefore while such centres have not been identified on the plan, opportunities exist for small corner stores on residential blocks.

Some matters will need to be addressed at the subdivision stage – for instance the extent of footpaths/dual use paths. These include parkland management and landscaping, acid sulphate soils, memorials on title relating to noise impacts, wetland management plans, contamination issues, surface area drainage basins, nutrient management measures, road spacings, frontage access control, footpath requirements, dual use paths in POS, road widths, extra shared paths, roundabout and access issues. Rather than there being an informal understanding of what are legitimate subdivision issues, it would be desirable to receive a clear listing of these matters in a formal letter to the City.

In particular, although the structure plan is backed by an innovative Urban Water Management Plan, details regarding the hydraulic requirements of the area will need to be finalised through the subdivisional approval process.

Various comments on the drafts of the Structure Plan, and the associated supporting documents, have been made by City officers. These have been responded to by the consultants and the reports amended accordingly. There remain some outstanding issues relating to environmental matters and specifically drainage, which will need to be addressed prior to the finalisation of the Structure Plan.

A common infrastructure agreement will be administered through a subsequent scheme amendment. The structure plan foreshadows the matters requiring cost sharing to be administered by the Development Contribution Plan. These include the district distributor roads, regional path network, regional drainage, conservation category wetlands, water quality management, power line relocation, community facilities, additional recreational space and regional sewer infrastructure.

