

MACQUARIE  
UNIVERSITY



COX



# Consolidated Approved Concept Plan and Gazetted State Significant Site listing

Macquarie University

December 2009 | 08548

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- E Revised Macquarie University Concept Plan TMAP (February 2009)  
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- F Economic Impact Assessment (February 2008)  
BIS Shrapnel
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1.0

Concept Plan Approval and  
State Significant Site Listing Gazettal

## 1.1 Introduction

This report (Volume 1) is the final consolidated version of the Macquarie University Campus Concept Plan. This report incorporates the originally exhibited version of the Concept Plan, the relevant matters of the subsequent Preferred Project Report, its Statement of Commitments, and the modifications (conditions) of approval of the Concept Plan. This is a requirement of the conditions of approval (see condition A4). The Concept Plan was approved by the Minister for Planning on 13 August 2009 (see Appendix A of Volume 1).

Section 2.0 through to Section 9.0 represents the consolidation of the Concept Plan with relevant matters incorporated from the Preferred Project Report. Volume 2 to this report contains the exhibited supporting studies, and the updated supporting studies, as prepared for and submitted with, the Preferred Project Report, and supersedes those initial studies, where relevant. In some cases original figures contained within the Concept Plan have been revised to provide greater clarity and/or address the requirements of the Minister's approval.

The approved Statement of Commitments is included in Volume 1 with an additional column to highlight and demonstrate compliance actions in relation to matters which require further work within a specified timeframe (see Section 8.8). It should be noted that whilst the Statement of Commitments is approved, the conditions of approval in some cases seek to revise and refine the Commitments and prevail over the Commitments (see conditions A2(1) and A2(2)). Accordingly, the Commitments should be read in conjunction with the conditions of approval.

This report also incorporates the gazetted State Significant Site (SSS) listing, which provides for a new planning regime for the Campus (see Appendix B of Volume 1).

The SSS listing is an amendment to Schedule 3 of the State Environmental Planning Policy (Major Development) 2005 (the Major Development SEPP). The SSS listing commenced on 11 September 2009.

## 1.2 The Approval and New Planning Regime for the Campus

### 1.2.1 Concept Plan Approval

The Minister's approval of the Macquarie University Campus Concept Plan on 13 August 2009 has provided for a structured and staged growth of the University Campus.

In general, it has approved development over the next 25 years for:

- The provision of an additional 400,000m<sup>2</sup> of commercial gross floor area (GFA) and associated parking outside of the Academic Core;
- The provision of an additional 61,200m<sup>2</sup> of academic GFA within the Academic Core;
- The provision of an additional 3,450 beds within the University Housing precincts for University purposes only;
- Infrastructure upgrading and improvements to the road network as required; and
- Rationalisation of University carparking locations.

The approval commences on the date of the Minister's approval – 13 August 2009 and will lapse on 13 August 2014 (5 years) unless a subsequent application for development is submitted and/or work commences on the site in line with the Concept Plan approval. Under the Act, the lapsing of the Concept Plan may be extended.

The conditions of approval (at Appendix A of Volume 1) set out the general areas of compliance required to undertake the project. Many of these require further action within specified timeframes. This is addressed separately below.

The conditions of approval otherwise set out areas of detail where the Concept Plan has been modified from that submitted or confirms development parameters sought under the originally exhibited version of the Concept Plan, the subsequent Preferred Project Report, and its Statement of Commitments.

The main detailed development parameters within the conditions of approval are:

- The maximum GFA across the Campus is limited as follows:

Precinct D	(MURP)	136,000m <sup>2</sup>
Precinct E	(Station North)	90,000m <sup>2</sup>
Precinct E	(Station South)	85,000m <sup>2</sup>
Precinct E	(Triangle South of University Ave)	155,000m <sup>2</sup>
Precinct F		70,000m <sup>2</sup>
Academic Core		61,200m <sup>2</sup>

It should be noted that the total of 400,000m<sup>2</sup> is the sum of Precincts E and F.

- Car parking for commercial uses are not to exceed 1 space per 80m<sup>2</sup> of GFA in Precincts E and F. Variations to this rate are possible for individual developments where it can be demonstrated with certainty that at completion of Precincts E and F compliance with the overall rate can be achieved.
- The maximum parking allowed across the Campus is 10,800 spaces distributed as follows:
 

Precincts A, G, and H (total)	4,095
Precinct B	1,000
Precinct D	705
Precinct E and F (total)	5,000
- A 40% non-car mode share shall be adopted for the academic and commercial uses on the site. A survey is required to be undertaken every 5 years to identify the mode share split with the report to identify the survey methodology, results and recommendations in the achievement of the target.

## 1.2.2 State Significant Site (SSS) Listing

The SSS listing for the site provides for:

- Identification of the University Campus site;
- Establishment of land use controls via a rezoning of the University Campus for Infrastructure and Mixed Use purposes;
- Establishment of height limits and controls for development on land outside of the Campus' Academic Core; and
- Establishment of GFA limits and controls for development on land outside of the Campus' Academic Core.

These provisions and controls are graphically represented in the SEPP's gazetted maps which are included at Appendices C to F.

The SSS listing also provides for detailed controls that, generally consistent with the Concept Plan approval, seek to:

- Prevent development above and beyond the gazetted height and floor space controls. This is achieved by removing the ability to deviate from development standards under State Environmental Planning Policy No.1 – Development Standards (SEPP 1). All other SEPPs continue to apply to the site's redevelopment as far as relevant and applicable.
- Notwithstanding the above, provisions have been included in the SSS listing that allow (for Part 3A projects only) discretion by the Director-General of the Department of Planning to vary the height, GFA, and car parking controls and standards through the issuance of a certificate which acknowledges the strict compliance would be unreasonable or unnecessary and sufficient planning grounds exist and are justifiable to vary the standards.

- Similarly, any development undertaken to which Part 3A does not apply are subject to provisions which allow a flexible approach to development standards and better outcomes in particular circumstances. The Consent Authority must consider whether strict compliance would be unreasonable or unnecessary and sufficient planning grounds exist and are justifiable to vary the standard. The Director-General of the Department of Planning must provide concurrence to the consent authority to do so. In doing so the Director-General must consider regional and State planning objectives, and the public benefit of maintaining the development standard. This provision does not allow consent to be granted for development that contravenes a development standard for complying development or in connection with a commitment set out in a BASIX certificate.
- Prevent various land use zone and development standard objectives from applying to future Part 3A projects within the Campus as Part 3A projects are only bound by permissibility. Part 4 projects (ie Development Applications) will be subject to these provisions.
- Provide for a range of land uses within each applicable zone as well as objectives for the zones. Any development not listed as permissible is prohibited.
- Apply objectives in relation to the height of buildings and set maximum heights for future development outside of the academic core.
- Apply objectives in relation to the GFA of buildings and set maximum GFA limits for future development within precincts outside of the academic core.
- Apply objectives in relation to car parking within the Campus and set a maximum rate in connection with a building at no more than 1 space per 80m<sup>2</sup>.
- Development consent can not be granted to development on the Campus unless the consent authority is satisfied that appropriate levels of public utility infrastructure are available or that suitable arrangements have been made to make it available.

- Development that may be carried out as either development with or without consent under the Infrastructure SEPP may still be carried under the terms of that SEPP despite the SSS listing. Similarly, the SSS listing also does not restrict or prohibit the use of existing buildings of the Crown by the Crown.

It should be noted that as the SSS listing is silent on the Capital Investment Value threshold for Part 3A projects, all new development will need to qualify as a Part 3A Major Development in its own right by meeting the various threshold terms under Schedule 1 of the Major Development SEPP or otherwise be subject to a Development Application to the City of Ryde Council.

Under Schedule 1 of the Major Development SEPP (as at December 2009), the most relevant classes of development are as follows, including the thresholds for qualification as a Major Development. See weblink to the SEPP - <http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+194+2005+cd+0+N>

#### 11 Other manufacturing industries

Development that employs 100 or more people or with a capital investment value of more than \$30 million for the purpose of:

- laboratory, research or development facilities, or
- medical products, or
- printing or publishing, or
- textile, clothing, footwear or leather manufacturing, or
- furniture manufacturing, or
- machinery or equipment manufacturing, or
- the vehicle, defence or aerospace industry, or
- vessel or boat building.

#### 13 Residential, commercial or retail projects

- (1) Development for the purpose of residential, commercial or retail projects with a capital investment of more than \$100 million.

#### 19 Medical research and development facility

Development for the purpose of health, medical or related research (which may also be associated with the facilities or research activities of a NSW Government Area Health Service, a University or an independent medical research institute) and that:

- has a capital investment value of more than \$15 million, or
- employs 100 or more people.

#### 20 Educational facilities

Development for the purpose of teaching or research (including universities, TAFE or schools) that has a capital investment value of more than \$30 million.

A project that can meet these requirements is a Major Development under Part 3A of the Environmental Planning and assessment Act 1979, with the Minister for Planning as the Approval Authority. Capital Investment Value is defined by the Major Development SEPP as all costs necessary to establish and operate the development, including the design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment (but excluding GST, as defined by A New Tax System (Goods and Services Tax) Act of the Commonwealth, and land costs).

A project is Regional Development if it has a Capital Investment Value of more than \$10 million or if it is Crown development with a Capital Investment Value of more than \$5 million.

A project is also Regional Development if it is for affordable housing, child care centres, community facilities, educational establishments, electricity generating works, electricity transmission or distribution networks, rail infrastructure facilities, research stations, road infrastructure facilities, roads, sewerage systems, telecommunications facilities (amongst other things) and it has a Capital Investment Value of greater than \$5 million.

Applications for Regional Development are made to City of Ryde Council and are approved by the relevant Joint Regional Planning Panel. All other applications for development below these thresholds are Local Development and subject to Development Applications which are assessed and approved by Council. It should be noted that some minor or low impact development or projects may also be Exempt or Complying Development or Development without Consent.

## 1.3 Further Actions and Work Required

The majority of the conditions of approval require further detailed actions and management plans within specified timeframes. Aside from a consolidated Concept Plan the following is required to be addressed. Reference should be made to the relevant condition of approval concerning the applicable timeframe. It should be noted that many of these further actions are also Statements of Commitment.

- Travel Survey (as discussed above in relation to the mode share target)
- Road intersection upgrades (timing and intended staging of works)
- Works Authorisation Deed with the RTA for the above works
- Preparation of a Design Excellence Strategy and Urban Design Guidelines and Landscape Management Plan in a combined fashion on a precinct by precinct basis



- Amendment to the Concept Plan (in consultation with Council and the RTA) to address setbacks within the campus along Balaclava Road (from Epping Road to University Ave) and Waterloo Road (from Herring Road to Research Drive) to facilitate additional capacity improvement and bus priority
- Staging Plan
- Urban Design resolution for the Station North precinct
- Combined Stormwater Management Plan, Vegetation Management Plan, and Threatened Species Management Plan
- Bushfire Management plan
- Weed Management Plan
- Consideration of Department of Environment, Climate Change and Water's *Guideline for Development Adjoining DEC Land – August 2006*
- ESD Report
- Hazardous Materials Audit and targeted Phase 2 Intrusive Contamination Assessment
- Aboriginal Archaeology Strategy
- University Travel Plan
- Traffic Micro-simulation Model
- Work Place Travel Plan for individual commercial developments
- Child Care Strategy
- Construction Staging Plan
- Construction Management Plan and Erosion and Sedimentation Plan (to be undertaken with Staging, Vegetation, and Threatened Species Plans)
- Utilities supply Master and Servicing Plan(s)

Agreements will also be needed between the University and the RTA concerning the Micro-simulation Model and the various road and intersection works. An agreement has also been conditioned as being required between the University and Council for contributions.

2.0

Introduction

## 2.1 Concept Plan Structure

This Environmental Assessment Report (EAR) is submitted to the Minister for Planning (the Minister) pursuant to Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) to fulfil the Environmental Assessment Requirements issued by the Director-General for a Concept Plan approval for Macquarie University Campus.

The Concept Plan seeks to establish the parameters for the strategic development of the Macquarie University Academic Core, as well as allow for the development, for mixed use purposes of excess land outside of the Academic Core in proximity to the new Macquarie University rail station. The land to which the Concept Plan applies is referred to as the Campus and is defined in Figure 1. The Campus is divided into precincts (also shown in Figure 1) which reflect particular uses and development parameters:

This Concept Plan seeks approval for the following over a 25 year period:

- The provision of 400,000m<sup>2</sup> of broad commercial (within proposed mixed uses zones) gross floor area (GFA) outside of the Academic Core;
- The provision of an additional 61,200m<sup>2</sup> of academic gross floor area within the Academic Core;
- The provision of an additional 3,450 beds within the University Housing Precinct for University purposes only, as well as provisions which allow for seniors living development within this Precinct. The addition of 3,450 beds would take the total number of bedspaces to 5,000 on Campus.
- Infrastructure upgrading and improvements to the road network as required;
- Establishment of a landscaped open pattern across the Campus integrated with the pedestrian and cycle network; and
- Establishment of car parking structures at key vehicle access points across the Campus.

The key parameters for the future development of the Campus have been established as follows:

- Allow sufficient land for the future expansion of the University including Academic Core functions, University housing and University open space and sport fields;
- Enable the development of other University land for a number of purposes in suitable locations with good access to the new Macquarie University rail station;
- Establish a comprehensive road hierarchy, open space pattern and land-use structure based on the original University grid design;
- Allow for linkages between the remodelled Academic Core and new mixed use precincts at the same time as ensuring the Academic Core is protected from vehicle traffic associated with the mixed use precincts;
- Establish car park stations at the University's key access points to ensure a mode change from vehicle to pedestrian, for students/staff entering the Academic Core; and
- Encourage increased public transport use through urban design initiatives including higher density land-uses closer to the new station and establishing comprehensive pedestrian and cycle networks within the Campus.

The planning and design philosophy for the Concept Plan includes:

- Planning and design guidelines, as well as development parameters;
- Road, pedestrian and cycle networks;
- Landscape and open space strategy;
- Infrastructure strategy; and
- Environmental guidelines and water management strategy for the project.

The report has been prepared by Cox Richardson Architects (Cox) and JBA Planning Consultants Pty Ltd (JBA) for the proponent, Macquarie University, and is based on information originally provided by CRI Australia Pty Limited (CRI) and supporting technical documents provided by an expert consultant team.

This EAR describes the Campus, its environs and the proposed development, and includes an assessment of the proposal in accordance with the Director-General's Environmental Assessment Requirements (DGEAR) under Part 3A of the EP&A Act. It also includes an application to amend the State Environmental Planning Policy (Major Projects) 2005 (Major Projects SEPP) as it relates to this site, and should be read in conjunction with the information contained within and appended to this report.

This report:

- Outlines the vision for the development of the Macquarie University Campus;
- Establishes the basis for change to the existing zoning and planning provisions to the Campus;
- Presents a Concept Plan to guide the future development of the Campus; and
- Provides an assessment of the environmental impacts of the proposed land-use change and Concept Plan.

Macquarie University is strategically located within the Macquarie Park Corridor, and is a key site for education, research and research-related employment. The land is subject to a number of City of Ryde Council (CoR) planning controls, as well as the Inner North Subregional Strategy such as:

- Creating 23,000 jobs over a 25-year period, taking the total number of jobs in the Macquarie Park Corridor to over 55,000; and
- Providing a total of 1,700,000m<sup>2</sup> for the Macquarie Park Corridor.

Figure 1 – Concept Plan area and Precincts



CoR Council is currently amending its planning controls to reflect substantial growth in the corridor, as well as reflecting the objectives in regards to land-use and compatibility. Macquarie University also propose the rezoning of land at key strategic areas of the campus, particularly around the new railway station in the south (Herring Road), in order to promote effective Transit-oriented Development that is in accordance with the Metropolitan Strategy, is compatible with surrounding land-uses, and responds to the economic growth objectives of the Inner North Subregional Strategy.

The report is structured as follows:

Section 2: Introduction, background, objectives and visions for the development, project team and approvals process.

Section 3: Evolution of the Macquarie University Campus including benchmarking of the University core area and housing requirements for the next 25 years.

Section 4: Description and the spatial 'Concept Plan' including key elements for which concept approval is sought.

Section 5: Detailed design statement and specifics indicative perspectives of the Station South Precinct.

Section 6: Detailed description of the planning objectives and design parameters for each precinct within the Campus development.

Section 7: Environmental assessment of the land-use change and Concept Plan including an assessment of the current strategic and statutory planning framework and context applying to the site.

Section 8: Proposal for amendment to the Major Projects SEPP, including nomination of future land-use zones and planning approvals strategy for future applications and the draft Statement of Commitments.

Section 9: Conclusion.

Appendices are attached to this report, which include a range of technical studies undertaken to inform the land-use change and Concept Plan, and its environmental assessment.

These studies address the Director-General's requirements for the environmental assessment and the state significant study. They provide a technical assessment of the environmental impact of the proposed development, and recommend proposed mitigation measures to manage potential environmental impacts associated with the proposal.

## 2.2 Background

Macquarie University occupies approximately one third of the Macquarie Park Corridor, which forms part of the Global Economic Corridor identified in the NSW Government's Metropolitan Strategy for Sydney titled City of Cities – A Plan for Sydney's Future. It is also the location of a new rail station to be completed in July 2008 that will form part of the Epping to Chatswood rail line.

Recognising that the new rail line would improve accessibility to the Macquarie Park Corridor and the University, the State Government, through the Department of Planning and CoR Council, undertook a series of studies in 2002/2003 including the Macquarie Park Structure Plan and the Transport Management and Accessibility Plan (TMAP).

One of the outcomes of this exercise was the preparation of the Macquarie Park Corridor Masterplan which was subsequently adopted by CoR Council, on 17 February 2004.

On 20 January 2006, Ryde Planning Scheme Ordinance 1979 (RPSO) was amended by Local Environmental Plan No. 137 (LEP137) in order to implement the recommendations of the Macquarie Park Corridor Masterplan. LEP137 rezoned a small portion of land on the Macquarie University Campus to allow for commercial uses.

Since the University's inception in 1964, a Development Plan has been in place to guide the growth of the University. In late 2002, in response to the growth of the Macquarie Park Corridor and the foreshadowed development of a new rail station on Campus, Macquarie University commenced a review of the 1997 Development Plan prepared by Conybear Morrison. This resulted in the comprehensive Macquarie University Campus Development Plan 2004 (CDP) prepared by CRI/Cox.

The CDP identifies opportunities to guide the future growth of the University and forms the basis for this Concept Plan which supports a specific Macquarie University planning instrument to allow implementation of the development potential identified in the CDP.

On 16 September 2005, Macquarie University wrote to the Minister for Planning (the Minister) requesting consideration of the Macquarie University Campus to be included in Schedule 3 of the Major Projects SEPP as a State Significant Site (SSS). On 24 January 2006, the Department of Planning (the Department) advised the University that the Minister agreed to consider the site as a potential SSS, requesting that a Concept Plan be prepared for the campus (see correspondence at Appendix A of Volume 2) and that certain matters be assessed in a planning study. These were addressed in the Planning Study to Support Amendment to Schedule 3 of Major Projects SEPP 2005 prepared by JBA and CRI dated May 2006 which has been exhibited.

On 27 February 2006, CRI (on behalf of Macquarie University) requested confirmation from the Minister that:

- The project is subject to Part 3A of the EP&A Act;
- Authorisation for a Concept Plan to be prepared and lodged; and
- The issue of DGEARs in accordance with Section 75M of the EP&A Act.

A synopsis of the Concept Plan (equivalent to a Preliminary Environmental Assessment Report) was submitted with this request for confirmation.

On 4 April 2006, the Minister formed the opinion under Clause 6(1) of the Major Projects SEPP that the development (described in italics below), is of a kind described in Schedule 1 Clause 20 - Development for the purposes of teaching or research (including universities, TAFE or schools) - and thus declared it a Project to which Part 3A of the EP&A Act applies:

*'A proposal to design and construct development for the purposes of the future development of Macquarie University including:*

- A 140,000m<sup>2</sup> increase in built floor space for academic uses;
- Identification and creation of commercial and research precincts totalling 620,000m<sup>2</sup>;
- Residential accommodation for approximately 5,000 students; and
- Retention of existing open space areas and playing fields;

*generally as described in a letter dated 27 February 2006 from CRI (on behalf of Macquarie University) to the Department of Planning, and in the Macquarie University Campus Development Plan – 2004.'*

This Concept Plan and its content, complements and supports the State Significant Site Study (SSS Study), prepared in May 2006.

A copy of the Minister's Opinion is included at Appendix B of Volume 2. On 1 June 2006, the Director-General of the Department of Planning released the DGEARs for the Macquarie University Concept Plan. These are attached at Appendix C of Volume 2.

The proposed Concept Plan is 'generally as described' in CRI's letter of 27 February 2006. Minor adjustments have been made to accommodate key principles identified in a letter from the Minister dated 12 July 2007 (Appendix D of Volume 2), which include the issues raised in Table 1.

## 2.3 Objectives

The objectives of the Concept Plan are to:

- Protect the future physical expansion and academic development of Macquarie University;
- Build on the special qualities of Macquarie University;
- Allow development flexibility within the certainty of a structured framework;
- Enhance the University's physical identity and address;
- Optimise development potential to allow the University to leverage from its assets to provide a sustainable income for reinvestment into the University;
- Rationalise and strengthen access and circulation in response to new infrastructure;
- Create planning controls which will attract academic and research partners to the University;
- Maximise efficiency of the future built environment for academic and non-academic uses on the Campus;
- Maintain the park-like setting of the University;
- Enhance the Campus environment, and
- Engage with the community.

The Concept Plan addresses how the University may evolve up to 2031. It identifies those principles which are still valid and how new opportunities can strengthen the continued development of the Campus.

The following objectives and principles (Table 2) have been identified in relation to key aspects of the Campus development.

**Table 1** – Issues raised by the Minister (July 2007)

Issue Raised	How Addressed
The University should principally be for University-related purposes and associated commercial and research-based functions.	The principle use of the University is to allow for the retention, and the sufficient expansion of the academic core. This is demonstrated in the proposed zoning of the key strategic centre of the Campus (ie the Academic Core), and the allowance of a number of broad commercial and ancillary research-based functions in other parts of the site, outside of the Academic Core (i.e. the Station South Precinct and the Epping Road Precinct). It is a key objective of the University to develop links and research chains with industry, and the location of these broad commercial/research-based functions around the new rail station has also been identified in the strategic directions of the Metropolitan Strategy. The proposed B4 Mixed Uses zone will allow for a number of broad commercial/research-based functions and will not detract from the key objectives of the University and the directions of the Department.
Ensure certainty and longevity of the University's core academic functions, a distinct academic core should be identified and a buffer placed around this core to cater for future growth and expansion.	A statutory buffer has been placed around the academic core, with the zoning of land primarily for traditional academic uses (i.e. "educational establishment" within Precincts A, B, C, D, G and H). The broad commercial and ancillary research based functions of the University are restricted to the MURP Precinct, Station South Precinct, and Epping Road Precinct. Importantly, the zoning of precincts outside the Academic core should not limit the future growth and expansion of the principal purpose of the Campus. Therefore, educational establishments are permissible within these zones (see SEPP Amendment for greater clarification).
The location of non-core University or academic uses may be towards the site's eastern fringe to encourage public transport usage around the soon to be completed Macquarie Park Station and to reinforce the principles of Integrated Land-use and Transport Planning.	The non-core University uses have been centred around the site's eastern fringes. Namely, the Station South Precinct (with additional broad commercial precincts along the M2 Motorway, Macquarie University Research Park and the Epping Road Precinct). This is to focus key ancillary development to the University, around the future rail station in the south east, and to maximise opportunities for Transit-oriented Development, particularly along the Herring/Epping Road frontage.
Such uses should be at densities and with gross floor areas commensurate with those within and identified for the Macquarie Park Corridor to the east. Any growth in residential accommodation for University purposes must be for student accommodation and at a rate and scale commensurate with the growth of core academic functions.	<p>The Inner North Subregional Strategy recognises Macquarie University as a key landholding within the locality. Further to this, an additional 900,000m<sup>2</sup> of commercial floor space, over the existing 800,000m<sup>2</sup> of floor space, is now achievable under current planning controls. As such, the amount of floor space proposed by the University is based on:</p> <ul style="list-style-type: none"> <li>• The size of the landholding;</li> <li>• Location of the Campus next to a new rail station (for the purposes of Transit-oriented Development); and</li> </ul> <p>The future strategic direction of the Macquarie Park Corridor under the Metropolitan Strategy.</p> <ul style="list-style-type: none"> <li>• Furthermore, the provision of an additional 400,000m<sup>2</sup> of broad commercial floor space on the Campus will not detract from the key objectives of the University charter, this Concept Plan or the objectives of the Macquarie Park Corridor under statutory planning controls. Namely, to maintain strong industry links to the University, to ensure integration between research and enterprise and to activate the new rail station. Seniors living development is proposed in this precinct, as it will provide the following: <ul style="list-style-type: none"> <li>• A compatible land-use with land to the north of the Campus;</li> <li>• Provide for social interaction; and</li> <li>• Allow for usage of shared facilities. Seniors living development is only proposed within the University Housing Precinct, and it will not compromise the ability of the University to achieve its academic objectives.</li> </ul> </li> </ul>
The horizon for growth should accord with the Metropolitan Strategy (i.e. 25 years).	The horizon for growth of the proposed concept plan is 25 years, in order to meet the timing and objectives of the Metropolitan Strategy. There are references within the Concept Plan to the University's Campus Development Plan, which modelled future academic growth on a 40-year timeframe. This benchmarking exercise has occasionally been utilised on a pro-rata basis to 25 years, in order to achieve the broader strategic objectives.

**Table 2** – Objectives and Principles for Concept Plan

Objective	Principle	Comments
1. To allow development flexibility within the certainty of a structured framework	<ul style="list-style-type: none"> <li>• Create a strategic framework for the University, identifying appropriate and inappropriate areas for development.</li> <li>• Develop key structural elements to support a range of potential uses.</li> <li>• Integrate the physical, environmental, economic and community opportunities and constraints.</li> <li>• Plan for growth of the University to accommodate a total potential enrolment of 42,000 students by 2031.</li> </ul>	Many campuses which have expanded incrementally over time have lost their legibility and original concept. It is important that the Concept Plan maintains the integrity and improves the overall concept and legibility of the Campus throughout future developments.
2. Enhance the University's physical identity	<ul style="list-style-type: none"> <li>• Identify various means of creating and reinforcing a distinct physical identity.</li> <li>• Address the impact of the new Macquarie University station with an integrated main Campus gateway to Macquarie Park Corridor.</li> </ul>	The Concept Plan needs to enhance the physical presence of the Campus as it relates to its surrounds. The Concept Plan must build on the new opportunities at the Herring Road entry.
3. Optimise development potential to allow the University to maximise return from its assets	<ul style="list-style-type: none"> <li>• Review the potential of development for academic, research, commercial, and community uses.</li> <li>• The highest intensity uses to be located within proximity to the railway station.</li> <li>• University-related research and mixed uses to be located adjacent to the Academic Core to encourage research distinction for key academic areas.</li> <li>• Student housing to be located on the north western side of the Campus, related to recreational facilities and away from potential commercially valuable land.</li> </ul>	The area surrounding the station will attract the highest FSRs and generate a high number of rail commuters. Encouraging a broad range of commercial development opportunities will assist the University in becoming financially strong and entrepreneurial and promote industry links with the University. This close association will assist in maintaining a close nexus between teaching and research. Students living on Campus are less likely to be travelling by rail in peak periods.
4. Rationalise and strengthen access and circulation in response to new infrastructure	<ul style="list-style-type: none"> <li>• Create a legible, logical, safe and accessible entry circulation network responding to the location and benefits of the new railway station and future bus stop locations.</li> <li>• Upgrade the Herring Road entry, located adjacent to the new railway station as an easily identifiable address.</li> </ul>	This would allow the University to discourage dependence on the private car for the journey to the University. The function of this address is to reinforce the entry as well as provide a strong University presence to the Macquarie Park Corridor.
• Pedestrian	<ul style="list-style-type: none"> <li>• Strong external connections need to be created to optimise pedestrian access to and from the Campus whilst limiting the potential for external traffic travelling through the Campus.</li> </ul>	The pedestrian concept plans take into account the University's vision for internal egress.
• Vehicular	<ul style="list-style-type: none"> <li>• Promote access to public transport areas and reduce dependence on the private car for the journey to the University.</li> <li>• Parking stations to be provided at the Campus with peripheral entry points and connected with secondary circulation roads.</li> <li>• Road structure hierarchy to discourage inappropriate and non-University traffic to certain areas, in particular to the Academic Core.</li> </ul>	Short-term/after hours parking should assist in security and equality of access issues. Balaclava and Herring Road intersections are currently at operational capacity. At full development, the vehicle trips generated by the Campus and associated uses could put considerable pressure on the key adjacent intersections and some upgrading works may be required.



Objective	Principle	Comments
<ul style="list-style-type: none"> <li>• Vehicular continued...</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a traffic plan that will allow appropriate parking, distribution and circulation, recognising future modal splits and sustainable University growth.</li> <li>• Allow controlled vehicular movement through the Campus including increased after hours movement.</li> <li>• To minimise the impact of Campus traffic on the surrounding arterial road network by developing alternative access points.</li> </ul>	<p>The University has committed to the following transport and traffic initiatives:</p> <ul style="list-style-type: none"> <li>• A University Travel Plan (UTP) will be formulated by Macquarie University for the academic / educational uses at the site only.</li> <li>• Development on the site (academic and commercial) shall be consistent with the aim of the Macquarie Park Traffic Study which seeks a target of 40% non-car modal split over time. Details of the academic mode share targets (staging/mode split) will be incorporated in the UTP and will be reviewed on a regular basis against achievement as per the timing above.</li> <li>• A car parking management strategy will be developed as part of the UTP.</li> <li>• A strategy for intra-university travel will be developed as part of the UTP and will include recommendations on travel to/from university housing, connections to the rail station, and night travel. Consideration will be given to the development of a campus shuttle bus service in the UTP.</li> <li>• A detailed micro-simulation transport model of the University internal road network and surrounding "area of influence" will be developed. The model will be used to assess in detail proposed changes to the internal road network and review internal intersection performance. The model will be utilised for assessment of project applications and to determine staging of works. The timing of the model would be based on full operation of the Epping-Chatswood rail link being realised and any major redevelopment of the Station South portion of Precinct E.</li> <li>• Development on the site shall promote as far as practicable reduced use of private single occupant vehicles and promote public transport use, walking and cycling – including implementation of the Macquarie University Cycle Access Plan.</li> <li>• Commercial developments will be required to prepare a Workplace Travel Plan (WPTP) for individual sites in accordance with City of Ryde DCP 2006 Part 4.5 (Section 7.3.9).</li> <li>• All internal roads are to be designed and constructed consistent with the requirements of all relevant Australian Standards, and the requirements of Council and Austroads as applicable.</li> <li>• The design facilities will permit effective, appropriate and safe use by all people, including those with disabilities in accordance with the Building Code of Australia and Australian Standard AS 1428.</li> <li>• 4800 car parking spaces are to be retained for academic (4,095) and existing commercial and MURP related (705) uses on site. New car parking for non-academic uses shall be at a maximum rate as identified within the Concept Plan for each precinct.</li> </ul>
<ul style="list-style-type: none"> <li>• Bicycle</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage the use of bicycles as an alternative means of transport by improving current facilities to provide safe and convenient access for cyclists to the campus.</li> <li>• Permit bicycles within the Campus without undermining the quality of the pedestrian environment.</li> <li>• Strengthen external connections to existing cycleways, optimise access to and from the Campus.</li> </ul>	<ul style="list-style-type: none"> <li>• This will increase the modal split for bicycles and encourage a use other than private car. Improved bicycle access will be subject to legal constraints.</li> <li>• The 2006 Macquarie University Bicycle Network Master Plan will guide access to and through the Campus and development in relation to bicycle-friendly facilities.</li> <li>• A strategy for bicycle parking including end of trip facilities will be developed as part of the UTP.</li> </ul>

Objective	Principle	Comments
5. Attract academic and research partners to the University	<ul style="list-style-type: none"> <li>• Create areas adjacent to the Academic Core that provide for related research and commercial uses.</li> </ul>	There can be a blending of academic and broad commercial uses fostering partnerships between the University and relevant industry.
6. Maximise efficiency of the future academic environment	<ul style="list-style-type: none"> <li>• Identify and reinforce the Academic Core ensuring the key academic and support facilities are within a 400m radius of the Student Service Node/ Central Core, allowing a 10 minute walk from one extremity of the Academic Core to the other (800m).</li> <li>• Promote key academic segments, clustering around an easily recognisable and distinctive Node, which will act as the focus and entry to the segment. Interstitial spaces will retain flexibility to allow academic progress and evolution.</li> <li>• Allow flexibility in space planning to ensure University adaptation enables current and future marketability.</li> <li>• Student uses to be generally accommodated in the lower levels to allow ease of access to high volume/high turnover facilities and spaces.</li> </ul>	The University was originally planned to allow access between lectures, within a 10 minute walk. This principle will reinforce the University's commitment to the pursuit of flexible skills and unity of knowledge and is to remain where possible. As the floor space of the Campus is increased there will be a need to have a series of nodes each providing a service identity and marketable front to each segment. This will reinforce identity and assist in way-finding. These nodes will not detract from potential interdisciplinary teaching and integrated approach to academic areas. The key to continued attraction for new students is to target areas of progress and innovation. From a maintenance and environmental viewpoint, high volumes of students are best located on lower levels to encourage walk up/down access and reduce demand on lifts.
7. Enhance the Campus environment and amenity	<ul style="list-style-type: none"> <li>• Future development should not lose the existing 'Campus in a park' atmosphere.</li> <li>• Retain the northern quadrant of the University and creek lines as a major landscape setting, encourage use and retain views to open spaces where possible.</li> <li>• Create new public spaces with particular character for each place.</li> <li>• Coverage for buildings in the Academic Core is not to exceed 35%.</li> <li>• Continue to create a place that will attract local, national and international students as well as staff to the campus as a University of choice.</li> <li>• New building sites shall take into account solar access and amenity of surrounding open spaces.</li> <li>• Continue to improve the quality of new building design by reducing reliance on non-renewable energy sources. This can be achieved by allowing appropriate solar access to potential buildings and encouraging appropriate and cost efficient energy saving design principles.</li> </ul>	The existing Campus character is unique and should be preserved where possible. A designated 'open space' area as a contrast to the man-made forms will ensure this vision is maintained. This will enable the character of the Campus to be maintained as a 'green' Campus and retain the 'Campus in the park' image. As the floor space of the Campus expands to accommodate up to 42,000 students, so will the need to provide more integrated usable open spaces. These will be the focus of recreational activity and student interaction and will become the elements, which will help retain the 'green' image of the University.
8. Engage with the community	<ul style="list-style-type: none"> <li>• Encourage the interaction and relationships with surrounding uses and the Macquarie Park Corridor.</li> <li>• Identify areas of potential community use and address strategic alliances with the community.</li> </ul>	The planning for the Campus should not be undertaken in isolation. Linkages between the Campus and surrounding uses should be considered to promote open access to the University's scholarship and services. The promotion of community links reinforces the founding concept of 'serving the community'.
9. Promote Ecologically Sustainable Development (ESD) and account for the impacts of Climate Change	<ul style="list-style-type: none"> <li>• Create a sustainable University campus.</li> <li>• Reduce the impacts of any future development on the biophysical environment.</li> <li>• Allow for the Campus to adapt to the impacts of Climate Change.</li> </ul>	The University currently has a cogeneration plan and will be active in promoting the use of the Green Star Education Rating, when it becomes available. The impacts of Climate Change have been accounted for in the preparation of this Concept Plan.  A Flood and Stormwater assessment report has been prepared to address existing flood conditions, flood risk and levels, as well as water reuse opportunities.

### 2.3.1 Vision

This Concept Plan seeks to accommodate academic and related growth within the University Campus, providing the flexibility to respond to a changing external environment including the growth of the Macquarie Park Corridor and the introduction of new rail infrastructure.

Macquarie University prides itself on its green image and parkland environment. It is unique amongst the Sydney university campuses in its landscape quality and maturity, and this point of difference has become a major element in attracting students to the University as their first choice.

Macquarie will now be distinguished from other campuses in Australia, by having the following attributes:

- A railway station at the entrance to its Campus;
- A direct link to the region's major orbital motorway, providing regional access to the University;
- Proximity to one of Australia's leading high technology business parks;
- Established relationships with industry;
- A consolidated Academic Core with surrounding land available for potential expansion;
- Preservation of a parkland setting for the campus;
- A sound public domain framework established at the foundation of the University 40 years ago; and
- Flexibility to meet the future demands that will arise.

In looking to the future, the Concept Plan must build on the successes of the past and on those elements that have come to define the University as a desirable environment for learning, research and interaction.

## 2.4 Consultant Team

An expert project team has been formed to deliver the project and includes:

Proponent	Macquarie University
Project/Development Manager	CRI Australia
Architects/Urban Design	Cox Richardson Architects
Urban Planning	JBA
Market Analysis and Project Feasibility	BIS Shrapnel
Quantity Surveyors/ Cost Planners	Page-Kirkland Group
Geotechnical	Douglas Partners
Infrastructure (Energy, Gas, and Telecommunications)	Wood & Grieve Engineers
Stormwater, Water, Sewer and Roadworks	Taylor Thomson Whitting
Biodiversity	EDAW
Traffic and Transport	Cardno Eppell Olsen
Stakeholder Consultation	CRI Australia
Economic	BIS Shrapnel
Contamination	EDAW
Bicycle Network Planning	GTA Consultants

## 2.5 Director-General Requirements

The DGEARs for the Concept Plan are attached at Appendix C of Volume 2 and are addressed in the Concept Plan as detailed in Table 3 below:

**Table 3** – Director-General’s Requirements

Relevant DGR Requirement	Concept Plan	Specialist Report	Section in Specialist Report
<b>HEADS OF CONSIDERATION</b>			
Suitability of the site	Section 2.1 – Concept Plan Structure Section 7.1 – Strategic Planning and Suitability	-	-
Likely environmental, social and economic impacts	Section 4.9 – Environmental Strategy Section 4.10 – Water Management Strategy Section 7.1 – Strategic Planning and Suitability	Preliminary Ecological Assessment, EDAW	1.3 Statutory Requirements 3.3 Vegetation Significance 4 Fauna
	Section 7.4 – Environmental Aspects Section 7.5 – Social and Economic Benefits and Impacts	Contamination Assessment, EDAW	3 Contamination
		Economic Impact Assessment, BIS Shrapnel	2 Economic Impacts 2.1 Economic Impacts on Surrounding Land-uses
Justification for undertaking the project	Section 2.1 – Concept Plan Structure Section 3 – Evolution of the Campus	-	-
The public interest	Section 7.1 – Strategic Planning and Suitability	-	-
<b>PROPOSAL DESCRIPTION</b>			
Land-use distributions (eg academic, commercial, research etc)	Section 4.2 – Land-Use Strategy	-	-
Student housing	Section 6.2 – Precinct B: University Housing	-	-
Community and recreation facilities	Section 4.4 – Landscape and Open Space Strategy	-	-
Road hierarchy/layout, access, and car parking provision	Section 4.3 – Transport, Access and Parking Strategy Section 4.5 – Pedestrian and Cycleway Strategy Traffic and Transport Assessment at Appendix E.	Traffic and Transport Assessment, Cardno Eppell Olsen	3.2 Road Network 3.5 Parking
Landscaping areas	Section 4.4 – Landscape and Open Space Strategy	-	-
<b>URBAN FORM AND DESIGN</b>			
Urban design response for each precinct	Section 6 – Precinct Guidelines Section 4.6 – Urban Design Strategy	-	-

Relevant DGR Requirement	Concept Plan	Specialist Report	Section in Specialist Report
Precinct development controls including: Density Building heights Footprints Entry points Public domain Private open space Car parking	Section 6 – Precinct Guidelines Section 4.6 – Urban Design Strategy Section 5 – Station South - Indicative Design	Traffic and Transport Assessment, Cardno Eppell Olsen	3.2 Road Network 3.2.3 Access to the University 3.5 Parking
Existing land-use and development structure including: Existing bulk and scale of surrounding development Landmark buildings Density Heights View corridors Connectivity Street address Open space Landscaping network	Section 4.1 – Context Section 4.4 – Landscape and Open Space Strategy Section 4.6 – Urban Design Strategy Section 5 – Station South - Indicative Design	-	-
<b>STAGING</b>			
Maximise development opportunities around the Station	Section 4.11 – Project Staging Section 4.12 – Staging Strategy Section 6.5 – Station South Precinct	-	-
Staging to encourage development that supports rail line	Section 4.11 – Project Staging Section 4.12 – Staging Strategy	-	-

Relevant DGR Requirement	Concept Plan	Specialist Report	Section in Specialist Report
<b>TRANSPORT, TRAFFIC AND ACCESS</b>			
Strategic transport policy matters	Section 4.2 – Land-use Strategy Section 4.3 – Transport, Access and Parking Strategy Section 4.5 – Pedestrian and Cycleway Strategies Section 7.3 – Traffic and Access Traffic and Transport Assessment at Appendix E.	Traffic and Transport Assessment, Cardno Eppell Olsen	2 Strategic Context
Forms of transport – maximising usage of new rail line			3.2 Road Network 3.3 Public Transport System 3.4 Pedestrian and Bicycle Facilities
Distribution and intensity of use in relation to Macquarie University, Macquarie Park and Delhi Road Stations			1.3 Key Access and Traffic Issues 3 Existing Transport Situation 3.3 Public Transport Systems 6 Impact Assessment
Measures to promote public transport use			3 Public Transport System 3.3.1 Existing Bus Services (Proposed changes to the bus network) 3.3.3 Rail
Efficiency of new roads, access, parking			3.2 Road Network 3.5 Parking
Pedestrian and bicycle linkages			3.4 Pedestrian and Bicycle Facilities
<b>ECONOMIC IMPACTS</b>			
Economic impacts on surrounding existing and proposed uses particularly in the Macquarie Park Corridor	Section 7.5 – Social and Economic Benefits and Impacts Economic Impact Assessment at Appendix F of Volume 2.	Economic Impact Assessment, BIS Shrapnel	Executive Summary 2.5 Impact on the Macquarie Park Corridor office precinct
Demand and supply of proposed land-uses in relation to staging	Section 4.11 – Project Staging Section 4.12 – Staging Strategy Economic Impact Assessment at Appendix F of Volume 2	-	-
Carrying capacity of existing facilities and services and their ability to cater for the proposed land-uses	Section 4.7 – Infrastructure Strategy Section 7.5 – Social and Economic Benefits and Impacts Infrastructure Strategy (Electrical, Communications and Gas Services) at Appendix G of Volume 2.	Infrastructure Strategy (Electrical, Communications and Gas Services) at Appendix G	3.2 (Electricity) Proposed Expansion – Increase in Load 4.2 (Communication) Proposed Expansion

Relevant DGR Requirement	Concept Plan	Specialist Report	Section in Specialist Report
<b>PLANNING AGREEMENT AND DEVELOPER CONTRIBUTIONS</b>			
Planning agreement and/or develop contributions between the proponent, Council and other agencies	Section 8.7 - Outline of Contribution Framework	-	-
<b>ENVIRONMENTAL AND ECOLOGICAL IMPACTS</b>			
Contamination	Section 4.1.6 - Contamination and Geotechnical	Contamination Assessment, EDAW	3 Contamination
Geotechnical	Section 4.1.6 - Contamination and Geotechnical	Geotechnical Considerations, Douglas Partners	Geotechnical Issues and Considerations (Page 2)
Drainage and stormwater	Section 4.10 - Water Management Strategy	Infrastructure Masterplan for 2031, TTW Engineers	3.2 Stormwater
Sustainability measures	Section 8.8 - Draft Statement of Commitments	-	-
Construction impacts	Section 8.8 - Draft Statement of Commitments	-	-
Services	Section 4.7 - Infrastructure Strategy	Campus Development and Infrastructure Strategy, WG Engineers	1.2 Electrical Services 1.3 Gas Services 1.4 Communication Services
<b>STATEMENT OF COMMITMENTS</b>			
Draft Statement of Commitments	Section 8.8 - Draft Statement of Commitments	-	-

## 2.6 Consultation

The DGEARs also include a requirement to consult with the following stakeholders in Table 4 below.

**Table 4** – Consultation for Concept Plan

Stakeholder	Details of Consultation
AGENCIES AND OTHER AUTHORITIES	
Road and Traffic Authority	See CRI Consultation Summary at Appendix I of Volume 2
Department of Education and Training	
Department of Planning (Sydney East Region office)	
CoR Council	
RailCorp	
State Transit Authority	
Transport Infrastructure Development Corporation	
Sydney Water	
Energy Australia	
Telstra Corporation Limited	
Public	
Peer Review	



3.0

Evolution of the Concept Plan

The siting of Macquarie University on a large greenfield site followed a world trend at the time. Other Australian examples include La Trobe University (Vic), Flinders University (SA) and Murdoch University (WA). Frequently these universities were located in fine bushland settings but, despite their welcoming ambience, were often difficult to access by public transport.

The philosophy behind the Macquarie University Campus Plan was outlined by Walter V Abraham, the University's first architect-planner, in a paper published in 1966. His paper explained the key principles influencing the form and shape of the Campus. These principles are important as background when considering the future pattern of development given the dramatic, and at the time unforeseen, external impacts on the University.

The key principles of the original Masterplan are briefly summarised below:

#### Compact and Centralised Academic Core

Despite the comparatively large campus, a compact and centralised Academic Core was proposed to respond to limitations imposed on pedestrian time, distance factors by lecture timetables, and the desire to facilitate person to person contact.

#### Landscape Network

The academic area was designed to incorporate built elements surrounding by a network of green areas.

#### Parking

A traffic and parking zone established to restrict penetration by vehicles into the academic area.

#### Development Grid

A 100m grid provided a framework for services and pedestrians (100m corresponded to a one minute walk). The grid also defined a development unit that served as the site of each building.

#### Orientation

The development grid was formed on a north-south axis to ensure maximum natural light and sun control.

#### Sustainability

The Campus was designed to allow for the sustainable development of the Academic Core from its central location expanding outwards along the established development grid. The concept of sustainability was considered by Walter Abraham in relation to sustainability in terms of solar access and accessibility.

Walter Abraham recognised the problem of the isolated site as noted in an article from the Australian Planning Journal of July 1965 which commented that 'Bedford Park (Flinders), Macquarie, La Trobe and Monash all have precisely the same defects, all are inconvenient to get to and add nothing to our urban life ... the new universities are all located according to the same criteria, a pretty site at the cost of reducing accessibility'.

The original model for the Macquarie University/North Ryde employment area was Stanford University in California. This nexus was proposed by the Chairman of the State Planning Authority in the 1960s following a visit to San Francisco. Over 40 years later, both the University and North Ryde (Macquarie Park Corridor) have flourished.

However, the nexus between academia, research and commerce has not yet achieved the same degree as the Stanford model, where these functions and relationships are intertwined. The dramatic changes in the level of accessibility to Macquarie University as a result of the new station could change the perception of remoteness and allow the original visions to come to reality.

## 3.1 Campus Development Plans

Since the University's inception 40 years ago, a number of plans and studies have been prepared to guide the growth of the University. Each document reflects specific agendas, focus and issues of the day.

#### The First Plan – 1964-1983

The first 20 years saw the Campus generally take the shape envisaged by the first Architect- Planner, Walter Abraham. The first phase of campus planning is well documented in the September 1981 Plan from the Architect Planner's Office and is shown in Figures 2 to 6.

Macquarie University was planned from the outset to reflect a specific academic philosophy of a single degree. This gave rise to academic precincts, broadly termed Humanities, Social Sciences and Sciences, rather than the more traditional faculties. The academic precincts were tied together by an academic centre comprising the library, student union and administration.

These arrangements required a compact Academic Core that allowed students to move from one end of the campus to the other in ten minutes, a distance of around 800m. To emphasise this, a major pedestrian spine was planned. This setting provided opportunity for organic expansion controlled around a clear access way and a defined area.

Notwithstanding the large area of the whole Campus and the modification of the one degree philosophy, the original compact Academic Core remains as the key built form concept.

Macquarie was seen as a motor vehicle university, reflecting the view in the 1960s that mass public transport to Macquarie was unlikely. Despite this, the importance of a pedestrian friendly Academic Core was noted, with parking located clear of future expansion areas and forming an arc around the south side of the core.

The main vehicular entry was from Epping/Balaclava Roads, with Herring and Culloden Roads as minor entries. This later changed as the eastern section of Waterloo Road became more important with the build up of the North Ryde industrial area and the opening of Macquarie Shopping Centre in the early 1980s.

The internal road network was designed to access the car parks and allow buses to use Macquarie Drive and University Avenue, south of the Academic Core. The built form developed to include a pedestrian precinct surrounded by car parking access and service roads, reflecting this southern access.

Pedestrian ways and service roads were based on a 100m square grid that also provided a site for each core building.

By orienting the planning grid in a north-south, east-west direction, academic and administration buildings, and movement networks were sited at around 45 degrees to the surrounding road network and the creeks that bisect the Campus. This has given a distinctive geometry to the Campus and influenced the configuration of roads, pedestrian ways and relationships of buildings.

The First Plan established a development pattern for the Campus based on concentric rings with research and University uses located within a central zone and secondary and affiliated uses located in the perimeter zone.

### The Second Plan – 1984-2003

The functional zones were generally in place reflecting the development over the first 20 years when Conybeare Morrison was commissioned to prepare the second plan in 1984. The Academic Core was largely consolidated in the central area; parking occupied the area south of the Campus; the open space – parklands lay north of the Academic Core; student housing and colleges were sited in eastern areas fronting Herring Road; Australian Film Television and Radio School (AFTRS) was located to the west; and the sports fields were developed north of Talavera Road.

The 1984 Draft Development Plan generally reinforced the initial plan with a particular emphasis on the retention of meaningful open spaces within the Academic Core as more buildings were developed in the comparatively restricted area. The plan also:

- Proposed a central point of arrival on Macquarie Drive with an appropriately landscaped axis and forecourt;
- Identified the site for future development on the periphery, reflecting the earlier plan and including the proposed location for the Macquarie Graduate School of Management (MGSM);
- Discussed a continuation of a 1:1 FSR, but anticipating that in the future higher FSRs may need to be employed;
- Highlighted a number of peripheral sites for academic purposes;
- Identified the need for 5,500 car spaces when the student numbers totalled 20,000 and recommended decked car parking over existing surface car parks;
- Recommended completion of an internal road network, particularly linking the Culloden Road entry with the other entrances;
- Recommended improvement and identification of two main entry points : Epping/Balaclava Roads and Herring/ Waterloo Roads;

- Considered two growth options : a dispersed option and a consolidated option – the consolidated option was recommended so as to confine the campus ‘to the southern side of Mars Creek enabling large peripheral sites to be left as a land bank for future university or associated development’; and
- The open space concept sought to reinforce the original landscape structure plan for the University, including the two creek landscape systems.

The 1984 Draft Development Plan included the following key recommendations:

- Consolidation of the existing campus;
- Decked parking to avoid more land take for additional car spaces;
- Allocation of primary sites for academic area expansion;
- Allocation of secondary sites for expansion of associated academic uses;
- Preservation of existing major open space areas and maintaining views; and
- Linking the three entry points with an internal road.

It combined the three basic essentials of movement, open space and development areas. The pedestrian system, road and parking networks were clearly articulated. A clear distinction was also made between sites for expansion of the Academic Core and those for new academic related uses. The 1984 Draft Development Plan introduced new academic sites through infill of the Academic Core and allocated sites for new academic buildings. In doing this it also set aside an area as a clear point of arrival from Macquarie Drive, highlighting the need for an address and open space link back to the main courtyard and the open space beyond.

The 1984 Plan is illustrated in Figures 7 to 10.

