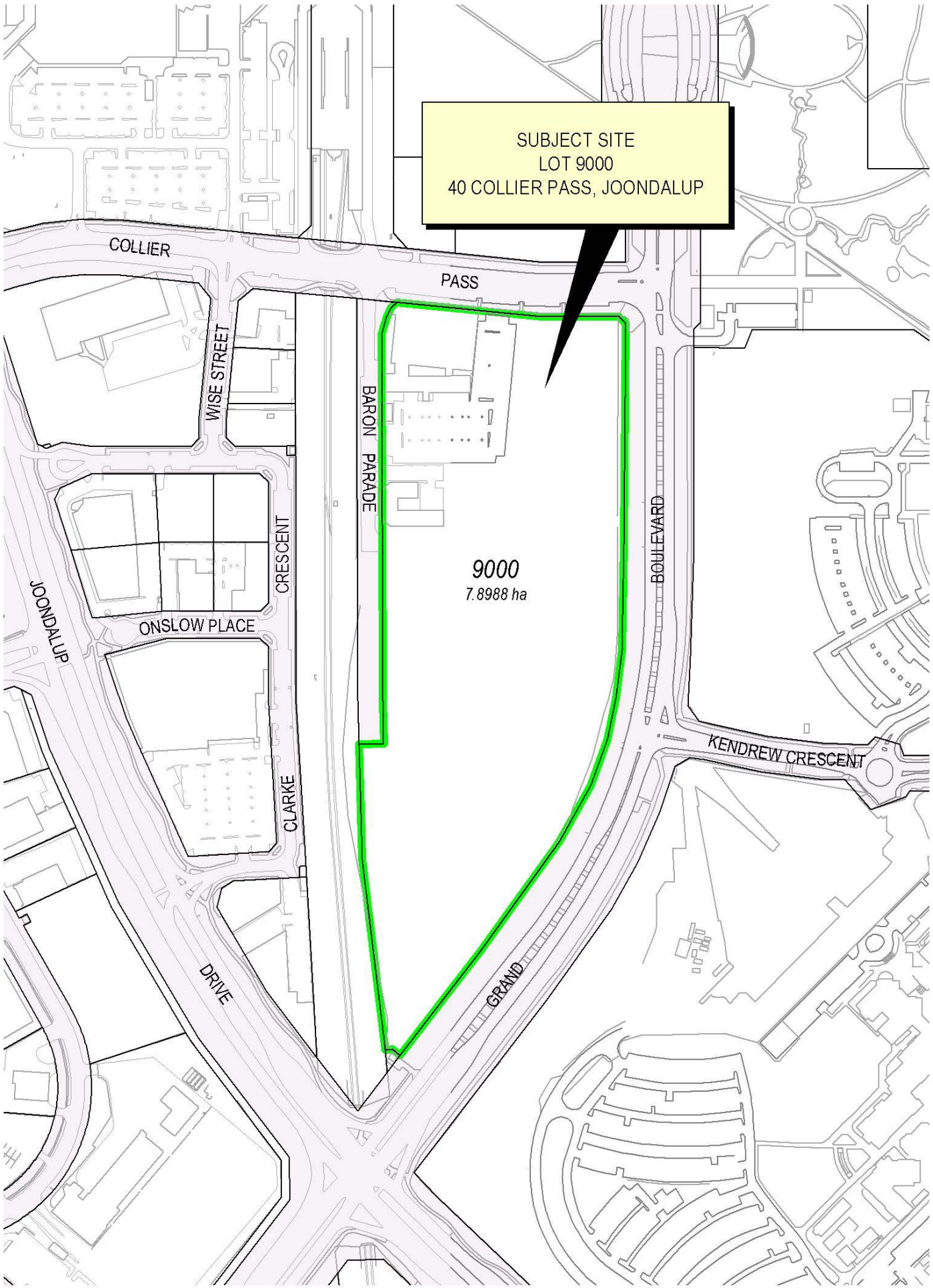
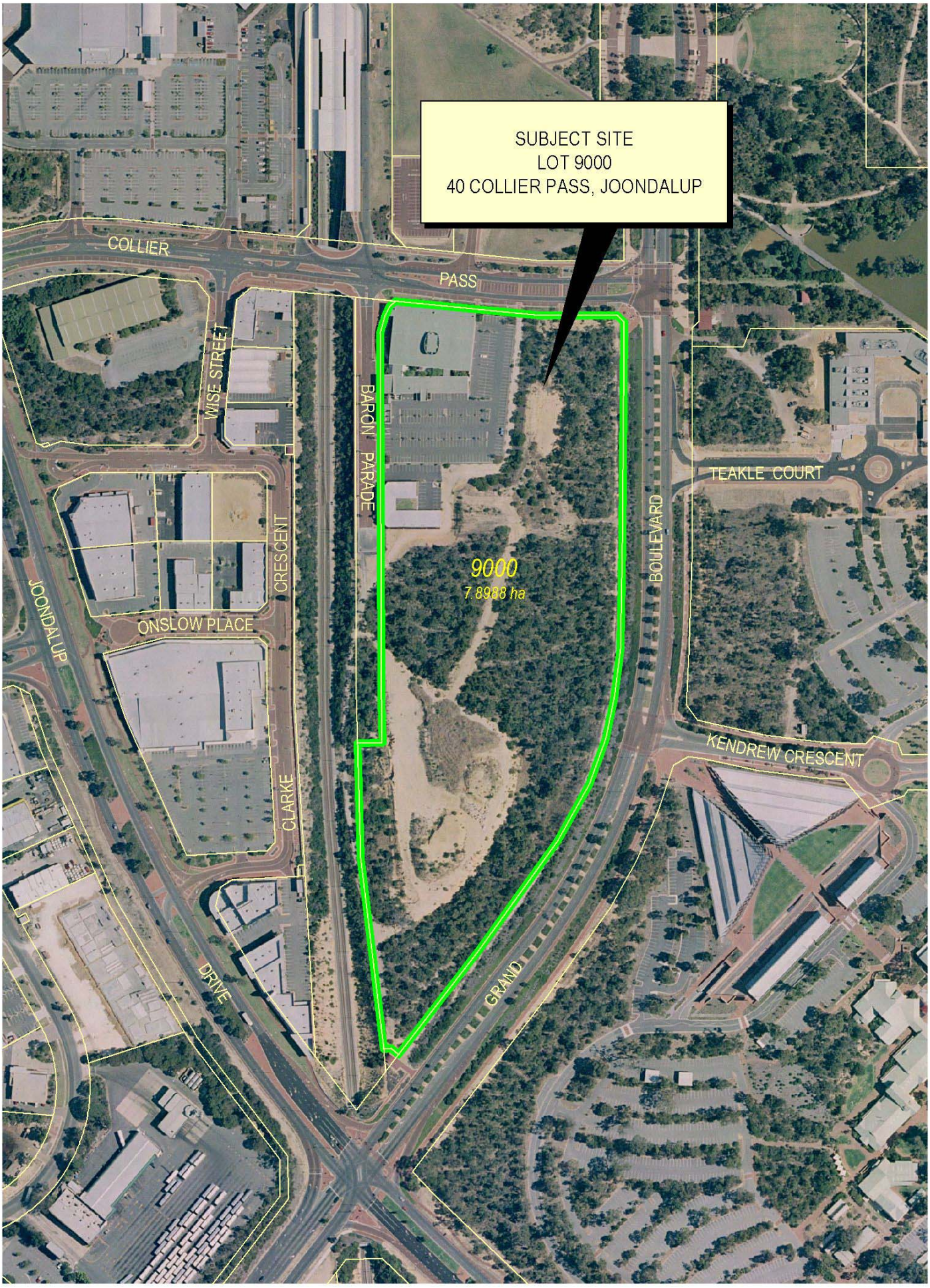


Prepared by City of Joondalup : Urban Design & Policy, Cartographic Section. 18/01/2006 - djt



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Prepared by City of Joondalup : Urban Design & Policy, Cartographic Section. 18/01/2006 - djt

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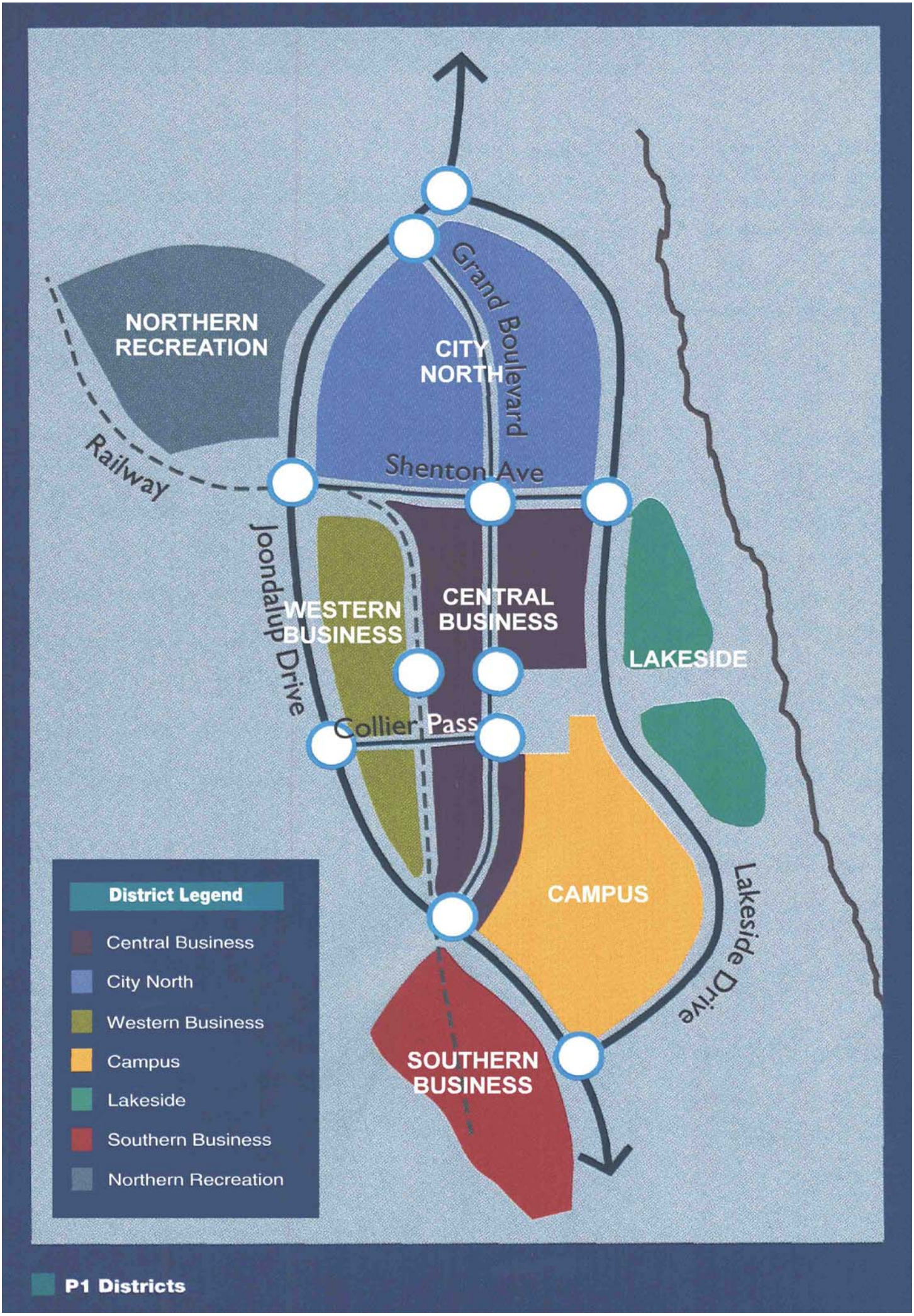

EDITH COWAN UNIVERSITY (ECU)
JOONDALUP CITY CAMPUS STRUCTURE PLAN AMENDMENT

Part 1 – Statutory Amendments

Prepared for Edith Cowan University

Prepared by:

HAMES SHARLEY

41558

January 2006

REVISION SCHEDULE

No.	Date	Details	CM
1	September 2005	Draft	JAH
2	January 2006	Final Draft	RMS

DISCLAIMERS

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This report is for the use only of the party to whom it is addressed and Hames Sharley disclaims responsibility to any third party acting upon or using the whole or part of its contents.

Table of Contents

Figures, Maps & Diagrams:

1.0 Introduction

The site is located at Lot 9000 (40) Collier Pass, Joondalup, directly west of the main ECU Campus and is known as the 'Edith Cowan University (ECU) Joondalup City Campus'. The City Campus forms a link between the main campus and the Joondalup City Centre and is part of the Joondalup Central Business District.

The site is subject to the Joondalup City Centre Development Plan and Manual (JCCDPM) which is the 'Agreed Structure Plan' for the whole of the Joondalup City Centre area. The purpose of this report is to amend the JCCDPM to include specific objectives and guidelines for the ECU City Campus. This Structure Plan will become an amendment to the existing Structure Plan.

This Structure Plan will provide a comprehensive framework for the future development of the ECU Joondalup City Campus site for the consideration and approval of future development proposals by the Council. The new Structure Plan will be reviewed at appropriate intervals to reflect changes to the general growth and development of both the Joondalup City Centre and the University.

The City Campus Precinct will contain a range of land uses with Education as a preferred land use throughout the precinct. The existing list of preferred uses for the site will be retained with educational uses being added to the list. It is not intended that the Precinct be further subdivided as it is important for the university's long term viability that land tenure remains as flexible as possible. The Precinct will remain as one lot in one ownership.

The new Structure Plan is a long term plan with an anticipated life of over 20 years. Development of the site will be dependant on commercial feasibility and growth of the university student population. Initially ECU anticipates the City Campus will be primarily commercial in use, with buildings being adapted for university use over time.

Indicative Development Plans have been created to guide the development of the site. In the immediate term a student carpark will be developed and accessed by extension of

Kendrew Crescent into the site. It is expected that development opportunities will arise along Kendrew Crescent West, and by 2022 development will extend further south along Grand Boulevard.

2.0 Amendment to Joondalup City Centre Development Plan and Manual (JCCDPM)

This amendment comprises two parts:
Part 1: Statutory amendments
Part 2: Background report

Part 1 – Statutory Amendments

The following sets out the proposed statutory amendments to the existing JCCDPM (the 'Agreed Structure Plan').

A1 Land Use

Add new Land Use to the list of Land Uses under clause A1 as follows:

A1.6 Education/Mixed Use
- Educational
- Residential
- Office
- Retail
- Accommodation
- Leisure and Entertainment
- Cultural facilities
- Community service facilities
- Medical Centre

Development shall generally be in accordance with the Proposed Structure Plan (Figure 1) and Indicative Development Plan (IDP) (Figure 2). Building outlines and forms shown on this plan are indicative only Document text shall take precedence over plans.

