
CURRAMBINE DISTRICT CENTRE STRUCTURE PLAN

STRUCTURE PLAN NO. 6

**This Structure Plan is prepared under the provisions of Part 9
of the City of Joondalup District Planning Scheme No. 2**

CONTENTS

INTRODUCTION	1
PART 1 – STATUTORY PLANNING SECTION	3
PLAN A - INDICATIVE CONCEPT PLAN	12
PART 2 - EXPLANATORY REPORT	13
THE SITE	13
LAND OWNERSHIP	15
LAND PARTICULARS	15
PREVIOUS PLANNING APPLICATIONS	15
LEGAL AGREEMENT ON CIVIC & CULTURAL LAND AREA	18
LAND USE AND IMPROVEMENTS	18
PROJECT BACKGROUND	19
REGIONAL CONTEXT	19
LOCAL CONTEXT	19
DEVELOPMENT OBJECTIVES AND PHILOSOPHY	19
MAIN STREET NETWORK	20
BUILT FORM AND LAND USE RICHNESS	20
ROBUSTNESS AND SUSTAINABILITY	20
DESIGN CRITERIA	21
PLANNING FRAMEWORK	23
METROPOLITAN REGION SCHEME	23
CITY OF JOONDALUP - DPS NO. 2	24
CITY OF JOONDALUP - P3.2.8 - CENTRES STRATEGY	24
WAPC - METROPOLITAN CENTRES POLICY	26
CONCLUSION - RETAIL FLOOR AREA CONTROL	27
CONTEXT AND ANALYSIS	29
CLIMATE	29
GEOLOGY AND SOILS	29
HYDROLOGY AND HYDROGEOLOGY	29
SITE CONTAMINATION	30
NOISE AND VIBRATION	30
FLORA AND FAUNA	30
COMMUNITY INTEGRATION	31
HISTORIC CONNECTIONS	31
PHYSICAL CONNECTIONS	31
SOCIAL INTEGRATION	31

STRUCTURE PLAN OUTLINE	33
DEVELOPMENT PRINCIPLES	33
MOVEMENT SYSTEMS	33
LAND USES INTENT	36
URBAN DESIGN	37
CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)	38
IMPLEMENTATION AND STAGING	39
PLANNING COMPLIANCE	39
COMMUNITY CONSULTATION	40
SERVICING	40
CONCLUSION	43
APPENDIX 1	45
DEVELOPMENT PLAN	
ZONING PLAN	
RESIDENTIAL CODING PLAN	
APPENDIX 2	47
INDICATIVE MAIN STREETS AND LINKS PLAN	
PLANT COMMUNITIES OVER STRUCTURE PLAN	
APPENDIX 3	49
CERTIFICATES OF TITLE	
APPENDIX 4	51
TRAFFIC REPORT (SEPARATE DOCUMENT)	

INTRODUCTION

The Currantbine District Centre, in the City of Joondalup (Refer Figure 1 - Location Plan) is the subject of this Structure Planning exercise. The intent of the Structure Plan is to guide the development of both improved and unimproved land in the District Centre in a co-ordinated and integrated manner. The potential exists for the Structure Plan to guide the development of the 16.35 hectare site towards becoming an innovative, community focused district centre. The Structure Plan follows main street principles providing a strong sense of place and support for social, economic and environmental sustainability.

This report has been prepared on behalf of Davidson Pty Ltd, the Roman Catholic Archbishop of Perth and Woolworths Ltd being the landowners and leaseholders for the majority of the site. This report conveys a land use Structure Plan that supports the best outcome for the site within its context and constraints. The Structure Plan does not form a finite detailed development plan.

The proponents have undertaken a comprehensive review of all town planning, engineering, traffic management, and market and retail considerations in order to prepare the Structure Plan. The Structure Plan seeks approval from the City of Joondalup and the Western Australian Planning Commission pursuant to Part 9 of the City of Joondalup District Planning Scheme No 2.

This Structure Plan report supports a partnership-based approach, with the proponent working with the City to create a best practice main street District Centre. This proposal creates an integrated retail centre that can serve its local community with its required retail needs as well as form a Liveable Town Centre as a base for a strong, proud and vibrant community.

The proponents wish to complete the development of this important District Centre and see the integrated Structure Plan as an opportunity to lead centre planning in WA, if not Australia.

This Structure Plan has been prepared in accordance with Schedule 7 and Part 9 of the City of Joondalup District Planning Scheme No. 2.

PARTS OF THE STRUCTURE PLAN

This Structure Plan comprises two parts:

Part 1: Statutory Planning Report

A copy of Plan A - Indicative Concept Plan is attached under this section of the Structure Plan.

Part 2: Explanatory Report

Clause 9.8 of the City of Joondalup District Planning Scheme No. 2 provides, amongst other things, that a provision, standard or requirement of a Structure Plan approved under Part 9 of the Scheme shall be given the same force and effect as if it were a provision, standard or requirement of the Scheme. It is hereby provided that such force and effect shall only be given to Part 1 and Appendix 1 of the Structure Plan Report. Part 2 and the remaining appendices of the Structure Plan is for explanatory purposes only, providing a descriptive analysis of the Structure Plan and an indication of potential development opportunities and intended benefits.

Subclause 9.8.3(f) of the Scheme states that where there is any inconsistency or conflict between any provision, requirement or standard of the Scheme and any provision, requirement or standard of an Agreed Structure Plan, the Scheme shall prevail.

PART 1 – STATUTORY PLANNING SECTION

1.0 SUBJECT AREA

The Structure Plan area comprises approximately 18.35 ha and is described as:

Lot 9503 on Deposited Plan 34971 and being the subject of Certificate of Title Volume 2531 Folio 997. The land comprises 8.8593ha and is generally bounded by Shenton and Delamere Avenues, Chesapeake Way, Hobson Gate, Marmion Avenue and the northern and eastern boundaries of Lot 929.

Lot 929 on Diagram 90408 and being the subject of Certificate of Title Volume 2079 Folio 304. The land comprises 7.5ha and is generally bounded by Marmion and Shenton Avenues and the southern and western boundaries of Lot 9503.

Lot 1574 on Deposited Plan 36888 and being the subject of Certificate of Title Volume 2573 Folio 480. The land comprises 2 ha and has frontage to Delamere Avenue.

REFER TO APPENDIX 4 FOR CERTIFICATES OF TITLE.

2.0 LAND USE AREAS

The zoning plan indicates the zones being Residential, Civic and Cultural, Commercial and Business.

3.0 DEFINITIONS

The terms used shall be interpreted in accordance with the Scheme and as set out hereunder:

'The Scheme'
shall mean the City of Joondalup District Zoning Scheme No. 2 (as amended).

'Storey'
shall mean the vertical space extending from one habitable floor of a building to the floor above and for residential properties shall be deemed to be no more than 3 metres. The term shall not include any space within a roof, whether used for habitation or not.

'Currambine District Centre'
shall mean the area recognised under the Metropolitan Centres Strategy (WAPC 2000), otherwise referred to as the Currambine Small Town Centre in the City of Joondalup Centres Strategy (P.3.2.8).

'Urban Edges'
shall mean building facades designed to maximise commercial exposures, create interest and pedestrian interaction, in accordance with the criteria listed in section 8.1.2 and the Development Plan (Appendix 1).

'Non - Urban Edges':

shall mean building facades designed (where necessary) to encourage surveillance and pedestrian activity, in accordance with the criteria listed in section 8.1.2 and the Development Plan (Appendix 1).

'Detailed Area Plans (DAPs)':

shall mean that design guidelines that are prepared by subdivision proponents for all lots below 350m² and for other lots as appropriate, which address matters raised in Element 3 - Lot Layout of Liveable Neighbourhoods, Edition 2 June 2000 (WAPC), or its replacement.

4.0 THE SCHEME

Unless provided for by specific requirements in this Structure Plan, all requirements shall be in accordance with the Scheme.

5.0 RETAIL NET LETTABLE AREA (NLA)

The retail floor space limit shall be 10,000 m² NLA, which is in accordance with Schedule 3 of the Scheme and City of Joondalup Policy 3.2.8 'Centres Strategy'.

6.0 RESIDENTIAL DENSITY CODING

Residential land and development within the Centre Zone shall be developed in accordance with the Residential Design Codes of Western Australia, as given effect by clause 4.2 of the Scheme, unless otherwise specified in this Structure Plan. The 'Residential Density Codes Plan (Appendix 1)' indicates the Residential Density Codes that apply to the subject land, pursuant to Clause 4.2.5 of the Scheme.

7.0 PROVISIONS

This document identifies four zones distinguished by their land use intent and built form character. Each has a predominant use, which is intended to be treated in a flexible manner to allow other compatible uses so that the Currambine Centre can develop with the diversity and robustness of a small town centre.

Development shall conform in intent with the Development Plan. Uses shall conform with the City of Joondalup District Planning Scheme No. 2 Zoning Plan – Currambine District Centre and Residential Coding Plan – Currambine District Centre (refer Appendix 1).

In addition land use and development within the District Centre is required to achieve an outcome that delivers similar level of benefits as those that might be derived from the proposals outlined in the Indicative Concept Plan and the Indicative Main Street and Links Plan.

Development shall also conform in intent with the Objectives and Criteria as stated below.

8.0 OBJECTIVES AND CRITERIA

The provisions are divided into objectives that describe, in general terms, the intentions to be addressed in each zone, and criteria, which set out built form requirements. These may be augmented by the preparation of Detailed Area Plans (DAPs) at the future land subdivision stage detail specific planning, design and construction requirements for each zone which are proposed to accommodate the desired uses and meet the criteria.

8.1 COMMERCIAL ZONE

The Commercial zone is intended to accommodate a wider range of uses including retailing, entertainment, professional offices, business services and residential. The land uses listed in the Scheme for the Commercial zone are the land uses that can be considered in the Commercial zone.

8.1.1 Objectives

The general objectives of the Commercial zone are:

- I. To create an active focus for the community with a diversity of retail and commercial uses that generates day and evening activity.
- II. To allow appropriate businesses to locate and develop in close proximity to residential areas for the convenience of the community.
- III. Encourage high standards of 'Main Street' built form and an active edge to create an attractive façade to vehicle and pedestrian routes providing visual amenity and interaction.
- IV. Provide efficient vehicle access and circulation with pedestrian priority, and
- V. Encourage a high level of passive surveillance of public and private spaces.

8.1.2 Criteria

General criteria are based on primarily controlling land use and the quality of the edge condition.

General criteria to be satisfied in this zone are as follows.

- I. The provisions of the 'Commercial' zone (Clause 3.7) in the Scheme shall apply to this area unless otherwise specified in this section.
- II. Urban Edges (as shown on the Development Plan) are to be zero-setback other than for minor recesses of up to 1.5m deep and a maximum of 3m long.

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- iii. Non Urban Edges of the building (as shown on the development plan) may fall anywhere within the building envelope indicated on the same plan.
 - iv. Urban and Non Urban edges of buildings shall be designed to have active frontages towards vehicle and pedestrian routes and at grade parking areas with continuous awnings and/or colonnades along these frontages to give pedestrians protection from the weather;
 - v. There shall be no blank facades to the building other than where the building directly abuts another building or a loading bay.
 - vi. Loading bays are to be located away from the Urban Edge and are to be no more than 15 metres wide or otherwise located in a service yard away from areas of pedestrian use
 - vii. Building façades shall be two storeys high (or equivalent parapet height) to create a human scaled street and an urban edge to the street boundary. Design should give the impression of a habitable upper floor even if such a floor is not created as leasable area.
 - viii. Where a development area fronts a mall and a street, tenancies shall interface and integrate with both frontages. However, a single tenancy shall not interface with both a pedestrian mall and a street, except those tenancies at the end of a development area, subject to pedestrian access being provided from at least two of the three building facades;
 - ix. Other than for areas of blank façade allowed for under previous clauses, building frontages are to comprise a minimum 70% of windows and visually permeable doors. Window sills shall be set no less than 600mm from the ground floor level, open shop fronts are encouraged.
 - x. Access and circulation shall reinforce the creation of sub blocks akin to a fine grain town centre Urban edges and non-urban edges may include breaks for vehicle access of up to 15m wide. These shall be no closer than 40 metres apart. The Structure Plan clearly indicates that the existing 'left-in/left-out' access point from Shenton Avenue to the car park is to be retained. The intersection of Delamere Avenue and Shenton Avenue is to be identified as the main entrance to the car park and access to the "Main Street" from Shenton Avenue. This intersection is to be signalled subject to investigation between the proponents, the City and Main Roads WA.
 - xi. A continuous footpath (3 metres minimum) shall be provided along the building edge other than where a loading bay abuts the building or vehicle crossover is present.
 - xii. Car parking areas shall be designed to provide pedestrian paths separate from vehicle flow at a rate of one path every 40 metres. The paths shall be aligned with the predominant pedestrian flow direction.

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- XIII. The car park shall be designed to ensure slow speeds. Lengths of road exceeding 50 metres shall incorporate speed control devices such as minor level changes;
 - XIV. Car park landscaping requirements shall be in accordance with the Scheme;
 - XV. The tree species shall be such that it has a high branch free stem to allow surveillance and visibility of shop fronts and a large canopy to achieve adequate shading of car parking area and west facing portion of building. Planting of natives is preferable however they must meet this criteria.
 - XVI. Publicly accessible space shall be provided in accordance with the Development Plan allowing for some variation in shape and exact location. Additional landscape space beyond required footpaths, pedestrian street, and the plazas is not required.
 - XVII. The open pedestrian street shall be no less than 8 metres wide and neither plaza less than 15 metres.
 - XVIII. Service areas, bin and material storage areas and services such as air conditioners, compressors and other machinery shall be located away from public areas and screened from view from streets and public areas by an enclosure in the style and material of the building.
 - XIX. Roof mounted mechanical equipment, if required, shall be screened from view by the roof form or parapet walls.
 - XX. Buildings and all streets, parks and parking areas shall be well lit to encourage safe use after hours with light spill into neighbouring residential areas minimised;
 - XXI. Convenient, safe and direct pedestrian access shall be provided throughout the area as an extension to the 3 metres footpath required along Urban and Non Urban edges.
 - XXII. Security bollards shall not conflict with pedestrian flow, and
 - XXIII. Security shutters (if required) shall be visually permeable and retractable.

Residential Development Criteria:

- i. Residential development shall conform to the general criteria

8.2 BUSINESS ZONE

The Business zone is intended to accommodate a wider range of uses including entertainment, professional offices, business services and residential. The land uses listed in the Scheme for the Business Zone are the land uses that can be considered in the Business Area.

8.2.1 Objectives

The general objectives of the Business Area are:

- I. To create an active focus for the community with a diversity of non-retail mainstreet uses that generate day and evening activity;
- II. To allow appropriate businesses to locate and develop in close proximity to residential areas for the convenience of the community;
- III. Encourage high standards of 'Main Street' built form and an active edge to create an attractive façade to vehicle and pedestrian routes providing visual amenity and interaction;
- IV. Provide efficient vehicle access and circulation with pedestrian priority; and
- V. Encourage a high level of passive surveillance of public and private spaces.

8.2.2 Criteria

General criteria to be satisfied in the Business Area:

- I. The Provisions of the 'Business' Zone in the Scheme shall apply to this Area;
- II. The design criteria of the Commercial Area to be applied to development; and
- III. All buildings within the Business zone that front Delamere Avenue are to be designed to present a maximum two storey façade to Delamere Avenue and must be sympathetic in both scale and built form to minimize any impact on the amenity of adjacent residential dwellings. This can be achieved by utilizing a range of methods, such as, but not limited to:

Wall recesses
Articulation of panels
Non-obscured glazing
Awnings
Range of colours and textures

Such design drawings to be made available for viewing and comment by the property owners in Delamere Avenue facing the site.

Residential Development Criteria:

- I. Residential development shall generally conform to these criteria.

8.3 CIVIC AND CULTURAL ZONE

This Area is intended to comprise Public Open Space and a building(s) to be developed for community and civic purposes and may also include a future toilet facility for users of the Public Open Space.

8.3.1 Objectives

The general objectives of the Civic and Cultural Area are:

- I. To create an active focus for the community with a diversity of activity occurring along it;
- II. To create an Area which provides a real focus for a range of civic, cultural and community activities;
- III. To integrate the Civic and Cultural Area with surrounding commercial, business and residential land uses;
- IV. To encourage the use of the Civic and Cultural Area at different times of the day and evening;
- V. Encourage high standards of built form and streetscape and reinforce the plaza; and
- VI. To create a conservation area as recommended by the flora and fauna study of the site prepared by ENV Australia dated November 2005.

8.3.2 Criteria

General criteria to be satisfied in the Civic and Cultural Area:

- I. The Provisions of the 'Civic and Cultural' Zone in the Scheme shall apply to this Area unless otherwise specified in this section;
- II. The design criteria of the Commercial Area to be applied to development;
- III. The building should be designed to present a 2 Storey appearance along Urban Edges. The remainder of the building may be 1 storey; and

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- IV. A conservation area is to be created within the northwest portion of the land in the area that corresponds with the location of a viable population of *J. seneca* and other plant communities. The area that corresponds with the area of *J. seneca* as shown in Appendix 2 to Report CJO16-02/06 must be left undisturbed and this conservation area shall be protected by a small exclusion fence consisting of 'gelding' type fencing at a height of 1.3 metres. This conservation area shall also be made the focal point of the landscaping design for the Civic and Cultural zone and all development adjacent to it proposed under the structure plan.

8.4 RESIDENTIAL ZONE

The predominant land use in this Area shall be Residential Single house and Grouped Dwellings. Uses permitted and general provisions for this Area are the same as those that apply to the Residential Zone in the Scheme unless otherwise specified in this section.

8.4.1 Objectives

The general development objectives of the Residential Area are:

- i. To encourage high quality residential development with a strong streetscape presence;
- ii. To promote a subdivision and dwelling configuration, which provides for pedestrian friendly streetscapes with passive surveillance of the public streets, open space and adjacent Civic and Cultural Area; and,
- iii. To encourage local employment through viable home based business.

8.4.2 Criteria

Criteria to be satisfied in this Area:

- i. The residential density code shall be as stated on the Residential Coding Map (Appendix 1);
- ii. The provisions of the Residential Zone in the Scheme and the Residential Design Codes of WA shall apply to this Area;
- iii. Buildings on street corners shall address each street frontage and the corner with equal importance;
- iv. Setbacks are to be determined under the Residential Design Codes.