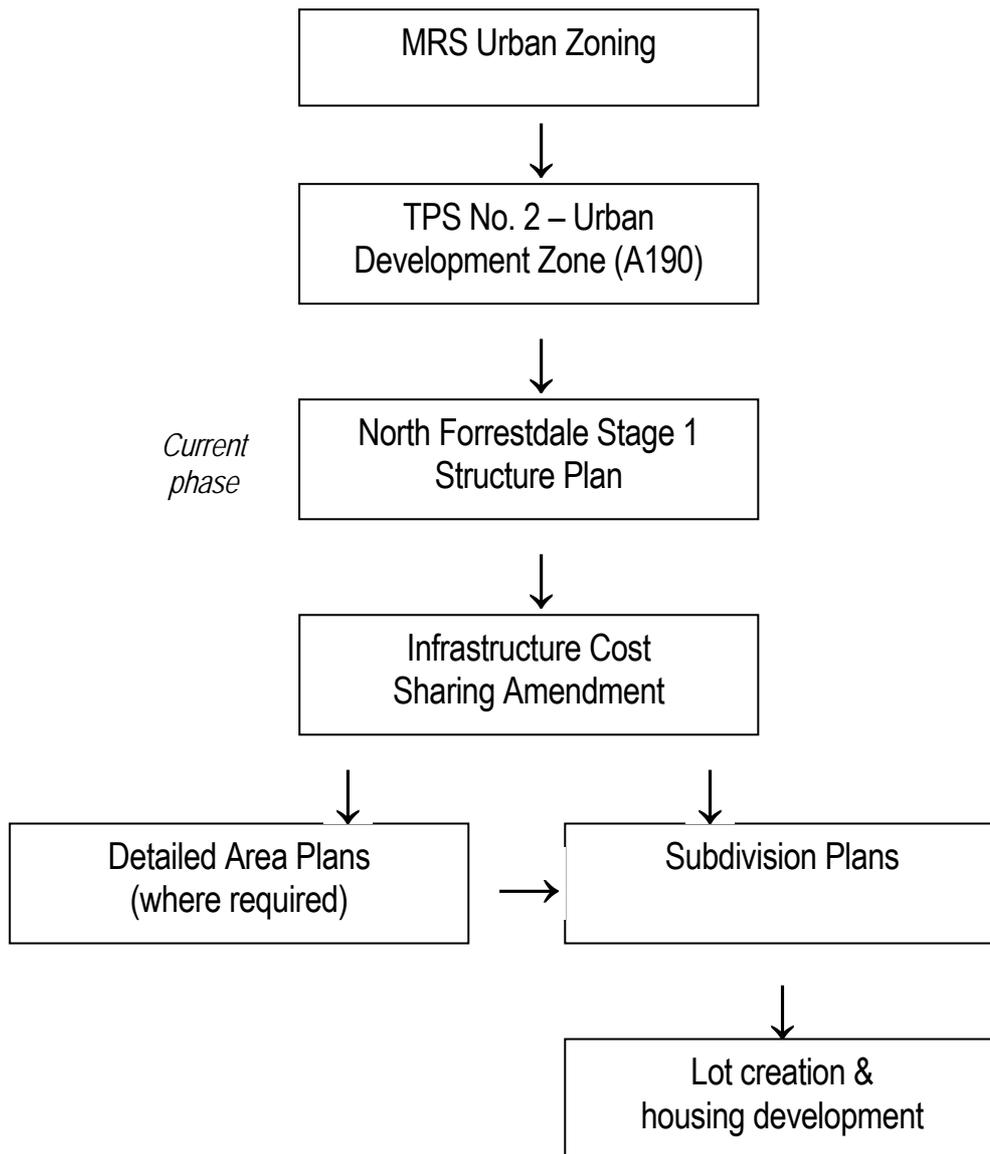
ANALYSIS

There remain a number of steps that need to be made before development will occur in North Forrestdale. (*See attached schematic overview of the statutory planning process diagram*). The structure plan provides the mechanism to ensure that development will be planned and coordinated. However, the actual arrangements for the provision of infrastructure will need to be set out in the Development Contribution Plan (DCP) which will be subject to a scheme amendment. The matters to be included in this DCP have been foreshadowed in the structure plan but the details have not been finalised. The structure plan, being relatively broad brush, is not intended to provide definitive guidance for future subdivision applications. A further stage should be required to provide Detailed Area Plans (DAPs) for North Forrestdale or for sections as the stages progress. These DAPs should be required prior to subdivision unless not required by the City (where the applicant is able to demonstrate that all matters have been agreed between adjacent landowners).

The subdivision process itself is one that will afford the opportunity to impose conditions regarding funding, management plans, and detail design.

Subject to the Structure Plan meeting the requirements of the Scheme and matters identified of concern being addressed, the City is required to advertise the Structure Plan for public inspection for at least 21 days.

Schematic Overview of Statutory Planning for North Forrestdale



OPTIONS

1. Council could agree to the advertising of the structure plan for public comment.
2. Council could defer the advertising of the structure plan on the grounds that the information made available is inadequate.

CONCLUSION

The North Forrestdale Structure Plan has been prepared by consultants for landowners in North Forrestdale in close consultation with officers of the City and key State Government agencies. The major concern that has not been entirely addressed relates to the need for a strategic open space area for active recreation. Some effort has been made to address this in the design by locating active areas adjacent to schools – however, there remains a possible deficiency. This may be compensated for by the abundance of open space (regional and local) allocated for passive use.

While there are a number of issues that will need to be addressed prior to subdivision being approved, it is not expected that the structure plan would see the resolution of all the details. Accordingly it would be appropriate for the structure plan to be advertised for public comment in accordance with the scheme requirements. The structure plan can then be reviewed and if necessary, modified prior to recommending its endorsement by the WAPC.

RECOMMEND

That Council resolve that:

1. **the North Forrestdale Structure Plan be advertised for public inspection by:**
 - a) **Publication of a notice in a newspaper circulating in the Scheme area;**
 - b) **Signs to be erected on site;**
 - c) **Notice to be given to:**
 - ♦ **all owners whose land is included in the proposed structure plan;**
 - ♦ **all owners and occupiers likely to be affected by the structure plan; and**
 - ♦ **the relevant public authorities;**
 - ♦ **The documents to be available on Council's web site;**
 - d) **The Structure Plan to be advertised for 21 days.**
2. **The following matters be addressed prior to the finalisation of the Structure Plan:**
 - a) **The mechanism to acquire the proposed area for POS (designated "non- residential landuse") adjacent to Carey Baptist College;**
 - b) **The provision of an open space plan indicating what the functions of the different open spaces are proposed to be;**
 - c) **Advice being received from Council's consultant supporting the concept of the UWMP;**