Figure 2 – Provisional Development Plan

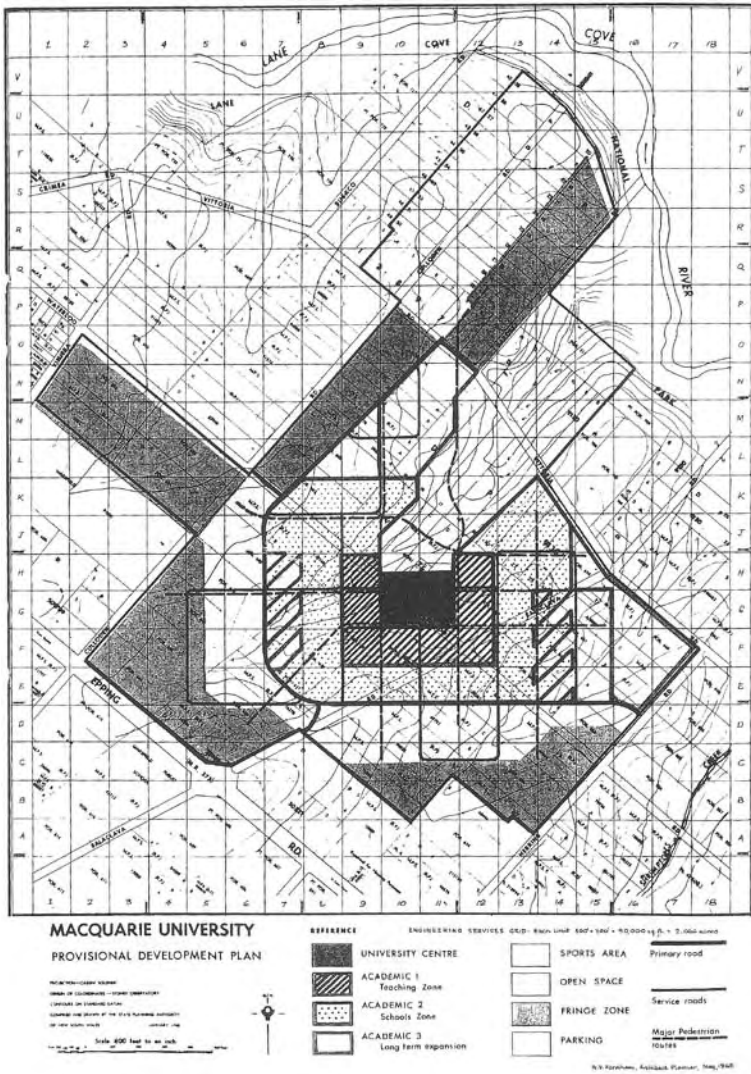


Figure 3 – 1966 Physical Framework for the Academic Core

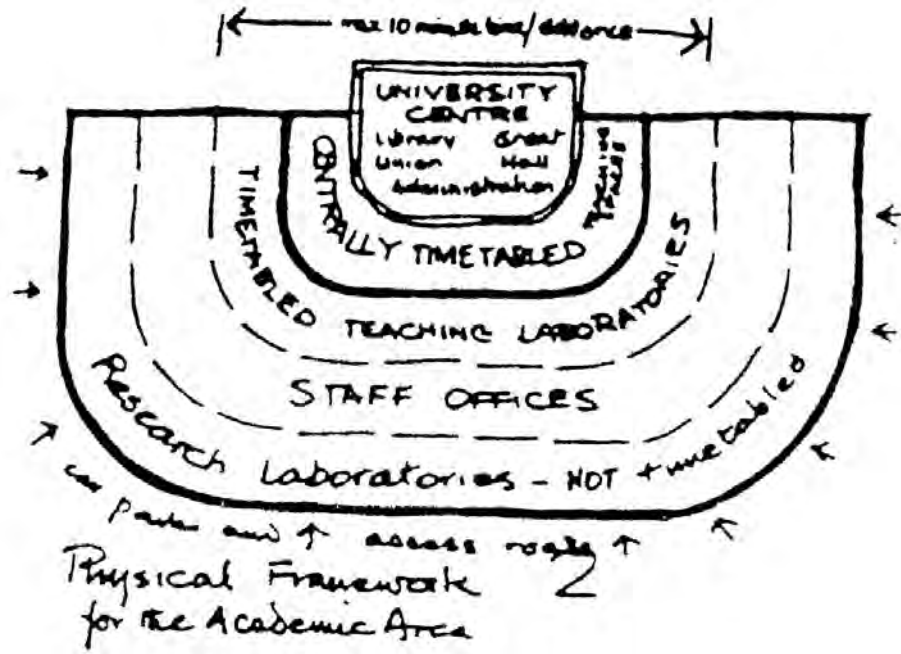


Figure 4 – Site Framework

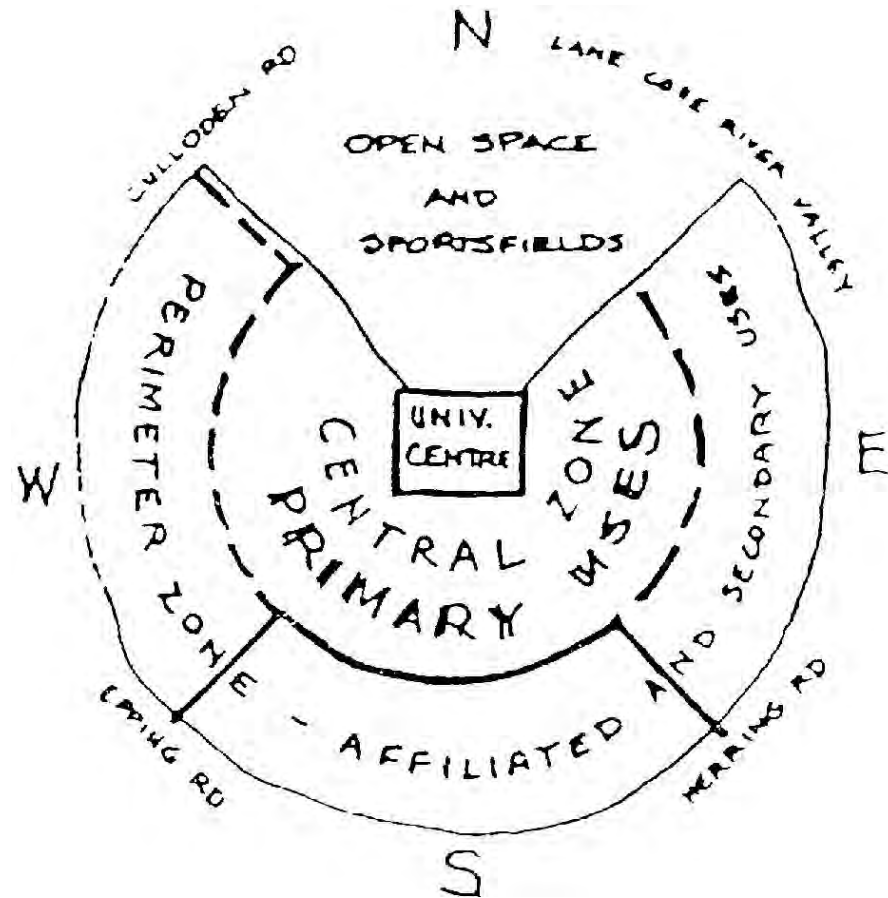


Figure 5 – 1965 Concept Model looking from west

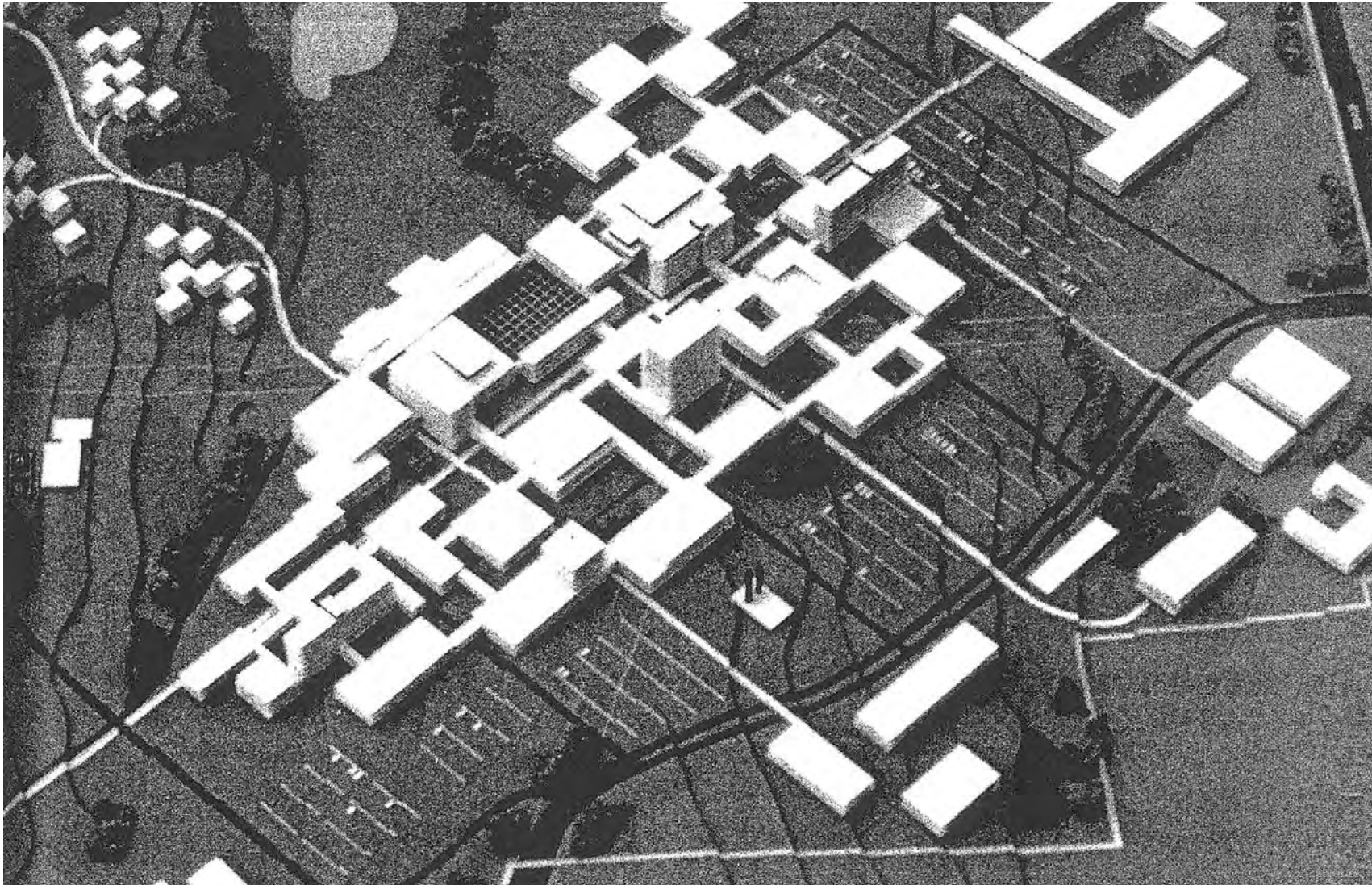


Figure 6 – Macquarie University Plan 1966

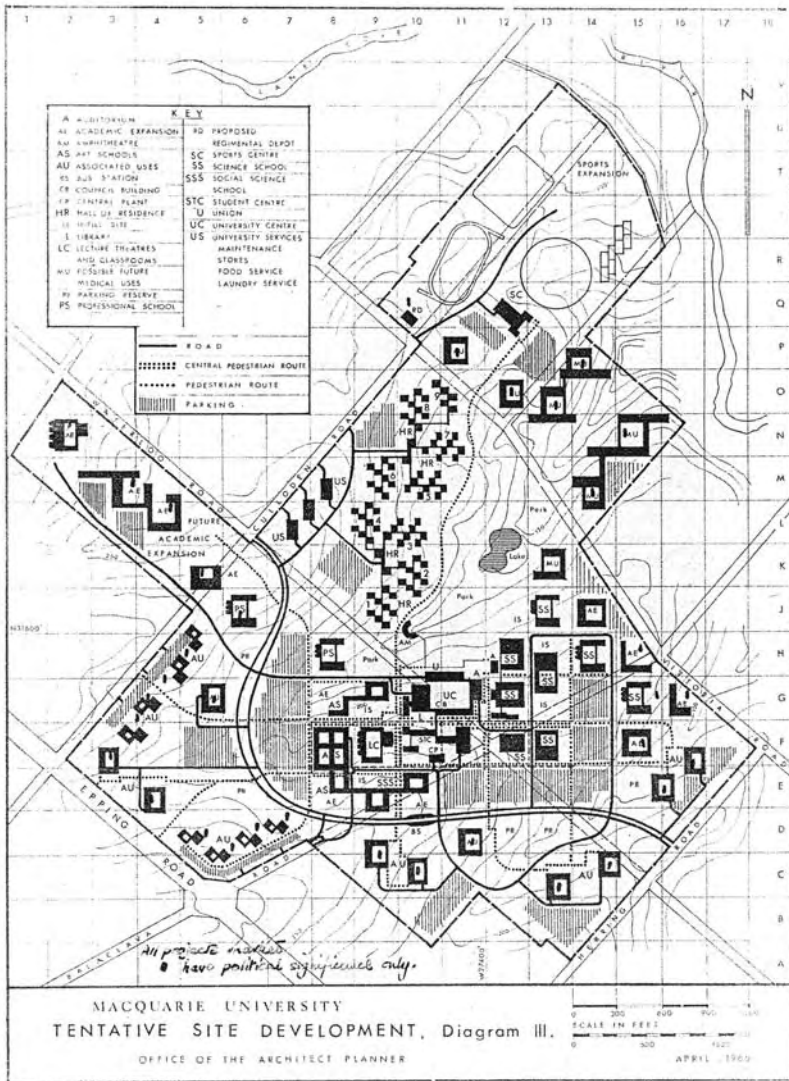


Figure 7 – Macquarie University Strategy Plan 1984

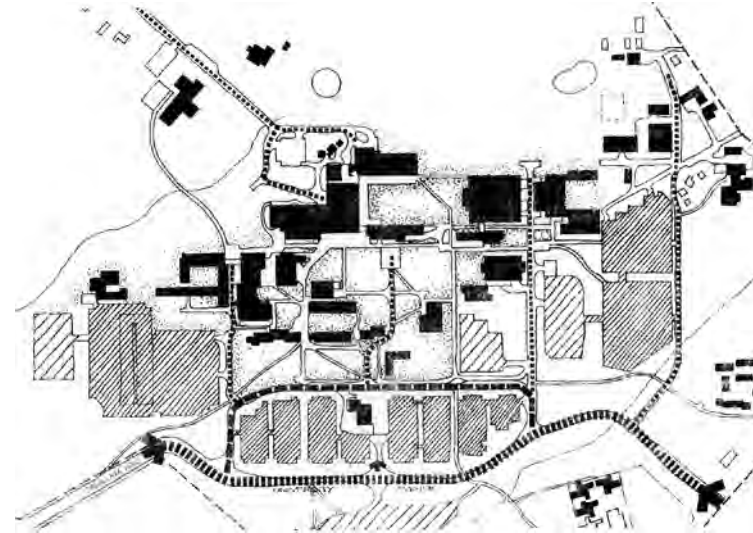


Figure 8 – Structure Plan: Academic Structure 1984

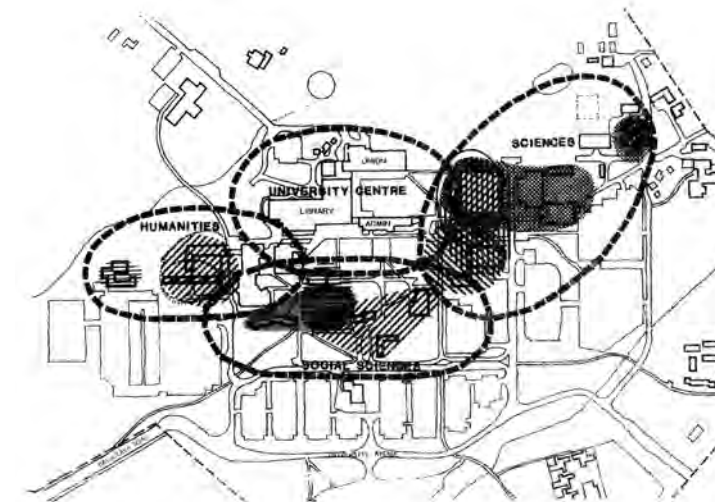


Figure 9 – Structure Plan: Access Structure 1984

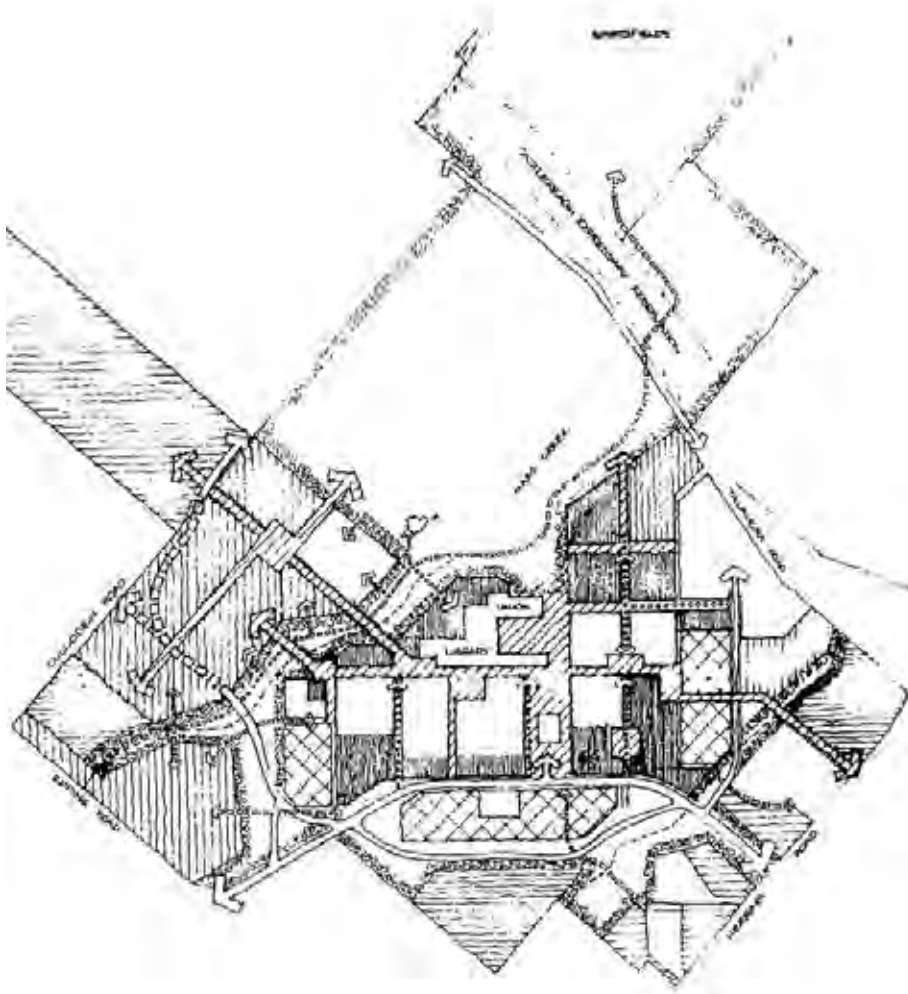
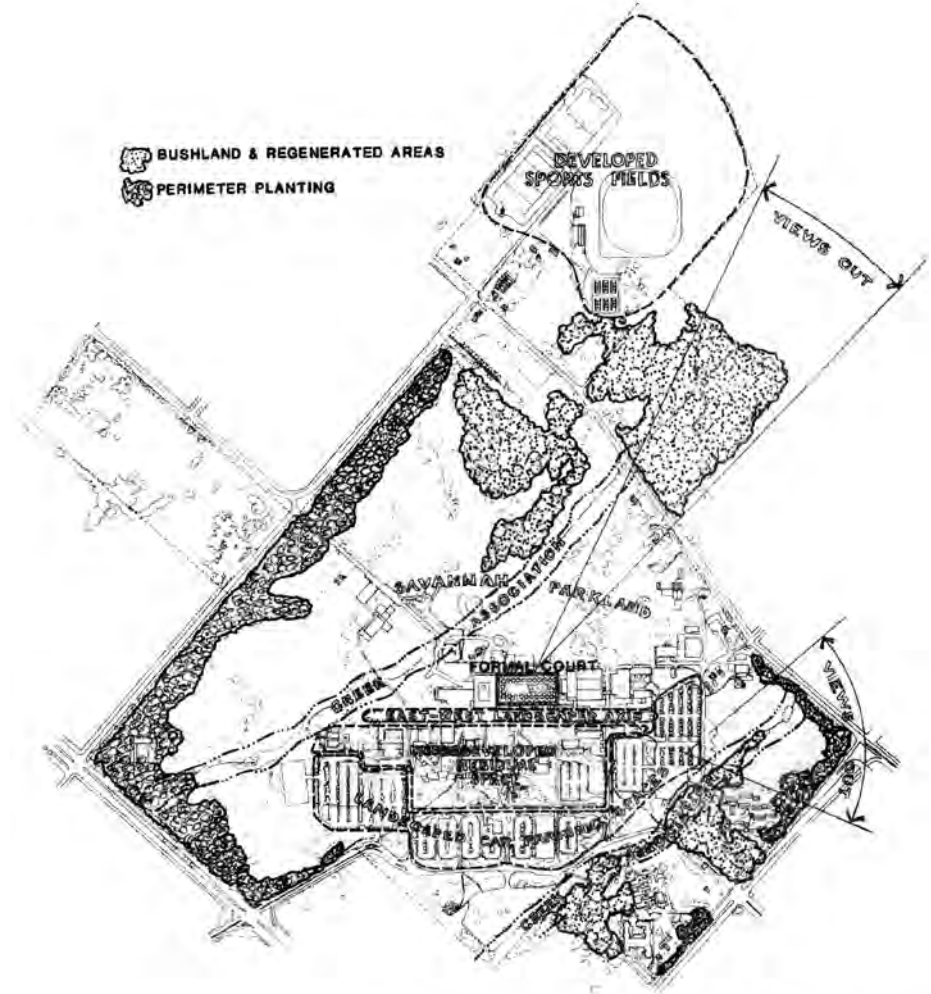


Figure 10 – Structure Plan: Landscape Structure 1984



**MACQUARIE UNIVERSITY DEVELOPMENT PLAN**  
CONYBEARE MORRISON & PARTNERS  
0 100 200 300 400 500m



### The 1997 Campus Development Plan

The 1997 Campus Development Plan was also prepared by Conybeare Morrison. This plan built on previous initiatives whilst recognising key changes that have since taken place and recommended achievable strategies. The main issues included:

- Direct access from the M2 Motorway to the University suggesting a new improved entry at Talavera/Christie Roads;
- The development of the Macquarie University Research Park (MURP);
- Expansion of the Academic Core into areas previously targeted for open space and the location of a major central north-south axis;
- Further development of the MGSM and recognition of the need for improved access to and from the University. This was subsequently proposed as the new north-south axis along Eastern Avenue; and
- Further management of traffic issues including management of through traffic and new parking initiatives to free up key development sites. Except for these items noted above, the 1997 study did not propose any major new public domain initiatives, beyond those included in the 1984 Plan. Instead it dealt with development and planning structure based on the changes that had occurred since the 1984 plan.

### The Campus Development Plan 2004

The most recent review of the Campus Development Plan has specifically responded to the changing context within which the University Campus is located. There have been significant infrastructure and land-use changes within the Macquarie Park Corridor which will have significant impacts on the University.

The key events that have occurred since 1984 affecting the development of the University are:

- The development of MURP;
- The MGSM;
- Student numbers exceeded the original target of 20,000;
- The development of the M2 Motorway;
- Final stages of the Sydney Orbital were either completed or under construction including the:
  - M7
  - Lane Cove Tunnel
  - M5; and
  - Eastern Distributor;
- The development of the Macquarie Park Corridor;
- Start of the Parramatta Rail Link (PRL) and the Macquarie University station; and
- Sydney's population growth from 3.3 million (1984) to 4.2 million (2004).

The 2004 Campus Development Plan provides an appropriate planning tool to guide the future development of the site as it:

- Is based on comprehensive analysis and a clear understanding of the context;
- Was developed in response to, and to compliment the Macquarie Park Corridor Masterplan;
- Involved stakeholder consultation; and\
- Is based on sound planning principles including:
  - Increased densities around the new railway station;
  - Peripheral parking and limited vehicular penetration in the Academic Core;
  - Protection of open space and drainage corridors;
  - Pedestrian linkages with surrounding residential, commercial and retail uses;
  - A strong planning grid and clear road network;
  - Wide variety of uses to ensure a viable and sustainable urban environment; and

- Employs the principles of ecologically sustainable development.

In 2008, after nearly 45 years, Macquarie University will possibly become the most accessible University by rail and motorway anywhere in Australia, while promoting industry linkages and retaining its landscape setting. This reflects a total transition from its creation and it is necessary for planning controls to be designed to ensure the University continues to play an important role in the economy and community.

### Looking Forward – The Development of the Campus to 2031

The progressive aims and planning considerations of the various University's Campus Development Plans are summarised in Table 5.

The original aims of the First and Second Plans and the 1997 CDP have now been achieved:

- A compact Academic Core has been established based on a north-south/east-west grid;
- Decked parking has been established south of Macquarie Drive;
- A comprehensive network of open space area has been created;
- MGSM has been developed.
- MURP has been developed.

Additionally, since the completion of the 2004 CDP, a number of projects on the Campus have been completed or are expected to be developed in the near future. These include:

- Completion of the University's new Aquatic Centre;
- Approval of the Macquarie University Private Hospital;
- Submission of the new Macquarie University Library Project;
- Renovation and maintenance work within the Academic Core; and
- Completion of the new Economic and Commerce Building.

Conceptually, the academic areas of the University and colleges have developed as anticipated by earlier plans. However, the significance of the Herring Road entry, with its added importance brought about by the location of the new railway station was not predicted and now presents opportunities for significant changes to the development and focus of the Campus. The Concept Plan will allow for the sustainable development of the University Campus into 2031, responding to the growth of the Macquarie Park Corridor, the pending opening of the Macquarie University rail station and the introduction of broad commercial land-uses on to the Campus through LEP137. The Concept Plan enables the implementation of the CDP's vision and objectives and provides a response to strategic developments on the Campus that have taken place since the completion of the CDP in 2004.

## 3.2 Benchmarking

A benchmarking study has been carried out to establish the design standards and targets for use in the strategic review and masterplanning process, compared with relevant standards attained by similar institutions in Australia. This benchmarking exercise has informed the floor area requirements for the expansion of the University to determine the level of excess land available for commercial/research land-uses.

It should also be noted that the Campus Development Plan identifies a number of works which should now be amended to fit the 25-year vision for delivery of the Concept Plan, such as relocation of the car parks in Precinct E and the relocation of Colleges along the Herring Road frontage to other parts of the Campus.

Data has been obtained from the University of New South Wales, the University of Sydney, Monash University (Clayton Campus) and La Trobe University (particularly the Bundoora campus).

Comparisons have been made on the basis of:

- Student numbers - both enrolments and Equivalent Full Time Student Units (EFTSU);
- Staff numbers;
- Staff : Student ratios;
- Site area;
- Academic Core area;
- Coverage;
- Gross floor area per student;
- Car parking numbers;
- Number of students per car space; and
- Number of University housing beds provided.

With student numbers compared to Macquarie University's anticipated 2031 levels (a total of 42,000 students), the University of New South Wales (UNSW) has emerged as an appropriate comparison in several aspects of the benchmarking process. Whilst the two campuses do not share the 'parkland setting', the relatively compact nature of UNSW is comparable to the central Academic Core at Macquarie University.

Publications by the Tertiary Education Facilities Management Association (TEFMA) have also been reviewed. Of particular relevance are the Space Planning Guidelines (Edition 2). Macquarie University's current levels of GFA per student fall within the 'low' range of the TEFMA guidelines for total university GFAm<sup>2</sup>/EFTSU – this range covers 8-12m<sup>2</sup>/EFTSU.

The findings of the benchmarking exercise are summarised on the following table, noting TEFMA guidelines, comparable universities, benchmarks established and targets set for the masterplanning exercise.

**Table 5 – Progressive aims of Macquarie University Campus Development Plans**

The First Plan 1964 – 1983	The Second Plan 1984 – 2003	1997 Campus Development Plan	2004 Campus Development Plan
<ul style="list-style-type: none"> <li>• Reflect an academic philosophy of a single degree;</li> <li>• Tie the academic precincts through an academic centre;</li> <li>• Provide a compact Academic Core;</li> <li>• Encourage a pedestrian friendly academic core with parking clear of expansion areas;</li> <li>• Establish pedestrian ways and service roads based on a 100m square grid;</li> <li>• Orientate the planning grid in a north-south/ east-west direction; and</li> <li>• Retain perimeter lands for future affiliated and secondary uses.</li> </ul>	<ul style="list-style-type: none"> <li>• Consolidate the existing campus;</li> <li>• Establish decked parking to create more developable land;</li> <li>• Allocate primary sites for academic area expansion;</li> <li>• Allocate secondary sites for expansion of associated academic uses;</li> <li>• Preserve existing major open space areas and maintaining views; and</li> <li>• Link the three entry points with an internal road.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide direct access from the M2 motorway to the University;</li> <li>• Develop MURP;</li> <li>• Expand the Academic Core into areas previously targeted for open space;</li> <li>• Further develop of the MGSM;</li> <li>• Recognise the need for improved access to the University; and</li> <li>• Manage through traffic and new parking initiatives to free up key development sites.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide for increased densities around the new railway station;</li> <li>• Establish peripheral parking and limited vehicular penetration in the Academic Core;</li> <li>• Establish open space and drainage corridors;</li> <li>• Allow for pedestrian linkages with surrounding residential, commercial and retail uses;</li> <li>• Enable a strong planning grid and clear road network;</li> <li>• Provide for wide variety of uses to ensure a viable and sustainable urban environment; and</li> <li>• Employ the principles of ecologically sustainable development.</li> </ul>

**Table 6 – Benchmarking**

Item	Comparable Universities (2004)						
	Macquarie (current)	TEFMA	UNSW	Sydney	Monash	La Trobe	Benchmark/ Targets to 2031
ENROLLED STUDENTS (NO)	30,000	N/A	41,538	39,915	37,963	22,880 all campuses	42,000
EFTSU (NO.) APPROX. 60% OF TOTAL STUDENTS	18,000	N/A	29,649	32,250	30,689	18,367 all campuses 14,000 Bundoora	25,200
SIZE OF ACADEMIC CORE (M2)	153,000	N/A	-	260,000 approx Darlington/ Camperdown		200,000 approx	214,200
GFA PER STUDENT (M2) (EFTSU)	8.5	8 – 12	-	8.1		14.2 approx	8.5m <sup>2</sup>
CAR PARKING SPACES (NO.)	5,060	3,000	2,500	-		5,500	5060
NO. OF STUDENTS PER CAR SPACE	5.9 enrolled 3.5 EFTSU	3 – 4 EFTSU	12.3 enrolled 9.88 EFTSU	16.9 enrolled 12.9 EFTSU		2.56 EFTSU (Bundoora)	8.3 enrolled 4.9 EFTSU
UNIVERSITY HOUSING NO. OF BEDS	1,551 existing and approved on campus N	N/A	420 UNSW colleges 415 UNSW apartments 659 independent colleges 1,494 Total	1,500 approx		1,750	5,000 (8.4% enrolled)

4.0

Concept Plan

The Concept Plan provides the design controls and guidelines for the future development of the Macquarie University Campus and is supported by an amendment to the Major Projects SEPP. The SEPP amendment outlines the additional land-uses and the maximum gross floor area (GFA) proposed within the proposed commercial precincts on the Campus.

This section of the EAR provides the overall development and land-use strategies for the whole Campus. Specific development parameters and design guidelines are provided for each Precinct in Section 6.

This Concept Plan seeks approval for the following over a 25 year period:

- The provision of 400,000m<sup>2</sup> of broad commercial GFA and associated car parking outside of the Academic Core;
- The provision of an additional 61,200m<sup>2</sup> of academic floor area within the Academic Core;
- The provision of an additional 3,450 beds within the University Housing precincts for University purposes only (taking the total number of bedspaces to 5,000);
- Infrastructure upgrading and improvements to the road network as required; and
- Rationalisation of University car parking locations.

## 4.1 Context

### 4.1.1 Location and Context

Macquarie University Campus is located 17km to the north-west of the Sydney CBD (Figure 11) at the western end of the Macquarie Park Corridor. The Macquarie Park Corridor is a major employment and research business precinct that is generally bounded by Culloden Road, the M2 Motorway and Epping Road (Figure 12). In July 2008, the Corridor will be serviced by the Epping to Chatswood Railway Line which will enhance the attractiveness of the Corridor as a place to work.

To the north of the main University Campus is the M2 Motorway with the Lane Cove River/ National Park beyond. Areas to the south and west of the Campus and across Epping Road are largely residential. To the west is the suburb of Marsfield. The Macquarie Shopping Centre is located immediately east of the Campus across Herring Road with the majority of the Macquarie Park business corridor further to the south east.

### 4.1.2 Description and Existing Development

The University Campus is illustrated at Figure 13. It is generally bounded by Epping, Herring, Talavera and Culloden Roads. The Campus currently has a student population of approximately 30,000 and covers an area of approximately 126ha. The main components of the Campus are:

- The Academic Core which contains the main University buildings ranging in height from 1 – 8 storeys including the new Commerce Building which received a Bronze Medal in the Green Buildings Awards in 2003;
- MURP which is located in the eastern corner of the Campus fronting Herring Road and Talavera Road. Commercial tenants include Nortel, Siemens and Dow Corning in modern buildings typically eight storeys in height;
- University housing located west of Culloden Road;
- University housing fronting Herring Road; and
- Playing fields and open space located in the northern quadrant of the Campus and north of the M2 Motorway (accessible from Culloden Road).

Other land-uses on Campus include:

- MGSM accessed from Talavera Road;
- A Travelodge Hotel (off Talavera Road);
- The former AFTRS on the Epping Road frontage;
- A service station on the corner of Epping and Culloden Roads;

- A golf driving range on a short lease in the west of the site; and
- A new Aquatic Centre has recently been completed on the Campus.

On 13 May 2007, the Minister of Planning approved a Project Application for the staged construction of a private hospital adjoining MURP. Construction on the hospital has now commenced. A Project Application was also submitted to the Department in October 2007, for a new library building adjoining the proposed new University Common. This Project Application is currently under consideration.

As illustrated at Figure 13, the University has yet to fully develop all usable areas of the site.

### 4.1.3 Landform

The Campus has an undulating landform with a central east-west ridgeline falling to natural creeks to the north (Mars Creek) and south (University Creek). The landform varies from Australian Height Datum (AHD) 85 to the west of the site and AHD 25 at the bottom of Mars Creek (Figure 14).

This allows the Mars Creek valley to form a distinctive landscape and open space focus.

### 4.1.4 Bushfire

CoR has identified areas of risk in the bushland north of the site on Culloden Road and on the sports precinct.

The bushfire prone areas identified by CoR do not affect the proposed commercial development areas (Precincts D, E and F in Figure 15). Consideration will be given to addressing bushfire protection issues when developing land within the University Housing precinct which is affected by bushfire risk.

Figure 11 – Metropolitan context



Figure 12 – The Macquarie University Campus within the context of the Macquarie Park Corridor

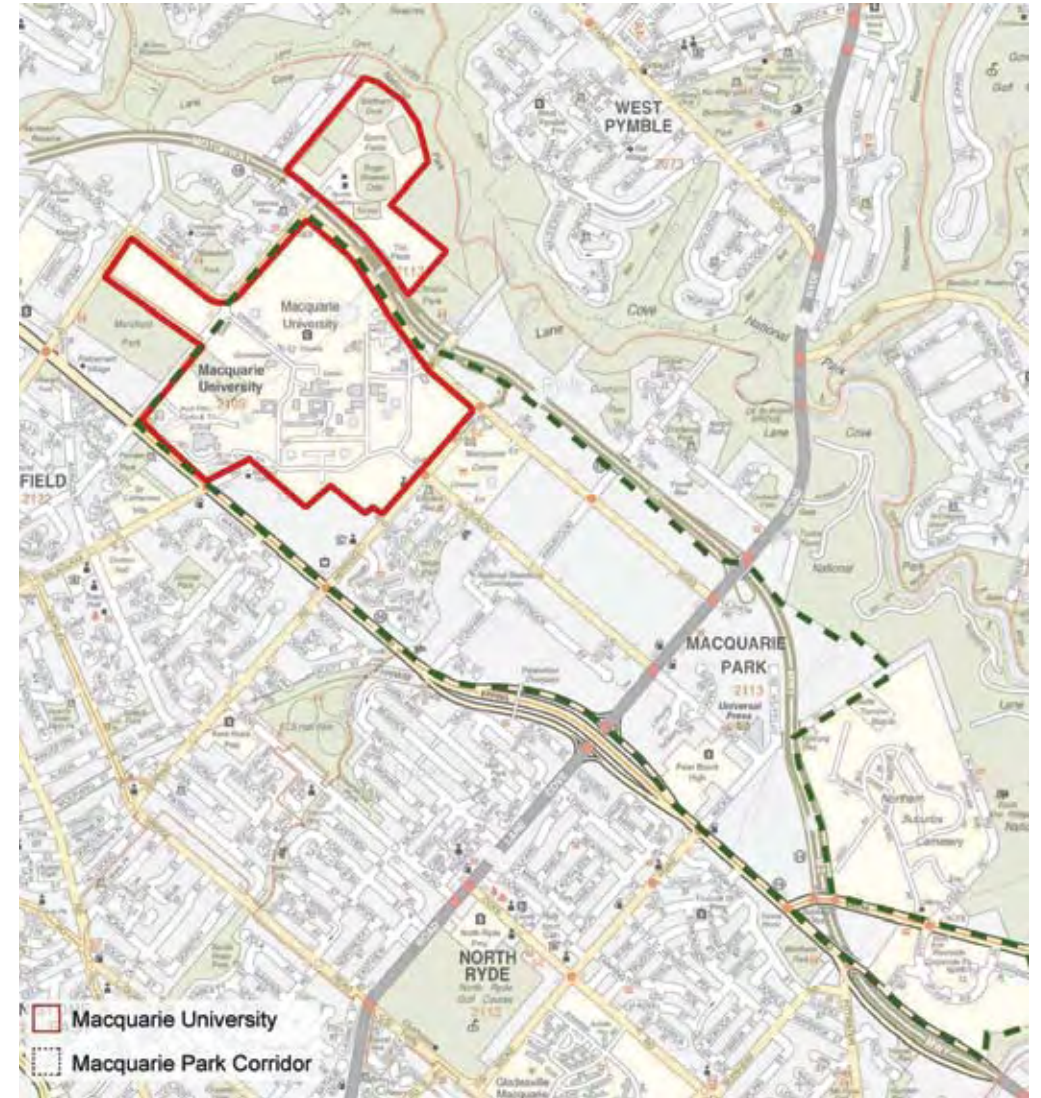


Figure 13 – Aerial photograph of the site



Figure 14 – Topography

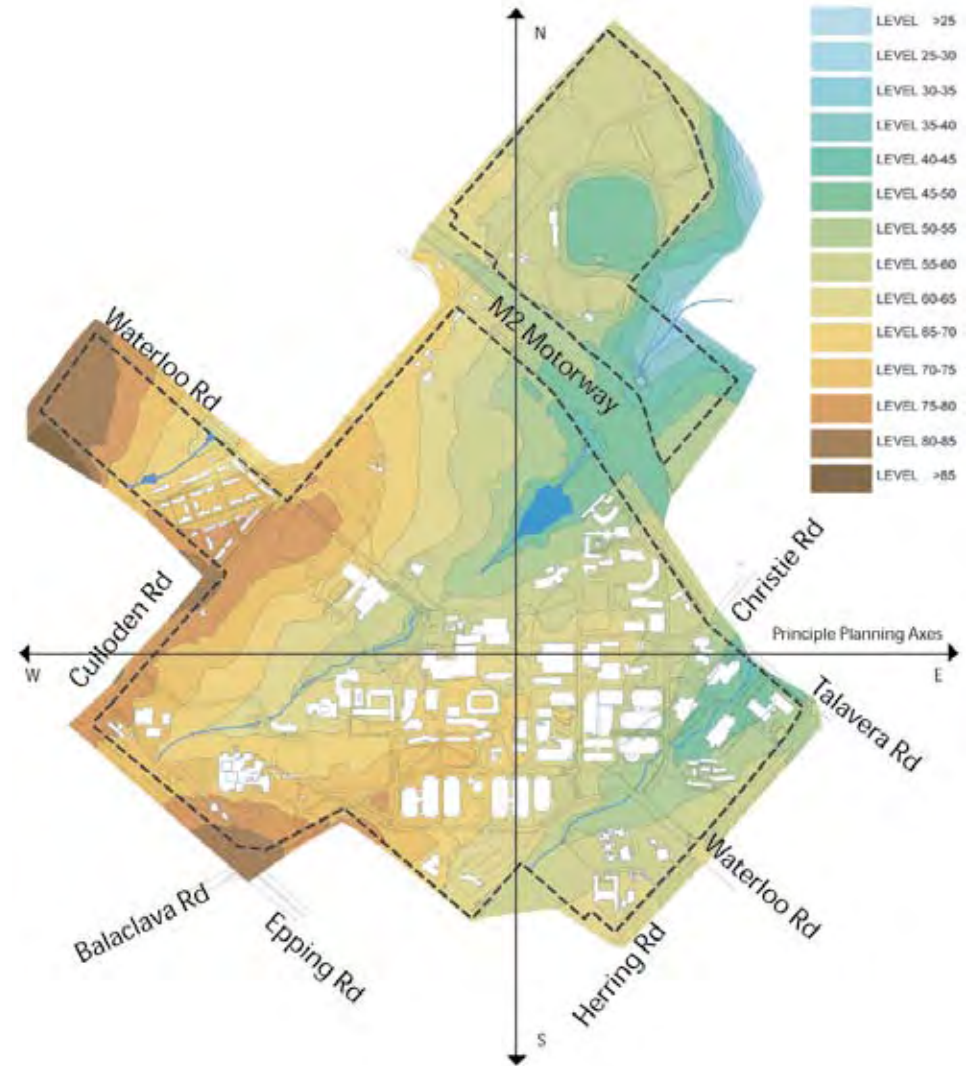


Figure 15 – Bushfire prone land



## 4.1.5 Heritage

### European Heritage

Buildings on the Campus fall into two historic groups – those that pre-date the University (pre-1964) and those that have been built as part of the University’s development. The pre-1964 buildings consist of a number of residual residential buildings in the west of the Campus. These are not considered as being architecturally, socially or historically significant and none appear on Federal and State lists.

The only heritage item identified on the Campus is a local heritage item listed under the RPSO. It comprises the ruins of a stone cottage and is located in the northern portion of the Campus outside of any area proposed for broad commercial development. Preservation of this heritage item is possible.

### Aboriginal Heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) has been conducted which reveals that there are no aboriginal items recorded on the Campus. Figure 16 shows the location of identified Aboriginal heritage items.



#### 4.1.6 Contamination and Geotechnical

Prior to the establishment of the University in 1964, there was a long history of market gardens and orchards on the Campus. A study of available information on the Campus by environmental consultants EDAW indicates that there is unlikely to be ground or water contamination on the Campus. However, the current service station land-use on the corner of Culloden and Epping Roads may create potential contamination of a portion of the Campus. Detailed investigations will be required as part of the assessment process for any future development.

A study of available information on the Campus by EDAW (Appendix J of Volume 2) indicates that there is unlikely to be ground or groundwater contamination on the Campus. A current service station land-use on the corner of Culloden and Epping Roads may create potential contamination of a portion of the Campus. Geotechnical investigations have been undertaken for a number of projects on the Campus. These investigations have not found any significant impact. A geotechnical letter is attached at Appendix L of Volume 2.

#### 4.1.7 Leaseholds and Land Ownership

To accommodate a variety of external uses, a number of leases have been negotiated around the edges of the Campus. The University retains ownership of this land. The details and terms of these leases are detailed in Table 7 and Figure 17.

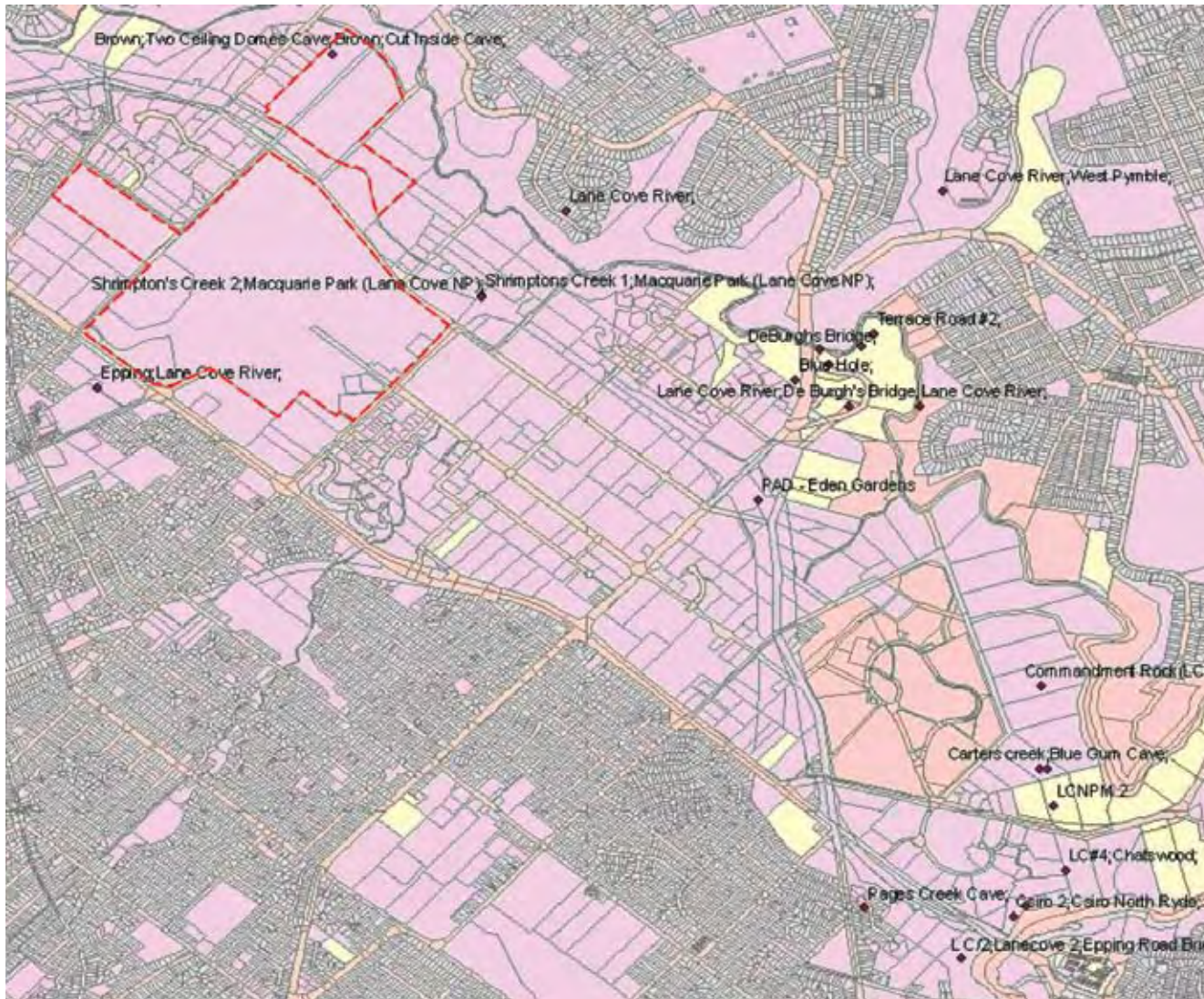
**Table 7** – Macquarie University Leaseholds

Lease	Lot	DP/Plan No	Lease Area (m <sup>2</sup> )	Expiry Date	Option Date
Dunmore Lang College	17	858135	12,020	5 February 2095	Refer Note 2
Shell Company Australia	14	814087	3,459	15 July 2002	15 July 2007
AFTRS	15	814087	34,890	1st April 2029	1 April 2069
CSIRO	Part 20	1015626	Refer Note 1	28 February 2043	Refer Note 2
Travelodge	10	1015627	30 June 2099	Refer Note 2	
Robert Menzies College	7	569359	5,318	30 June 2073	Refer Note 2
Robert Menzies College	8	569359	5,849	30 June 2073	Refer Note 2
MURP					
National Mutual Trustees	11	879843	5,306	26 October 2097	Refer Note 2
Murpx No. 1 and No. 2	Part 10	879843	10,960	27 February 2098	Refer Note 2
Talavera Herring	14	884150	7,237	15 December 2098	Refer Note 2
Perpetual Nominees	15	1002910	7,238	17 August 2099	Refer Note 2

Note 1: CSIRO lease of part of Building EB6

Note 2 : No option period is identified on the Title

Figure 16 – Results of AHIMS search



## 4.2 Land-Use Strategy

Academic uses (shown in yellow in Figure 18) occupy a large portion of the Campus and accommodate University-related uses including administration functions, the library building, lecture rooms and academic offices.

In order to protect the key academic objectives of the Concept Plan, the university proposes strategic planning in order to create a buffer affect. This has been proposed by incorporating non commercial and retail functions in Precinct A. Although, it is important that any imposed buffer does not compromise the key academic objectives of the Concept Plan. Therefore, the University proposes that academic uses such as "Educational Establishments" are a permissible use within all zones of the campus. This will protect the future viability of the academic uses of the University, without imposing any physical buffer.

To the south of Macquarie Drive are the University's primary multi-level car parks. Additional car parking is located along the Core's perimeter including a large at-grade car park in the western portion of the Precinct.

Significant areas of open space are located to the north-west of the Academic Section with the University's playing fields located on the eastern side of the M2 Motorway. University Housing is located to the north-west adjoining Culloden Road and adjoining Herring Road in the south-east.

Commercial uses are located within MURP in the eastern corner of the Campus. This is also the location of the new Macquarie University Private Hospital.

The Concept Plan responds to the proposed growth and increase in student population, as well as the completion of the Epping to Chatswood Rail Line, the associated growth in the Macquarie Park Corridor and demand for the commercial floor area.

Figure 17 – Land ownership and leasehold



The following key elements form part of the land-use strategy for the Campus:

- Creation of a compact Academic Core;
- Location of higher density commercial uses close to the new Campus rail station;
- Location of lower density commercial land-uses fronting Epping Road;
- Development of new green public spaces at the centre of the Academic Core with links to an open space network outside of the Academic Core;
- Realignment of Macquarie Drive at the southern edge of the Campus;
- Further development and identification of the Herring/Waterloo Road gateway in response to the new railway station;
- Restructure of University parking into four peripheral sites around the Academic Core;
- Creation of a new University facade along Macquarie Drive and visible from the east and west entry points;
- Development opportunities for two new commercial precincts;
- Focusing the most intensive land-use close to the railway station at Herring Road; and
- Clustering of University housing and associated facilities in the north-west

## Development Precincts

New development precincts have been identified within those areas of the University's land not required for future expansion of the Academic Core, future student housing, or parkland.

These development precincts comprise the following:

- Precinct E – Station
- Precinct F – Epping Road

Precinct D - MURP has also been earmarked as a potential mixed uses zone, based on existing uses in the precinct, although further development opportunities here are limited.

The Plan envisages that these precincts will have their own identity but will integrate into the pedestrian network of the Campus with a consistent parkland treatment.

The Concept Plan proposes the incorporation of two zonings across the entirety of the Campus:

1. SP2 Infrastructure – University (Precincts - A, B, C, G & H)
2. B4 Mixed Uses (Precincts D, E and F)

Apart from implementing a revised zoning structure under the standard Local Environmental Plan (LEP) template, the following additional land-uses are proposed to be included within Precincts D, E and F within the area currently zoned 5(c) to enable the flexibility to promote co-location opportunities for commercial, business, and research uses beyond uses ancillary to the University's core academic functions as allowed by the Special Uses zone. That is, the following are also proposed permissible land uses, as well as those already permissible with development consent in a B4 Mixed Use zone under the Standard LEP Template.

- Advertisement;
- Food and Drink Premises;
- Health Services Facility;

- Industrial Retail Outlet;
- Kiosk;
- Light Industry;
- Neighbourhood Shop;
- Recreation Facility (Outdoor);
- Research Station;
- Residential Accommodation;
- Restaurant; and
- Serviced Apartments.

The SP2 Infrastructure-University zone has no generic permissible land-uses. Therefore, the following are proposed under the SEPP Amendment.

- Educational Establishment;
- Food and Drink Premises;
- Kiosk;
- Recreational Facility (Indoor);
- Recreational Facility (Outdoor);
- Research Station; and
- Seniors Housing.

The proposed rezonings of Macquarie University's Campus have been proposed on a number of grounds:

- To provide flexibility to respond to key strategic initiatives over a 25-year period, in the Station South Precinct;
- To be consistent with the strategic direction of the Department of Planning Regional North team; and
- Importantly, to allow for the retention and expansion of the Academic Core.

There are a number of operational drivers for research-based commercial development to be located within close proximity to a reputable academic institution. As such this Concept Plan and SEPP Amendment has sought to include key land-uses which would support this vision such as "Health Services Facility" and "Light Industry" whilst also allowing for development flexibility and the "compulsory" land-uses under the Mixed Uses B4 Zone, which allow for this flexibility.

The University will continue to actively seek research based development to be provided onsite, in order to establish links with the core functions of the University.

Establishment of research based development, which demonstrates clear research links with the University will be taken into account and given precedence over a development opportunity which cannot demonstrate links in the event of two opportunities arising on an "as needs basis".

This precedence however, should not come at the expense of delivering the strategic objectives of the proposed B4 Mixed Uses Zone, or the compulsory, permissible land uses. Rather, it is a specifically a University Charter Objective to actively engage with private enterprise in order to develop research and business links.

## Compact and Centralised Academic Core

The consolidation of University functions within the Academic Core will allow the development of a series of discrete precincts around the Campus.

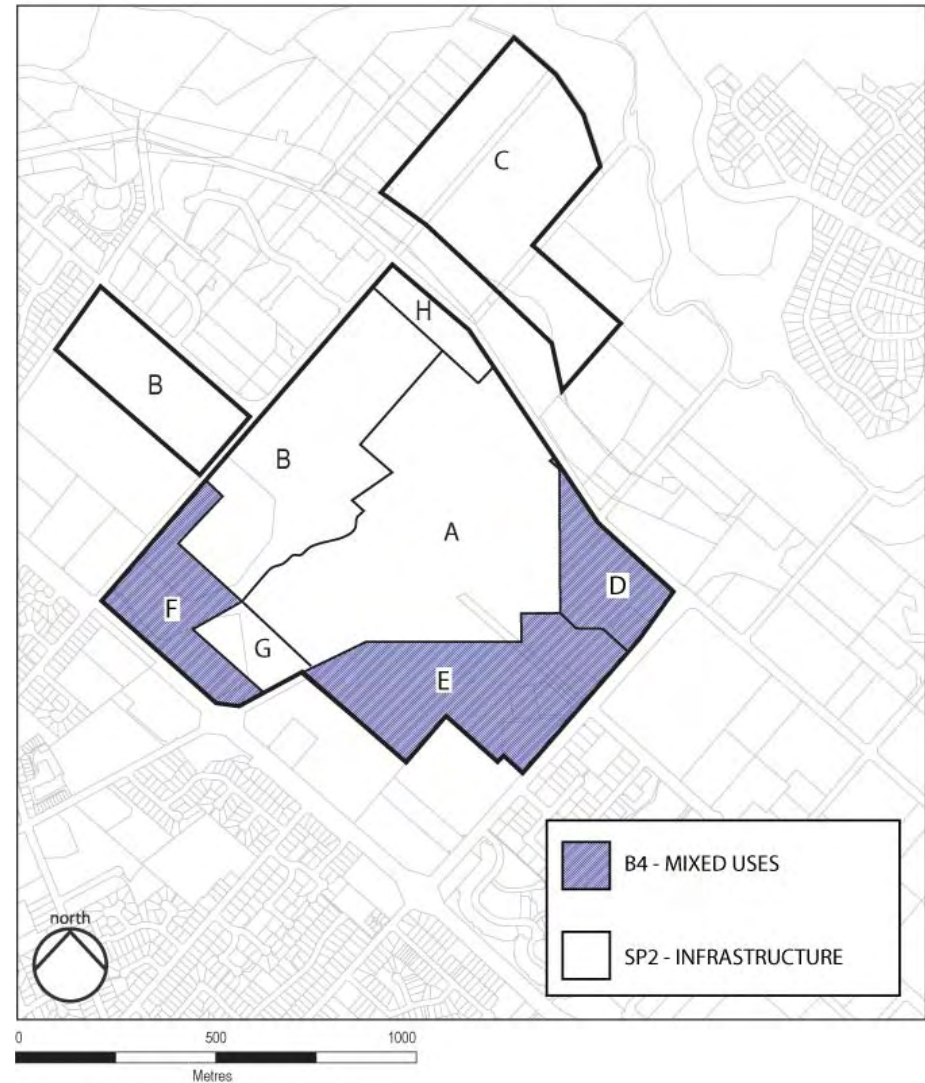
The Concept Plan is predicated on the principle that land-use controls must be flexible enough to allow the University to respond to opportunities as they arise. There is also a need for certainty that the resultant built form is consistent with the University's identity and character.

The proposed land-use zones and land-use strategy is shown in Figure 19.

Figure 18 – Existing Land-use Strategy



Figure 19 – Proposed Land-use Zone



## 4.3 Transport and Access Strategy

### 4.3.1 Road Network

The road network in the vicinity of the Campus is made up of Epping, Herring, Talavera, Culloden and Waterloo Roads (as illustrated in Figure 20). The key characteristics of these roads are detailed in Table 8.

The University currently has a number of connections to the surrounding road network. Access to the main car parking areas and service areas within the University is provided via the main entry points from Herring/Waterloo Roads, and Balaclava/Epping Roads. Access to the University from Talavera Road is provided by a signalised intersection with Christie Road. A separate non-signalised access to MGSM is located adjacent to this intersection. A series of secondary access driveways are located on Talavera and Culloden Roads.

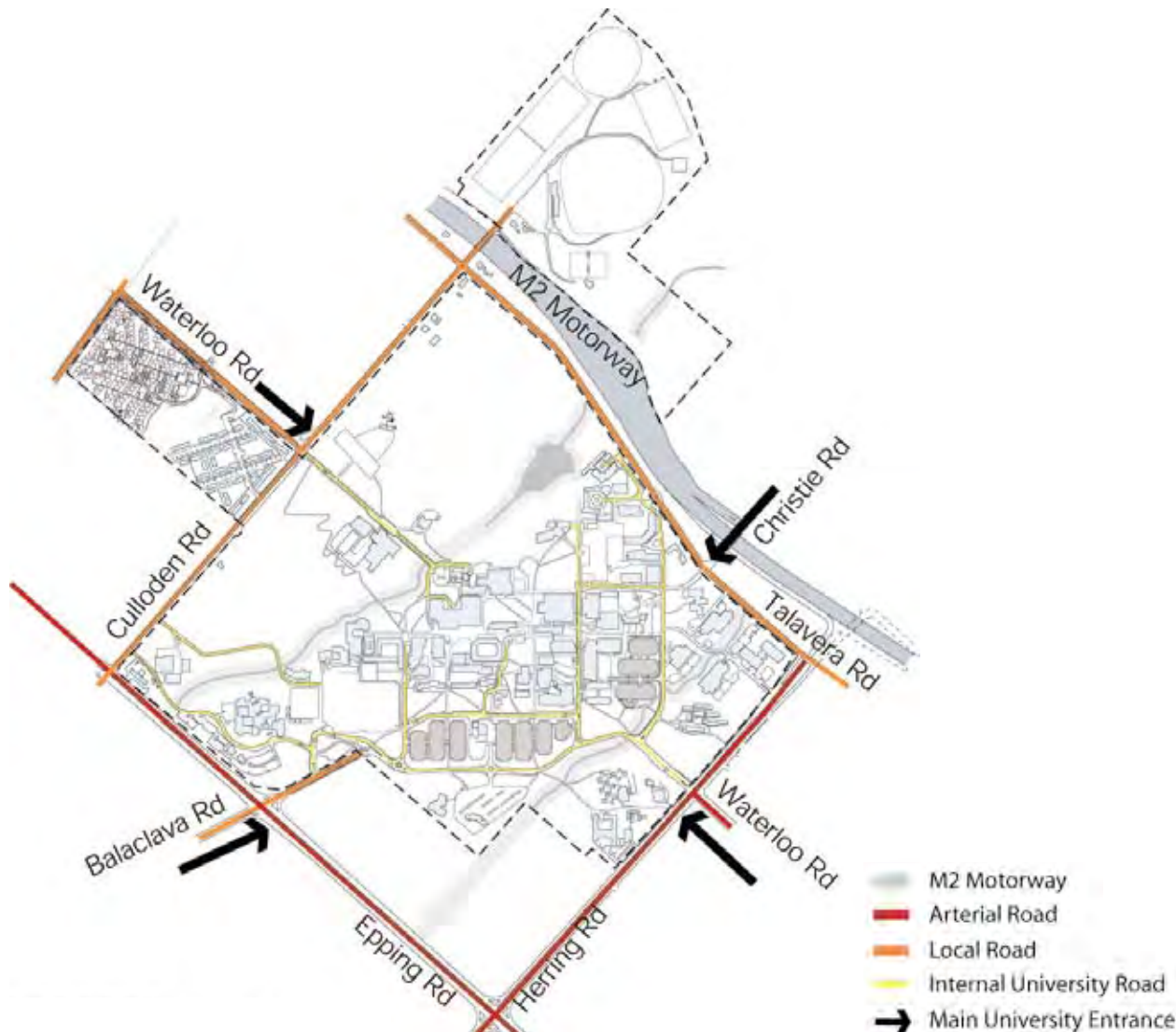
Providing multiple access points to the University and MURP results in minimising vehicular circulation on the surrounding road network and also provides direct routes to car parking and service areas within the main University Campus.

The capacity of the local road network is presented in detail in the revised Traffic and Transport Assessment (TMAP) included at Appendix E of Volume 2.

**Table 8** – Key Characteristic of Surrounding Roads

Road	Type	Characteristics
Epping Road	Arterial road (main east-west route linking Epping and Lane Cove)	<ul style="list-style-type: none"> <li>• Six lane divided carriageway</li> <li>• Access to the University provided via Balaclava Road</li> </ul>
Herring Road	Arterial road (north south route linking Epping and Talavera Roads)	<ul style="list-style-type: none"> <li>• Access to M2 Motorway</li> <li>• Four lane divided carriageway</li> <li>• Access to the University provided via Waterloo Road</li> </ul>
Talavera Road	Local road	<ul style="list-style-type: none"> <li>• Two lane undivided carriageway/parking lanes provided</li> <li>• Access to the University provided via Christie Road</li> </ul>
Culloden Road	Local road	<ul style="list-style-type: none"> <li>• Two lane undivided carriageway (one parking lane in each direction provided)</li> <li>• Access to the University provided via Gymnasium Road-</li> </ul>
Waterloo Road	Arterial Road	<ul style="list-style-type: none"> <li>• Four lane divided carriageway east of the Campus</li> <li>• Provides access to the Macquarie Park Corridor</li> <li>• Two lane undivided carriageway (one parking lane in each direction provided) west of the Campus, adjacent to University Housing</li> <li>• Access to Ryde Road</li> </ul>

Figure 20 – Existing Road Network and Site Access



### Access to External Road System

The Concept Plan offers a number of distinct opportunities in terms of providing direct access to and from the surrounding regional road network. Access arrangements from the surrounding main roads, in particular Epping and Herring Roads, into the University will be maintained and upgraded through additional lanes and improved signalisation.

A new primary access point will be introduced at the intersection of Culloden and Waterloo Roads. An additional secondary access point will also be introduced onto Culloden Road midway between the above intersection and Epping Road.

The intersections on the regional road network including Epping/Balaclava Roads and Herring/Waterloo Roads could be upgraded to improve accessibility to the University, and provide for the future development within the surrounding Macquarie Park Corridor.

With the redevelopment of the surrounding Macquarie Park Corridor and the development of University land, access to and from the M2 Motorway could potentially be enhanced with the provision of new east-facing on and off ramps at Herring Road.

Modelling has been undertaken of intersections surrounding the University using the SIDRA Intersection modelling tool. The intersections assessed as requiring additional upgrades are:

- Epping Road / Balaclava Road;
- Epping Road / Herring Road;
- Waterloo Road / Herring Road;
- Waterloo Road / Culloden Road;
- Talavera Road/ Christie Road; and
- Talavera Road / Herring Road.

It is proposed that these upgrades form the basis of negotiations and arrangements agreed between the University and the Council and RTA, as relevant. Included within these arrangements will be appropriate apportionment and timing for these works.

Whilst these additional upgrades have been recommended, it should be remembered that the underlying transport objective of the Concept Plan is to increase the use of public transport, walking and cycling to/from and within the Macquarie University area.

In that context, and given the substantial investment in Epping-Chatswood Rail Link, it is considered appropriate to minimise the range of road upgrades. This approach is consistent with the demand management focus of current transport planning, and also frees up funds for measures more likely to increase public transport use, cycling and walking. Increased public transport use to and through the site is also to be potentially realised by the planned, but as yet not committed, bus interchange at Herring Road.

Furthermore, the detailed road network improvements in the broader Macquarie Park area have been considered in the MPTS. In some areas there is limited scope for any significant upgrading measures. Key intersections such as M2 / Epping Road and Epping Road / Lane Cove Road are already grade-separated. While a number of other intersections experience congestion during peak periods, it is considered that there is either insufficient space or insufficient justification from a broader policy point of view to warrant further grade separation.

It should also be noted that Transurban has announced M2 upgrades and a proposed Park & Ride scheme for the Herring Road intersection with the M2.

Nonetheless, the existing constraints of the surrounding road network and key intersections mean that to accommodate the additional development on the site, a number of road and intersection improvements will need to be implemented over time and commensurate with the expansion of the University.

#### Internal Circulation

An improved internal road system is proposed within the University, providing better access to the new Academic Core and the surrounding precincts (Figures 21 and 22). The roads will provide access to:

- The four main structured car parks located on the periphery to the Academic Core;
- Basement parking beneath the various commercial developments; and
- Residential parking within the University Housing Precinct.

The internal circulation roads within the proposed Concept Plan have been developed based on guidelines similar to those set out in Australian Model Code for Residential Development (AMCORD). The roads will provide a mix of primary and secondary access roads and shareways. Primary access roads will carry the majority of traffic through the Campus and will perform a variety of important transport functions. In addition to providing the main central collector roads through the Campus, they will allow access to the main University parking areas and provide for bus services through the Campus. These roads will be important pedestrian routes servicing the Academic Core and surrounding precincts. They will be the focus of public and private transport systems through the Campus.