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- V. The relationship between the residential development and the Civic and Cultural Zone shall be managed to ensure efficient and safe pedestrian access to the front of the lots, to allow for passive surveillance over the Civic and Cultural Zone from future residential dwellings and to create a sense of separation and privacy from the Civic and Cultural Zone. Notwithstanding City of Joondalup Policy 3.2.6 – Subdivision and Development Adjoining Areas of Public Space, the City may consider alternative interface treatments proposed at the future subdivision stage, rather than requiring a public or private road interface treatment as required under this policy. As a minimum, a 5.0 metre wide pedestrian access way along the boundary between the Residential Zone and the Civic Cultural Zone, contained wholly within the Residential Zone, is required and is to provide linkage between Delamere Avenue and Hobsons Gate; and
- VI. A Detailed Area Plan may be required to address, among other things, parking, privacy and noise attenuation.

PART 2 - EXPLANATORY REPORT

THE SITE

The site is one of the few remaining large development areas within the City of Joondalup. The Structure Plan relates to the 18.35ha development area, which is located with the suburb of Currambine at the northeast corner of the intersection of Marmion and Shenton Avenues. The Joondalup City Centre is approximately 3km to the east and the Perth CBD is approximately 27 kilometres south east (Refer to Figure 1 - Location Plan). The Indian Ocean is 1.5 kilometres to the west. The northern and eastern edges of the site are bound by the sweep of Delamere Avenue that connects Shenton and Marmion Avenues.



FIGURE 1 - LOCATION PLAN

The entire site (Refer to Figure 2 - Site Plan) has a frontage of approximately 710 metres to Marmion Avenue and rises steeply from the road in the south west corner. Frontage to Shenton Avenue is approximately 290 metres with a crest occurring near the intersection of Delamere Avenue. The site is generally rectangular, varying in width from 240 metres to 300 metres.

The site is immediately adjacent to existing residential areas in the locality of Currambine. Residential development has occurred on adjacent and opposite corners in the localities of Connolly (south), Ocean Reef (south-west) and Iluka (west). Most residential development is low density (R20), with lots ranging from 600m² to 800m². There is however a small component (30 lots) of medium density single residential lots facing Delamere Avenue, some with rear lanes. These lots range in size from 350m² to 450m².

The proximity of the Joondalup Strategic Regional Centre to the site is an important factor in determining how the proposed district centre will develop, both in terms of land use and built form. Joondalup provides all the facilities of a city, such as rail transport, office, civic and residential. Currambine's development pattern needs to take account of this crucial context. Its future retail expansion will be second to none in the northern corridor. Currambine by comparison will be a district centre serving the weekly needs of surrounding suburbs.

The site affords some views to the Indian Ocean and is also subject to seasonal south westerly breezes.



FIGURE 2 - SITE PLAN

LAND OWNERSHIP

The owners of the land as Tenants in Common in equal shares are as follows:

- The Roman Catholic Archbishop of Perth
Victoria Square, PERTH
- Davidson Pty Ltd
3rd Floor
45 St Georges Terrace, PERTH

THE OWNER OF LOT 1574 IS THE CITY OF JOONDALUP

Refer to Appendix 4 for Certificates of Title

A 99 year lease in favour of Woolworths Limited exists on a portion of Lot 929.

LAND PARTICULARS

The land subject to the proposed Structure Plan is described as follows:

Lot 9503 on Deposited Plan 34971 and being the subject of Certificate of Title Volume 2531 Folio 997. The land comprises 8.8593ha and is generally bounded by Shenton and Delamere Avenues, Chesapeake Way, Hobson Gate, Marmion Avenue and the northern and eastern boundaries of Lot 929.

Lot 929 on Diagram 90408 and being the subject of Certificate of Title Volume 2079 Folio 304. The land comprises 7.5ha and is generally bounded by Marmion and Shenton Avenues and the southern and western boundaries of Lot 9503.

Lot 1574 on Deposited Plan 36888 and being the subject of Certificate of Title Volume 2573 Folio 480. The land comprises 2 ha and has frontage to Delamere Avenue.

PREVIOUS PLANNING APPLICATIONS

Pre-1995

Council (then the City of Wanneroo) initiated the rezoning of the subject site through Amendment No. 862 to the then City of Wanneroo Town Planning Scheme No. 1. That amendment was advertised and it was reported in Council minutes that there were 23 submissions. Four supporting the proposal and 19 objecting. Council resolved to recommend final approval subject to a maximum retail floor area of 15,000m² and development being staged with floor space being limited to 7500m² until January 2000. The first stage was not to include a discount department store.

The Minister's decision on final approval of Amendment 862 included modifications, reducing the area of Commercial zoning from 7.5ha to 5ha and simply limiting retail floor space to 10,000m² with no provisions in relation to staging.

March 1995

Minutes of the City of Wanneroo Town Planning Committee of 27 March 1995 record Commission advice to Council that 'The Commission would be prepared to reconsider the longer term net retail floorspace potential of the Currambine District Centre in the light of a review of Councils District Zoning Scheme and any related review of the Retail Strategy'. It is noted that the Scheme and Strategy as well as the Metropolitan Centres Policy have all been reviewed since that time.

July 1995

Conditional planning approval for the development of the Currambine Marketplace Shopping Centre was granted by the City of Wanneroo in July 1995.

1997

The Centre opened.

January 2002

On 24 January 2002, a request was made of Council to initiate an amendment to its Scheme rezoning land from 'Business' to 'Commercial' and to adjust the location of a proposed community purpose site in order to permit the centre to expand from approximately 6,500m² (total NLA excluding cinemas) to 10,000m² of retail space in a manner integrated with the future community facility.

March 2002

Council responded on 14 March 2002, advising that it was not prepared to initiate a rezoning until a Structure Plan had been prepared for the centre.

A letter from Council dated 19 March 2002 followed, advising that Council was continuing to pursue the design of a building on the community purpose site. In other words, it was not considering the adjustment of the community facility's location so that the centre expansion proposed by Woolworths could be accommodated on the northern part of the site. Development of the community purpose site would proceed without regard to integration with existing and/or future commercial facilities and without regard to the structure planning requested by Council.

April 2002

On 24 April 2002, the Landowners advised Woolworths that in accordance with an agreement with Council, subdivision approval had been granted for the creation of the community purpose site without change to its location.

May 2002

A meeting with Council officers was held on 7 May to discuss the further development of the centre and the possibility of relocating the community purpose site. The outcomes of that meeting were confirmed in a letter of 14 May, requesting a deputation with Council.

July 2002

On 30 July, a presentation was made to Councillors outlining Woolworths proposal and its relationship to Council's Scheme and Centres Strategy. Following the presentations, discussion continued between Councillors and Council officers and subsequent verbal advice indicated that a detailed report was to be prepared and presented to Council.

December 2002

On 3 December 2002, Council wrote reiterating earlier advice that it required a Structure Plan and that it intended to pursue development of the community purpose site in the approved location.

2003

The proponents undertake a collaborative structure planning process to provide the framework for a Village Style District Centre developed along Main Street Principles.

February 2004

The proponents lodge a structure plan with the City of Joondalup based on a maximum retail floor space of 15,000m². The City delays advertising the structure plan pending further discussion on retail floor space. The proponents agree to re-submit the structure plan with a maximum retail floor space of 12,500m² to avoid further delays in adoption of an agreed structure plan.

LEGAL AGREEMENT ON CIVIC & CULTURAL LAND AREA

The landowners and the City entered into a legal deed on 14 July, 1995 as a condition of rezoning part of the subject site to 'Commercial' (5ha permissible retail gross leasable area [10,000m²]), 'Business', 'Service Station' and 'Civic'.

The legal deed requires the landowners, subject to the rezoning and when requested by the City to transfer to the City in fee simple, free of encumbrances and at no cost to the City and without payment of compensation, the Civic land for the purposes of recreation and the construction thereon of a community facilities and town square. The deed states that the Civic land shall be accepted by the City as part of the landowners subdivision commitment to the 10% public open space contribution.

A subdivision application (WAPC reference 120166) to create the Civic land has been granted approval and the land has been transferred to the City of Joondalup.

LAND USE AND IMPROVEMENTS

The site is partially developed. The north western corner contains three lots that are developed as highway service/drive through development (zoned 'Business'). The south-western corner contains the existing Currambine Marketplace Shopping Centre and Grand Cinemas (zoned 'Commercial'). The remainder of the site is undeveloped under various zonings, and consists primarily of degraded coastal heathland. The undeveloped portions of the site include zonings for 'Civic and Cultural', 'Residential R40' and 'Business'.

Currambine Marketplace follows the tradition of car based shopping centre development common in Perth of the last 40 years. It is setback from the road reserve property boundary by 100m of surface level carparking, which also allows full exposure to passing traffic. The centre contains some outward facing tenancies but otherwise is entirely internalised. A service station (Woolworth's Plus) is located on the southern boundary adjacent to Shenton Avenue. The cinemas provide useful diversity and mix of activity in what would otherwise be a mono-use centre. However, they sit alone with insufficient supporting activities to create a vibrant 'Town Centre' atmosphere.

PROJECT BACKGROUND

REGIONAL CONTEXT

Currambine District Centre is located approximately 27 kilometres from central Perth. It lies in the coastal Northern West Corridor which is serviced by the Mitchell Freeway and the Northern Rail Line. Currambine lies to the west of these transport routes and is connected to them by Sherton Road and various bus routes.

The Currambine District Centre is part of the suburb of Currambine and is within the North Coastal Ward of the City of Joondalup. The Joondalup Strategic Regional Centre, which serves the North West Corridor, is located on the Mitchell Freeway and on the Northern Rail Line 3 kilometres away. Connolly, Ocean Reef, Iluka and Currambine form a cluster of coastal suburbs around the Currambine centre on the western side of the freeway.

Currambine and the surrounding suburbs are relatively new suburbs compared to the suburbs at the southern end of the City of Joondalup. However, new suburbs and centres are being developed to the north in the City of Wanneroo and Currambine and the surrounding suburbs are becoming well established.

LOCAL CONTEXT

The Currambine District Shopping Centre site is surrounded by the recently established communities of Connolly, Ocean Reef and Iluka. These suburbs have proximity to Joondalup City Centre and the Indian Ocean and developments such as the Joondalup Golf Course and Resort. In time, as the area matures, it is anticipated that the proposed Currambine District Shopping Centre will act as a hub for the local area. The proximity of the site to the ocean and associated recreational facilities should not be overlooked in terms of providing a unique local identity to the centre. It is important that this area has a functioning District Centre as Joondalup will not provide a hub for these communities.

DEVELOPMENT OBJECTIVES AND PHILOSOPHY

The objective is to create a safe, attractive and vibrant centre that will be sustainable over time and contribute to the quality of life of the local community. The design philosophy is to, as far as possible, transform the Currambine Centre into a main street based small town centre. To this end, within the site much effort and co-ordination has gone into ensuring multiple ownerships and lease holdings would not compromise the orderly and integrated development of the entire site. Streets have been brought through the site to integrate the centre and create vibrant main streets. The effect is further enhanced by utilising a consistent 'build-to' line and setback. This approach is a radical departure from the shopping box in a coat of parking 'model' which currently exists in this and many other Centres.

MAIN STREET NETWORK

The Structure Plan proposes that new main streets through the site will form a simple and coherent system. The system includes a pedestrian street as well as shared main streets (vehicular and pedestrian). The importance of these is balanced so that they reinforce each other and provide choice.

The Pedestrian Street effectively begins at the site's southern boundary on Shenton Avenue, where a raised pedestrian route is marked out through the carpark. It runs north towards the shopping centre for approximately 100 metres. The pedestrian street then enters the interior air-conditioned shopping mall space for approximately 100 metres before entering a proposed plaza area in front of the cinemas for approximately 60 metres. From the town plaza the street runs for 230 metres to Hobson Gate. The street within the site is therefore around 500 metres long and accentuated by features along its path.

The pedestrian street, for almost all of its length, abuts a traffic calmed vehicle street. The provision of on street parking along the length of this street helps to activate the edge of pedestrian street.

The main streets provide a strong and memorable location for the community centre. The centre is now both highly visible and highly accessible and a key feature of the town square.

In summary, main streets provide a vibrant public domain that links the activities of the Currambine District Shopping Centre together. Cafes, restaurants and shops will attract people at night and provide a hub for commercial and social interaction in the community. The main streets are the thread that binds a range of activities into a single experience.

BUILT FORM AND LAND USE RICHNESS

Richness is the quality that provides interest. Richness is created by mixing uses, including retail, office, community centres, entertainment, public spaces and residential use.

A wide variety of uses are proposed. These are configured to enhance the synergy between activities creating a vibrant centre.

ROBUSTNESS AND SUSTAINABILITY

Robustness, and hence sustainability, is the creation of a built environment that fronts public space actively, logically and clearly. This allows the adaptation and transformation of the Currambine District Shopping Centre over time. All development along frontages is zero or minimal setback to provide an active interface to the street or public realm.

The proposal includes a service road on Marmion Avenue. The service road provides an opportunity for parking and for access to underground parking. It creates a pedestrian friendly frontage to Marmion Avenue and an opportunity for show rooms or small business.

The robustness of this street framework is assured as it directly responds to the street system/movement economy. The movement economy is a benchmark for urban development. As long as cars and people pass buildings, the commercial uses within them can remain viable.

DESIGN CRITERIA

The criteria presented in Part 1, have been written to support and reinforce a pedestrian town centre focused outcome. The design principles for the design criteria are:

- Activities contained within each building should be visible from the street or pedestrian street. Pedestrian spaces should be protected from the weather by awnings, eaves and a generous planting of street trees.
- Pedestrian activity should be at ground level and the use of colonnades, verandahs and awnings should be promoted. A highly pedestrianised environment should be supported whilst allowing controlled and appropriate vehicular access.
- Built form must provide a strong street presence with minimal setbacks in order to encourage and frame street activity. Alfresco/cafe/restaurant uses are to be encouraged, especially near the retail focal point. Activities with extended trading hours should be located on the Main Street (i.e. post office/fitness centre/ATM/video store/fast food/hair dresser etc).
- Tree planting and awnings providing shade to the shop fronts/alfresco areas should be provided. Landscape design should soften the impact of the centre and reinforce key vistas through avenues. On-street parking, defined parking precincts and rear service courts should be promoted to avoid fragmentation of the Main Street.
- Uses and design should support a safe environment that manages the relationship between pedestrian and vehicle movement and maximise personal safety. Passive surveillance must be reinforced to reinforce safety and minimise anti social and criminal activity.

PLANNING FRAMEWORK

METROPOLITAN REGION SCHEME

The Metropolitan Region Scheme (MRS) includes the site within an Urban zone. The land surrounding the site is zoned Urban under the MRS. Features of note are the reservations for Marmion Avenue and Shenton Avenue as 'Important Regional Roads' and the dominance of the nearby 'City Centre' Zone of Joondalup and the 'Controlled Access Highway' Reserve of the Mitchell Freeway.



The MRS therefore zones the land for the development of the Currambine District Shopping Centre.

CITY OF JOONDALUP - DPS NO. 2

The land within the boundaries created by Marmion Avenue, Sherron Avenue and Delamere Drive includes areas of Commercial, Business, Civic and Cultural and Residential use.

The commercial zone is limited to part of lot 929 on the corner of Marmion Avenue and Sherron Avenue. Clause 3.7.2 (Schedule B) of DPS 2 currently states that all land contained in the commercial zone shall not exceed a maximum retail net lettable area (NLA) of 10,000m².

The total Net Lettable Retail Area proposed under the indicative Concept Plan (Appendix No.2) as part of the Gurrambine District Shopping Centre is approximately 10,000m², which is in accordance with the Scheme.

CITY OF JOONDALUP - P3.2.8 - CENTRES STRATEGY

The Centres Strategy has been developed to manage the distribution of retail floor space and to facilitate the adoption of a main street approach to the design of centres in the City of Joondalup. The Strategy includes the following centre classifications: City Centre (Joondalup), Town Centre (eg. Whitford City), Small Town Centre (eg. Gurrambine), Tourist Centres (eg. Hillarys Boat Harbour), Village Centres (eg. Glensig Place, Connolly) and Local Shops (eg. Kinross Drive, Kinross).

The City of Joondalup Centres Strategy is Policy 3.2.8 and is dated July 2001. The Strategy is consistent with the Metropolitan Centres Policy (WAPC 2000) in adopting a similar commercial centres hierarchy. It does however, differ in nomenclature as described above calling the Joondalup Strategic Regional Centre a City Centre, Regional Centres are named Town Centres, District Centres are called Small Town Centres and Neighbourhood Centres are described as Village Centres. It also introduces Tourist Centres to the hierarchy covering the locations of commercial development at the Hillarys Boat Harbour and at the Ocean Reef Boat Harbour.

The following table compares per capita retail space allocations to the hierarchy established under the Metropolitan Centres policy and under Councils Strategy. It will be noted from the table that the allocations are reasonably consistent between the two policy statements.

Hierarchical Tier	Metropolitan Centres Policy (m ²)	City of Joondalup Centres Strategy
Strategic Regional Centres/City Centre Regional Centres/Town Centres	0.61	0.62
District Centres/Small Town Centres	0.40	0.41
Neighbourhood Centres/Village Centres	0.53	0.55

Again, there is a consistency between Council's Centres Strategy and the Metropolitan Centres Policy in describing the functions of centres and in particular the functions of District Centres/Small Town Centres. In each case, Small Town Centres or District Centres are described as having the primary function of being a centre of weekly retail, service and community facilities. Retail types anticipated in such centres include minor discount department stores, supermarkets, speciality stores and convenience stores.

At various sections, the Council Centres Strategy makes particular reference to the Currumbine Marketplace Centre. Firstly, a list of the Centres within the hierarchy under the Strategy at 1.2, page 4, of the Policy includes Currumbine as a Small Town Centre that is, a District Centre under the terms of the Metropolitan Centres Policy.

Paragraph 1.4.3 also makes specific reference to Currumbine including the following recommendation:

'Currumbine Centre

- No expansion over 10,000m² be permitted until it can be demonstrated that the planned commercial structure of the centres in the north of the City has been substantially developed to the plan sizes and trained persons have settled.
- Nothing in the recommendation above shall preclude the incremental expansion of Currumbine along Main Street principles as envisaged under Section 5.2.6 of the Metropolitan Centres Policy contained in statement of Planning Policy No. 9.

The Centres Strategy states in Section 1.1, page 2:

- Promotes small town centres more actively than has been the case until now.
- Promote Currumbine as a small town centre in the medium term.
- Encourage mixed business to establish adjacent to District Centre sites.

The Policy also describes Council's attitude and approach to centre development at Page 3 as follows:

'Promote a more flexible, open and innovative approach to centre development, providing for individual initiative and enterprise wherever appropriate, and encouraging the emergence and implementation of new ideas. Encourage a diverse range of attractions for all age groups, including 'shoppertainment', 'satertainment' and 'edutainment' type concepts, through family entertainment centres.'