- d) Receipt of a letter from the landowners detailing the matters to be dealt with prior to, or as conditions of, subdivision approval;
 - e) Clarification in the document that it reflects the UWMS requirement that 30% public and private open space needs to be planted with local native species;
 - f) Clarification of drainage requirements for drainage flowing from developed to undeveloped land, particularly in respect to Lots 2 and 6 Nicholson Road and detailing any interim measures required to support development until the regional drainage network is in place pursuant to development of land outside of the current Structure Plan area;
 - g) Clarification regarding the method of controlling water volumes under the UWMP in view of the fact that 10 of the identified 31 sub-catchments have a required storage volume between 10,000 and 40,000 m³ which could require areas in each of those 10 catchments of between 1 and 4 hectares for storage and the two largest storage areas are located on land which is outside the current structure plan area.
 - h) Clarification as to whether the Resource Enhanced Wetland will be provided with standard buffers.
 - i) Provision of evidence to confirm that Council's records have been examined for the subject land in terms of approvals and licences relating to noxious industries.
 - j) Arrangements to be made with the City regarding the submission of a road safety audit to be carried out on the road layout once completed. (Arrangements to include when the audit will be required as well as the detail to be included).
3. With respect to the traffic plan, all details relating to road cross sections, intersection control and path provision will be subject to the City's specification following finalisation of outstanding issues.
 4. The applicant be advised that a Development Contribution Plan will be required by the City for the commencement of development in accordance with the Structure Plan.
 5. Detailed Area Plans (DAPs) will be required to be prepared, unless otherwise determined by the City, to provide a greater level of detail than that provided under the Structure Plan and that these DAPs will be required to indicate the level of development and landscaping, provision of infrastructure and equipment to be provided within areas designated as public open space.

Moved Cr _____
Carried/Lost ()

MEETING DECLARED CLOSED AT _____

DEVELOPMENT SERVICES COMMITTEE
SUMMARY OF "A" ATTACHMENTS
26 OCTOBER 2004

	SUBJECT
PLANNING	
A1	North Forrestdale – Stage 1 Structure Plan Report (Executive Summary)

NORTH FORRESTDALE – STAGE 1
STRUCTURE PLAN REPORT

NORTH FORRESTDALE - STAGE 1
STRUCTURE PLAN REPORT

PREPARED BY: ROBERTS DAY TOWN PLANNING + DESIGN
 CHAPPELL & LAMBERT PLANNING CONSULTANTS
 DEVELOPMENT PLANNING STRATEGIES
 DYKSTRA & ASSOCIATES

OCTOBER 2004

EXECUTIVE SUMMARY



OVERVIEW

The North Forrestdale Stage 1 Structure Plan encompasses a number of landowners. The site comprises a total area of approximately 452 hectares and is generally bounded by Wright, Warton, Nicholson, Skeet (formerly Hale Road) and Keane Roads, within the City of Armadale.

The Structure Plan has been prepared in accordance with the requirements of the Development Zone proposed for the land by Amendment No. 190 to the City of Armadale Town Planning Scheme No. 2.

The method used for preparing the Structure Plan involved ongoing consultation and negotiation with relevant government agencies and comprehensive analysis and site investigations by the project team, comprising land use planners, engineering and traffic consultants, environmental management consultants, hydrological consultants and retail consultants. The City of Armadale has facilitated this process through the formation of a Steering Group which has provided a forum for discussion between stakeholders.

The outcome of this process is a Structure Plan proposing a diverse and integrated development which capitalises on the site's natural characteristics and delivers an urban form that will appeal to the market and foster a high quality of life for the future community of North Forrestdale to the benefit of the City of Armadale.

Planning is a dynamic process by nature as it endeavours to forecast the form of urban development. It is therefore reasonable to expect structure plans to be modified during the course of their implementation. The Structure Plan prepared for the North Forrestdale area provides a robust design that has the flexibility to accommodate future change as the development of the area evolves. Any future modification to the Structure Plan altering major design components such as primary roads, drainage requirements and major land use distribution will require re-advertising in accordance with the Scheme. Minor modifications to the Structure Plan, as determined by the City of Armadale, however, will not be required to be advertised and will be dealt with under delegation at the officer level.