The Land Use Map and Legend shall be amended as follows:
See Map – A1 Land Use

LEGEND

- STRUCTURE PLAN AREA EDUCATION/MIXED USE
- 5 - STOREY HEIGHT LIMIT
- 4 - STOREY HEIGHT LIMIT
- 3 - STOREY HEIGHT LIMIT

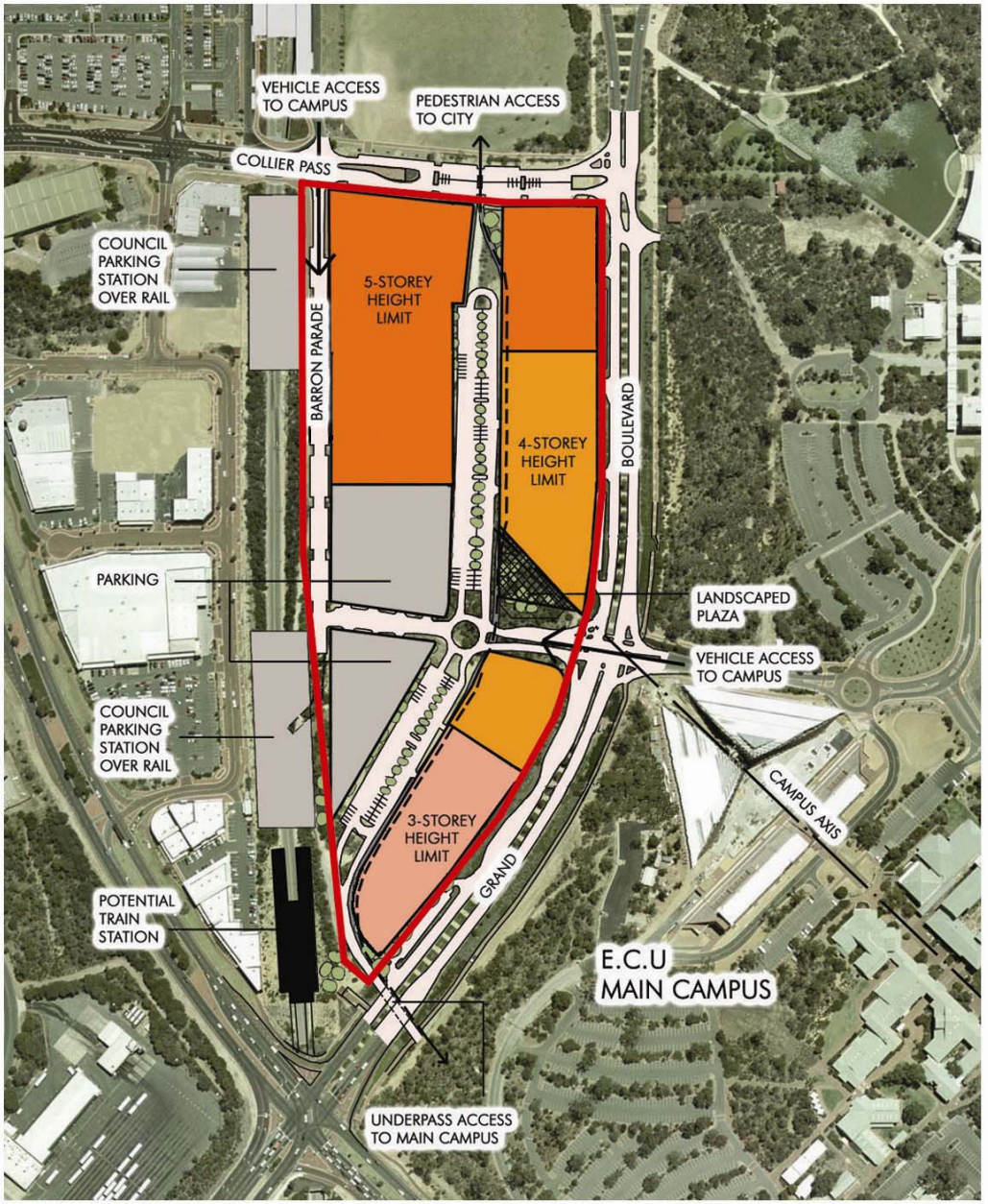
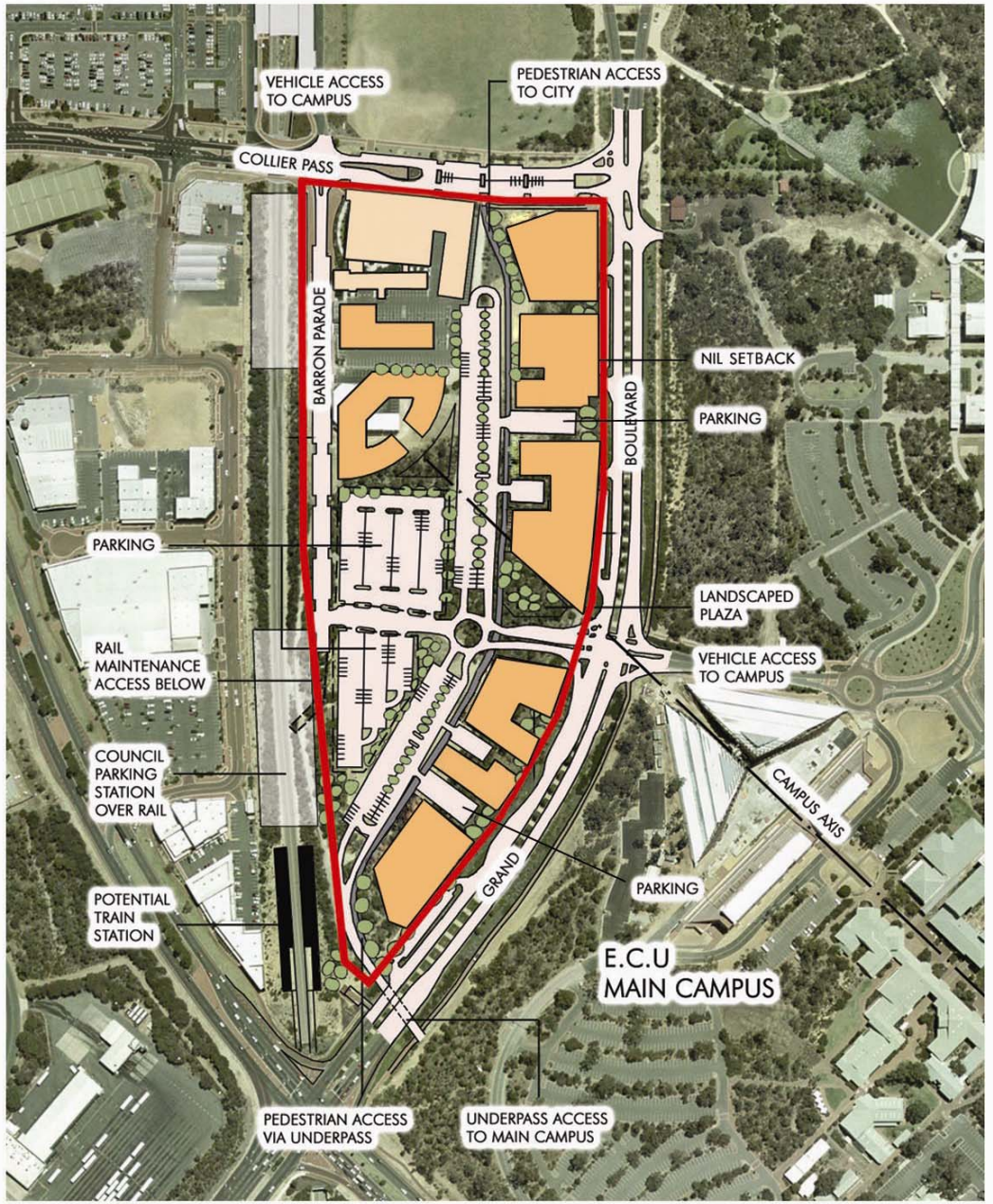


Figure 1
Proposed Structure Plan
Edith Cowan University ECU Joondalup City Campus



LEGEND

- STRUCTURE PLAN AREA EDUCATION/MIXED USE
- EXISTING BUILDINGS
- POTENTIAL NEW BUILDINGS

Figure 2 Conceptual only

Indicative Development Plan

Edith Cowan University ECU Joondalup City Campus


Shenton
Mc Larty
Reid
Boas
Station Square
Transit Station
Grand Boulevard
Davidson Tce
Lakeside
Central Park
Collier
Kendrew
P
A1 Land Use
Land Use Legend
General City Uses
Civic
Education/Mixed Use
Retail
Police Station and Law Courts
Public Open Space
Residential Mixed Use
Parking
Where air rights are taken over the railway, such development will be included in the Central Business District.
Central Business District
A1 Land Use
February 1995
Joondalup City Centre • Development Manual •

A2 Plot Ratio

Add additional clause to clause A2

A2.4 Education/Mixed Use

Plot ratio shall not apply to the Education/Mixed Use Precinct.

A residential density of R100 applies.

A density of R160 may be approved where Council considers that a development has an appropriate landmark quality.

The Plot Ratio Map and Legend shall be amended as follows:
See Map – A2 Plot Ratio


Shenton
Mc Larty
Reid
Boas
Station Square
Transit Station
Grand Boulevard
Davidson Tce
Lakeside
Central Park
Collier
Kendrew
Plot Ratios
Other
1.0
1.5
2.0
2.5
Unlimited
Public Open Space
Not applicable
Central Business District
A2 Plot Ratio
A2 Plot Ratio
February 1995 Joondalup City Centre • Development Manual • Central Business

A3 Car parking

Amend clause A3.1 to include the following:

Education uses: As per Table 2: Car Parking Standards of District Planning Scheme No. 2

A4 Setback and Heights

Amend clause A4.1 as follows:

Education/Mixed Use
Buildings are required to have a nil (0 m) setback to all streets.

Open spaces are permitted between buildings to provide courtyards, landscaped spaces and small parking areas. These spaces will provide transition from the city centre urban context to the softer landscape of the Edith Cowan University Campus.

Add additional clauses to A4 Setbacks and Heights as follows:

A4.5 Heights of buildings within Education/Mixed Use Precinct.

The maximum height of buildings shall be in accordance with the Structure Plan (Figure 1).

A4.6 Distance between buildings

Buildings on the site shall be spaced so as to provide for a reasonable degree of solar access to the spaces between them. The appropriate separation distance will be determined by a number of factors, including,

(a) the height and massing of buildings to the north of the space,
(b) the orientation of the space and the buildings surrounding it,
(c) the intended use of the space, (movement, passive recreation or landscape)

Buildings can be stepped back with variations in height and alignment to provide interest and variety to spaces, whilst also ensuring that the spaces created are safe to use and the opportunity for passive surveillance from buildings is maximised.

Shadow analysis diagrams shall be submitted with development applications indicating the impact of new buildings on the adjacent buildings and open spaces.

EDITH COWAN UNIVERSITY (ECU) JOONDALUP CITY CAMPUS STRUCTURE PLAN AMENDMENT

Part 2 – Background Report

Prepared for Edith Cowan University

Prepared by:
HAMES SHARLEY
41558
January 2006

REVISION SCHEDULE

No.	Date	Details	CM
1	March 04	Revision 1 – Report 1	RMS
2	June 04	Issued Draft	RMS
3	August 04	Issued Draft 2	RMS
4	November 04	Issued Draft 3	RMS
5	September 05	Final	JAH
6	January 06	Amended final	RMS

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Contents

EXECUTIVE SUMMARY

Purpose

This Structure Plan is an amendment to the existing Joondalup City Centre Development Plan and Manual (JCCDPM - the 'Agreed' Structure Plan). The Structure Plan will provide a comprehensive framework for the future development of the Edith Cowan University (ECU) Joondalup City Campus for the consideration and approval of future development proposals by the Council. The Structure Plan will be reviewed at appropriate intervals to reflect changes to the general growth and development of both the Joondalup City Centre and the University.

The Site

The ECU Joondalup City Campus site comprises one lot of 8.4872 hectares being Lot 9000 (40) Collier Pass. This will be reduced to 7.8988 hectares with the creation of Barron Parade and provision for Westrail access.

The site is well positioned to form a link between the Joondalup City Centre and the Education Precinct. Grand Boulevard provides excellent exposure for the site and Kendrew Crescent West will be extended into the site with a controlled intersection at Grand Boulevard. Links, both visual and physical, to ECU main campus are essential.

Zoning

The ECU City Campus is zoned 'City Centre' in accordance with the City of Joondalup Town Planning Scheme No.2 and is part of the Central Business District (CBD). Generally the CBD is "intended to epitomise the urbanity of a bustling city centre."

The Proposed Structure Plan

The City Campus Precinct will contain a range of land uses with Education as the preferred land use throughout the Precinct. It is not intended that the Precinct be further subdivided as it is important for the university's long term viability that land tenure remains as flexible as possible. The Precinct will remain as one lot with one ownership. Building heights will be between 3 and 5 storeys and the street pattern will provide essential linkages to integrate with the Joondalup City Centre.

The Structure Plan is consistent with, and adopts the objectives of, the current ECU Masterplan which recognises the City Centre Campus as being different in character to the main campus. The Structure Plan adopts the environmental building design guidelines of the Masterplan and further acknowledges the need for a parking strategy for the whole campus.

Staging

The Structure Plan is a long term plan with an anticipated life of over 20 years. Development of the site will be dependant on commercial feasibility and growth of the university student population.

In the near future, a 400 bay student carpark will be developed and accessed by extension of Kendrew Crescent into the site. The remainder of the land will be used in the interim as bushland laboratory for educational purposes, providing a unique opportunity for ECU. It is

expected that development opportunities will arise along Kendrew Crescent West, and by 2022 development will extend further south along Grand Boulevard.

Initially ECU anticipates the City Campus will be primarily commercial in use, with buildings being adapted for university use over time.

Access, Infrastructure and Telecommunications

Efficient private and public transport access are key elements of the Structure Plan. Vehicle access to the site will be via the existing Barron Place, a proposed four-way traffic light controlled intersection at Kendrew Crescent and Grand Boulevard and via a proposed underpass to link the site to the existing ECU campus. Pedestrian and cycle networks may require upgrading to meet increased demand.

Public transport access by train is from the existing Joondalup Station, 160m to the north of the site or by a proposed additional station adjacent to the site. Grand Boulevard is well serviced by buses that will require good pedestrian links to the campus.

The Structure Plan provides for existing services to be upgraded to cater for increased future demand.

ECU's Commitment to Sustainability

The Structure Plan supports ECU's commitment to sustainable development and it provides the opportunity for the University to honour its commitment to the social, economic and environmental development of Joondalup City.

Edith Cowan University (ECU) Joondalup City Campus Structure Plan Amendment

1 INTRODUCTION

Edith Cowan University (ECU) has commissioned Hames Sharley to prepare a Structure Plan Amendment for the portion of the University's Joondalup Campus within the Joondalup Central Business District. This Structure Plan will become an amendment to the existing Joondalup City Centre Development Plan and Manual (JCCDPM).

1.1 PURPOSE

The purpose of the Structure Plan is to describe a preferred land use structure for this portion of the campus known as ECU Joondalup City Campus.

Once endorsed this new Structure Plan will provide a framework for the University to make informed decisions regarding appropriate future expansion and within which the City of Joondalup can assess development proposals.