Clause 3.11.5 states that floorspace figures contained within Schedule 3 shall be adhered to except as otherwise varied by an agreed Structure Plan.

WAPC - METROPOLITAN CENTRES POLICY

The Currambine District Shopping Centre falls within the 'District Centre' hierarchy of the above Policy (Statement of Planning Policy No. 9). This allows floor area up to 15,000m² NLA. It is described as a centre for weekly retail, service and community facilities with district level offices such as professional sales and service offices. It may include minor discount department stores, supermarkets, speciality stores and convenience stores. Accessibility through public transport services and a district distributor road system outlines a district centres preferred location. With this in mind, the Currambine District Shopping Centre as proposed fulfils these centre functions admirably.

The Metropolitan Centres Policy was gazetted in October 2000. The Policy establishes a hierarchy of commercial centres headed by the Perth CBD and followed by the Strategic Regional Centres, Regional Centres, District Centres and Local/Neighbourhood Centres.

Strategic Regional Centres are listed as Armadale, Cannington, Fremantle, Joondalup, Midland, Morley, Rockingham and Stirling. The Policy provides that these centres should generally be confined to 80,000m² of shopping floor space. Regional Centres form a tier beneath the Strategic Regional Centres and are generally confined to floor space limit of 50,000 m². The nearest Regional Centre to the subject site is at Whitford City. District Centres including the Currambine Marketplace Centre have a general floor space limit of 15,000m². These centres are designed to cater for the weekly food and grocery shopping needs of the suburban population. Neighbourhood and Local Centres are generally allowed up to 4,500m² of shopping floor space and formed the final tier in the hierarchy.

Significantly, Clause 5.4 of the Policy discusses shopping floor space guide and states shopping development up to the floor space indicated is deemed to be acceptable and unlikely to have significant adverse social or economic intakes on the locality or other centres. The shopping floor space referred to in the Policy excludes such uses as banks, real estate agencies, medical practices and showrooms. In addition, hotels, taverns and nightclubs are excluded from the measure of shopping floor space.

Clause 5.6 of the Policy encourages centres plans for new District Centres and existing District Centres experiencing development pressures. This Structure Plan comprehensively fulfils the requirement for a Centre Plan.

CONCLUSION - RETAIL FLOOR AREA CONTROL

The WAPC Metropolitan Centres Policy and the City of Joondalup Centres Strategy both support the inclusion of a small department store in a District Centre. It is recognised in City of Joondalup Policy that, in time, Currambine will become a fully fledged District Centre.

The City of Joondalup is currently well serviced with Regional Centres in the south but under serviced in the north. The City of Joondalup will provide a City Centre for the whole north west corridor, and Currambine, a District Centre will provide weekly needs for the surrounding northern suburbs. Currambine is too large to be a neighbourhood centre yet without the adoption of a supportive structure plan it will not reach its proper potential as a District Centre.

CONTEXT AND ANALYSIS

The following opportunities and constraints analysis establishes an understanding of the site as a basis for the Structure Plan.

CLIMATE

The subject site is located near the coast. As a result strong sea breezes and other winds associated with the prevailing weather patterns are experienced. The prevailing winds tend to be from the north east during winter mornings and from the west during winter afternoons, while in the summer months the prevailing winds are from the east in the morning and the south west in the afternoon (Bureau of Meteorology, 2002). However, the dominant winds tend to be the south west sea breezes experienced during summer afternoons.

GEOLOGY AND SOILS

The subject land is within the Swan Coastal Plain, where the superficial formations generally comprise of limestone, sand and derivatives. The site consists of a base of Tamala Limestone covered by Safety Bay Sand and sand derived from Tamala Limestone (DME, 1986).

Tamala Limestone consists of creamy white to yellow, or light grey calcareous enlignite (Davidson, 1995). It is composed of various proportions of quartz sand, fine to medium grained shell fragments and minor clayey lenses (Davidson, 1995). The quartz sand tends to be medium grained and moderately sorted however it does vary between fine and coarse grained (Davidson, 1995). The limestone varies in thickness along the coastal strip, depending on the topography of the area, but it is known to have a maximum thickness of 110 metres (Davidson, 1995). Tamala Limestone tends to have a variable bearing capacity dependant upon the degree of cementation (DME, 1986).

Safety Bay Sand consists of white, un lithified, calcareous fine to medium grained quartz sand and shell fragments with traces of fine-grained, black, heavy minerals (Davidson, 1995). Safety Bay sand is known to have a maximum thickness of 24 metres (Davidson, 1995). There are few limitations associated with development over Safety Bay Sand, however some settlement under foundations can be expected (DME, 1986).

The geomorphology of the site consists of materials of an eolian origin with dune morphology and can be described as degraded spearwood dune surface (DME, 1986).

HYDROLOGY AND HYDROGEOLOGY

There is no permanent surface water on the subject land, with the nearest water bodies being the Indian Ocean to the west and Lake Joondalup to the east. The water table below the subject site has been observed at approximately 8 metres below ground level or at 0 metres AHD (ENV, 2000).

The subject site is underlain by the Superficial Aquifer (Davidson, 1995). The superficial aquifer is a major unconfined aquifer comprising the Quaternary Tertiary sediments of the coastal plain. Water in this superficial aquifer is derived from direct recharge over the subject land and from the top of the large mound of groundwater underlying the Swan Coastal Plain (the Gnangara Mound).

Development of the subject site and the associated increase in the use of groundwater is not expected to affect the forecast requirements for future public water supply.

In order to reduce the impact of the proposed development on the groundwater quality of the site, the drainage system needs to follow natural contours as closely as possible and there should be adequate source control measures to reduce surface water pollution entering the groundwater system.

SITE CONTAMINATION

The site does not have a history of past urban and industrial uses and no dumping or site contamination has been detected.

NOISE AND VIBRATION

Noise and vibration levels on site are acceptable for an active district centre. The residential component is located sufficiently distant from the noise sources from Marmion Avenue.

FLORA AND FAUNA

Areas of the site that remain undeveloped are generally not cleared. Vegetation consists of typical coastal heath. Some stands of Banksia woodland are also found on the land, however it is not considered that these are viable in the long term and as such, there are no areas of conservation value within the area of the Currambine District Shopping Centre.

The lack of quality native vegetation on site is not conducive to fauna habitation. High levels of fauna habitation have not been observed on site and it is considered that in its current state, an increase in sightings is not likely to occur. However, the development of the Civic and Cultural reserve may result in the re-establishment of new fauna habitats. Consideration should be given to the introduction of native plant species conducive to the repopulation of the area by native fauna. These species should be extended beyond the reserve into the streetscape of the Currambine District Shopping Centre where appropriate.

COMMUNITY INTEGRATION

Currumbine District Shopping Centre will become a hub for the surrounding suburbs which are now virtually fully developed. 'Filling in' this last piece of developable land in the area is not only economically sound, but socially necessary.

HISTORIC CONNECTIONS

Acknowledgement of the sites past ownership and development process is an important part of connecting the local community to the landscape. This is best achieved through public art pieces and other interpretive media. Public art will be integrated into the Main Street environment as this is the area likely to receive most pedestrian traffic, and therefore the opportunity to reflect on the areas development history.

PHYSICAL CONNECTIONS

There are no built structures on the site from previous generations, therefore there is little or no physical connection to the site or marking of the landscape that existed earlier than 1990.

SOCIAL INTEGRATION

Currumbine is an important centre for the local area. Its supermarket is well used and the restaurants and cinema are popular. The centre provides little beyond these consumer experiences.

The creation of a Main Street environment of mixed uses will facilitate a sense of community identity for the Currumbine District Shopping Centre. This will evolve over time, but laying the foundations for a future social maturity is an important part of the development process. The built form, as proposed, will help achieve this.

STRUCTURE PLAN OUTLINE

DEVELOPMENT PRINCIPLES

Under the Structure Plan the Centre will expand to provide the focus for retail, commercial, cultural, entertainment and leisure facilities.

The Centre is intended to become an employment focus for the District and to meet the need for the provision of a range of goods and services. The key objectives being:

- To create a vibrant and well designed mixed use Centre with safe and vibrant pedestrian friendly public streets and uses addressing those streets; and
- To incorporate a mix of residential housing forms (houses, apartments, shop-top housing etc) that provide a range of choice, diversity and affordability, in keeping with the City of Joondalup's expressed desire that the Structure Plan is based on main street principles.

The Metropolitan Centres Strategy defines Main Street as:

"mixed land use developments fronting to a street in a manner whereby pedestrian access to the majority of individual businesses can be achieved directly from the street and / or where customer car parks on private property generally do not separate the road reserve boundary from the front of a building (Clause 6)."

It states that:

"As far as practicable centres at all levels should be developed or redeveloped in accordance with the traditional "main street" design principles as integrated, attractive, safe and vibrant places to provide a focus for community activities. Incentives are provided to promote traditional "main street" development by allowing shopping floorspace development to exceed the shopping floorspace guide of this policy or the floorspace specified in an endorsed Local Planning Strategy (Clause 4.2.6)".

MOVEMENT SYSTEMS

The Traffic Report by Riley Consulting provides a comprehensive analysis of movement issues. This section provides an overview of the key issues addressed in the report (Appendix 5).

Streets

Intent

A multi-functional/mixed use Centre can function best when streets connect all its elements. The street pattern is the basic element that organises buildings and relates them to streets. Adopting a grid pattern of streets facilitates good circulation of vehicles through the area. With all circulation focused on streets which are always open, there is greater scope to integrate entertainment, leisure and community uses into shop front locations where their use and enjoyment is more assured. This street block pattern is the key to linking built form and pedestrian movement.

Principles

The guiding principles for the development of the street pattern include:

- **Permeability:** a street pattern to provide the extent and choice to which an environment allows people access through it, from place to place;
- **Public and private:** the street layout provides for a distinction between public and private places. Therefore, not all places are accessible to everybody but the access across the interface between them is; and
- **Front and backs of buildings** have been carefully designed. Buildings will be designed to face outward onto public spaces - streets, squares or parks. The rear of buildings will face laneways or the centre of development blocks.

The plan is configured to reflect the established regional and local road network. The main pedestrian spine of the Centre extends from the existing retail development on the land to the fast food restaurants to the north of the Centre.

Achieving a grid pattern of roads in the proposed Structure Plan is constrained by the position of existing buildings on Lot 929.

Vehicle laneways and car parking areas are located to the rear of the suggested building areas on each proposed development site.

The Traffic Assessment by Jonathan Riley Consulting Engineers (Appendix 5) concludes that:

- The proposed road network will accommodate internal traffic needs;
- A traffic light controlled intersection should be created where Shenton Avenue intersects with Delamere Avenue. This intersection will provide the link to the new main street. The existing "left-in/left-out" access point from Shenton Avenue as indicated on the Structure Plan is also to be retained.

Public Transport

The Centre is well serviced by buses running on Shenton Avenue. Detailed planning will include provision for new bus stops and paths on Shenton Avenue. The connecting of the centre by bus to the rail stations of Joondalup and Currambine is a key element in the ongoing sustainability of the Currambine District Shopping Centre.

Car Parking

Car parking will be provided on street, in undercroft areas of proposed buildings and in parking cells behind Main Street frontage. The principle feature of the parking strategy is the integration of all these types of parking to allow maximum flexibility and choice.

Car parking will be evenly distributed throughout the centre, and there will be connections between parking cells. Short term street parking will be available in the Centre to encourage access to the Main Street and the other trading areas. The majority of car parking will be contained behind buildings or as undercroft or roof top parking. This will ensure the streetscape can achieve an urban, rather than suburban, sense of place.

Footpath Network

A comprehensive footpath network is essential throughout the area of the Structure Plan. The design of the Structure Plan is to prioritise environments for pedestrians and to inter-connect the Centre with the surrounding areas of Currumbine.

LAND USES INTENT

Retail (Commercial Land Use)

Existing Retail Development

Currently the Currumbine Marketplace Shopping Centre has a floor area of 5,642m² comprising 4,063m² of supermarket, 1,330m² of speciality stores and 229m² of office functions NLA. The existing centre is fundamentally a shopping centre with retail tenancies focused on an internal, air-conditioned mall. However, the site also contains a service station and a cinema complex. These components are all on the 5ha parcel of land zoned 'Commercial' under the City of Joondalup Town Planning Scheme. The parcel is dominated by expanses of at grade parking.

The boundary between the 5ha Commercial zoning on the Woolworths lease, and the adjacent Business zoning on the Woolworths lease, is just to the north of the existing cinema complex. A strip of land approximately 30 metres wide, zoned business, runs between the cinema complex and the site of the Councils proposed community centre. Access to the shopping centre is secured by a traffic light controlled crossover to Marmion Avenue and a crossover to Shenton Avenue. The crossover to Marmion Avenue is opposite Ocean Gate Parade and therefore north of the northern boundary of the existing 'Commercial' zoned portion of the site. There is no physical connection between the existing commercial facilities on the site and the site of the proposed community centre.

Proposed Retail Extensions

It is proposed that the extension to the retail floor space be within 10,000m². This equates to the net let able area of development shown on the Woolworths lease excluding the Cinemas. The commercial area will be designed as a mixed use/retail hub forming a Town Centre for the district.

Mixed Use Area (Business)

A mix of land uses is encouraged along the Main Street, activities which promote an active ground floor are preferred. Office, showroom, restaurants and tavern uses are anticipated.

It is expected that a number of residential uses will occur at the second storey along the Main Street. The residential component will predominantly comprise walk-up apartments, home/studios, home/office and town house accommodation, all of which are lifestyle options that add to the diversity and interest of Village Centre life.

Mixed forms of development are encouraged and the overall objective is to:-

- Promote development that respects the scale and proportions of the Centre;
- Fosters a close relationship to the street to ensure the continuity of the streetscape.

- Allows for a mixing of residential and commercial uses and achieves minimum intrusiveness from parking

The Business Area located adjacent to Delamere and Shenton Avenues is proposed to be developed for Service Commercial uses. This use will capitalise on the commercial exposure afforded by the high volume of vehicles travelling along Shenton Avenue. Buildings within the Business Zone are to be designed to present a two storey facade to Delamere Avenue.

Public Space (Civic and Cultural)

The Structure Plan proposes a public space for a Community Centre and open space in accordance with the current zoning.

Residential (Residential Land Use)

The Structure Plan proposes to integrate residential uses with other uses proposed for the Centre. The proposed residential uses aim to achieve a 24 hour presence within the Centre.

The Structure Plan proposes residential uses on land zoned Residential R40, to the north east of the Centre and introduces a portion of R100 to complement the Commercial Use. The R40 coding of the land provides opportunities for a variety of medium density housing/accommodation types within near proximity of the mix of uses proposed within the Centre. Medium density residential development is compatible with the existing surrounding residential areas and also presents opportunities to encourage home based businesses in a transitional zone between the Centre and existing residential development.

The development of this land will need to address Delamere Avenue to encourage passive surveillance of the street and to mirror the existing surrounding residential development. The development should also address the abutting Civic and Cultural site for the enjoyment of prospective residents as well as encouraging passive surveillance of the civic space. To this effect, a minimum 50 metre wide Pedestrian Access Way (PAW) is to be located along the boundary between the Residential Zone and Cultural and Civic Zone and to be wholly contained within the Residential Zone. The PAW will provide a linkage between Delamere Avenue and Hobsons Gate.

URBAN DESIGN

Streetscape

Parallel parking is to be incorporated along every street where possible with the view to providing parking and reducing traffic to suitable speeds that accommodates and complements the pedestrian environment. The built elements along Main Street will be softened by tree planting to create a street canopy, complemented by fine street furniture and lighting to provide rest points. Awnings, signage and banners will provide colour and movement, enriching the pedestrians experience along Main Street.

Street Frontage

It is essential to create a strong and continuous built edge in order to foster a strong sense of intimacy and provide a set for the human theatre along Main Street. A zero setback is critical along this zone to achieve framing of street activity that aims to create a rich and diverse pedestrian experience. The Streetscape will be furnished with fine lighting and street furniture to aid this experience.

Built Form

A number of developers and architects are likely to be responsible for proposed buildings within the Centre. The adoption and implementation of Design Guidelines strikes a balance between a level of certainty through prescription and some flexibility to encourage a variety of innovative architectural responses. The controls would include a range of building materials and a palette of colours to achieve a unified, cohesive Centre where all buildings will relate to each other and create a sense of place; an important feature of a Main Street.

Public Landscaping

Road reserves will be landscaped as formal and informal avenues utilising predominantly deciduous tree species. Landscaping will include treatments for the Main Street and the Town Square.

Private Landscaping

The provision of high quality landscape treatments consistent with identified themes for the Shopping Centre as a whole will be a key requirement for the development of individual residential, mixed use and commercial allotments.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

While the centre appears reasonably attractive and safe it is facing the types of safety and security problems that can lead to a spiral of decline. Vandalism of property, petty arson, intimidation as well as serious criminal activity including assault are affecting the centre. The current incomplete and fragmented nature of the centre does not assist in overcoming these problems.

The proposed Structure Plan reinforces CPTED. It creates well defined, legible and visibly public spaces while separating ancillary service spaces from public access. Vitality and extended hours of use help keep eyes-on-the-street. Links are direct and safe while dead ends are avoided. The Structure Plan supports development that will benefit from the safety factors that make Town Centres inherently safe.

IMPLEMENTATION AND STAGING

PLANNING COMPLIANCE

Compliance with City of Joondalup Centres Strategy

Under the Strategy Principles, it is stated that Currambine is to be promoted as a small town centre in the medium term. What is meant by the medium term is unclear but it is noted that the Strategy is dated 2001 and that the Strategy Period is to 2006. To this extent, development of an expanded Currambine centre will occur in the latter period of the Strategy rather than the medium term.

Indeed, the conclusions recognise that "over the next 7-8 years Joondalup will be reaching maturity", that is by 2008/2009. It is also recognised within the statement on "Objective and Principles" that, "the specific objective of this Policy is to promote retail and incremental expansion of existing centres throughout the City of Joondalup as part of a catch-up strategy until 2006."

Against the background of these statements, it is reasonable to assume that the timing of the Currambine expansion proposals is consistent with the program indicated by the Strategy.

The Strategy also established principles for the development of Mixed Business Areas noting that, "Opportunities for new developments of this type are limited. Notwithstanding this, and subject to good urban design, promote initiatives to establish new mixed business areas accommodating bulky goods outlets, warehouses, showrooms, service industries and small and medium scale business uses as part of all designated city, town and small town centres."

This proposal meets this objective by linking retailing with entertainment uses (cinema), community uses, bulky retailing and other commercial functions.

The centre use mix combining retailing with the existing entertainment functions and expanding entertainment uses on a main street format allows cinema goers to access restaurants/cafes achieving strategy objectives.