PLANNING FRAMEWORK

The form of development proposed by the Structure Plan for North Forrestdale is supported by the relevant strategic and statutory planning documents i.e.:

- The site is identified in the Southern River/ Forrestdale/ Brookdale/ Wungong (SRFBW) District Structure Plan and is recommended to be one of the first areas rezoned Urban under the Metropolitan Region Scheme (MRS);
- Further to the recommendations contained within the SRFBW District Structure Plan, an Urban Water Management Strategy (UWMS) was prepared by JDA Consultants in 2002 to address drainage development concepts and protect water quality within the region. An Urban Water Management Plan (UWMP) has subsequently been prepared by Parsons Brinkerhoff (2004) for the Structure Plan area to outline specific hydrological requirements for future development.
- The site is subject to MRS Amendment No. 1072 to rezone the site to 'Urban (due to be finalised by October 2004)';
- Amendment No. 190 to the City of Armadale Town Planning Scheme No. 2 proposes to zone the land from 'General Rural' to 'Development Zone' (was adopted by Council in August 2004 and forwarded to the Western Australian Planning Commission (WAPC) for a recommendation to be prepared for the Minister's consideration).



CONTEXTUAL FRAMEWORK

The suitability of the site for mixed use residential development is supported by the relationship the site has with nearby regional infrastructure and the nature of surrounding development.

The site is relatively unconstrained and close to the encroaching urban fronts of Canning Vale and Southern River. These surrounding urban areas provide important nodes for commercial transactions, regional level community facilities and serve as employment opportunities.

A strong regional and district road system provides the Forrestdale locality with good accessibility to the broader metropolitan region. Regional roads such as Ranford Road to the north and Armadale Road to the south provide excellent east-west access to the Kwinana Freeway to the west and the proposed Tonkin Highway and Armadale Regional Centre to the east.

The Jandakot Airport is located to the west of the Structure Plan area, the subject land is outside the Jandakot Airport Australian Noise Exposure Forecast Contours (ANEF) and therefore aircraft noise is not considered an issue.

The site is also surrounded by a number of CALM nature reserves and the Jandakot Groundwater Mound and associated buffers, which are located to the south east of the Structure Plan area.

EXECUTIVE SUMMARY

ENVIRONMENTAL CHARACTERISTICS

Comprehensive site investigations were undertaken to establish the opportunities and constraints for development and to ensure the final Structure Plan effectively responded to local site conditions.

In setting a level of assessment for the study area of 'Not Assessed – Advice Given' under MRS Amendment No. 1072, the Environmental Protection Authority (EPA) identified environmental factors associated with urban development of the application area, which would be subject to further review at a later stage. In response to the EPA's advice, the landowners associated with Amendment No. 190 to TPS No.2 engaged ATA Environmental to conduct an updated environmental assessment of the application area, with specific consideration given to the factors identified by the EPA.

Important site characteristics that were identified by both the EPA and the technical consultants and which have been addressed in the Structure Plan include:

- A significant proportion of the site has been extensively cleared and used for various farming and rural activities. The pursuit of these activities has resulted in significant clearing and the degradation of large parcels of land. Some native vegetation remains, and although no sites of regionally significant vegetation (ie. no Bush Forever Sites) occur within the area, several immediately adjoin it. Future urbanisation in these areas will need to incorporate appropriate interfaces between these Bush Forever sites and urban areas.
- A detailed flora and vegetation survey of the Structure Plan area was undertaken by ATA Environmental between 15 September and 25 September 2004. Results indicate that no Declared Rare Flora (DRF) occur on the site. A small population of Priority 3 taxa *Aotus cordifolia* was recorded from vegetation associated with the southern boundary of Conservation Category wetlands on Lot 49 Wright Road. An additional site visit is programmed for early October at which time a final report will be provided to the City of Armadale.
- Several species of fauna have been recorded in the adjacent Bush Forever sites. Retention and enhancement of vegetated corridors that connect remnants of native vegetation where possible will allow for the movement of fauna. The management of the adjacent Bush Forever sites is however the responsibility of CALM.
- Water quality – this is probably the most important factor associated with the proposed urbanisation of the project area. By adopting the drainage and nutrient management principles outlined in the UWMS (refer Urban Water Management section), the Water Cycle Plan that is currently being developed for the study area by the Water Corporation together with the proposed implementation of Water Sensitive Urban Design principles, it is envisaged that the risk for deterioration of water quality within the Local Structure Plan area can be ameliorated. Monitoring of the nutrients and pollutants in drains, groundwater and soils forms an integral part of the UWMS. Groundwater monitoring has already commenced over part of the Local Structure Plan area in May 2001.