1.2 OBJECTIVES

The objectives of the Structure Plan are to:

- Ensure maximum and 'best' use of a significant and prominent land asset;
- Increase the profile and physical presence of the University within the City Centre through carefully planned north-westerly growth;
- Promote a campus design which is contemplative, interactive and above all stimulating;
- Encourage University buildings and open spaces to positively respond to non-university interfaces, providing integration with the fabric of the city; and
- Provide the University and the City of Joondalup with a long-term and yet flexible vision for the development of Lot 9000.

2 EXISTING SITUATION

2.1 LOCATION

The ECU Joondalup City Campus (or 'site' as it shall be referred herein) is located approximately 27 kilometres north-west of the Perth City Centre in the City of Joondalup and forms part of the Joondalup Strategic Regional Centre.

The ECU Joondalup City Campus comprises one lot of 8.4872 hectares being Lot 9000 (40) Collier Pass. This will be reduced to 7.8988 hectares with the creation of Barron Parade and provision for Westrail access.

:

Figure 1
Aerial View of the Site

2.1.1 OWNERSHIP & ENCUMBRANCES

The ECU Joondalup City Campus is wholly owned by Edith Cowan University of Joondalup. Two caveats are registered to the property in favour of Ansett Australia Ltd (call centre leasehold) and the Commonwealth of Australia (business incubator leasehold).

2.1.2 LAND USE & IMPROVEMENTS

Lot 9000 is largely undeveloped and characterised by remnant bushland.
Improvements include the call centre at the corner of Collier Pass and Barron Parade and the business incubator centre located further south along Barron Parade.

2.1.3 LOT PATTERN

The site comprises one lot only.
Lot 9000 has primary frontage to Grand Boulevard (east) with frontage also to Collier Pass (north) and Barron Parade (west).
Vehicular access to the site is currently provided from Barron Parade servicing the call centre and business incubator centre.

2.1.4 SURROUNDING PATTERN OF LAND USE

Situated within the Joondalup City Centre (refer Figure 2), the site is surrounded by:

- The Lakeside Regional Shopping Centre and Joondalup Bus/Rail transfer station to the north;
- West Coast College (TAFE) and the main ECU campus to the east; and
- The Western Business District / Business Park to the west.

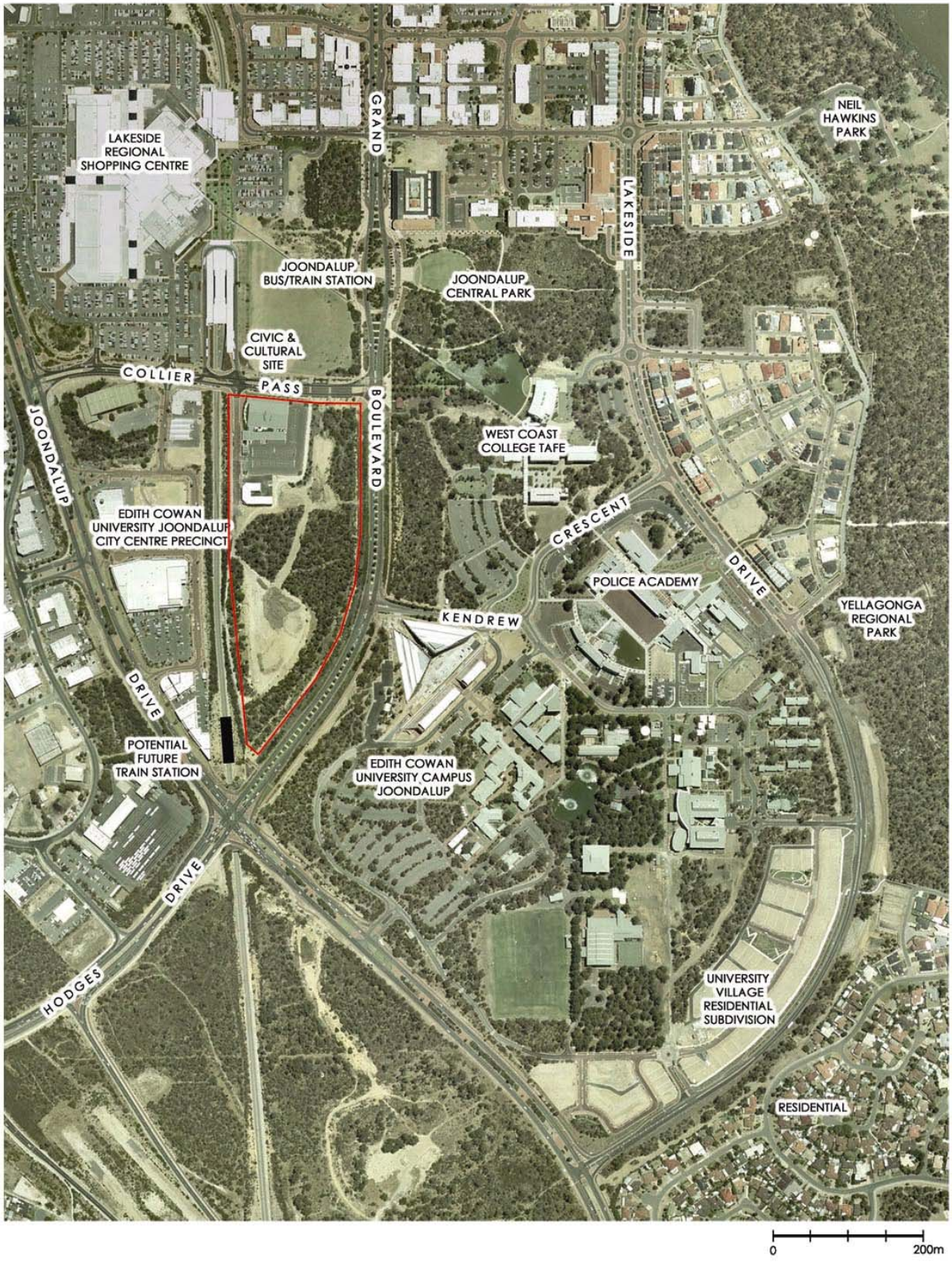

Figure 2
ECU Joondalup City Centre in Context

2.2 PLANNING FRAMEWORK

2.2.1 METROPOLITAN REGION SCHEME

The site and all surrounding roads and properties are zoned 'Central City Area' in accordance the Metropolitan Region Scheme.

2.2.2 LOCAL ZONING

The ECU City Campus is zoned 'City Centre' in accordance with the City of Joondalup Town Planning Scheme No.2.

Scheme No. 2 states:

"*3.11.1 The Centre Zone is intended to accommodate existing and proposed business centres varying in size from all neighbourhood centres to large multi-purpose regional centres and provides for the co-ordinated planning and development of these centres or other planning precincts where the Council considers that an Agreed Structure Plan is necessary.*

The objectives of the Centre Zone are to:

- *(a) provide for a hierarchy of centres from small neighbourhood centres to large regional centres catering for the diverse needs of the community for goods and services;*
- *(b) ensure that the city's commercial centres are integrated and complement one another in the range of retail, commercial, entertainment and community services and activities they provide for residents, workers and visitors;*
- *(c) encourage development within centres to create an attractive urban environment;*
- *(d) provide the opportunity for the co-ordinated and comprehensive planning and development of centres through an Agreed Structure Plan process.*

3.11.2 No subdivision or other development should be commenced or carried out in a Centre Zone until a Structure Plan has been prepared and adopted under the provisions of Part 9 of the Scheme. No subdivision should be commenced or carried out and no other development shall be commenced or carried out otherwise than in conformity with an Agreed Structure Plan.

3.11.3 The permissibility of uses in the Centre Zone subject to subclauses 9.8.2 and 9.8.3 shall be determined in accordance with the provisions of the relevant Agreed Structure Plan."

2.2.3 JOONDALUP CITY CENTRE DEVELOPMENT PLAN & MANUAL

The Joondalup City Centre Development Plan & Manual functions as the agreed District Structure Plan for the Joondalup City Centre.

The Development Plan identifies Lot 9000 as being part of the Central Business District (CBD). Generally the CBD is "intended to epitomise the urbanity of a bustling city centre."

Preferred land uses for Lot 9000 are 'General City Uses' and 'Residential Mixed Use' and Plot Ratios for the site are graded from south to north, having a maximum density in the north closest to the City Centre (refer Figure 3).

The existing ECU Campus is identified for Educational Uses and controlled by separate structure plan guidelines.

2.2.4 ECU MASTERPLANNING

A Masterplan has been prepared for the entire ECU Joondalup Campus (refer Figure 4). The Masterplan has been endorsed by the ECU board.

The ECU City Campus Structure Plan will take precedence over the Masterplan for the City Campus.

2.2.5 INDIGENOUS HERITAGE

The Department of Indigenous Affairs has advised that the ECU City Campus (Lot 9000) is not registered as an Aboriginal heritage site; however the Aboriginal Heritage Act 1972 protects all Aboriginal sites in Western Australia whether they are known to the Department or not.

Departmental advice states:

"Prior to any proposed development/activity, so that no site is damaged or altered (which would result in breach of Section 17 of the Act) it is recommended that suitably qualified consultants are engaged to conduct ethnographic and archaeological surveys of the area. This should ensure that all Aboriginal interest groups are consulted so that all sites on the designated land are avoided or identified. Such a survey would archival research, consultations and on ground inspections" [1]

[1] Culbong, B. (2004) *Personal Communication*, Department of Indigenous Affairs, PO Box 1696 Midland WA 6936.

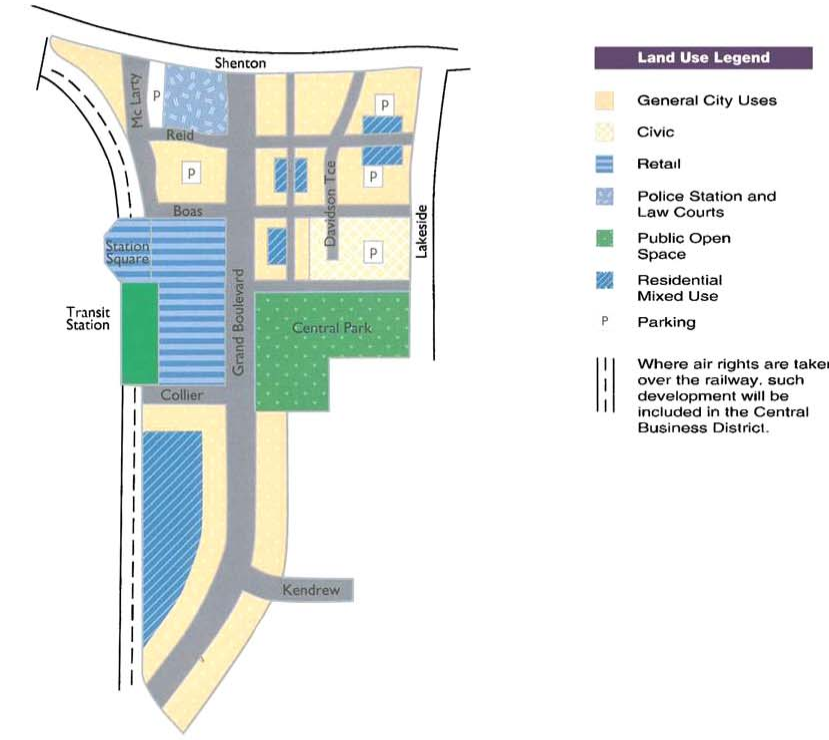

Figure 3
Extract From: Joondalup City Centre - Development Plan & Manual

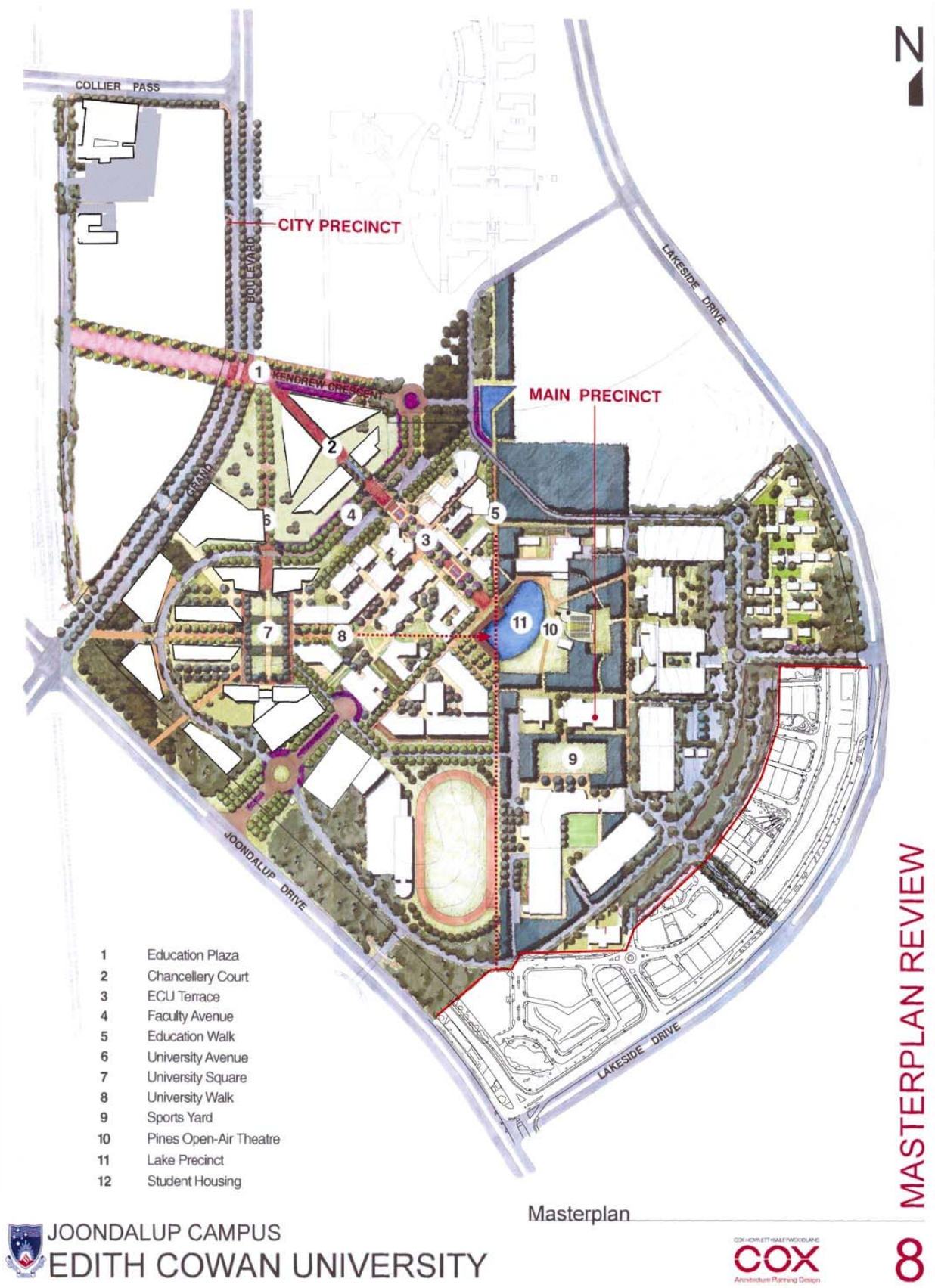

Figure 4
ECU Joondalup Campus Master Plan

2.3 RELEVANT PLANNING STUDIES

2.3.1 ECU JOONDALUP CITY CENTRE PRECINCT: DEVELOPMENT OPPORTUNITIES STAGE 1 REPORT FEB 2003

In 2003, Edith Cowan University undertook a feasibility study for the development of Lot 9000. The study investigated the feasibility of several development scenarios.