Currently, the Currambine Marketplace Shopping Centre generally fits the description of a big box centre. As far as is practical, this proposal introduces a main street concept to the retailing component and extends this through the community/entertainment precinct to the mixed business areas. The proposal therefore conforms with the objective of the Strategy in relation to the 'The Nature and Form of Centres'.

Compliance with City of Joondalup District Planning Scheme No.2

The core retail uses proposed under this Structure Plan will be confined to the land area zoned 'Commercial'.

It is recognised that the success of the core retail and main street business precinct will be largely dependant on the ambience of the public spaces and the attraction of the centre as presented by this document.

COMMUNITY CONSULTATION

The full extent of the Structure Plan Area is owned by two land owners. The land owners and the lessee (Woolworths) are collaborating towards the development of the centre.

Community consultation for the site has been previously carried out through the due process followed by the City of Joondalup and WAPC as part of the advertising periods required in preparation of the District Planning Scheme, Metropolitan Centres Policy, the Centres Strategy and other such documents, both statutory and advisory.

In accordance with the scheme requirement the Structure Plan will be advertised prior to adoption. It should be noted that the established residential areas are separated from the Centre by major and minor roads and while the area is designated as a District Centre every effort has been made to minimise any negative impact on existing residents. The development will add significantly to land values and local quality of life.

SERVICING

WATER

The Northern Portion of the site has existing 150mm dia and 250mm dia water reticulation mains in Delamere Avenue with a 150mm dia main across Hobsons Gate on Marnion Avenue.

The Southern Portion of the site has existing 250mm dia in Delamere Avenue and 200mm dia main in Shenton Avenue adjoining the site.

In both areas, the existing mains can be readily extended and connected to serve the proposed development.

SEWERAGE

The existing 150mm dia sewer main in Hobsons Gate and Chesapeake Way has the capacity and level to enable the Northern Portion of the site to served with sewer reticulation to the Water Corporation's requirements.

The existing 900mm dia Burris Beach Main Sewer Section 9 is contained within the easement located on the Western Boundary of the Southern Portion of the site. There is an existing 150mm dia connection provided from this main sewer to enable this area to be served with sewer reticulation.

DRAINAGE

The existing drainage pipework in Chesapeake Way and Hobsons Gate enables the Northern Portion of the site to be connected to the system that discharges into the drainage basin located in Sir James McCusker Park on the West of Naturaliste Boulevard. This is in accordance with the drainage strategy for this area.

The Southern Portion will require a drainage sump to be constructed in the corner of either of the business areas located to the south of the site. The sump is to be designed to accommodate the 1:100 year storm to the City of Joondalup requirements.

OTHER SERVICES

The adjoining Road Reserves of Delamere Avenue, Shenton Avenue and Marmion Avenue contain Power, Telstra and Gas reticulation enabling the Northern and Southern Portions of the site to be serviced accordingly.

CONCLUSION

The early stages of development at the Currambine District Shopping Centre has occurred incrementally and in the absence of a guiding plan. The proposed Structure Plan provides the vision for the future development of the Centre and a mechanism for the City of Joondalup Council to consider future proposals for the area.

The goals and objectives of the Structure Plan have been strongly influenced by the City of Joondalup Councils view that future development of this Centre must be a vibrant commercial and social forum based on Main Street design principles.

The implementation of Main Street principles has been constrained by existing town planning ordinance and development on the site. Notwithstanding this, the pattern of roads and development proposed by the Structure Plan provides a foundation for Main Street and will allow for change, to enable the Centre to evolve and overcome the these constraints. This may involve proposals to modify and refine the agreed Structure Plan in the future.

APPENDIX 1

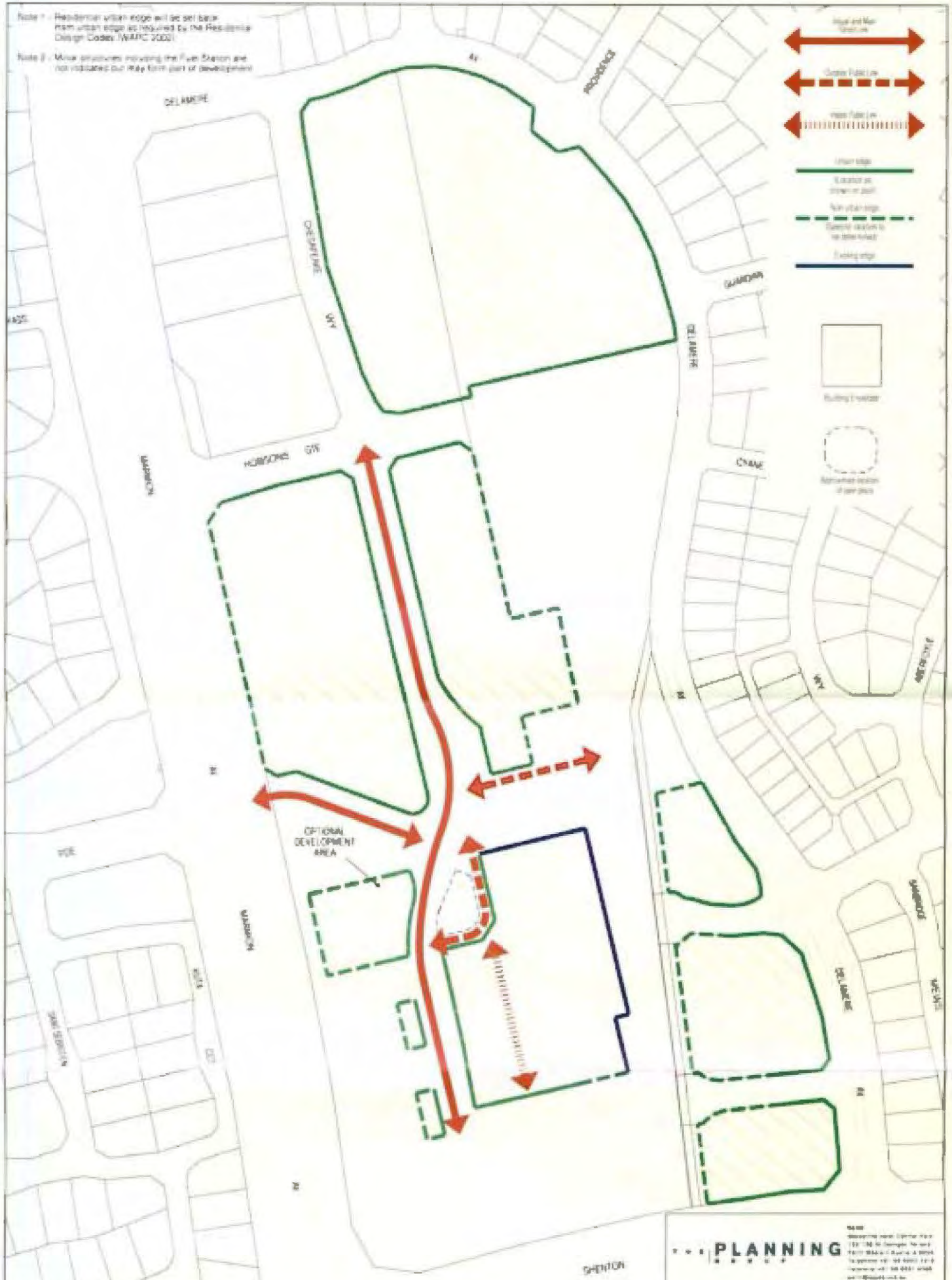
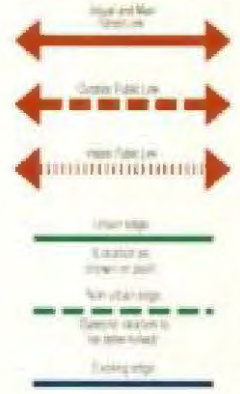
DEVELOPMENT PLAN

ZONING PLAN

RESIDENTIAL CODING PLAN

Note 1: Residential urban edge will be set back from urban edge as required by the Residential Design Codes (RDC 2002)

Note 2: Minor structures including the Fire Station are not indicated but may form part of development



STRUCTURE PLAN
DEVELOPMENT PLAN
CURRAMBINE DISTRICT CENTRE
MARION AVENUE, CURRAMBINE



NO.	REVISION	DATE	BY	CHECKED BY
1	Issue for public comment	15/08/2011	[Signature]	[Signature]
2	Final Development Plan	15/08/2011	[Signature]	[Signature]

PLANNING
ROBERTSDAY

15/08/2011
15/08/2011
15/08/2011
15/08/2011
15/08/2011

robertsday
ARCHITECTS & PLANNERS

15/08/2011
15/08/2011
15/08/2011
15/08/2011



robertsday
Real Estate

REALTOR 1000 10th St Saskatoon, SK S7N 3A5	REALTOR 1000 10th St Saskatoon, SK S7N 3A5	REALTOR 1000 10th St Saskatoon, SK S7N 3A5	REALTOR 1000 10th St Saskatoon, SK S7N 3A5
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STRUCTURE PLAN -
 RESIDENTIAL CODING PLAN
 CUMBERLAND DISTRICT CENTRE
 MARION AVENUE, CUMBERLAND

REVISIONS		DATE	BY	DESCRIPTION
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

PLANNING
 CONSULTANTS

1000 10th St
 Saskatoon, SK
 S7N 3A5
 Tel: (306) 975-1111
 Fax: (306) 975-1112
 www.planningconsultants.com

APPENDIX 2

**INDICATIVE MAIN STREETS AND LINKS
PLAN**

**PLANT COMMUNITIES OVER STRUCTURE
PLAN**



- Shared Main Street
- Pedestrian Main Street
- Pedestrian access (existing/proposed)



INDICATIVE MAIN STREETS AND LINKS PLAN
 CURRAMBINE DISTRICT CENTRE
 MARION AVENUE, CURRAMBINE



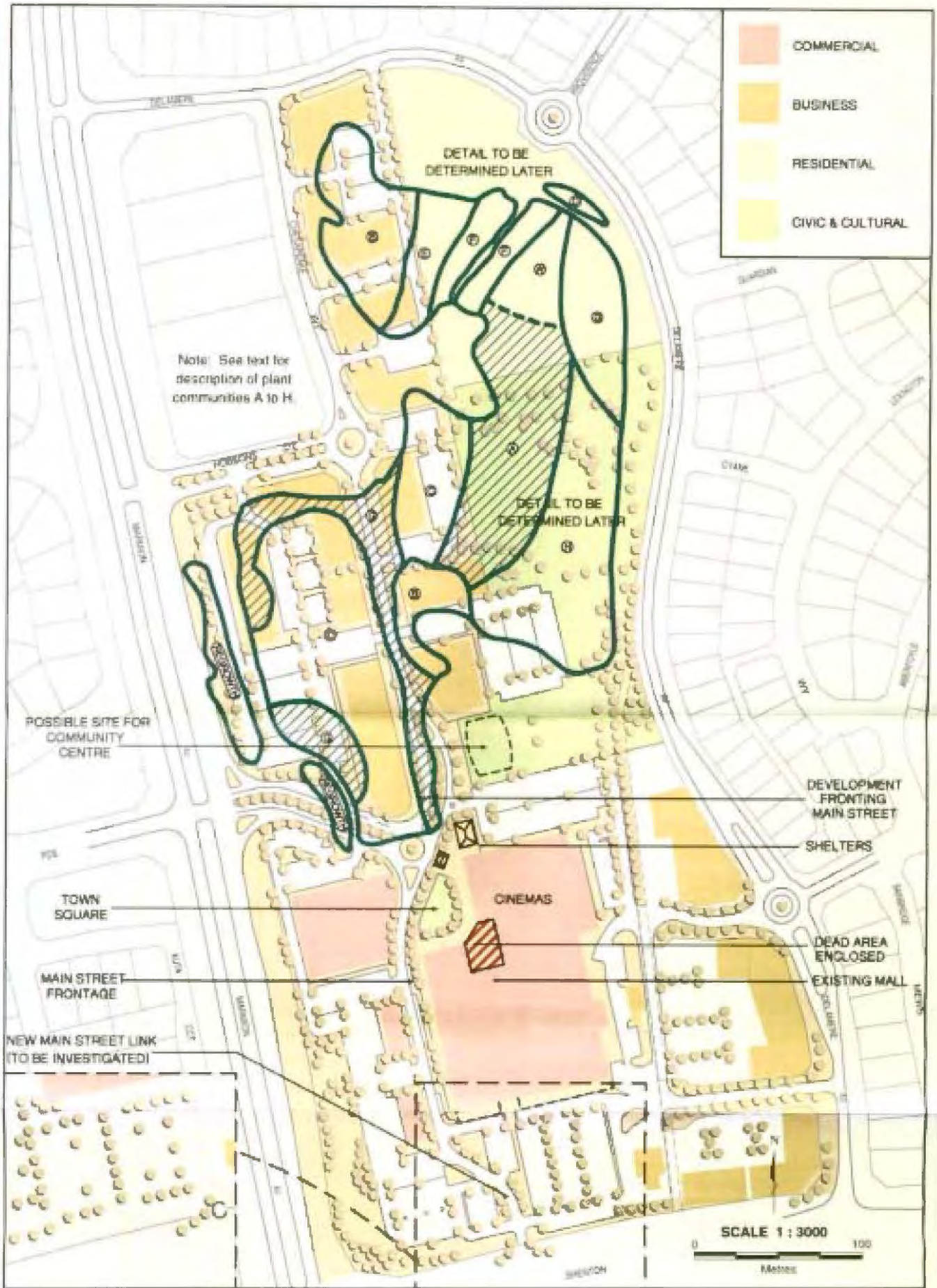
NO.	STREET NAME	CLASS	STATUS
1	DELAMERE	Local	Proposed
2	PRINCIPLES	Local	Proposed
3	LONDON	Local	Proposed
4	CHAM	Local	Proposed
5	ABERCROMBIE	Local	Proposed
6	GLENVIEW	Local	Proposed
7	GLENVIEW	Local	Proposed
8	MARION AVENUE	Arterial	Existing

PLANNING
 GROUP

100/101 ...
 ...
 ...

day

...
 ...
 ...



Note: See text for description of plant communities A to H

	COMMERCIAL
	BUSINESS
	RESIDENTIAL
	CIVIC & CULTURAL

env
Australia

Client: **THE PLANNING GROUP**

Project: **CURRAMBINE DISTRICT CENTRE STRUCTURE PLAN**

PLANT COMMUNITIES OVER STRUCTURE PLAN

Date: 1 November 2005

Scale: 1:3000

Author: M.L./S.C.

Figure No. 2

Plan No. OR-002

Note: Data sourced from The Planning Group

A4

APPENDIX 3

CERTIFICATES OF TITLE

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ENCL

WESTERN



AUSTRALIA

REGISTER NUMBER 1574/DP36888	
INSTRUMENT NUMBER 1	DATE OF INSTRUMENT 9/9/2004

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 2573 PLAN 488

The person recorded in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the covenants, conditions and rights (if any) contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and modifications shown in the second schedule.

RG Roberts
REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 1574 ON DEPOSITED PLAN 36888

**REGISTERED PROPRIETOR:
(FIRST SCHEDULE)**

CITY OF JOONDALUP OR POST OFFICE BOX 21, JOONDALUP

(T 092275) REGISTERED 6 SEPTEMBER 2004

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)**

- EXCEPT AND RESERVING METALS, MINERALS, ORES AND MINERAL OIL SPECIFIED IN TRANSFER 5367/1946.
- G375304 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 36888 REGISTERED 4.2.1997.
- 1987294 RESTRICTIVE COVENANT TO WESTERN AUSTRALIAN PLANNING COMMISSION - SEE DEPOSITED PLAN 36888 REGISTERED 6.9.2004.

Warning: A cross-section of the strata of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries recorded by us remain only our opinion on the current status of the duplicate certificate of title.
Lot as described in the land description may be a lot or lots.

END OF CERTIFICATE OF TITLE

STATEMENTS:

The statements set out below are not intended to be read as if they were read by or substituted for the signature of the landowner and the relevant documents or the local government, legal, surveying or other professional adviser.

SKETCH OF LAND: DP36888
PREVIOUS TITLE: 2531-097
PROPERTY STREET ADDRESS: 52 DELAMERE AV, CURRAMBINE
LOCAL GOVERNMENT AREA: CITY OF JOONDALUP

WESTERN



AUSTRALIA

REGISTRATION NUMBER 9505/DP36888	
OFFICIAL EDITION 1	DATE DEPOSITED ONLINE 9/9/2004

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 2573 PAGE 481

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

EG Roberts
REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 9505 ON DEPOSITED PLAN 36888

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

THE ROMAN CATHOLIC ARCHBISHOP OF PERTH OF VICTORIA SQUARE, PERTH
DAVIDSON PTY LTD OF 3RD FLOOR, 45 ST. GEORGE'S TERRACE, PERTH
AS TENANTS IN COMMON IN EQUAL SHARES

(AF 1987276) REGISTERED 6 SEPTEMBER 2004

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

- EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 5367/1946.
- G375304 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 36888. REGISTERED 4.2.1997.
- G667966 EASEMENT TO ELECTRICITY CORPORATION. SEE DEPOSITED PLAN 36888. REGISTERED 18.12.1997.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries provided by an authority may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP36888.
PREVIOUS TITLE: 2531-997.
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AREA: CITY OF JOONDALUP.