On secondary access roads traffic speeds and volumes would be generally lower and pedestrian and cycle movements encouraged. Vehicle speeds should be controlled by street length, on-street parking, landscape design, built form and activity along the frontage.

Upgraded access roads will be provided between Epping and Herring Roads (via University Avenue and Macquarie Drive). These roads will provide the primary address to many of the commercial developments located within the Station Precinct.

New north-south access routes will link University Avenue and Macquarie Drive and a new access to Herring Road from University Avenue will be provided with a left-turn only onto Herring Road from University Avenue.

In addition to primary and secondary access roads, the Concept Plan incorporates a number of shareways where pedestrian mobility dominates and vehicular access is limited. A speed limit of 10km/hour is considered appropriate. In the design of a shareway, it is important to ensure a change of environment, making it different from other streets. This can be achieved by the use of different coloured and textural paving, use of landscaping and street furniture.

The internal circulation roads are provided in accordance with the following principles:

- Primary access road - three or four lane carriageway, two lanes each way plus one or two bus lanes;
- Secondary access road - two lane carriageway; and
- Shareway - one lane carriageway.

The proposed road network incorporates a logical hierarchy of road functions and slow speed design to prioritise and facilitate pedestrian and cycle activity and enhance amenity. The network of pedestrian and cycle routes permeates through the Campus to the Academic Core and open space areas.



Adequate lighting, markings and easy surveillance of pedestrian and cycle movement areas, particularly along Macquarie Drive, and in the vicinity of the new railway station, will assist safety and user amenity. A more detailed model will be required to be developed to assess the internal University traffic issues. The model should allow progressive assessment of staged works of short, medium and long-term horizons.

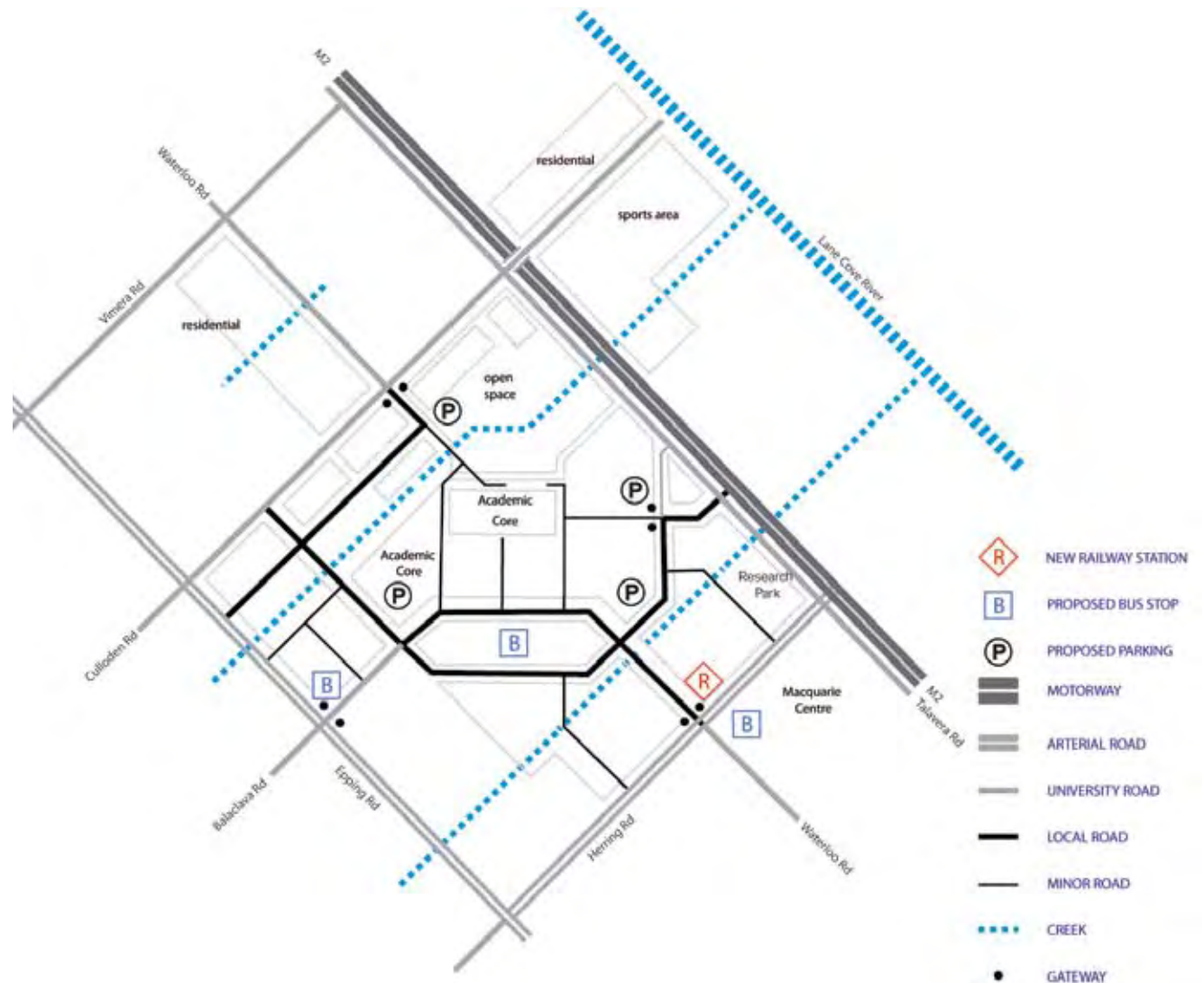
The detailed internal University traffic model will be developed from the MPTS Paramics model. This way a detailed micro-simulation model of the University can be used as an on-going tool to assess impacts of individual developments and staging of concept plan works. It will also inform detailed precinct planning.

The model will be used to assess the impact and determine management strategies for through traffic. It will also be utilised to test various internal road network options during the detailed precinct planning stages of the Concept Plan for the operation of Macquarie Drive and University Avenue such as the potential for:

- Macquarie Drive to become a bus only road with pedestrian and cycle facilities. University Avenue to function as the primary vehicle access route for non-public transport vehicles between Herring Road/Waterloo Road and Epping Road/Balaclava Road; and
- Macquarie Drive to become pedestrian and cycle route only. University Avenue to become a two way road with two bus only lanes.

Macquarie University has undertaken to commit to the development of detailed micro-simulation model of the internal University road network. See revised Statements of Commitment. The timing of this modeling should ideally be undertaken once the Epping-Chatswood rail link commences operating at its intended capacity (ie beyond the 100-day free travel period and once it moves beyond a shuttle service).

Figure 21 – Access Structure



Further this should also be linked to any major redevelopment of the Station South precinct within Precinct E. Clear pedestrian and cycleway links have also been established. These links encourage pedestrian and cycle movements through the University, or to and from the public transport system, thereby discouraging private vehicular movements. See Section 4.5 for additional information.

### 4.3.2 Car Parking

The University has developed historically as a Campus dependent on vehicles with peripheral car parking provided in a crescent of parking structures along the southern perimeter of the Academic Core. Within the University car parking is provided for a total of 5,341 spaces (including 705 spaces in the MURP), in a mix of structured and at-grade car parking areas. The majority of these areas are accessed from the internal service roads linking Balaclava, Herring and Talavera Roads.

#### University Parking

The Concept Plan proposes to consolidate car parking within four parking structures on the periphery of the Academic Core. These structures will be located adjacent to the four primary entry roads to the University, one on each boundary including Epping, Herring, Talavera and Culloden Roads (Figure 21). They are located so as to limit unnecessary vehicle penetration through the Campus, allow access to the surrounding road network and ease of access to the Academic Core.

The four car parking structures for the University will be linked directly to the pedestrian network, providing convenient and safe access to and from the Academic Core. On-grade parking spaces will be provided on the internal road network for visitors to the University. These metered spaces will be available at specific times and will provide short-term parking close to the University and convenient surveillance for students walking to or from the railway station and car parking structures, particularly during the evening period.

Other principles for car parking within the University include:

- Restrict car parking to areas designated for this purpose;
- Locate car parking structures on the periphery of the Academic Core, minimising vehicular penetration into the Core and maximizing pedestrian permeability through the academic core;
- Provide vehicular access between the car parking structures via the primary internal circulation roads;
- A total of 1,000 car parking spaces is to be allocated for University Housing purposes within Precinct B (being the applied rate of 1 space per 5 beds over the proposed total of 5,000 beds); and
- A reduction in the total number of car spaces for Academic purposes from the existing 4,636 to 4,095 (within the Academic Core) so as to promote the 40% mode split towards public transport usage.

#### Parking in Mixed Use Precincts

Parking provision rates in the mixed use precincts have been generally based on CoR Council's current rates under LEP137. These parking provision rates vary with proximity to the railway station and in principle will be lower close to the station and higher to the west of the Campus where the station is beyond a 10 minute walk.

The applicable car parking rate applied is:

- 1 space per 80m<sup>2</sup>

This equates to a total car parking allocation within the commercial / mixed use areas of Precincts E and F of 5,000 spaces, based on the total GFA of 400,000m<sup>2</sup>. It is proposed that variations to the car parking rates could be considered where it can be demonstrated with certainty that upon completion of the full development of Precincts E and F in accordance with the approved Concept Plan, compliance is achieved with the maximum prescribed car parking rate.

Further detail regarding proposed car parking rates is provided in the Precinct Guidelines. The University has indicated that it wishes to largely eliminate on-grade parking. As a result, within the broad commercial precincts, car spaces will be constructed in basement car parks or at podium level.

The total allocation for parking across the Campus is 10,800 spaces distributed as shown in Figure 23 below.

### 4.3.3 Public Transport

The University is well served by a network of bus routes. These routes link the area with surrounding suburbs and commercial centres, as well as major regional centres such as the Sydney CBD, Parramatta and Chatswood. A total of 750 to 800 bus services pass through the University on a typical weekday. The bus routes are focused on the bus station on Herring Road at the Macquarie Shopping Centre. On the basis of this public transport supply as much as 29% of students and 12% of staff utilise buses to get to and from Macquarie University (2008 survey as part of the draft Sustainable Transport Study).

A public transport plan showing routes through the Campus is represented in Figure 24.

Bus services are provided by both the private sector and the government and offer connections to a number of urban centres. Sydney Buses is the dominant operator, with services accessing the University and the Macquarie Shopping Centre.

The University is well connected to the surrounding areas and to a number of railway stations. Peak period frequencies, particularly during University terms, indicate a good level of public transport accessibility, with bus services coordinating with train timetables operating from existing railway stations at Chatswood, Epping, Gordon and Parramatta.

Figure 22 – Internal Circulations



Figure 23 – Car Parking Supply

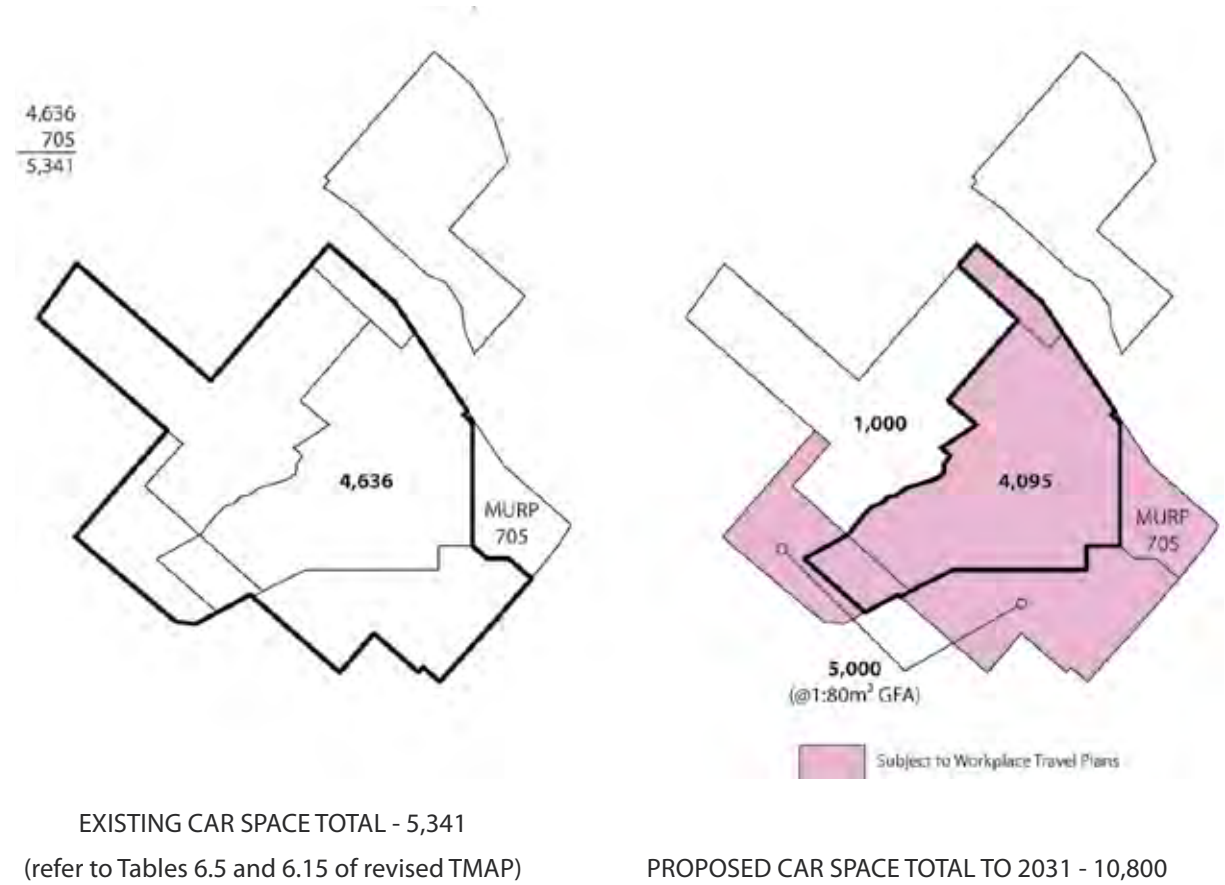


Figure 24 – Public Transport



### Railway Planning and Station Access

The announcement that the North West Rail Link project would be abandoned in favour of the North West Metro and then the subsequent indefinite deferral of the North West Metro resulted in the announcement of an additional 100 new buses for use in north western Sydney. Accordingly, all trips from the North West of Sydney will now be made only by car and bus for the foreseeable future.

The buses could carry between 8,000 and 10,000 commuters over the three-hour morning peak, compared with a maximum of 60,000 by suburban heavy rail, or 90,000 by metro rail.

The bus company that services the north-west, Hillsbus, has already planned for the Government to buy about the same number of buses over three years in response to overwhelming demand for services.

Consultation between Macquarie University, the Ministry of Transport and the RTA with input from RailCorp and other relevant bus service providers, should be undertaken in order to fully realise the Concept Plan and its implications for the public transport network.

The Macquarie University Railway Station opened in February 2009 and is a key component of the sustainable transport network serving the University. Currently, two access/egress points are provided at the station, one on the north-eastern corner and one on the north-western corner of the intersection of Waterloo Road with Herring Road. The station access/egress point on the north-western corner provides access to/from the station for University travelers without having to cross Herring Road at-grade. However, pedestrians heading to or from areas south of Macquarie Drive will need to cross Macquarie Drive at-grade.

An additional entry to the railway station on the south-western corner of this intersection would improve pedestrian access, removing another at-grade crossing. However, construction of the station is complete – so any alterations would incur additional construction costs and potentially impact part or all of the station. This is a matter that is outside of the scope of Macquarie University.

Detailed precinct planning will review pedestrian linkages to the station and consider pedestrian crossing opportunities along University Avenue.

The new rail station will be a key destination in the future of Macquarie University. Therefore providing priority pedestrian routes to the station will be essential to encourage and entice these trips. A more direct route which is a priority route and has active frontages needs to be achieved.

Active frontage and potential for overlooking is essential as there is a significant demand for after business hours access to the University and these trips need to be made safe and secure. This will also improve the attractiveness of the route.

The Integration of the Rail Station Services Building will be subject to future Urban Design associated with the Herring Road and Rail Station Plaza.

#### Bus Services

Despite the opening of the Epping to Chatswood railway line, buses will continue to perform a critical role in the transport network serving Macquarie University. As Macquarie University is one of the largest single trip generators in the region, it is important that buses service the University as well as possible.

The University acknowledges the important role buses play in delivering sustainable transport choices for the campus, now and in the future. The fact that buses travel into the university campus along the internal road network is considered key to delivering an efficient service onto the campus.

The increasing traffic volumes along the internal roads within the campus provides competition for the limited road space. Priority for buses is considered important in delivering an efficient bus service. The University has commenced discussions with the RTA Bus Priority Section to investigate options for providing bus priority treatments including 'bus only' lanes within the campus.

The University is concerned that bus priority should not be at the expense of pedestrian/cyclist safety. Therefore all issues will be analysed and the solution developed appropriately. The importance of bus services will be reflected in the possible development of Macquarie Drive as a bus only road and the provision of a bus interchange within the academic core. Bus priority facilities on roads surrounding the university will improve travel times and reliability, making bus services a more attractive transport option.

#### Travel Demand Management

In an increasingly environmentally conscious society there is the need to assess transport's impact and set aims and objectives to reduce the transport carbon footprint. These targets can be based on personal transport trips and also combined transport from an unlimited number and type of origin and destination. Increasingly common is looking at places of work, home and study and the transport generated by them. The University is very conscious of its potential impact on the environment from transport and is looking at ways to combat and reduce this.

Various types of travel management are covered in the TMAP and should be used in addition to the package of measures discussed elsewhere in the TMAP which aim to encourage more long term sustainable transport for the Campus.

The measures discussed below are known as 'soft' Travel Demand Management measures, and 'Hard' measures include road pricing and tolls amongst others.

This is still a developing field which is very broad and many types of measures suit different establishments. Developments should establish what is best for them and how to go about setting targets, objectives and measures.

Some of the key Australian targets influencing Travel Demand Management are:

- National - 60% total Greenhouse gas emission reduction by 2050; and
- NSW - A return to 2000 greenhouse gas levels by 2025.

The following list of measures has been developed, however, is not exhaustive or prescriptive, and can be adopted through the University Travel Plans and the individual site Work Place Travel Plans.

The rationale behind this is that each individual site should tailor a package of measures to address the needs of its staff, visitors and vehicular activity through a University Travel Plan and/or Parking Management Strategy. Elements such as bicycle parking and storage/changing facilities for staff should be incorporated to developments at the design stages to ensure sufficient locations and space requirements are incorporated.

Often the budgetary requirements, size of the organisation and staff resources required to implement Travel Demand Measures can affect the likelihood of achievement and success of the actions.

An option would be for the University to consider employing a Travel Plan Coordinator to manage the implementation and reduce duplication of efforts. The Coordinator can also assist in providing guidance on the development of individual site Work Place Travel Plans.

Many of the following measures were included in the original TMAP document but are repeated to ensure a comprehensive list is provided.

The relevant measures are:

- Establishment of a Travel Smart Program
- Improved travel information
- Formalised car pooling and car sharing
- Encouragement of travel passes for students and staff
- Appropriate levels of parking pricing
- Intra-University travel
- Options for home-study
- Review of lecture times

## 4.4 Landscape and Open Space Strategy

### 4.4.1 Landscaping

The University is recognised for its exceptional landscape setting, with its academic buildings and colleges set amongst parklands, courtyards and natural creek lines. The existing landscape is a combination of both natural and planned elements. The maturing landscape has been planned and planted over the past 40 years on a site formerly used for market gardens, cut flowers, orchards and hobby farms. The indigenous vegetation reflects the Campus' location at the interface between two geological zones, Sydney Sandstone and Wianamatta Shale.

At least eight discrete bushland environments have been identified on the Campus. These include the following associations:

- Eucalyptus Haemastoma association on the sandstone soils of the ecology reserve;
- Eucalyptus Recemosa/Eucalyptus Globoidea association on the interface between the sandstone and shale soils; and

- The less well-represented Eucalyptus Resinefera/ Syncarpia Glomulifera association on the richer soils and creek areas.

Prominent landscaped car parks occupy the Campus periphery to the east, west and south. Pedestrian walkways, occasionally highlighted by sculptures and avenue planting, form a grid-like pattern throughout the Campus (Figure 25). The Campus can be experienced as a composition of five main landscape zones as follows:

#### Northern Zone

The Northern Zone comprises the landscaped edge of native eucalypts along Culloden Road framing adjacent open slopes and parklands, the woodland of eucalypts incorporating the Animal Research Facility, the golf driving range and Print Shop facilities. Together with the Mars Creek zone, the Northern Zone defines the parkland character of the Campus and provides the unity between the University landscape and the Lane Cove National Park.

#### Mars Creek Zone

The Mars Creek Zone is comprised of a steep-sided valley dissecting the Campus from west to northeast, centred on the rehabilitated creek line and ornamental lake and more open areas near MGSM. It is made up of a number of recently restored and enhanced natural elements including the landscaped creek sides and valley floor, the piped creek zone with its grass amphitheatre, and the artificial lake that opens up to views of the playing fields and Lane Cove National Park beyond.

#### The Academic Zone

The Academic Zone comprises the University's Academic Core, MGSM and AFTRS. The MGSM is edged by landscaped car parks and developments to the south, and the open landscape of Mars Creek and the lake to the west and north.

Because of the planning configuration of the development, the landscape areas within the development are more intimate in character with exotic trees and shrubs defining the entrance and arrival areas and native trees blending with the surrounding eucalypt canopies at the periphery. The Academic Core has the richest variety of landscapes, highlighted by a mixture of exotic and native avenues and courtyards that add to character of the buildings and enhance the urban form of the University.

#### The Southern Zone

The Southern Zone comprises the entrance and driveway from Balaclava Road, the University western car parks, University Creek, the principal vehicle and pedestrian entry from Herring Road, the University Colleges and development lands incorporating the new railway station. The southern entrance presents a focus on University Creek and its leafy surrounds.

#### The Playing Fields Zone

The Playing Fields Zone is located across the M2 Motorway adjacent to the Lane Cove National Park. This zone is accessed from Culloden Road and is generally visually separated from the main campus. The facilities include two ovals, three sporting fields, tennis centre and sports centre. The landscape backdrop of the National Park comprising vegetation representative of Sandstone Forest Ridge Top Association, provides a green fringe around three sides of the zone.

The Concept Plan includes the creation of new open space areas including a landscaped open space surrounding the new Macquarie rail station off Herring Road, a large University Common to the north of Macquarie Drive and an open space area within the Station South Precinct. These open space areas will be linked by view corridors and pedestrian access routes.

Existing parkland to the north of the Campus is to be retained with some perimeter development proposed on Culloden and Gymnasium Roads. This is to be associated with the University housing on Culloden and Gymnasium Roads. Development footprints have been identified while retaining significant existing vegetation in these areas.

Key to the proposal is further enhancement of the University's main gateways from Herring/Waterloo and Epping/Balaclava roads. These entries are predominantly green gateways reinforcing the 'campus in the park' theme and allowing visual connection from the main access points to the Academic Core beyond. They provide a green transition into a more urban Academic Core and will be further emphasised by the adjacent development opportunities and readily identifiable sculptural elements. The primary University gateways are shown in Figure 26.

The overall landscape principles have been identified as:

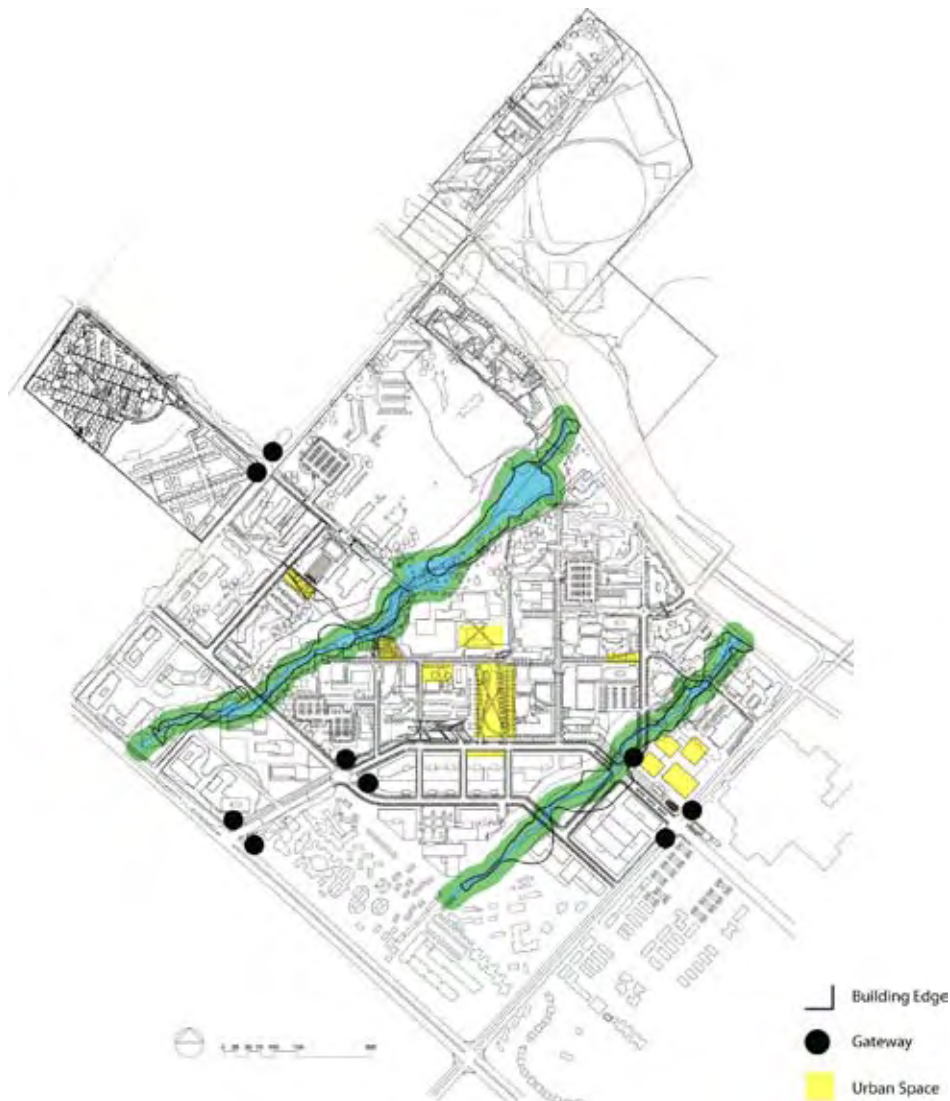
- Reinforce the concept of a 'Campus in a Park' theme;
- Extend the use of native planting punctuated by the use of deciduous on main pedestrian walkways;
- Preserve significant open spaces within the Academic Core;
- Develop strong landscape links between Precincts;
- Develop distinctive landscape themes in each of the new Precincts:
- Reinforce the landscape quality of the two creek systems while increasing accessibility;
- Preserve the integrity of the Mars Creek valley open space in the north of the Campus;
- Develop the new north-south pedestrian spine and new University Common open space;
- Preserve significant views and vistas;
- Terminate vistas on open spaces where possible; and
- Create green gateways to the Campus and to the Academic Core.

The Concept Plan's landscape strategy is shown in Figure 27.

Figure 25 – Key Landscape Corridors



Figure 26 – Campus Gateways



## 4.5 Pedestrian and Cycleway Strategy

### Pedestrian Network

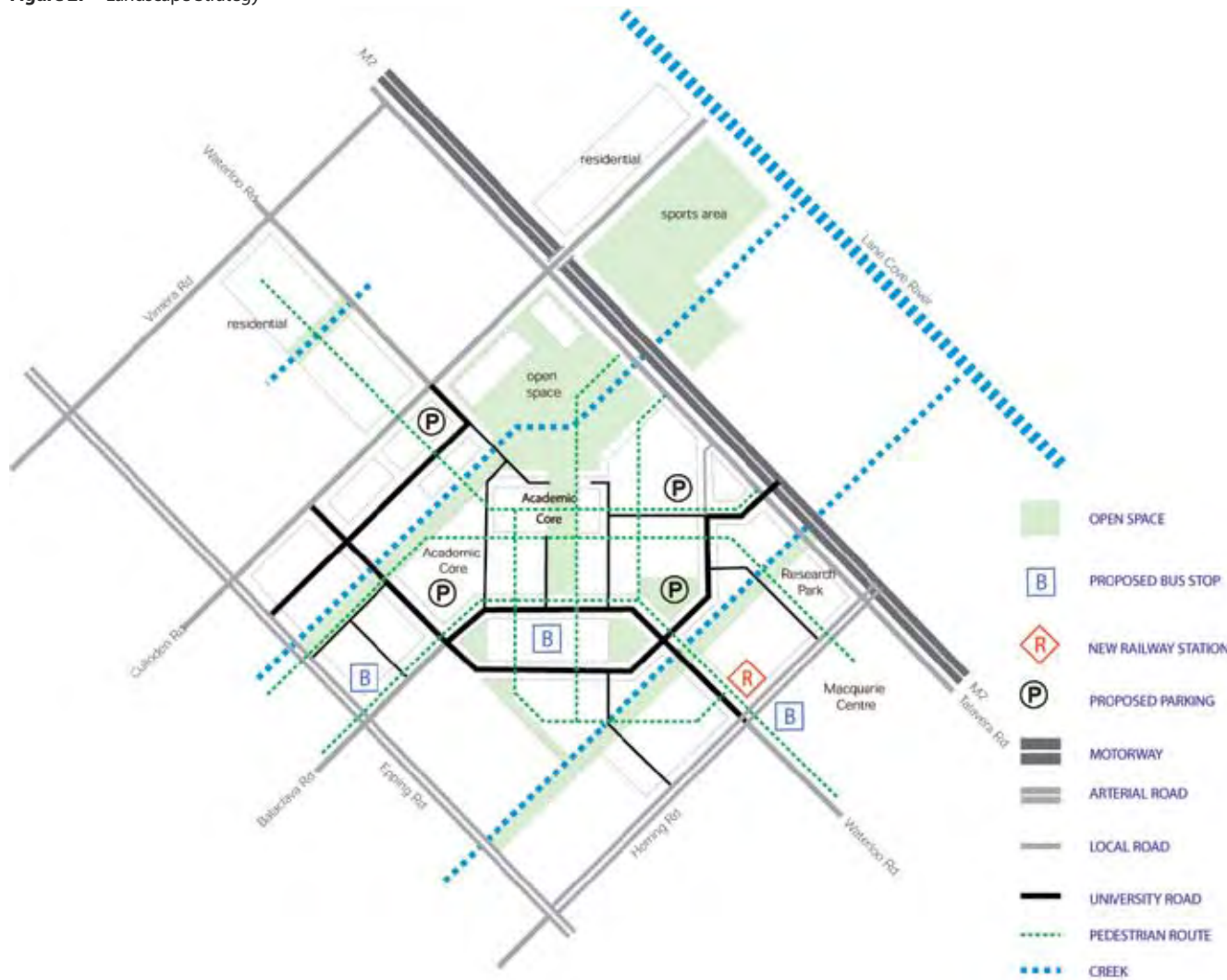
The University's Academic Core was established as a pedestrian precinct, with only limited vehicular access north of Macquarie Drive for service, emergency and special vehicles. The pedestrian and cycle network within the main Campus is currently being developed once complete it will be extensive and provide good access to all facilities. The increase in student numbers highlights the opportunity for a dedicated pedestrian zone and identifiable arrival point into the Academic Core. This point has appropriately been nominated as open space – the University Common. Several main issues anchor the location of such a space:

- The proposed main vehicle circulation on an enhanced Macquarie Drive;
- The proposed location of bus stops to serve the University;
- The nearby location of the new railway station; and
- The location of the Central Courtyard and the existing vista from this space to the parkland environment beyond.

A series of alternating pedestrian and vehicle access ways exist along the north-south axis of the Campus, connecting Macquarie Drive to the central east-west pedestrian spine. At the heart of this network a new proposed central north-south pedestrian spine will incorporate a significant green open space that will link an arrival point with the new University Common and the parkland beyond. New buildings will be oriented to address and activate this pedestrian spine and open space. The new spine has been planned to terminate on the Mars Creek valley to the north and the main Academic Core arrival point to the south. Importantly, this also provides the opportunity for access to the proposed Station precinct. The proposed pedestrian routes and structure plan included in the 2004 Campus Development Plan are provided in Figures 28 and 29.



Figure 27 – Landscape Strategy



### Cycle Network

Macquarie University forms part of an extensive regional bicycle network (Figures 30 and 31). Cycle ways to Macquarie University currently link to Eastwood Station, Denistone East, Chatswood West, West Pymble and South Turramurra. Planned initiatives will provide future connections to Epping Station, Turramurra, and towards the city.

The Macquarie University Bicycle Network Masterplan (2006) aims to provide the University with a short and long term direction for the provision of a comprehensive bicycle network and increase the current levels of cycling by students and staff. This Masterplan is a document which aims to improve the mode split towards non-motorized transport and to ensure the University contribution to the local and regional context.

As the University grows, the number of students living in the surrounding district is likely to grow, with an increase in bicycle activity anticipated. The following initiatives are proposed for bicycle access and parking under the Concept Plan.

- Appropriate points of access into the University have been nominated from the existing and planned cycle routes;
- Access is made via the main entry areas on dedicated cycleways to areas immediately adjacent to the Academic Core. The surrounding precincts are accessible by their proximity to the main access points, or proposed paths to these areas;
- Primary bicycle parking areas will be strategically placed for use as storage and service areas, and located adjacent to the main entry paths and Academic Core. A secondary network of bicycle store areas allowing convenient access and reducing the potential for unplanned bicycle parking locations will supplement these; and
- Strategically located shower, locker and change room facilities will promote the use of bikes for longer distance journeys to and from the campus.

The campus cycleway network is provided in Figure 30. Its integration with the regional cycleway network is illustrated in Figure 31.

The Macquarie University Bike Plan shows the short term and long term bicycle network to be implemented by the University (reproduced as Figure 8.1 and Figure 8.2 of the revised TMAP). The primary bicycle routes encompass the four major entrance points to the campus and jointly provide for movements through the campus and circulation around the academic core. In addition to the primary routes, cycle access will be available on the entirety of the internal road network.

With regard to the Ministry of Transport’s specific request of ensuring a direct ‘line of sight’ connection between the two segments of Waterloo Road (which is not provided due to the location of the academic core) and the desirability of separating pedestrians and through bicycle traffic, it is considered that the primary routes circulating the academic core are an acceptable compromise for through bicycle traffic. Pedestrians will be provided for with a direct pedestrian link through the academic core.

Additionally, Macquarie Drive is included as a primary bicycle route in the Bicycle Network Master Plan and dedicated bicycle facilities will be provided. Pedestrian facilities will be determined as part of the detailed precinct planning and bus interchange planning stages.

**Figure 28 – Pedestrian Route Structure Plan**

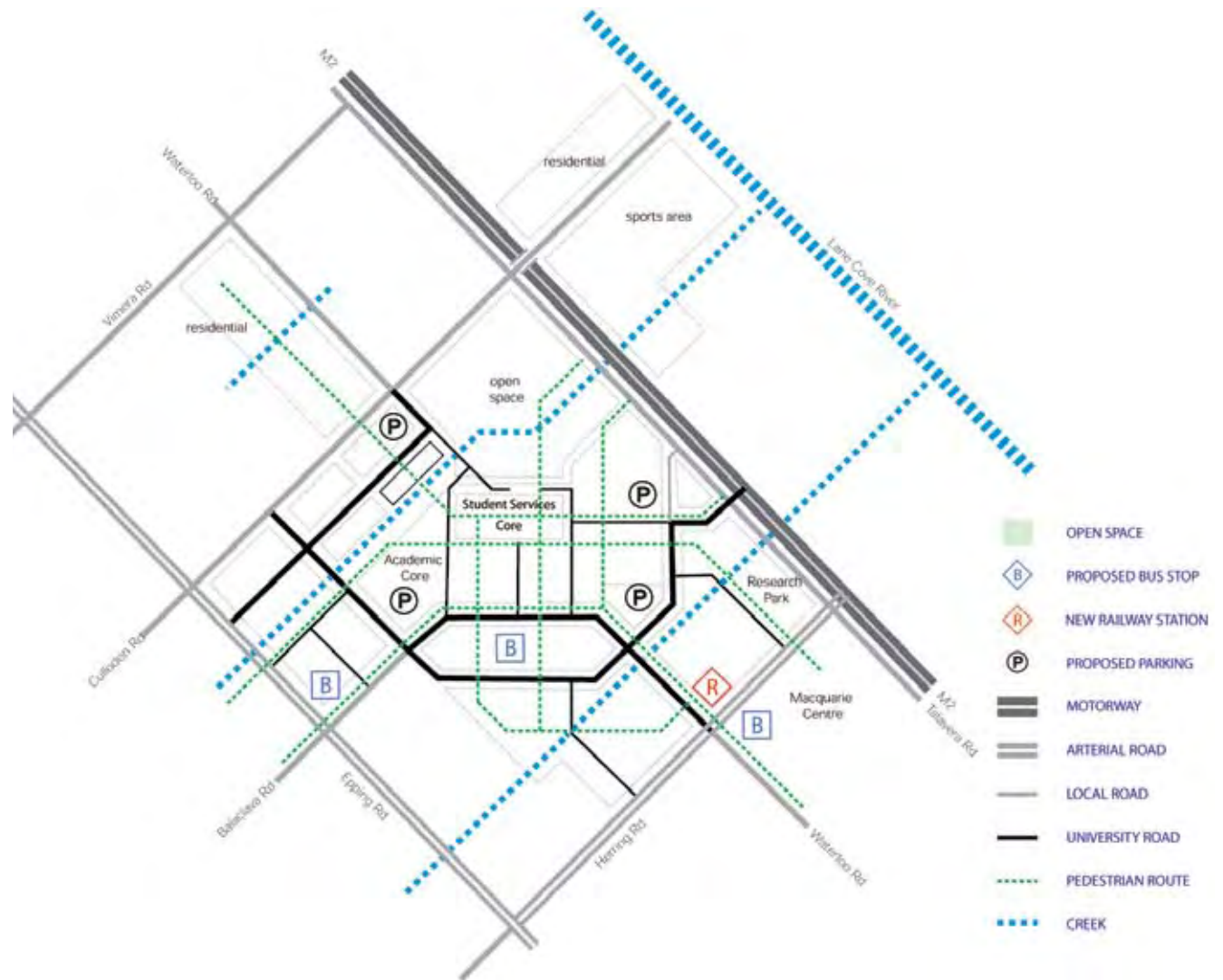


Figure 29 – Pedestrian Routes



Figure 30 – Modes of Transport – Cycleways

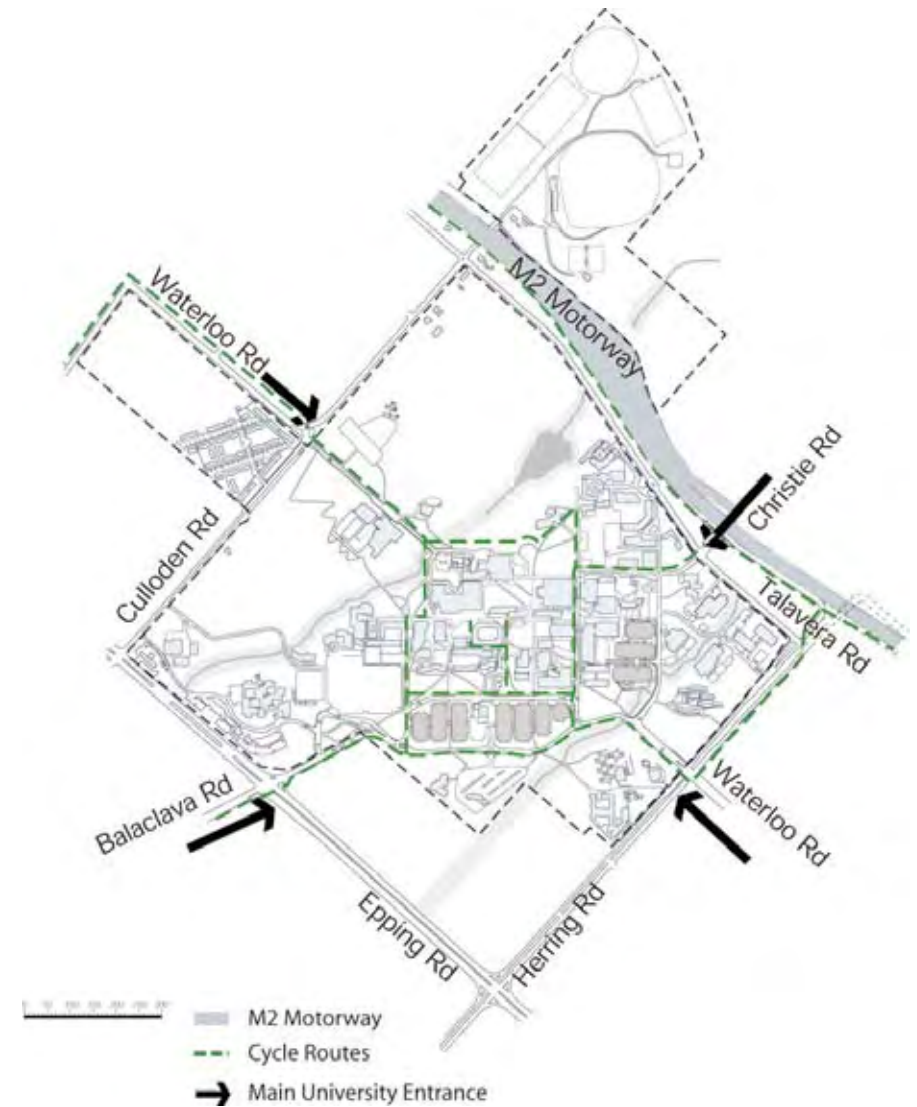
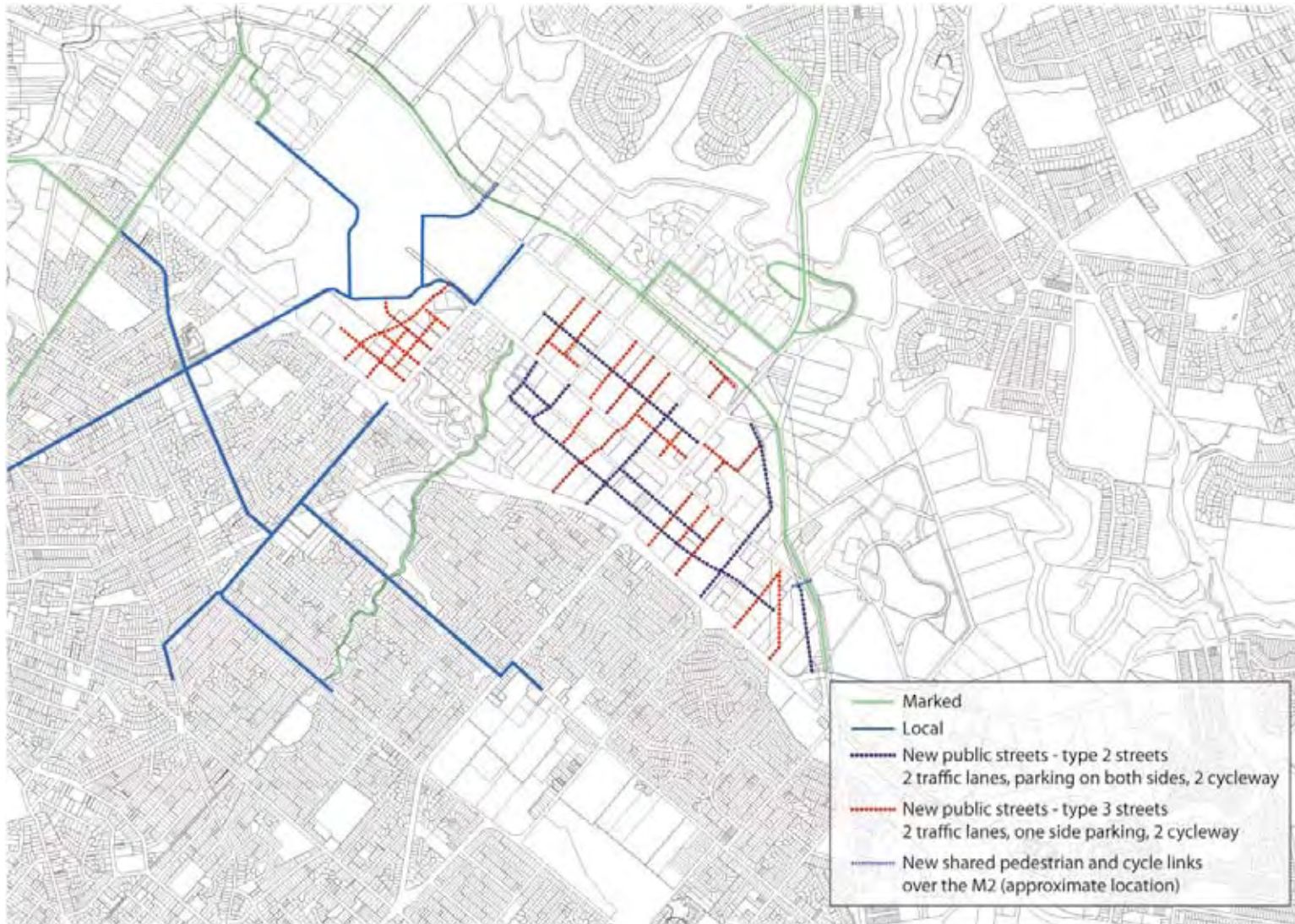


Figure 31 – Regional Cycle Network



The Bicycle Network Master Plan includes Culloden Road north of Waterloo Road as a 'future bicycle road'. Cardno as part of its TMAP recommends that Culloden Road between Waterloo and Epping Roads be included as a 'future bicycle road'.

The University supports the City of Ryde Bicycle Strategy and the University Bicycle Network Master Plan (2006) which is consistent with the Ryde Bicycle Strategy and Masterplan 2007. Internal cycle links will be fully integrated with the Ryde regional cycle strategy. Signage to direct cyclists from local University cycle paths onto strategic routes (as shown in the City of Ryde Proposed bicycle network) will be implemented. The University will consider the use of treatment options consistent with those used in Council's Bicycle Strategy.

#### Bike parking

To promote the use of sustainable transport modes, such as cycling, best practice needs to be followed in the provision of bicycle parking and end of trip facilities.

The Macquarie University Bicycle Network Master Plan (2006) makes recommendations about facilities proposed around the University – serving the academic and educational uses – but does not specify rates for future commercial developments proposed on the campus. For academic and education uses the Macquarie University Bicycle Network Master Plan calculated the proposed volume of bicycle parking required in the long term as per three different scenarios:

- Austroads Guide Part 14: Bicycles;
- Austroads Guide, plus the assumption that students living within 5km would be more likely to cycle; and
- Planning Guidelines for Walking and Cycling (Department of Planning).

The results of the calculations are presented in Table 8.1 of the revised TMAP.

The plan recommended that the volume of bicycle parking in the short term be provided in the range of 400-750 spaces (on average 600 spaces). This represents a significant increase over the existing 65 spaces. In the long term (up to 40 years) it is recommended that cycle parking be provided in the range of 700 - 1650 spaces (on average 1175 spaces).

Cardno has recommended (in its TMAP) that the proposed volume of bicycle parking is too low, and that a target should be established of 10% of the peak volume of students on campus on one day plus 5% of staff. Parking supply of this volume would enable a significant mode share target for sustainable transport to be achieved. The University has committed to investigating the provision of additional bicycle parking spaces as part of the preparation of the University Travel Plan.

The Macquarie University Bicycle Network Master Plan (2006) does not make recommendations on the bicycle parking rates required for future commercial developments on campus. Cardno has recommended that the Plan be amended to include minimum bicycle parking provision requirements.

In developing an appropriate bicycle parking rate for the commercial land uses on campus there are a number of options. Section 6 of the Ryde DCP for the Macquarie Park Corridor (Part 4.5) includes minimum requirements for bicycle parking to be provided in new commercial developments. These are presented in Table 8.2 of the revised TMAP.

The recently approved Cochlear development has included bicycle parking at a rate of 1 space per 133m<sup>2</sup> GFA, or 1 space per 7 employees, which is considerably in excess of the minimum requirements laid down in the Macquarie Park Corridor DCP.

The University will implement minimum parking requirements for future commercial developments, based on the Ryde DCP for the Macquarie Park Corridor and consider the standards in the Cochlear development as a standard as relevant.

In addition, the University will encourage future developments to match the bicycle parking rates included in the Green Star Rating Scheme. Bicycle parking provision will be formalised during the preparation of Workplace Travel Plans for each commercial development.

## 4.6 Urban Design Strategy

### Urban Structure

The key structural organising element of the Campus, from the time of the first plan, has been the 100m north-south orientated square. This grid (Figure 32) has been used to locate the pedestrian, road and services networks as well as provide a site for individual buildings. The orientation was to ensure north facing academic and administrative buildings so as to maximise solar access.

This grid reflected the philosophy of freestanding buildings set in a landscaped setting albeit in a concentrated form. Early plans for peripheral sites indicated buildings in a park setting reflecting a modernist/Corbusian built form philosophy, popular with the architectural profession in the 1960's. Forty years later, urban design philosophy has reverted to premodernism, that of buildings addressing streets. The rationale for this approach is that streets should become more activated, pedestrian friendly and provide passive surveillance. The built form guidelines for the Macquarie Park Corridor Masterplan prepared by the State Government and Council specifically require that buildings address the street.

The Concept Plan continues the philosophy of a tightly-knit Campus. However, the positioning of surrounding non-academic buildings follows the external street pattern. MURP buildings already follow the Herring Road-Talavera Road grid. The relationship of the two grids, which are approximately at 45 degrees to each other, is considered as a positive way of distinguishing the Academic Core from the surrounding non-academic buildings.

This is important so as to retain the identity of the University as a relatively tight cluster of buildings surrounded by non-academic buildings which should still be read as part of the Campus. It is as important from an environmental viewpoint, that academic buildings face north. The non-academic buildings (within Precincts D, E and F) on the street grid will need to be carefully designed to achieve their energy rating. Residential buildings (in the University Housing precinct) can benefit, with careful design, from a north-east/north-west orientation.

The relationship between the north-south/east-west street and pedestrian grid of the Academic Core and the entry point at 45 degrees makes for interesting vistas, quite distinct from an overall orthogonal grid. The opportunity has been taken in this Concept Plan to reconcile and celebrate the interface of the two grids and take full advantage of the urban design.

#### Built Form

Macquarie University's success has been in part, through the quality of its landscape and parkland setting. However, new development will create pressures on this character and must be managed to protect the identity of the Campus. Despite this increase in intensity, the plan aims to maintain the overall character and environment of the Campus.

The principles underpinning the built form strategy are:

- Definition of major spaces by built form;
- Reinforcement of main circulation spines with buildings that overlook the spaces;
- Activation of ground levels on major spaces with retail, cafes or student services;
- Buildings to have a clear address to either a road or a main open space;
- High turnover spaces in the Academic Core on the lower three floors;
- Highest development at the Station;

- Increase the height in the Academic Core up to eight storeys to contain the size and increase the vitality of the core;
- Preservation of solar access to key open spaces;
- Lower buildings located furthest from the Station; and
- Improved security and surveillance.

The biggest changes in scale on the Campus will occur around the new rail station in Herring Road. The Macquarie Park Corridor Masterplan proposes that this precinct can accommodate buildings up to ten or twelve storeys. Further details about the proposed built form are provided in Section 6 – Precinct Guidelines.

#### Architectural Expression

The Concept Plan is based upon an extension of the existing geometric layout, creating clear orientation and efficient formation of streets. The parks, gardens, building layout and pedestrian links play a significant role in generating freedom of movement and a sense of place. Vistas will help students, staff and visitors with orientation as well as create a strong sense of identity in an inspiring landscape environment. Street design will focus on pedestrian amenity, landscape treatment and the control of traffic to reduce vehicular impact.

Within this setting, the challenge is to create a unified built form that will reinforce this image while maintaining opportunities for diversity and variety within each part of the Campus. Just as the environment has played an important role in the public domain, new buildings on Campus will be expected to continue to adopt innovative environmental initiatives that may lead to development of design controls.

Some key considerations for the development of subsequent buildings should include the following:

- Embody environmentally sensitive design principles, for example, maximize natural daylight and ventilation;
- Ensure that building facades are environmentally responsive. Windows with northern, eastern and western aspects are to incorporate shading elements;
- Use colours and materials that are consistent and/or responsive to the design palette of existing materials, colour and finishes;
- Express different characters for the various precincts within a common language of materials and finishes;
- Develop a comprehensive and unified lighting strategy;
- Develop a strong landscape setting; and
- Where possible collaborate with artists to include public artwork, for example, sculpture, image, painting, landscape intervention.

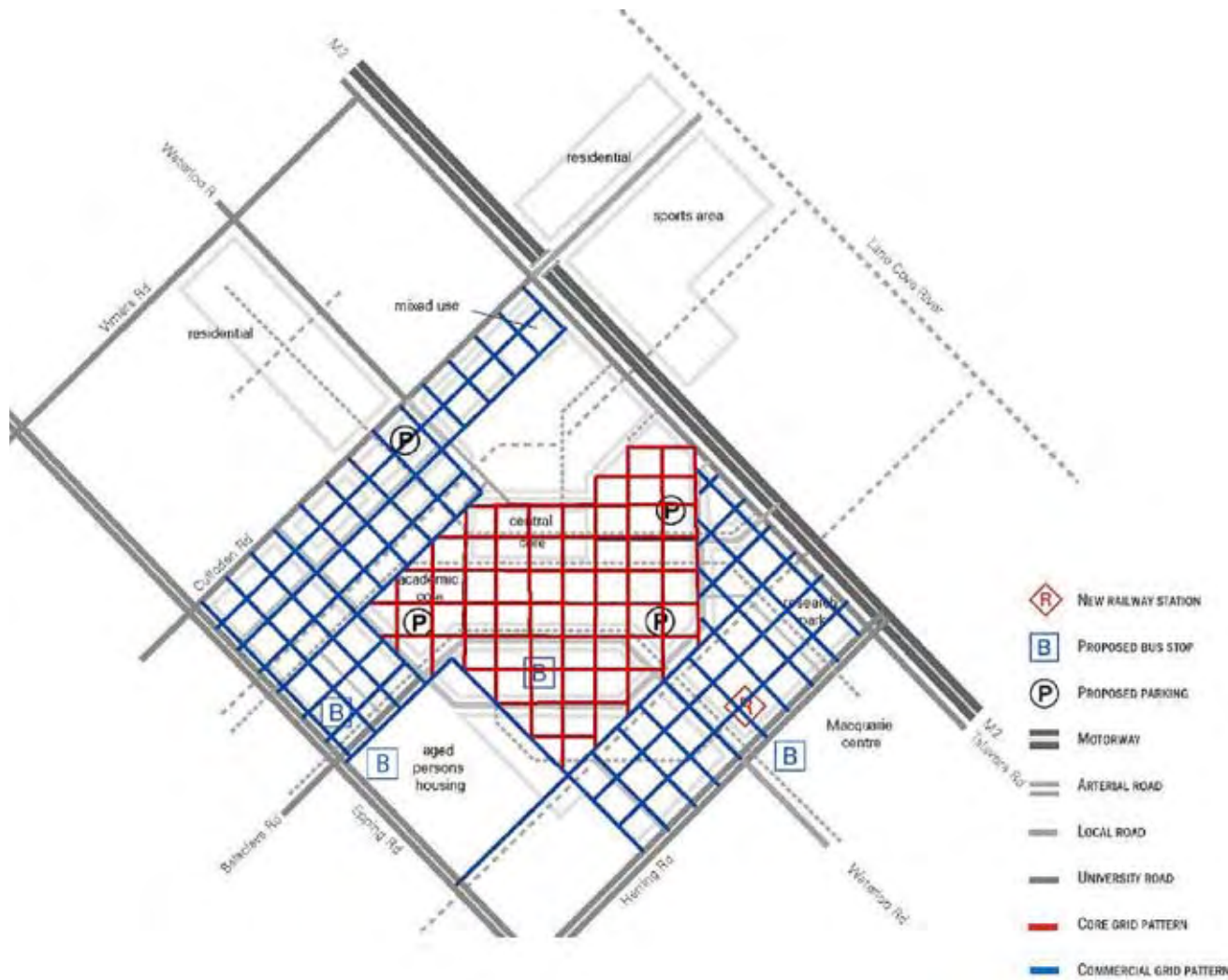
## 4.7 Infrastructure Strategy

Conceptual infrastructure investigations have been carried out by Wood & Grieve Engineers and Taylor Thompson Whitting, indicating the following works over the next 25 years.

The delivery of civil and serviced engineering solutions is likely to be in accordance with the envisaged average annual take up of mixed-use and academic floor space, over the period up to 2031. The University has recently commissioned the development of an Infrastructure Strategy and Masterplan, which is in accordance with Appendices G and H, and their findings.

Additional information, in relation to detailed infrastructure delivery (i.e. timing) is not yet known. Infrastructure delivery is highlighted in greater detail in the respective engineering subconsultant's reports (Appendices G and H)

Figure 32 – Urban Structure



### 4.7.1 Water Supply

Sydney Water Corporation’s (SWC) mains records indicate a number of services surround the University (Figure 33). These include:

- Talavera Road stopping at Mars Creek;
- Crossing the M2 Motorway and Talavera Road and serving the playing fields;
- Both sides of Culloden Road;
- Epping Road, and
- Herring Road.

Notwithstanding the substantial infrastructure in the locality, significant water main augmentation works as well as new water main links external to the Campus will be required to service the full development capacity envisaged under the Concept Plan. The proposed works will involve water main links along Talavera Road, Culloden Road, Waterloo Road, Balaclava Road, Epping Road, and Herring Road. These water main works are outside the University land and are to be constructed in existing road and/or footpaths. This work is subject to a final detailed design and liaison/approval with Sydney Water.

Internal water main infrastructure is proposed to feed individual buildings/development and the proposed works are to be maintained within the road reserve. These new water mains will be located on the footpath of the existing and proposed access roads within the Campus. Relocation of existing water main lines will be required where clashes with proposed works occur. Sydney Water has confirmed that water reticulation serving the Campus is fed from two separate reservoir zones (Mobbs Hill and Marsfield).

As development on the University Campus progresses, a detailed infrastructure needs analysis will be undertaken which will allow for the identification and controlled connection of these two reservoir supplies in consultation with Sydney Water. Further detail is provided in the Infrastructure Masterplan prepared by TTW and attached at Appendix H of Volume 2.