This Structure Plan is based on the outcomes of that report and direction from ECU.

2.3.2 JOONDALUP CITY CENTRE PUBLIC PARKING STRATEGY

In August 2001, the City of Joondalup prepared a City Centre Public Parking Strategy.

The long term objective of the Strategy is "planned congestion". It is considered that reducing parking and accessibility within the City Centre will encourage public transport usage. In the short and medium term however, a high level of accessibility and adequate parking is encouraged to support business.

Three of 13 public parking stations identified in the City Centre are located in close proximity of the ECU Joondalup City Campus, these are:

P9 Collier Pass: constructed for 80 at-grade bays
P10 Barron Parade: 750 bays constructed over railway
P11 Clarke Crescent: 600 bays constructed over railway

Funding of these stations will be through cash in lieu with a reduced on-site parking provision. The stations will not be constructed until there is both demand and cost benefit.

The Strategy envisages that an important component of the public parking provision will be on-street parking. Currently 543 bays have been constructed of the 1070 bays proposed.

2.3.3 ECU METROPOLITAN CAMPUSES INTEGRATED TRANSPORT PLAN

ECU commissioned Estill and Assoc. to prepare this document to address future access and parking on all their metropolitan campuses.
It is recognised that parking will impose a considerable constraint on campus development in the future.

Recommendations for the Joondalup Campus include:

- Promote all modes of transport access;
- Cap parking provision at the 2008 levels being 2294 car bays;
- Provide a shuttle bus between Joondalup Station and the Campus;
- Defer multi storey car park construction as long as possible due to cost constraint;
- Modify bus route 465;
- Improve bus shelter provision along Grand Boulevard; and
- Provide an ECU specific timetable for bus/train times.

2.4 SITE CONDITIONS

2.4.1 TOPOGRAPHY

Existing site levels vary from RL 53.5 in the north of the site to RL 43.1 in the south of the site. New levels graded across the site will be established prior to development.

The site is a combination of sandy soil and limestone outcrops.

2.4.2 VEGETATION

A vegetation survey of the site has been carried out by ATA Environmental. The key findings follow:

"The study area comprises fragmented bushland parcels which are dominated by Jarrah-Banksia-Sheoak Woodland with scattered Tuarts over a uniform understorey which is generally in very good condition. Portions of the site are highly disturbed and are dominated by invasive species such as Castor Oil Plant, Lupin, Acacia saligna, Veldt Grass, Pigface and Fleabane.

The survey conducted in April 2004 identified a total of 64 native species of flora in the bushland. None of the species recorded during the survey are listed as Declared Rare or Priority Flora species according to CALM (2003).

The composition of the vegetation types represents a typical Spearwood soil system, and is found in other local bushland areas of similar soils such as Yellagonga Regional Park, Neerabup National Park and Yanchep National Park. According to Bush Forever the study area does not comprise vegetation of regional significance.

The study area does not form part of a recognised bushland linkage (i.e. Perth's Greenways) and has limited value for bushland appreciation or passive recreation due to its small size (6.5ha) and location between a busy road network and rail reserve.

To improve the aesthetics and provide shade within built areas such as car parks, consideration should be given to the retention of pockets of bushland in very good condition or individual tress (such as Tuarts), where practicable within the proposed development."[2]

Due to the requirement to regrade the site to prepare it for development, it is not possible to retain any significant areas of vegetation.

[2] ATA Environmental 2004.Vegetation Assessment of the Edith Cowan University Joondalup City Centre Precinct.

2.5 ACCESS

The site has excellent public and private transport access.

2.5.1 PUBLIC TRANSPORT

The site is accessed by both train and bus:

Bus

Currently there are 4 bus routes that travel along Grand Boulevard and Collier Pass adjacent to the site. These routes are summarised in Table 1 below:

Table 1: Joondalup Bus Routes

Bus Route	Start #1	Finish #1
462 #1	Whitfords Train Station	Joondalup Train Station
463 #1	Whitfords Train Station	Joondalup Train Station
464 #1	Whitfords Train Station	Joondalup Train Station
465 #2	Whitfords Train Station	Joondalup Train Station

#1 Circle route through West Side of Mitchell Freeway
#2 Circle route through East Side of Mitchell Freeway

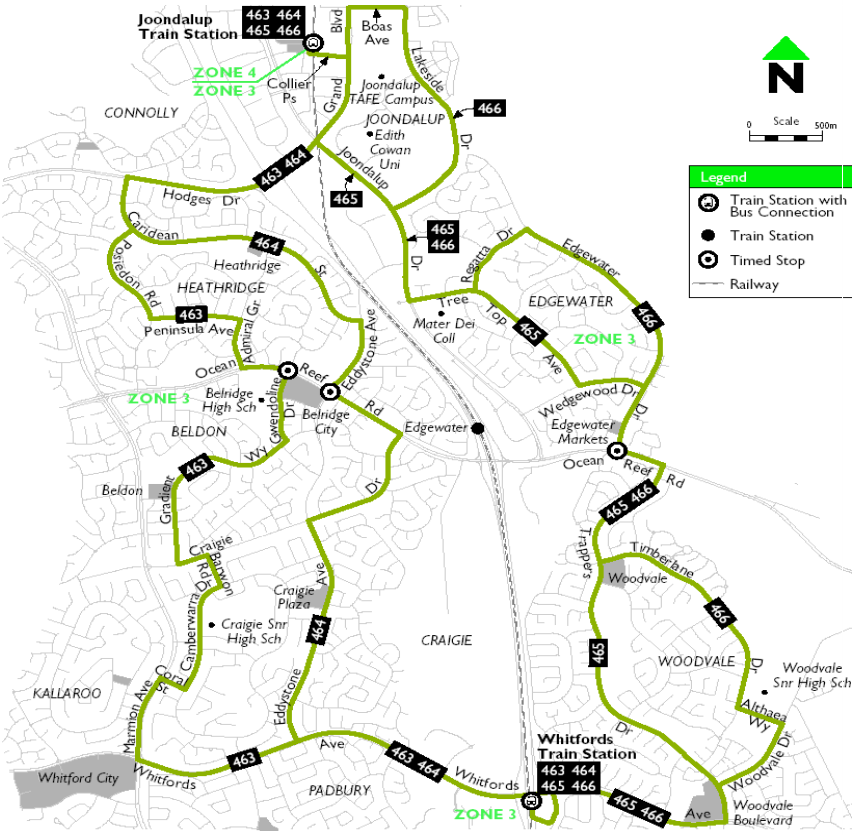

Figure 5 - Bus Routes 463, 464 & 465 through Study Area
Source: Transperth website – www.transperth.wa.gov.au

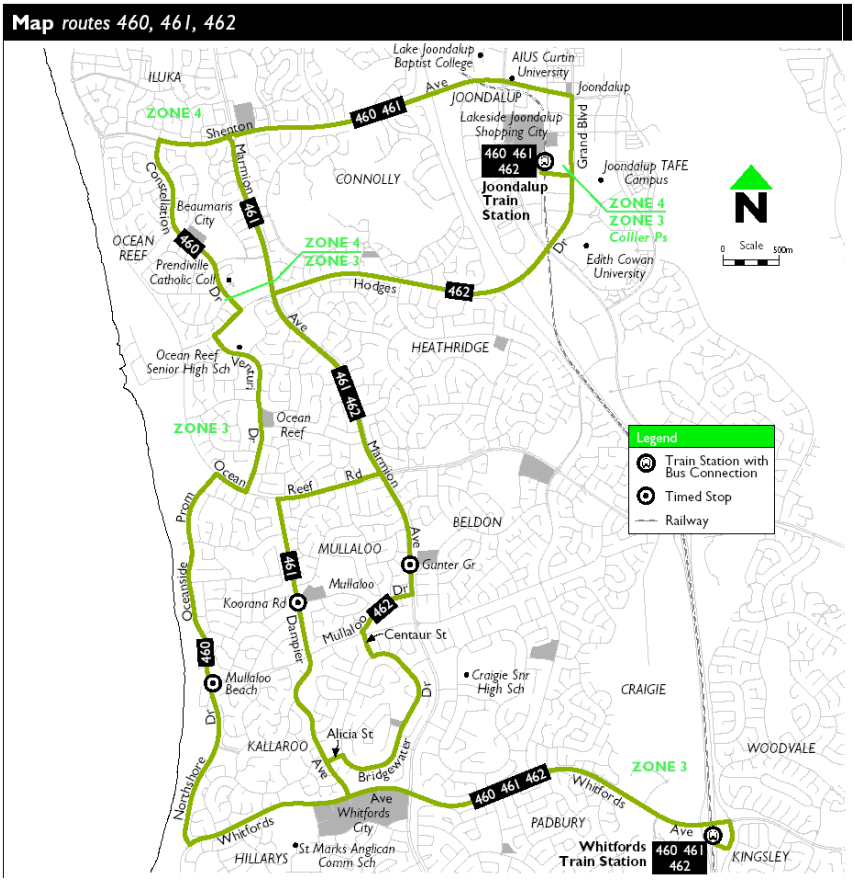

Figure 6 - Bus Route 462 through Study Area
Source: Transperth website – www.transperth.wa.gov.au

Train

The existing Northern Suburbs Railway runs between Perth Central Station and Currambine Station. The line has been extended northwards to Clarkson Station with the station opening in September 2004. Existing stations at Edgewater and Joondalup are located south and north of the site.

The existing Park'n'ride Edgewater Train Station is located approximately 3.5km south from the site and has no bus interchange facilities.

The Joondalup Train Station is located approximately 160m walk from the site, immediately north of Collier Pass. It is well serviced by a bus interchange servicing various bus circle routes from Whitfords Train Station. This Station has an existing Kiss 'n ride facility, with no Park 'n ride provision.

2.5.2 PEDESTRIAN & CYCLE NETWORKS

There are footpaths on the eastern side of Grand Boulevard and both sides of Collier Pass and cycle paths on Grand Boulevard and Collier Pass. The existing paths form part of the overall pathway network throughout the Joondalup City Centre. The existing pathways are generally located away from the back of the kerb and are well illuminated by a separate lighting network.

2.5.3 ROAD NETWORK

This site is bounded by a District Distributor Type A (Grand Boulevard), District Distributor Type B (Collier Pass), and Access Street (Barron Parade).

2.5.4 CAR PARKING

There are approximately 240 car parking bays located on site to cater for the existing developments on the north-west portion of the site. Access to these car parking areas is via Barron Place.

Additional on-street car parking bays are available in Collier Pass and Barron Place.

2.6 INFRASTRUCTURE

2.6.1 DRAINAGE

Stormwater disposal for the existing northern development on the site is discharged into the Local Authority drainage system located in Collier Pass. This stormwater connection has sufficient capacity to cater for up to 2.9 hectares of the northern portion of the site.

The remaining southern portion of this site (4.98ha) has been allocated to discharge into the existing Local Authority drainage network in Grand Boulevard. Connection will be via a 900mm diameter stub drainage connection located approximately 140m east of the existing Joondalup/Grand Boulevard intersection. City of Joondalup records do not indicate the area of runoff catered for in the design of the existing drainage system however, given the large 900mm diameter stub connection and large downstream pipes (1050mm diameter), it would appear that the original design calculations made provision for the 4.98 hectares of the southern portion of this site.

2.6.2 SEWERAGE

A 225mm diameter sewer main is located in Barron Place. This sewer main currently ends in the vicinity of the existing buildings at the northern portion of the site. There are no other apparent sewer connections to the site.

2.6.3 WATER SUPPLY

The site is bounded by several 200mm diameter water mains. These are located within the Grand Boulevard western verge, Collier Pass southern verge, and the eastern verge in Barron Place.

2.6.4 TELECOMMUNICATIONS

Telstra has existing Mains Telecommunication Network in the form of a Telecommunications Pillar on Barron Place. This was installed to service the Business Incubator Centre. The distribution feed and lead in was done at Commercial rates.

2.6.5 POWER

Correspondence has been referred to Western Power, advising them of the proposed ECU City Campus Structure Plan and seeking confirmation whether Western Power have sufficient infrastructure in the vicinity of the site to cater for full development or if not, what is required and what costs would be borne by ECU to provide the necessary infrastructure.

2.6.6 GAS

Gas mains are located within the vicinity of the site. Advice has been received from Alinta Gas outlining extensions required for full development of the site.

3 SITE ANALYSIS

The following opportunities and constraints have been identified for development of the site:

3.1 PLANNING FRAMEWORK

- There is opportunity through this Structure Plan process to modify the provisions of the existing Joondalup Development Plan and Manual for this site.

3.2 SITE LOCATION IN JOONDALUP CITY CENTRE

- The site is well positioned to form a link between the Joondalup City Centre and the Education Precinct.
- Development of a movement network on the site will improve the safety and amenity of the student walking journey from Joondalup train/bus station to the ECU main campus.
- There is a requirement under the existing Joondalup Development Plan controls to develop the urban character including: urban wall type buildings and a grid of streets.
- This site offers opportunities for the University to access the wider community and integrate with the city.

3.3 EXISTING SITE CONDITIONS

- Proposed finished levels grade down to the south west (8 metre fall across the site).
- Site levels give potential for basement parking in the southern part of site and provides access to the underpass to the main campus under Grand Boulevard.
- There are existing buildings to the north-west of the site. The call centre will remain while the business incubator centre could be redeveloped in the longer term.
- Existing vegetation is not regarded as regionally significant.

3.4 SURROUNDING MOVEMENT NETWORK

- Grand Boulevard provides excellent exposure for the site.
- Pedestrian safety issues between campus precincts need consideration.
- Kendrew Crescent West will be extended into the site with a controlled intersection at Grand Boulevard.
- The axis established through the main campus will extend across into the site providing pedestrian access to the city centre.
- A proposed underpass under Grand Boulevard will provide service vehicle and pedestrian access between campus precincts.
- Collier Pass has recently been upgraded with median car parking; more vehicle access points are therefore not desirable.
- There is existing vehicle access from Barron Parade.

3.5 SURROUNDING USES

- Links, both visual and physical, to ECU main campus are essential.
- The provision of pedestrian links north into the shopping centre and the train /bus station are important.
- A future train station is to be considered in the plan.
- Potential for air rights development over rail adjacent to the site.
- Rail noise to be considered in building location, design and orientation.
- Westrail access road to be provided.
- Access to future public parking stations over rail to be considered.
- Possible future bridges across rail to business park to be considered.

3.6 COMMERCIAL OPPORTUNITIES

- The site is well located within the Joondalup City Centre.
- Appropriately sized and positioned sites for commercial development should be provided.
- There is opportunity for a synergy of uses related to the University.
- The timeframe for university requirements puts limits on commercial investment and leasing opportunities.
- Commercial built form types need to be flexible for university reuse.