AMENDMENTS TABLE

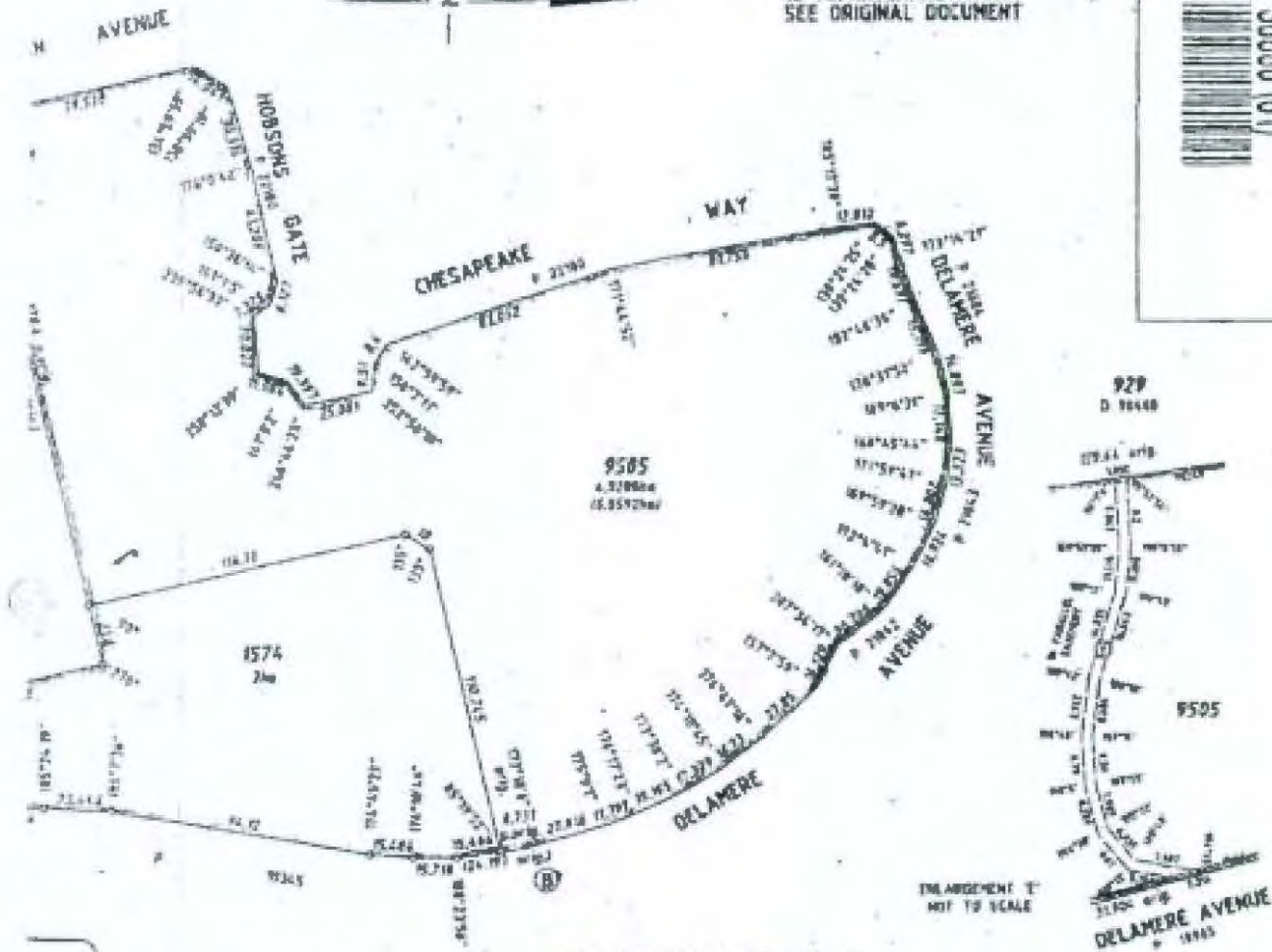
NO.	AMENDMENT	BY	ENDORSE	DATE
1.1	Grant of GRAB Rights for Restriction to receive lot 1574 to Council Council	HAPS	<i>[Signature]</i>	12.2.2004
1.2	Altered Restriction Covenant to benefit City of Jambanja	HAPS	<i>[Signature]</i>	9-4-2004
1.3	SURVEY SHEET BEING SHEET NOW LODED	DL		8.1.2004



TYPE	FREEHOLD	FORMAL IDENTITY	LOT 9505 DP 34371 LOT 2121/191	SCALE: 1 : 1000 AS SHOWN ON DRAWING	SURVEYOR'S CERT Reg 84
ADDRESS	SUBDIVISION				
PLAN OF					
	LOTS 9505, 1574 & RESTRICTIVE COVENANT				
DISTRICT	0444	TOWNSITE			
DOLA REF		LOCALITY	DAMARUW		
LOCAL AUTHORITY	CITY OF HONOLULU				

NOTE 2: THE EASEMENT DIMENSIONS AND POSITION ON THIS PLAN IS AN INTERPRETATION. SEE ORIGINAL DOCUMENT

DP 36888 (01)



INTERESTS AND NOTIFICATIONS

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS
⊗	EASEMENT		5375366	LOTS 1585 & 1574	WATER CORPORATION	SEE NOTE 2
⊙	EASEMENT		6647964	LOT 1585	ELECTRICITY CORPORATION	SEE NOTE 2
	MINERAL RESERVATION	SEC 13 PUBLIC WORKS ACT	5967/1864	LOTS 1585 & 1574		
	RESTRICTIVE COVENANT	SEC 119DA of the T.L.A.	DOC	LOT 1574	W.A.P.C.	

NEYSON'S CERTIFICATE Reg 54

MARK J. HANDETTI
 I certify that this plan is a correct and true copy of the survey and/or plan shown thereon and that I am a duly qualified and licensed surveyor or engineer in the Province of Ontario and that I am a member of the Ontario Association of Professional Surveyors or Engineers.

10.4.03

LOGGED DATE: 28-4-2003
 TIME TAKEN: 3.20h
 NUMBER OF SHEETS: 38/098

APPROVED BY: [Signature]
 REG 28A 141
 DATE: 7-7-2004

IN ORDER FOR DEALINGS

SUBJECT TO: Sec 129BA of T.L.A.

[Signature] 8/7/09

APPROVED: [Signature]
 REG 28A 141
 DATE: 6.9.2004

Department of Land Administration

DEPOSITED PLAN
36888

SHEET 1 OF 2 SHEETS

Constantine
10.11/1110.

Shopping Centre

Application G221310
Volume 1897 Folio 808

WESTERN



AUSTRALIA

REGISTER BOOK
VOL. FOL.

2079 304

CERTIFICATE OF TITLE

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

I certify that the person described in the First Schedule hereto is the registered proprietor of the undermentioned estate in the undermentioned land subject to the easements and encumbrances shown in the Second Schedule hereto.

G. Sach

REGISTRAR OF TITLES



Dated 4th July, 1996

ESTATE AND LAND REFERRED TO

Estate in fee simple in portion of Swan Location 1370 and being Lot 929 on Diagram 90408, delineated on the map in the Third Schedule hereto, except and reserving metals, minerals, gems and mineral oil specified in Transfer 5367/1946.

FIRST SCHEDULE (continued overleaf)

The Roman Catholic Archbishop of Perth of Victoria Square, Perth and Davidson Pty. Ltd. of 3rd Floor, 45 SE Georges Terrace, Perth, as tenants in common in equal shares.

SECOND SCHEDULE (continued overleaf)

NIL

THIRD SCHEDULE

10.11/1110.
7.5 ha - checked etc.



ce, CAM
11.11.1996.

NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

Page 1 (of 2 pages) 304 FOL.
2079 VOL.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WESTERN



AUSTRALIA

REGISTER NUMBER 9503/DP34971	
DEPT. & STATE DIVISION 1	DATE OF REGISTRATION 23/1/2003

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 3501 PAGE 397

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described herein subject to the encumbrances, conditions and legal liabilities contained in the original grant (if a grant in fee) and to the limitations, interests, encumbrances and qualifications therein in the second schedule.

RG Roberts
REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 9503 ON DEPOSITED PLAN 34971

**REGISTERED PROPRIETOR:
(FIRST SCHEDULE)**

THE ROMAN CATHOLIC ARCHBISHOP OF PERTH OF VICTORIA SQUARE, PERTH
DAVIDSON PTY LTD OF 3RD FLOOR, 45 ST. GEORGE'S TERRACE, PERTH
AS TENANTS IN COMMON IN EQUAL SHARES

(AFD60318) REGISTERED 21 JANUARY 2003

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)**

- EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 5367/1945.
- G375304 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 34971 REGISTERED 4.2.1997.
- *G358695 CAVEAT BY CITY OF WANNEROO AS TO PORTION ONLY. LODGED 4.2.1997.
- G667966 EASEMENT TO ELECTRICITY CORPORATION. SEE DEPOSITED PLAN 34971. REGISTERED 18.12.1997.

Warning: A current search of the sketch of the land should be obtained where details of position, dimensions or area of the lot is required.
* Any interest preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot of two lots.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be used should they be relied on as substitutes for inspection of the land and the relevant documents or for legal, governmental, legal, planning or other professional advice.

SKETCH OF LAND: DP34971.
PREVIOUS TITLE: 2523-200.
PROPERTY STREET ADDRESS: 2 HOBSONS CIRCLE, CURRAMBINH.
LOCAL GOVERNMENT AREA: CITY OF KONDALUP.

NOTE 1: B463741 DEPOSITED PLAN 36888 LODGED.

APPENDIX 4

TRAFFIC REPORT (SEPARATE
DOCUMENT)

City of Joondalup DOCUMENT REGISTRATION
 Reference # : 47351
 Letter # : 627945
 Action Officer : PL01 CC: APES06
 Date Received : 11/09/2006
 Action Required: NOTE
 Note : ORIGINAL RETAINED ON FILE 47351

Currambine District Centre Structure Plan

Appendix 4 Traffic Report

July 2006

City of Joondalup DOCUMENT REGISTRATION
 Reference # : 47351
 Letter # : 622795
 Action Officer : PL01 CC: APES06 PL02
 Date Received : 07/08/2006
 Action Required: NOTE
 Note : ORG TO PL01 10 X COPIES
 AND CD



2/2 Sherwood Court

Perth WA 6000

08 9225 6774 Phone/Fax

0413 607 779 Mobile

Issued on	01-08-06	Amendments	Date
Version	4	Amended to reflect Shenton Ave changes	31-07-06
Reference	168		

CONTENTS

- 1.0 EXECUTIVE SUMMARY
- 2.0 THE SITE AND SURROUNDING ROAD NETWORK
- 3.0 EXISTING TRAFFIC ASSOCIATED WITH THE SITE
- 4.0 TRAFFIC GENERATION AND DISTRIBUTION
- 5.0 THE ROAD NETWORK
- 6.0 ACCESS
- 7.0 PARKING
- 8.0 PEDESTRIANS, CYCLISTS AND PUBLIC TRANSPORT
- 9.0 CONCLUSIONS

APPENDICES

- A Concept Structure Plan (The Planning Group)
- B Northern Area Land Use Assumptions (FDP Savills)
- C Indicative Subdivision and Traffic Generation Areas
- D Structure Plan Traffic Generation Spreadsheet
- E Roads and Traffic in Urban Areas – Intersection Control Requirements
- F SIDRA Analysis of Access to Shenton Avenue

1.0 EXECUTIVE SUMMARY

Riley Consulting has been commissioned to consider the traffic issues associated with the future development of the Currambine district centre, known locally as the "Currambine district shopping centre". This report is a structure plan traffic report and shows that traffic associated with development of the site can be accommodated by the surrounding road network. The analysis undertaken in this report indicates the following:

- The traffic generated by the land uses identified in the structure plan area can be accommodated by the surrounding road network.
- Marmion Avenue has significant capacity to cater for the projected traffic increases and future extensions to the Mitchell Freeway will generally reduce daily traffic movements providing even greater spare capacity.
- The internal road network will require road reservations ranging from 16.5 metre access streets fronting residential lots to 21 metres for Chesapeake Way main street.
- Parking has not been reviewed in this report, but it is recommended that consideration of cross-visitation and reciprocal car parking is undertaken when applications for development are received. This will avoid creating huge unsightly car parks that are under-utilised and which could potentially cause a security issue.
- Easy pedestrian and cycle access is provided to and through the structure plan area. All streets are recommended to be provided with a footpath adjacent to residential and commercial land uses. There are significant areas of residential development located within 400 and 800 metres of the district centre.
- Traffic flows on internal streets are low and cycling on-street is considered to be safe and acceptable.
- Public transport provision is currently good and is not expected to change.

2.0 THE SITE AND SURROUNDING ROAD NETWORK

Currambine district centre is an existing shopping centre and business area located on the corner of Marmion Avenue and Shenton Avenue. The site is currently occupied by a Woolworths supermarket, speciality shops, a Petrol Plus filling station and cinemas. The existing lots to the corner of Marmion Avenue and Delamere Avenue (north-west corner) containing fast food outlets, form part of the district centre and are considered for traffic purposes. They are not within the current structure plan application area.

Figure 1 shows the location of the site in relation to the regional, district and local road network. Appendix A shows the indicative structure plan that has been used for this report.

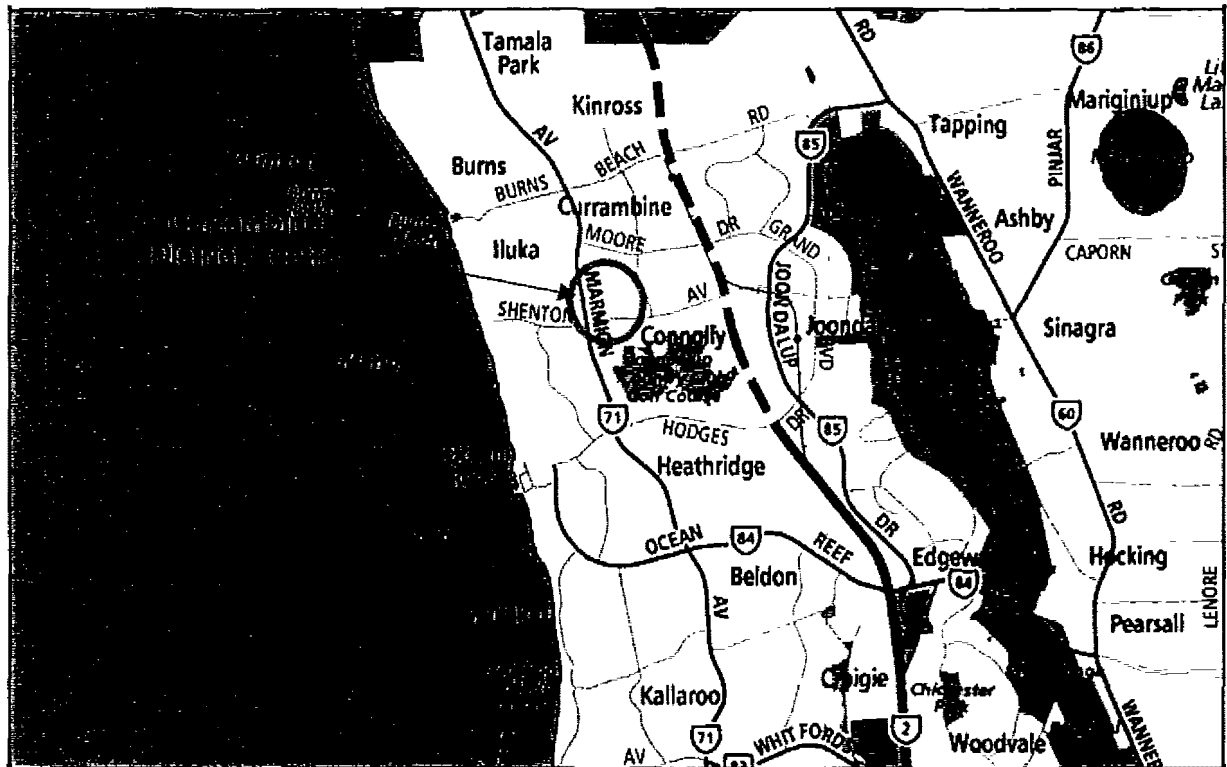


Figure 1 Site Location (Source UBD on disk)

Figure 2 shows an aerial photograph of the site and the area covered by this report. It can be seen that access to the site has already been constructed to Marmion Avenue and Delamere Avenue. Roads of significance to the structure plan are considered below.

Marmion Avenue

Marmion Avenue is a primary distributor road under the control of Main Roads Western Australia. To the north are the expanding suburbs of Mindarie, Clarkson and Brighton. Marmion Avenue is the only easily accessible route between these suburbs and the Freeway.

At the present time the Freeway terminates to the south of Currambine at Hodges Drive. However, future extensions will provide Freeway access at Shenton Avenue and Burns Beach Road and eventually at Clarkson.



Marmion Avenue is constructed to its ultimate standard as a four lane divided carriageway with localised widening at intersections. Current traffic volumes are 33,800 vehicles per day.

Future extensions to the Mitchell Freeway would be expected to remove a significant level of existing movements on Marmion Avenue, providing greater spare capacity to cater for future development.

Shenton Avenue

Shenton Avenue provides an east-west connection to the south of the structure plan area and is constructed as a

single two lane road at present. Land has been set aside to upgrade Shenton Avenue to a four lane divided carriageway standard. Current traffic flows are in the order of 12,200 vehicles per day.

Delamere Avenue

Delamere Avenue borders the north and east sides of the structure plan area and is constructed as a single 7 metre carriageway road. No traffic data is available for Delamere Avenue, although it is considered that existing traffic volumes are unlikely to be greater than 2,000 vehicles per day, except at its southern end where access to Woolworths is provided.

3.0 EXISTING TRAFFIC ASSOCIATED WITH THE SITE

Currambine Market Place (Woolworths)

Traffic data has been sourced for the existing development site for the Thursday evening peak hour (5pm to 6pm) and shows 477 vehicles entered the site and 486 vehicles exited the site. Based on the Director General Transport SA, *Guide to Traffic Generating Developments*, the evening peak hour (5pm to 6pm) traffic flow associated with a shopping centre equates to 13% of the daily traffic flow. On this basis 7,407 trips per day would be associated with the existing Woolworths site. By comparison the daily trip rate in the same Guide would be 112 trips per 100m². Based on the existing store size of 7,100m² (GLA) a daily traffic flow of 7,952 vehicles would be expected. It can be seen that the SA Guide is over-predicting the existing traffic movements associated with the site (+13%). The over-prediction provides a level of robustness to the assessment and it is considered appropriate to apply the SA Guide.

The SA Guide is appropriate to provide a very robust estimation of future shopping trips

Fast Food

A survey was undertaken of the fast food outlets to the north of the site during the Thursday PM peak period. The survey indicated about 112 patrons using the three facilities. Again based on the SA Guide, the peak equates to 10% of the daily total giving a daily traffic movement of (112 x 2 trips x 10) 2,240 trips per day (this equates well with the McDonalds and Chicken Treat in Wanneroo, which are larger).

The existing fast food outlets attract about 2,240 trips per day

Cinema

The cinema has a total seating capacity for 1,448 people and it could be expected that each theatre would have at least two screenings per day (during holidays more would be expected). Thus a total of 2,896 people per day could be accommodated by the cinema. It is estimated that on an average the cinema would be 30% occupied with typical trading (it would only be major new releases and school holidays that would significantly change attendance). Thus 870 people per day would be anticipated. Assuming car occupancy of 2.2 persons per car (typical occupancy) and 80% attraction by car, a total of 316 vehicles per day or 632 trips per day would be expected to be attracted to the cinema.