**Table 9** – Key Characteristic of Surrounding Roads

Infrastructure Service	Proposed Infrastructure Supplied to 2034	Timing
Gas System	<ul style="list-style-type: none"> <li>• Gas authority upgrade on Epping Road from Culloden to Balaclava to serve Epping Road Precinct;</li> <li>• New gas lines in Station South Precinct;</li> <li>• Possible future authority extension along Talavera Road in MURP Precinct.</li> </ul>	As required
Electrical Substation	<ul style="list-style-type: none"> <li>• New proposed high-voltage cabling in Station South Precinct;</li> <li>• Proposed Energy Australia zone substation in Station South Precinct and associated feeders.</li> </ul>	Feeders and high voltage cabling will be installed in the initial growth periods as required and substation will be provided for long term growth
Communications	<ul style="list-style-type: none"> <li>• Conduits and pits at various locations throughout the campus to meet the telecommunications requirements of future tenants.</li> </ul>	Delivery of communications infrastructure will be on going and provided in conjunction with the development of the site
Water mains	<ul style="list-style-type: none"> <li>• Proposed water mains throughout all Macquarie University Precincts, specifically between the following:               <ul style="list-style-type: none"> <li>- Epping and Agincourt Roads;</li> <li>- Culloden and Epping (existing);</li> <li>- Epping and Talavera Roads;</li> <li>- Culloden and Herring Roads;</li> <li>- Talavera Road and a future proposed road (furthest proposed building from Talavera Road).</li> </ul> </li> </ul>	These will be developed in line with the development of the precincts and associated development of footpaths and roads.
Sewer mains	<ul style="list-style-type: none"> <li>• Proposed sewer mains throughout all Macquarie University precincts;</li> <li>• Amplification of existing mains at:               <ul style="list-style-type: none"> <li>- Mars Creek;</li> <li>- University Creek.</li> </ul> </li> </ul>	Sewer mains will be provided in line with development of the site. Amplification to be undertaken at the initial stages of development of the site.
Road Works	<ul style="list-style-type: none"> <li>• Proposed road works include additional slip lanes, through lanes, exit lanes and reconfiguration of intersections at the following intersections:               <ul style="list-style-type: none"> <li>- University Avenue / Western Road</li> <li>- University Avenue / Research Park Drive</li> <li>- Waterloo Road / Herring Road</li> <li>- Epping Road / Balaclava Road</li> <li>- Epping Road / Vimiera Road</li> <li>- Vimiera Road / Waterloo Road</li> <li>- Waterloo Road / Culloden Road</li> </ul> </li> <li>• Carriageway works are proposed with the widening of Culloden Road between Epping Road and Waterloo Road, and the widening of Talavera Road between Culloden Road and Christie Road to provide additional lanes.</li> </ul>	The road works will be undertaken as the areas adjoining the roads are developed. Road works will be undertaken over the length of the development in co-ordination with providing underground infrastructure services such as gas, and electricity.



Infrastructure Service	Proposed Infrastructure Supplied to 2034	Timing
Cycle Lanes	<ul style="list-style-type: none"> <li>• On road cycle lanes will be provided on key streets within the University, including:                             <ul style="list-style-type: none"> <li>- University Avenue;</li> <li>- Eastern Road;</li> <li>- Western Road;</li> <li>- Christie Road;</li> <li>- Research Park Drive;</li> <li>- Waterloo Road;</li> <li>- Balaclava Road;</li> <li>- Gymnasium Road</li> </ul> </li> <li>• This will be supported by the provision of end of trip facilities such as showers, lockers and bike parking in various buildings through out the campus to promote the transit orientated design.</li> </ul>	<p>The provision of the cycle lanes will be accommodated as the areas where on road cycle lanes are proposed are developed and footpath and road works are undertaken.</p>
Pedestrian Lanes	<ul style="list-style-type: none"> <li>• Provide wider paths and consistent surface treatment along footpaths as well as providing the following additional pedestrian spines or extensions to existing pedestrian spines:                             <ul style="list-style-type: none"> <li>- Waterloo Road, Macquarie Drive, Balaclava Road</li> <li>- A central spine running past the proposed central common and central courtyard</li> <li>- Extend east-west spine running from the western edge of the campus to the eastern edge to Research Drive.</li> <li>- Provide a major pedestrian spine including improvement to the existing pedestrian access along Gymnasium Road to connect directly into the Central Common</li> </ul> </li> <li>• Improvement works to the following roads to support the pedestrian spines:                             <ul style="list-style-type: none"> <li>- Research Park Drive</li> <li>- Christie Road</li> </ul> </li> </ul>	<p>Footpath and road works will be undertaken as the areas the pedestrian spine traverses are developed.</p>
Public Domain	<ul style="list-style-type: none"> <li>• Main street treatments including median strips and landscaping along University Avenue (as outlined in Section 5 of this Concept Plan for Precincts E and F)</li> </ul>	<p>With the development of Precinct E.</p>

## 4.7.2 Sewer

There are two separate sewer systems crossing the University campus. The lines follow Mars Creek and University Creek. The whole of the University Campus drains to one of the two existing sewer systems.

### Mars Creek Carrier Main

The Mars Creek carrier system has a catchment extending to Balaclava Road to the south-west of Epping Road. The main crosses Epping Road then travels through the University Campus to Talavera Road, and after crossing the Motorway runs into the Lane Cove National Park.

The Balaclava Road Carrier main that runs along University Creek has a catchment extending past Epping Road to the south-west bounded by Balaclava Road, Wilding Street, Cooper Street and Herring Road. Existing sewer services and trunk mains on the Campus are illustrated in Figures 34 and 35 below.

Investigations with Sydney Water have included the following:

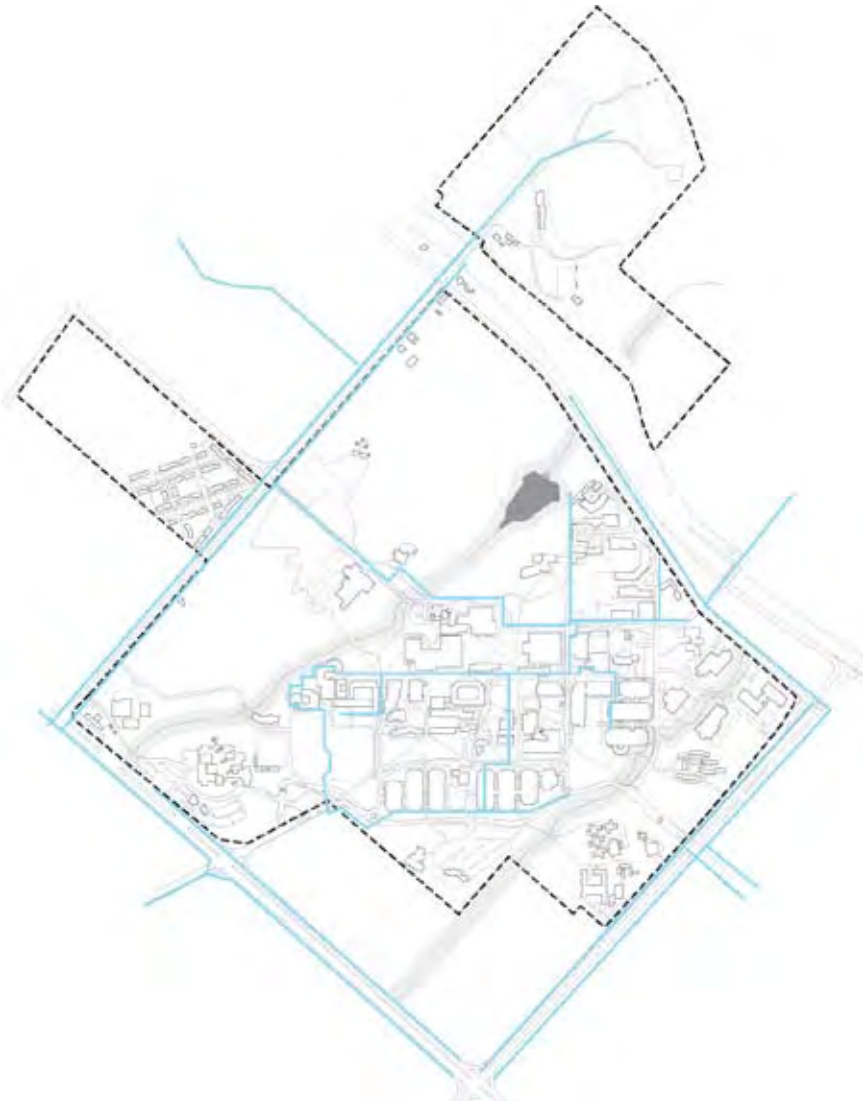
- The amplification of sewer carriers to cater for the University's development requirements. The extent is likely to include works under the M2 Motorway;
- Sydney Water's policy requires provision of individual points of connection to both water and sewer mains for all developments on leasehold portions;
- Sydney Water will require a Section 73 Certificate for each development at which time Developer
- Services contributions can be determined; and
- Sydney Water agrees in principle to the potential for "sewer-mining" of either or both sewer carriers that traverse the Campus provided that Trade Waste Agreements are established. The sewer mining could provide a source of irrigation water for sporting fields and landscaped areas and contribute to the University's sustainability issues.

Figure 35 shows the existing sewer mains of the Campus.

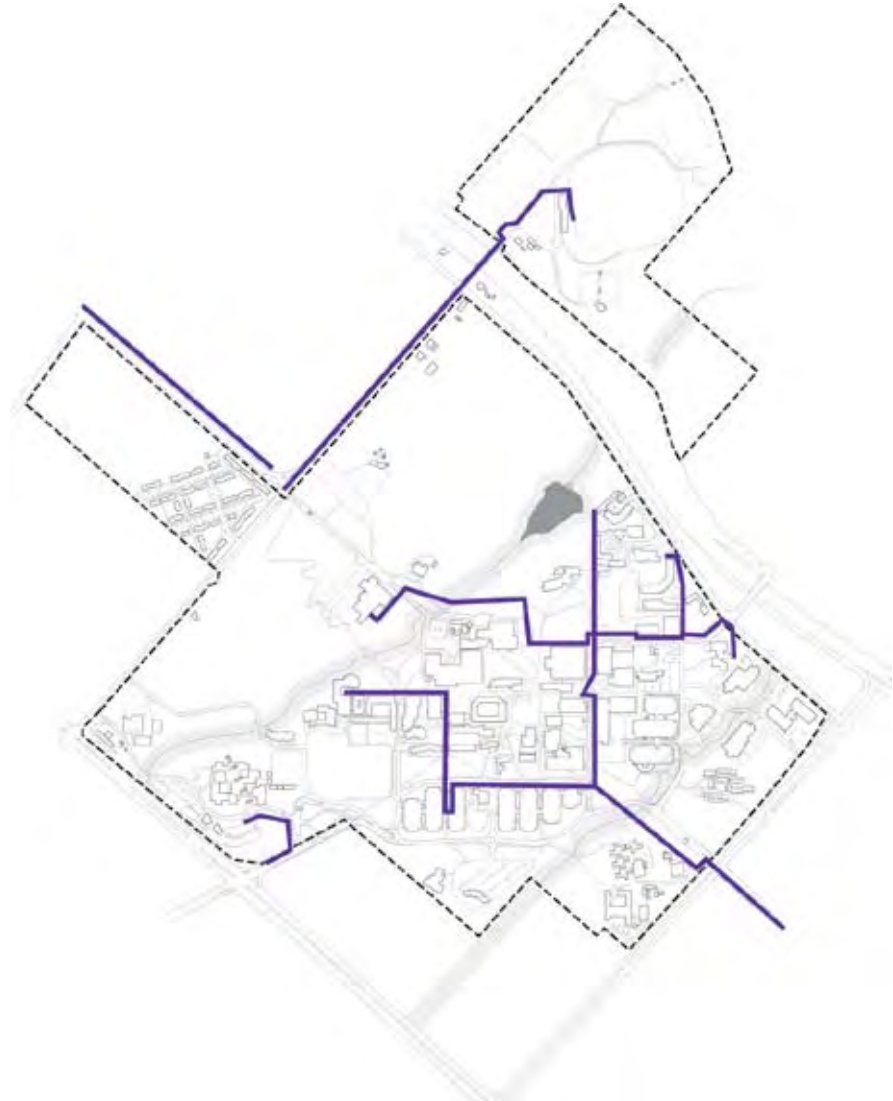
Sydney Water advised that under their current policy, each commercial development would require a Sydney Water sewer main connection line to the Sydney Water trunk main in each creek. The University currently maintains a significant length of sewer drainage and would prefer to maintain the new infrastructure as well. Sydney Water advised that future discussion would be required to resolve any arrangement outside current policy.

Potential exists for the duplication of the existing system instead of replacement of the existing line to allow the existing service to remain in place and functioning while the new service is constructed. Amplification of the sewer main layout will be coordinated in the detailed design stage and in liaison with Council. Further detail is provided in the Taylor Thompson Whitting Infrastructure Masterplan at Appendix H of Volume 2.

**Figure 33** – Existing water supply



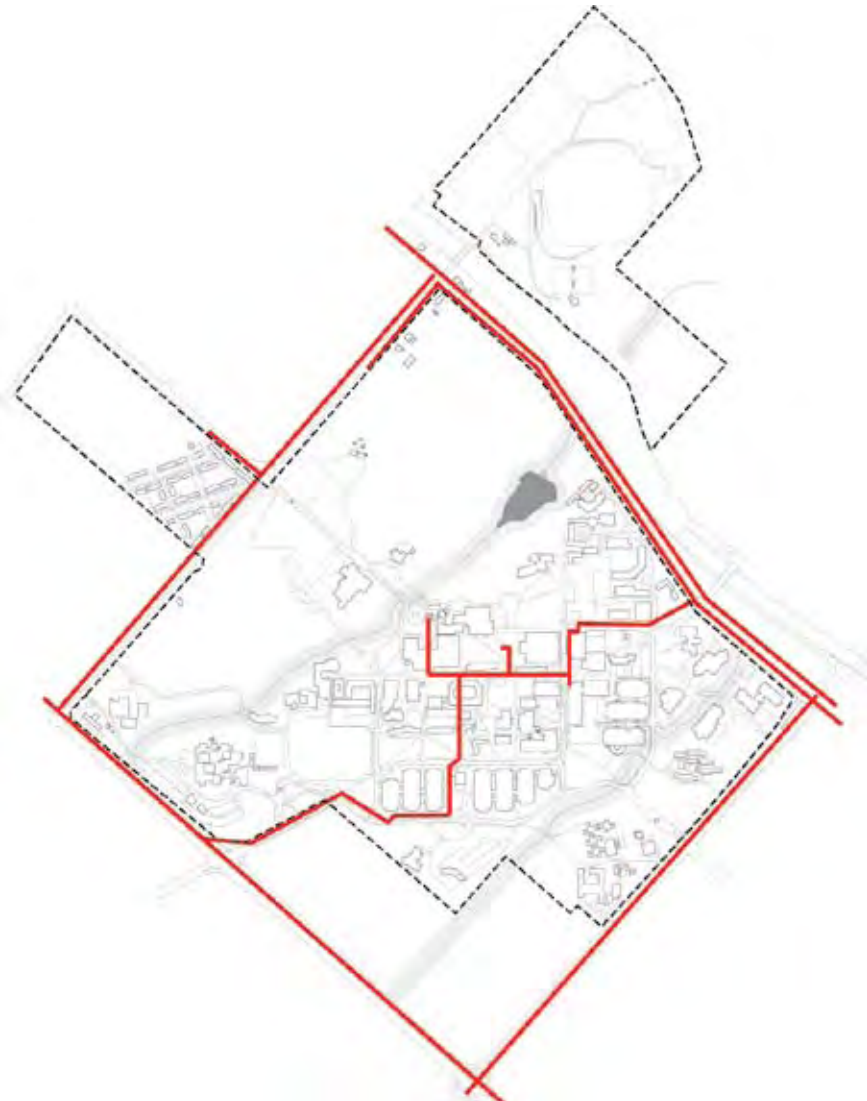
**Figure 34** – Existing sewer services



**Figure 35** – Sewer trunk mains



**Figure 36** – High Voltage power supply



### 4.7.3 Electricity

Energy Australia records show that there are underground electrical mains as follows:

- In Epping Road;
- Both sides of Culloden Road;
- Herring Road; and
- Talavera Road.

There are high voltage mains in Waterloo and Wicks Roads. Electrical supply within the vicinity of the Campus is described in Figure 36.

The Campus is currently supplied by Energy Australia from two substations namely the Epping Zone Substation located off Epping Road and the Macquarie Park Zone Substation located off Waterloo Road. These feeders are 11,000 volt supplies and are underground reticulated to approximately 14 substations strategically located throughout the Campus. Feeders from the existing zone substations have limited spare capacity.

An initial meeting has been held with Energy Australia's planning and liaison representative for the area. An assessment of the increase in load was provided for discussion and possible options for achieving these loads were discussed.

Early indications are that the initial 5 year development will need a new high voltage feeder from Macquarie Park Zone Substation located on Waterloo Street. The following 5 year development will need a second high voltage feeder from the substation. It is likely that the following 15 year development will trigger the need for a high voltage zone substation on the Campus.

Based on infrastructure research for this Concept Plan, additional feeders required for the 0-5 year and 5-10 year development (envisaged under the Concept Plan) will be linked into existing underground 11kv reticulated service existing on the Campus. Further detail is provided in the Wood & Grieve Engineers (WGE) Infrastructure Strategy at Appendix G of Volume 2.

Alternative options for power that are being investigated at Macquarie University include power cogeneration. Cogeneration can reduce CO2 of any future development projects, with Macquarie University already considered as one of the pioneers in this area.

The existing cogeneration plant at Macquarie University incorporates two 760 kW gas-fired engine generator sets which provide electricity for general use. The waste heat powers the absorption chiller which provides chilled water for cooling. Heat produced by the system is captured and available for use elsewhere in the University, which allows projected abatement of over 5,000 tonnes of Carbon Dioxide emissions annually.

### 4.7.4 Gas

The provider of gas infrastructure to the Campus is Alinta. Infrastructure investigations indicate that the Campus appears to be well served by gas infrastructure. The mains supply currently connects to a gas substation on the corner of Waterloo and Herring Roads. AGL reticulate their gas through a network of various reticulation pipe works. For future commercial development on the Campus, it would be prudent to create new feeds off the Authority main for each site as it comes online.

Further detail is provided in the WGE Infrastructure Strategy at Appendix G of Volume 2.

### 4.7.5 Telecommunications

The Macquarie / Ryde area is well served with telecommunications, with various communications services providers having infrastructure in the area and on Campus such as:

- Telstra;
- Uecomm / Optus;
- Powertell;
- AAPT; and
- Pipe-networks.

The communication services providers will make all the necessary changes to the conduit and pit installations outside the Campus to provide whatever telecommunication infrastructure that commercial customers require. Macquarie University will need to provide a network of conduits and pits within the Campus boundaries for use by service providers in the future. As each development is undertaken, conduit provisions in the area will be planned to accommodate both the new development requirement and the requirement for future development in the area.

Further detail is provided in the WGE Infrastructure Strategy at Appendix G of Volume 2.

#### 4.7.6 Roads

Road works within the Campus are intended to remain part of the University property. The commercial development within the Campus is proposed to be leasehold type developments. The proposed road works will be required to ensure adequate allowance is made for bus routes, commercial vehicle access, and general traffic in accordance with AS2890. Road levels are intended to match the existing road and ground levels where possible, in order to minimise the extent of retaining works and filling required. New bridge/culvert crossings are proposed which will cater for the 100 year storm event and ensure that for storms up to this event, the proposed development precinct will not be inundated due to the bridge structures. Further detail regarding the road structure is provided in the Traffic and Transport Assessment at Appendix E and the TTW Infrastructure Masterplan at Appendix H of Volume 2.

### 4.8 ESD Strategy and Climate Change

Macquarie University has a Sustainability Office to support and oversee improvements in the sustainability performance of the University and is committed to establishing a sustainable Campus.

There have been a number of initiatives implemented within the Academic Core to reduce energy usage and increase efficiency including:

- Installation of a cogeneration plant next to the existing Library and subsequent link to heating the pools at the Aquatic Centre;
- Installation of high efficiency equipment as old equipment is retired; and
- Geothermal air-conditioning and chilled water storage in particular buildings.

Additionally, each development is to provide measures to capture, retain, and minimise litter, oil, sediment, nutrients, and pollutants prior to stormwater runoff discharge to the receiving creeks. Further, a precinct-based supply vs. demand analysis should be performed at the detailed design stage of the development to provide water re-use storage system to service non-potable use such as irrigation for landscape areas and for toilet flushing;

Macquarie University has a history in the use of alternative energy and there remains a commitment to investigate options for future developments on the Campus in this regard. Examples of previous initiatives include the implementation of a co-generation plant.

The University aims to apply the principles of ESD in developing the Campus. This will include the following initiatives in accordance with the Concept Plan:

- Promote the use of co-generation plants in development design;
- Establish a comprehensive landscaped open space network;
- Encourage the use of public transport and alternative transport sources (other than private vehicle) through the establishment of cycle and pedestrian networks and concentration of high density uses in proximity to the Station;
- Ensure new University buildings are established with a northern aspect;
- Promote the development of new buildings within the Academic Core that achieve a "4
- Star" Greenstar rating; and
- The impacts of Climate Change have also been accounted for in the preparation of this Concept Plan.

### 4.9 Environmental Strategy

#### Flora

A Preliminary Ecological Assessment of the Campus was undertaken by EDAW in May 2006 (included at Appendix K of Volume 2). From this assessment, EDAW concluded that 'whilst no final decision has been made in regards to the proposed development of the Campus, it is considered that in general the Campus is suitable for further development.'

EDAW identified that the Campus had been largely cleared when Macquarie University Campus was established in 1964. Today five stands of non-contiguous remnant vegetation remain (identified in Figure 37) and parts of these include the following ecological communities:

- Sydney Turpentine Ironbark Forest;
- Sandstone Ridgetop Woodland; and
- Western Sandstone Gully Forest.

Remnant communities 1, 2 and 5 are proposed to be retained. Commercial development within Precinct E is likely to require the removal of remnants 3 and 4 (remnant 4 has already been partially affected by the construction of the new rail line). The ecological communities within remnants 3 and 4 are adequately represented elsewhere on the Campus. The loss of these remnants will be compensated for through the augmentation and maintenance of remnants 1, 2 and 5; a landscaped buffer will be provided around these areas to ensure the appropriate protection of these endangered flora communities from any development impacts.

The level of detailed flora and fauna assessment undertaken to date is sufficient for the purposes of establishing the site's floristic constraints and establishing the broad Concept Plan for the site. Importantly, the key areas of remnant vegetation have been identified and, in the most part will be protected and rehabilitated.

The University will undertake to complete full flora and fauna assessments prior to any development in the areas nominated as potential endangered ecological communities (EEC). This is reflected in the Statement of Commitments. Additionally, ecological restoration management plans are to be developed for retained remnants and should include pest and weed management.

Further, the Statement of Commitments also includes retention and protection of endangered vegetation remnants from further encroachment/degradation and where possible, individual remnant trees outside remnant areas.

#### Sydney Turpentine Ironbark Forest (STIF)

The protection and rehabilitation of Remnants 1, 2 and 5 of the Sydney Turpentine Ironbark Forest (STIF) is key. The University will protect and rehabilitate (and augment) these. The Concept Plan has been designed to as far as possible minimise the impacts upon Remnants 3 and 4 of STIF in Precinct E (Station South).

It is however clear that to achieve the proposed scale of development around the station and to foster and support higher public transport usage, these remnants will be affected or removed. In this instance, the opportunity exists to further rehabilitate the larger and more significant stands and sections of STIF, such as Remnant 1, with additional offset plantings. Where the opportunity arises, the objective would be to consolidate the STIF remnants. It should be noted that any approval required under the Commonwealth EPBC Act, will be sought either separately or as part of the existing Bilateral Agreement.

#### Fauna

The Preliminary Ecological Assessment included at Appendix K of Volume 2 identifies 13 threatened fauna species that may occur within a 5km radius of the Campus. EDAW suggest that given the limited extent of vegetation and the availability of alternative habitat in nearby Lane Cove National Park, the Campus is unlikely to provide important habitat for these species. Furthermore, the vegetation on Campus is isolated from other patches of vegetation and is subject to constant human disturbance and tree hollows are uncommon.

## 4.10 Water Management Strategy

The University Campus can be divided into two main stormwater drainage catchments – the Mars Creek and University Creek valleys.

#### Mars Creek Catchment

Mars Creek drains a catchment of approximately 200ha. The catchment is predominantly medium density residential and open space with some minor industrial and commercial areas. The main Campus falls from Culloden Road in the north to Mars Creek in the south. The creek drains through the campus to a culvert crossing under Talavera Road, the M2 Motorway and draining to Lane Cove River. On the north east side of the M2 Motorway, the Macquarie University playing fields also drain into Mars Creek. There are four existing stormwater detention basins along Mars Creek within the University Campus that provide detention storage in the 100 year storm benchmark.

#### University Creek Catchment

University Creek drains in a north easterly direction through the grounds of the University, under Talavera Road and the M2 Motorway, into Shrimptons Creek and the Lane Cove River. It runs parallel to Herring Road, approximately 150 to 250m east of Mars Creek.

The catchment area for University Creek is approximately 88ha upstream of Talavera Road. The existing drainage system appears to be a mixture of modified channel sections and four detention basins formed at locations where the drainage line passes under roads and footpaths. The 100 year levels under the existing drainage system have been reviewed.

The Campus, in its current level of development, drains into these watercourses through a series of stormwater pipes and on-site detention (OSD) basins (Figure 38).

#### Stormwater Management

TTW recommend that the existing stormwater and detention capacity be augmented to ensure there is no increase in stormwater peak flow downstream due to the proposed development in the Concept Plan. This measure will ensure that infrastructure works downstream of the University Campus will not be required as part of the University infrastructure works.

TTW propose that the existing commercial development precinct provide independent stormwater detention storage in accordance with CoR Council's detention policy. The University prefers to augment the existing on-stream detention storages for the expansion of University buildings and road work within the Academic Core.

Figure 37 – Existing vegetation types



Figure 38 – Existing drainage – overland flow





An initial meeting with CoR Council with respect to stormwater management on the Campus considering the proposed future development was held on 22 October 2007. Council advised the following:

- Proposed buildings are recommended to be located outside the 1 in 100 year flood extent.
- CoR Council has contracted Bewsher Consulting to carry out a general flood study for these catchments; and
- Water quality modelling is required for the proposed Campus development to determine the extent of water treatment works required to achieve Council's water quality limits.

In addition to the above, TTW has prepared a further detailed flood and stormwater assessment report in response to issues raised. This report addresses existing conditions, flood risk and levels, water quantity and water quality, soil and erosion control, and water reuse opportunities. The report is located at Appendix N of Volume 2.

The report's main findings are that:

- All proposed structures in the Concept Plan are to be located outside of the 100-year flood extent and the riparian corridors to ensure existing hydraulic flow is not altered or made worse downstream;
- There will be no increase in run-off peak flow rates for downstream properties, subject to an adequate stormwater detention system being provided to limit flowrates to that of a pre-development scenario and staged as required as development proceeds; and
- The proposal will have minimal water quality impact on the receiving creeks and waterways if water quality measures are adopted and implemented.

Accordingly, the recommendations of the report are:

- Adopt the 100-year storm event as the interim design flood level standard and that proposed structures to have 500mm freeboard to the finished floor level, 300mm freeboard for flood egress roads, and 150mm freeboard for flood egress footpaths;
- Locate the proposed development outside the 100-year storm flood extent as shown in the report;
- Locate proposed development outside the riparian zone (except for development for approved revegetation and creek rehabilitation and stabilisation works);
- Provision of a flood management/evacuation plan for proposed development within the Probable Maximum Flood (PMF) flood extent as shown in the report;
- Precinct-based stormwater detention storages are to be implemented to limit flow to that of the pre-development flowrates, from the 5-year to the 100-year ARI storm events;
- Each development is to provide measures to capture, retain, and minimise litter, oil, sediment, nutrients, and pollutants prior to stormwater runoff discharge to the receiving creeks;
- A precinct-based supply vs. demand analysis should be performed at the detailed design stage of the development to provide water re-use storage system to service non-potable use such as irrigation for landscape areas and for toilet flushing;
- Siltation and sediment controls satisfying all relevant authority requirements should be implemented during construction; and
- A detailed creek rehabilitation and riparian vegetation management plan should be prepared early to establish a short, medium and long-term revegetation and rehabilitation strategy for the Mars and University Creeks beds, banks, and riparian zones.

Macquarie University will continue to work with Ryde Council and other relevant authorities concerning flooding issues as part of the ongoing development of the campus. The Statement of Commitments has been revised to capture the above findings and recommendations.

### Riparian Zones

Taylor Thomson Whitting (TTW) has prepared a riparian survey report for both Mars and University Creeks. This addresses the current condition of the creeks and recommends a series of remediation works required to improve creek and riparian ecology and function. This report is located as an appendix within the Flood Assessment Report at Appendix N of Volume 2.

The report found that Mars Creek has been largely rehabilitated and that numerous stabilisation works are in existence. There are some areas requiring further work.

The nature and location of these works is set out in the report. This includes such works as additional planting, rock linings, rockworks, bank stabilisation, and general cleaning.

University Creek conversely is in a relatively poor condition and requires a significantly greater amount of remediation, including stabilisation and riparian works. As per Mars Creek works, this includes a series of actions involving additional planting, rock linings, rockworks, bank stabilisation, and general cleaning.

The riparian zone setback requirements will be requested via individual Project Applications for approval by the NSW Department of Planning in order to confirm the exact extent of developable land on the Macquarie University Campus. It is the intention of the University that flood paths be maintained, free of proposed development.

### Water Sensitive Urban Design and Water Quality

It is proposed that wetlands be incorporated within the communal OSD basins and that development will capture and reuse rainwater for irrigation, laundry use and toilet flushing. The proposed sewer amplification works will have a significant effect on water quality in the watercourse as the overflow discharges from the sewer decrease. Further detail on the construction and operational water quality measures are provided in the Infrastructure Masterplan at Appendix H of Volume 2.

## 4.11 Childcare Strategy

As part of the University's commitment to the needs of the University community, Macquarie University is committed to providing childcare services for the University. Current services also provide childcare for the local community.

The University completed review of its childcare services in September 2007. This is included for information at Appendix Q of Volume 2. Following this review, the University has initiated development of childcare strategy to deliver childcare places as required by the Concept Plan.

The University is committed to maintaining the same level of service as currently provided. There are currently 290 spaces split as follows:

- Banksia: 90 children
- Gumnut: 90 children
- Waratah: 45 children
- Mia Mia: 65 children

The ratio of childcare spaces to the current number of equivalent full time students (EFTSU) is one childcare space per 69 EFTSU. With 20,000 EFTSUs, this equates to 290 spaces.

For the estimated number of EFTSUs to 2031 (ie 30,000 units) an additional 145 spaces will be required to achieve 435 childcare spaces and the same rate of spaces per EFTSU and level of service.

As the maximum licensed capacity is 90 children per centre, capacities to 2031 require the following supply:

- Banksia: 90 Children (no change)
- Gumnut: 90 Children (no change)
- Waratah: 90 Children (+45 spaces)
- Mia Mia: 90 children (no change)
- (New centre) Station Precinct: 90 children (+90 spaces)
- (New centre) Culloden Rd Precinct: 90 Children (+90 spaces)
- Total capacity: 540 children (+225 spaces).

Of the current centres, Waratah is temporarily closed due to the construction of the Cochlear Global Headquarters development within Precinct E.

To satisfy the above childcare space requirement, the University is committed to the development of an overall Campus-wide Childcare Strategy. The Strategy will indicatively address, amongst other things, issues such as demand, existing and proposed facilities, decanting and relocation of facilities (if and when affected by individual redevelopments), and minimisation of impacts and disruptions to services.

A Statement of Commitment is included to reflect the University's desire to address ongoing issues concerning supply and management of childcare on the Campus in a strategic, rather than piecemeal, manner.

## 4.12 Project Staging

Macquarie University represents an opportunity for the Macquarie Park Corridor to provide research based and non-research based floor space in a mixed uses zone (under the provisions of the Standard LEP Template). The eventual users of the floor space and their timing will depend to a large degree, upon variables outside the control of the University. In support of the Government's policy of "NSW – Open for Business", the University has positioned itself to be able to provide the correct accommodation for companies which are either not in NSW or who may otherwise leave NSW, or the Metropolitan Region.

The fact that the University maintains flexibility for any future academic, commercial or research-related activity is imperative for NSW and the Macquarie Park Corridor to maintain a competitive edge in order to meet key strategic initiatives such as the NSW State Plan and the Metropolitan Strategy.

From a planning perspective it is important to note that this is a Concept Plan designed to deliver a vision by 2031. Between now and then, the campus will go through a number of development phases. Accordingly, in the interim phases, elements will be created, relocated and staged to allow delivery of the "end vision". For example, an open space area, a car park, a commercial development or an academic facility shown on the Concept Plan may not actually exist until 2031 in order to account for existing site infrastructure and facilities. The role of the Concept Plan is to allow flexibility while establishing and providing certainty around the visions. This flexibility will allow refinement of the plan through time which may, in turn, result in some elements being relocated on site where doing so will protect the campus development vision.

## 4.13 Staging Strategy

The principal driver for undertaking development of part of the University campus is to underpin the financial, research and teaching strengths of the University. Accordingly, the staging strategy protects the ability of the University to expand academic floor space to meet its research and teaching objectives.

### 4.13.1 Overall Approach

The purpose of this Staging Strategy is to provide sufficient certainty to allow impacts and benefits to be understood and to facilitate future opportunities for delivering the objectives of this Concept Plan and the Inner North Subregional Strategy, the Sydney Metropolitan Strategy and the NSW State Plan.

This staging strategy applies to the entirety of the Macquarie University Campus, although the focus is primarily on the mixed use development areas (i.e. Precincts E and F). While academic development and growth is difficult to accurately predict, specific targets for future growth have been developed and are outlined in Table 6 which shows the University's benchmarks for student numbers and University Housing. It is envisaged that academic-related development within the academic precincts (i.e. Precincts A, B, C, G and H), will be delivered at a rate which is consistent with the benchmark targets. Importantly, although key planning controls including GFA caps, land-use, parking and access are defined by this Concept Plan it is proposed that the timing and staging of academic floor space, be driven by academic / University need rather than by this staging strategy.

This staging has been designed to be flexible enough to allow the Campus to be developed, so as to capture development and tenancy opportunities, while also allowing the University to meet on-going academic and learning opportunities. This staging strategy has been developed in accordance with the above objectives.

### 4.13.2 Commercial Development Precincts

The Macquarie University Campus is a large landholding in the context of both future academic and commercial development. It is necessary therefore, to provide a range of future development opportunities across the Campus.

A diversity of precinct composition supports the philosophy that a range of different development opportunities will be created to meet the needs of employees in the Macquarie Park Corridor. This is an important consideration given the commercial reality of delivery of the over-arching objectives of the NSW State Plan and the Sydney Metropolitan Strategy, namely "to increase business investment in NSW" and "to strengthen economic competitiveness". For example, the different attributes of the precincts (Precincts D, E and F) which permit commercial type uses are shown in Table 10.

This is important to the overall staging objective of this strategy, as it supports the "as needs" basis of delivering broad commercial, research-based development within the University Campus. If a development or tenancy opportunity arises, it is important to maintain flexibility and certainty for the University to provide accommodation, as the opportunity may be lost to outside competition (either nationally or internationally), if certain commercial requirements cannot be suited.

**Table 10** – Attributes of Precincts D, E and F

Precinct	Precinct D MURP	Precinct E Station South	Precinct F Epping Road West
Commercial Development Permissible	✓	✓	✓
Research-based Commercial Development	✓	✓	✓
Teaching and Research Opportunities	✓	✓	✓
Building Heights Up to 108m		✓	
Campus Style			✓
Main Road Exposure			✓
Adjacent, or Close to New Railway Station	✓	✓	
Strong Connection / Interface with Macquarie Park Corridor	✓	✓	
Opportunities for Signature Building		✓	

### 4.13.3 Infrastructure Delivery

The scope of infrastructure required to service the site will be investigated and determined with a comprehensive infrastructure study, which will be developed in collaboration with service providers. The study will examine both the external and internal infrastructure requirements and the necessary staging that will be required to compliment any future development on-site and within the Macquarie Park Corridor. The infrastructure study will allow the University to identify what upgrades will be required to support a development and whether the upgrades will need to be designed to accommodate any further development within the site. This will ensure that infrastructure upgrades will be coordinated and costs, time and disturbance are minimised as future development will not have to re-excavate.

Coordination between government agencies and key stakeholders will also be required to ensure the staging of external infrastructure works, including road works proposed by the University, considers and complements other works in the greater Macquarie Park Corridor.

All internal infrastructure requirements will be designed to accommodate any further development within the University site. The upgrading of internal infrastructure required for any development will form part of applications for development. Subsequently, the delivery of all internal infrastructure requirements will be undertaken in association with or prior to the development, if the area requires infrastructure upgrades. It is anticipated that infrastructure works that involve the disturbance of roads will also address other servicing requirements (gas, sewer mains, water mains, communications and widening), which will ensure costs and disturbances are minimised.

The initial stage of development will include the delivery of the following infrastructure upgrades to the site:

- high voltage cabling and feeders
- gas lines
- conduits and pits
- amplification of existing sewer mains at:
  - Mars Creek; and
  - University Creek.
- Road works along a section of University Avenue consisting of:
  - reconfigurations of intersections;
  - increased road width;
  - footpath works;
  - introduction of cycle lane; and
  - installation of a median strip.

Any infrastructure delivery should occur at a rate that is consistent with the requirements of Table 9 of this Concept Plan.

### 4.13.4 Staging Plan

Table 11 shows the indicative staging strategy of future development on the University Campus, and should be read in conjunction with the indicative staging plan shown in Figure 39.

Development of the University is focused on achieving the long term Concept Plan visions. Delivery of this vision is made challenging by the need to relocate and decant some existing activities and uses while seamlessly continuing the operations of the University. Examples of this include existing residential colleges, child care and car parking facilities within the proposed mixed use development precincts. The areas identified as having commercial development potential are located in Precincts E and F.

These precincts and areas within these precincts have a number of distinguishing characteristics which will meet the requirements of a wide range of investors.

The characteristics that distinguish the development potential of the areas are determined by both physical constraints and planning opportunities. Subsequently, it provides investors with a choice and allows the University and the Corridor to accommodate a diverse range of investors. The characteristics identified in Table 11 influence the physical and locational considerations between the different areas within Precinct E and Precinct F. It is important that the staging plan promotes investment by organisations who would positively contribute to the University and the Corridor.

This staging plan maintains a level of flexibility to promote investment within the Corridor. However, given the characteristics shown in Table 11, the first phase will consist of development of the first stage of Cochlear in the Triangle South of University Avenue. Certain characteristics and the ability to meet strategic planning objectives suggests the next area to be developed would be higher density development in proximity to the station within Transit-orientated development within the Station South Precinct that is relatively free from

development constraints. However, this should not exclude the University from providing opportunities within Precinct F and other areas within Precinct E (including the remainder of the Triangle South of University Avenue for Cochlear expansion or another investor) to accommodate investors that may have unique requirements.

Table 11 demonstrates the indicative staging strategy of delivery of the Concept Plan.

Figure 39 – Indicative Staging Plan Diagram



Table 11 – Indicative Staging Strategy

Indicative Timeframe	Works / Development
2009 - 2014	<ul style="list-style-type: none"> <li>• Demolition of multi-deck car parking structures in Precinct E and of limited buildings within the academic core;</li> <li>• New development to the north of the Macquarie University Rail Station;</li> <li>• Cochlear Global Headquarters Stage 1 (underway) and future Stage 2;</li> <li>• New Macquarie University Library (underway);</li> <li>• Hearing Hub;</li> <li>• New car parking structures within the academic core;</li> <li>• Redevelopment of the existing library and other buildings around the Central Courtyard; and</li> <li>• Student housing in Precinct B and Culloden Road parking.</li> </ul>
2015 - 2023	<ul style="list-style-type: none"> <li>• Redevelopment to south of Macquarie University rail station;</li> <li>• Further redevelopment of existing multi-deck parking areas in Precinct E;</li> <li>• Completion of area to south of Cochlear Global Headquarters;</li> <li>• Development to north of E7B within academic core;</li> <li>• Potential commencement of development in Precinct F; and</li> <li>• Further student housing in Precinct B near Culloden Road.</li> </ul>
2024 - 2031	<ul style="list-style-type: none"> <li>• Remaining development within Precinct E, including redevelopment of multi-deck car parking structures, and area fronting Herring Road;</li> <li>• Additional Culloden Road student housing; and</li> <li>• Completion of development in Precinct F.</li> </ul>

5.0

Station South – Indicative Design

## 5.1 Urban Design Statement

The Station South Precinct surrounds the new rail station and forms a major terminus to the Macquarie Park Corridor and the Waterloo Road Axis to the University.

The existing planning controls under LEP 137 (RP50) apply floor space ratio controls of 2:1 and 3:1 around the railway station. It is noted that these planning controls are being reviewed in the context of allowing the development to assist in achieving the floor space and employment targets in the Inner North Subregional Strategy. The planning envelopes proposed are generally consistent with these existing controls.

The broad urban design principles driving the configuration of the precinct are the street pattern, distribution and quality of public spaces, heights and setbacks and are described as follows:

- To acknowledge and extend the University's grid pattern of streets and paths south through the Precinct;
- To provide clear and legible 'gateway' public domain spaces and places on entering the Precinct both at the rail station and Epping Road entry;
- To provide a sunny, landscaped and accessible public domain space, away from the Station which enhances and relates to the surrounding built form;
- To provide robust and clear legible built edges to spaces noted above, University Avenue and Macquarie Drive;
- To maximise floor space immediately surrounding the rail station, reducing density as one moves away;
- To create built height at the rail station to provide a 'regional marker' identifying the rail station in the locality;
- To create built height at the rail station to provide a visual termination to the Waterloo Road axis running through the Macquarie Park Corridor;

- To provide appropriate setback and reduced heights to precinct boundaries to mitigate solar impacts on neighbours;
- To provide a clear and legible pedestrian and bicycle network acknowledging existing and proposed routes around the precinct;
- To anticipate building floorplates that are commercially viable;
- To clearly delineate public, semi-public and private domain through clearly legible built 'edges';
- To locate car parking within basements and single level podiums which are 'sleeved' within surrounding mixed use floor space avoiding 'unactive' built form and 'exposed' car parks;
- To ensure the principle public domain space of the immediate rail station area is an activated, sunny and secure space with an appropriate civil quality that announces a major public transport node and entry point to the University.

The above broad principles are amplified in the following sets of principles surrounding topics of 'gateway and address'; 'public transport and pedestrian amenity'; 'landscape and bushland character'; and 'sustainability'.

### 5.1.1 Gateway and Address

The precinct will function as a major Public Domain 'hub' and provides the 'interface' between the University's academic core and the Macquarie Park Corridor. As such it provides a major public domain 'address' for the University and Macquarie Park, particularly in the immediate area to the rail station.

In this regard the following Urban Design Principles/Objectives are proposed:

- To create the new Gateway to the University Campus at the new station and at the emerging Macquarie Park Corridor;
- To create an identity for the University at this new gateway;
- To create an appropriately civic urban environment at this interface with the Macquarie Park Corridor;
- To heard and complement the parkland theme of the University Campus;
- To activate street frontages to University Avenue, Macquarie Drive and to Herring Road;
- To create a high quality pedestrian gateway environment with strong links to the Campus and surrounding pedestrian network; and
- To create a strong connection from the Station to the University Common, and from the station to Macquarie Park Corridor.

### 5.1.2 Public Transport and Pedestrian Amenity

The station will significantly change the student modal split and facilitate increased public transport usage for the surrounding proposed workers within the Station South Precinct, and the existing workers in the adjacent areas. The increased floor space within and around the precinct will also lead to increased vehicular traffic.

In this regard the following Urban Design Principles/Objectives are proposed:

- To separate pedestrian and vehicular traffic;
- To provide equitable access;
- To create an urban environment with supportive amenity for pedestrians via a quality integration of hard and soft landscaping, street furniture, signage and active and vibrant sunny spaces and places;
- To minimise vehicular 'rat-running' through the University;
- To permit the direct and easy flow of vehicles to University Car parking with minimal impact on pedestrian amenity;
- To provide for an effective bus service to the Campus and precinct with quality amenity for commuters; and
- To provide safe and secure movement for pedestrians throughout the precinct.

### 5.1.3 Sustainability

A sustainable approach to development is anticipated in the delivery of floor space and infrastructure to the precinct. Some Principles which impact the quality of the Urban Environment are proposed as follows:

- To provide for water sensitive urban design and maximise the conservation and recycling of water;
- To minimise greenhouse gas emissions; and
- To encourage a minimum 4.0 Green Star rating to all building within the precinct.

### 5.1.4 Built Form

The existing built form around the station comprises a mixture of heights, setbacks, street frontages and uses.

These include:

- 8 storey buildings in the MURP;
- Multi level residential apartments on the south eastern side of Herring Road;
- A major regional shopping centre (Macquarie Centre); and
- The existing University related buildings including residential colleges.

City of Ryde Council recently exhibited the Draft Macquarie Park Corridor Development Control Plan (Draft Macquarie Park DCP). This draft DCP proposes built form controls for the Macquarie Park Corridor. Although, it identifies potential built form controls applying to this part of the Campus, the draft DCP allows for these controls to be varied via a Masterplanning / Concept Plan process.

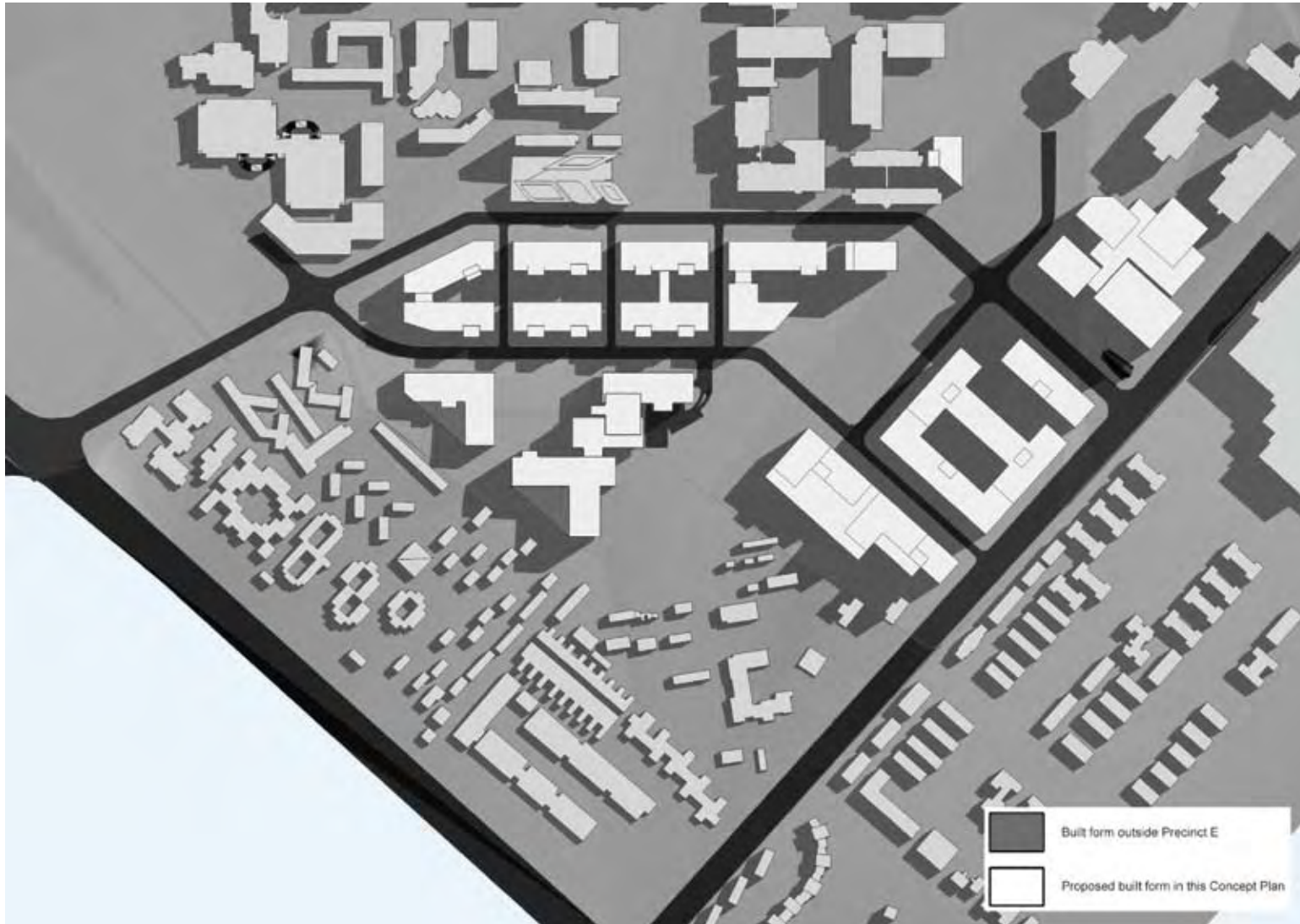
Figures 40a through to 45b show how the proposed Concept Plan controls relate to the controls and built form proposed by the Draft DCP.

These built form perspectives are indicative only. The development controls proposed by this Concept Plan are based on urban design principles outlined in this section. The figures showing proposed future development under Council's draft planning controls (i.e. the "b" series of figures) also indicate a number of buildings proposed as part of the Concept Plan. Development proposed as part of the Concept Plan has been included where there is no interaction with Council's draft planning controls. The design objective here is that the built form should be based on the detailed urban design principles of this Concept Plan.

Artist perspectives shown in Figures 46 to 48, illustrate the relationship with the new railway station entrance.



Figure 40a – Concept Plan indicative building footprints



**Figure 40b** – Concept Plan and Council’s draft planning controls indicative built form perspective (looking west from the corner of Herring Road and Waterloo Road)



**Figure 41a** – Concept Plan indicative built form perspective (looking west from the corner of Herring Road and Waterloo Road)



**Figure 41b** – Concept Plan and Council’s draft planning controls indicative built form perspective (looking west towards University Avenue)

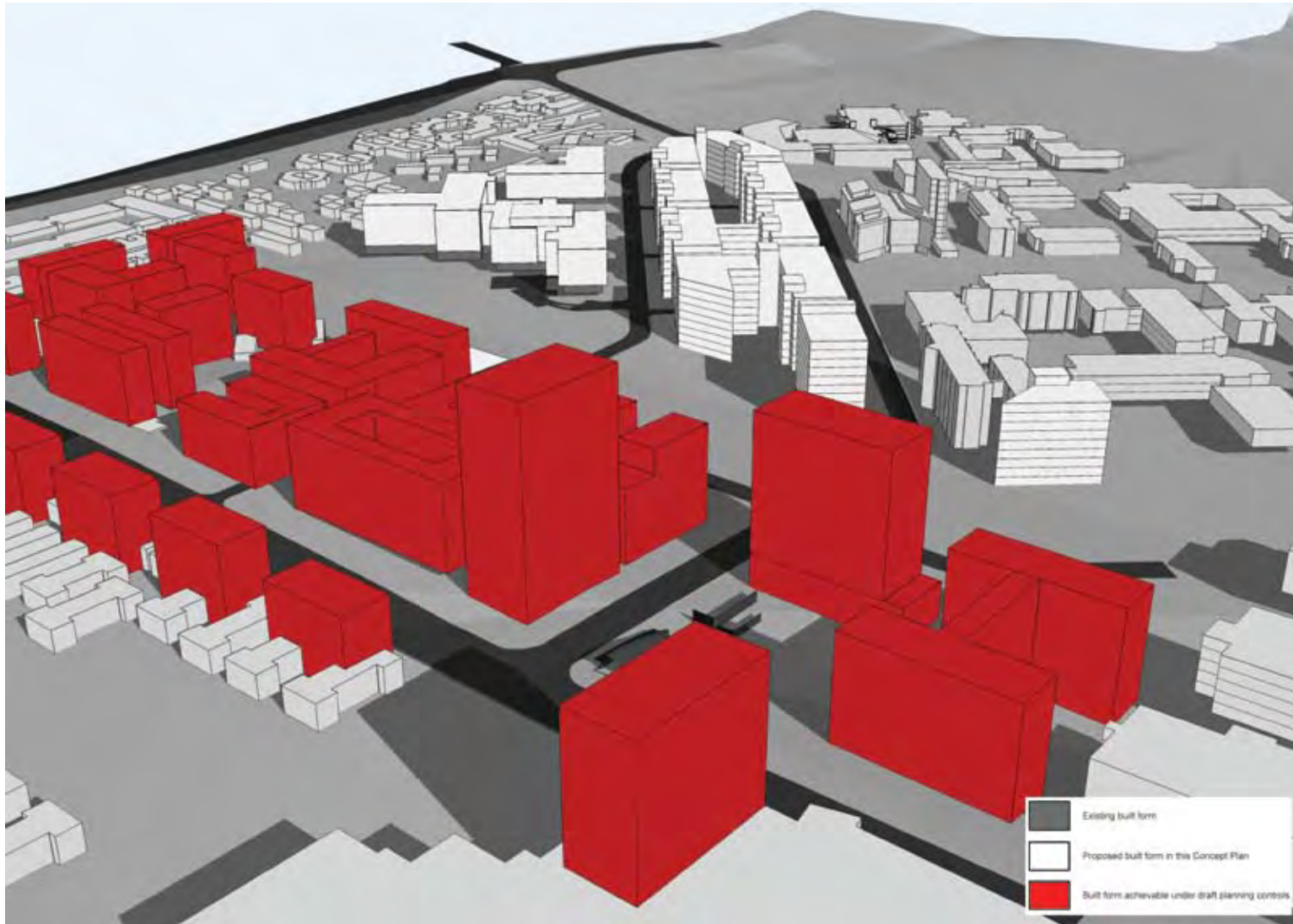


Figure 42a – Concept Plan indicative built form perspective (looking west towards University Avenue)



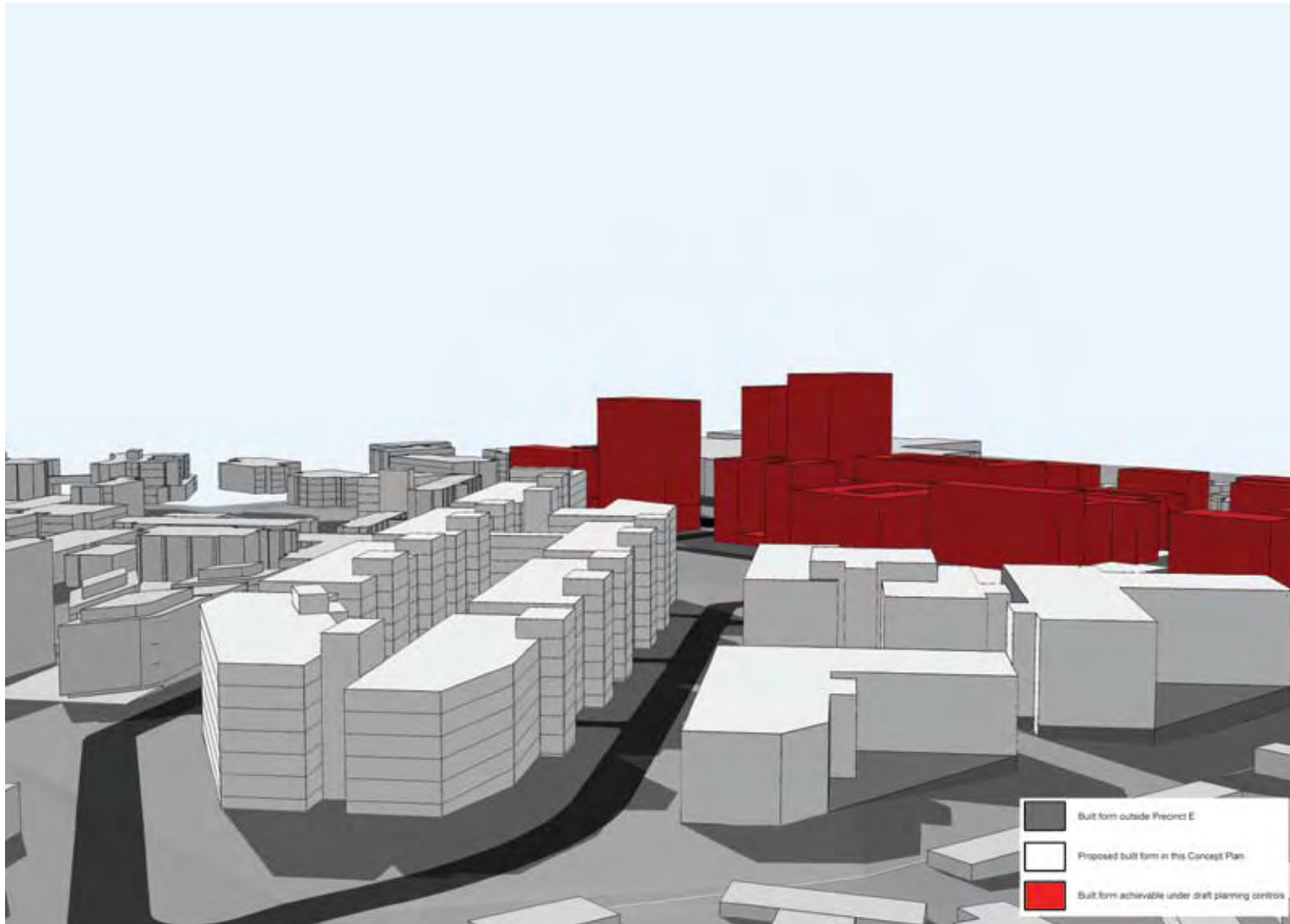
**Figure 42b** – Concept Plan and Council’s draft planning controls indicative built form perspective (looking east towards Herring Road along University Avenue and Academic Core)



**Figure 43a** – Concept Plan indicative built form perspective (looking east towards Herring Road along University Avenue)



**Figure 43b** – Concept Plan and Council’s draft planning controls indicative built form perspective (looking south east towards Herring Road from Macquarie Drive)

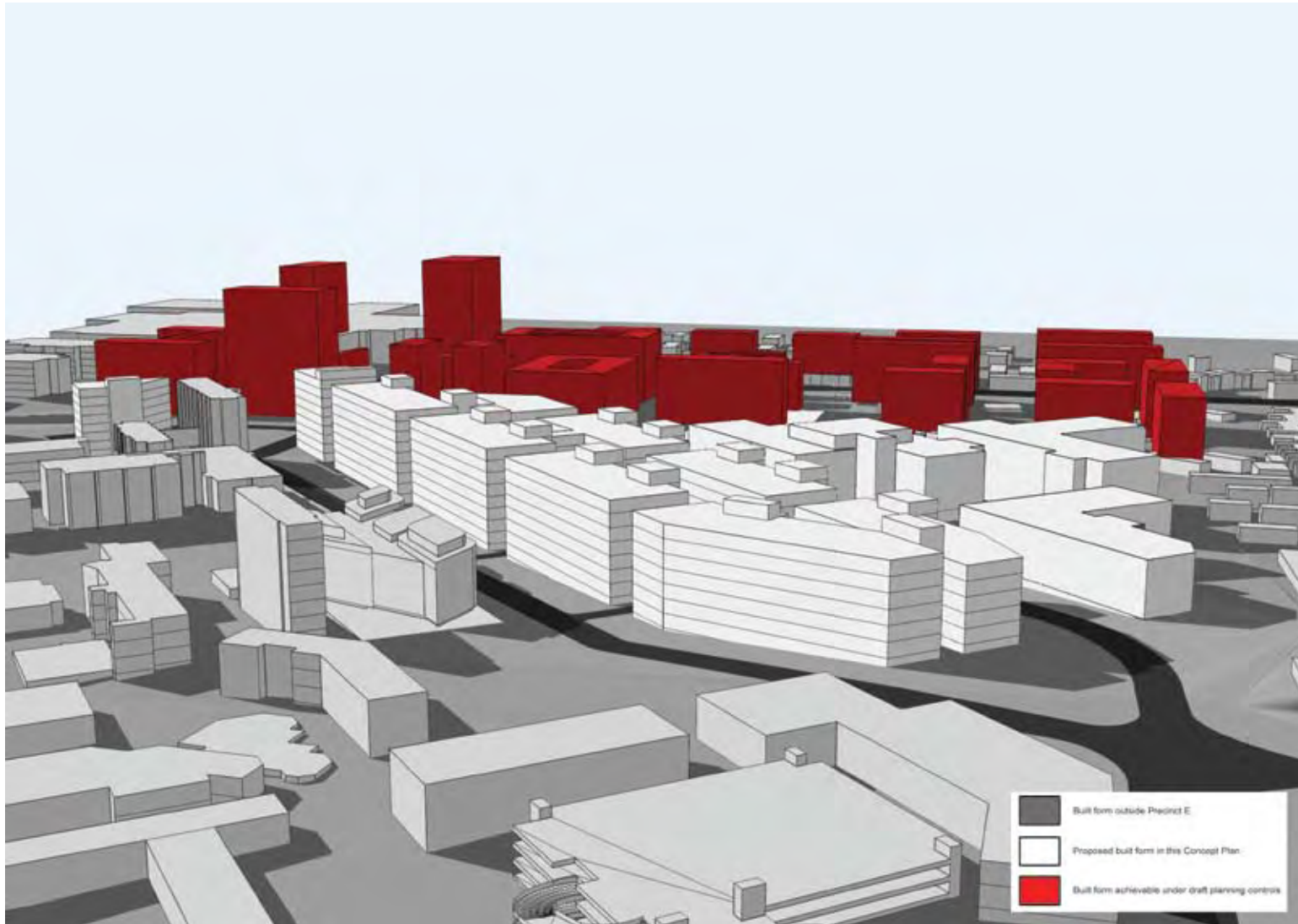




**Figure 44a** – Concept Plan indicative built form perspective (looking south east towards Herring Road from Macquarie Drive)