3.7 APPROPRIATE BUILT FORM

- Built form should provide an appropriate image for ECU in the City of Joondalup.
- Built form should provide an appropriate character and scale for the city centre.
- There is opportunity for some significant or landmark buildings.
- Building depths should be suitable for commercial use and for future university uses.
- Typical commercial office building widths are 17 to 20 metres to allow natural light penetration.
- University buildings vary in width dependent on use, but are compatible with typical commercial office building widths.
- Orientation of buildings to maximise solar access

3.8 APPROPRIATE OPEN SPACES

- Public spaces in this precinct are as important as the buildings themselves.
- The Campus Axis will create the primary public space.
- Spaces will be created that compliment significant buildings.
- Streets will be designed as public places.
- Grand Boulevard to be regarded as part of the city centre and also as part of the ECU campus.
- Balance of hard and landscaped green spaces reflecting the link between the campus and the city.
- Spaces between buildings to allow for solar access into courtyards dependent on building height.
- Views and vistas, particularly between the ECU campus proper and this site will be important.

3.9 CAR PARKING

- The need to accommodate 400 student bays in the intermediate term.
- Statutory requirement is currently 1 bay per 30sqm net leasable area for commercial uses and one bay per dwelling unit for multiple and mixed use dwellings.
- City of Joondalup Parking Strategy recommends reduction over time to 1 bay per 60sqm on site with balance in public parking stations.
- Public parking stations are not likely to be developed for a long time due to funding being based on cash in lieu payments.
- ECU currently provide car parking at approximately 1 bay per 44sqm of floor space, but anticipate a lower provision will be required to accommodate the city campus due to the close proximity to public transport.

- Multi level parking opportunity on the city campus as the need arises.
- Access roads to be at levels to allow access to future public parking stations over the rail (for which levels have been established).

4 DESCRIPTION OF STRUCTURE PLAN

4.1 THE STRUCTURE PLAN

The Structure Plan (Figure 7) indicates a framework for full development of the Edith Cowan University Joondalup City Campus. This is a long term plan with an anticipated life of over 20 years. It is considered appropriate that this plan be reviewed at intervals to reflect changes to the general growth and development of both the Joondalup City Centre and the University.

4.2 INDICATIVE DEVELOPMENT PLAN

The Indicative Development Plan (Figure 8) illustrates the likely outcome of the Structure Plan at full development. Figure 9 illustrates the Indicative Development Plan in context with future development.

4.3 STAGING

Staging of development on the site will be dependent upon commercial feasibility and the growth of the University student population. ECU anticipates that the City Campus will initially be primarily commercial in use, with buildings being adapted for university use over time.

The ECU Master Plan envisages some development along Kendrew Crescent west as development opportunities arise. By 2022, further development is likely to extend further south along Grand Boulevard.

The student car park will be developed in the near future accessed by extension of Kendrew Crescent into the site.

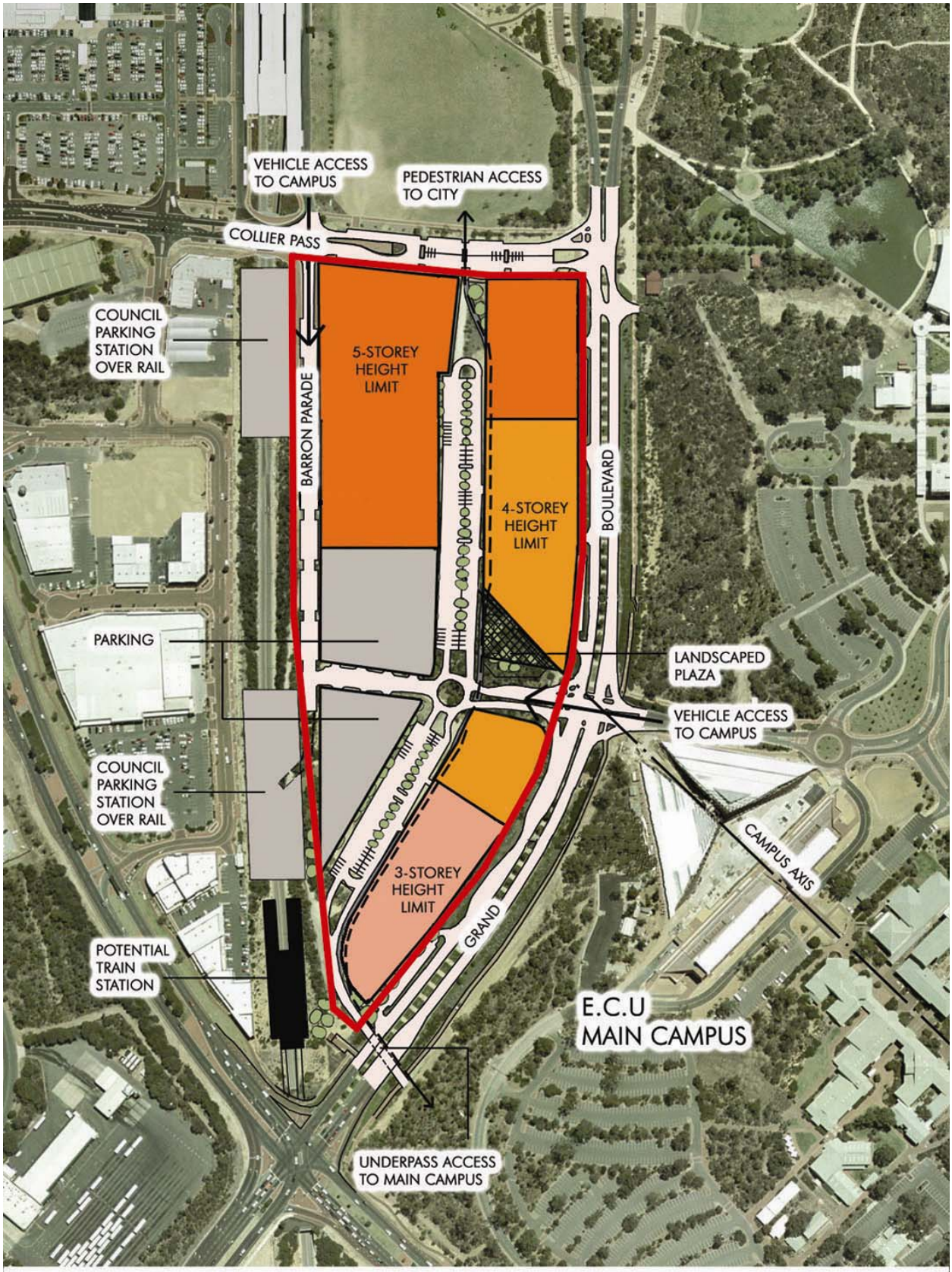

Figure 7
Proposed Structure Plan
Edith Cowan University Joondalup City Campus

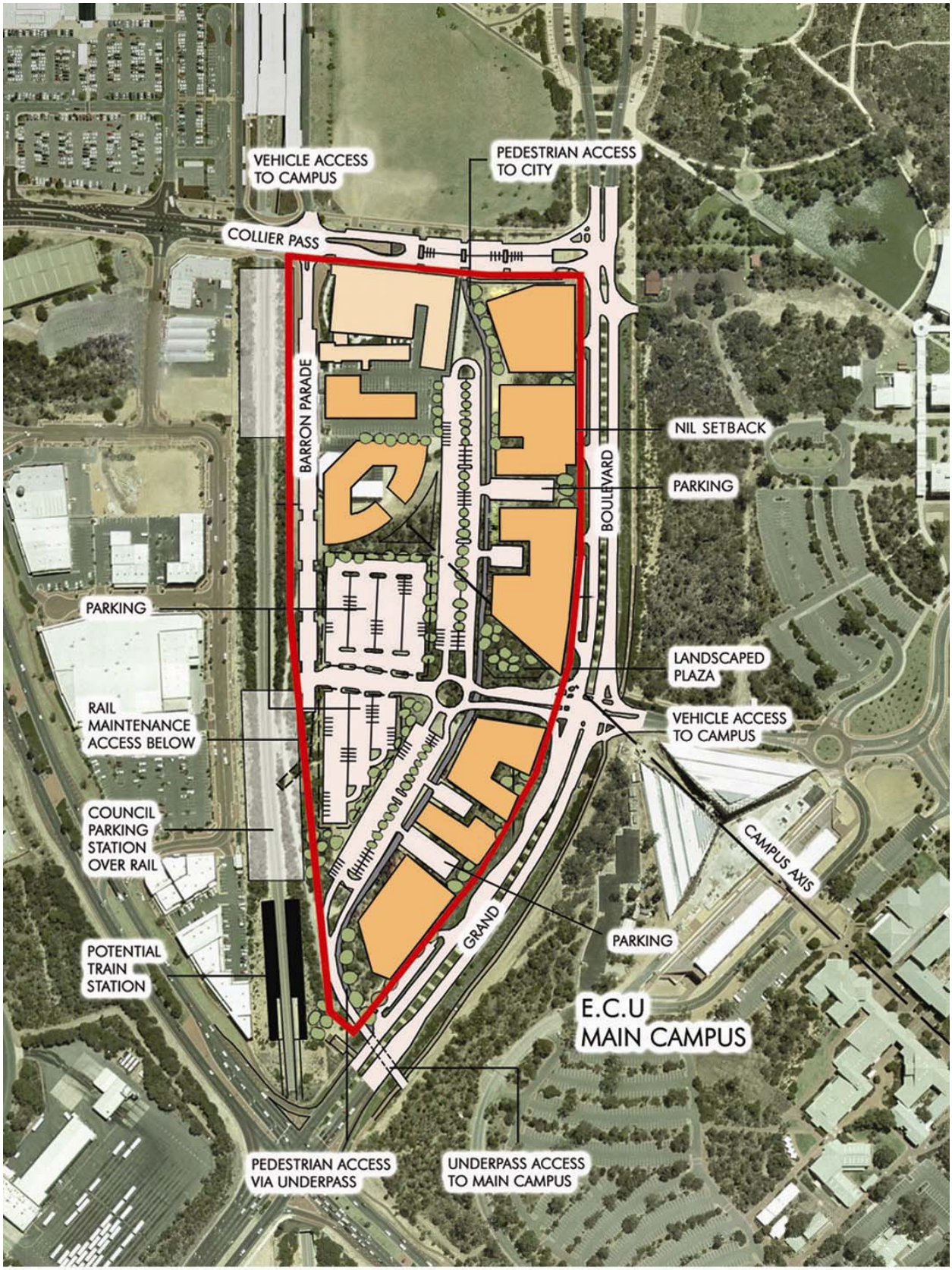

Figure 8
Indicative Development Plan
Edith Cowan University Joondalup City Campus

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Figure 9
Indicative Development Plan In Context With Future Development
Edith Cowan University Joondalup City Campus

5 DETAILS OF THE PROPOSED STRUCTURE PLAN

5.1 RESPONSE TO JOONDALUP DEVELOPMENT PLAN & MANUAL

The ECU Joondalup City Campus is located within Joondalup Central Business District as defined by the City of Joondalup Development Plan and Manual.

5.2 DESIRED CHARACTER

The Development Plan and Manual define the desired character of the Central Business District as:

"The Central Business District is intended to epitomise the urbanity of a bustling city centre…There will be an intensely developed mix of city centre activities within a pedestrianised environment where street level retail and entertainment facilities predominate. There will be an emphasis on speciality shops, cinemas, personal service establishments, restaurants, alfresco dining, offices and residential accommodation. This combination will contribute to a 24 hour character with night life focused upon entertainment, leisure, arts and cultural activity…Movement through the district should be pedestrian dominant; however, a high level of accessibility by private and public transport is also intended…."

Public parking stations will be developed throughout the district. The scale of development in the district should be sensitive to its highly pedestrianised nature. Accordingly, elements offering a high level of amenity for pedestrians such as colonnades, walkways, seating areas, pocket parks and small plazas are encouraged. "

The Proposed Desired Character for the City Campus is:

"The City Campus of the Edith Cowan University in the City of Joondalup is envisaged as a lively and visually exciting place where the activities of the University and the City come together. With a built form character based on the general character of the City, the campus will offer a further layer of interest as an educational precinct with a range of buildings and activities consistent with its function.

The Edith Cowan University Campus will front both sides of Grand Boulevard offering an excellent opportunity to provide a well designed entry and character to the City. The Campus axis passing through the Chancellery building will pass through a plaza and be terminated by a significant building at its intersection with the north-south axis into the city.

It is envisaged that activity at street level would continue into the evening to provide safe passage for students using the train station and walking into the city centre. Student

parking will be a significant use in the campus in the early stages. The parking areas will be designed as attractive and safe places for use at all hours. The remainder of the land will be used for a Bushland Laboratory in the short-term.

As opportunities arise for development, buildings should be designed to be climate sensitive with good solar access and a strong relationship with surrounding open spaces. Open space should provide a balance between the hard urban spaces of a city centre and softer green spaces as relief and response to the campus environment. The city campus offers the opportunity for Edith Cowan University to develop a sustainable and innovative place that integrates university life into the City of Joondalup."

The proposed desired character for the City Campus is consistent with the desired character for the CBD defined in the Development Plan and Manual.

5.3 POLICIES & GUIDELINES:

Proposed variations from the policies and guidelines of the Joondalup Development Plan and Manual are as follows:

5.3.1 LANDUSE

It is envisaged that the City Campus will have a range of intense city centre and educational land uses to provide a lively and continually active place. Kendrew Crescent West is likely to have some retail and café activity.

The CBD already allows considerable flexibility in the distribution of land uses throughout the City Centre and the mixing of land uses is encouraged. A wide range of General City uses are permitted, together with residential/mixed use. In the long term, this Campus may include some residential use perhaps to the upper levels of commercial or university buildings.

The inclusion of education as a permitted use in the CBD will enhance the range of preferred uses in the CBD whilst providing an interface between the main campus and the City Centre.

The City Campus Precinct will contain a range of land uses as defined in the Manual with the addition of Education as a preferred land use throughout the Precinct.

5.3.2 PLOT RATIO

Under the Manual, the Precinct has a graduating definition of plot ratio away from the city centre from 2.5 to 1.5. The intent of these defined plot ratios is to offer an intensity of built form appropriate to the City Centre and the City Centre Precinct's location as one of the 'gateways' to the City. The built form is to have a maximum density at the centre of the City and lower density on the periphery.

In this precinct, it is proposed that no separate lot boundaries will be created. The lot will remain as one lot and in one ownership. The plot ratio method of defining the intensity of built form cannot be used without separate boundaries, and therefore a more appropriate method of meeting this policy is required.

The intensity of built form can be equally expressed as building height and envelope. A graded height limit across the site together with the requirement for courtyard spaces between buildings will define built form intensity.

Building height limits will be consistent with the intent of the plot ratio densities as defined in the Manual.

5.3.3 STREET PATTERN

While the proposed street pattern differs from what was initially envisaged in the city centre it is appropriate to campus style development and provides good permeability through a range of open spaces.

The street pattern differs from the Manual but provides essential linkages to integrate into the City Centre.

5.3.4 CAR PARKING

The Joondalup City Council Car Parking Strategy requires that city centre uses be provided with 1 car bay per 30sqm floor space in the short to medium term. The long term strategy is for 50% of this provision provided in publicly owned and operated car parks paid for by cash in lieu.