The cinema is assumed to attract 632 trips per day (typical average)

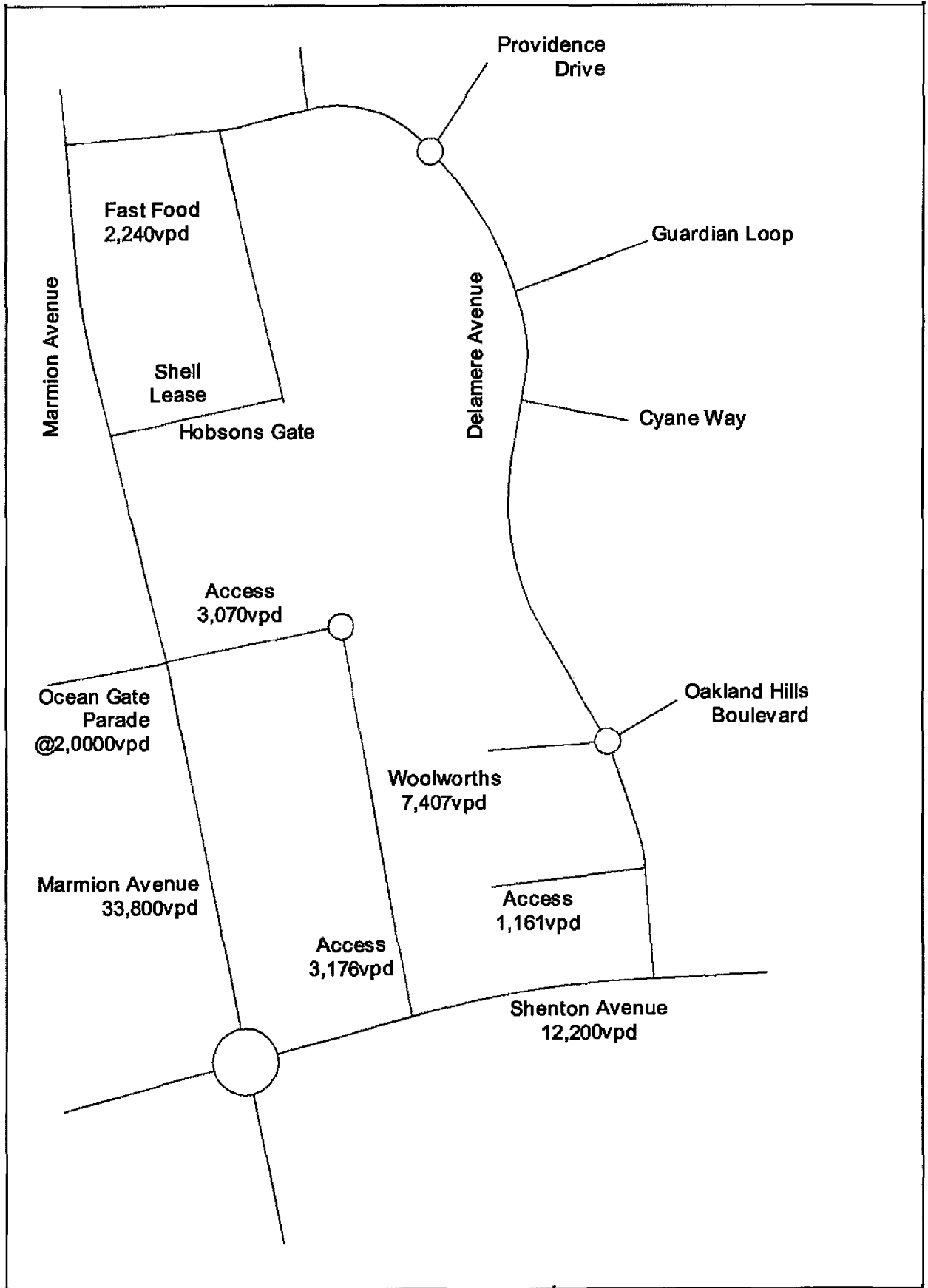


Figure 3
Currambine District "Shopping" Centre
Existing Traffic Movements

4.0 TRAFFIC GENERATION AND DISTRIBUTION

To provide a robust assessment of the road network and access treatments, the maximum potential land uses have been used. Indicative land uses have been provided by FPD Savills and are shown in Appendix B. However, the actual end use of each site may change from the indicated uses and for structure planning purposes a general commercial trip rate of 50 trips per 100m² is used for business areas and 89.5 per 100m² for the shopping centre (excluding cinema).

The residential lots are considered separately.

Main Street Business Lots

Figure 4 shows the indicative layout of the site and the approximate land areas that could be developed for business uses. A development ratio of 35% of the land area is used to derive the likely floor area of the constructed buildings. Table 1 shows the assumed land areas and resulting floor areas used for this report. These areas are based on the indicative layout shown in Appendix C.

Table 1 Business Area Floorspace

Locality (refer Appendix C)	Land Area	35% developed	Daily Flow
A (Shell Lease)	6,437	2,250	1,125
B	3,132	1,096	548
C	3,360	1,176	588
D	2,015	705	352
E	1,982	690	345
F	4,035	1,412	706
G	2,034	710	355
H	2,071	725	362
I	2,292	800	400
J	2,310	810	405
L	4,000	1,400	700
M	7,500	2,625	1,312
N	4,400	1,540	770
			7,967vpd

Based on 50 trips per 100m²

The business land uses are expected to generate about 7,967 trips per day

Woolworths Lease (excluding Area K)

The Woolworths lease will be zoned commercial to accommodate the expansion of the centre along mainstreet principles. The existing commercial floorspace area of 7,100m² GFA (6,390 NLA) will be increased by 9,451m² GFA (8,610 NLA) to 16,551m² GFA (15,000NLA) excluding the cinemas. Based on the Director General Transport SA, *Guide to Traffic Generating Developments*, the commercial area would be expected to generate 89.5¹ trips per 100m², or 14,813 trips per day.

The commercial area would be expected to generate 14,813 trips per day

Area K – Mixed Use area of Commercial Lease

Area K is predominantly to be used for business type uses, though a small amount of the core retail floorspace discussed under the Woolworths lease section could be located here to increase pedestrian activity. Based on the general business trip rate of 50 trips per 100m², Area K would be expected to generate 1,225 trips per day².

Area K would be expected to generate 1,225 trips per day

Residential Lots

There are areas identified for residential lots to the north and south. It is expected that approximately 34 lots could be provided. A standard trip generation of 9 trips per lot per day has been applied to the residential areas. On this basis 306 trips per day would be expected.

The residential land uses will generate 306 trips per day.

Community Centre

The structure plan also provides for a community centre to the north of the Woolworths lease area. This land use is not a major regular traffic generator and is not considered in this report.

The community centre would generate negligible traffic

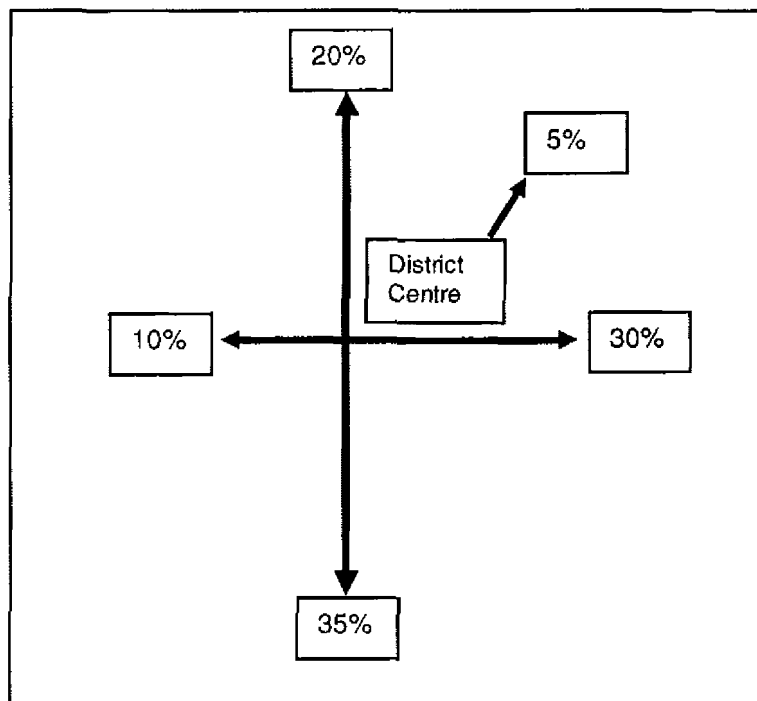
¹ 10,000m² = 96 per 100 and 20,000 = 83 per 100 therefore 15,000 = 89.5 per 100

² land area 7,000m² @35%

Distribution

Marmion Avenue provides the focal north-south distributor to Currumbine and Shenton Avenue provides the key east-west connection. It is estimated that about 95% of traffic associated with the development will access to / from the regional road network and 5% will be from adjacent residential areas using Providence Drive and Oakland Hills Boulevard. Figure 4 shows the assumptions used to distribute the structure plan traffic onto the district road network.

This distribution is based on the traffic data recorded for the existing centre and on the location



of residential dwellings and accessibility to other regional / district shopping facilities. A lower traffic attraction is shown to the north due to the new Coles supermarket in Clarkson. Alternative shopping facilities are available in Joondalup (to the eastern end of Shenton Avenue) and at Whitfords City approximately 6km to the south.

Figure 4 Distribution Assumptions

The generation / distribution spreadsheet is attached as Appendix D. Based on the distribution assumptions shown in Figure 4, the traffic flows shown in Figure 5 would be expected.

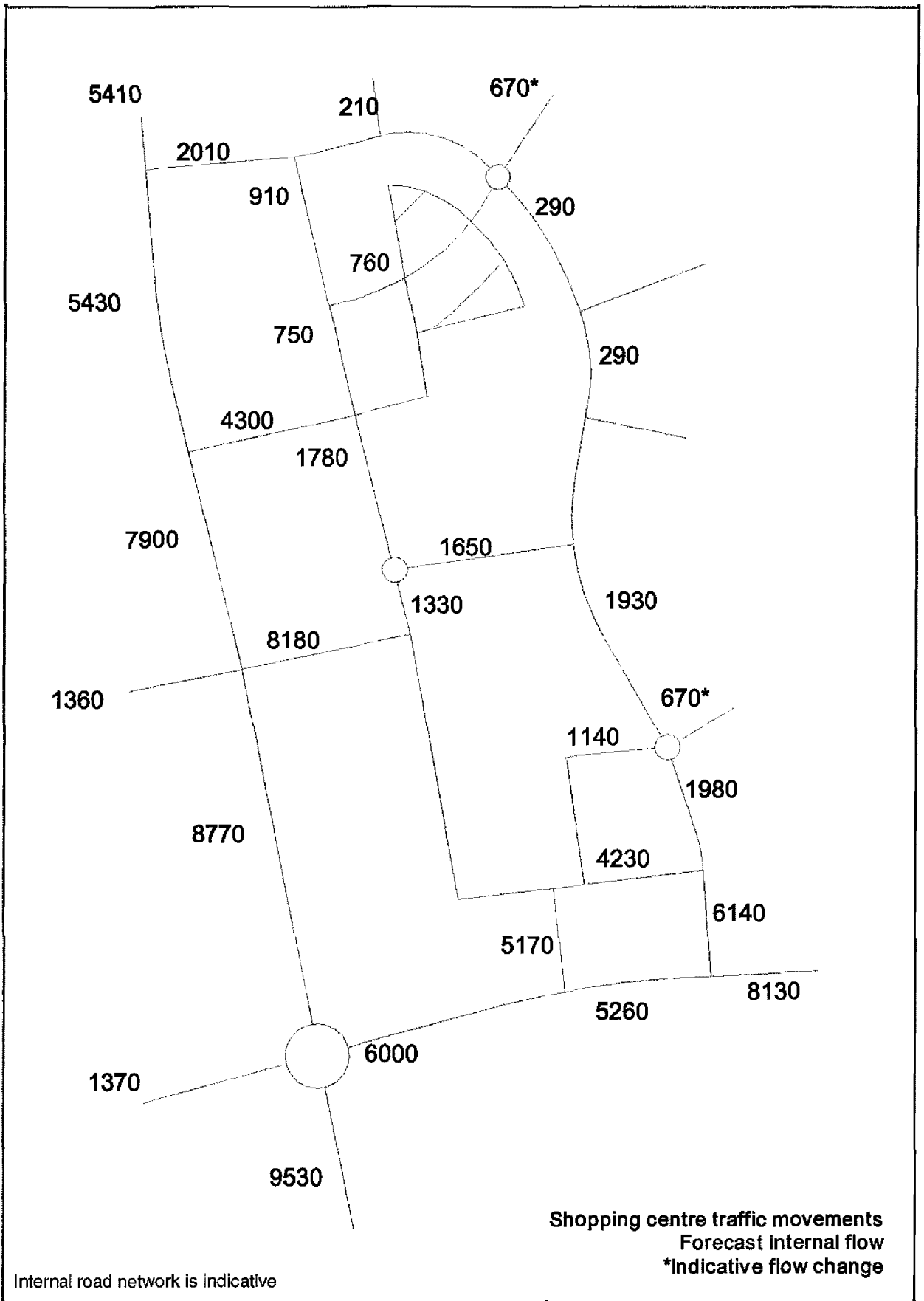
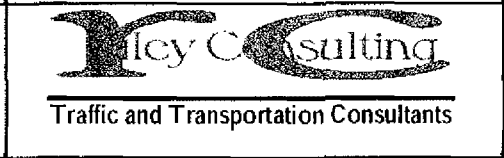


Figure 5
Currumbine District "Shopping" Centre
Future Daily Traffic Volumes



5.0 THE ROAD NETWORK

The projected traffic flows in Figure 5 indicate the anticipated traffic movements associated with the Currambine District "Shopping" Centre on local and regional roads. The increases to regional roads are indicated in Table 2 below with a comment on the network capacity³.

Table 2 Traffic Increases and Road Capacity

Approach	Increase	Future Flow	Capacity	Comment
Marmion Avenue North	+3,310 to +5,850vpd	Existing @ 33,800vpd increasing to about 39,650vpd	48,000vpd	The future traffic volume on Marmion Avenue equates to about 80% of capacity, assuming that a good level of service is maintained throughout the day. Future extensions of the Mitchell Freeway would result in traffic flows on Marmion Avenue reducing to levels similar or less than the existing flows.
Shenton Avenue	+1870vpd to +2,060	Existing @ 12,200vpd increasing to about 14,300vpd	48,000vpd	The forecast flows can be easily accommodated by the existing carriageway.
Delamere Road	+40 to 4,980vpd	<6,000vpd	18,000vpd	As a neighbourhood connector it is desirable that traffic flows do not exceed 7,000vpd. The forecast volumes fall within current planning guidelines, although the increases may raise some local resident concern.

The development of the Currambine district centre as outlined in this report will increase local traffic movements by about 16.650 vehicles per day. The surrounding road network is capable of accommodating this potential increase in daily traffic movements and maintaining a good level of service.

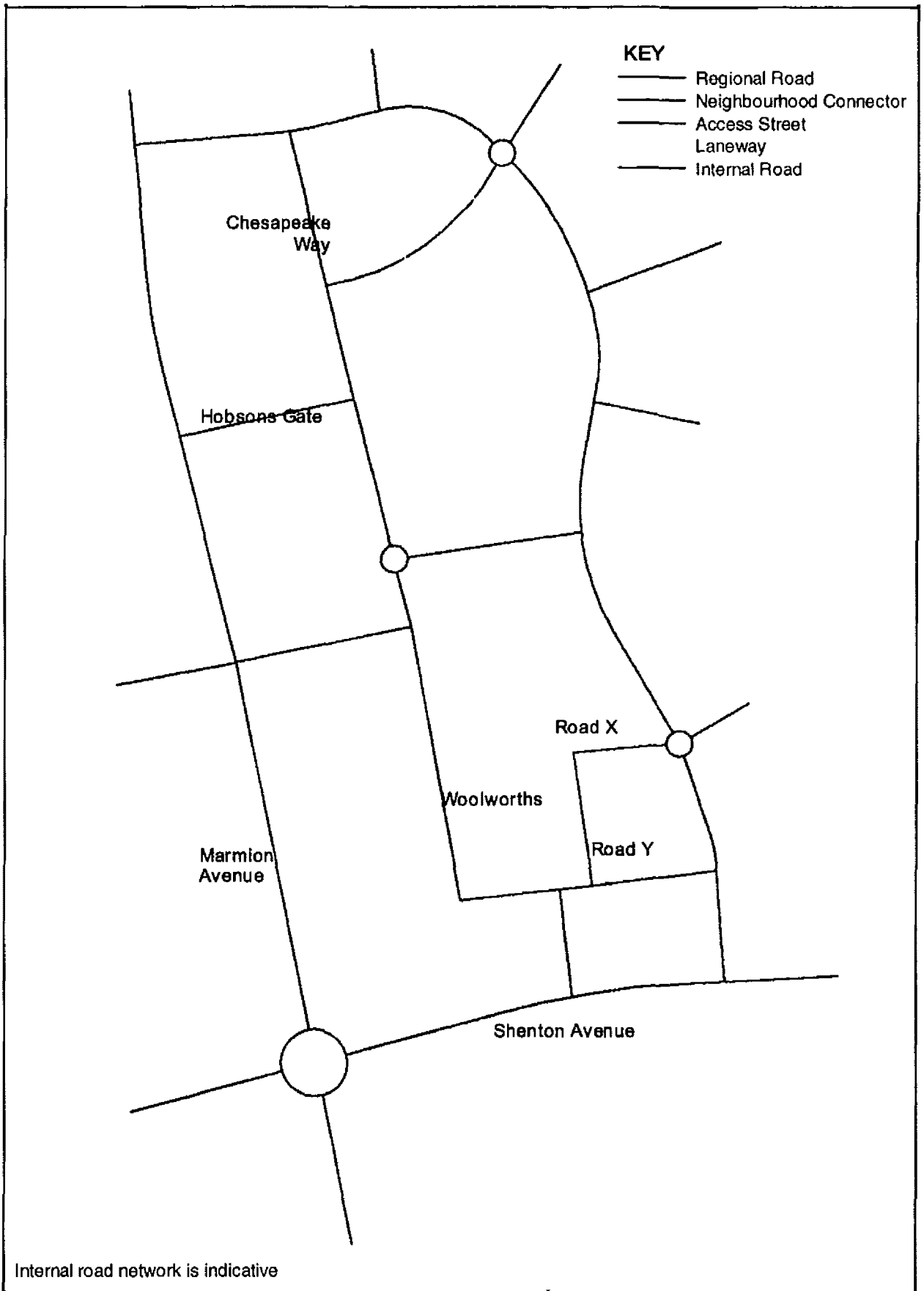
The existing road network can accommodate the full development of the Currambine District Centre.