**Figure 44b** – Concept Plan and Council’s draft planning controls indicative built form perspective (looking north west towards Macquarie University Railway Station entrance from Waterloo Road)



**Figure 45a** – Concept Plan indicative built form perspective (looking north west towards Macquarie University Railway Station entrance from Waterloo Road)



**Figure 45b** – Concept Plan and Council’s draft controls indicative built form perspective (looking north west towards Macquarie University Railway Station entrance from Waterloo Road)

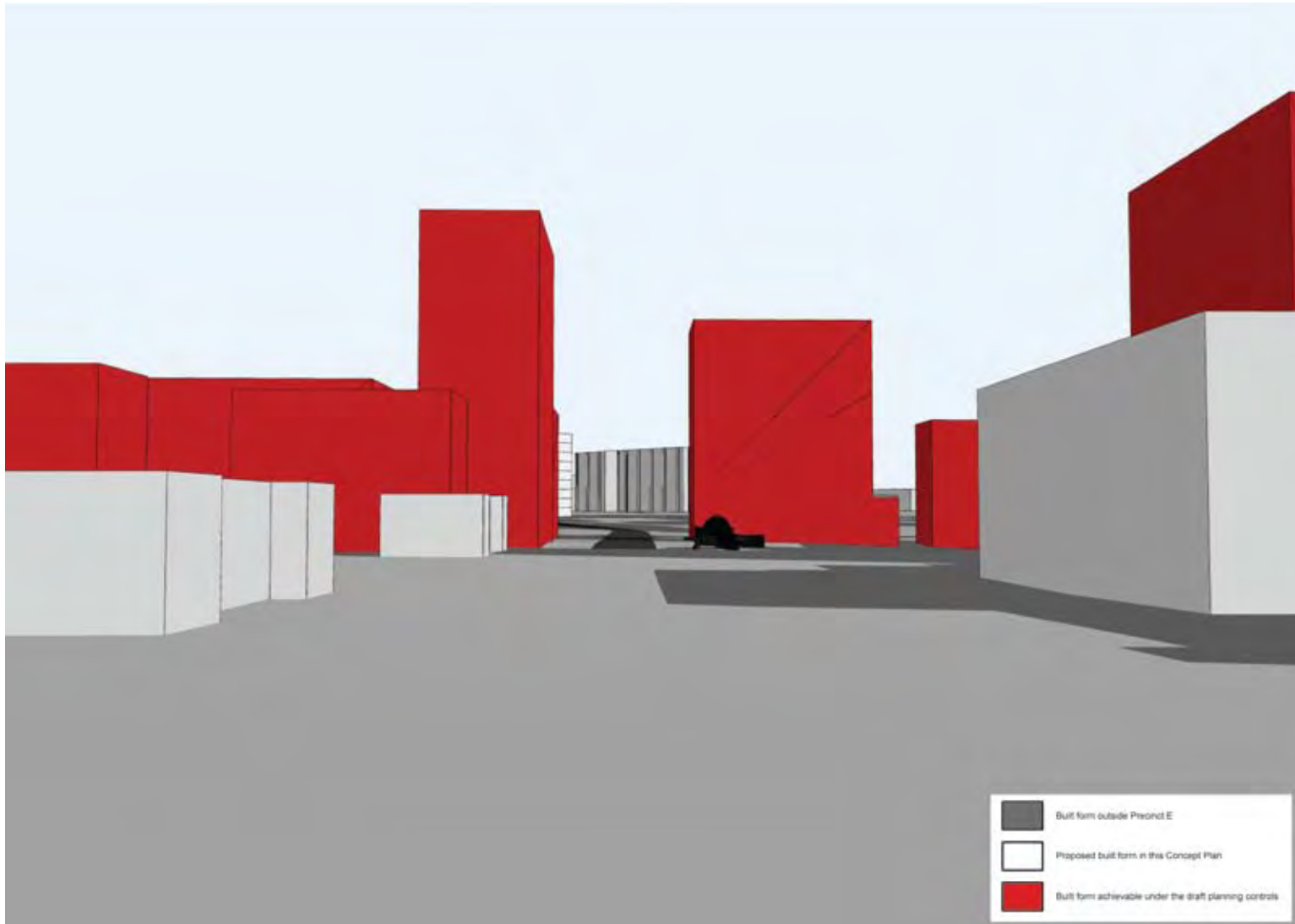
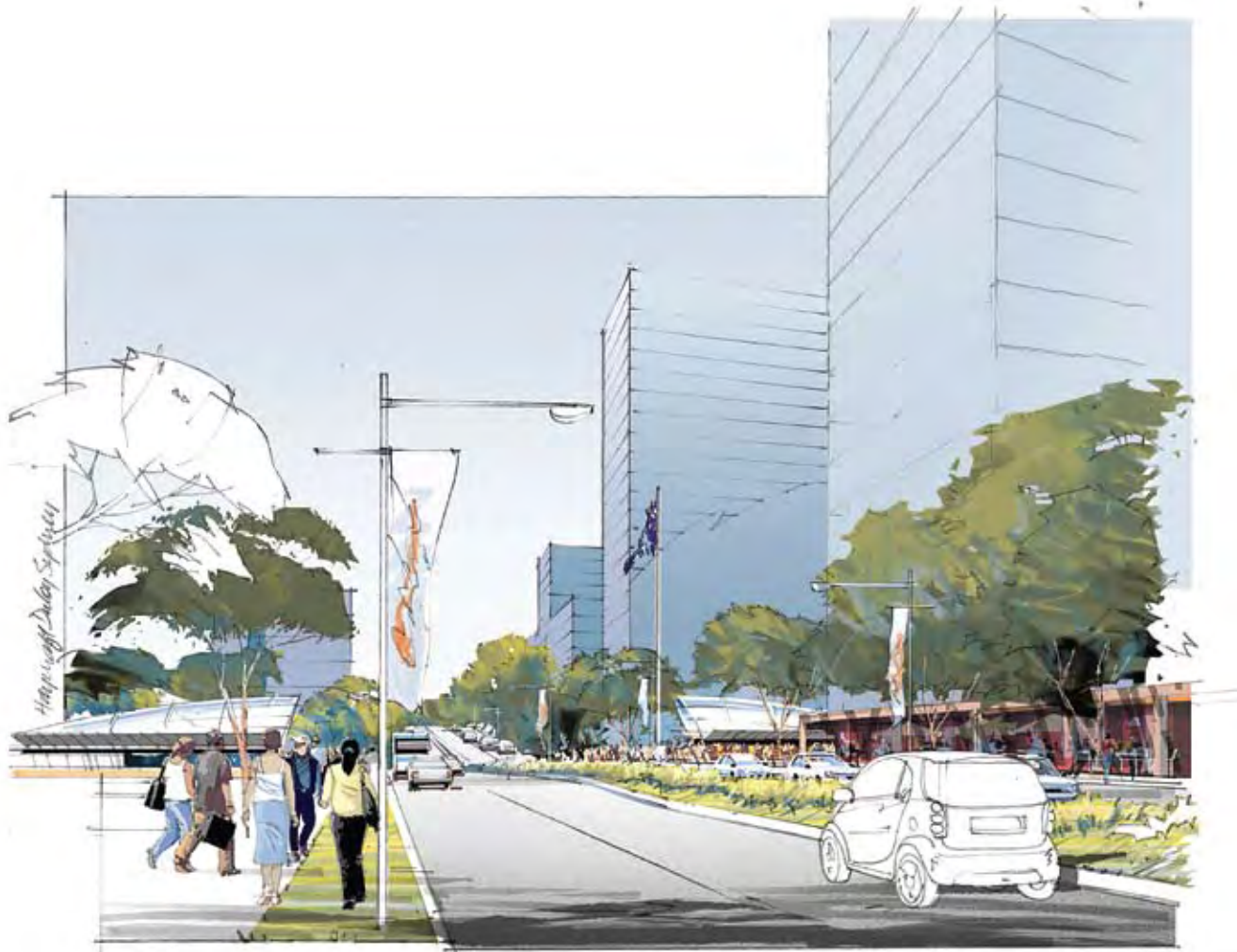


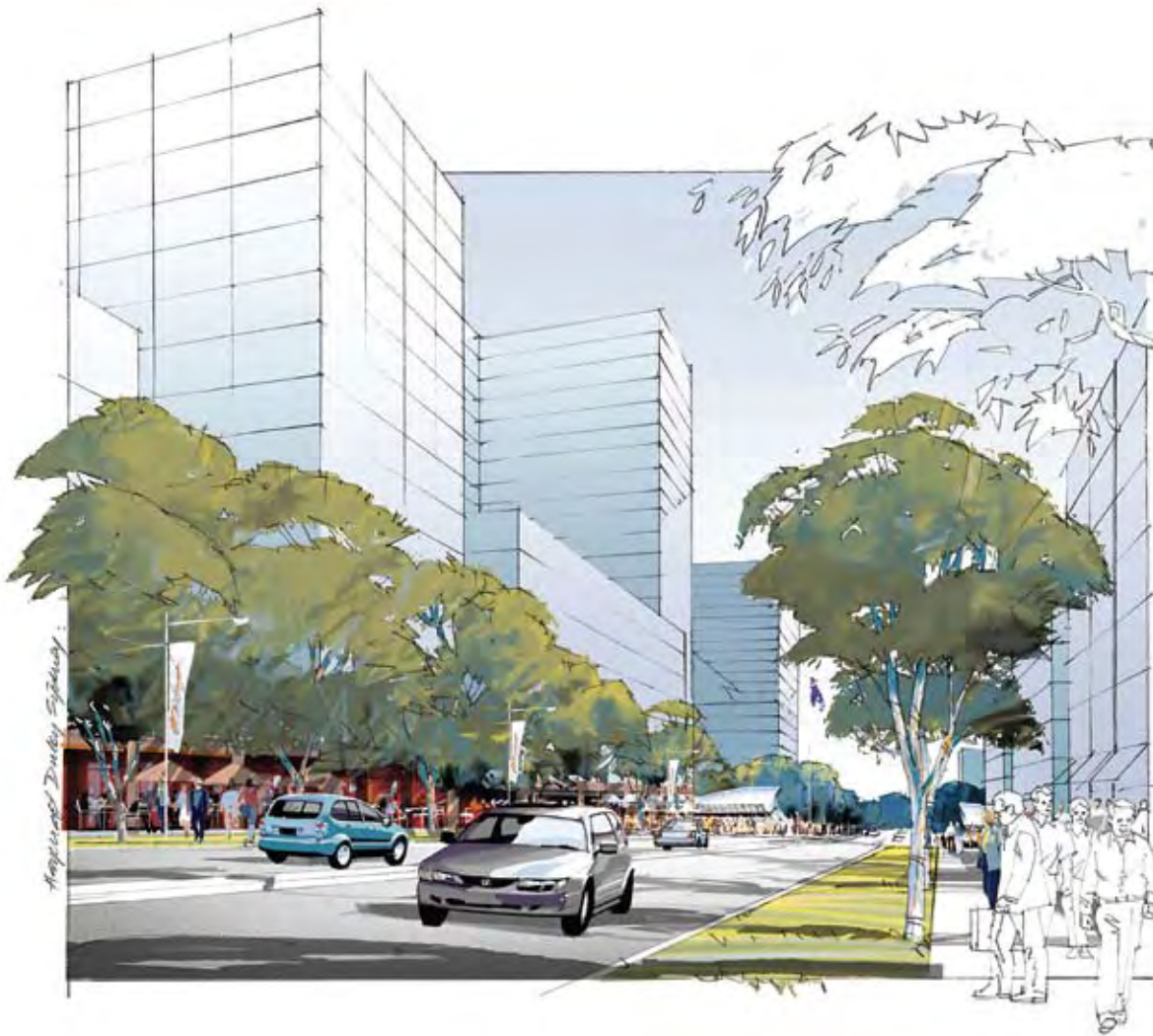
Figure 46 – Artist perspective (looking west towards Macquarie University Railway Station entrance from Herring Road)



**Figure 47** – Artist perspective (looking north west towards Macquarie University Rail Station entrance from Waterloo Road)



**Figure 48** – Artist perspective (looking north east along Herring Road towards Macquarie University Railway Station entrance)



6.0

Precinct Guidelines



## Overview

The Concept Plan provides for the development of the following precincts on the Macquarie University Campus:

- Precinct A – Academic Core
- Precinct B – University Housing
- Precinct C – University Open Space and Playing Fields
- Precinct D – Macquarie University Research Park (MURP) and Private Hospital
- Precinct E – Station South
- Precinct F – Epping Road West

The precinct boundaries (Figure 49) are based on broad land-use areas, both existing and proposed, as well as natural and physical boundaries. The following section sets out a brief description and outlines the objectives for each precinct, and where relevant, establishes more detailed design guidelines.

Precinct G – Epping Road Precinct Expansion, and Precinct H – Talavera Road North are within the boundary of the Concept Plan but have been earmarked for the long term development. As such, the guidelines for these precincts will be determined at a future date.

## 6.1 Precinct A – Academic Core

### Description

Precinct A - the Academic Core is the heart of the University Campus (Figure 50). It comprises approximately 25ha of the Campus and encompasses the majority of teaching, student and administrative accommodation as well as MGSM.

The Academic Core is broadly bounded by Macquarie Drive to the south, Research Park Drive, Talavera Road to the east and north-east and Epping Road to the west. The northern part of the precinct (the Mars Creek Valley) includes a significant passive open space, woodland, and large water quality pond.

The existing library adjoins the Central Courtyard which acts as the focal point within the Campus. Under the Concept Plan, this focal point is proposed to be shifted southwards towards a new University Common adjoining the new library building along Macquarie Drive which is subject to a separate Part 3A Project Application. A new north-south pedestrian link is proposed along the new University Common.

Existing academic buildings within the precinct range from one to eight storeys in height with a GFA of some 153,000m<sup>2</sup>. This Concept Plan assumes an expansion of the University student population from the current 30,000 to 42,000 total enrolments by 2031, equivalent to an increase from 18,000 to 25,200 Equivalent Full Time Student Units (EFTSU). This expansion will necessitate the provision of additional accommodation for academic, administrative and student support functions. 8.5m<sup>2</sup> GFA per student (EFTSU) has been adopted as the target space allocation within the Core. The additional GFA to accommodate the expanded student population is therefore, approximately 61,200m<sup>2</sup>. This includes the replacement of those buildings considered for demolition.

The objectives for the Academic Core Precinct are:

- To strengthen the role and function of the Core as the heart of the Campus;
- To accommodate an increase in student population through the consolidation and remodelling of the Core;
- To protect and enhance the passive open space and environmental qualities of the northern portion of the Core; and
- To enhance the amenity of the Core for students and academic staff.

Figure 49 – Campus Precincts Plan

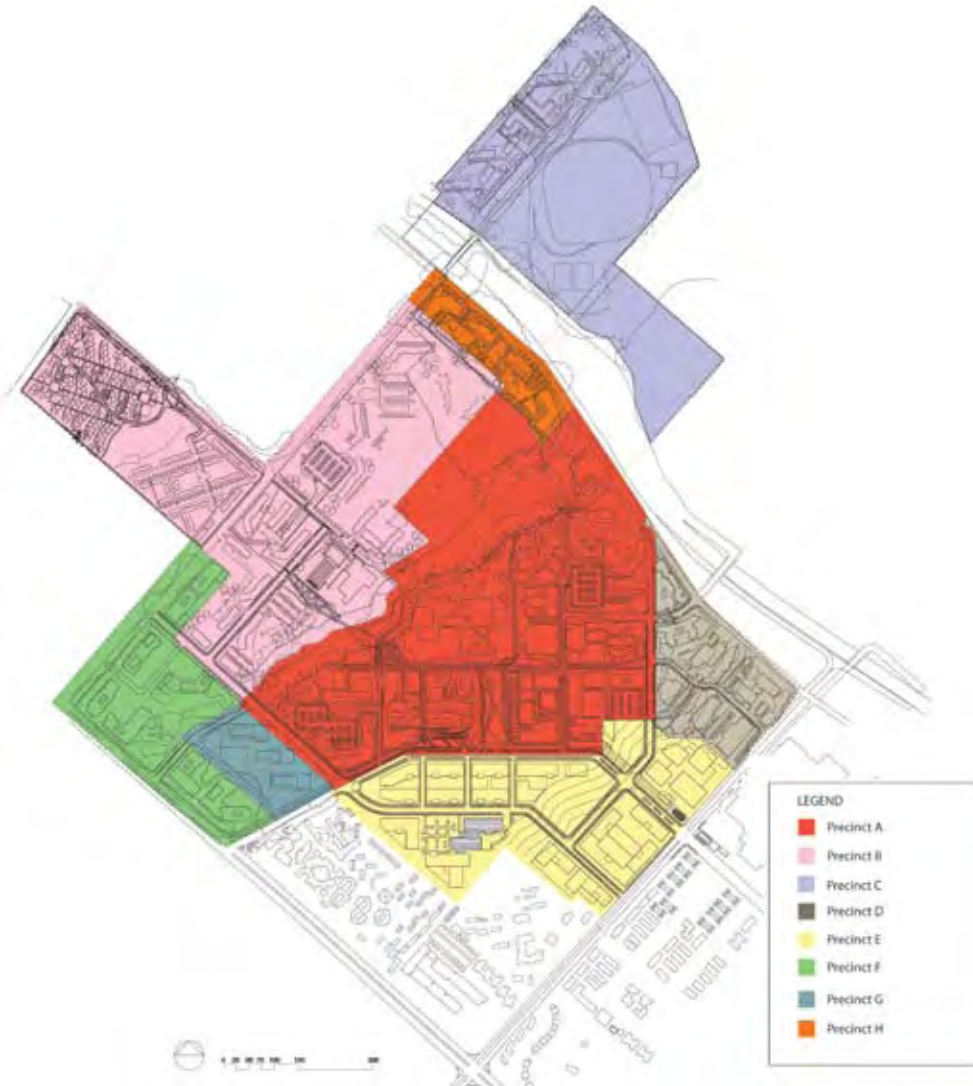


Figure 50 – Precinct A: Academic Core

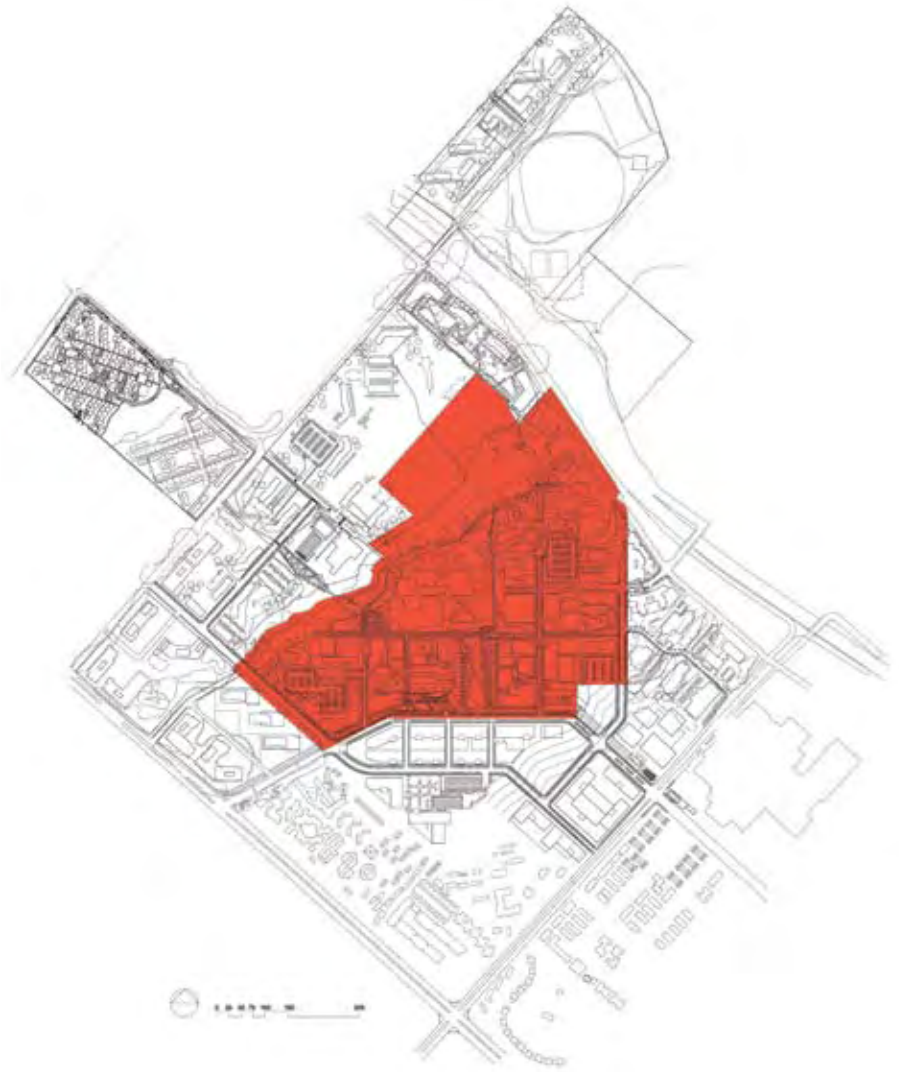


Figure 51 – Precinct A: Key Design Principles

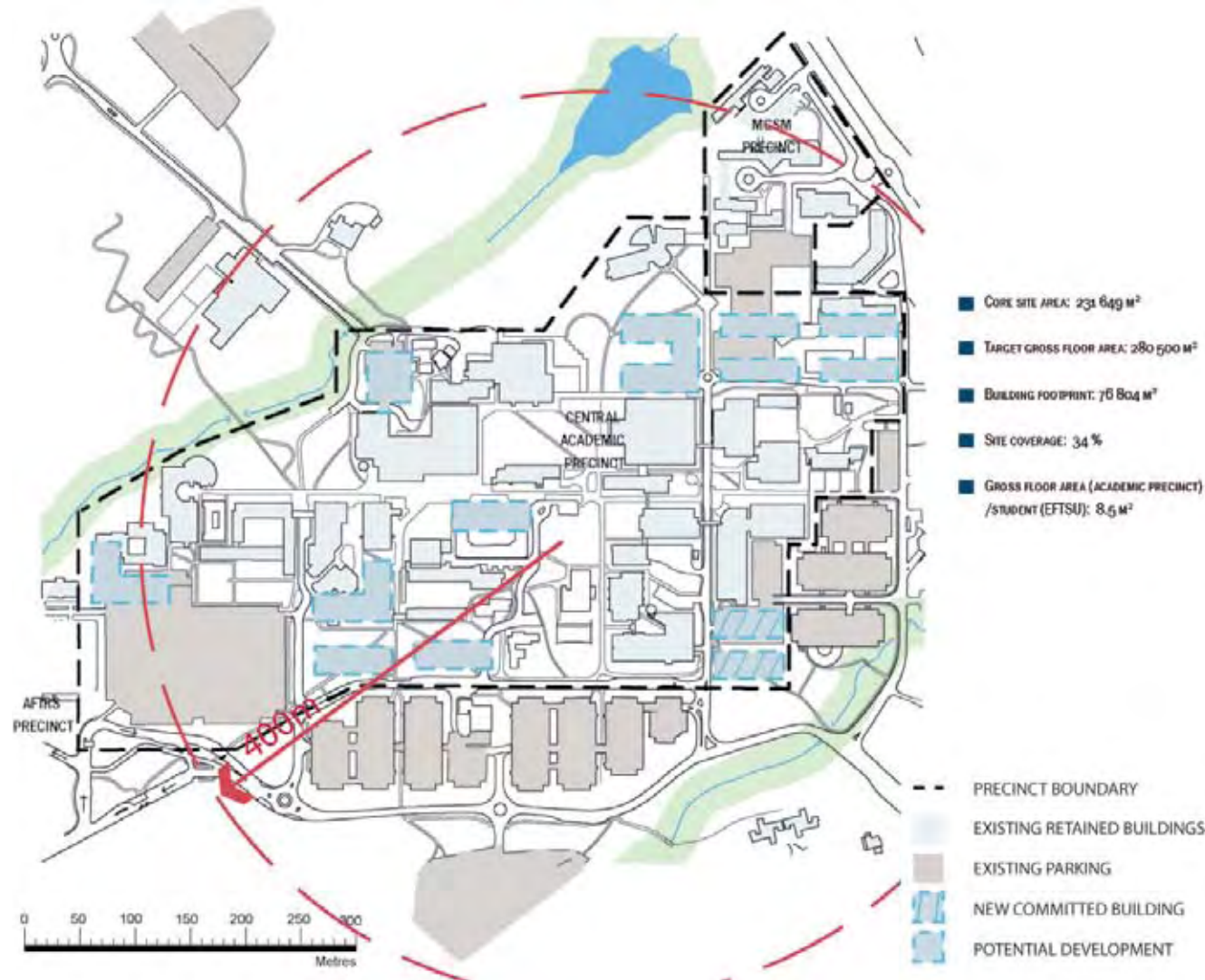


### Design Guidelines

The design guidelines (Figures 51, 52 and 53) for future development within the Academic Core precinct are:

- Rationalise and consolidate existing underutilised buildings and functions;
- Establish a new north-south pedestrian corridor through the Academic Core adjoining the new University Common;
- Develop the new Common on the new north-south spine as the main public open space in the Core;
- Establish an average building height of 6 storeys with taller buildings located at landmark locations;
- Maintain a site coverage within the Academic Core (buildings to non-buildings) below 35% (measured over the extent of the Core);
- Consolidate existing low-rise multi-deck and on-grade parking into peripheral above and below ground multi-deck parking at the University's key entry points with no increase in car parking for academic uses (currently 5,060 spaces);
- Upgrade and visually strengthen the arrival and entry points to the precinct with landscaping and signage;
- Improve legibility and permeability by maximising pedestrian links between buildings and introducing new cross-campus circulation and cycle routes;
- Continue to explore landscape themes that highlight and interpret the current and former uses and character of the Campus;
- New buildings are to demonstrate a high level of architectural design quality and energy efficiency;
- Adopt Crime Prevention through Environmental Design (CPTED) Principles for new development;
- Upgrade the existing University Central Courtyard in response to new desire lines and more shade-tolerant ground finishes without compromising its aesthetic and cultural integrity;

Figure 52 – Precinct A: Academic Core Design Guidelines



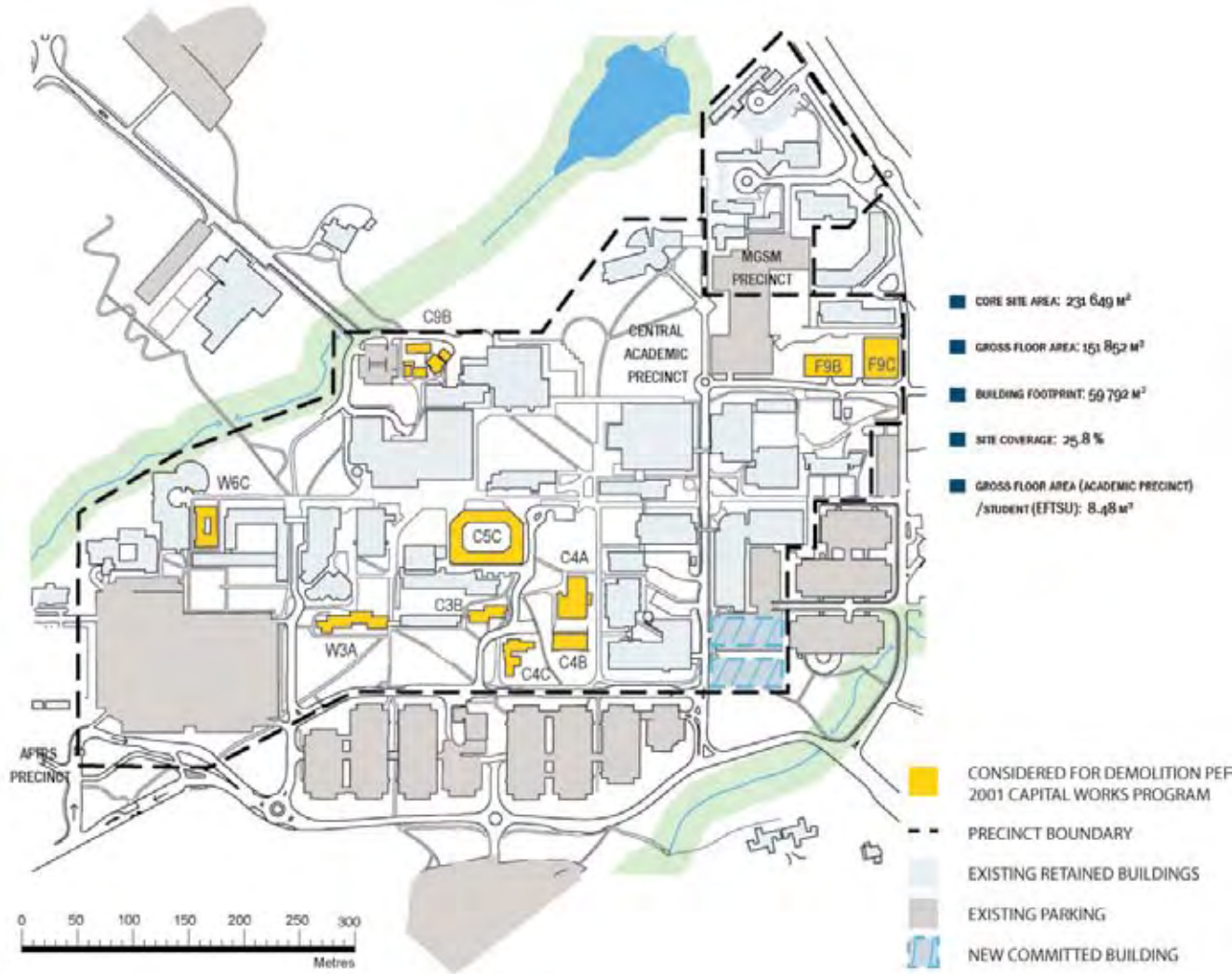
- Activate pedestrian zones within the Core with ground floor activities, cafes and shops where appropriate;
- Enhance the Mars Creek Valley area for use as passive open space whilst protecting the visual and environmental qualities of the woodlands and watercourse/pond;
- Open up vistas from the Academic Core to the Mars Creek Valley area wherever possible; and
- Update the Mars Creek Plan of Management to include a new landscape plan incorporating improvements to the grass amphitheatre and lake edge, more opportunities for greater engagement with the adjacent buildings, (eg terraces for cafes) screen planting to back of- house facilities and appropriate riparian vegetation along the creek line especially in the open areas to the west.

#### University Common

The increase in the student population will require more structured open space in the Academic Core to provide for informal recreation, learning and meeting places. Like the Yard at Harvard and the Lawn at the University of Virginia, the new Common will become a focus for student life and one of the images that defines Macquarie University. The Common will fulfil the following functions:

- Emphasise the north-south spine that runs down its eastern edge;
- Formally address and enhance the campus from Macquarie Drive;
- Provide a formal setting for the new library building;
- Create a destination space as part of the main pedestrian route to and from the station;
- Allow tables and chairs to spill out onto wide paved areas from cafes and food outlets and benefit from the afternoon sun; and
- Encourage informal enjoyment of the space by significant soft landscaping. Trees along the western edge can be retained and the slope graded back towards the east.

Figure 53 – Precinct A: Academic Core Design Guidelines



The University Common will be appropriately terminated by setting back a landmark building on the southern edge. This will help create a formal landscape area with north facing retail space for use by tenants, staff, students and visitors. The aim of this space is to further activate the University’s main entrance road, Macquarie Drive, with pedestrian activity. Macquarie Drive will be upgraded to accommodate increased pedestrian movement with existing trees retained as an important landscape element where possible.

## 6.2 Precinct B – University Housing

### Description

Precinct B – University Housing comprises the north-western portion of the Campus (Figure 54). Generally fronting Culloden Road, it includes the rectangular parcel of land on the northern side of Culloden Road (Lot 1 DP 1046405) that has been developed for student accommodation (Macquarie University Village). The Culloden Road frontage is characterised by open spaces with scattered woodlands and a significant amount of communal living accommodation including seniors housing and missionaries. Current uses within the Precinct include a golf driving range, the University Fauna Park, Observatory and the recently constructed University Aquatic Centre. The precinct includes Gymnasium Road which provides access into the Campus from Culloden Road.

### University Accommodation

Macquarie University currently provides university housing in various forms for overseas, regional, local and interstate students on and off campus. Table 12 summarises the existing provision of student accommodation. Locations are shown in Figure 56.

Figure 54 – Precinct B: University Housing

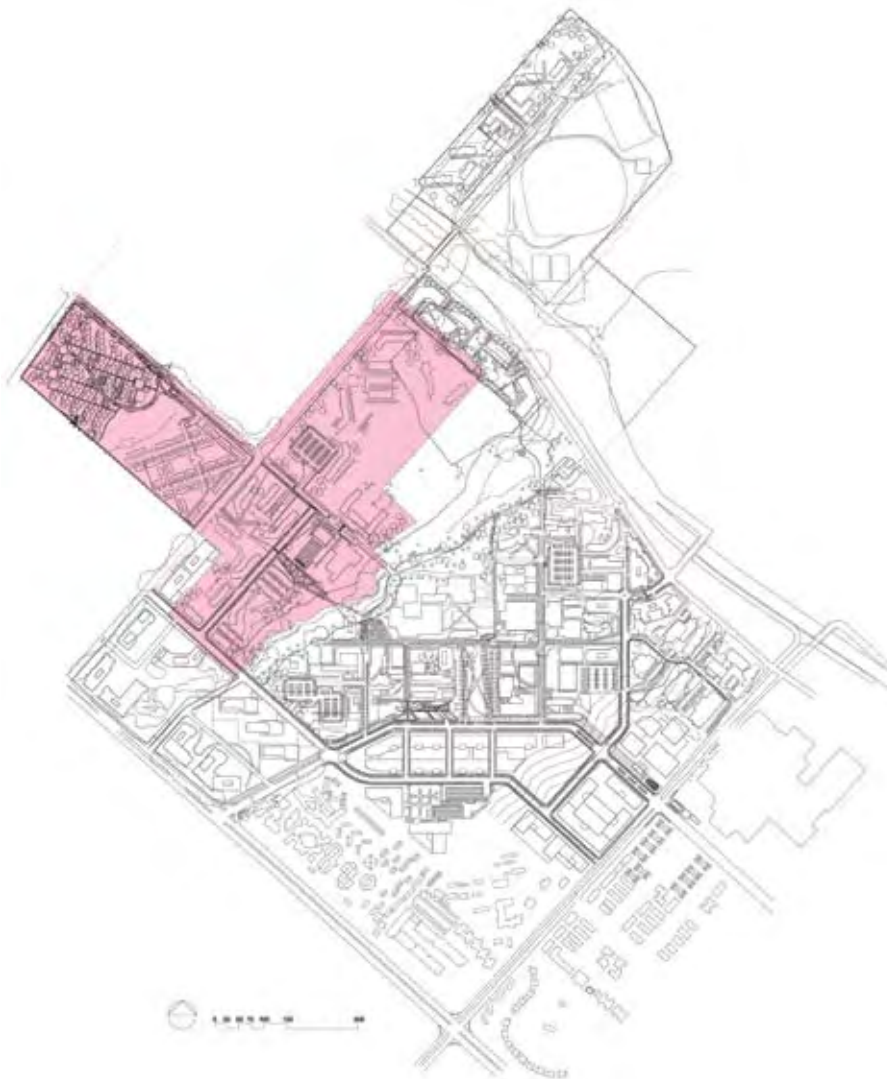


Table 12 – Existing student accommodation (on and off campus)

Premises	Current Capacity (Beds)
Macquarie University Village (Culloden Road)	930
Dunmore Lang College	330
Robert Menzies College	205
Macquarie University Housing, Herring Road	100
<b>ON campus total</b>	<b>1,565</b>
Balaclava Apartments	120
Macquarie Parklands	90
Epping Area	120
<b>OFF Campus Total</b>	<b>330</b>
<b>OVERALL TOTAL</b>	<b>1,895</b>

This current provision is falling well short of current demand, particularly in relation to the increasing enrolments of overseas students. In addition, the existing form of housing (generally two-storey traditional town house style) provides a very low bed yield for the site area occupied.

This Concept Plan proposes an additional 3,450 beds, taking the amount provided on Campus to 5,000 by 2031. At 30m<sup>2</sup> of floor space per student bed, an additional 103,500m<sup>2</sup> of student accommodation is required. The majority of this new accommodation will be located within the University Housing Precinct. In the long term, it is expected that the existing Dunmore Lang College, Robert Menzies College and the Macquarie University Housing (all located on the eastern side of the campus), will be relocated into the University Housing Precinct. In addition to student housing, the Precinct may accommodate a limited amount of housing for University staff which may take the form of single dwelling houses.

### Seniors Housing

The provision of Seniors Living Development in appropriate locations will also be provided within Precinct B. Seniors living development is proposed in this precinct. Over the last decade, particularly in the USA, there has been a growing link between University campuses and Seniors Housing. This has been driven by a number of considerations including:

- improved health and longevity and the resulting interest of the senior population in living on University Campuses;
- “Baby Boomers” who had an association with tertiary education earlier in life wishing to again engage in University learning or teaching;
- Compatibility of needs (learning, pools, open spaces);
- Improved vitality and security of campuses after hours as a result of people living on the campus.

The provision of seniors living development is a compatible land-use in the north-west part of the campus.

This area is surrounded by seniors living development along the Epping Road frontage, as well as a number of other special use residential land-uses. The provision of seniors living development in the north-west also allows for social interaction. Seniors living development is only proposed within this particular precinct and will not compromise the ability of the University to achieve its academic objectives.

### Objectives

The objectives for the University Housing Precinct are:

- To accommodate up to 5,000 student accommodation beds on Campus by 2031 (i.e. an increase in 3,450 beds from the existing number of 1,550);
- To protect areas of significant woodlands;
- To accommodate Seniors Living housing in appropriate locations;

- To utilise the land for university related functions; and
- To enhance pedestrian and cycle access between Culloden Road and the Academic Core.

### Design Guidelines

The design guidelines (Figure 55) for future development within the University Housing Precinct are:

- Strengthen the activity axis along Gymnasium Road to provide a more distinguished entrance and avenue link to the Academic Core;
- Retain significant native woodland areas in this precinct;
- Protect and enhance the Mars Creek riparian corridor;
- Incorporate a new green space leading down to Mars Creek. This space is to address a new north-south road, the Gymnasium, and respond to views of the creek and Academic Core;
- New buildings should be screened with similar tree species so that they blend with the backdrop when viewed across from the Academic Core. The existing parkland character should remain as the primary focus of this view;
- New buildings up to ten storeys in height and setback 6m from Culloden Road;
- New buildings are to demonstrate a high level of architectural design quality and energy efficiency;
- Car parking to be provided in line with relevant Council requirements; and
- Adopt Crime Prevention through Environmental Design (CPTED) Principles for new development.

## 6.3 Precinct C – University Open Space and Playing Fields

### Description

Precinct C – the University Open Space and Playing Fields, is located across the M2 Motorway adjacent to the Lane Cove National Park (Figure 57). It is accessed from Culloden Road and is generally visually separated from the main Campus. The facilities include two ovals, three sporting fields, a tennis centre and sports centre. The landscape backdrop of the National Park provides a green fringe around three sides of the precinct.

### Objectives

The objectives for the University Open Space and Playing Fields Precinct are:

- To retain and enhance the open space and recreation function of the land to serve the University function;
- To minimise environmental impacts on the adjoining Lane Cove National Park;
- To provide appropriate stormwater management measures in this location; and
- To ensure appropriate vegetation management procedures are implemented.

### Design Guidelines

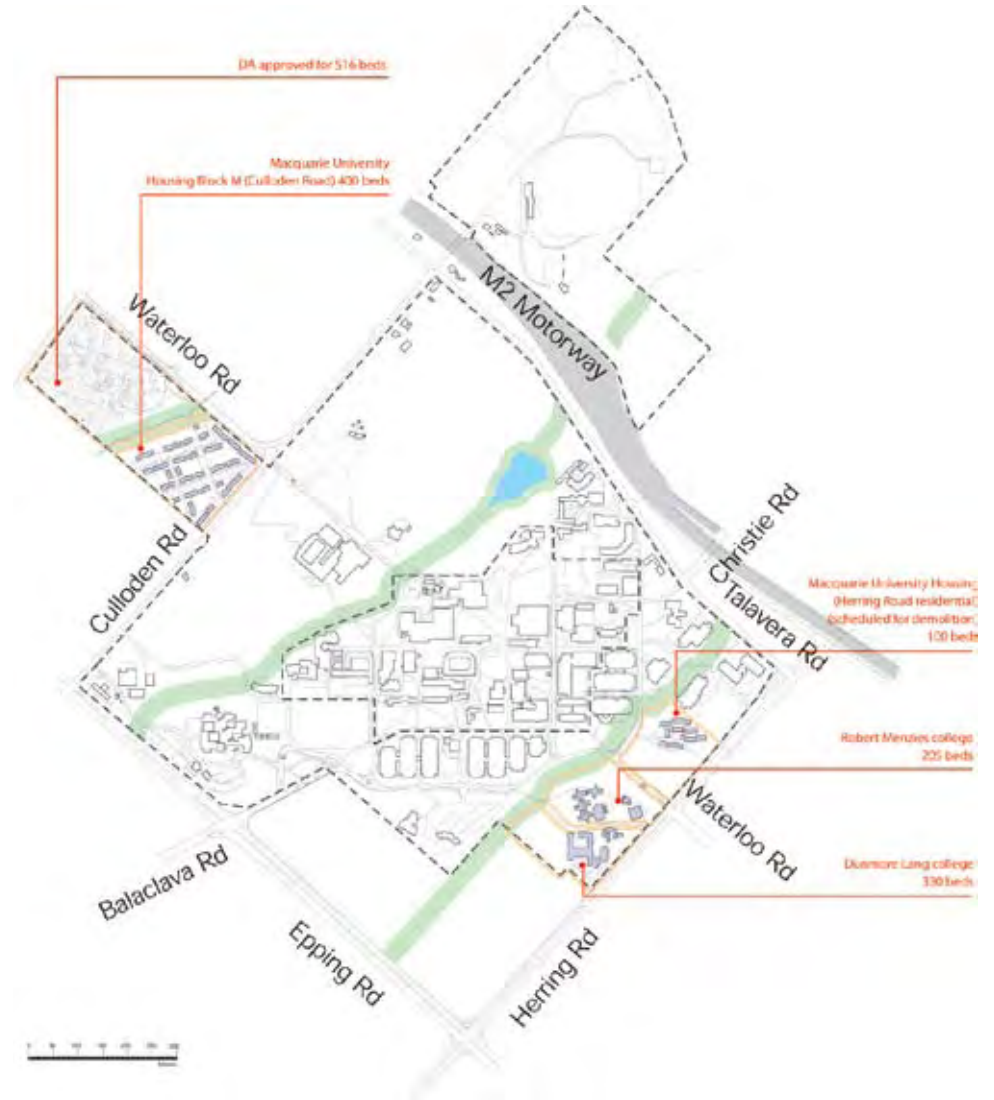
The design guidelines for the University Open Space and Playing Fields Precinct are to:

- Retain and manage the natural landscape setting of the playing fields precinct; and
- Extend the indigenous vegetation to the south to mitigate the impact of the Motorway.

Figure 55 – Precinct B: Key Design Principles



Figure 56 – Existing University student accommodation (on campus)





## 6.4 Precinct D – Macquarie University Research Park (MURP) and Private Hospital

### Description

Precinct D – MURP and Private Hospital is located at the eastern end of the Campus. It has an approximate area of 7.4 ha and is generally defined by Herring Road, Talavera Road, University Park Drive (Figure 58).

The site had been proposed in the University's 1984 Draft Development Plan for academic/research/science park uses. The model which encouraged this kind of development was established in the United States, linking Stanford University to adjacent industry. The concept was, that when tenanted by organisations capable of developing a synergy with the University, a 'research and development park' would consolidate the University and the local environ, as a leading educational, research and technology precinct. MURP is home to a number of leading Australian and international companies such as Nortel, Siemens, Dow Corning, and Proctor & Gamble.

Approval was granted in May 2007 for the Macquarie University Private Hospital – a 200 plus bed private hospital with associated medical consulting rooms. The proposed model of integrating a private hospital with a research intense university is one based upon best practice as established in such distinguished institutions as the Mayo Clinic, Rochester and Georgetown University Hospitals in Washington DC.

To support this vision, the University has established the Australian School of Advanced Medicine (ASAM) which has already attracted a number of leading medical researchers.

There are limited further development opportunities within this precinct. However, in order for the site to be rezoned in accordance with the Standard LEP Template, this precinct has been included within the proposed Mixed Uses zone in order to appropriately define the existing land-uses, and allow any future academic use.

### Objectives

The objectives for MURP and Private Hospital Precinct are:

- To continue to foster a relationship between commercial and research uses in MURP and the University core activities;
- Continue the landscape and open space pattern established within the Academic Core;
- Ensure a consistent connection between cyclist and pedestrian networks established within the Campus; and
- Ensure an appropriate setback is maintained to Talavera and Herring Road.

### Design Guidelines

The design guidelines for MURP and Private Hospital Precinct are:

- New development to provide an address to an internal or external road or significant open space area;
- Overshadowing impacts to be considered in the development of new buildings; and
- Appropriate stormwater measures to be incorporated in the development of new buildings.

## 6.5 Precinct E – Station South

### Description

The Station South Precinct (approximately 17.6ha in area) occupies the south eastern portion of the Campus (Figure 59). It is accessed from Balaclava Road to the south-west and Waterloo and Herring Roads to the south-east. The Macquarie University Station which, once complete, will form part of the Chatswood to Epping rail line, is located at the precinct's south-eastern boundary adjoining the Waterloo/Herring Road intersection.

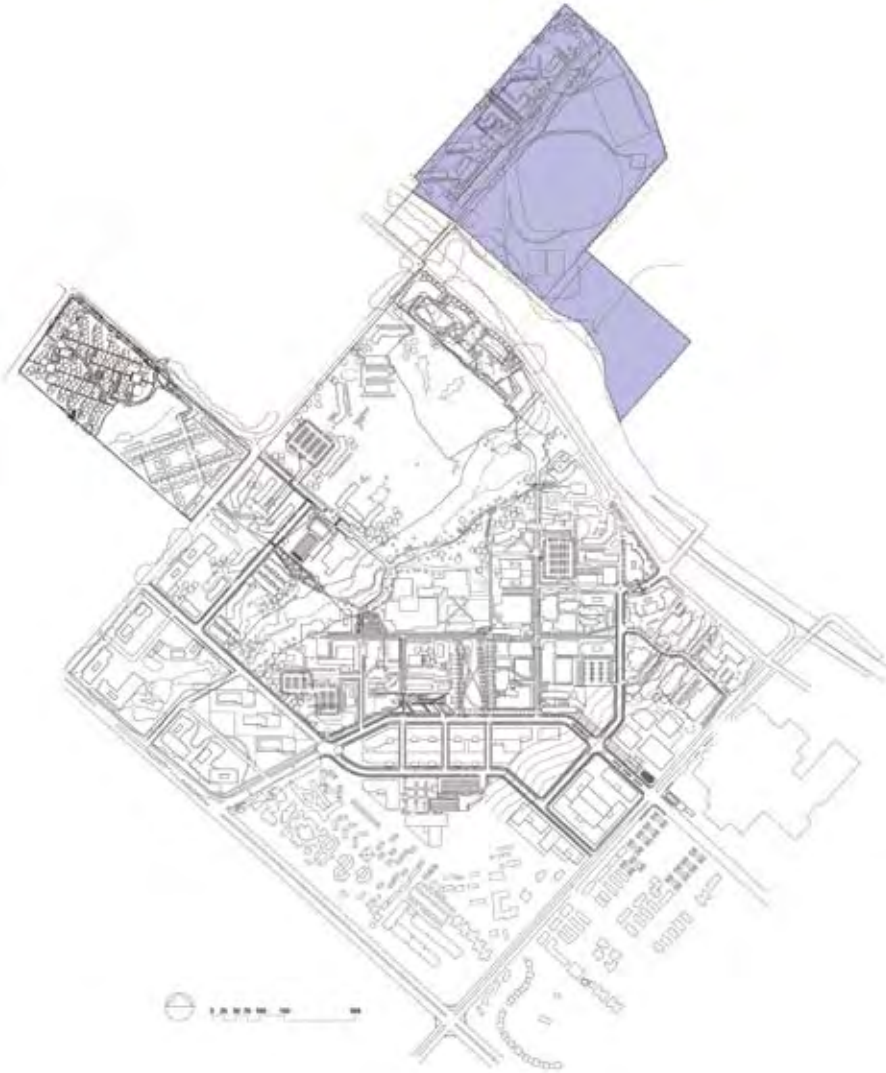
The precinct is separated from the University Academic Core via Macquarie Drive, which forms a crescent shape running from west to east linking the Balaclava Road access to the Waterloo/Herring Road intersection. At its south-western boundary, the precinct adjoins residential and aged-care development, as well as a creek corridor and surrounding open space. Adjoining the precinct at its north-eastern boundary is MURP.

Existing development within the precinct include the Robert Menzies and Dunmore Lang Colleges, a child care centre, and Gummut Cottage. North of University Avenue is a number of multi-level car parks which provide parking spaces for University staff and students.

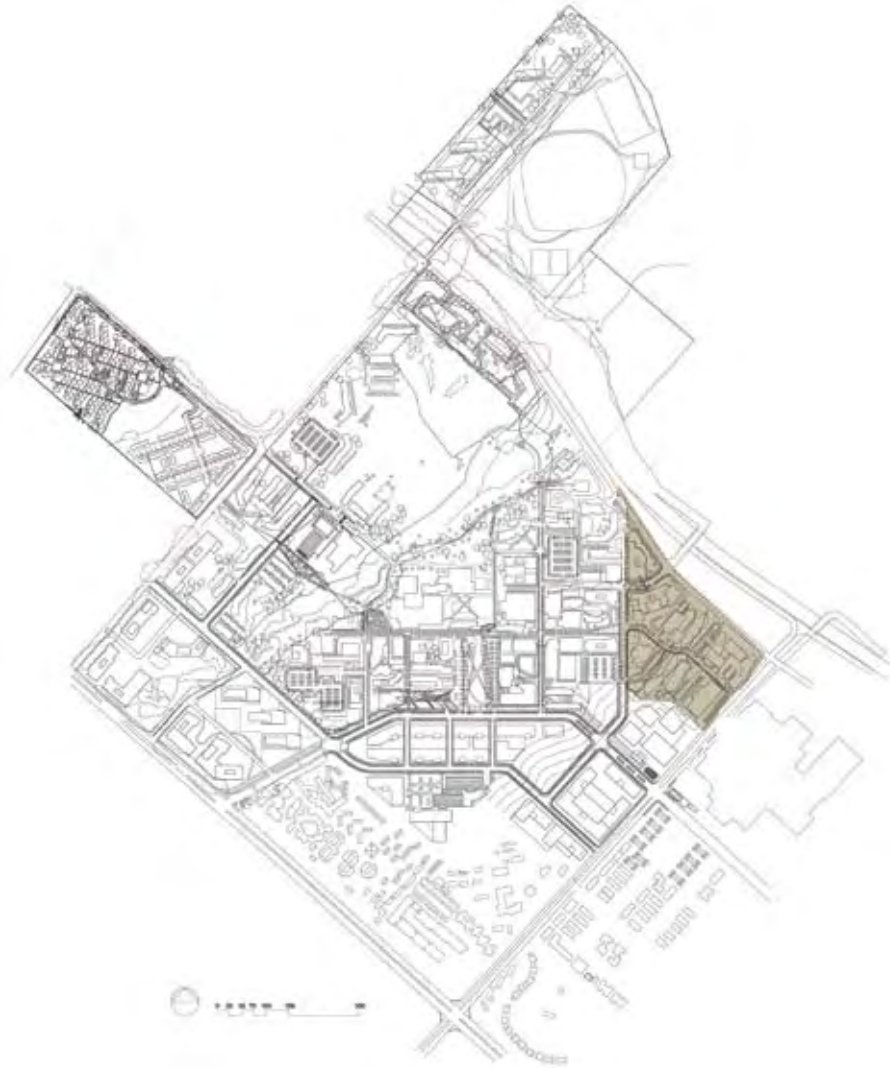
Part of the Station South Precinct is zoned 3(h) under Ryde PSO 1979. A range of uses are permissible on this part of the campus including commercial and retail uses. The PSO establishes maximum FSRs (2:1 up to 3:1 around the station) and maximum building heights for this part of the campus.

Due to its close proximity to the new rail station and its interface with the remainder of the Macquarie Park Corridor, the precinct will become the focus for new commercial and research-related development. All existing development within the precinct will be demolished over time.

**Figure 57** – Precinct C: University Open Space and Playing Fields



**Figure 58** – Precinct D: MURP and Private Hospital



To facilitate the development of the Station South Precinct as a focus for broad commercial development, a number of additional land-uses are proposed to be added to the proposed mixed uses zone (see Section 7 of this EAR for detail). New commercial development within the Station South Precinct will have a component of research-related activities associated with it and/or will be encouraged to achieve a level of collaboration with the University.

#### Triangle South of University Avenue

The triangle of land in the south western section of the Station South Precinct and generally bounded by University Avenue to the north, University Creek and the University's Dunmore Lang and Robert Menzies Colleges, and Morling Baptist Bible College to the east and south, NSW Baptist Community Services' Willandra Village to the south and west will accommodate the first research related commercial development within Precinct E.

The first such development is the relocation of the Cochlear Global Headquarters to this part of the Campus. The first stage of the Cochlear development will consist of:

- the construction of two 5-6 storey buildings;
- gross floor space of approximately 25,000m<sup>2</sup>;
- employment for up to 1,250 employees with car parking for some 550 cars;
- possible supporting ancillary retail and support services at ground level; and
- associated site landscaping.

The proposed floor space will provide for Cochlear's upgraded and expanded administrative, corporate, research and development, manufacturing, storage and distribution requirements. The remainder of the site will be developed either for expansion of Cochlear facility or to accommodate another development.

In considering the development of the triangle (and, indeed other areas on the Campus), it is important to note that the University will own all buildings, car parking and other facilities and will be in a position to ensure that this transition occurs effectively.

The current characteristics of this triangle include:

- open space and existing vegetation in the north-west;
- existing car parking in the centre and the east, with access off University Avenue;
- occasional care facilities to the west; and
- child care facilities to the south.

The existing facilities, and in particular the child care and occasional care facilities are not proposed to be relocated as part of the first stage of the Cochlear development. Due largely to this, it is currently proposed that existing at-grade car parking providing for existing and proposed uses be located/retained on the part of the site identified by this Concept Plan to ultimately accommodate open-space. It is proposed that as the triangle is developed, at-grade car parking will be relocated into basements of new buildings so that when the triangle is fully developed, the open space will be provided in accordance with this Concept Plan.

#### Objectives

The objectives for the Station South Precinct are:

- To maximise the commercial and research opportunities created by the new rail station and the interface with the Macquarie Park Corridor;
- To enhance synergies between the commercial sector and the academic function of the University;
- To strengthen pedestrian connections between the new station and the academic core; and

- To protect and enhance the environmental qualities and water management function of the associated area with University Creek.
- To promote delivery flexibility having regard to existing site facilities and infrastructure which will be relocated through the life of the Concept Plan.
- To allow precise locations and sizes of open space areas to be determined having regard to its role in the development through the life of the Concept Plan.

#### Design Guidelines

The design guidelines for the Station South precinct are:

- Accommodate up to 330,000m<sup>2</sup> of commercial floor area within the precinct (including the floor area currently permitted under LEP137);
- Allow for the progressive demolition of existing buildings and parking structures;
- Building heights and setbacks are to be generally in accordance with Figure 64 and Figure 65. Two landmark buildings are to be located fronting Herring Road in close proximity to the rail station. Adverse overshadowing impacts on adjoining properties are to be minimised;
- The immediate area surrounding the station and intersection of Waterloo and Herring Roads should provide the 'forecourt' to the two development parcels east and west of Waterloo Road;
- New buildings are to demonstrate a high level of architectural design quality and energy efficiency;
- Link new public spaces (i.e. station forecourt and new university common) with major west-east pedestrian routes;
- Establish view corridors along primary pedestrian routes linked by public open space;
- Upgrade and visually strengthen the arrival and entry points to the precinct with landscaping and signage;

Design Guidelines continued...

- Protect and enhance the University Creek riparian corridor;
- Incorporate Water Sensitive Urban Design (WSUD) principles within new development.
- Establish 'entry statements' at the Balaclava and Herring Road entrance to the Campus;
- Building setbacks on Herring Road and Waterloo Road should create a sense of open space and allow a visual link towards the Academic Core;
- Active uses such as retail shops, cafes, and restaurants are to be located around the station portal area;
- Internal road network and vehicular access and circulation are to be in accordance with Figure 70 and Figure 71. Vehicular impacts on the pedestrian network and the academic core are to be minimised. New roads are to continue the established grid pattern of the Campus;
- Car parking for new commercial development is to be provided in accordance with Figure 72, being 1 space per 80m<sup>2</sup> for the precinct; and
- Parking is to be accommodated generally within basement parking with up to 1 podium parking level permitted. All above ground parking is to be appropriately screened and architecturally treated.