Two of these public car parks are proposed adjacent to the campus over the rail line.

Car parking on the campus will be provided, in part, in the landscaped median of the central street and later, in car parks in the location of the student carpark.

While the parking ratios are appropriate for commercial development, long term use is likely to be predominantly educational. A more appropriate long term provision could be based on student ratios Current ECU provision is approximately 1 bay per 4 students, however it is expected that due to the closeness of public transport at this site, a reduction in the provision would be appropriate. Parking provision for education uses should be subject to council negotiation at development approval stage.

Parking provision for uses apart from education will be consistent with the Manual and the Parking Strategy. This should be subject to continuing review.

5.3.5 SETBACKS & HEIGHTS – MODIFICATION OF THE URBAN WALL

Climate sensitive design demands that buildings are orientated with the long axis east-west. This results in a series of buildings lining Grand Boulevard with spaces between them to allow sun penetration.

While these buildings will not form a strict urban wall, design of the open spaces and the street frontage will allow an urban edge to develop.

The rear facades of these buildings face a central street. A softened and landscaped urban edge with courtyards opening up on to this street is envisaged. The buildings will, in fact, have no backs.

Building heights are anticipated to increase closer to the city centre reflecting the increase in plot ratio and the original vision for the City. A graduation of building height from 3 storeys in the south to 5 storey developments in the north would be appropriate.

Building heights will be between 3 storeys and 5 storeys as defined on Figure 7, with setbacks consistent with the Manual except that the urban wall is modified.

5.3.6 LANDSCAPE & ENVIRONMENT

The City Campus is a part of the Joondalup City Centre and therefore anticipated as a hard landscaped urban area.

As part of the ECU Campus this area should offer a range of open spaces including some soft landscaped areas.
Endemic species should be used to reinforce the site's landscape context.

In recognition of the original Vision of the City of Joondalup as "City in Landscape "and of the University campus character it is appropriate that this campus has a softer landscape character than other parts of the City.

5.3.7 SPACES BETWEEN BUILDINGS

A balance of hard and soft landscape between buildings is important and spaces should contribute to the whole campus in a seamless way.

The campus is expected to have a 24 hour life, making attention to details such as lighting and passive surveillance critical. Buildings along Grand Boulevard are to be spaced with appropriate height to separation ratios to allow for solar access and natural ventilation to both the buildings and the spaces.

Spaces between buildings will be generally larger and more softly landscaped than defined in the Manual.

5.3.8 INTEGRATION WITH CONTEXT

Pedestrian and vehicle linkages are provided to integrate the precinct into the city and back to the university campus. In addition, links to TAFE and across the rail to the western business park are possible and should be considered during future development.

In particular, the campus axis has been extended into the precinct and the north south street created is an extension of the mid block pedestrian linkages through the retail site and beyond into the city.

The requirement to integrate with context is consistent with the Manual.

5.3.9 LOT PATTERN

It is not intended that the precinct be further subdivided as it is important for the university's long term viability that land tenure remains as flexible as possible.

It is however, intended to develop the precinct to generally reflect the subdivision pattern and scale of the city. Open spaces will be created throughout the precinct as if they were public spaces.

Leasehold areas may be created to allow for commercial development by others in the same way as they have been for the call centre and business incubator centre. These ground leases will be consistent with the Structure Plan's intent for development.

The precinct will remain as one lot with one ownership.

5.4 RESPONSE TO ECU JOONDALUP MASTER PLAN

The current ECU master plan recognises the City Centre campus as being different in character to the main campus. *Refer ECU web site for plans and text.*
www.ecu.edu.au

In the Introduction, the master plan states:

"The City of Joondalup remains committed to developing a diversity of activities within its City structure of which educational institutions play a significant role. The valuable contribution that Edith Cowan University will continue to make to the life of the City appears to be unchallenged. Current advice however would indicate that the City is more concerned with the nature of development in two particular campus areas than they are with the intricacies of any development proposed within the core area of the existing campus. These areas are:

- The peripheral zones of the existing Edith Cowan University site along Grand Boulevard and Joondalup Drive; and
- The proposed Edith Cowan University land acquisition of the City Campus precinct to the west of Grand Boulevard

which currently forms part of the City's central business district area."

Also, in **Objectives: 3.1 Planning Issues**
"The city precinct requires a more urban building response that relates to the existing and proposed city fabric as well as seeking a greater community interface. The city precinct will emanate from the Kendrew and Grand Boulevard intersection via a plaza which engages the intersection and fronts the ceremonial entry of the University.

The city precinct building design will respond in creating an urban environment, in keeping with the principles as set down in the City of Joondalup Development Plan and Manual. It will rely on strong well defined streetscape infrastructure, providing appropriate scale buildings and hard landscape treatments."

The Structure Plan adopts these master plan objectives.

5.5 TRAFFIC MANAGEMENT

The ECU master plan discusses **traffic management** as follows:

"The traffic management of the campus has been structured to provide an internal ring road with accesses from Joondalup Drive, Lakeside Drive and Kendrew Crescent… The Edith Cowan University entry from the roundabout on Kendrew Crescent is not intended to be a major traffic carrier for the campus. It is intended to be more of a ceremonial entry....

Lakeside Drive has been chosen as the focus for vehicle entry onto the site because of the lower projected traffic volumes on this road. This helps with the integration of the two parts of the campus on each side of Grand Boulevard...

With the spread of traffic using Kendrew Crescent during the day, no operational problems are expected…

Grand Boulevard is projected to carry in the order of 29,700 vehicles per day and as this road divides the campus it will have a major impact on connectivity between the two areas. High levels of pedestrian access across this road can be expected and will have to be catered for using both at-grade and grade separated facilities.

The proposed on-street parking along Grand Boulevard will assist in reducing the vehicle operating speed and improving the safety and amenity for campus students and staff…

The management of traffic on Grand Boulevard, as it grows, will be crucial to the development of the aesthetics, amenity and safety of the education precinct and in particular the ECU campus. Allowance has been made in the internal road design for a grade separated access under Grand Boulevard between the two campus sites…"

The Structure Plan adopts this traffic management approach.

5.6 PARKING

The ECU master plan discusses **parking** as follows:

"The major travel mode to the Joondalup Campus is by car. The current ratio of car parking bays to students is approximately 1:4. This compares to 1:2.07 for Murdoch University and 1:4.23 for Curtin University….

If the current ratio of 1:3 is retained for the full development of the campus to 18,000 students and 2,000 staff this will equate to 3,000 bays assuming 9,000 students are on campus at any one time…

This has a significant impact on use of the campus site as well as land available for buildings and other uses. A major issue for the University is to develop a clear …strategy for how students and staff are expected to get to and from the campus and hence the level of car parking to be provided. ... "

The Structure Plan acknowledges the need for a parking strategy for the whole campus.

5.7 ENVIRONMENTAL BUILDING DESIGN

The ECU master plan includes environmental building design guidelines as follows:

Orientation
The preferred orientation in a temperate climate is for buildings on an east west axis. This orientation provides the most efficient plan form maximising the potential of ambient energy systems such as control of direct solar gain.

Solar Access
Courtyards:
Courtyards between buildings should be of adequate size to ensure that direct sun onto the ground occurs in areas that are designed for people. Where buildings are on an east west axis the solar penetration into the courtyard generally occurs throughout the day.

To ensure adequate solar access to courtyards, the areas designed for people within the courtyard should be located at a distance from the north buildings of no less than 1.7 times the height of the building to the north. In mid winter this will ensure this area is in sun from 10AM to 2 PM.

Provided these areas have a width approximately equal to the height of the building to the north, these spaces will be useful as "Summer Courts". In winter months sun penetration onto the ground will be restricted, reducing their appeal as useable outdoor areas.

Wind Control
For east west axis buildings the main external pedestrian ways should be located on the north side of the buildings. This provides for pedestrian access ways that are sunny in winter and that can be shaded in summer. They will then also be screened from the main winter storms and the strong south westerly winds.

For pedestrian ways that run in a north south direction, the protection should be from the westerlies as this is the side of the strong summer sea breeze and winter storms. Where buildings are on north south axis, entries are preferred on the eastern side of the building.

Wind Tunnelling
Wind tunnelling, which results in 'wind overspeed' on the site, needs to be considered. 'Wind overspeed' refers to wind which is of higher velocity than the ambient wind conditions. Wind overspeed occurs where there is a compression of the air mass resulting in higher velocities. Wind tunnelling between buildings can be controlled by maintaining or planting large trees on the windward side of the opening to act as wind breaks, and by spacing buildings further apart.

Covered Ways Between Buildings
Covered ways are recommended for protected travel between buildings. Obviously wind tunnelling between buildings needs to be controlled as identified above. However, some additional control of wind driven rain should be considered. Wind driven rain is usually incident from the west. For north south walkways, partial enclosure of the western side of the walkways or mass landscaping can be used to reduce the effect of wind driven rain.

Acoustics
The site will be affected by traffic and rail noise and appropriate design of buildings will be required to accommodate it.
Buildings have been arranged away from the rail line to limit noise and vibration issues and individual buildings depending on use will be designed appropriately i.e. double glazing, to minimise impact of noise on noise sensitive areas within the buildings.

The Structure Plan adopts these master plan guidelines.

5.8 SUSTAINABILITY

There are many opportunities for sustainable development offered by the Structure Plan. ECU is committed to sustainable development.

5.8.1 SOCIAL & CULTURAL SUSTAINABILTY

Social and cultural sustainability opportunities are offered by the plan: These are as follows:

- Opportunity for the integration of university life into the City.
- Opportunity for employment in the early stages of development when the University does not require the land and facilities.
- Opportunity for cultural facilities shared by the University and the City.
- Opportunity for student, inner city and apartment living adding to the 24hour life of the city (the demand for housing is limited by the current proposed supply elsewhere).
- Opportunity for a safer, more active link between the City and the ECU campus.

5.8.2 ECONOMIC SUSTAINABILTIY

Economic sustainability opportunities are offered by the plan:

- Buildings will be designed for evolving re-use from commercial to educational.
- Joondalup has the opportunity to become a university based city, with educational uses fostering other related uses such as research.

5.8.3 ENVIRONMENTAL SUSTAINABLITY

Environmental sustainability is fostered by the Structure Plan and the ECU Campus Masterplan through guidelines for:

- Solar access to buildings and open space
- Spacing of buildings for natural ventilation
- Wind and noise control measures
- Use of endemic species in landscape
- Provision of good public transport access (bus and rail) and the continual review of parking strategy

The Structure Plan responds to all aspects of sustainability.

5.9 ACCESS

Provision of access to and from the city campus will be as follows:

Vehicle

Vehicle access to this site will be via:

- Existing Barron Place
- Proposed four-way traffic light controlled intersection at Grand Boulevard and Kendrew Crescent
- Proposed underpass under Grand Boulevard linking this development site to the existing ECU campus south of Grand Boulevard.

Grand Boulevard, Collier Pass, Barron Place and Kendrew Crescent east of Grand Boulevard are designated as public roads. Kendrew Crescent west of Grand Boulevard will be located within the ECU site and will be designated a private road.

The proposed underpass under Grand Boulevard will link car parking and facilities on the two parts of the campus. No

public roads will link into this underpass. Vehicle access is indicated on Figures 7 & 8.

Train

The existing Joondalup Train Station is located approximately 160m north of the study area. This station is served with Kiss 'n Ride and Bus interchange facilities.

BSD's 1996 report on the 'Identification and Reservation for a Railway Station between Edgewater and Joondalup' recommended a 'destination only' Train Station to be located adjacent to the southern portion of site. The train station site indicated is located immediately north of the existing railway tunnel. This station would provide direct access to the ECU campus for staff and students.

For the Department of Transport to give consideration to the provision of a new station, projected rail passenger numbers by time of day would be required together with the impact the station would have on the operation of existing and projected northern suburbs rail services. The Department would look for a financial contribution for construction. The Structure Plan indicates a possible additional train station adjacent to the site.

Bus

The site is already well serviced by buses along Grand Boulevard; hence it will be important to provide good pedestrian links from bus stops.

5.10 PEDESTRIAN & CYCLE NETWORKS

While the existing facilities are sufficient for the current surrounding land use, these facilities may require upgrading to handle the increasing volume of pedestrian and cyclist activities as the ECU City Campus is developed.

Collier Pass pedestrian and cycle facilities have been developed fully by City of Joondalup, and no upgrade is proposed. Barron Place is developed as two-way road with parallel parking both sides. The remainder of the road reserve is brick paved to cater for pedestrians. Further development of Barron Place should follow the same format.

Upgrading the western verge of Grand Boulevard to match the existing pathways/verge on the eastern side would provide pedestrian and cycle facilities to maximize and match the existing network abutting this site.

5.11 ROAD NETWORK

The existing road in Barron Place will be extended to the southern extent of the road reserve, with parallel parking on both sides. This treatment is of similar standard to the existing road layout. The extension of Barron Place will cater for a railway access track and access to proposed car parking indicated on the plan.

The existing three-way intersection of Grand Boulevard and Kendrew Crescent will be required to be converted into a four-way intersection under traffic signal control.

A traffic report was prepared by L. Millar & Associates (May 2003) to summarise the results from the SIDRA analysis of the future four-way intersection.

It recommended that:

"Traffic signals are to be installed at the future four-way intersection of grand Boulevard and Kendrew Crescent to operate under a two-phase signal arrangement with parallel pedestrian crossings and provision (now or in the future) should be made for two lane carriageways on both approaches on Kendrew Crescent for at least 90 metres from the intersection to accommodate the predicted future right hand turn queues."

Grade separated access to the ECU campus has been provided by an underpass at the southern end of the site. The underpass under Grand Boulevard is anticipated to be a link between the ECU pedestrian and car park facilities on each campus. No public roads are to link into this underpass. The existing drainage line along the southern verge of Grand Boulevard has governed the base level of the underpass."

5.12 CAR PARKING

Parking is proposed in a parking area adjacent the rail line (ECU student parking in the initial stages) and in a parking street behind buildings that front Grand Boulevard. Approx 800 bays can be accommodated on-grade with additional bays in decks over the parking area.

Right angle car bays are to be 2.5m wide x 5.5m long. Aisles adjacent to parking to be minimum 6.0m wide to allow for manoeuvring. Traffic lanes from the Kendrew Crescent/Grand Boulevard intersection to the internal roundabout to be 3.5m wide plus 1.5m cycle lane as required.
Consideration has been given to allow a rubbish truck to service the buildings fronting Grand Boulevard from the proposed car park "street". The large feature building adjacent to Barron Place will be serviced from the internal road network.

5.13 INFRASTRUCTURE

The existing and proposed services are shown on Figure 10, and the existing and preliminary design contours shown on Figure 11.

5.13.1 DRAINAGE

Stormwater for the northern development on this site is to continue to be discharged into the Local Authority drainage system located in Collier Pass. This connection point has sufficient capacity to cater for 2.90 hectares of the site.

The Southern portion of this site (4.98ha) has been allocated to discharge into the existing Local Authority drainage network in Grand Boulevard. Connection into this existing drainage network will be via a 900mm diameter stub drainage connection, located approximately 140m east of the existing Joondalup/Grand Boulevard intersection. The connection invert level is at RL 39.94, and subsequently only the southern portion of the site above RL 41.00 can be connected into this point.