³ Based on the existing shopping centre traffic generation distributed as shown in Figure 4

Internal Road Function

All new roads within the structure plan area are shown to have daily traffic flows less than 3,000vpd, except the accesses to Marmion Avenue and Shenton Avenue. The low traffic flows accord with the principles of *Liveable Neighbourhoods*.

Based on the projected traffic flows, Figure 6 indicatively shows the internal road hierarchy. Internally to the structure plan area, a general classification of Access Street would apply based on the function of the road. Roads shown in magenta are internal to the Woolworths lease area and are not public roads.



Internal road network is indicative

Figure 6
Currambine District Shopping Centre
Internal Road Hierarchy

Road Reservations

Ocean Gate Parade has an existing 20 metre road reservation, which is appropriate for its function.

Hobsons Gate is shown to have daily traffic flows of less than 1,000vpd, but with internal circulation traffic flows could reach about 2,000vpd. A single 7 (2 x 3.5m) metre carriageway would adequately cater for these daily volumes. To provide easy access to adjacent car parks a 3 metre turning lane is suggested to be provided within a 5 metre median. This will ensure safe access to car parks and adequate opportunity to provide landscaping. Parking embayments of 2.5 metres would be appropriate to service adjacent development to both sides of the street and footpaths of 2 metres should be provided within the minimum verge width of 3.5 metres. A minimum road reservation of 24 metres would be suitable for Hobsons Gate.

Hobsons Gate will require a 24 metre road reservation between Marmion Avenue and Chesapeake Way.

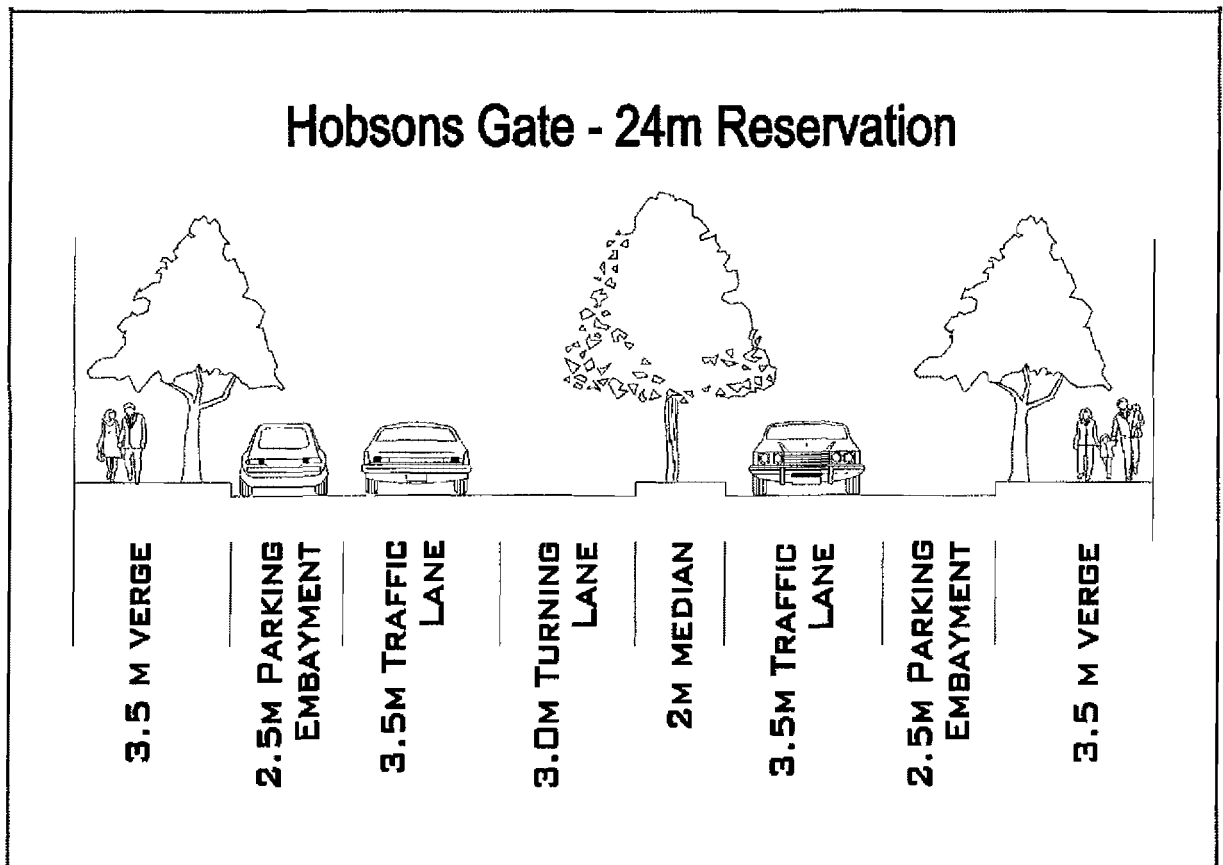


Figure 7

It is understood that an existing road reservation of 27 metres has already been set aside for Hobsons Gate between Marmion Avenue and Chesapeake Way. East of Chesapeake Way Hobsons Gate has very low traffic flows and a cross-section as shown for an access street would be suitable.

Chesapeake Way

Chesapeake Way is the 'main street' and focal attraction for the Currambine district centre. The street will need to provide parking to service local business and retail outlets and these parking bays should be included within the parking requirements for adjacent land uses.

North of Hobsons Gate, the daily traffic flows are generally less than 500 vehicles per day and parking on-street would be permissible. However, it is suggested that parking embayments be provided to the eastern side adjacent to the proposed commercial land uses. To the western side is the car parking for the fast food outlets and additional parking embayments on Chesapeake Way would not be required. In any event, if a 7 metre carriageway is provided, parking on-street would not cause undue interruption to traffic movements. The road cross-section would provide a 7 metre carriageway, a 2.5 metre embayment to the east and two 3.5 metre verges in a 16.5 metre reservation.

A road reservation of 16.5 metres is suggested for Chesapeake Way north of Hobsons Gate.

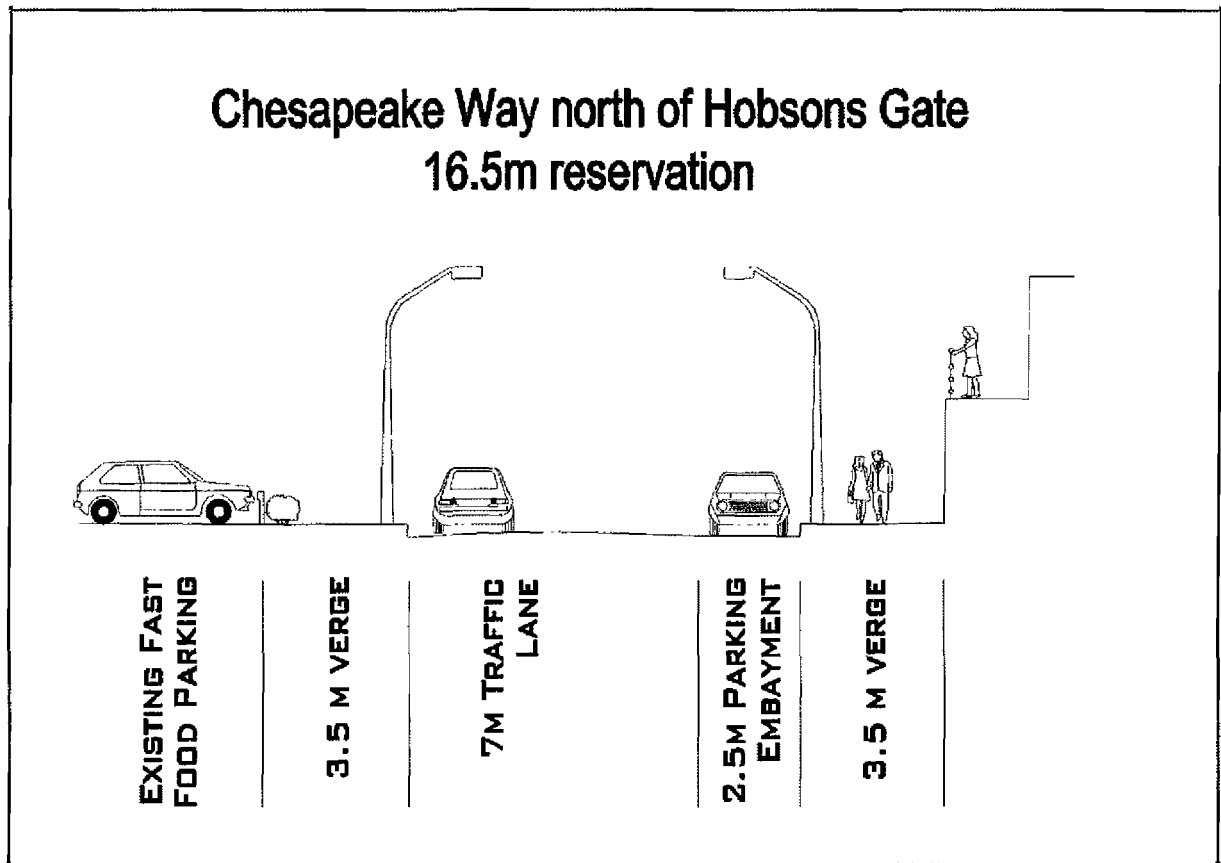


Figure 8

South of Hobsons Gate traffic flows are lower as the road only provides access to the Woolworths car park / a small area of business land uses and better access from the adjacent road network can be made. Chesapeake Way will therefore not be particularly attractive as a through road for traffic accessing Marmion Avenue or Shenton Avenue. The low traffic flows provide a significant opportunity to introduce a pedestrian friendly streetscape. A single carriageway of 6 metres would be suitable for this street, although 7 metres may be preferred by the City of Joondalup. Parking embayments of 2.5 metres should be provided to both sides of the street and a verge / footway area of 4.5 metres provided to cater for future alfresco dining opportunities. The street should be designed to provide a minimal cross-section and allow for two-storey buildings to each side. This will provide vertical constraint to traffic and should assist in maintaining a slow speed environment.

Chesapeake Way is not a critical connection through the Currambine structure plan area and its closure for festivals and other street entertainment would be appropriate between the two roundabouts provided at Hobsons Gate and Ocean Gate Parade.

A road reservation of 21 metres is suggested for Chesapeake Way south of Hobsons Gate.

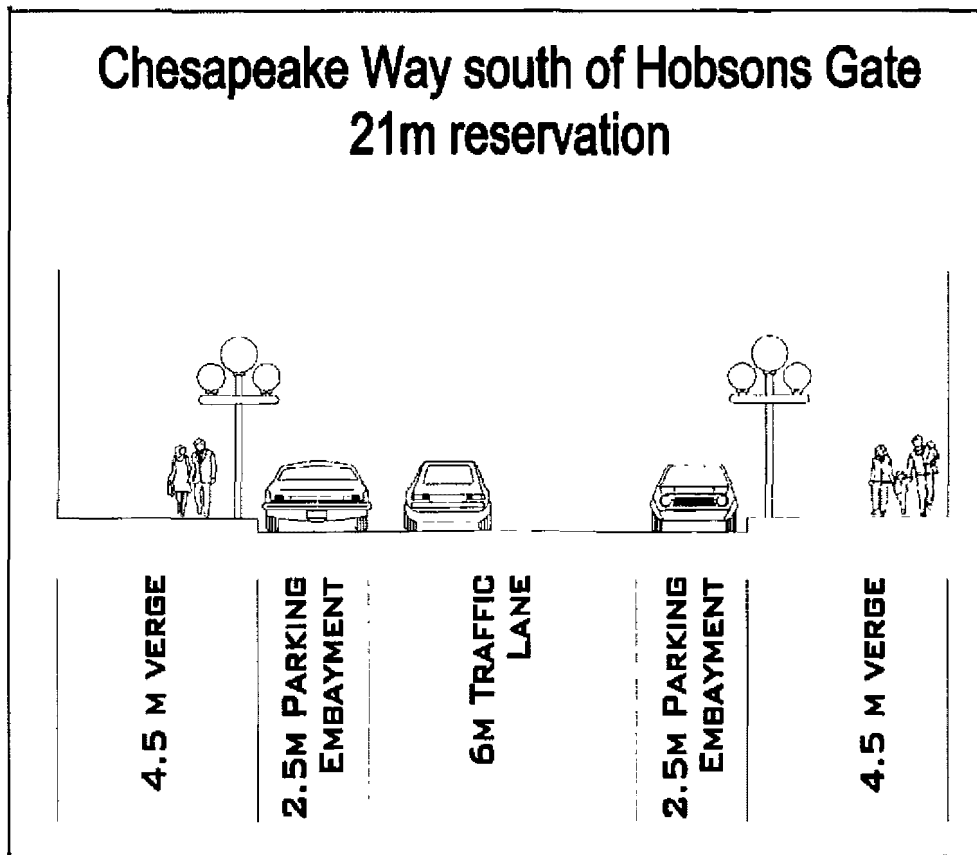


Figure 9

Internal Access Streets

All other streets should be provided with a minimum 6 metre carriageway, 2.5 metre parking embayments adjacent to residential lots and two 3.5 metre verges within an effective 18 metre road reservation. The road reservation need not be gazetted.

All access streets are suggested to have a minimum 18 metre road reservation.

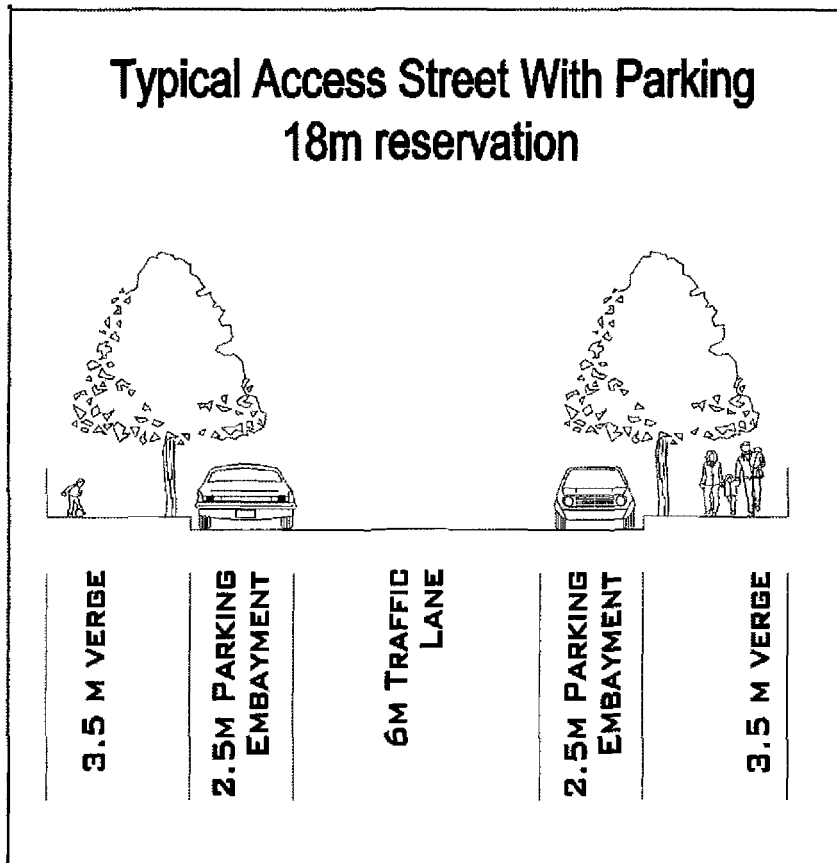


Figure 10

Roads X and Y

Figure 6 shows roads X and Y that service the south east corner of the Woolworths lease area. In effect these two roads will be culs de sac from a reservation perspective, as the Woolworths land area is private land. Space therefore needs to be provided within the road reservation to allow the possible construction of a turning area. It is highly unlikely that this would ever be needed as it is in Woolworths interests to have access through roads X and Y to their site and their petrol filling station. A turning head as shown in Figure 6 of the WAPC DC2.6 can be provided within the 18 metre road reservation suggested for these streets.

6.0. ACCESS

For structure planning it is not normal to undertake detail analysis of intersection operation, as this will be provided at the time of development applications. However, it is appropriate to identify the likely method of intersection control. Figure 38.1 in the UK publication *Roads and Traffic in Urban Areas* provides a convenient assessment of likely intersection control requirement based on the daily traffic volumes and is reproduced as Appendix E. This guide has been used to identify the future intersection requirements of the Currambine District Centre.

Traffic on Marmion Avenue is currently high due to the termination of the Freeway at Hodges Drive. At some future time the freeway will be extended to Shenton Avenue (no impact adjacent to the structure plan area), Burns Beach Road and Clarkson. Once the Freeway is extended to Burns Beach Road and beyond it can be expected that traffic flows on Marmion Avenue will significantly reduce. Reductions of 20% to 30% would not be unrealistic adjacent to the district centre.

Therefore the timing of the development and the extensions to the Freeway will need to be considered at the time of development applications.

Marmion Avenue / Ocean Gate Parade

There is existing access provided by traffic signals to Marmion Avenue, opposite Ocean Gate Parade. Future traffic flows are indicated to be up to about 40,000vpd on Marmion Avenue and 8,180vpd on the existing access. Reference to Appendix E indicates that this intersection would require control and the existing traffic signals are appropriate. However, minor widening may be required, depending upon the timing of development.

The increase in traffic flows predicted from the increased development of the structure plan area can be accommodated by the existing traffic signal controlled intersection. During the commuter peak period, longer delays may be experienced, although shoppers will change the time of their trips to suit local traffic conditions. It can be expected that as traffic flows on the surrounding road network increase, the peak traffic period of the shopping centre may occur later than the normal commuter peak hour.

The existing traffic signals on Marmion Avenue at Ocean Gate Parade are appropriate.

Marmion Avenue / Hobsons Gate

Access has already been constructed at Hobsons Gate and operates as a give way controlled intersection. Site inspection indicates few problems at this access, although it should be noted that there is very little traffic at the present time.

Future traffic flows are indicated to increase to about 4,300vpd on Hobsons Gate and Appendix E would suggest control at this intersection may be required. However, to the north Delamere Avenue is shown to have traffic flows of about 2,000vpd and it would be likely that during busier periods traffic would divert to this access. Therefore the Hobsons Gate and Delamere Avenue accesses to Marmion Avenue could be expected to have a daily flow of about 3,200 vehicles each. With future traffic flows on Marmion Avenue of about 37,000vpd, the two intersections would operate at the upper limits of a priority controlled intersection, until the Freeway is extended and traffic flows on Marmion Avenue decrease. In the interim, depending upon the scale of development, some form of control may be required.

The existing priority control at Hobsons Gate and Delamere Avenue would be sufficient with full development, but would operate at a low level of service during the peak periods.