- Three Conservation Category Wetlands (CCWs) are currently mapped as occurring within the proposed development area. The Structure Plan provides for the protection of the CCWs via appropriate buffer areas within public open space (POS) areas. The ecological values of the CCWs will be maintained through appropriate design and implementation of specific management measures.

Several Multiple Use Wetlands (MUWs) are currently mapped over the site. The better quality wetlands are proposed to be incorporated into the stormwater management system. These wetland areas may be rehabilitated and enhanced with native plantings and degraded portions of some wetlands may be rehabilitated to improve their ecological function. Any reconstruction will be undertaken so as to discourage the breeding of mosquitoes and midges.

Details relating to hydrological regimes of the wetlands will be addressed in management plans to be prepared at the subdivision stage of development. However, the Average Annual Maximum Groundwater Levels (AAMGL) will be maintained as per the UWMS.

The natural wetlands in the area are damplands and accordingly have no surface expression of water in the summer. Therefore, there will be no mosquito or midge problem in the area.

- Department of Environment (DOE) mapping indicates the majority of the Structure Plan area has a moderate to low risk of containing actual acid sulphate soils and potential acid sulphate soils with only small areas having a high risk of containing actual acid sulphate soils and potential acid sulphate soils. Should portions of the site (including areas proposed to accommodate the multiple use drainage corridors) be found to contain acid sulphate soils, an acid sulphate soil management plan will be prepared in accordance with the strict amelioration standards set out in Planning Bulletin 64.
- In regard to poultry farm operations on land to the south of the Structure Plan area, being Lot 22 Nicholson Road and Lot 21 Armadale Road, operations on Lot 22 have ceased, while the landowner of Lot 21 has confirmed in writing that he will cease farming operations prior to any residential subdivision or development taking place within 500m of his poultry sheds. Both landowners are currently entering into a legal agreement with Council's solicitors to ensure closure of the poultry farms on a permanent basis. The issue of odour poses no constraint to the residential development of the land as it is understood that the poultry sheds will be removed in the near future and the land will be rezoned to 'Urban'.
- Anthropological studies conclude that the whole of the Structure Plan study area continues to be devoid of any recorded cultural heritage sites.



EXECUTIVE SUMMARY



DESIGN LAYOUT

The objectives that were established from the outset for the proposed Structure Plan were as follows:

- To provide a quality living environment within the City of Armadale;
- To retain and enhance the aesthetic qualities and physical character of the site;
- To provide a variable range of lot sizes to appeal to a broad market spectrum.

The Structure Plan prepared for North Forrestdale has achieved these objectives through incorporating the following features:

- A highly interconnected internal street pattern, providing a legible and permeable environment for all modes of transport;
- Roads oriented to take advantage of vistas of open space, to accentuate linkages to the Neighbourhood Centre and to enable where possible optimal lot orientation for passive solar energy gains;
- The creation of 4500 single residential lots ranging in size and type to provide for a variety of lifestyles and differing housing choices and to promote a more equitable urban environment. A base density of R25 has been proposed with pockets of R40 to allow development to better respond to areas of POS, commercial centres, solar access and current market demand;