**Figure 59** – Precinct E: Station Precinct

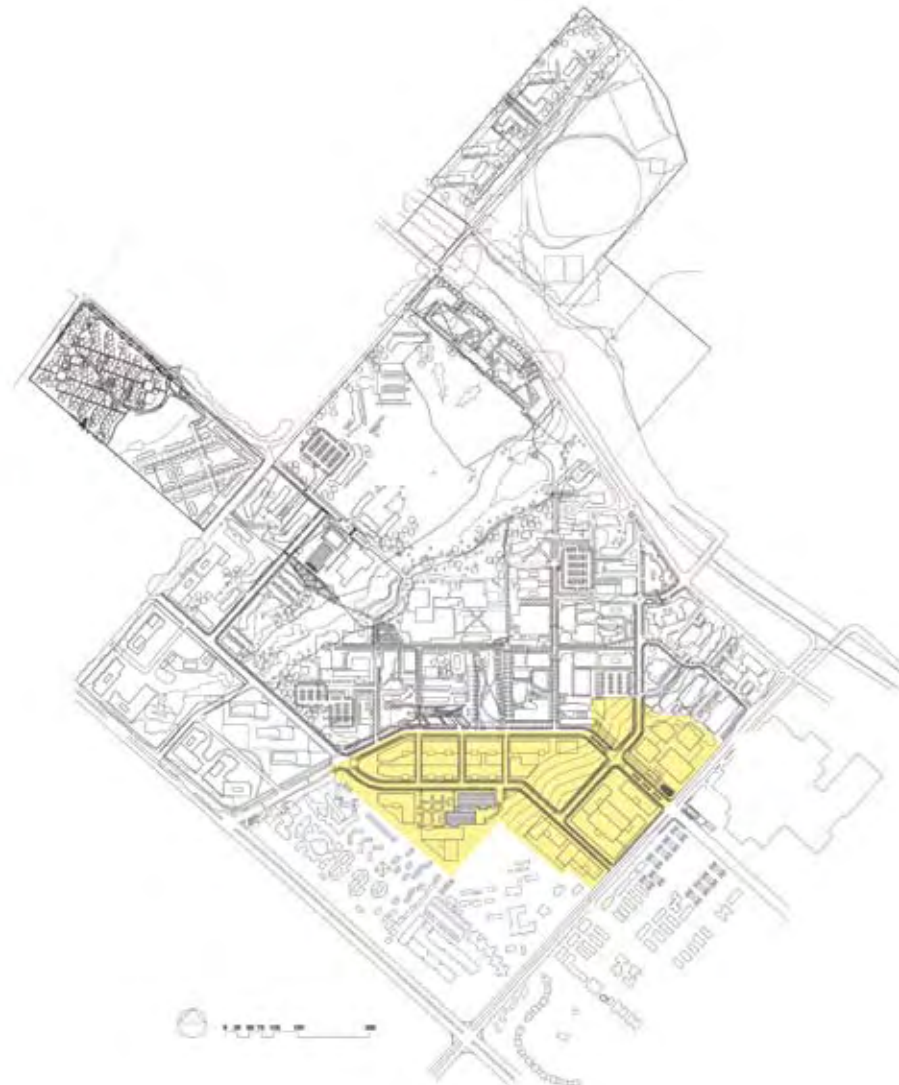


Figure 60 – Precinct E Land-Use Diagram

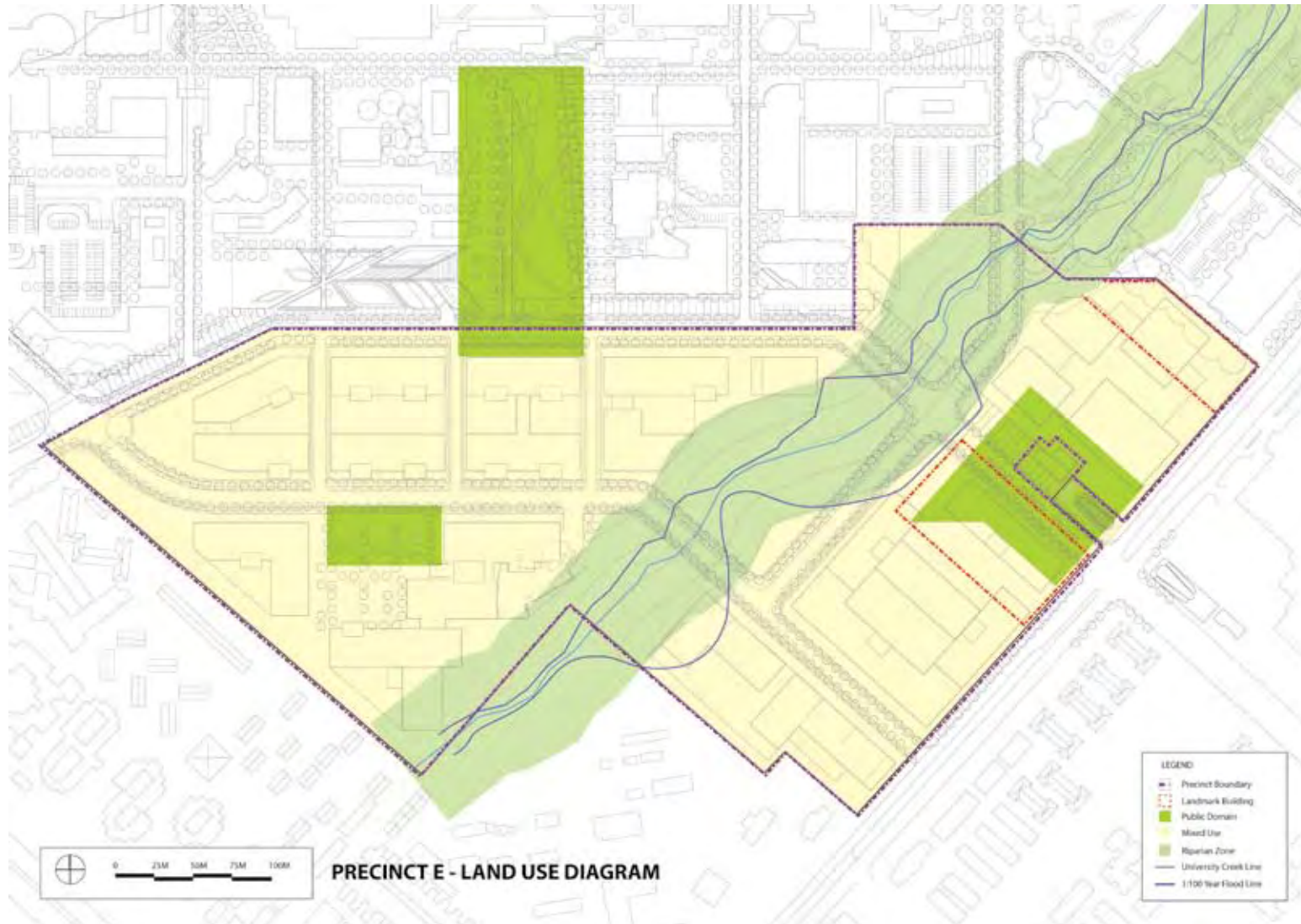


Figure 61 – Precinct E: Public Domain Diagram

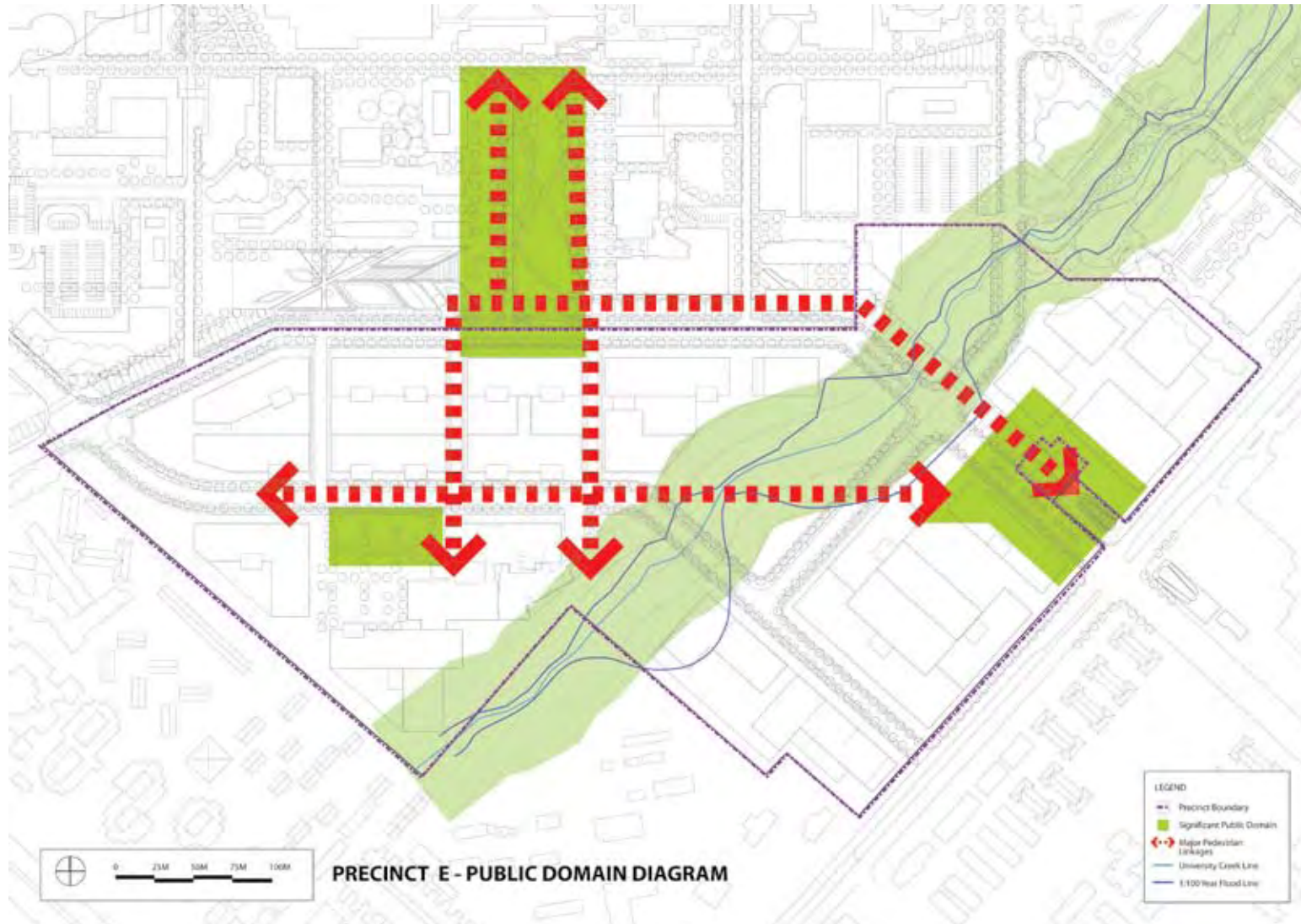


Figure 62 – Precinct E: Public Linkages / Pedestrian Circulation

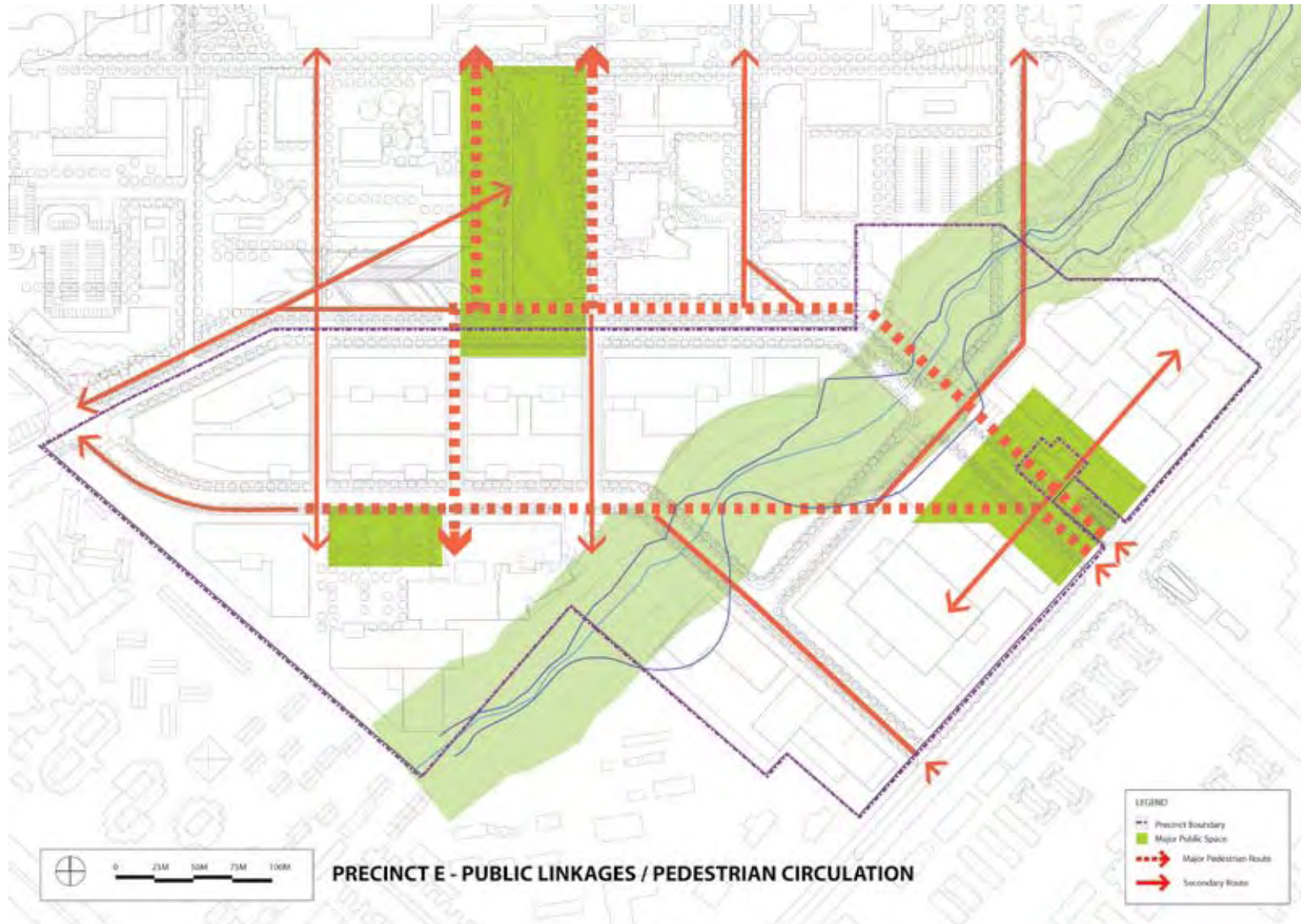


Figure 63 – Precinct E: Landscape Concept

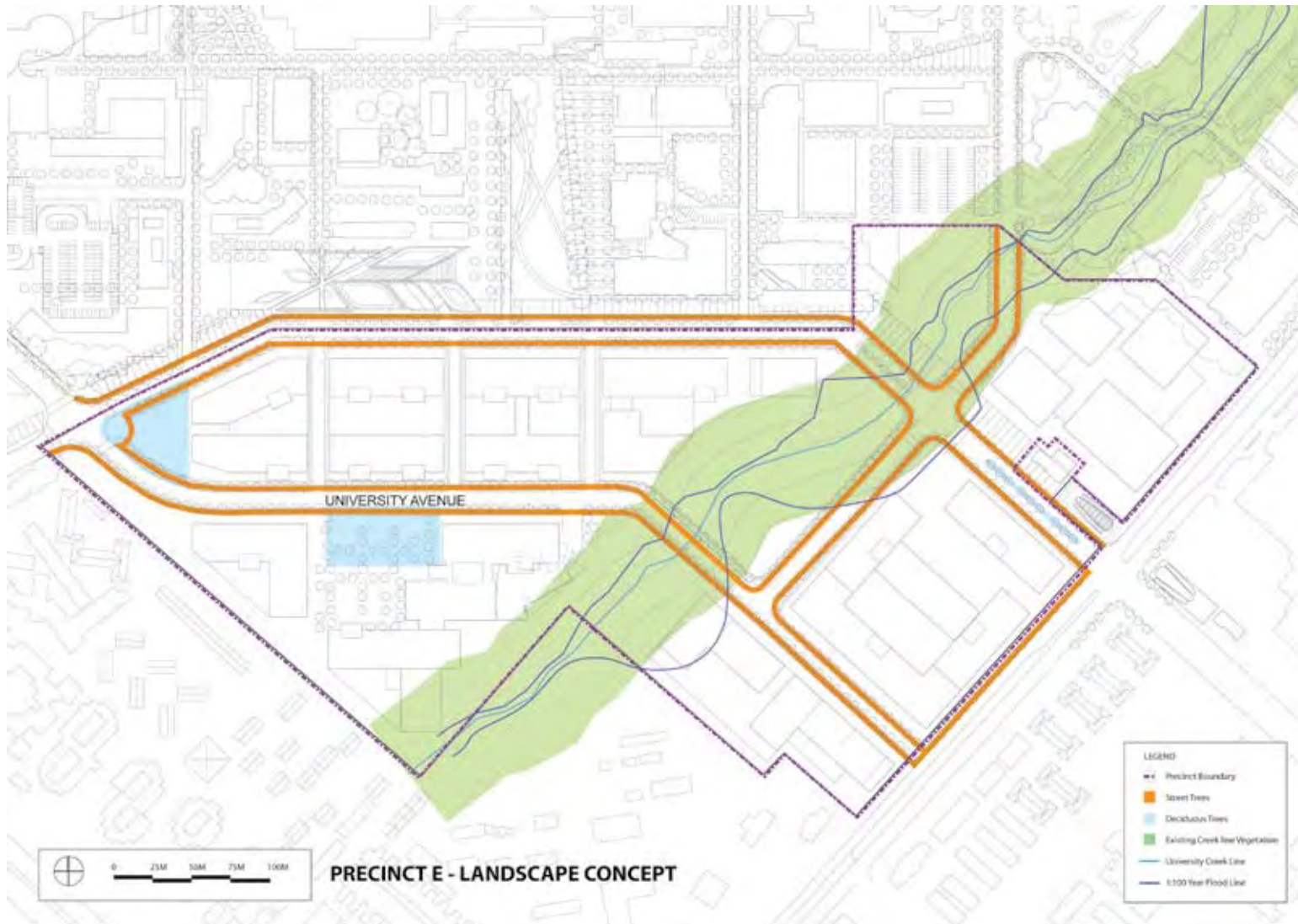




Figure 64 – Precinct E: Built Form / Height Control

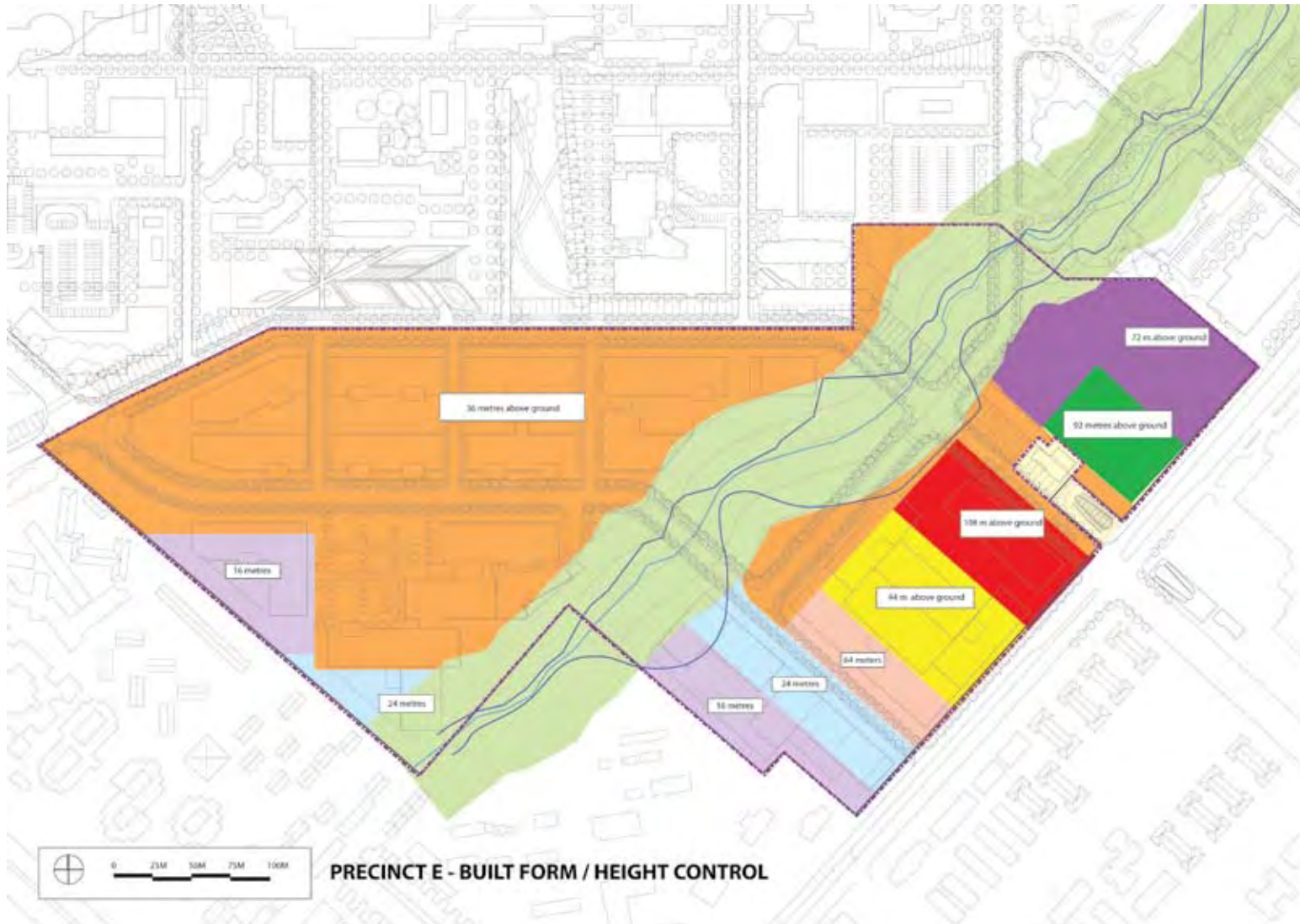


Figure 65 – Precinct E: Set Back Control Diagram

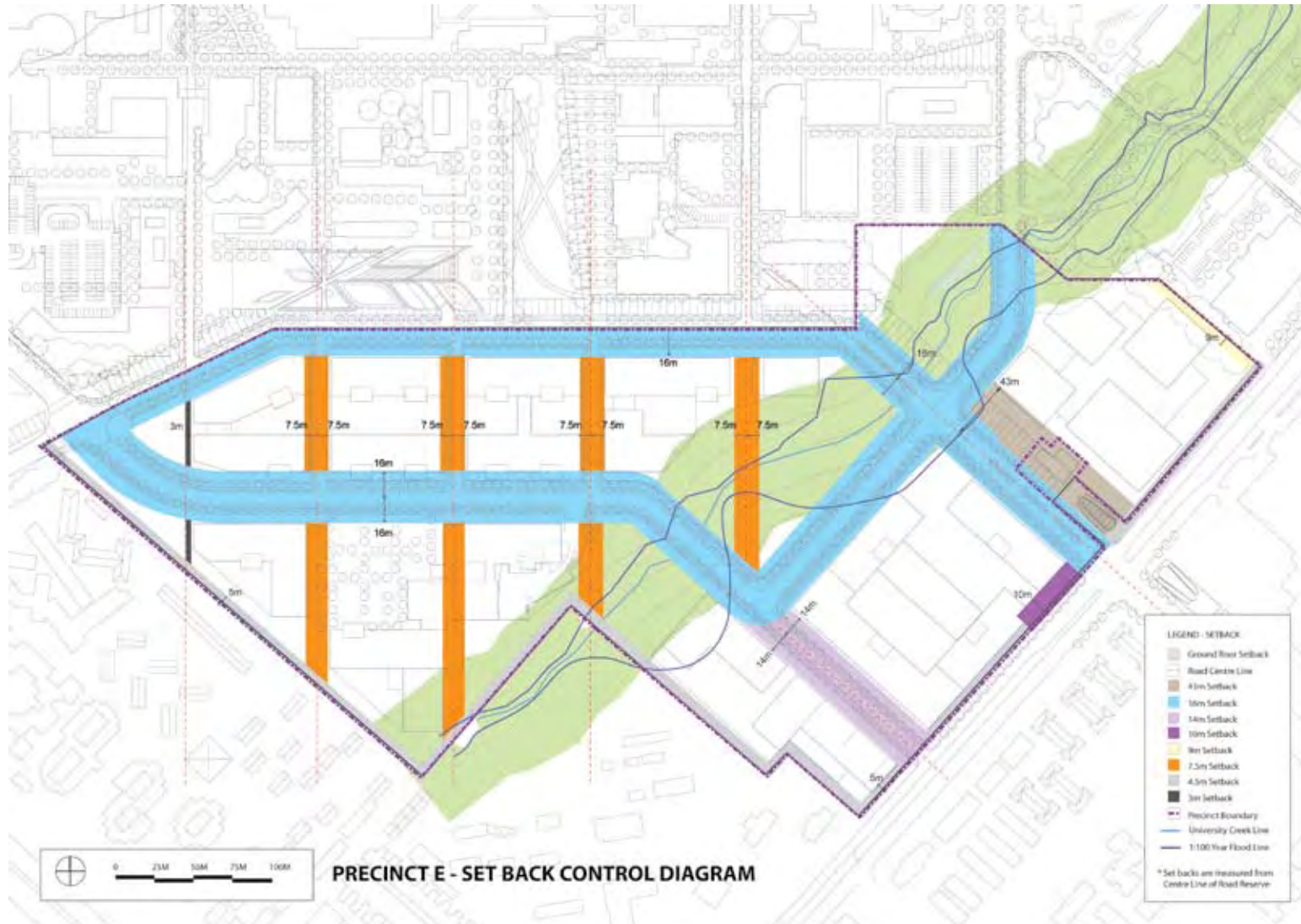


Figure 66 – Precinct E: Indicative Footprints Diagram

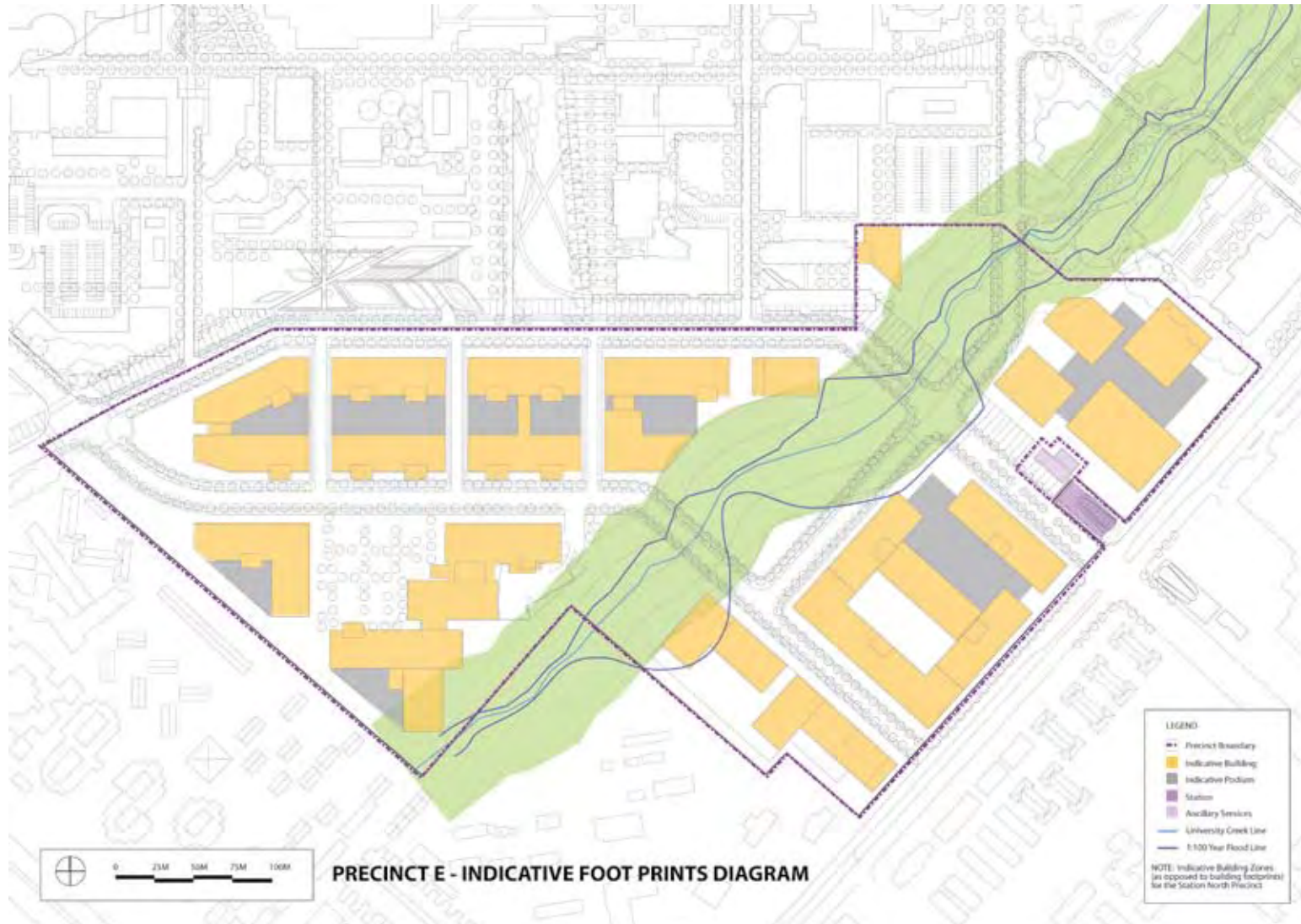


Figure 67 – Precinct E: Indicative Ground Level Street Activation



Figure 68 – Precinct E: Views and Vistas

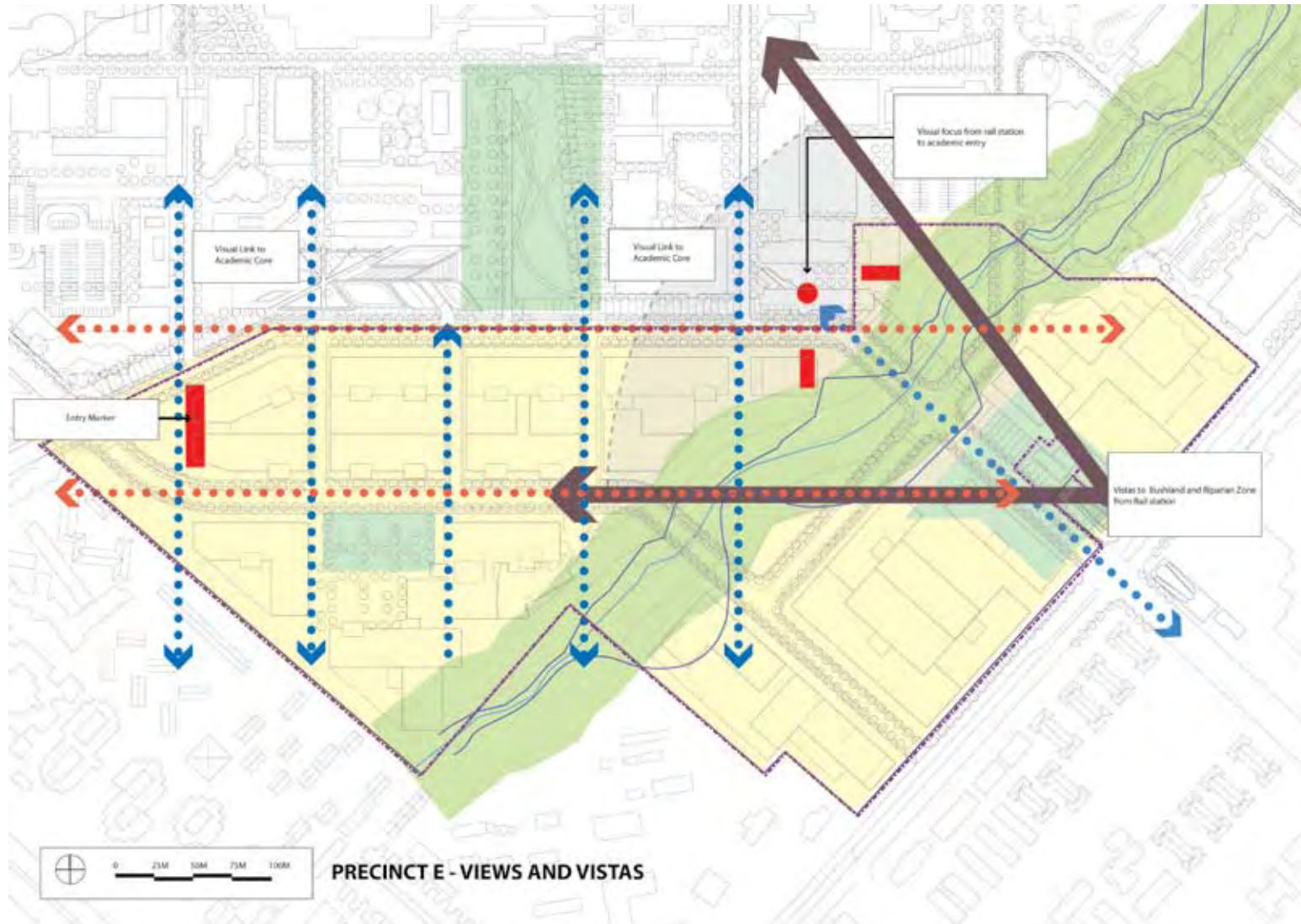


Figure 69 – Precinct E: Urban Design Principles

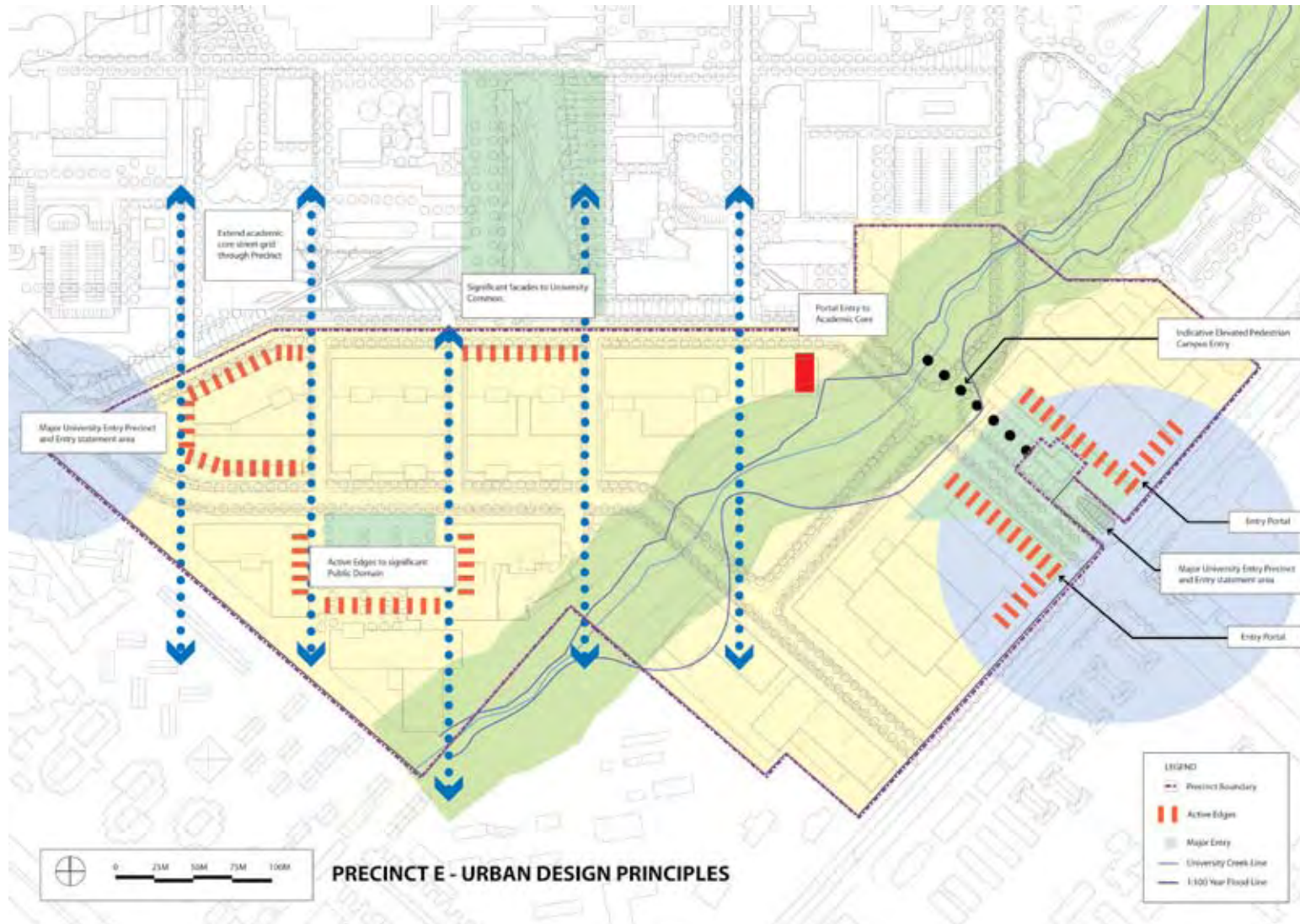


Figure 70 – Precinct E: Road Hierarchy / Vehicular Circulation

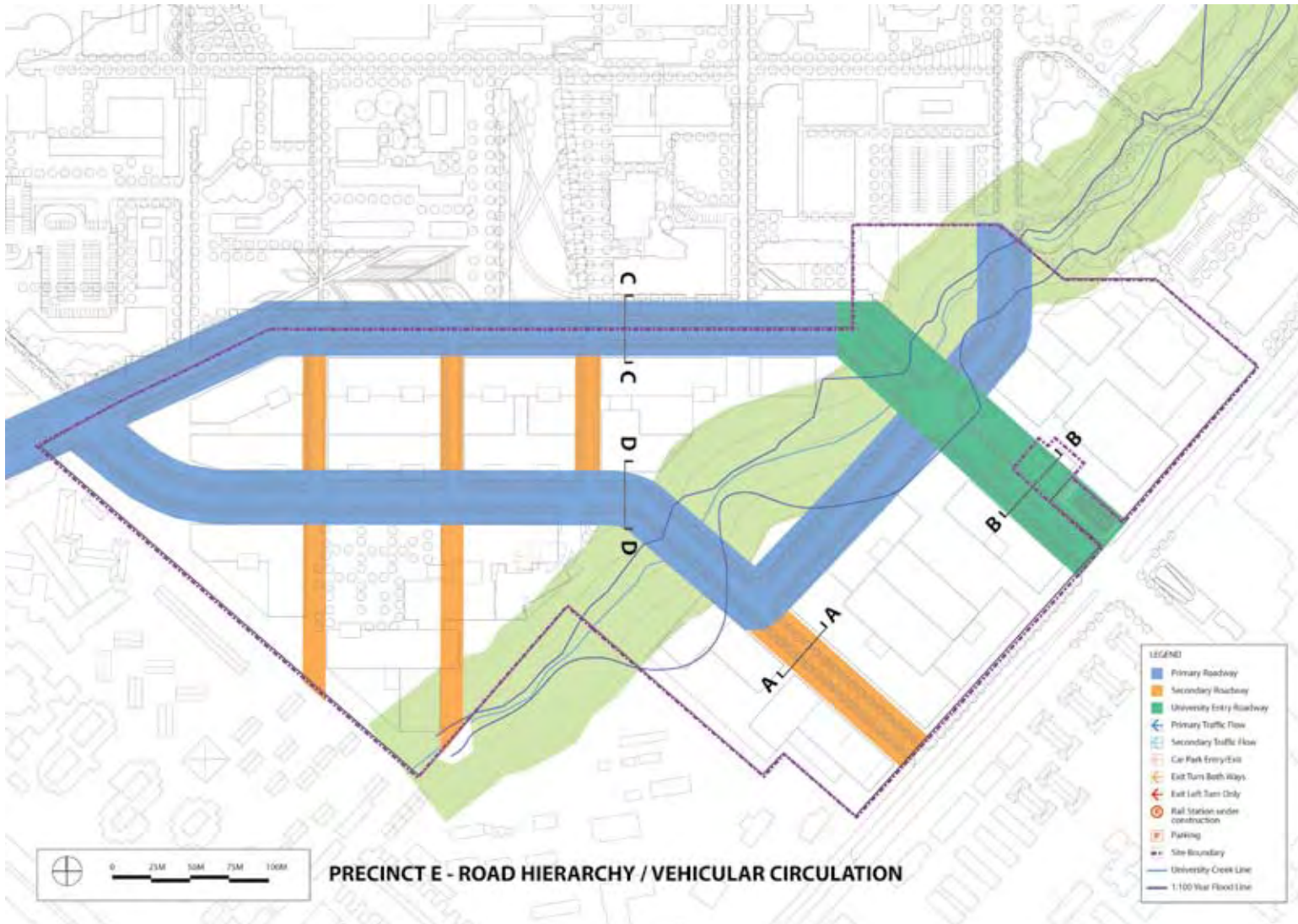
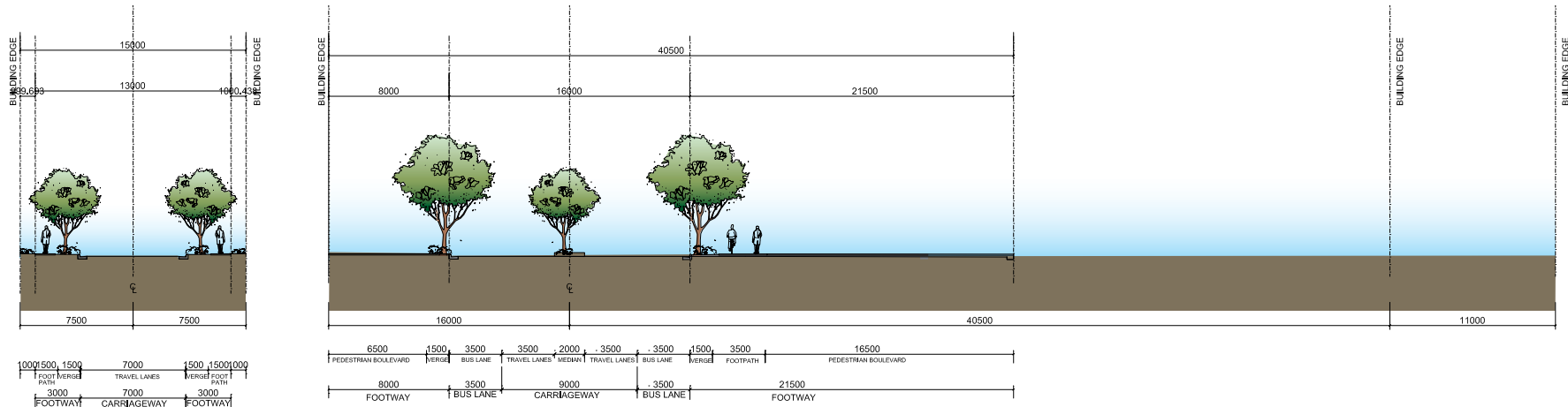
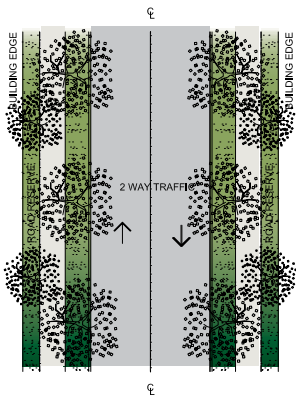


Figure 71a – Precinct E: Road Hierarchy: Indicative Street Sections

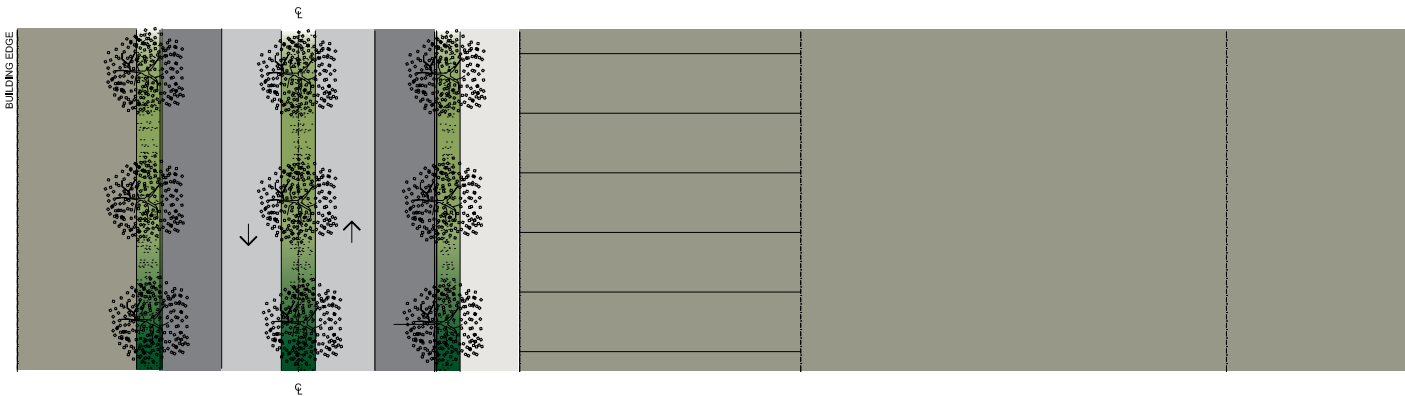


TERTIARY ROADWAY

UNIVERSITY ENTRY ROADWAY



TERTIARY ROADWAY  
SECTION AA

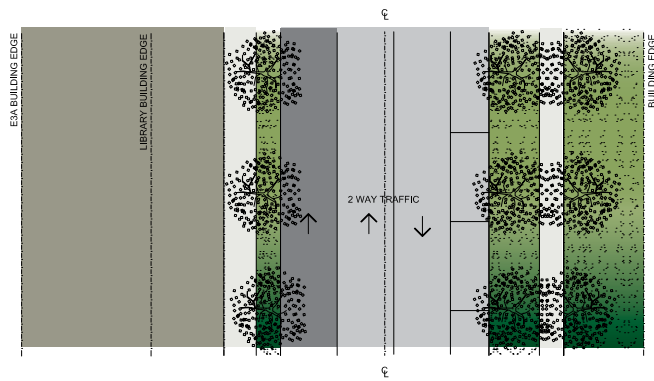
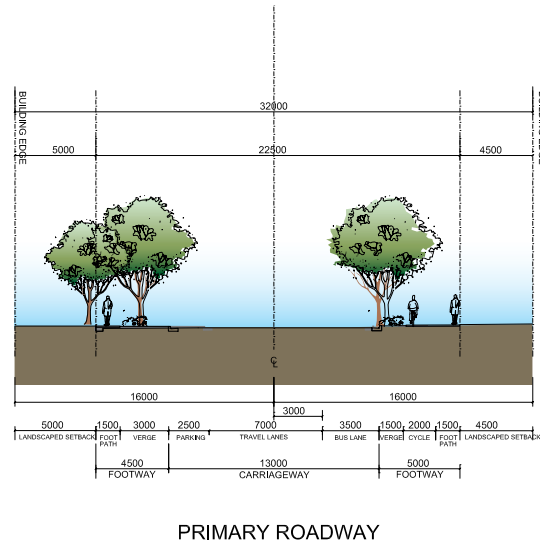
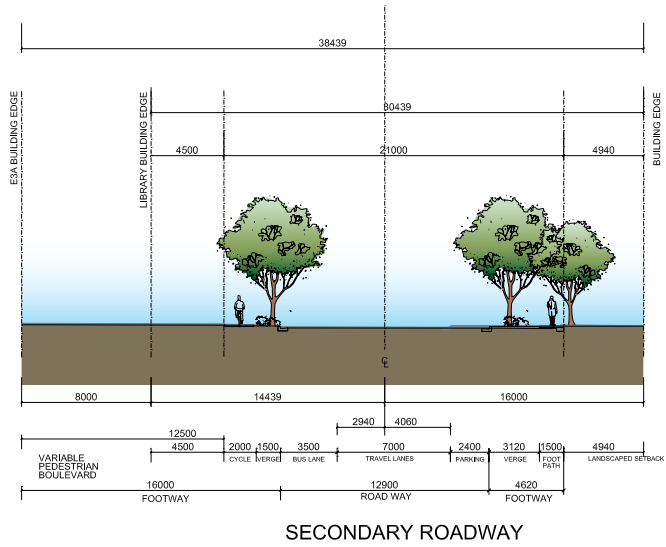


UNIVERSITY ENTRY ROADWAY  
SECTION BB

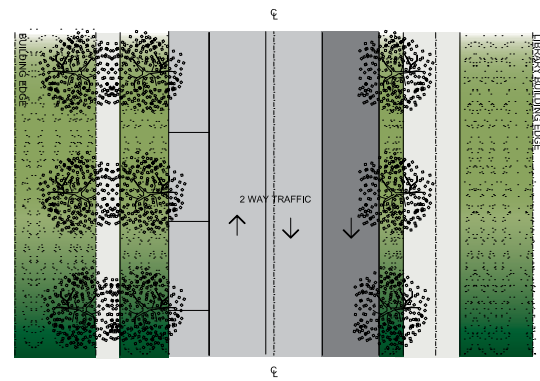




Figure 71b – Precinct E: Road Hierarchy: Indicative Street Sections



SECTION CC  
MACQUARIE DRIVE



SECTION DD  
UNIVERSITY AVENUE

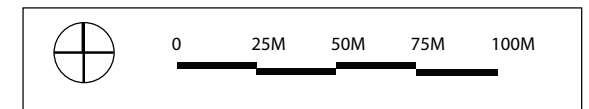
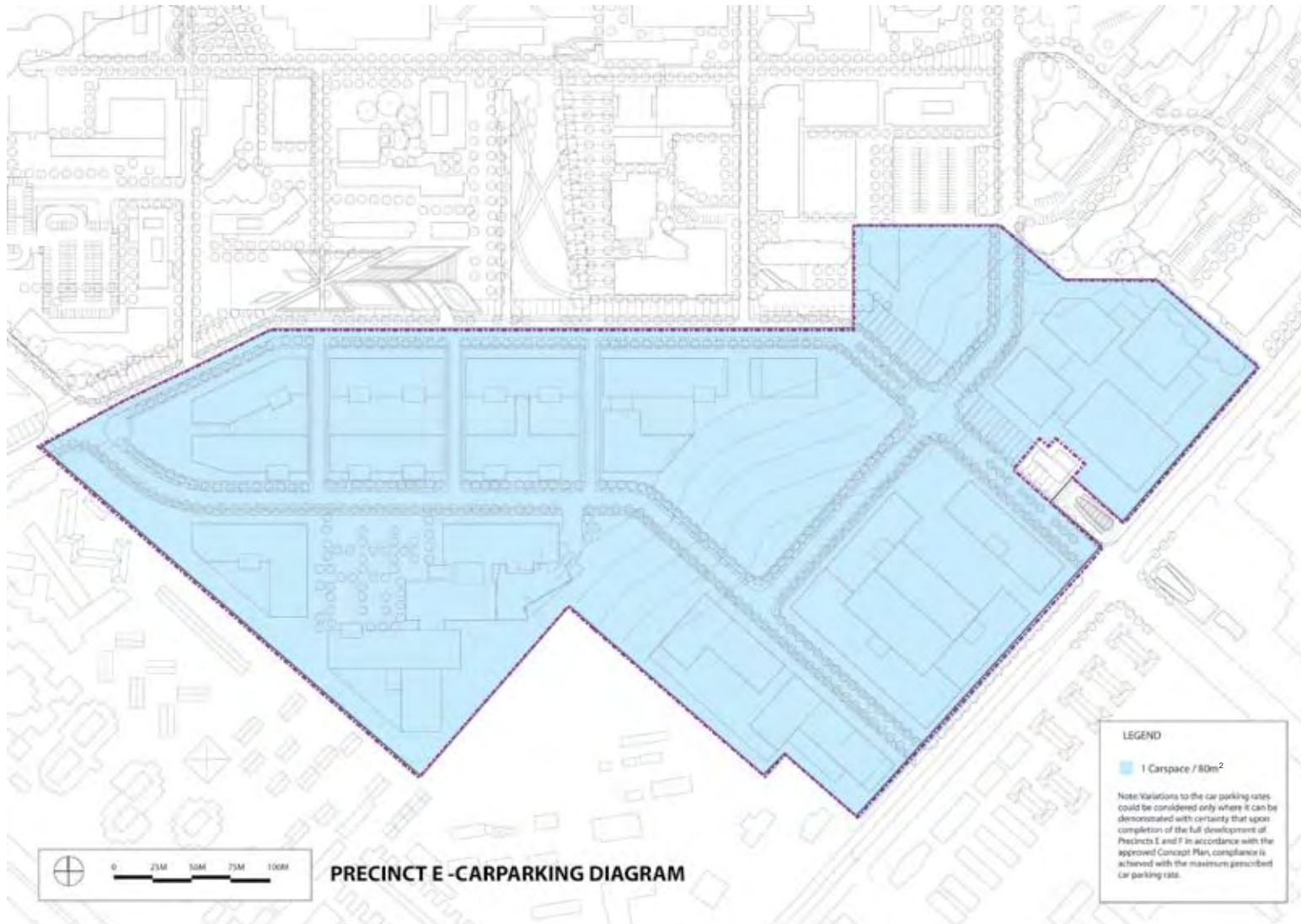


Figure 72 – Precinct E: Car parking Diagram



## 6.6 Precinct F – Epping Road West

### Description

Precinct F – Epping Road West is located in the western corner of the Campus (see Figure 73). This precinct is bounded by Epping Road to the south, Culloden Road to the north and the Campus entry road opposite Balaclava Road to the east. The Mars Creek corridor runs north-south through the centre of the precinct. Existing development within the precinct includes vacant land and car parking associated with the former AFTRS building, a Shell service station and a small grouping of University administration buildings. The Culloden Road frontage of the precinct is generally vacant.

Due to its Epping Road frontage, the Precinct will become the focus for new commercial and retail development. All existing development within the precinct will be demolished over time. To facilitate the development of the Epping Road West Precinct as a focus for commercial / retail development, a number of additional land-uses are proposed to be added to the Mixed Uses zone (see Section 8 of this report for detail).

### Objectives

The objectives for the Epping Road West precinct are:

- Encourage a relationship between commercial activities within Precinct E and University uses including the provision of research activities;
- Encourage high quality commercial, retail and associated ancillary development that maximises the opportunities created by the exposure to Epping Road; and
- Protect and enhance the environmental qualities and water management function of the associated site with Mars Creek.

### Design Guidelines

The design guidelines for the Epping Road West precinct are:

- Accommodate up to 70,000m<sup>2</sup> GFA within the precinct. Retail uses are to have frontage to Epping Road;
- Protect and enhance the Mars Creek riparian corridor with new native planting;
- Incorporate WSUD principles within new development;
- Provide new formal public open space associated with new development;
- Upgrade and visually strengthen the arrival and entry points to the precinct with landscaping and signage;
- Improve legibility and permeability by maximising pedestrian links between buildings and introducing new cross-campus circulation and cycle routes;
- Building heights and setbacks are to be in accordance with Figure 79 and Figure 80. Allow for one landmark building to mark the University entrance at Epping and Balaclava Road;
- New buildings are to demonstrate a high level of architectural design quality and energy efficiency;
- Adopt Crime Prevention through Environmental Design (CPTED) Principles for new development;
- Internal road network designed in accordance with Figure 78. Vehicular impacts on the pedestrian network and the academic core are to be minimised;
- Car parking for new development is to be provided at 1 space per 80m<sup>2</sup>. Parking and loading requirements for retail uses is to be in accordance with relevant CoR Council provisions; and
- Parking for commercial uses is to be accommodated generally within basement parking with up to 1 podium parking level permitted. All above ground parking is to be appropriately screened and architecturally treated. Large expanses of at-grade parking are not permitted.