Delamere Avenue / Shenton Avenue

The existing intersection of Delamere Avenue and Shenton Avenue operates as priority control and provides the right turn movement to the shopping centre from Shenton Avenue. Site inspection indicates that this intersection currently operates in an acceptable manner. The expansion of the shopping centre is shown to increase traffic flows at this intersection by about 4,980vpd on the side road. It is estimated that future flows on Delamere Avenue could therefore reach about 6,000vpd with about 17,000vpd on Shenton Avenue.

Reference to Appendix E indicates that this intersection would require some form of control. It would be recommended that traffic signals be considered as this will provide a safe pedestrian crossing facility to the district centre.

Delamere Avenue / Shenton Avenue would require traffic signal control with full development.

Woolworths Access / Shenton Avenue

An existing left-in / left-out access is provided to Woolworths from Shenton Avenue and currently operates in an acceptable manner. The forecast traffic flow increases could be easily accommodated by this access.

7.0 PARKING

At this stage of structure planning, the end users for the allocated land uses are unknown and providing specific advice on the parking requirements is not appropriate at this time. However, it is pertinent to identify key issues of parking that can be used to guide the development.

The City of Joondalup District Planning scheme requires 7 parking bays per 100m² floor area. This is a rate consistent with policy requirements for a centre of purely retail land uses. The policy takes little account of cross-visitation and reciprocal parking when centres expand, however, as is demonstrated by the traffic generation data, traffic attraction does not increase proportionately to the size of the centre.

This philosophy encourages car travel and results in large areas of parking that become difficult to control and difficult to monitor for security. Currambine district centre would certainly not seek to limit parking so that finding a space was difficult. But a balance should be made between the aesthetics of the area and the provision of car parking. This becomes more important when land uses with different hours of operation are considered. In the instance of Currambine district centre, the café/restaurant/tavern uses should be permitted to utilise the available parking of the retail land uses, which may be closed when these uses are operating at capacity⁴.

It is suggested that the City of Joondalup's scheme parking requirement be used as a starting point for car parking provision, but where cross-visitation or reciprocal use between adjacent land uses can be demonstrated, then a reduction to the off-street parking requirement should be allowed.

All land uses should provide reciprocal parking in well lit and easily accessible areas.

⁴ Based on current trading laws. However, changes to trading laws may permit shops to operate at the peak time of entertainment land uses, but it is highly likely that significant levels of cross-visitation would occur.

8.0 PEDESTRIANS, CYCLISTS AND PUBLIC TRANSPORT

The Currambine district centre is an established shopping area that services the local community of Beamaris Beach, Currambine and suburbs to the south. It is well located in the centre of these suburbs and major walking trips to the centre, although desirable, would not be usual for shopping activities. Further, the existing footpath network external to the site has not been completed, deterring local residents from accessing the centre by foot.

Pedestrians and Cyclists

Currambine district centre is well within an acceptable walking and cycling distance to a high level of existing residential areas. Figure 11 shows the pedestrian and cycle catchments and where existing road crossing facilities are provided.

External to the structure plan area, pedestrian facilities are provided across Marmion Avenue by an underpass to the north of Hobsons Gate and traffic signals at Ocean Gate Parade. No crossing facilities are provided on Shenton Avenue, although evidence of walking movements between the bus stop and the centre can be clearly seen in the median and verge.

Easy access to and through the district centre can be made on the proposed street network and all streets within the structure plan area would be provided with at least one footpath.

Footpaths should be provided adjacent to residential and commercial land uses.

The low traffic volumes on internal access streets would permit safe cycling on-street and is supported by *Liveable Neighbourhoods* where traffic flows are less than 3,000vpd. Convenient quiet access roads are provided that would allow cyclists a more direct route to the district centre and cycling on-street would be considered safe and appropriate.

Cycle parking facilities should be considered at the time of development.

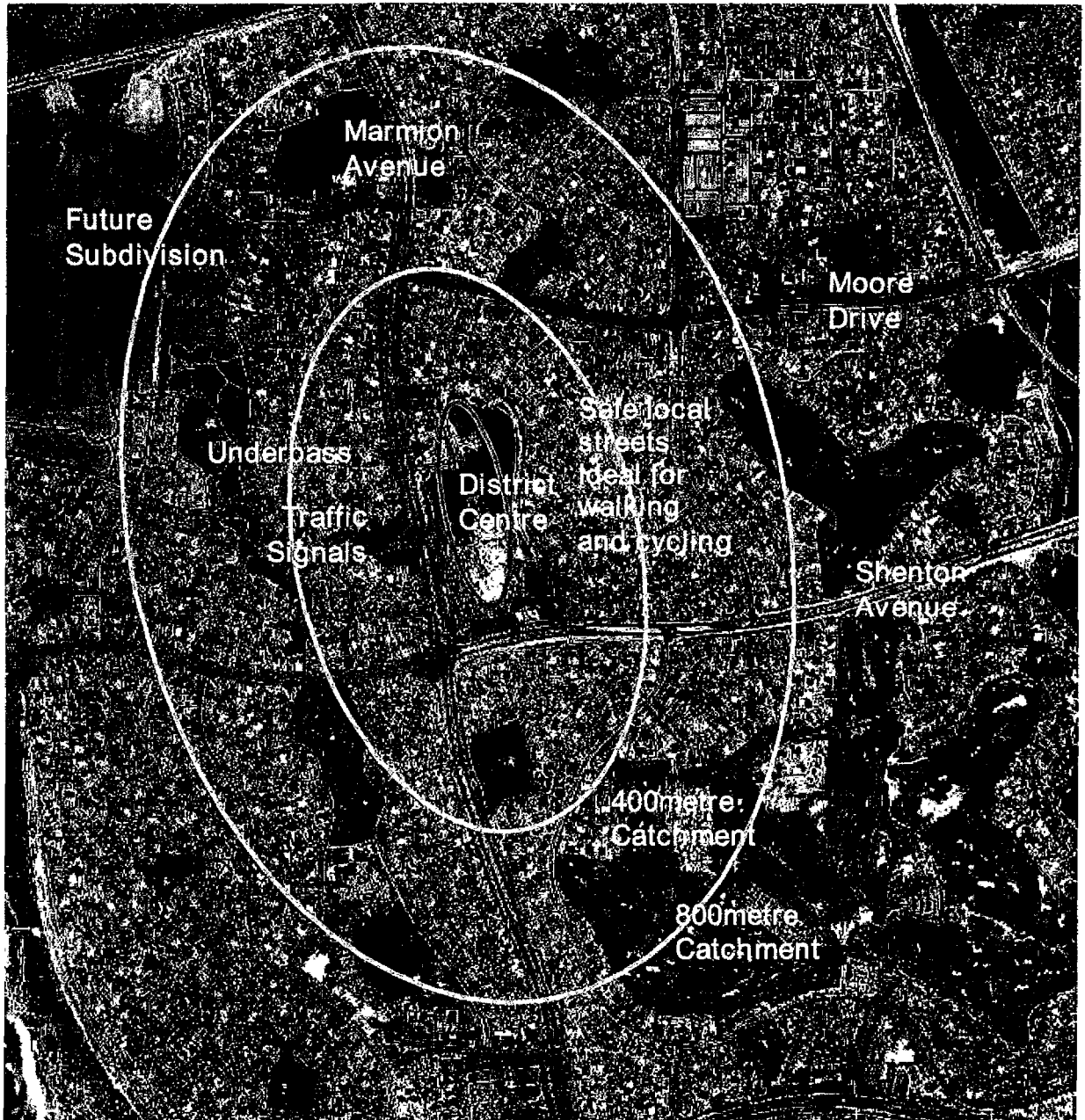


Figure 11 – Walking / Cycling Catchments and Facilities

Bus Services

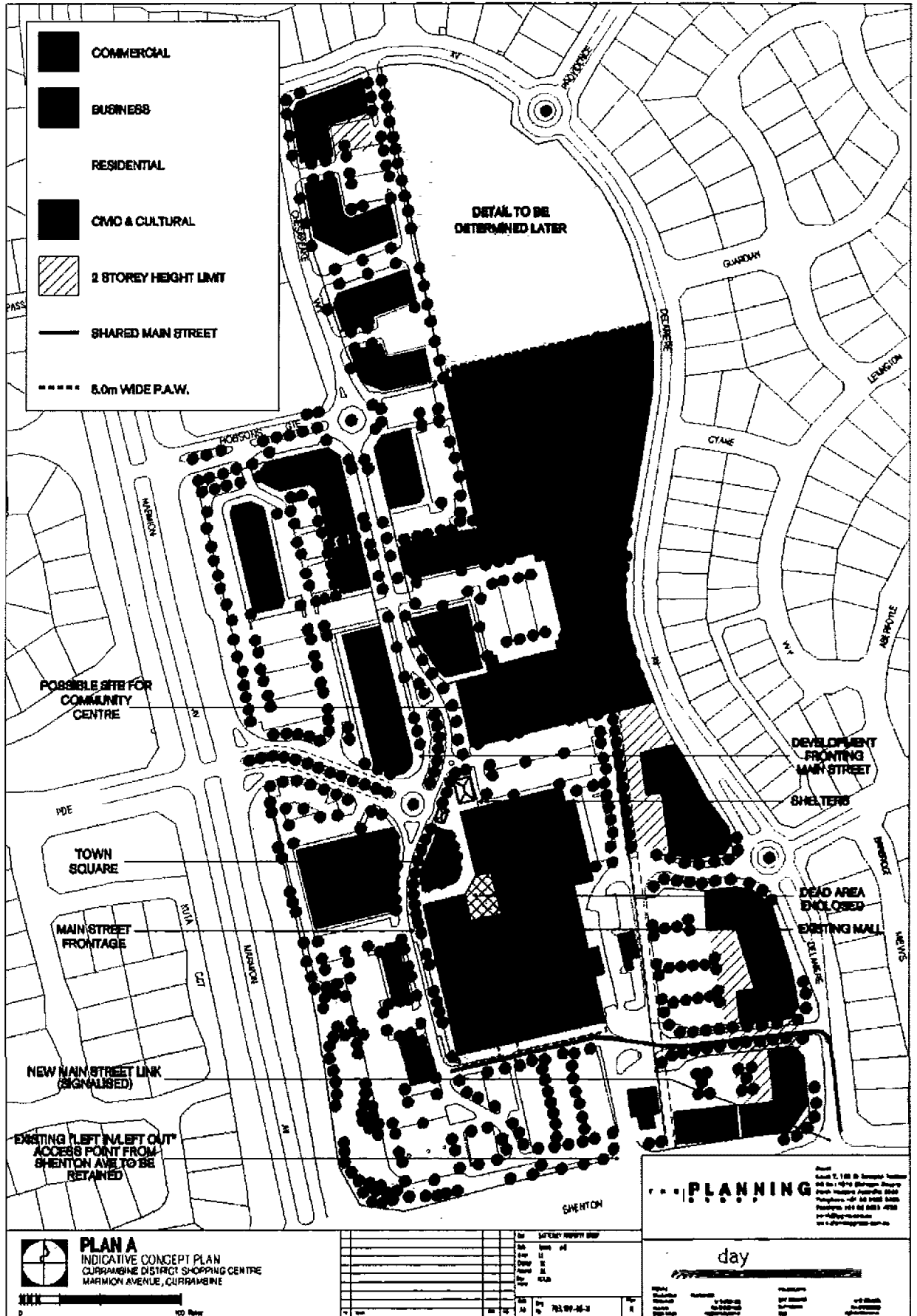
There would not be a requirement to provide a bus service through the structure plan area as existing bus routes provide an adequate service from Marmion Avenue with 400 metres. Generally, a bus passes the Currumbine district centre every 15 minutes during peak periods and every 20 to 30 minutes throughout the day. It is highly unlikely that Transperth would agree to deviate current services to roads internal to the structure plan area. Figure 12 shows the current bus routes servicing the district centre.

9.0 CONCLUSIONS

As a result of the traffic analysis undertaken for the Currambine district centre, the following conclusions are made:

- The full development of the structure plan area could generate about 26,400 trips per day onto the surrounding road network. The existing road network has capacity to accommodate this potential increase and all adjacent roads will continue to operate well within capacity.
- Access to the structure plan area has already been constructed to the regional road network. Two new accesses are to be provided to Delamere Avenue to service the future residential lots and provide access to the community centre. The accesses can of course be used by traffic accessing car parking for the shops, but it is anticipated that this would only be local traffic.
- An assessment of the existing priority controlled intersection of Hobsons Gate and Marmion Avenue, with the full potential development in the structure plan area, indicates it would require control. However, combined with the Delamere Avenue intersection and potential reductions to traffic flows on Marmion Avenue, priority control would operate with an acceptable level of service.
- Access to Shenton Avenue from Delamere Avenue will require traffic signal control with full development.
- No significant traffic benefit can be gained through limiting the Woolworths lease area to 10,000m² retail land use. The recommendations for access controls associated with the development of 15,000+m² would still be required if only 10,000m² were to be developed.

APPENDIX A
Indicative Structure Plan



**Appendix B
Northern Area Land Use Scenarios**

FPD Savills indication of potential land uses

Category	Area m ² Land	Area m ² Improvements	Comments
Car Wash	2,000		
Gym	4,000 – 6,000	2,000 ground 1,500 first	
Tavern	4,000 – 6,000		4,000 land at Livingston – 1,000 improvements
Medical	3,000	1,200	
Funeral	2,000	500	
Showrooms	4,000		
Swim	2,000 – 3,000		

Summary of Traffic Generation of above

Category	Daily Traffic Attraction
Residential Lots	720
Car Wash	240
Gym	200
Tavern	440
Medical	600
Funeral	80
Showrooms	960
Swim	300
Total	3,540vpd

APPENDIX D

Structure Plan Traffic Generation

Zone	Land use	Area	Rate	Total Trips	North	Oakland	East	South	West Shenton	West Ocean Gate	Providence
	Distribution				20.0%	2.5%	30.0%	35.0%	5.0%	5.0%	2.5%
1	Fast food			2240	448	56	672	784	112	112	56
2	Shell Lease	2,250	0.5	1125	225	28	338	394	56	56	28
3	A	1,096	0.5	548	110	14	164	192	27	27	14
4	B	1,176	0.5	588	118	15	176	206	29	29	15
5	C	705	0.5	353	71	9	106	123	18	18	9
6	D	690	0.5	345	69	9	104	121	17	17	9
7	E	1,412	0.5	706	141	18	212	247	35	35	18
8	F	710	0.5	355	71	9	107	124	18	18	9
9	G	725	0.5	363	73	9	109	127	18	18	9
10	H	800	0.5	400	80	10	120	140	20	20	10
11	I	810	0.5	405	81	10	122	142	20	20	10
12	J	2,450	0.5	1225	245	31	368	429	61	61	31
13	K	1,400	0.5	700	140	18	210	245	35	35	18
14	L	2,625	0.5	1313	263	33	394	459	66	66	33
15	M	1,540	0.5	770	154	19	231	270	39	39	19
16	Woolworths	16500		14813	2954	369	4430	5169	738	738	369
17	Cinema			632	126	16	190	221	32	32	16
18	Residential	4	9.0	36	5	0	9	16	4	2	0
19	Residential	7	9.0	63	9	0	16	28	6	3	0
20	Residential	6	9.0	54	8	0	14	24	5	3	0
21	Residential	10	9.0	90	14	0	23	41	9	5	0
22	Residential	7	9.0	63	9	0	16	28	6	3	0
	RESIDENTIAL DISTRIBUTION				15%	0%	25%	45%	10%	5%	0%
					5413	671	8127	9530	1372	1357	671

APPENDIX E

Roads and Traffic in Urban Areas – Intersection Control Requirements

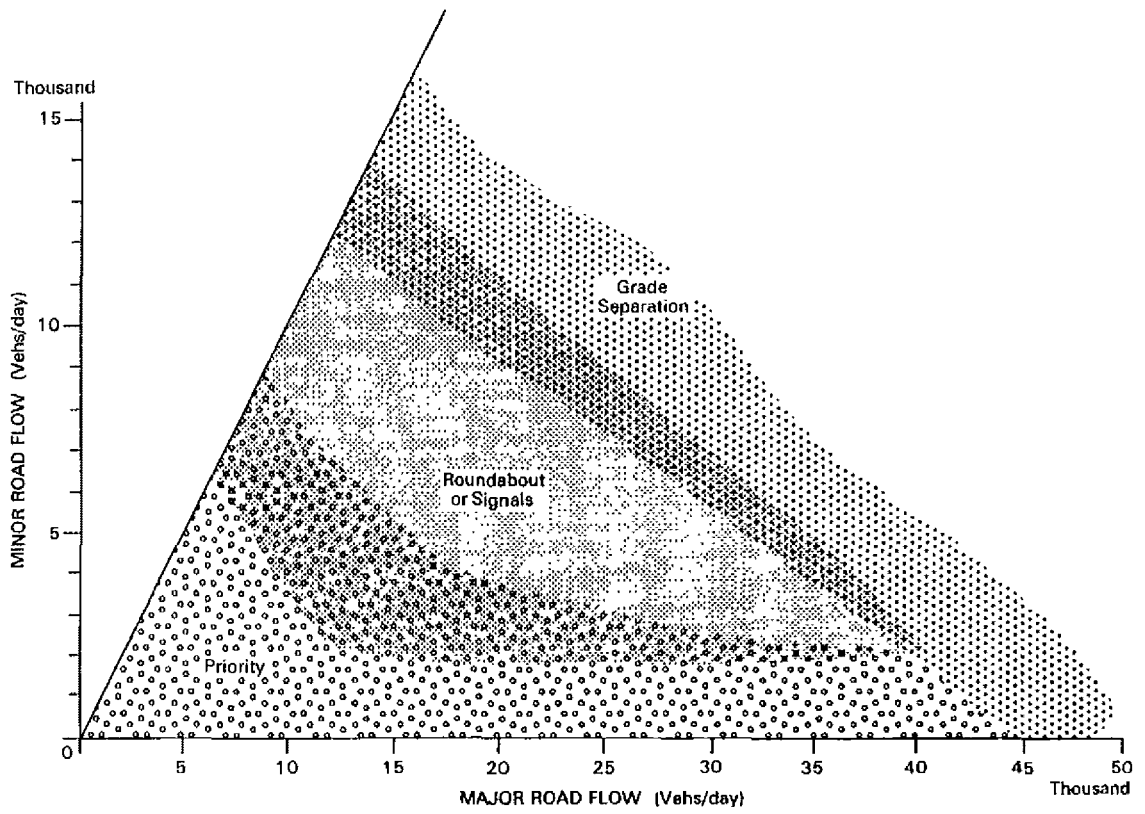


Figure 38.1 Type of junction appropriate for different traffic flows