- Development within the Structure Plan area will be as per the Residential Design Codes however development standards (ie setbacks, frontage etc) can be varied through Detailed Area Plans. The lots are also oriented and dimensioned to enable the application of solar design principles;
- POS areas have been configured to enable the retention of remnant vegetation and wetland areas and to be within convenient walking distance of all future residents;
- POS has been provided on the basis of approximately 10% of the land for open space recreational requirements and 2% - 4% of the land for drainage purposes. It has been assumed that a 50% POS credit will be attained for the drainage areas developed in the form of shallow basins and swales which will be incorporated within a series of linear multiple use corridors. The principle function of the POS areas is to provide active and passive recreation spaces whilst secondary functions include pedestrian movement, linking Regional Open Space areas and stormwater drainage;
- Provision for sufficient community facilities including a variety of active and passive areas of POS;
- A Neighbourhood Centre on Nicholson Road that is proposed to include retail and commercial uses, which will be designed according to traditional "main street" principles with a strong pedestrian focus. Home based businesses will also be encouraged throughout the subdivision specifically along the length of Nicholson Road; and

- Two primary school sites and a possible future primary school site to the south of the structure plan area are proposed. These have been positioned to be within easy walking distance of most school children. In addition to the school sites identified in the Structure Plan, the Carey Baptist College (Primary / High School) is located on Wright Road, opposite the Harrisdale Open Space Area in the northern portion of the Structure Plan.

Based upon this framework, a development outcome can be expected that provides a quality and sustainable living environment that is responsive to the physical character of the site and which provides an urban form conducive to the development of a 'true' neighbourhood community.

ACCESS AND MOVEMENT

The Forrestdale area is well served with the existing regional road network as well as a number of local distributor roads. Regional access to the estate is primarily provided via Warton and Nicholson Roads with secondary access from Wright, Keane, Skeet and Mason Roads.

Investigations undertaken by Riley Consulting Traffic and Transportation Consultants indicate that the existing regional road network has sufficient capacity to accommodate the future traffic flow and planned upgradings.

Regional dual use paths are proposed by the North Forrestdale Structure Plan on the major road network. These dual use paths are proposed to be a common infrastructure item and will thus be funded by all of the landowners with the Structure Plan.

In addition to the regional dual use paths proposed as part of this Structure Plan, an appropriate network of additional local dual use paths and footpaths will be provided throughout the area commensurate to current planning philosophy at the time of subdivision and construction.

Forrestdale is well located to access the future south-west rail line that will link Perth to Mandurah. Future bus services, as agreed and designed with the Perth Transport Authority, will also service the North Forrestdale area.



EXECUTIVE SUMMARY



URBAN WATER MANAGEMENT PLAN

A UWMP for the Structure Plan area has been prepared by Parsons Brinckerhoff pursuant to the recommendation of the UWMS. The UWMP is a refinement of the drainage and development concepts contained within the UWMS and outlines in more detail the drainage requirements for the Structure Plan. The key findings and management initiatives proposed by the UWMP include:

- Drainage infrastructure in the Balannup Precinct has not been adequately maintained for almost 20 years. The mismanagement of major culverts has resulted in sedimentation of drains due to backwater effects and has resulted in a rise in local groundwater levels and flooding of surrounding properties;
- Hydrological and hydraulic modeling has been undertaken at a more detailed level to determine peak flow rates, backwater effects and detention capabilities of the Balannup drainage system to identify measures required so that the post development requirements of the UWMS are met. From this modeling the conceptual design of basin storage requirements and fill levels and waterways were determined; and
- Linear Multiple Use Corridors or POS areas that run through the development have been included in the design to accommodate a linear arterial drainage system as proposed in the UWMS to drain the Balannup Precinct.

The following surface water flow and flood level criteria have been set for the Structure Plan area based on flood detention storage and waterway requirements outlined in the UWMS and on industry standard practice:

- The post development flow rate is to be consistent with pre-development flow rate at the discharge point (flow from the Balannup Drain into Baileys Drain);
- Drainage routes are to follow linear POS areas or multiple use corridors, existing Water Corporation Drainage and local drainage routes;
- Continuing the use of wetlands as part of the flood management system following development to protect downstream areas from flooding and erosion;
- Existing drains through wetlands are to remain to maintain existing hydrological regime of wetlands;
- Drainage inverts below the AAMGL be permitted only where groundwater levels will not be adversely affected;
- The flow path for water exceeding basin design level is to be directed to an overland flow path; and
- A 0.5m separation between peak groundwater levels and finished floor level has been allowed for in determining fill requirements.