Preliminary investigations have indicated that only a small portion of the site (0.15ha) adjacent to the underpass would be located below RL41.00. This small portion will be required to be drained via soak wells.

5.13.2 SEWERAGE

The existing 225mm diameter sewer main located in Barron Place will require a 120m extension to the southern extents of Barron Place. The extension would give a sewer connection level approximately at RL 40.00. The internal sewer network to the site extremities at 1 in 60 grade will give the minimum building of RL 42.50 that can be served by a gravity sewer connection.

5.13.3 WATER SUPPLY

The existing 200 mm diameter PVC water main in Barron Place will be extended 120 metres to the southern extent of Barron Place. An additional 320m extension along Grand Boulevard of 200mm diameter water main will be required.

It is proposed to serve proposed development via any of the 200mm diameter water mains bounding the site.

5.13.4 TELECOMMUNICATIONS

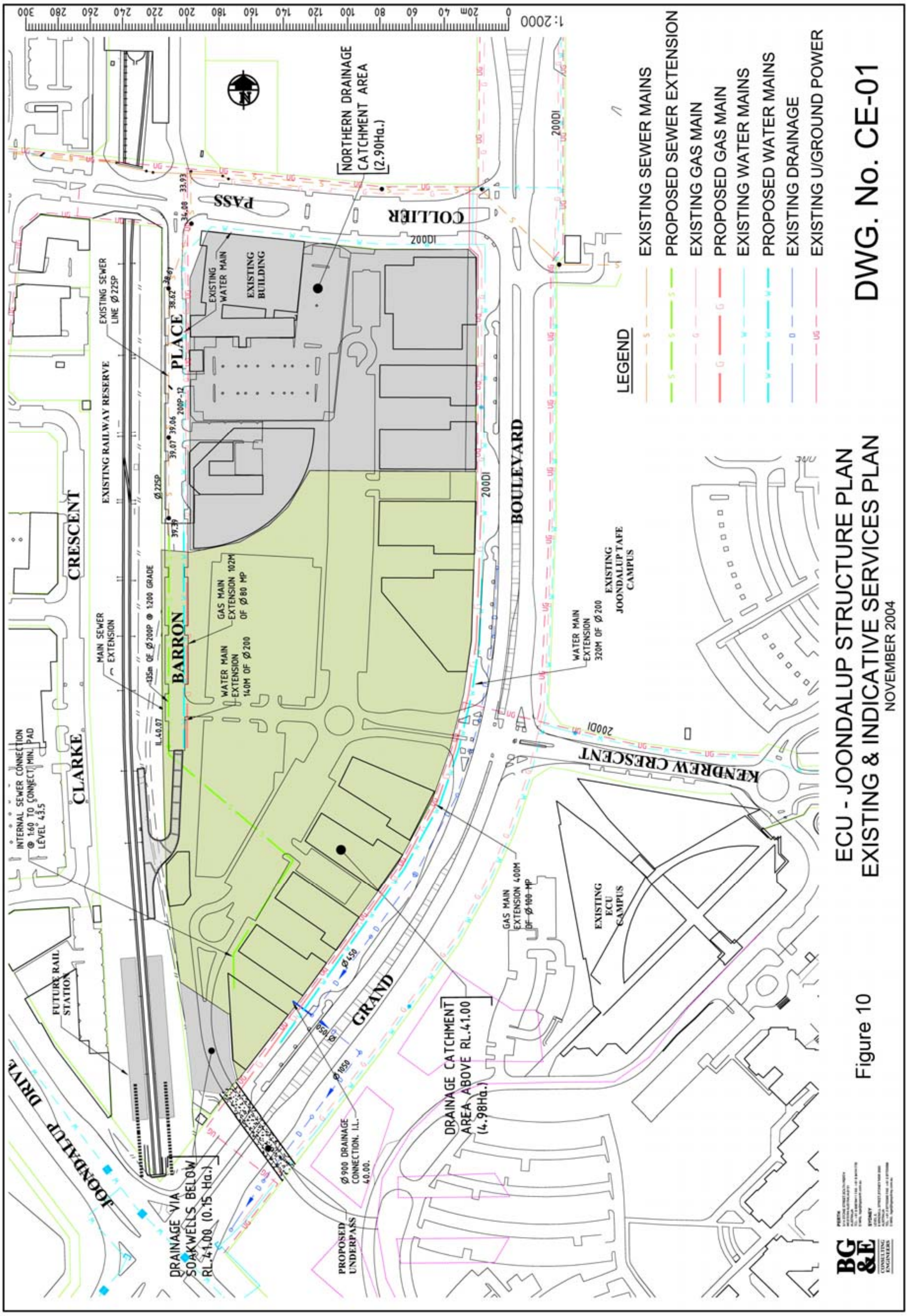
Telstra has advised that if the site were to remain as one title, all work to provide pit, pipe and cables to the proposed building would have to be done at commercial rates as per the previous agreements.

5.13.5 POWER

Awaiting Western Power comments on their infrastructure in the vicinity of the site to cater for the full development.

5.13.6 GAS

Following advice from Alinta Gas, it is proposed that the 80mm diameter Med. Pressure PVC gas main in Barron Place be extended to the southern extents of Barron Place. The extension required would be approximately 102m of 80mm diameter PVC. An additional 400m extension along Grand Boulevard of 100mm diameter Med. Pressure PVC gas main would also be required.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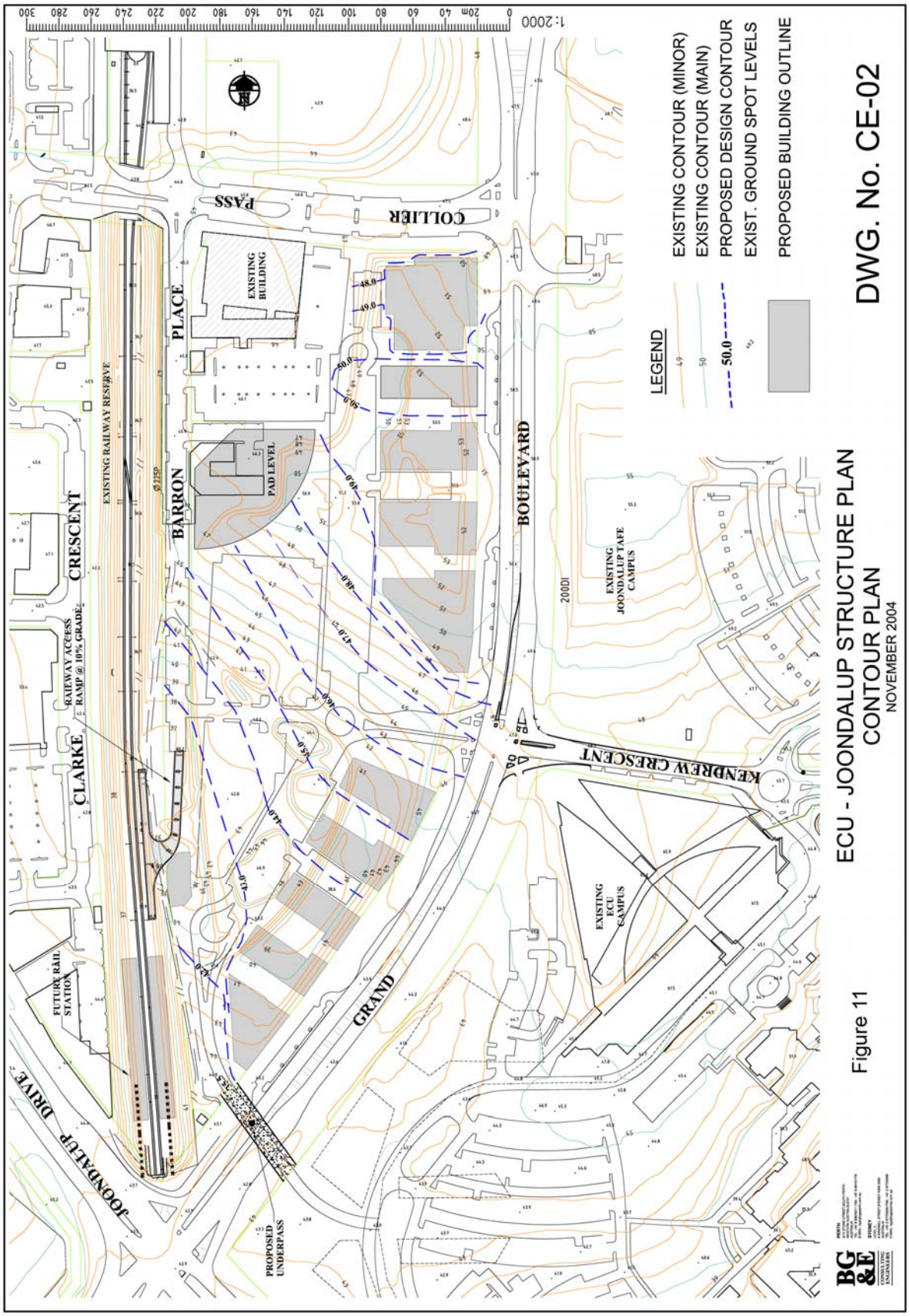
LEGEND
EXISTING SEWER MAINS
PROPOSED SEWER EXTENSION
EXISTING GAS MAIN
PROPOSED GAS MAIN
EXISTING WATER MAINS
PROPOSED WATER MAINS
EXISTING DRAINAGE
EXISTING U/GROUND POWER
DWG. No. CE-01
ECU - JOONDALUP STRUCTURE PLAN
EXISTING & INDICATIVE SERVICES PLAN
NOVEMBER 2004
NORTHERN DRAINAGE CATCHMENT AREA (2.90Ha.)
COLLIER PASS
EXISTING BUILDING
EXISTING WATER MAIN
EXISTING SEWER LINE Ø 225P
EXISTING RAILWAY RESERVE
BARRON PLACE
CRESCENT
CLARKE
BOULEVARD
GRAND
KENDREW CRESCENT
JOONDALUP DRIVE
FUTURE RAIL STATION
MAIN SEWER EXTENSION
GAS MAIN EXTENSION 102M OF Ø 80 MP
WATER MAIN EXTENSION 140M OF Ø 200
WATER MAIN EXTENSION 320M OF Ø 200
GAS MAIN EXTENSION 400M
EXISTING JOONDALUP TAFE CAMPUS
EXISTING ECU CAMPUS
INTERNAL SEWER CONNECTION @ 160 TO CONNECT MIN. PAD LEVEL 43.5
DRAINAGE CATCHMENT AREA ABOVE RL.41.00 (4.98Ha.)
DRAINAGE VIA SOAKWELLS BELOW RL.41.00 (0.15 Ha.)
Ø 900 DRAINAGE CONNECTION. I.L. 40.00.
PROPOSED UNDERPASS
BG &E

Figure 10


1:2000
0 20m 40 60 80 100 120 140 160 180 200 220 240 260 280 300
LEGEND
EXISTING CONTOUR (MINOR)
EXISTING CONTOUR (MAIN)
PROPOSED DESIGN CONTOUR
EXIST. GROUND SPOT LEVELS
PROPOSED BUILDING OUTLINE
DWG. No. CE-02
ECU - JOONDALUP STRUCTURE PLAN
CONTOUR PLAN
NOVEMBER 2004
Figure 11
BG &E
PASS
COLLIER
PLACE
BARRON
CRESCENT
CLARKE
BOULEVARD
KENDREW CRESCENT
GRAND
JOONDALUP DRIVE
EXISTING BUILDING
PAD LEVEL
EXISTING RAILWAY RESERVE
RAILWAY ACCESS RAMP @ 10% GRADE
FUTURE RAIL STATION
PROPOSED UNDERPASS
EXISTING JOONDALUP TAFE CAMPUS
EXISTING ECU CAMPUS
200DI

5.14 RAILWAY ACCESS

Access for railway maintenance vehicles to the Railway corridor has been provided for at the southern end of Barron Place. It is anticipated that an access track with a 4m wide formation be constructed from the end of Barron Place (RL43.2) down to the railway formation (RL36). The proposed access track is expected to have a vertical grade of 10%. The vertical grade of 10% is within the range expected to be found on low volume roads and is capable of being utilised by single unit type trucks (refer Figure 12).

5.15 FLOORSPACE, POPULATION AND EMPLOYMENT

The plot ratios indicated on the Structure Plan allow for approx 75,000sqm of floor space. This could accommodate a workforce of approx 5,000 people (1 per 15sqm office area) and require 2,500 car bays (at 1 per 30 sqm) or 1,250 bays at 1 per 60sqm.

On-grade parking indicated on the plan (approx 800 bays) will provide for approx 24,000sqm development at 1 bay per 30sqm, accommodating 1,500 to 1,800 people. Once parking ratios are modified to 1 bay per 60sqm on-site parking, the 800 bays will provide for 48,000sqm development. (3,000 to 3,600 people). *Note: Joondalup CBD total projection is 425,000sqm commercial space with 14,000 car bays (5000 public) for 17,000 employees*.

Over time the buildings on the city campus will evolve to university education purposes. The Edith Cowan Joondalup Master Plan indicates 57,000sqm of educational use floor space ultimately on the city campus.

The ultimate student population on the whole ECU campus will be 18,000 with 2,000 staff; a proportion of these will occupy the city campus.

Student housing is not considered likely on this site due to considerable supply currently being planned and constructed elsewhere however, there may be potential for some housing above and ancillary to other uses.