Figure 73 – Precinct F



Figure 74 – Precinct F: Land-use



Figure 75 – Precinct F: Demolition Diagram

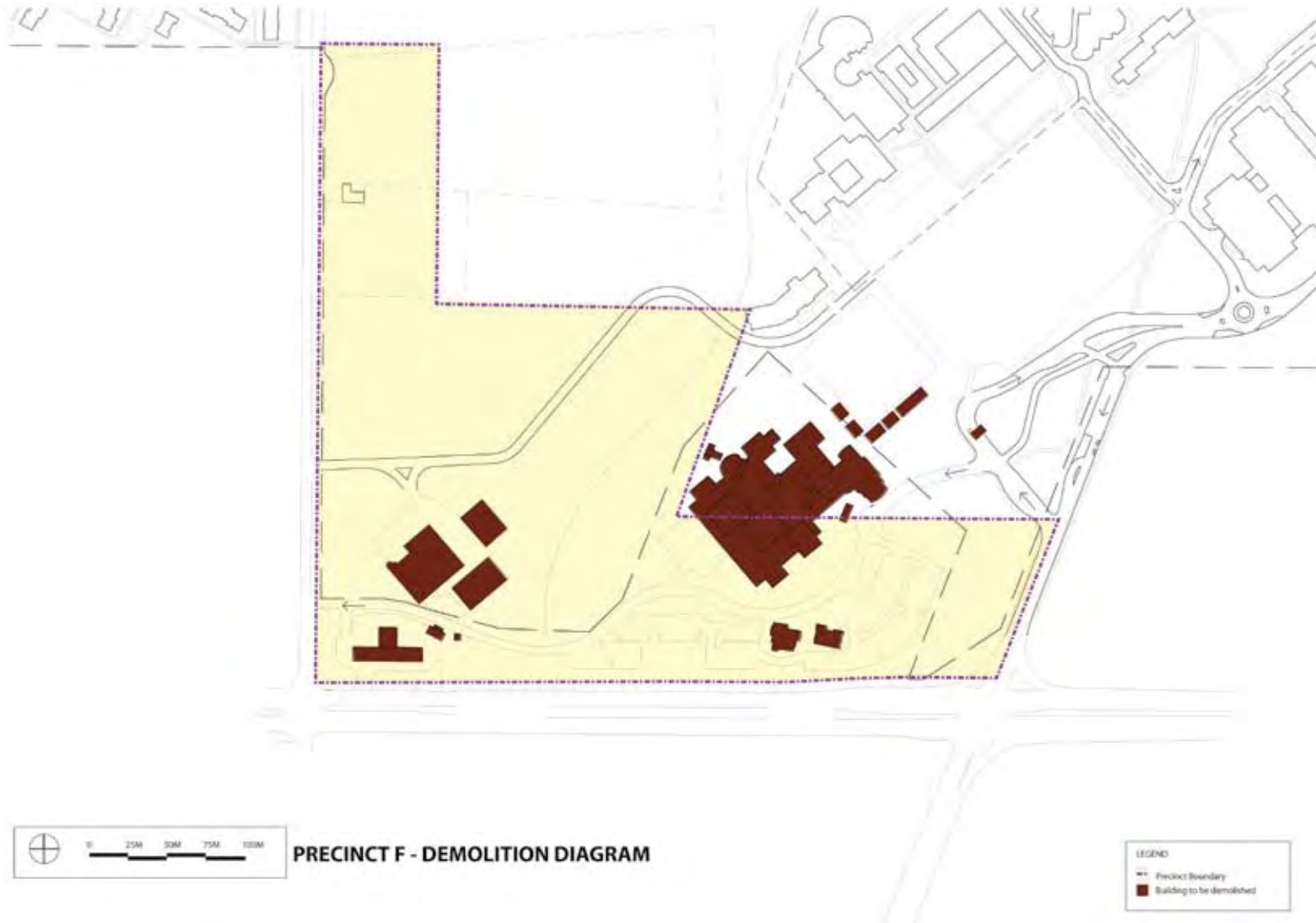


Figure 76 – Precinct F: Indicative Building Footprints

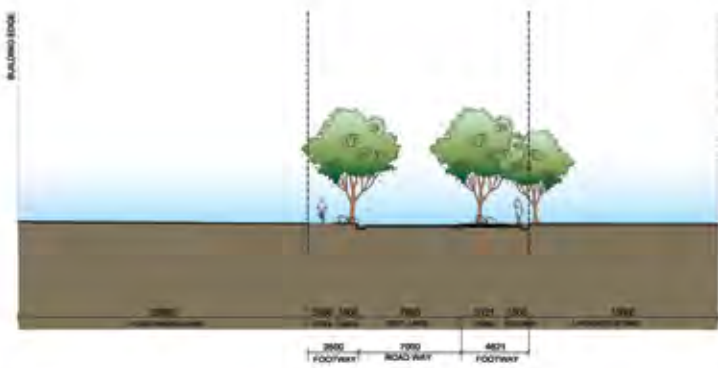


Figure 77 – Precinct F: Indicative Ground Level Street Activation

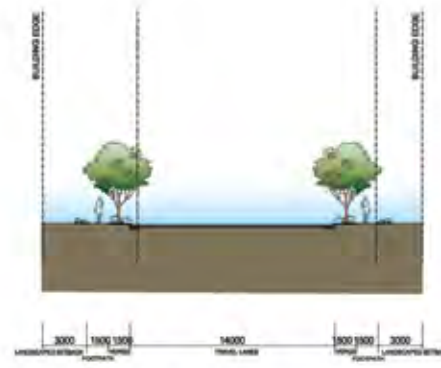




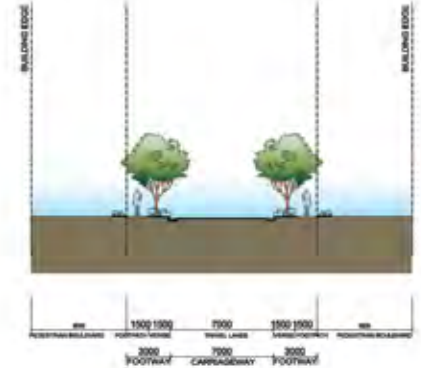
Figure 78 – Precinct F: Road Hierarchy: Indicative Street Sections



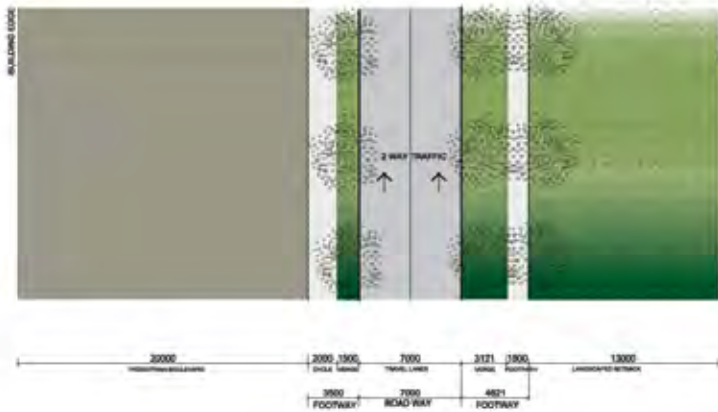
TERTIARY ROADWAY



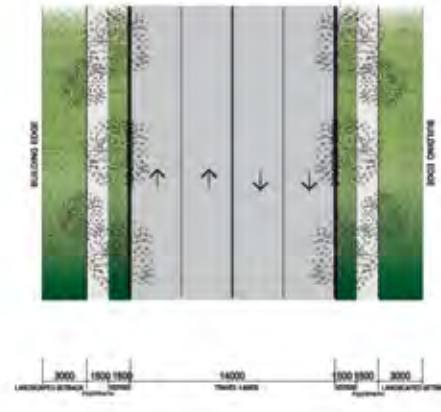
UNIVERSITY ENTRY ROADWAY



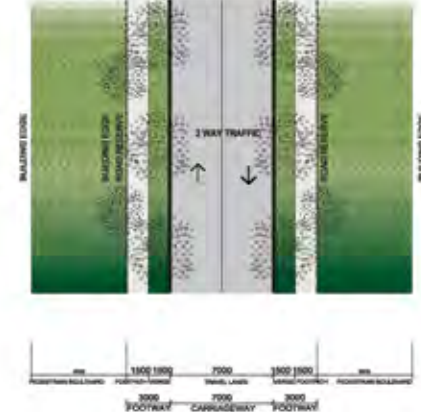
SECONDARY ROADWAY



TERTIARY ROADWAY  
SECTION AA



UNIVERSITY ENTRY ROADWAY  
SECTION BB



SECONDARY ROADWAY  
SECTION CC

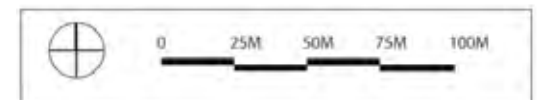


Figure 79 – Precinct F: Set Back Control Diagram

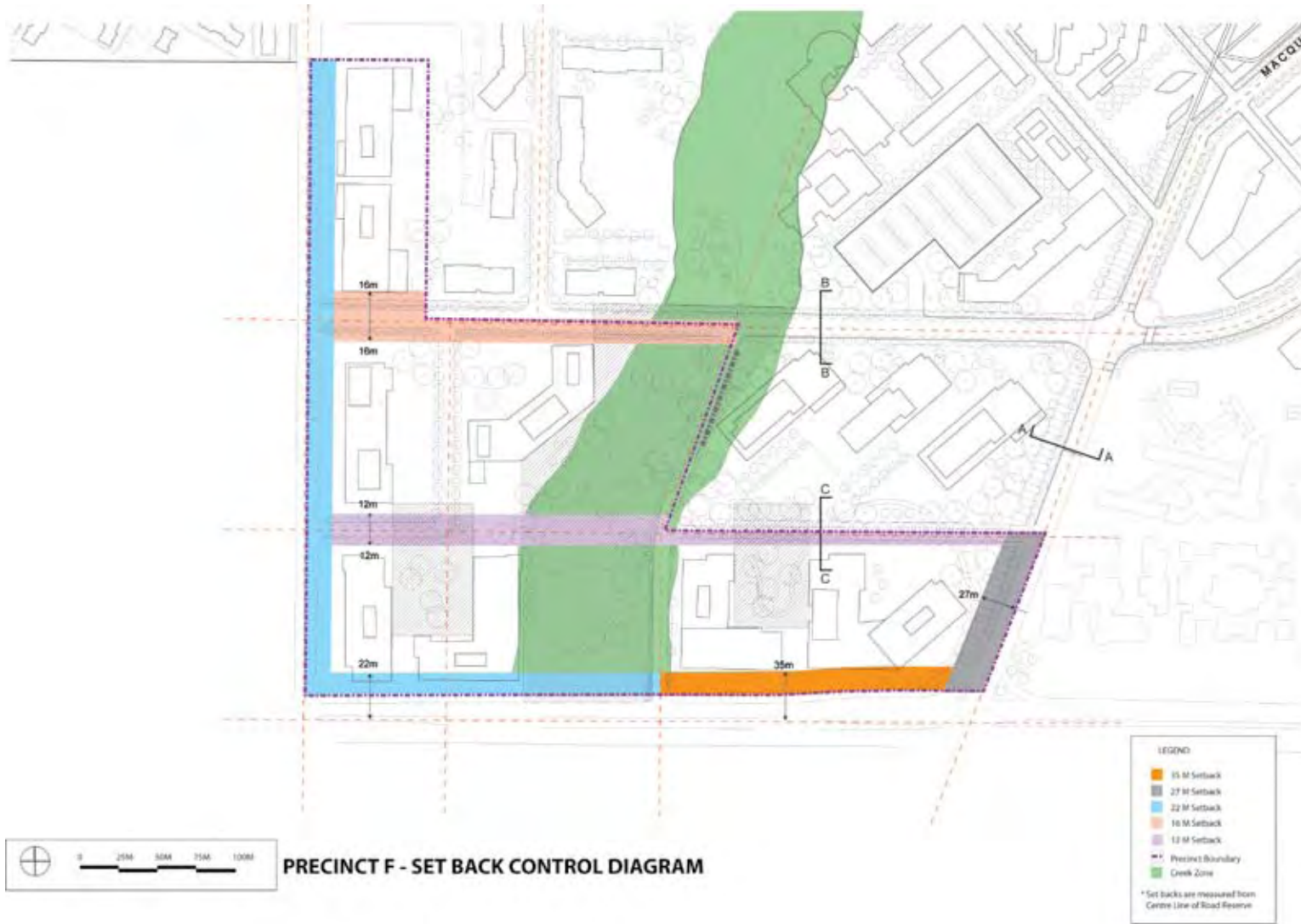
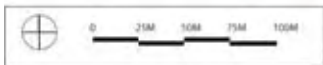


Figure 80 – Precinct E: Built Form / Height Control



PRECINCT E - BUILT FORM / HEIGHT CONTROL

Figure 81 – Precinct F: Landscape Plan

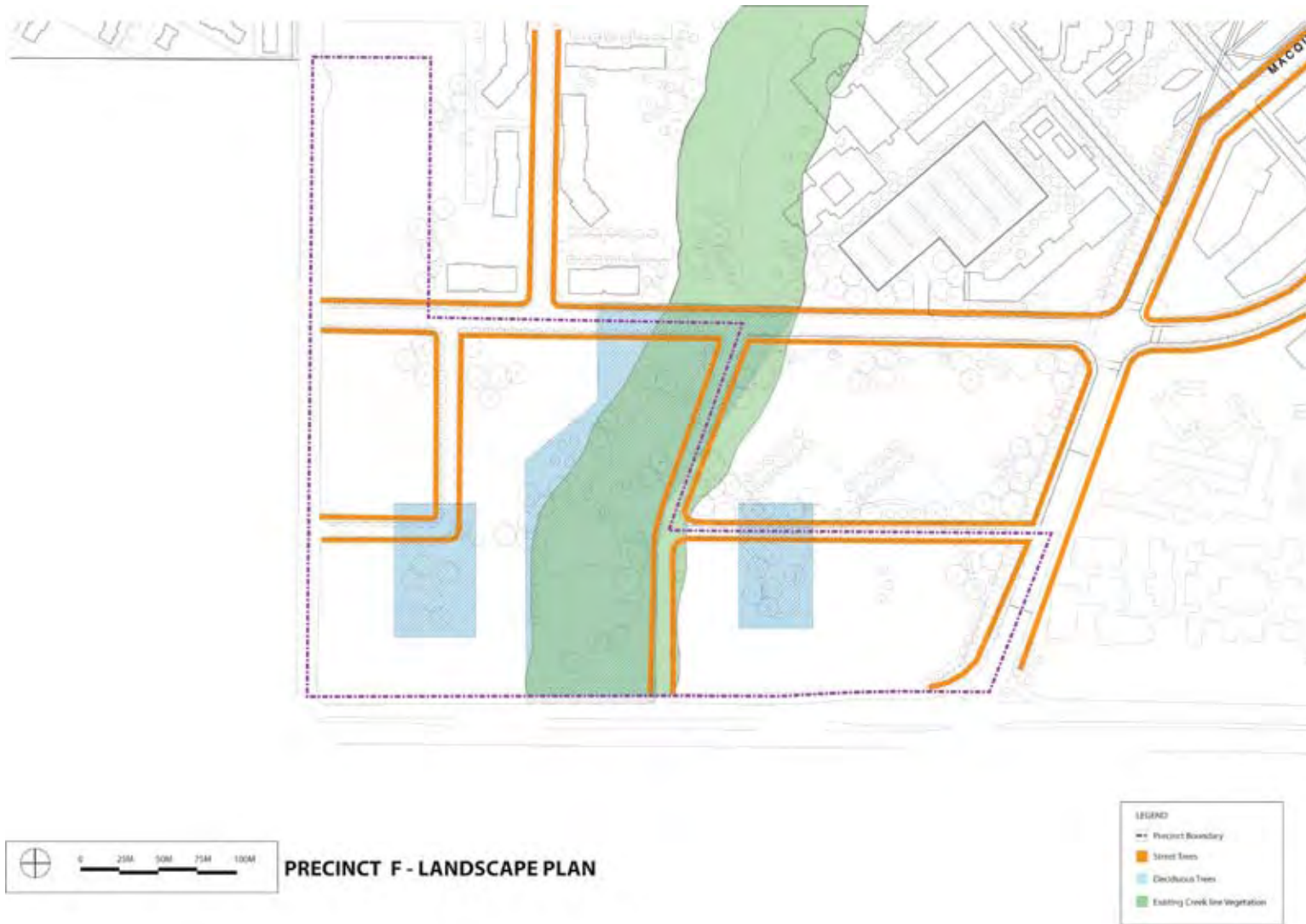


Figure 82 – Precinct F: Urban Design Principles

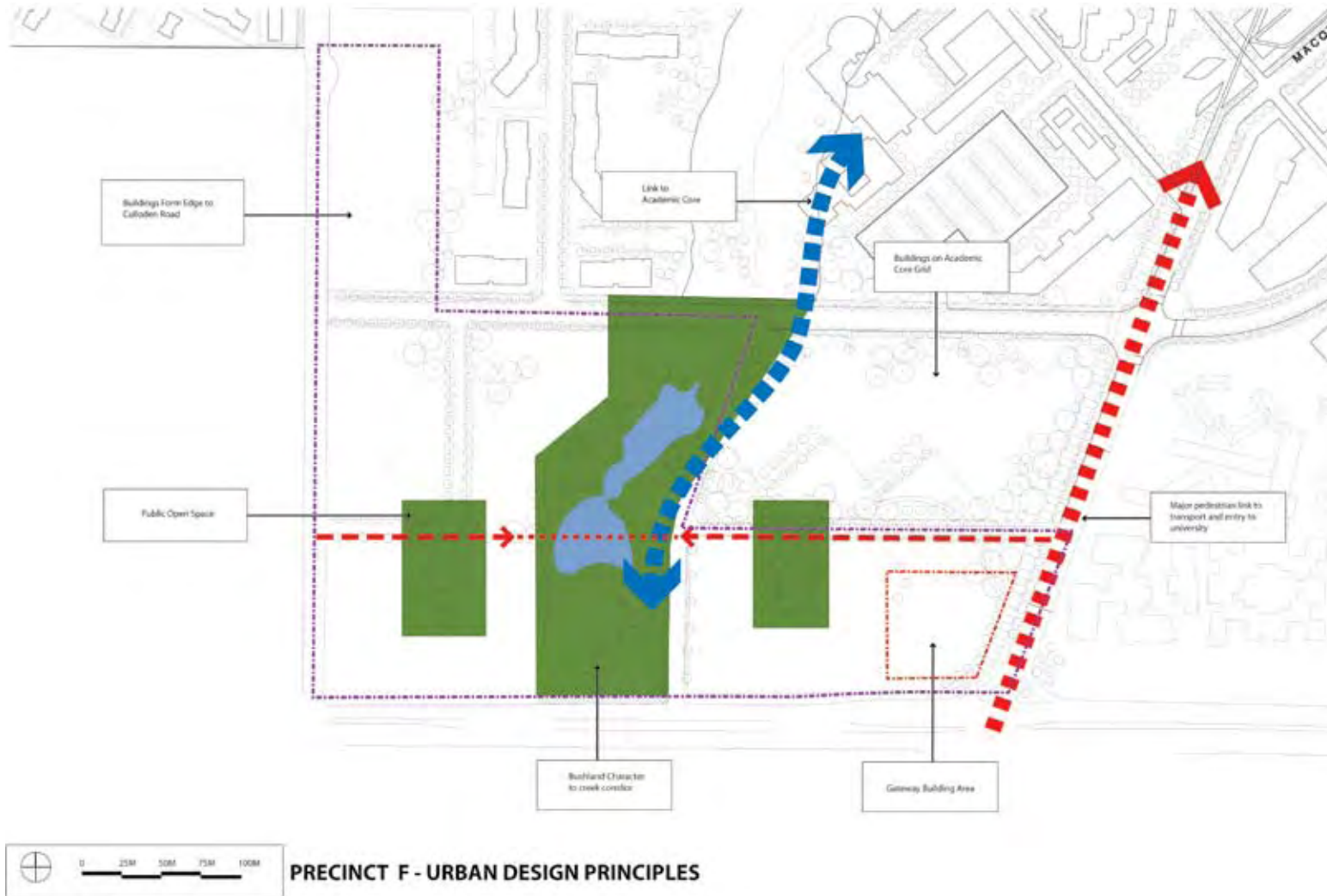


Figure 83 – Precinct F: Views and Vistas



PRECINCT F - VIEWS AND VISTAS

Figure 84 – Precinct F: Carparking



7.0

Environmental Assessment



## 7.1 Strategic Planning and Sustainability

The State Environmental Planning Policies (SEPPs), which are relevant to the proposal include:

- SEPP 19 - Bushland in Urban Areas
- SEPP 32 – Urban Consolidation
- SEPP 55 – Remediation of Land
- SEPP 63 - Major Transport Projects
- SEPP 65 – Design Quality of Residential Flat Development
- BASIX SEPP
- Major Projects SEPP
- Seniors Living SEPP
- Draft SEPP 66 – Integration of Land-use and Transport; and
- Sydney Regional Environmental Plan (Sydney Harbour Catchment 2005)

Consideration of the relevant provisions within these SEPPs and SREP is provided in Table 15.

### 7.1.1 Major Projects SEPP

The aims of the Major Projects SEPP (Clause 2) include (amongst other things) to:

- (a) Identify development under Part 3A of the Act.
- (b) Identify critical infrastructure projects under Part 3A of the Act.
- (c) Facilitate development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State.
- (d) Facilitate public services delivery outcomes and development of major sites for public purpose or redevelopment of major sites no longer appropriate or suitable for public purposes.
- (e) Make the Minister the approval authority for development of state significant sites.

The aims of the Major Projects SEPP would be satisfied by the inclusion of the Campus in Schedule 3 and adoption of the Concept Plan, in particular sub clauses 2(c) and 2(d). The Campus is of State significance due to its economic, locational and educational significance, and its inclusion would assist in a key State service delivery outcome for tertiary education as well as contribute to the delivery of key strategies adopted by the Sydney Metropolitan Strategy. This is further articulated in the following sub-sections.

The proposed land zones for the Macquarie University Campus have been devised using the Standard LEP template, as well the objectives of the Metropolitan Strategy and strategic objectives of the regional north planning team as well as the Draft Macquarie Park Corridor Development Control Plan, recently placed on public exhibition by CoR Council. The proposed zones are as follows:

- SP2 Infrastructure - University for the “Academic Core” (i.e. Precincts A, B, C, G and H) which includes “Educational Establishment” and restricts the permissibility of commercial-based establishments/businesses”. Within this zone the emphasis is based on delivering the educational and research based objectives of the university, and the Metropolitan Strategy; and
- B4 Mixed Uses - for Precincts D, E and F which provide for a range of permissible land-uses, which will promote the development of these precincts in a way which supports the broader planning objectives. The University also proposes that “Educational Establishments” be permissible in these precincts. This will therefore not preclude the use of this floor space for educational purposes at a later stage if required. This will also ensure that the University remains the primary use across the entire campus and into the future.

### 7.1.2 Sydney Metropolitan Strategy

In December 2005, the NSW Government released the Metropolitan Strategy for Sydney entitled City of Cities – A Plan for Sydney’s Future. The Metropolitan Strategy provides commentary and direction for the next 25-30 years at a regional level on issues such as landuse, economic development, jobs, transport, innovation, centres and corridors and residential areas within Sydney.

Macquarie University is referred to directly and indirectly in the Metropolitan Strategy. Directly, as part of the Global Economic Corridor, also known as the Global Arc, and indirectly when referring to the Macquarie Park Corridor of which the University is an integral component.

The Global Economic Corridor is considered in the Strategy as the most important employment sector being the home of most of Sydney’s “knowledge” jobs and innovative industries. It is intended for the Corridor to grow by an additional 150,000 jobs on top of the existing 800,000 (i.e. 40% of total employment growth). Sydney’s overall employment growth to 2031 is anticipated to be a further 500,000 jobs. The Macquarie Park Corridor is expected to contribute about 23,000 new jobs (or 70% growth) within the same timeframe under the Metropolitan Strategy. It is clear that the Macquarie Park Corridor is a key component of Sydney’s employment growth, particularly as part of growth of the Global Economic Corridor.

Macquarie University has been a major catalyst for the northern half of the Global Economic Corridor during the past 40 years and is expected to continue to play a pivotal role in positioning Sydney as one of Asia Pacific’s important global cities. An additional factor is that Macquarie University / Macquarie Park is unique in being the only strategic Specialised Economic Centre or Business Park which has direct access to the Orbital and will shortly be served by three railway stations. This is recognized in the Strategy as the model for other Specialised Centres and Business Parks.

Table 13 outlines the key strategies and actions under the Metropolitan Strategy for Sydney's growth as they apply to the University. This Table details how the proposal and the Campus Concept Plan will assist in achieving intended outcomes of the Metropolitan Strategy. Furthermore Cox-Richardson Architects & Planners have undertaken a study of how the university, and its strategic objectives, meet the vision of the Metropolitan Strategy. This study is located at Appendix M of Volume 2.

#### The Draft Inner North Subregional Strategy

The Department of Planning released the Inner North Subregional Strategy in July 2007. The Subregional Strategy provides a more in-depth summary and analysis of the Metropolitan Strategy objectives as they apply to this part of the metropolitan area. The subregion includes the Ryde LGA, Macquarie Park Corridor, and Macquarie University.

The Strategy identifies the Macquarie Park Corridor as a key specialised centre, with a strong emphasis on the strengthening of the Global Economic Corridor from North Sydney to Macquarie Park (of which the University is a major land holder and contributor), and reinforcement of the subregion's knowledge assets.

The subregion is anticipated to provide up to 60,100 new jobs by 2031. Of this employment growth target, Ryde is expected to contribute in the order of 21,000 to 23,100 jobs. These jobs are generally all expected to be absorbed within the Macquarie Park Corridor (pp46-47).

In addressing issues arising from the exhibition of the draft Subregional Strategy, Macquarie University has indicated, in a written response to the Department's regional team that the proposal is consistent with the visions and actions of the subregional strategy.

The six key directions of the draft Subregional Strategy are satisfied as follows:

#### Strengthen the Global Economic Corridor

The University forms the northern part to the Macquarie Park Corridor and a key hub within the wider Global Economic Corridor. A great number of globally competitive firms are located within the Macquarie Park Corridor and MURP taking advantage of access to physical infrastructure (transport and access), an available workforce, links to the University, and suitable serviced and zoned land.

To reinforce this position and promote the strengthening of the corridors, Macquarie University should be in a position to contribute positively through flexible land-use controls and growth in areas not typically considered part of academic functions of universities.

To this end, flexible controls over a 25 year timeframe should seek growth in new and innovative sectors of the economy with links to both academia and business. A strong clustering of likeminded activities and firms should be encouraged within the Macquarie Park Corridor and particularly within the University Campus given available land and access to a broad labour market and new public transport links.

Given the lengthy timeframe, level of growth and range of uses proposed by the University (some of which may not yet be foreseeable), this should not be interpreted as competing with other opportunities within the Macquarie Park Corridor nor the wider Global Economic Corridor, but as complementing overall growth and status of the corridors and the University itself.

Growth of the University for mutually-beneficial activities, being a significant activity within the specialist centre, should not be seen as competing with other specialist centres of similar function or other like clusters of activities, such as Westmead, Randwick, or even St Leonards.

The clustering of commercial, research or innovative business activities at Macquarie Park and Macquarie University is an opportunity to facilitate floor space for a different type of specialist centre focussed on multi-dimensional disciplines such as medical research and development and educational linkages with business. Other specialist centres serve clustering of distinct activities, and to limit Macquarie University to a set range of opportunities would be to limit growth - particularly, over the timeframe envisaged by both the University and Metropolitan Strategy.

Each specialist centre sits within its distinct subregion and generally serves a function specific to its location and cluster of activities. Accordingly, each specialist centre has the opportunity to develop individual synergies and partnerships within the subregion, to the benefit of the wider Metropolitan Region. In the case of Macquarie University and Macquarie Park, this should be seen as an opportunity to foster growth and further standing of both the University and the corridor as a high tech, research and development hub with strong educational ties and business support, rather than merely a competing quantum of floor space.

The growth of the Macquarie Park Corridor will not result in competition within Sydney, but rather ensure Sydney can compete within the Asia-Pacific region. A clear and current example of this is the proposed relocation of Cochlear's global headquarters to Macquarie University. Cochlear, the world's leading developer of hearing aids, was founded in Australia 25 years ago and has been based in Lane Cove since its establishment. In deciding to relocate from Lane Cove, Cochlear has seriously considered options outside of Sydney, NSW and Australia. Securing an opportunity to co-locate within the University, take advantage of good research and market conditions, and a suitable employment base assisted in determining its choice. Many similar new opportunities will also be able to present themselves within the Corridor, given the right conditions.

**Table 13** – Consistency with the Sydney Metropolitan Strategy

Element	Strategy / Action	Proposal
Job growth challenges	An additional 150,000 jobs are to be accommodated in the Global Economic Corridor (Global Arc) [p58] and an additional 23,000 jobs are to be accommodated in the Macquarie Park Corridor. [p95]	Macquarie University is the northern anchor of the global arc and its inextricable relationship with Macquarie Park Corridor makes the University a key player in the Strategy. The University has capacity to accommodate 400,000m <sup>2</sup> of broad commercial and/or research floor space by 2031. In addition, the University anticipates a 61,200m <sup>2</sup> growth in academic floor space which will strengthen the University as a major employer in the region. This floor space will translate into a significant proportion of the target job growth in Macquarie Park Corridor and the Global Arc.
Establish a stronger corridors planning & development initiative	Sufficient zoned land is to be provided for business and enterprise in locations with high quality transport access. [p8] The importance of the Corridor to the economy demands that a sound structure planning framework is in place for future development. [p108]	Macquarie University occupies approximately 1/3 of the Macquarie Park Corridor (an identified specialised centre for employment growth), has direct access to the Orbital and will soon have a train station on Campus connecting to the rail network. The proposed land-uses are in response to the Macquarie Park Masterplan which identified the Macquarie Park Corridor as Sydney's most important emerging specialised centre for growth. The proposal is based on sound structure planning (as demonstrated in the Campus Development Plan) and provides for business and enterprise uses on the Campus. As the site was not considered in the Macquarie Park Masterplan, the University's proposal provides additional land, over the next 25 years in addition to that envisaged by the recent zoning of the Corridor.
Concentrate activities near public transport	Concentrating activities in centres has substantial environmental benefits by reducing travel times, pollution, congestion and car dependence, protecting the character of existing suburbs and supporting public transport. [p104]	Macquarie University is well placed to accommodate a variety of uses as it is well serviced by high quality public transport, is in close proximity to a highly skilled working population, is the centre of tertiary education and is located adjacent to a regional shopping centre. Further concentration of development within the Macquarie Park Corridor on the University Campus will make more efficient use of the existing services and infrastructure and reduce the potential adverse effects of growth on the environment.
Innovation Strategy and Clustering business and knowledge-based activities in strategic centres.	Embrace innovation and knowledge based employment. [p39] Strengthen industry clusters and utilise local assets to encourage learning and innovation [p.41]. Enhance formal linkages between relevant activities (eg. Hubs which comprise universities, research institutions and hospitals). Enhance research and business networks [p69].	North Ryde is identified as a significant information and communication technologies, biotechnology biomedical device and pharmaceutical industry cluster. [p69] Macquarie University and the Macquarie University Research Park (MURP) are a significant centre for innovation and a hub for these specialised businesses with enhanced communication and networks. Macquarie University was a major catalyst for this development. The anticipated growth of the University over the next 25-40 years, focused growth on employment generation in the Macquarie Park Corridor and the improved access to the Campus will only heighten the demand for sites in close proximity to Macquarie University. The proposal provides for the expansion of the commercial, business and research opportunities on Campus. This clustering will ultimately foster economic competitiveness, innovation and job creation.
Building on Sydney's knowledge and magnet Infrastructure	A key element of the package for encouraging job generation in centres, corridors and specialised centres will be the availability of facilities for both upfront and lifelong learning opportunities. [p68]. Recent literature on 'learning cities' emphasises the benefits of constant interaction between knowledge institutions, business and the community and a driver of competitiveness.[p97]	Macquarie University is one of Australia's top tertiary institutions with a long term growth strategy to expand its academic role and enhance its relevance and influence through research, innovation and business linkages. The University is well placed in the Corridor to tailor programs for surrounding businesses and research institutes. In addition, the university places a crucial role in providing a highly educated and skilled workforce.

Element	Strategy / Action	Proposal
Establish a framework for the development of business parks	Economies of scale are driving many businesses to consolidate activities on one site, and competitive rents are attracting them to consolidate in industrial estates or business parks rather than in traditional centres. [p88] The government recognises Macquarie Park as a successful, specialised and important employment node and the role this centre plays in Sydney's economic competitiveness [p66]. Sydney's economic competitiveness is of critical importance to State Government Departments [p100].	Macquarie University has established a highly successful research and business park on the corner of the Herring and Talavera Road. This development has capitalised on its close proximity to Macquarie University. The proposed changes to the permissible uses on the Campus will provide for further business park opportunities within the Macquarie Park Corridor.
Identify, protect and promote sites for large scale development in strategic centres	In many centres development of key sites can act as a catalyst for additional development. The state government can facilitate development on particular sites by preparing appropriate development controls and fast tracking approvals [p103].	Macquarie University is a unique land holding in the Macquarie Park Corridor. The University has identified that other uses can be accommodated alongside the expansion of the Academic Core, particularly research institutes and commercial premises requiring large floor plates.
Strengthen the economic role of the orbital motorway network	The Orbital motorway network provides for more efficient production and distribution in Sydney's economy [p109].	Macquarie University – Macquarie Park, is soon to be served by the metropolitan rail system and with direct links to the Orbital. The Strategy has identified that this level of access is the model for all the other emerging specialised economic centres.
Residential	One of the ways of encouraging higher order jobs and increased business investment in sub-regions in Sydney is to ensure that professionals and 'executive labour' reside in these subregions. One of the reasons for the success of places like Norwest and Macquarie Park is that they have been highly accessible to the homes of workers in these industries [p76].	Macquarie University is located in an area that is highly accessible for the clusters of the skilled workforce located on the north shore and in the north west. The accommodation of additional residential opportunities on the Campus will enhance the success of the Corridor as an employment node particularly if additional employment opportunities are provided on the Campus.

#### Reinforce the Subregion's knowledge assets

In order to build upon the knowledge assets within the corridor, Macquarie University's status must be reinforced as a key knowledge hub within the Metropolitan Region as well as the corridors within which it sits. It is the only university within the Subregion and corridor.

The University should be given every opportunity to create and expand upon a diverse knowledge, research and business centre, in order to maximise its proximity to infrastructure, employment and the inherent co-locational advantages the existing Macquarie Park and Research Park bring. As discussed above, the opportunity to provide flexibility for innovation and investment tied to business and other commercial activities within a single campus can not be overstated, particularly as future innovations and roles for business (or emerging businesses) within research and development are not entirely foreseeable or predictable.

In some instances business with ties to academia has considered options to leave (or has left) Sydney or NSW for more supportive conditions conducive for growth. To reinforce the subregion's knowledge assets, this scenario should not be allowed to continue.

The University has identified suitable land for expansion outside of its academic core, for business, affiliated residential purposes and research. In order to remain competitive and to reinstate its high position, the University plans to continue its investment in achieving linkages with industry as well as academic growth.

#### Protect strategic employment lands

The proposal is entirely consistent with the objectives of protection of strategic employment lands as the University will retain ownership of land, and seek to substantially increase the availability of land for high-end employment uses. The University's land is amongst the best positioned to maximise these opportunities.

To achieve this, a new flexible planning regime and control are proposed, consistent with opportunities afforded adjoining sites, but with the focus directly on maintenance of University functions supported by a range of additional uses, with clear planning objectives consistent with the State Plan, Metropolitan and Subregional strategies, and the NSW Government Statement of Innovation.

#### Improve housing choice

The University is seeking to provide further housing choice on-campus, beyond that presently available. Housing options being proposed are directly related to promoting a self-sufficient and sustainable campus to foster a competitive edge in ancillary services for students, academics (including visiting academics) and other key stakeholders in the University's links to business. Given the often prohibitive costs, and limited-range of tenure mechanisms of housing off-campus, the University is seeking alternatives to encourage new growth.

#### Encourage use of public transport

The Macquarie University railway station is located on the campus and is scheduled to open in mid 2008. This will provide access to a wider catchment of staff and students, and encourage and promote a higher degree of public transport use. The station will be central to transport choices. Given suitable scope and flexibility in development on and near the station for non-core academic uses, and with potential for landmark buildings and suitable densities, this is likely to be further enhanced. Every opportunity should be taken to combine the maximisation of public transport use with a mix of activities that also strengthens the University and leads to employment growth.

#### Protect & promote the harbour & bushland setting

Planning for the University will ensure the health of the harbour's catchment is maintained and improved. The University will also promote the protection of its bushland setting, and retain large areas of open space, some of which contains threatened flora and habitat areas.

### 7.1.3 Relationship to Metropolitan Strategy, State Plan and NSW Government Statement on Innovation

The draft Subregional Strategy has provided a matrix of key overlapping and co-related Metropolitan Strategy objectives and State Plan goals and priorities. Below is a summary of this matrix as far as it relates to the proposal and how the Concept Plan and proposed SSS listing meets these objectives and priorities.

Further, the NSW Government's Statement of Innovation, which forms part of the overall "NSW – Open for Business" strategy, sets additional goals for innovation policy in NSW. These goals include "Improve human capital", "Upgrade knowledge and information infrastructure", "Encourage capital allocation to invest in innovation", and "Reduce regulatory barriers to innovative NSW companies".

The Statement is part of an overall approach to enhancing industry innovation, as a means to improving productivity and increasing business investment. Central to this, is ensuring innovative firms have access to science and technology, access to capital, and access to high quality information and knowledge infrastructure. The University is extremely well placed to assist in achieving this goal, but must be supported by a suitable positive regulatory system to not stifle growth and opportunities within this sector of the economy. This Concept Plan is considered to be an important part of the regulatory system required to facilitate the development, in order to meet the planning, economic and social objectives.

**Table 14** – Matrix of Assessment of Concept Plan and SSS against relevant State planning objectives

Metropolitan Strategy Objectives		State Plan goals and priorities	S6 – Increasing share of peak hour journeys on a safe and reliable public transport system	P1 – Increased business investment	P4 – More people participating in education and training throughout	E5 – Jobs closer to home
A	Economy & Employment					
A1	Provide suitable commercial s and employment land in strategic areas			×		
A2	Increase innovation and skills development			×	×	
B	Centres & Corridors					
B1	Provide places and locations for all types of economic activity and employment across the Sydney region			×		
B2	Increase densities in centres whilst improving liveability			×		×
B3	Cluster businesses and knowledge-based activities in Strategic Centres			×		
B4	Concentrate activities near public transport		×	×		×
B5	Protect and strengthen the primary role of economic corridors			×		
C	Housing					
C2	Plan for housing mix near jobs, transport, and services.					
C4	Improve housing affordability					
C5	Improve the quality of new development and urban renewal			×		
D	Transport					
D4	Improve transport decision-making		×			
E	Environment and Resources					
E2	Protect Sydney's natural environment					
F	Parks and Public Places					
F1	Increase access to quality parks and public places					
F2	Provide a diverse mix of parks and public places					
G	Governance and Implementation					
G1	Align subregional and local planning with strategic aims					

### 7.1.4 Ministerial (Section 117) Directions – July 2007

Ministerial Directions under Section 117 of the EP&A Act provide measures for consideration in preparing draft LEPs. However, it is considered they are also relevant matters for consideration as part of this study. The relevant s117 Directions (Table 15) include:

- 1.1 - Business and Industrial Zones;
- 3.4 - Integrating Land-use and Transport; and
- 4.4 - Planning for Bushfire Protection.

### 7.1.5 Local Statutory Planning Framework

The following local statutory planning instruments are relevant to the University Campus:

- Ryde Planning Scheme Ordinance 1979 (RPSO);
- Macquarie Park Corridor Masterplan 2004; and
- Ryde Development Control Plans.

These plans are summarised in the following sub-sections.

### 7.1.6 Ryde Planning Scheme Ordinance 1979

Ryde Planning Scheme Ordinance 1979 (RPSO) currently provides the planning framework for the assessment of development proposals at Macquarie University. It identifies land-use zones within which certain land-uses are permissible or prohibited. It also includes a number of Clauses containing provisions that must be considered in determining development applications.

On 20 January 2006, RPSO was amended by Local Environmental Plan No. 137 in order to implement the recommendations of the Macquarie Park Corridor Masterplan. The relevant aspects of the amended RPSO are summarised below.

In the consideration of a Major Project application, the only relevant matter for the Minister to consider is the permissibility of the proposal under the relevant environmental planning instrument for the site. This and other considerations are addressed below.

Clause 94 of RPSO states the following objectives for development within the Corridor:

- creating a location for globally competitive business;
- reducing car dependency; and
- ensuring a high quality, well designed and safe environment to live, work and study.

The Planning Principles contained in Schedule 18 of RPSO expand on the above objectives and cover in more detail the specific environmental, social and economic factors of developing the Corridor.

#### Zoning and permissible uses

The RPSO zoning map is shown at Figure 85. The majority of the Campus is zoned Special Uses 5(c) University (shown yellow). The Macquarie University Research Park (MURP), located on eastern corner of the Campus and the area adjacent Herring Road were recently rezoned by LEP137 to 3(h) Business Special (Mixed Activity).

The permissible land-uses in the 5(c) Special Uses Zone are listed at Table 16 below.

Within the 3(h) Business Special (Mixed Activity) zone all uses, except those listed below, are permissible:

Brothels; caravan parks; car repair stations; gas holders; offensive or hazardous industries; junk yards; liquid fuel depots; motor showrooms and industries referred in Schedule 3 of the RPSO.

#### Car parking

There are no car parking rates prescribed in the RPSO for the 5(c) Special Uses Zone. Clause 34(2) of the RPSO states that Council will assess any proposal which increases traffic movements on merit, taking into consideration vehicular access, provision of parking and provision for loading and unloading. A car parking rate is provided for educational establishments in Ryde Car Parking DCP No. 29A 2003 as follows:

- 1 space / 2 employees; and
- 1 space / 5 students.

The maximum car parking rate for commercial and industrial development in the 3(h) Zone is 1: 80m<sup>2</sup> net usable floor area pursuant to the RPSO car parking map shown at Figure 88.

#### Aesthetics

Clause 34 (1) of the RPSO requires Council to consider the probable aesthetic appearance of the proposed building or work on the land when used for the proposed purpose, when viewed from a main road, railway, public reserve or land reserved for open space or land within Zone 6(a), 6(b) or 6(c).

**Table 15** – Consistency with 117 Directions and State and regional planning policies and strategies

Section 117 Directions	Requirement	Compliance / Relevance
1.1 – Business and Industrial Zones	To encourage employment growth in suitable locations, protect employment land in business and industrial zones, and support the viability of identified strategic centres. The direction applies where business and industry zone boundaries are to be altered or such land is affected by a new LEP.	The proposal seeks to consolidate and expand areas zoned for business uses, consistent with the Metropolitan Strategy, draft sub-regional strategy, and other State policy directives and initiatives. The proposal is wholly consistent with maximising employment growth and opportunities for appropriately located lands and the viability of strategic centres (and corridors).
3.4 – Integrating Land-use and Transport	Seeks to ensure that urban structure, building forms, land-use locations, development designs, and subdivision, and street layout achieves improved access to housing, jobs and services by walking, cycling and public transport; reducing private car dependence and private transport trips; supports viable and efficient operation of public transport services; and efficient movement of freight.	The proposal will allow a mix of commercial, research, university, business, and retail uses within walking distance of the new railway station on the Campus. Development in accordance with the Concept Plan and draft SEPP amendment will substantially increase the density around this station which is consistent with the principles of this direction. The Campus has and will continue to have direct public transport by bus. Access to the M2 and Orbital network will enhance movement of freight or other goods associated with the expanded use of the University Campus.
4.4 – Planning for Bushfire Protection	To protect life, property, and the environment from bushfire hazard and to facilitate sound management within bushfire prone areas. To provide an appropriate Asset Protection Zone services and infrastructure.	Part of the Campus is bushfire prone. While this is unlikely to be a limiting factor to development, mitigation of bushfire hazard will be dealt with in the Concept Plan. The area of bushland (and development) most applicable to consideration of this matter is within Precinct B where student and potential seniors housing is proposed.
SEPPs	Requirement	Compliance / Relevance
SEPP No 19 Bushland in Urban Areas	In general, to preserve and protect bushland in urban areas amongst a series of specific aims, including the Ryde LGA.	Bushland is located on Campus and is identified in the Preliminary Ecological Assessment included at Appendix K. Preservation and conservation of bushland on the campus is dealt with as part of the Concept Plan. Detailed discussion is included at Section 6.4.
SEPP No 32 Urban consolidation	Promotes urban consolidation and encourages urban land no longer required for the purpose it is currently zoned to be rezoned, if appropriate, for multi unit housing and related development.	The proposed land-uses and development of the Campus in accordance with the Concept Plan illustrates how greater densities of development, including appropriate forms of housing can be achieved in an urban area of metropolitan Sydney.
SEPP No 55 Remediation of Land	Land must not be rezoned unless contamination has been considered and, where relevant, land has been appropriately remediated.	A Contamination Assessment of the Campus is included at Appendix J. It concludes that contaminants are not expected within the Academic Core and that possible contaminants could be located at the site of the service station and AFTRS. The report recommends that when development is proposed more detailed soil investigations are undertaken in accordance with EPA guidelines.
SEPP No 63 Major Transport Projects	Facilitates development of major transport projects including the Parramatta – Chatswood Rail Link. Development applications require concurrence from RailCorp and any proposal for excavation greater than 3m must be referred to the proponent of the project.	The Concept Plan was formulated with consideration of the Parramatta Rail Link Plan and details the location of buildings with regard to the Rail Link and any future applications for the site will be forwarded for RailCorp's concurrence.
SEPP No 65 Design Quality of Residential Flat Development	Includes design principles to raise the design quality of residential flat buildings. It also requires that in the preparation of Environmental Planning Instruments and DCPs, provisions are included to ensure the achievement of design quality principles.	The proposed zoning amendment seeks forms of housing that may include residential flat buildings. The Concept Plan will illustrate design principles and objectives consistent with ESD and SEPP65 principles, where relevant.



SEPPs	Requirement	Compliance / Relevance
The proposed zoning amendment seeks forms of housing that may include residential fl at buildings. The Concept Plan will illustrate design principles and objectives consistent with ESD and SEPP65 principles, where relevant.	This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX.	The proposed zoning amendment seeks forms of housing to which BASIX is applicable. The Concept Plan will illustrate design principles and objectives consistent with BASIX requirements, where relevant.
Seniors Living SEPP 2004	This SEPP aims to create opportunities for the development of housing that is located and designed in a manner particularly suited to both those seniors who are independent, mobile and active as well as those who are frailer, and other people with a disability regardless of their age. This SEPP overrides local prohibitions for developments pursuant to this policy in locations with access to public transport, services and other characteristics.	Macquarie University is potentially suitable for Seniors Living development as parts of the Campus are highly accessible for public transport and other key services.
Draft SEPPs	Requirement	Compliance / Relevance
Draft SEPP No 66 Integration of Landuse & Transport	Draft LEPs should ensure that urban structure, building form, land-use locations and subdivision design help integrate landuse and transport and minimise the need to travel by private car. Target residential densities of 15 dwellings per hectare are established for new neighbourhoods in release areas.	The proposal will allow a mix of commercial, research, university, business, and retail uses within 400m to 800m of the new railway station on the Campus. Development in accordance with the Concept Plan will substantially increase the density around this station which is consistent with the principles of the draft SEPP. The Campus has and will continue to have direct public transport by bus.
SREPs	Requirement	Compliance / Relevance
Sydney Harbour Catchment SREP 2005	The Sydney Harbour Catchment Planning Principles must be considered and where possible achieved in the preparation of a draft EPI. The key relevant principles are summarised to include: <ul style="list-style-type: none"> <li>• protect and improve hydrological, ecological and geomorphological processes;</li> <li>• consider cumulative impacts of development within the catchment;</li> <li>• improve water quality of urban runoff and reduce quantity and frequency of urban run-off; and</li> <li>• protect and rehabilitate riparian corridors and remnant vegetation.</li> </ul>	The Campus is within the Sydney Harbour catchment and drains to the Lane Cove River. The impact of the proposed development on the Sydney Harbour Catchment is assessed through detailed hydrological and stormwater impact assessments (Appendix H). The Concept Plan provides details on the proposed stormwater management and the retention of vegetation on the Campus.

**Table 16** – Permissible land-uses under RPSO

Zone	Uses Permissible with Consent
Special Uses 5(c) - University	Agriculture , Drainage, Dwelling-houses, Hospitals, Open space, Places of public worship, Roads, Service stations, Telecom facilities, University colleges, University hostels, University, Utility installations Additionally, any purpose ordinarily incidental or subsidiary to university purposes is permissible

Figure 85 – RPSO Zoning map

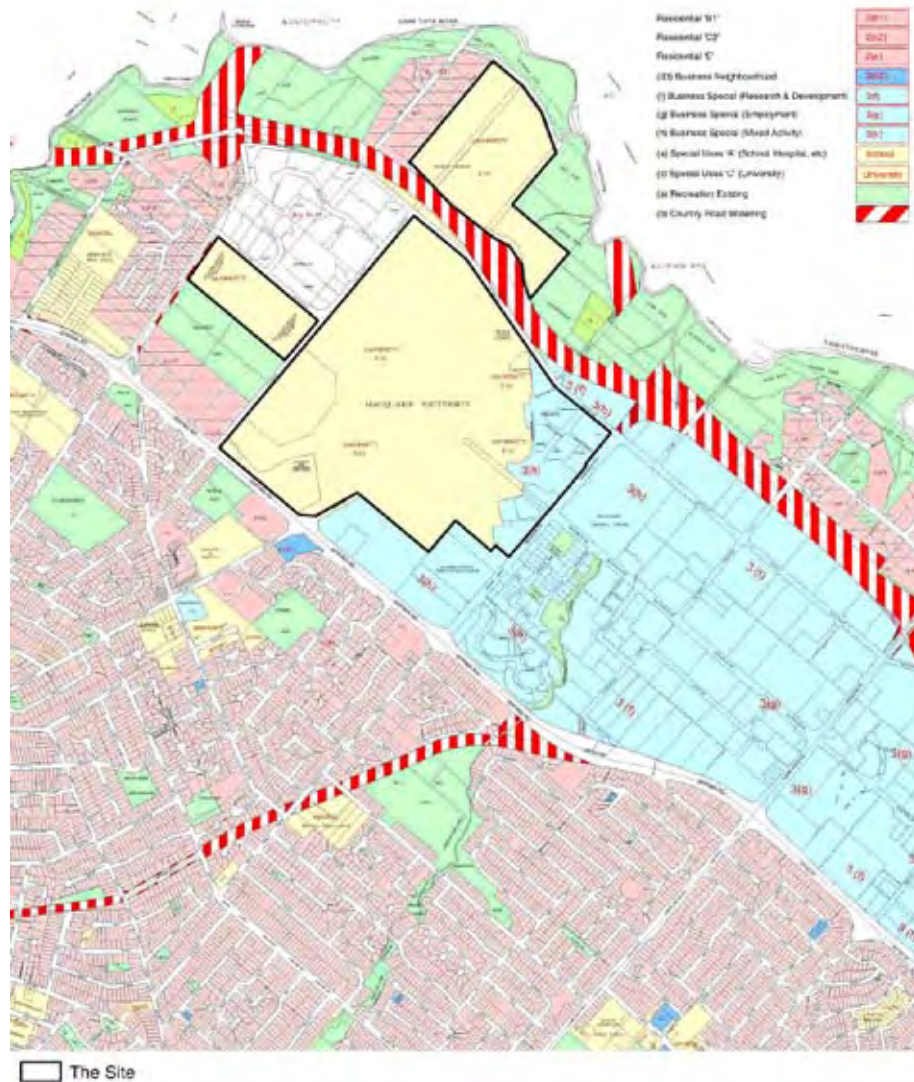


Figure 86 – RPSO FSR map

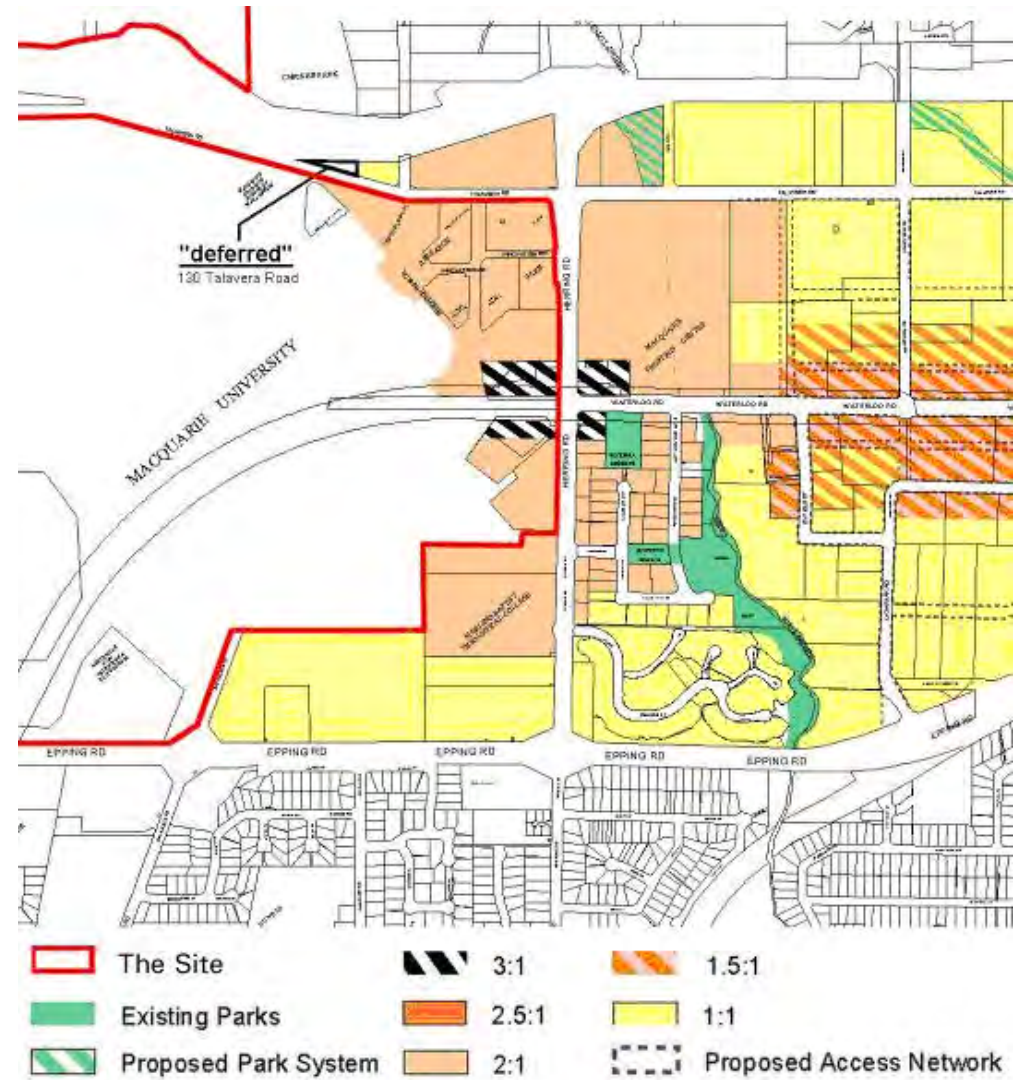


Figure 87 – RPSO building height map

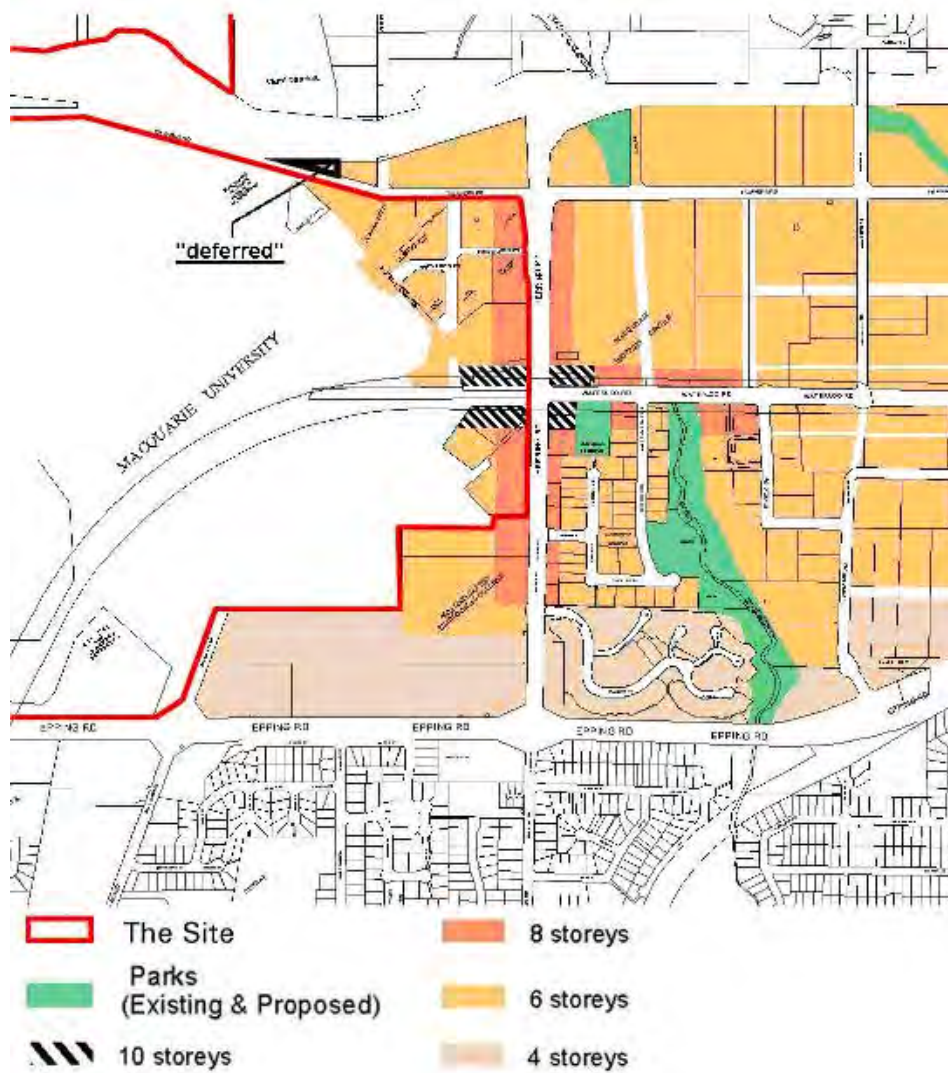
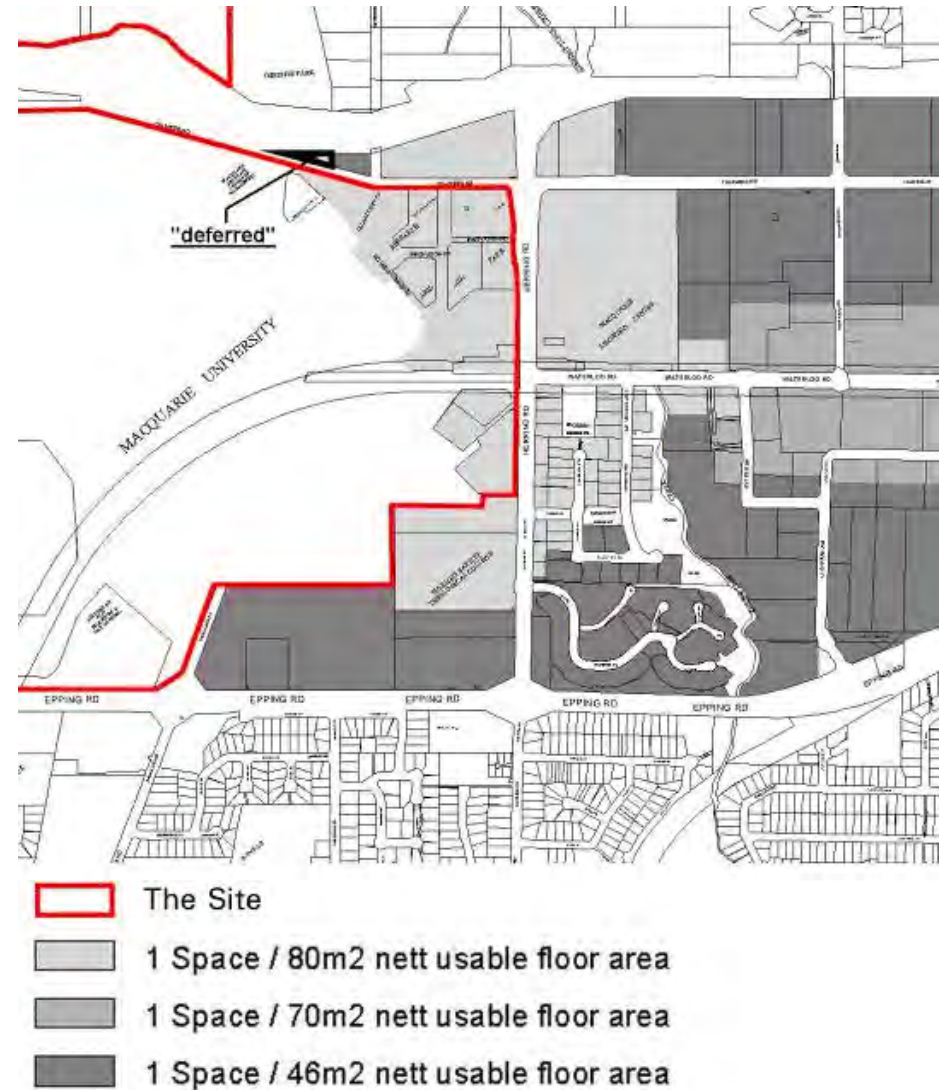


Figure 88 – RPSO car parking map



## 7.1.7 The Macquarie Park Corridor Masterplan 2004

Macquarie University occupies approximately 1/3 of the Macquarie Park Corridor (refer to Figure 13). The University's sports fields and student housing north of Culloden Road and the M2 Motorway are outside the Corridor.

Recognising that the new heavy rail line would improve accessibility to the Macquarie Park Corridor and the University, the State Government through the Department of Infrastructure, Planning and Natural Resources (DIPNR) and CoR Council undertook a series of studies in 2002/2003 including the Macquarie Park Structure Plan and the Transport Management and Accessibility Plan (TMAP).

One of the outcomes of this exercise was the preparation of the Macquarie Park Corridor Masterplan which was subsequently adopted by CoR Council, on 17 February 2004.

The Masterplan outlined land-use and development controls for land in the Corridor (including building height and FSR controls). It has subsequently been translated into amendments to RPSO (LEP137) and the Draft Macquarie Park Corridor DCP (DCP 55). Importantly, the Masterplan and its subsequent planning instruments excluded the vast majority of the Macquarie University Campus.