The UWMP is consistent with the UWMS and the initiatives of the Water Corporation in undertaking the Water Cycle Plan for the wider area. As such the Water Corporation supports and endorses the UWMP and other innovations related to the Water Corporation's 'Water Cycle Plan' project.

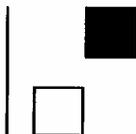
SERVICING AND INFRASTRUCTURE

A detailed report on Engineering Aspects and Infrastructure has been prepared by Wood & Grieve. Primary findings are detailed below:

- Drainage - The main feature of the Structure Plan is the linear Multiple Use Corridor or POS that runs through the centre of the development. This feature was included to accommodate a linear arterial drainage system as proposed in the UWMS to drain the Balannup Precinct;
- Sewerage - The site generally falls within two wastewater catchments located north and south of the significant "pine tree ridge" in the vicinity of the intersection of Warton Road and Nicholson Road. Detailed sewer reticulation design is expected to extend the southern catchment to the boundaries of the site. Opportunities exist to locate a temporary pump station near the southern boundary of Lot 50, discharging directly into the Westfield Effluent pressure main in Armadale Road or into the catchment of a permanent pump station to be located near the intersection of the Wright Road road reserve and the Serpentine Trunk main. This interim arrangement would have capacity to accommodate the early years of development within the subject area;
- Water Reticulation - The Water Corporation has confirmed that a potable water supply will be available from the existing DN250 tee off the Serpentine Trunk Main at the intersection of Nicholson Road and Warton Road. The Water Corporation has advised that this connection point has adequate capacity to supply about 1,000 residential lots. Further details of the proposed water distribution network to service the subject land will become available once the Water Corporation has completed its planning review of the Canning Gosnells Scheme;
- Electrical Reticulation - Western Power has confirmed that the first stages of development can be supplied with power from the existing 22kV overhead power lines in Warton Road and Nicholson Road. Further stages will require the supply to be connected from either of the new proposed zone substations to be constructed at Success and Southern River;
- Gas Supply - AlintaGas has confirmed that the development can be supplied with reticulated natural gas by extending its existing infrastructure; and
- Telecommunications - Telstra has advised that the project is ideally situated for the provision of telecommunications, including optical fibre. The project falls within the Forrestdale exchange area.