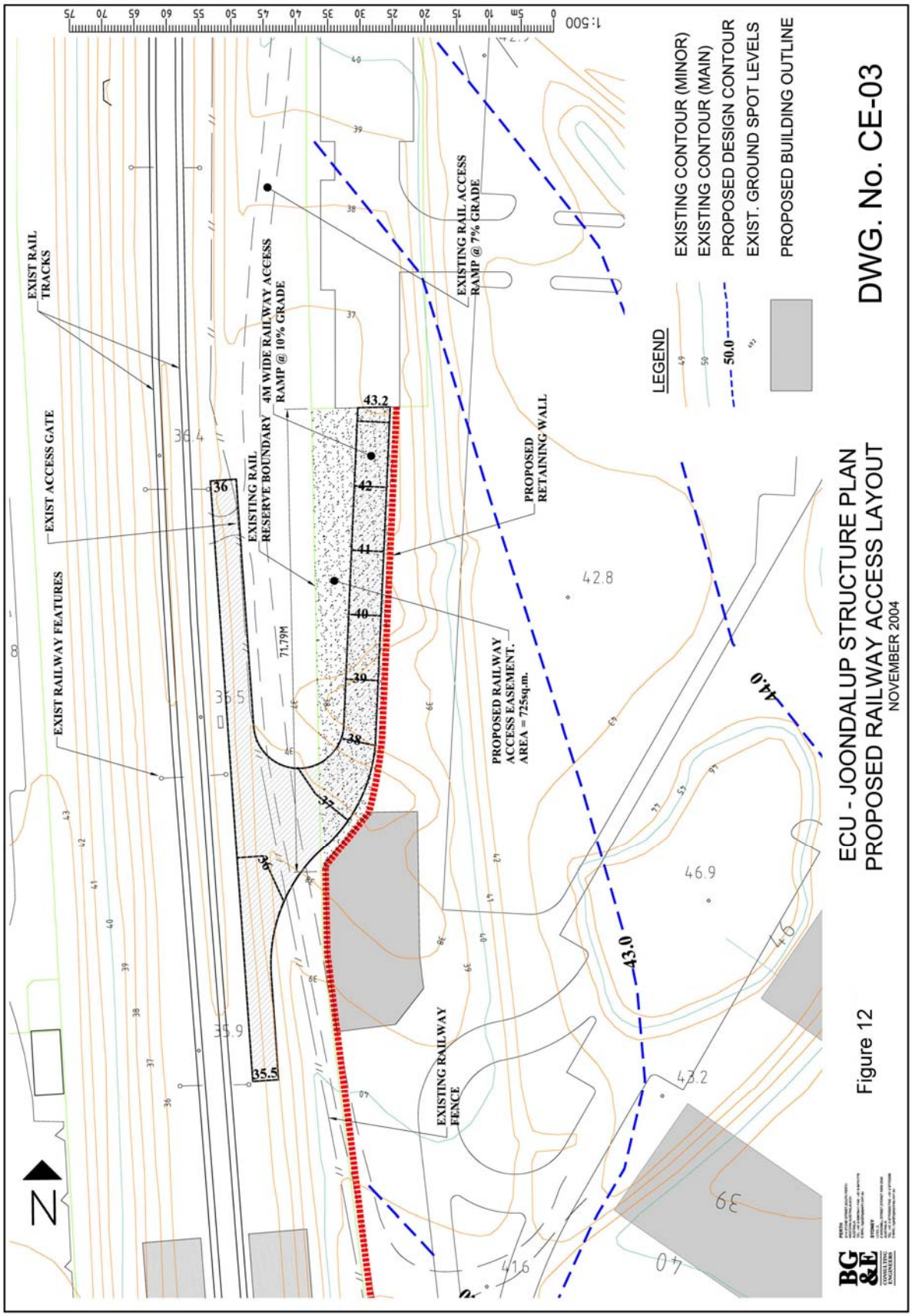

ECU - JOONDALUP STRUCTURE PLAN
PROPOSED RAILWAY ACCESS LAYOUT
NOVEMBER 2004
DWG. No. CE-03
LEGEND
EXISTING CONTOUR (MINOR)
EXISTING CONTOUR (MAIN)
PROPOSED DESIGN CONTOUR
EXIST. GROUND SPOT LEVELS
PROPOSED BUILDING OUTLINE
EXIST RAIL TRACKS
EXIST ACCESS GATE
EXIST RAILWAY FEATURES
EXISTING RAIL RESERVE BOUNDARY
4M WIDE RAILWAY ACCESS RAMP @ 10% GRADE
EXISTING RAIL ACCESS RAMP @ 7% GRADE
PROPOSED RETAINING WALL
PROPOSED RAILWAY ACCESS EASEMENT. AREA = 725sq.m.
EXISTING RAILWAY FENCE
71.79M
43.2
42.8
46.9
43.0
44.0
35.5
1:500
N

Figure 12

6 IMPLEMENTATION

6.1 STRUCTURE PLAN APPROVAL

Clause 9.7 of the City of Joondalup Town Planning Scheme allows for any Agreed Structure Plan, subject to the approval of the Commission, to be amended or revoked. Such provisions of Clause 9.6 shall be applied as considered appropriate by the Council.

The provisions of Clause 9.6 are set out below:

1. Lodgement of Structure Plan with the City of Joondalup.

2. City of Joondalup to determine within 60 days whether Structure Plan is satisfactory for advertising

3. City of Joondalup advertises Structure Plan for a minimum of 21 days.

4. Subsequent to advertising the City will consider all submissions and within 60 days of the advertising being completed, the City must forward a copy of the proposed Structure Plan, copies of all submissions (together with the City's responses), a recommendation and any other relevant information to the WAPC).

5. The Commission will then decide (within a period of 60 days) to either approve the proposed Structure Plan with or without modifications, or refuse to approve the Structure Plan and provide reasons.

6. Where the Structure Plan is approved the WAPC must notify the City and the proponent within 14 days from the date of the decision.

7. As soon as practicable after receiving the Commission's approval, the Structure Plan should be adopted by the City and approved copies forwarded to the Commission, the proponent and any other relevant party.

7 BIBLIOGRAPHY

Joondalup City Centre: Development Plan and Manual: prepared for Landcorp Feb 1995

City of Joondalup District Town Planning Scheme No.2: (Nov 2000).

Edith Cowan University Joondalup Campus Masterplan, prepared by Cox Architects (2003).

Edith Cowan University Metropolitan Campuses Integrated Transport Plan, prepared by Estill and Assoc. for Department of Infrastructure (Final May 2003).

SIDRA Analysis for Grand Boulevard and Kendrew Crescent Intersection, prepared by Millar and Assoc. (May 2003).

Identification and reservation of a site for a railway station between Edgewater and Joondalup, prepared by BSD Consultants for the Department of Transport (August 1996).

Flora and Fauna Assessment of the Edith Cowan University-Joondalup City Centre Precinct, prepared by ATA Environmental No. 2004/69 (May 2004).

Edith Cowan University City Centre Precinct-Development Opportunities Stage 1 Report, prepared by Hames Sharley and others
(Feb 2003).

Joondalup City Centre Public Parking Strategy, City of Joondalup (August 2001).

Transperth web site www.transperth.wa.gov.au

ECU JOONDALUP CITY CENTRE CAMPUS PART 2 TRACKED (EXTRACT ONLY)

3.3 EXISTING SITE CONDITIONS	• Proposed finished levels grade down to the south west (8 metre fall across the site). • Site levels give potential for basement parking in the southern part of site and provides access to the underpass to the main campus under Grand Boulevard. • There are existing buildings to the north-west of the site. The call centre will remain while the business incubator centre could be redeveloped in the longer term. • Existing vegetation is not regarded as regionally significant.
3.4 SURROUNDING MOVEMENT NETWORK	• Grand Boulevard provides excellent exposure for the site. • Pedestrian safety issues between campus precincts need consideration. • Kendrew Crescent West will be extended into the site with a controlled intersection at Grand Boulevard. • The axis established through the main campus will extend across into the site providing pedestrian access to the city centre. • A possible future proposed underpass under Grand Boulevard could ~~will~~ provide service vehicle and pedestrian access between campus precincts. This underpass would be subject to detailed traffic analysis in ~~the future~~ and maintenance, security and ownership issues will need to be resolved with Council. • Collier Pass has recently been upgraded with median car parking; more vehicle access points are therefore not desirable. • There is existing vehicle access from Barron Parade.

5.5 TRAFFIC MANAGEMENT

The ECU master plan discusses **traffic management** as follows:

"The traffic management of the campus has been structured to provide an internal ring road with accesses from Joondalup Drive, Lakeside Drive and Kendrew Crescent… The Edith Cowan University entry from the roundabout on Kendrew Crescent is not intended to be a major traffic carrier for the campus. It is intended to be more of a ceremonial entry....

Lakeside Drive has been chosen as the focus for vehicle entry onto the site because of the lower projected traffic volumes on this road. This helps with the integration of the two parts of the campus on each side of Grand Boulevard...

With the spread of traffic using Kendrew Crescent during the day, no operational problems are expected…

Grand Boulevard is projected to carry in the order of 29,700 vehicles per day and as this road divides the campus it will have a major impact on connectivity between the two areas. High levels of pedestrian access across this road can be expected and will have to be catered for using both at-grade and grade separated facilities.

The proposed on-street parking along Grand Boulevard will assist in reducing the vehicle operating speed and improving the safety and amenity for campus students and staff…

The management of traffic on Grand Boulevard, as it grows, will be crucial to the development of the aesthetics, amenity and safety of the education precinct and in particular the ECU campus. Allowance has been made in the internal road design for a possible future proposed grade separated access under Grand Boulevard between the two campus sites…" This underpass would be subject to detailed traffic analysis in the future and maintenance, security and ownership issues will need to be resolved with Council.

5.9 ACCESS

Provision of access to and from the city campus will be as follows:

Vehicle

Vehicle access to this site will be via:

- Existing Barron Place
- Proposed four-way traffic light controlled intersection at Grand Boulevard and Kendrew Crescent
- In addition, a possible future ~~Proposed~~ underpass under Grand Boulevard could provide a link~~ing~~ between this development site and ~~to~~ the existing ECU campus south of Grand Boulevard.

Grand Boulevard, Collier Pass, Barron Place and Kendrew Crescent east of Grand Boulevard are designated as public roads. Kendrew Crescent west of Grand Boulevard will be located within the ECU site and will be designated a private road.

A possible future ~~The~~ proposed underpass under Grand Boulevard could~~will~~ link car parking and facilities on the two parts of the campus. No public roads will link into this underpass. This underpass would be subject to detailed traffic analysis in the future and maintenance, security and ownership issues will need to be resolved with Council.

–Vehicle access is indicated on Figures 7 & 8.

5.11 ROAD NETWORK

The existing road in Barron Place will be extended to the southern extent of the road reserve, with parallel parking on both sides. This treatment is of similar standard to the existing road layout. The extension of Barron Place will cater for a railway access track and access to proposed car parking indicated on the plan.

The existing three-way intersection of Grand Boulevard and Kendrew Crescent will be required to be converted into a four-way intersection under traffic signal control.

A traffic report was prepared by L. Millar & Associates (May 2003) to summarise the results from the SIDRA analysis of the future four-way intersection.

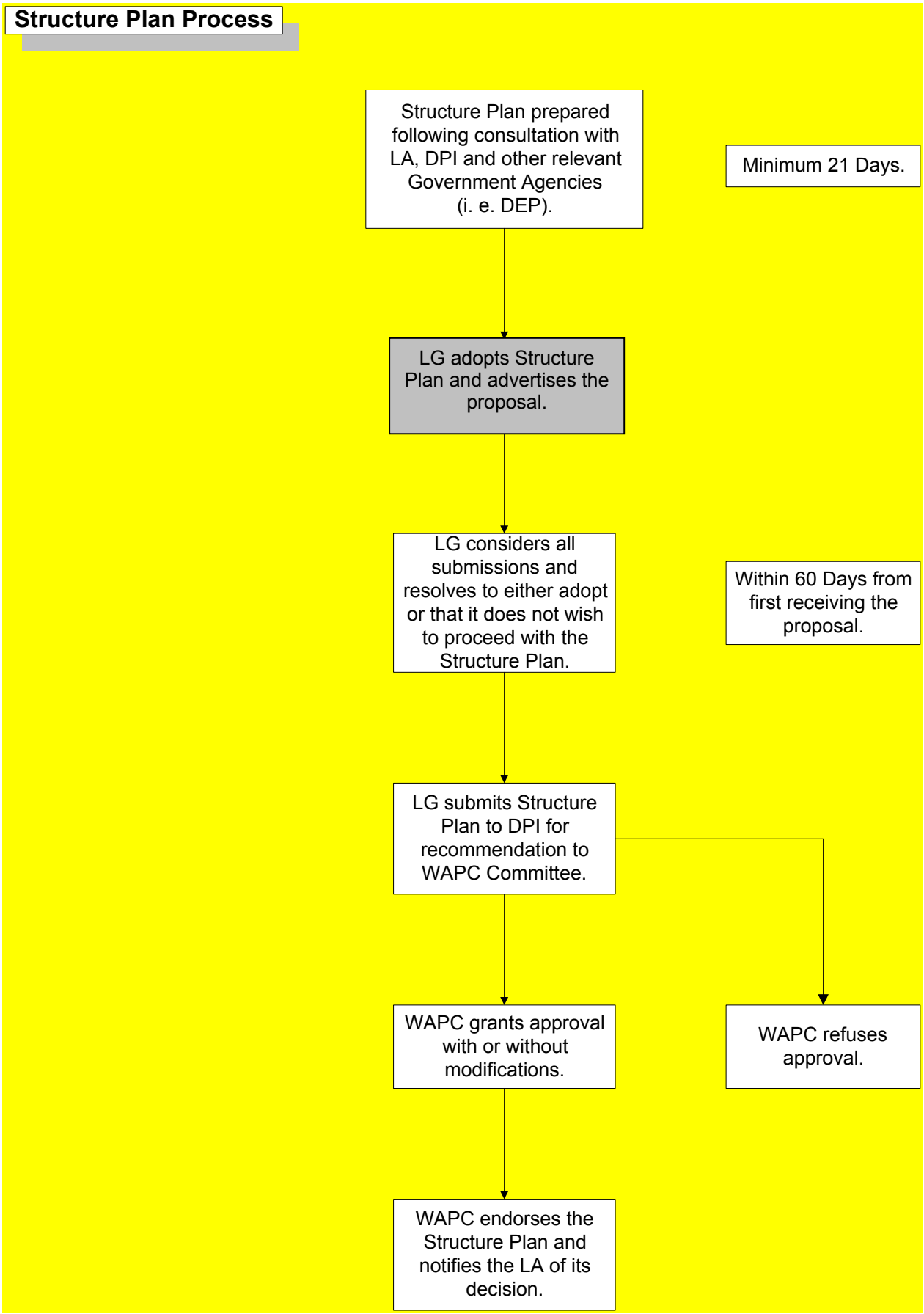
It recommended that:

"Traffic signals are to be installed at the future four-way intersection of grand Boulevard and Kendrew Crescent to operate under a two-phase signal arrangement with parallel pedestrian crossings and provision (now or in the future) should be made for two lane carriageways on both approaches on Kendrew Crescent for at least 90 metres from the intersection to accommodate the predicted future right hand turn queues."

Grade separated access to the ECU campus could be ~~has been~~ provided by an underpass at the southern end of the site. A possible future ~~The~~ underpass under Grand Boulevard would provide ~~is anticipated to be~~ a link between the ECU pedestrian and car park facilities on each campus. No public roads would ~~are to~~ link into this underpass. This underpass would be subject to detailed traffic analysis in the future and maintenance, security and ownership issues will need to be resolved with Council. The existing drainage line along the southern verge of Grand Boulevard ~~has~~ would govern~~ed~~ the base level of the underpass."

EDITH COWAN UNIVERSITY – JOONDALUP CITY CAMPUS STRUCTURE PLAN
SCHEDULE OF SUBMISSIONS FOLLOWING ADVERTISING
(CLOSED 6 APRIL 2006)

NO	NAME OF SUBMITTER	DESCRIPTION OF AFFECTED PROPERTY	SUBMISSION SUMMARY	COUNCIL'S RECOMMENDATION
1	Western Power	N/A	No objection	Adopt draft amendments
2	Transperth	N/A	No objection	Adopt draft amendments


Structure Plan Process
Structure Plan prepared following consultation with LA, DPI and other relevant Government Agencies (i. e. DEP).
Minimum 21 Days.
LG adopts Structure Plan and advertises the proposal.
LG considers all submissions and resolves to either adopt or that it does not wish to proceed with the Structure Plan.
Within 60 Days from first receiving the proposal.
LG submits Structure Plan to DPI for recommendation to WAPC Committee.
WAPC grants approval with or without modifications.
WAPC refuses approval.
WAPC endorses the Structure Plan and notifies the LA of its decision.