EXECUTIVE SUMMARY



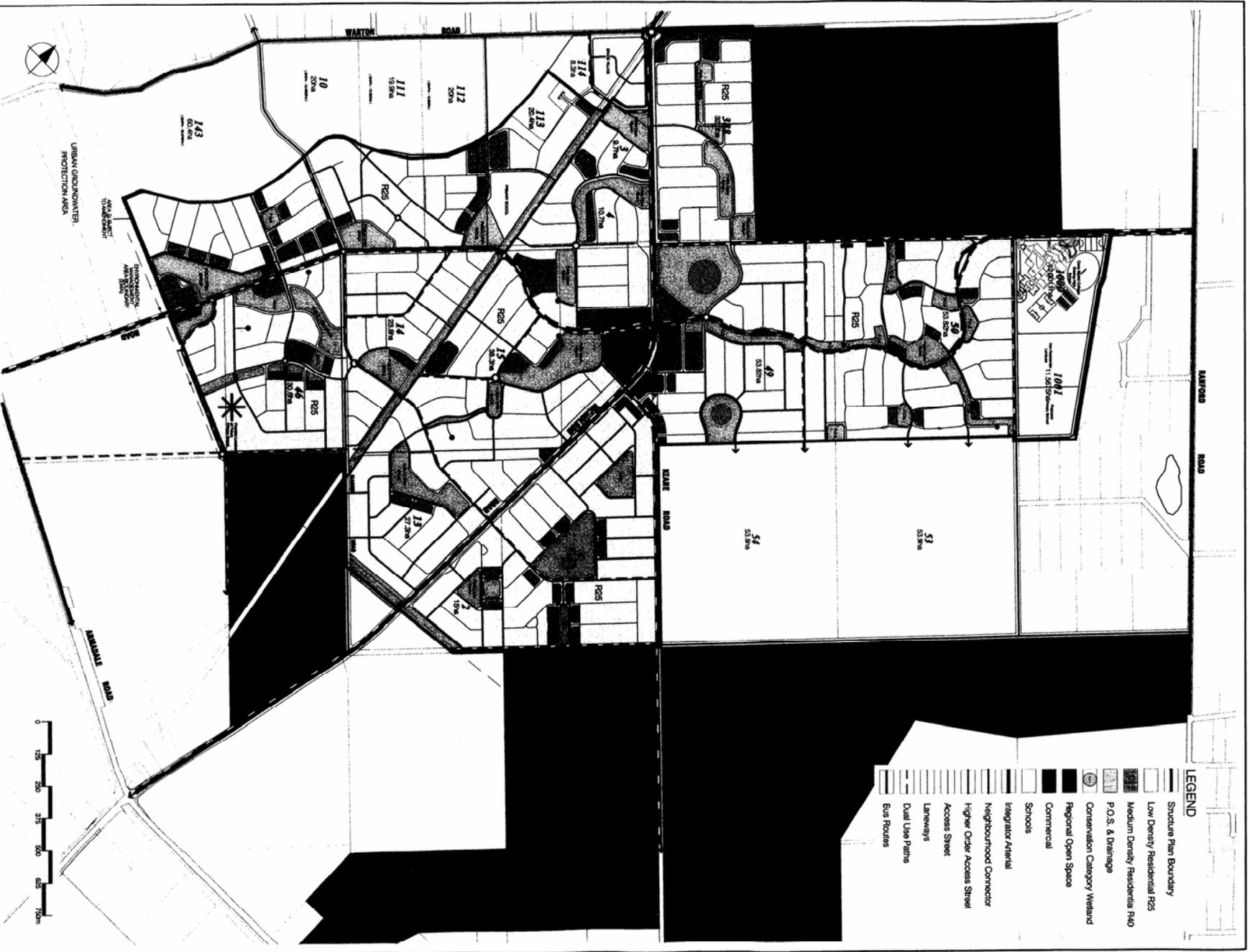
STRUCTURE PLAN ELEMENTS

The table below gives a summary of the key land use elements of the Structure Plan.

Additional information regarding these matters is provided in the following sections.

TABLE 1: SUMMARY OF STRUCTURE PLAN STATISTICS

Total Structure Plan Area	452 hectares
Total estimated lot yield	4500 lots
Density range	R25 – R40
Likely lot size range	220 – 800m ²
Estimated population	11,250 people (assuming 2.5 persons per household)
Schools	3 primary schools (the southern most school may be relocated further south) (4 hectares each)
	Carey Baptist College – private primary school and high school
Retail	Neighbourhood Centre
	Local centres to be developed in strategic locations, however specific sites not identified on Structure Plan
Public Open Space & Drainage	Each land owner will provide 10% of their land for open space and 2-4% of their land for drainage (50% POS credit for landscaped drainage swales) Two conservation category wetlands within Lot 49 will cause a surplus of POS on this land holding. The conservation category wetlands will be an item in the Development Contributions Plan to ensure that the land owner of Lot 49 is equitably compensated for the protection of these wetlands within additional areas/ public open space.



NORTH FORRESTDALE - STAGE 1 STRUCTURE PLAN

CITY OF ARMADALE

- LEGEND**
- Structure Plan Boundary
 - Low Density Residential R25
 - Medium Density Residential R40
 - P.O.S. & Drainage
 - Conservation Category Wetland
 - Regional Open Space
 - Commercial
 - Schools
 - Integrator Arterial
 - Neighbourhood Connector
 - Higher Order Access Street
 - Access Street
 - Laneways
 - Dual Use Paths
 - Bus Routes

PROFESSIONAL LOCAL STRUCTURE PLAN SIGNING GROUP
 DATE: 28/08/2018 SCALE: 1:5000 50m 500m