## 7.1.8 Ryde Development Control Plans

Council has a number of DCPs relating to various types of development or planning issues, including:

- Residential Development in Business Zones (DCP 12);
- Urban Housing (DCP 21);
- Waste Minimisation and Management (DCP 27);
- Car Parking (DCP 29A);
- Access for People with Disabilities (DCP3 7);
- Stormwater (DCP 41);

- Energy Smart, Water Wise (DCP 45); and
- Draft Macquarie Park Corridor (DCP).

## 7.1.9 Draft Macquarie Park Corridor Development Control Plan

The draft Macquarie Park Corridor Development Control Plan (Macquarie Park DCP) was placed on public exhibition by CoR Council on the 15 February 2008. The Macquarie Park DCP provides detailed development principles, controls and guidelines for future development in the Macquarie Park Corridor.

Apart from establishing the urban design principles and parameters for the Corridor, the Macquarie University Station Precinct has been identified as a Special Precinct within the context of the planning instrument. Within the DCP, objectives of the future character, public domain and building design have been established. Further to this, the Macquarie Park DCP states the following vision for the Corridor:

*“Macquarie Park will mature into a premium location for globally competitive businesses with strong links to the University and research institutions and an enhanced sense of identity. The Corridor will be characterized by a high-quality, well-designed, safe and livable environment that reflects the natural setting, with three accessible and vibrant railway station areas providing focal points. Residential and business areas will be better integrated and an improved lifestyle will be forged for all those who live, work and study in the area.”*

The above statement is representative of the key aims of the Macquarie Park DCP. To support the vision of the Macquarie Park DCP, as well as the previous Draft Development Control Plan for the Macquarie Park Corridor (DCP No. 55), the University has prepared a Campus Development Plan to guide the future expansion of the Academic Core, in order to cater for 50,000 students over the 40 year vision.

Within the context of the Macquarie Park DCP, there are

Precinct-specific planning controls which apply to land occupied by the University. Further to these specific controls, it is noted that any proposal to vary the requirements of the Macquarie Park DCP, a masterplan shall be prepared for the whole of the precinct that demonstrates:

- How the objectives and future character of the Precinct will be achieved;
- How equivalent public open space will be achieved;
- How the street, open space and built form networks will be achieved; and
- How equivalent development potential will be distributed in the Precinct.

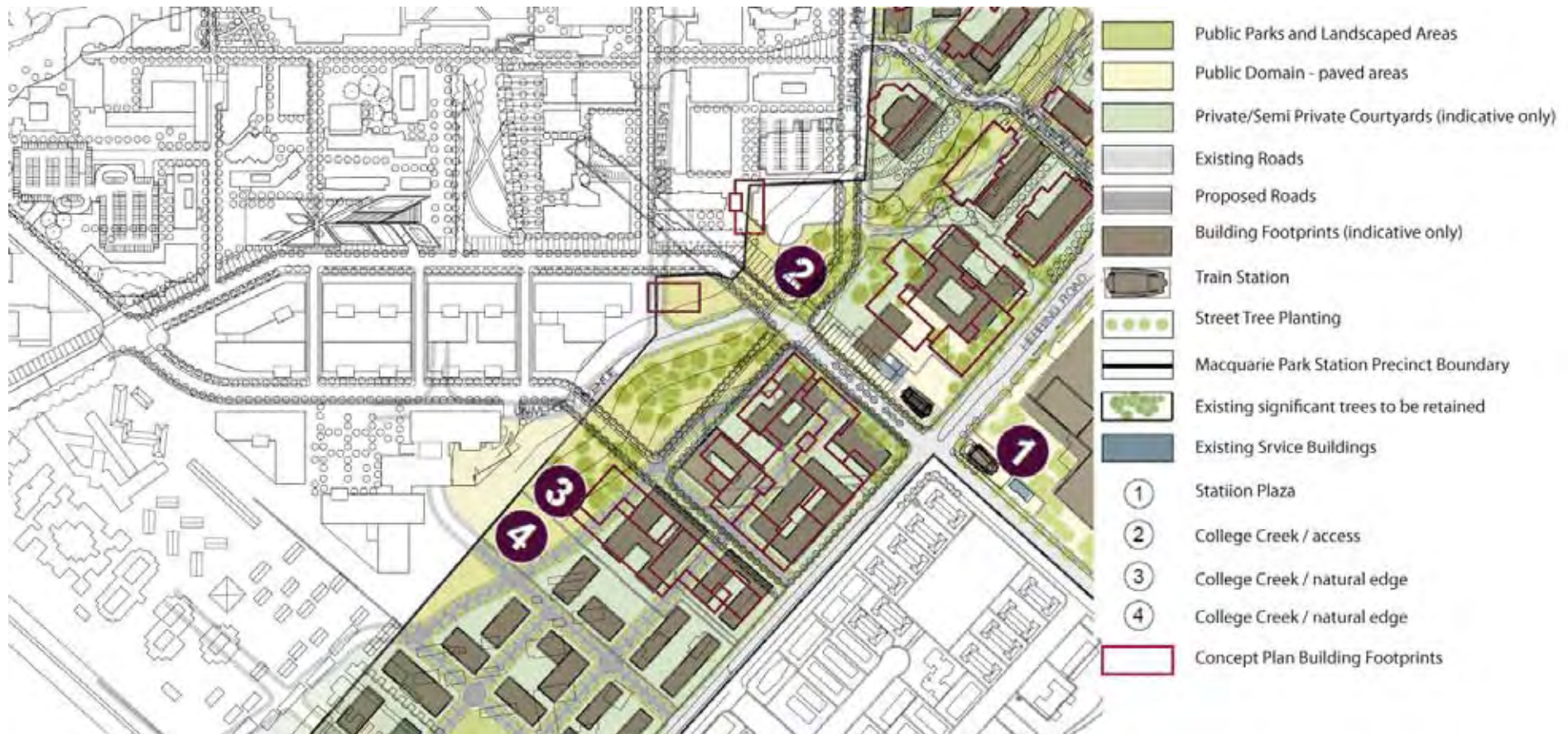
The Macquarie Park DCP would contribute an additional 192,000m<sup>2</sup> of floor space to the applicable part of the Station South Precinct (i.e. the area to which both the Concept Plan and the DCP applies). For this particular part of the Precinct which both the DCP and Concept Plan boundaries overlap, the Concept Plan proposes an additional 206,000m<sup>2</sup> of floor space. The difference can be seen from the different indicative building footprints shown in Figure 89, where the red indicative building footprints (depicted in this Concept Plan) are overlaid on the proposed road system and indicative building footprints depicted in the draft DCP.

This slight increase in density from the envisaged DCP vision will maximise development opportunities which are in accordance with:

- The philosophy of Transit-oriented Development; and
- Envisaged floor space targets of what the Macquarie Park Corridor is expected to deliver under the Inner North Subregional Strategy.

Additional detail on the quantum and distribution of development is included Section 8.2 of this Concept Plan.

Figure 89 – Concept Plan (indicative building footprints) overlaid on the draft Macquarie Park Corridor DCP



### 7.1.10 Development Approval Process

In accordance with the provisions of the EP&A Act, the University is currently required to submit Development Applications for development that requires consent under the RPSO or any other planning instrument, where it is not a Major Project.

The provisions of the EP&A Act, and other relevant instruments are taken into account by the consent authority (Council) in determining the DAs (or project applications).

The Macquarie University Campus Development Plan 2004 does not have any statutory weight in the assessment of DAs.

### 7.1.11 Crown Applications

As a party prescribed as the Crown, Macquarie University, can rely on Part 5A of the EP&A Act for the determination of DAs.

These provisions mean that the Council, as consent authority, must not refuse consent to an application made by the Crown (or person prescribed as the Crown ) except with the written consent of the Minister for Planning.

The consent authority also must not impose conditions of consent except with the written approval of the Minister or the applicant.

Furthermore, a Crown applicant may refer a DA to the Minister if it has not been determined within 40 days of lodgement. The DA may then be resolved by agreement between the consent authority and applicant or, if that fails, the Minister will resolve the DA. In any event the Minister will have the final determination on the matter.

### 7.1.12 Shortcomings with the existing planning framework

The existing planning framework for development of Macquarie University is no longer appropriate as:

- The current Special Uses Zone 5(c) does not provide sufficient flexibility in land-uses to allow the University to develop into a 21st century urban Campus, which requires strong commercial and research linkages to University;
- The Macquarie Park Corridor Masterplan and subsequently the amending LEP137 only provide expanded land-uses and development controls for a small portion of the Campus. This inconsistency will inhibit the intention of the University to develop the whole Campus in an integrated manner;
- The zone 3(h) boundaries identified on the RPSO zoning map as a result of LEP137 are arbitrary and do not reflect the sites opportunities and constraints;
- Some allotments have two applicable zones as a result of LEP137 amendment and have very different restrictions/provisions applying. Similarly, different height and FSR provisions apply to arbitrary areas of the site and in areas immediately adjoining the height and FSR would be assessed on merit;
- The draft Macquarie Park Corridor DCP requires the preparation of a specific masterplan which is no longer part of the statutory planning process; and
- Macquarie University has been approached by highly desirable and compatible institutions/companies wishing to locate on the Campus. These opportunities are entirely consistent with the aims and objectives of the Macquarie Park Corridor, would contribute to the Metropolitan Strategy employment targets, would contribute to the strengthening of the Campus as a hub for high quality education and research industries and would make efficient use of infrastructure. However, these opportunities are being lost largely due to the uncertainty of / and use permissibility in the 5(c) zone;
- The Macquarie Park Corridor Masterplan and LEP137 do not include certain parcels of the land which form the Macquarie University Campus. These sites are integral to the development of the Campus and are incorporated into the Campus Concept Plan; and
- Existing controls are too restrictive to attract the key employer research entities and international companies required to promote the Macquarie Park Corridor, as the preeminent technology transfer and commercial precinct in Australia.

The declaration of the Macquarie University Campus as a State Significant Site, allows the creation of a new planning regime for the Campus (as detailed in Section 8 of this report), and adoption of a Concept Plan, will ensure appropriate development flexibility for the University, and certainty for the University, consent authorities and other stakeholders to achieve planning targets and objectives over the next 25 years.

## 7.2 Urban Design and Form

The proposed Urban Design Strategy for the Campus is outlined in Section 4.6, with specific Precinct design stations and additional urban design guidelines for each Precinct provided in Sections 5 and 6.

The primary urban design objectives for the Campus are summarised below:

- Establish a compact and centralised Academic Core with mixed use development at the Campus' southern and western peripheries;
- Encourage the location of high density mixed uses in proximity to the Station;
- Ensure new buildings within the Academic Core are established on the existing north south grid, with new mixed use development outside of the Core located at 45 degrees to the north- south grid consistent with the surrounding road network;
- Establish a comprehensive and inter-related open space network, as well as pedestrian and cycle networks within the Campus;
- Maintain the landscape character of the Campus;

- Locate new multi-level University car parks at the Core's perimeter to ensure minimal penetration of the Academic Core by motor vehicle;
- Establish building heights and setbacks that will ensure amenity impacts within the Campus and to adjoining properties are minimised;
- Establish linkages with the urban design and form with other landholdings in the Macquarie Park Corridor;
- To create a quality public domain; and
- To implement development controls which will allow design excellence.

## 7.3 Transport, Access and Parking Impacts

Cardno Eppell Olsen has prepared a Traffic and Transport Assessment for the Concept Plan at Appendix E of Volume 2.

An analysis of the existing transport situation has been provided and a number of 25-year development scenarios (to align with the Metropolitan Strategy) have been examined for the development of the Campus. These are as follows:

### Base Case Scenario – “Do Nothing”

- Academic related growth at the University over the 25 year period, based on RTA/TDC Sydney Strategic Model;
- Commercial development within the University as per RTA / TDC Sydney Strategic Model;
- Commercial development in the Macquarie Park Corridor as per RTA / TDC Sydney Strategic Model; and
- No change to the Macquarie Park road network.

### Scenario 1 - Potential Growth under the Current Planning Controls in the Macquarie Park Corridor

- Academic related growth at the University over a 25 year period, based on this Concept Plan;
- Commercial development within the University as per LEP 137;
- Commercial development in the Macquarie Park Corridor as per LEP137, including the two deferred sites; and
- No change to the Macquarie Park road network.

### Scenario 2 - This Concept Plan with changes to Planning Controls in the Macquarie Park Corridor

- Academic related growth at the University over a 25 year period, based on this Concept Plan;
- Commercial development within the University as per this Concept Plan;
- Commercial development in the Macquarie Park Corridor as per LEP137, including the two deferred sites; and
- No change to the Macquarie park road network.

The traffic and transport impacts of development as described in the 3 scenarios above is examined in detail in the Traffic and Transport Assessment at Appendix E of Volume 2 and is summarised below:

### Road Network

At the base case scenario, road networks within the vicinity of the Campus are already under stress with a number of intersections operating above capacity. Upgrade works are required. Whilst both scenarios 1 and 2 represent a significant increase in traffic volume with a corresponding increased in stress on the road network and intersections, the difference in impact between scenarios 1 and 2 is not substantial when considered in relation to the level of upgrade works required even for the base case.

Furthermore, a shift to increased public transport usage may be forced by the deteriorating road performance at scenarios 1 and 2.

### Public Transport

The increased level of development described in the development scenarios will clearly have a positive impact on demand for rail travel in the Macquarie Park Corridor. The University station is expected to be one of the busiest stations within the Corridor with users from both the University academic area, proposed commercial precincts and the Macquarie Shopping centre using the station.

The commencement of the Epping to Chatswood rail line is likely to fundamentally change the demand for buses operating in the Macquarie Park area. Currently bus services carry the largest volume of passengers into and out of the area with the main destination being the Sydney CBD. The level of demand is expected to decrease with the opening of the Epping to Chatswood rail line.

Overall there is expected to be an increase of public transport usage in the area with a corresponding decrease in vehicle traffic.

### Pedestrian and Bicycle Trends

The additional growth forecast in all of the development scenarios will lead to an increase in the level of pedestrian activity in the Macquarie Park area. This increase will be further enhanced by a shift to higher level of walking and cycling. Trips made by bus and rail will also generate additional pedestrian movements as passengers access the new rail stations or bus services at various locations.

The main demand for pedestrian facilities will be focused on the rail station with a large demand for sites to cross Waterloo and Herring Road centred around the new station and the Macquarie Shopping Centre.

Scenario 2 will have a significant impact in terms of pedestrian demand. Concentration of development in proximity to the new station will encourage higher levels of rail use and associated pedestrian activity. Additionally, the higher densities are likely to support a level of retail and/or café uses and other services around the station.

A number of cyclist could be expected to cycle to the new station from nearby residential development. Refer to the Traffic and Transport Assessment at Appendix E of Volume 2.

## 7.4 Environmental Aspects

### 7.4.1 Stormwater and Drainage

An Infrastructure Masterplan for 2031 which deals with stormwater for the commercial development precincts has been prepared by TTW and is attached at Appendix H of Volume 2.

#### On-site detention

Stormwater detention is proposed to be provided in accordance with CoR Council's detention policy and will be considered for each development as it takes place on the Campus. Consultation with CoR Council has taken place and recommendations have been made by Council in regard to stormwater management on the Campus.

#### Riparian Corridors

Two riparian corridors follow the creek lines of University and Mars Creeks. Typically, a permit under Part 3A of the Rivers and Foreshores Improvement Act 1948 (RFI Act) is required for the excavation of riverbanks and beds. Under the RFI Act, a person must not excavate or remove material from 'protected land', or do anything that detrimentally affects the flow of protected waters unless they have a permit under Part 3A of the RFI Act.

'Protected land' covers the bed, bank, or shore of creeks, as well as land within 40 metre of the creek.

Major Projects assessed under Part 3A of the EPA Act are excluded from the requirements of Part 3A of the RFI Act. However, appropriate mitigation measures to ensure there are no adverse impacts on the riparian corridor will be undertaken.

Building setbacks to the corridors (to University and Mars Creeks) are proposed to be developed in consultation with the Department of Planning.

#### Water Quality Management

A number of water quality management measures are proposed in the TTW report. These include appropriate measures to be applied during construction, as well as WSUD measures such as the incorporation of wetlands in within communal on-detention basins.

### 7.4.2 Contamination

State Environmental Planning Policy 55 – Remediation of Land (SEPP 55) facilitates the remediation of contaminated land and ensures that land-use changes do not occur without consideration of whether the land is suitable to the proposed use.

As detailed in Section 4.1.6 there is unlikely to be ground or water contamination on the site. However, the current service station land-use on the corner of Culloden and Epping Roads may create potential contamination of a portion of the site.

A detailed investigation report will be prepared when this portion of the site (proposed Precinct F) is developed.

### 7.4.3 Bushfire

Two bushfire prone areas have been identified in the northern section of the Campus.

Development within this area is capable of providing a building footprint in accordance with the requirements of 'Planning for Bushfire Protection' (2006). Detailed analysis will take place at the Project Application Stage for development within this Precinct.

### 7.4.4 Residential Amenity

Residential development is located to the south-west of the Campus adjoining the boundary to Precinct E. This residential development is made up of a mix of seniors living, dwelling house and town house development. Appropriate setback and height controls are proposed at this boundary to ensure there are no unacceptable amenity impacts on this residential area. Shadow diagrams have also been prepared for the Concept Plan which demonstrates that the residential allotments to the south will largely be able to retain three hours of sunlight

access to open space areas in mid-winter. Further detail is provided in Section 6 in relation to Precinct E.

### 7.4.5 Flora and Fauna

Five areas of remnant vegetation representing three ecological communities have been identified on the Campus (Figure 37 in Section 4). The three ecological communities are:

- Sydney Turpentine Ironbark Forest
- Western Sandstone Gully Forest
- Sandstone Ridgetop Woodland.



Based on the EDAW Preliminary Ecological Report at Appendix K of Volume 2, Remnant 1 represents the largest and most intact example of endemic remnant vegetation on the Campus. Although subject to some disturbance, particularly around the edges including mowing and weed infestation, there is a representative understorey complementing the endemic canopy. This remnant is also relatively diverse as it transitions between different ecological communities.

Remnant 5 has a representation of the various ecological communities, but is subject to severe weed infestation, particularly closer to the M2 Motorway reserve and Roger Sheeran Oval. The importance and long term viability of this remnant is however enhanced by its connection to the bushland within Lane Cove National Park.

The other remnants are generally in poor condition, primarily because of mowing activities that occur within them. Their small size also limits their ecological value and ongoing viability. It is proposed to retain remnant 1, 2 and 5 and improve the quality of these remnants. Remnants 3 and 4 will require complete or partial removal as development of Precinct E continues.

Sydney Turpentine Ironbark Forest is listed under the NSW Threatened Species Conservation Act (1995) (TSC Act) as an endangered ecological community. The specific requirements of the TSC Act must be addressed in the assessment of flora and fauna matters. This requires the consideration of potential impacts on threatened species, populations, ecological communities or their habitats.

A Species Impact Statement will be prepared when development within Precinct E, that specifically affects these ecological communities, proceeds. Sydney Turpentine Ironbark Forest is also protected under the Environment Protection and Biodiversity Conservation Act 1999. Approval from the Federal Department of Environmental and Water Resources will be sought when development approval is sought in precincts affected by these remnants.

## 7.4.6 Noise

The Concept Plan including land-uses, layout and separation of uses has been carefully considered to ensure uses are generally not conflicting. Indeed, it is not considered that any of the uses proposed for the campus would be inconsistent with each other from a noise perspective.

The main noise source on campus are the bus corridors along Macquarie Drive and University Avenue. The built form along these corridors, which comprises academic and commercial buildings, will be designed, in order to ensure noise impacts are negligible.

Furthermore, the University Housing Precinct is located in the north-western section of the Campus and is protected from noise generating uses by an open space buffer. Residences within this portion of the Campus will not be subject to significant traffic noise impacts as the Precinct adjoins Culloden Road which is not a main thoroughfare and which has residential development along part of its frontage.

## 7.4.7 Waste

The Campus is currently serviced by private waste contractors. Waste collection will continue to operate as currently established within the Academic Core and University Housing Precinct. New developments on the Campus will be required to prepare Waste Management Plans in accordance with the following principles:

### General

- Minimise waste generation to landfills and maximise waste material avoidance, reuse and recycling;
- To increase the awareness of all employees and subcontractor employees to ensure they understand their responsibilities for waste management; and
- To comply with all relevant legislation and regulatory requirements relating to waste minimisation

### Waste Avoidance Principles

- When assessing design options, consideration shall be given to options that have higher waste reduction than the alternatives (if economical to do so);
- When assessing construction options, consideration shall be given to options that have higher waste reduction than the alternatives (if economical to do so);
- When purchasing for the project, consideration shall be given to either reduce or avoid the generation of waste; and
- Aim to accurately estimate and order quantities of materials required.

### Waste Reuse Principles

- Identify materials for a reuse purpose;
- Segregate materials at the source of generation to facilitate reuse (if economical to do so); and
- Store or reuse those items, either on- or off-, during the process (if economical to do so).

### Waste Recycling Principles

- Erect signage to encourage the reuse and recycling of recovered waste material.
- Identify materials for a recycle purpose;
- Sort materials into components to facilitate recycling; and
- Process the material components for recycling, either within the project or off-site (if economical to do so).

### Waste Removal Principles

- Regular collection / removal or emptying bins or skips to be implemented.
- Disposal of waste to be in accordance with DECC requirements;

- All waste to be either removed for disposal or reuse/recycle off-site will be transported by trucks on regional or main roads, designated for truck movements;
- Local truck routes will be chosen for environmental acceptability and to minimise disruption to the residents along the routes; and
- All trucks are to be covered and have their wheels cleaned before departing the work, to ensure that no waste residue is deposited on public roads.

## 7.5 Social and Economic Benefits and Impacts

### 7.5.1 Economic Impacts

An Economic Impact Assessment of Rezoning Land at Macquarie University has been prepared by BIS Shrapnel and is included at Appendix F of Volume 2.

The Economic Impact Assessment does not identify any negative impacts of the proposal on adjoining or other employment/ economic centres. Rather the report concludes that the proposed commercial uses of land at Macquarie University will help ease Sydney's anticipated 1.75 million m<sup>2</sup> shortage of office space within the next 25 years (to 2031).

According to BIS Shrapnel this would help to ease pressure on rental escalations, assisting Sydney to remain competitive against other cities with regard to office based functions, while preventing a leakage of activity to other cities.

Additionally, BIS Shrapnel indicate that the Concept Plan proposal will encourage additional employment within the Corridor within close proximity to the new University rail station. This is consistent with State planning objectives of encouraging employment-generating uses in proximity to the new station.

The Macquarie Park Corridor is identified as a specialist centre in the Sydney Metropolitan Strategy and the recently-released draft Inner North Subregional Strategy. The Strategy identifies the Macquarie Park Corridor as a key specialised centre, with a strong emphasis on the strengthening of the Global Economic Corridor from North Sydney to Macquarie Park (of which the University is a major land holding and contributor), and the reinforcement of the subregion's knowledge assets.

The advancement of the subregion's knowledge assets will be encouraged through the proposed link between commercial and research uses within the Concept Plan's proposed commercial precincts, and academic and research activities within the Academic Core. Increasingly, some commercial organisations prefer to be located in proximity to universities to take advantage of the mutual beneficial arrangements including research capacity, access to new staff and knowledge sharing. The proposed 'Stanford Model' for the University campus will promote this knowledge sharing and will ensure that the subregion's objectives as a specialised centre are met. The clustering of knowledge-based and research commercial land-uses within the proposed commercial precincts will ensure that Macquarie Park Corridor becomes a specialised knowledge centre, and will not compete with other centres.

This is exemplified in the proposed new headquarters for Cochlear which will be located within the proposed Station South Precinct. This development will establish the nexus between proposed commercial uses and research activities within the University.

The Concept Plan will alleviate the expected shortfall in office space provision in Sydney. The type of commercial development proposed under the Concept Plan will encourage the economic development of the Corridor and the provision of additional employment capacity within proximity to the new rail station, whilst avoiding adverse impacts on other centres.

### 7.5.2 Social Impacts

The development of the Campus in accordance with the Concept Plan will not only allow for the expansion of the Academic Core within a clearly defined urban design framework, but will also encourage the development of University-related research and broad commercial activities at the Core's perimeter. It will promote the image of the University as a worldclass research institution modelled on the Stanford model of encouraging collaboration between commercial activities and research facilities. Funds obtained from the development of commercial precincts will be fed back into the University allowing for the advancement of Macquarie University.

The promotion of the University and expansion of its research activities will contribute to the overall perception of the Macquarie Park Corridor as a key research and technology centre (a notion already supported by the location of MURP on the Campus). The inclusion of commercial and research facilities on the Campus will enhance this perception and reputation.

Additionally, the Concept Plan will allow for the development of a vibrant research Campus that will attract a high calibre of research students and staff to the University. The new commercial precincts on the Campus will also attract prestigious commercial tenants with a number of internationally-recognised research-orientated companies already proposed to occupy the Campus. These initiatives will contribute to the ongoing vitality of the area.

A series of cycle and pedestrian networks are proposed, which will link with regional networks. Remnant bush land will be retained where possible and a network of open space areas will be established on the Campus. These amenities are available for use by the general public and provide a significant social and public benefit. Additionally, the University provides the following benefits to the local community:

- Child care: 90 kids each day: 22% enrolments in the centre are from the local community
- The library collection (physical and electronic) and the exhibition space is available for walk- in public use 82 hrs per week during semester
- Sport and Aquatic centre: 26% usage from the community.
- Sports field: 40% community use including a wide range of schools

The provision of additional commercial floor space on the University Campus will achieve the State government's objectives of locating high density commercial activities in close proximity to public transport nodes. The Concept Plan allows for high density uses in close proximity to the new rail station and encourages the use of public transport. In this respect it will reduce dependency of motor vehicle use and have a positive social impact.

## 7.6 Environmental Risk Analysis

The Environmental Risk Analysis for Macquarie University Campus has been adapted from Australian Standard AS4369:1999 Risk Management and environmental risk tools developed by other organisations (see Table 17). The Environmental Risk Assessment establishes a residual risk by reviewing the 'significance of environmental impacts' and the 'ability to manage those impacts'.

The significance of environmental impacts assigned a value between 1 and 5 based on:

- The receiving environment;
- The level of understanding of the type and extent of impacts;
- The likely community response to the environmental consequence of the project;

The manageability of environmental impact is assigned a value between 1 and 5 based on:

- The complexity of mitigation measures;
  - The known level of performance of the safeguards proposed; and
  - The opportunity for adaptive management.
- The sum of the values assigned provides an indicative ranking of potential residual impacts after the mitigation measures are implemented.

### Summary

The environmental risk analysis illustrates that there are no anticipated high residual risks associated with the project. The balance of the potential impacts identified are generally categorised as low or as low/medium residual impact. The low/medium residual impacts include:

- Transport, traffic and access impacts;
- Risk of bushfire due to proximity to Lane Cove National Park; and
- Damage / disturbance to flora and fauna as a result of the new development;
- Potential adverse economic impacts on other commercial centres;
- Increased demands on exiting infrastructure on the Campus and within its vicinity; and
- Risk of downstream stormwater and water quality impacts.

The key recommendations for mitigation of all impacts include:

- Improving the level of traffic control measures and roads directly affected by the proposed development on the Campus;
- Regularly monitoring traffic impacts generated by the new development;

- Minimising risk of bushfire spreading beyond the National Park by ensuring buildings are designed in accordance with relevant Australian Standards and "Planning for Bushfire Protection", and the Rural Fire Service endorses a bushfire evacuation plan for the Campus;
- Preserving more substantial remnants of protected flora;
- Preventing encroachment of stormwater and building runoff into the National Park to minimise any introduction of weed species and protecting areas containing sensitive species;
- Ensuring the built form is sympathetic to surrounding bushland and adjoining residential properties; and
- Implementing infrastructure works (including stormwater management measures) as development of the site progresses.
- Responding to key government agency directions in relation to Climate Change adaption and preventative measures.

**Table 17** – Environmental Risk Matrix

Significance of Impact	Manageability of Impact				
	5 Complex	4 Substantial	3 Elementary	2 Standard	1 Simple
1 – Low	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)	2 (Low)
2 – Minor	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)
3 – Moderate	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)
4 – High	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)
5 – Extreme	10 (High)	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)

**Table 18** – Environmental Risk Analysis for Macquarie University Concept Plan

Item	Phase	Potential Environmental Impact	Proposed Mitigation Measures	Risk Assessment		
				Significance of Impact	Manageability of Impact	Residual Impact
Transport, Traffic and Access	C + O	Increased traffic on local and internal roads Increased stress on existing overstretched road infrastructure Environmental Impact	Contributions to be made to augmentation of road and intersection infrastructure directly impacted by the proposed Concept Plan opposed Mitigation Measures	3	2	5 (Low/Medium)
Heritage and Urban Design	C	Limited heritage value on the Campus. Established urban design character on the Campus	Buildings and facilities are to be generally located within established built areas to minimise impacts on the surrounding bushland. Appropriate setbacks to residential development to the west and south-west are proposed. No impact on heritage items will occur.	1	1	2 (Low)
Bushfire	C + O	Bushfire risk to new development	Construction of Buildings in Bushfire Prone Areas will comply with AS 3959-1999. The University Housing precinct is affected by bushfire risk. Development within this area is capable of providing a building footprint in accordance with the requirements of 'Planning for Bushfire Protection' (2006). Detailed analysis will take place at the Project Application Stage for development within the Precinct.	2	2	4 (Low/Medium)
Flora and Fauna	C + O	Loss of flora and fauna	The vast bulk of the existing natural bushland on the Campus will be retained. Most areas of sensitive flora and fauna will be protected. Stormwater management and run-off into the surrounding bushland will be greatly improved through appropriate stormwater mitigation measures.	3	2	5 (Low/Medium)

Item	Phase	Potential Environmental Impact	Proposed Mitigation Measures	Risk Assessment		
				Significance of Impact	Manageability of Impact	Residual Impact
Economic	O	Impacts on other centres	The University seeks to attract commercial development on the Campus with a research component. It will contribute to the promotion of Macquarie Park Corridor as a knowledge-based specialised centre, limiting the impact on other commercial centres. The additional floor area proposed will respond to an expected shortfall in commercial floor area within the Sydney region.	2	2	4 (Low/Medium)
Contamination	C + O	Limited contamination has been identified within Precinct F.	Appropriate remediation measures can be implemented when development within this Precinct takes place.	1	2	3 (Low)
Residential Amenity	C + O	The Campus's western boundary adjoins residential development.	Appropriate height and setback controls are proposed at this boundary to minimise any residential amenity impacts.	2	1	3 (Low)
Infrastructure Works (energy, telecommunications, gas and sewer)	C + O	Ongoing infrastructure augmentation works will be required to accommodate proposed Concept Plan development.	WGE and TTW have prepared a comprehensive analysis of the infrastructure requirements for the development envisaged under the Concept Plan. Ongoing analysis of the infrastructure needs for the Campus will continue as development proceeds.	2	2	4 (Low/Medium)
Stormwater and water quality management	C + O	Existing stormwater and water quality management measures will need to be implemented to accommodate the proposed development.	Measures recommended in the TTW report will ensure there is no increase of stormwater peak flow downstream. WSUD measures and sewer amplification works are proposed to ensure water quality is maintained or improved.	2	2	4 (Low/Medium)

8.0

Proposed SEPP Amendment

Macquarie University is seeking to amend Schedule 3 of the Major Projects SEPP to include the Macquarie University North Ryde Campus as a State Significant Site (SSS). The Minister agreed to consider the site as a potential SSS on 22 December 2005.

Item (i) of the Minister's State significant site study requirements requires, amongst other things, consideration of the development controls for the site that should be included within Schedule 3 of the Major Projects SEPP 2005.

An SSS study was exhibited during mid 2006. As a result of this exhibition and comments made to the Department of Planning, Macquarie University has taken each stakeholder's views into account, including the Minister's and Department of Planning's views and comments, as well as issues raised in other submissions.

In general, concern was raised at the need to explore the SSS listing given the flexibility available under Part 3A of the EP&A Act, the range of additional uses proposed on the Campus (deemed to be outside of the charter of the University's core academic functions), and the proposed additional gross floor area (GFA) and its potential to negatively impact upon the economic opportunities of the remainder of the Macquarie Park Corridor and other related specialised centres over the next 25 years. In response, Macquarie University has sought to reduce the proposed GFA for non-academic uses from those originally proposed, while maintaining the same objectives, in order to provide the University with the greatest flexibility and range of opportunities to remain competitive and pursue an economically sustainable development model.

The objective of the SEPP is therefore to maximise this opportunity while seeking to satisfy the State Government's objectives for the region, subregion and Macquarie Park Corridor consistent with the Metropolitan Strategy, draft subregional strategy for the Inner North, and the State Plan.

These objectives include:

- (a) Increased business investment in NSW consistent with State Plan priority P1;
- (b) Increased number of people participating in education and training throughout their life consistent with State Plan priority P4;
- (c) Promotion of jobs closer to home consistent with State Plan priority E5;
- (d) Reinforcement and strengthening of the Macquarie Park Corridor's specialist centre status by promoting strong links between the education, research and employment sectors;
- (e) Reinforcement and strengthening of the Macquarie Park Corridor's knowledge assets through promotion of co-location of knowledge and education clusters and employment land, and encouragement of innovation;
- (f) Encouragement of use of public transport and the opportunity to make full use of infrastructure;
- (g) Contribution towards, and assistance in achievement of, an additional 60,000 jobs within the Inner North Sub-Region, and 21,000 jobs within the Ryde LGA, in the next 25 years; and
- (h) Fostering suitable growth and commercial opportunities for Macquarie University to ensure a competitive edge.

As a result, Macquarie University seeks the following SSS listing:

- To enable the introduction of an SP2 Infrastructure - University zone to allow for the retention and expansion of the Academic Core;
- To rezone Precincts D, E and F of the Campus to B4 Mixed Uses, and allow a number of other uses compatible within the surrounding urban environment;
- To rezone Macquarie University in consistency with the Standard LEP Template and broader strategic objectives of the metropolitan region;

- To enable the inclusion of additional development quantum as follows:
  - Identification and creation of new commercial, research and business precincts within the existing Special Uses 5(c) zone and 3(h) Business Special (Mixed Activity) totalling 400,000m<sup>2</sup> GFA (including 117,000m<sup>2</sup> GFA already allowed under LEP137). This equates to an additional 283,000m<sup>2</sup> GFA.
  - Revise zonings to coincide with the standard LEP template.
- To ensure the Minister for Planning is the approval authority under Part 3A of the EP&A Act for all development greater than \$5 million capital investment value; and
- To correct minor zoning boundary anomalies as a result of the earlier amendment to the Ryde PSO by LEP137 to spatially better reflect the planning and economic objectives of both the Macquarie Park Corridor and Macquarie University.

The proposed amendments, including a draft instrument and indicative maps, are described in more detail below at Section 8.5.

## 8.1 Additional Land-Uses within the Proposed Zones

It is proposed that Precincts D, E and F be zoned B4 Mixed Uses and that Precincts A, B, C, G and H be zoned SP2 Infrastructure - University. This zoning arrangement allows simple transition into the Ryde Local Environment Plan, when it is amended in accordance with the Standard LEP Template.

The following additional land-uses are proposed to be included in the Mixed Uses zone (Precincts D, E and F) to enable the flexibility to promote co-location opportunities for commercial, business, research, and retailing uses beyond uses ancillary to the University's core academic functions:

- Advertisement;
- Food and drink premises;
- Health services facility;
- Industrial retail outlet;
- Kiosk;
- Light industry;
- Neighbourhood shop;
- Recreation facility (outdoor);
- Research station;
- Restaurant; and
- Serviced apartment.

The key reasons for allowing a number of land-uses within this zone are:

- To provide flexibility to meet the strategic directions of both the Metropolitan Strategy and the University;
- To ensure the University remains the dominant use along the Herring Road frontage; and
- To allow the expansion of the Academic Core.

Under the new Standard LEP Template, there are no compulsory land-uses within the SP2 Infrastructure zone. Therefore the following are proposed:

- Education Establishment;
- Food and Drink Premises;
- Kiosk;
- Recreational Facilities (indoor and outdoor);
- Research station; and
- Seniors Housing

In regards to Seniors Housing, this land-use is only permissible within the University Housing Precinct (Precinct B).

## 8.2 Quantum and Distribution of Development

### Academic Floor Space

The proposed SEPP amendment seeks to facilitate an increase of approximately 61,200m<sup>2</sup> GFA over a 25 year period. This is in addition to the 153,000m<sup>2</sup> of existing floor space. The new space will be considered on an 'as needs' basis and will be largely concentrated within the existing academic core.

### Commercial and Research Floor Space

The proposed SEPP amendment seeks to facilitate an increase of an additional 283,000m<sup>2</sup> GFA built floor space for commercial, business and research uses over the next 25 years over and above that which is already permissible. That is, of the 400,000m<sup>2</sup> GFA, some 117,000m<sup>2</sup> GFA is already allowed under existing controls. The new commercial, business and research floor space will be generally located around (and within walking proximity of) the new rail station at Herring Road and fronting Epping Road and the southern portion of Culloden Road

(Precincts E and F). Based on the availability of land on Campus, existing leases and the anticipated demand for floor space, the likely development uptake on campus in the next 20 years is estimated to be approximately 200,000m<sup>2</sup> of the total quantum.

The additional business / commercial land-uses and the quantum of floor space are sought so that the University can better consider its future options to deliver quality education, and accommodate academic and related growth with the flexibility to respond to a changing external environment.

The shift in funding for universities over the last decade and the implications of the Federal Government's Higher Education Review in 2003, has increased the need for universities to develop additional funding sources to achieve higher levels of self-sufficiency. A number of recent major State Government infrastructure initiatives over the same period have provided considerable opportunities for Macquarie University particularly in relation to maximizing employment around rail stations.

The higher education market in Australia is growing with strong demand from both local and international students. Macquarie University is fortunate to have land available for expansion and will benefit directly from the new transport infrastructure that will significantly increase accessibility to the Campus. The additional range of uses is not to be at the expense of preservation of land (or development opportunity) for the University's key academic functions.

The University wishes to capitalise strategically on its location and so benefit from the new station and simultaneously establish a significant and identifiable entrance to the Campus and Research Park.

The proposal contributes an additional 283,000m<sup>2</sup> GFA (or total new 400,000m<sup>2</sup> GFA) in assisting to meet the additional 800,000m<sup>2</sup> GFA envisaged (or total potential of 1,700,000m<sup>2</sup> GFA under current planning controls within the Macquarie Park Corridor). The proposal is therefore about a 23% of total potential floor space under current controls. At this rate, the University's proposal does not seek to compromise, or compete with, the rest of the Macquarie Park Corridor. It is seeking to maximise strategic and economic opportunities consistent with the longer term objectives for, and growth of, both the University and the Corridor. The proposal seeks only an average annual increase of 16,000m<sup>2</sup> GFA within the University for non-core functions over the 25 year period. As an example, the proposed Cochlear redevelopment will contribute an initial 25,000m<sup>2</sup> GFA at Stage 1 and a total of about 50,000m<sup>2</sup> GFA over 15 years.



### Student Accommodation and Seniors Housing

Additional student accommodation is required over the next 25 years to provide a proportion of on-Campus housing for the anticipated growth from 30,000 to 42,000 students.

Up to a total 5,000 students are proposed to be accommodated on-site, generally within the areas proposed for University Housing fronting Culloden Road (at Precinct B). It is also proposed that seniors housing uses be permissible within this precinct as an additional use. The rationale behind this is to enable a suitable range and flexibility in residential accommodation within areas devoted to residential development. The development of seniors housing accommodation shall not be at the direct expense of provision of student accommodation. The proposed SEPP recommends a minimum quantum of student accommodation that must be attained in order for seniors housing accommodation to be developed.

### Retail and Other Uses

In addition to the range of commercial, business and research use, it is proposed retail uses, such as retail premises, neighbourhood shops, service stations, food and drink premises and kiosks be permitted as additional uses within Precincts D, E and F. In particular, Precinct F offers a suitable opportunity to create and activate the edge of the University (and fringe of the Macquarie Park Corridor) with uses which will contribute to (but not compete with) the hierarchy of mixed use functions within the area. This would make use of the exposure of land within Precinct F to serve passing trade and the growing population within the site and its environs, particularly the growth of the student housing precinct adjacent.

Support services such as child care centres, hotels and recreational facilities are proposed in order to provide for the needs of a modern urban Campus community.

Broadening the types of uses on the site will assist in the sustainability of the growth strategy for the Macquarie University Campus, and provide high quality services to employees and residents of the Macquarie Park Corridor.

As Macquarie University will retain ownership of all lands within the Concept Plan area (and subject of the SEPP amendment), it should be noted that leasing arrangements will be such that should the University require further land or buildings for key academic functions it will be able to.

The implications and impacts of the proposed land-uses and quantum of additional development are addressed in Sections 4, 6 and 7.

## 8.3 Approval Authority Role

Item (h) of the Minister's Requirements requires that parts of the site are identified which should be subject to Part 4 of the EP&A Act, with CoR Council as the consent authority.

While this is acknowledged, Macquarie University originally requested that the consent role for the whole site be retained with the Minister. This view was formed having regard to the planning process to date and because having the Minister as the one consent authority would assist in the consistency and efficiency of decision making.

Given other recent examples of SSS listings under Schedule 3 of the Major Projects SEPP, a threshold of \$5 million for Major Projects is proposed to ensure consistency with other similar recent legislative changes. Therefore, any development under \$5 million will be dealt with as either exempt, complying, Part 4, or Crown development. CoR Council will be consent authority for the latter two items.

It is noted that CoR Council will be consulted as part of the approval process for any application made under Part 3A of the Act, ensuring that adequate involvement by the elected local Council for all development at the site.

By introducing a \$5 million threshold, all significant development may be considered and assessed consistently to ensure that all regional and State planning and economic objectives may be best satisfied.

Macquarie University requests that the provisions for exempt and complying development provided for under Ryde Development Control Plan No. 34 remain.

## 8.4 Zoning Boundary Anomalies

The recent rezoning of part of the Macquarie University Campus to 3(h) Business Special (Mixed Activity) under Ryde PSO by LEP137 created opportunity for further business and commercial uses aligned with the University's Research Park. The proposed zoning boundary realignment seeks to replicate this zoning and opportunity equally towards the south west of the Herring Road frontage to maximize a similar growth and range of uses and ensure equitable density and patronage of the soon to be open Macquarie University Station.

The intended new boundary is located along University Creek to the same zone at abutting land to the south. This realignment ensures a consistent spatial approach to planning along the Herring Road frontage spanning MURP, the Station South Precinct, and opportunities afforded adjacent properties.

## 8.5 Draft Instrument

### 1. Name of Policy

This Policy is State Environmental Planning Policy (Major Projects) 2005 (Amendment No XX)

### 2. Aims of Policy

The aims of this Policy are:

- (i) To identify the land to which this Plan applies as a State significant site under the State Environmental Planning Policy (Major Projects) 2005, and
- (ii) To identify development on the site that is development to which Part 3A of the Environmental Planning and Assessment Act 1979 applies, and
- (iii) To allow land for the future expansion of the University including Academic Core functions, University Housing and University Open Space and Sports Fields, and
- (iv) To enable the development of other University land for a number of purposes in suitable locations with good access to the new Macquarie University rail station, and
- (v) To establish a comprehensive road hierarchy, open space pattern and land-use structure based on the original University grid design, and
- (vi) To allow for linkages between the remodelled Academic Core and new mixed use precincts at the same time as ensuring the Academic Core is protected from vehicle traffic associated with the mixed use precincts, and
- (vii) To establish car park stations at the University's key access points to ensure a mode change from vehicle to pedestrian, for students and staff entering the Academic Core, and

(viii) To encourage increased public transport use through urban design initiatives including higher density land-uses closer to the new station and establishing comprehensive pedestrian and cycle networks on the campus.

### 3. Land to which this Part Applies

This Part applies to the land identified on Map XX to this Schedule referred to in this Schedule as the Macquarie University, North Ryde Campus.

### 4. Amendment of State Environmental Planning Policy (Major Projects) 2005

State Environmental Planning Policy (Major Projects) 2005 is amended as set out in Schedule 1.

#### Schedule 1 Amendments

##### 1. Schedule 3

Insert (with appropriate numbering) at the end of the Schedule (before the maps):

#### Part X Macquarie University, North Ryde Campus Division 1 Preliminary

##### 1. Definitions

In this Part: Zoning Map means the map marked State Environmental Planning Policy (Major Projects) 2005 (Amendment No XX) – Proposed zoning and uses.

### 2. Interpretation

A word or expression used in this Part has the same meaning as it has in the standard instrument prescribed by the Standard Instrument (Local Environmental Plans) order 2006 unless it is otherwise defined in this Part.

### 3. Relationship with other environmental planning instruments

The only environmental planning instruments that apply, according to their terms, to or in respect of development on land within the Macquarie University, North Ryde Campus are this policy and all other State environmental planning policies.

### 4. Maps

- (1) A reference in this Part to a named map adopted by this Part is a reference to a map by that name:
  - (a) approved by the Minister when the map is adopted, and
  - (b) as amended from time to time by maps declared by environmental planning instruments to amend that map, and approved by the Minister when the instruments are made.
- (2) Any 2 or more named maps may be combined into a single map. In that case, a reference to this Part to any such named map is a reference to the relevant part of the single map.
- (3) Any such maps are to be kept available for public access in accordance with arrangements approved by the Minister.
- (4) For the purposes of this Part, a map may be in, and may be kept and made available in, electronic or paper form, or both.

## Division 2 Part 3A projects

### 5. Part 3A projects

Such development within the Macquarie University, North Ryde Campus as has a capital investment value of more than \$5 million, other than development for the purpose of a public utility undertaking.

## Division 3 Provisions applying to development within Macquarie University, North Ryde Campus

### 6. Application of Division

This Division applies with respect to any development within the Macquarie University, North Ryde Campus and so applies whether or not the development is a project to which Part 3A of the Act applies.

### 7. Land use zones

(1) For the purposes of this Policy, land within Macquarie University, North Ryde Campus is in a zone as follows if the land is shown on the Zoning Map as being that zone:

- (a) Zone B4 Mixed Use
- (b) Zone SP2 Infrastructure - University

### 8. Zone B4 Mixed Use

- (1) The objectives of Zone B4 Mixed Use are as follows:
- (a) To provide a mixture of compatible land uses,
  - (b) To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling,

- (c) To ensure that the Macquarie Park Corridor and Macquarie University Campus matures into a premium location for globally competitive businesses with strong links to the University and research institutions and businesses,
  - (d) To ensure that the employment and educational activities within the corridor and campus are integrated with other businesses and activities,
  - (e) To promote the principles of ecologically sustainable development,
  - (f) To ensure an appropriate density, form, range and distribution of land-uses and development,
  - (g) To promote appropriate retail development along the Epping Road frontage,
  - (h) To ensure Macquarie University retains a competitive edge.
- (2) Permitted with consent  
Advertisement; Boarding Houses; Business Premises; Child care centres; Community facilities; Educational establishments; Entertainment facilities; Food and drink premises; Function centres; Health services facility; Hotel or motel accommodation; Industrial retail outlet; Information and education facilities; Kiosk; Light industry; Medical centre; Neighbourhood shop; Office premises; Passenger transport facilities; Recreation facilities (indoor); Recreation facility (outdoor); Registered clubs; Research station; Residential accommodation; Restaurant; Retail premises; Seniors housing; Serviced apartments; Shop top housing
- (3) Permitted without consent  
Roads.
- (4) Development for the purposes of a utility undertaking may be carried out without consent on land within the Macquarie University,

### 9. Zone SP2 Infrastructure – University

- (1) The objectives of Zone SP2 Infrastructure - University are as follows:
- (a) To provide for infrastructure and related uses,
  - (b) To prevent development that is not compatible with, or that may detract from the provision of infrastructure,
  - (c) To allow for the retention of the Academic Core of the Macquarie University, North Ryde Campus,
  - (d) To allow for the future expansion of the academic components of the Macquarie University, North Ryde Campus.
- (2) Permitted with consent  
Educational establishment; Food and drink premises; Kiosk; Recreation facility (indoor); Recreation facility (outdoor); Research station; Seniors housing; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose.
- (3) Permitted without consent  
Roads.
- (4) Notwithstanding sub-Clause 9(2) above, the provision of Seniors Housing, may only be granted in Precinct B

### 10. Exempt and complying development

Development within the Macquarie University, North Ryde Campus, that satisfies the requirements for exempt development or complying development specified in City of Ryde Development Control Plan No. 34 – Exempt and Complying Development adopted by Council 19 July 2005), is exempt development or complying development, as appropriate.

### 11. Public utility undertakings excepted

Development for the purpose of a public utility undertaking that is carried out on land within Macquarie University, North Ryde Campus, does not require consent.

Note. As a consequence of the removal of the requirement from development consent under part 4 of the Act, development for the purposes of public utility undertakings is subject to the environmental assessment and approval requirements of part 5 of the Act.

### 12. Relationship with other planning instruments

- (1) Except as provided for by this Policy, all other environmental planning instruments apply, according to their terms, to the Macquarie University, North Ryde Campus.
- (2) Division 2 Clauses 5 and 6 apply to the Macquarie University, North Ryde Campus despite any provision of Ryde Planning Scheme Ordinance or any other local environmental plan applying to that site.

### 13. Suspension of covenants, agreements and instruments

- (1) For the purpose of enabling development on land within the Macquarie University, North Ryde Campus to be carried out in accordance with this Part or with consent granted under the Act, any agreement, covenant, or similar instrument that restricts the carrying out of the development does not apply to the extent necessary to serve that purpose.
- (2) Nothing in sub-Clause (1) affects the rights of interests of any public authority under any registered instrument.
- (3) Pursuant to section 28 of the Act, before the making of this Clause, the Governor approved of sub-Clauses (1) and (2)

## 8.6 Draft Maps

Figure 90 – Macquarie University Campus

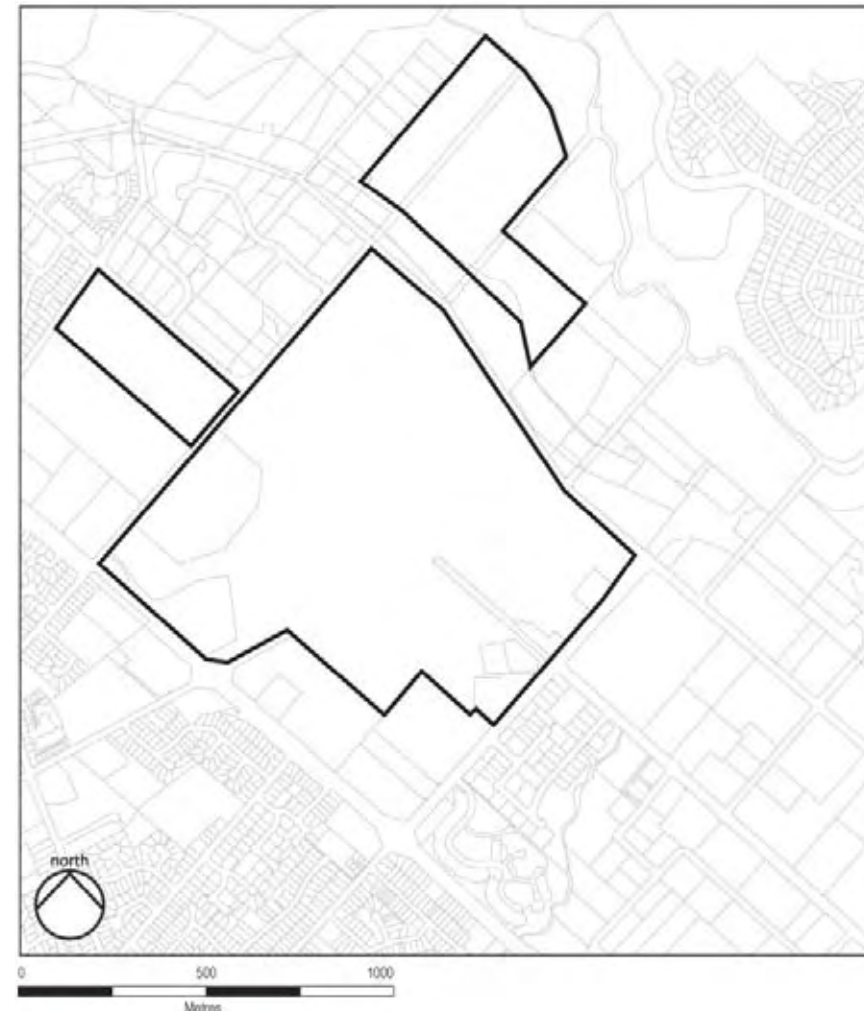


Figure 91 – Macquarie University Precincts

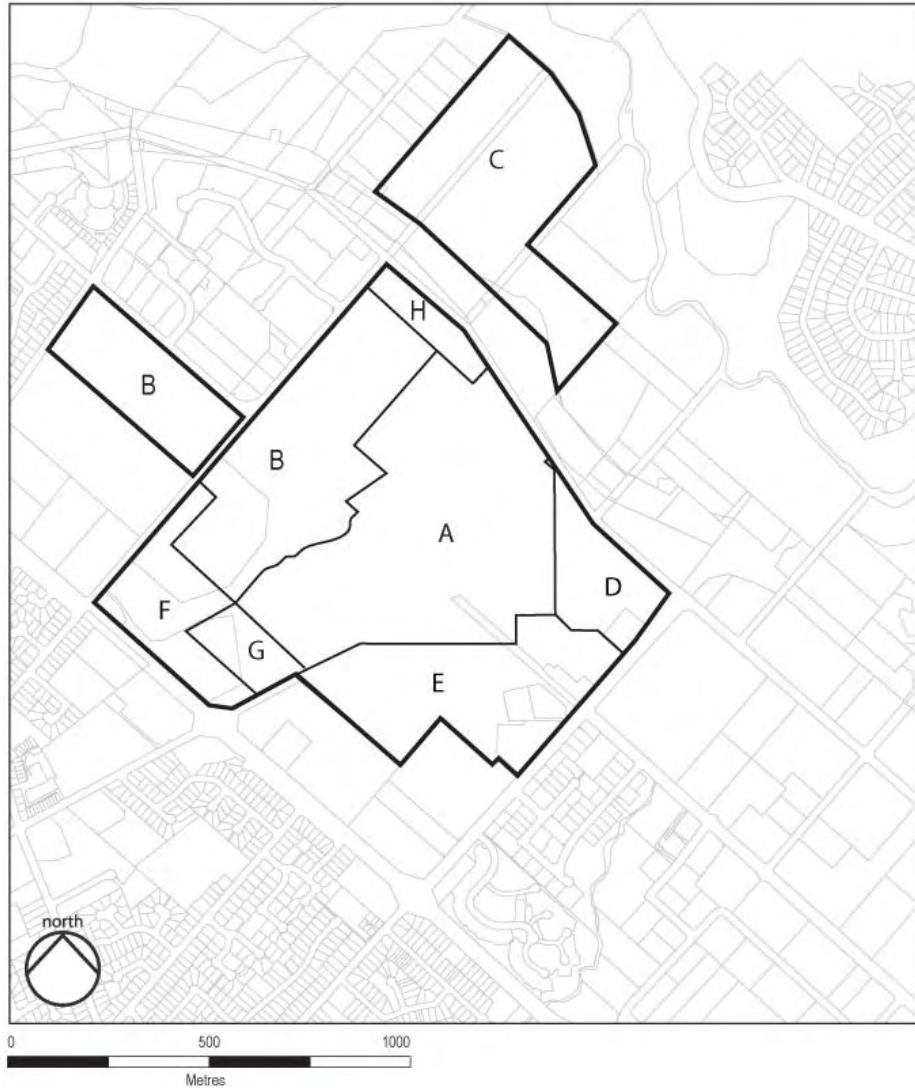
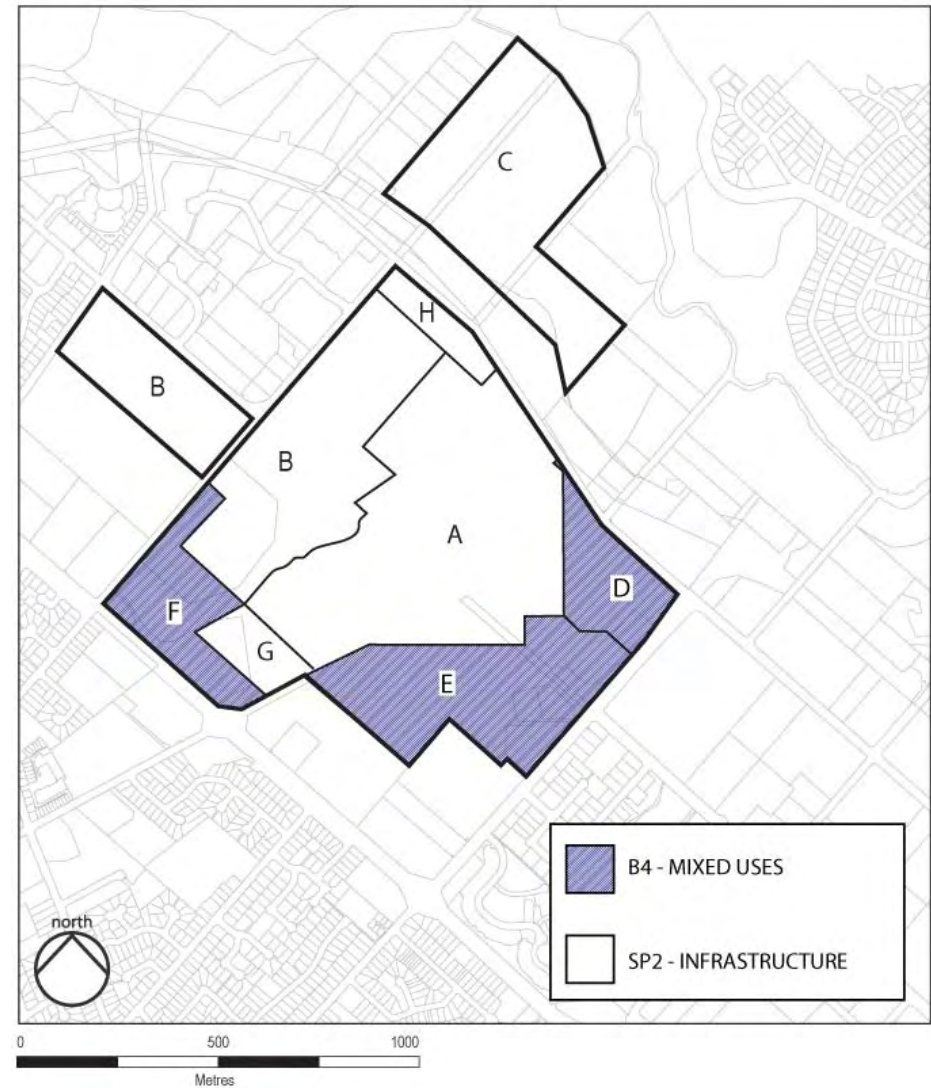


Figure 92 – Proposed Zoning and Uses



## 8.7 Outline of Contributions Framework

The Concept Plan presents the background rationale and justification for the preparation of the voluntary planning agreement (VPA) and associated Statement of Commitment to implement infrastructure required as a result of the developments.

Based on the current level of road network infrastructure provision, projected growth and development to an agreed year (2031 to correspond with the NSW Metropolitan Strategy), the anticipated shortfalls as a result of this growth have been identified and the opportunities for addressing such shortfalls will be need to be agreed upon with Local and State authorities.

The Concept Plan will provide the scope for a coordinated planning agreement and/or a contributions plan between the proponent, Council and other agencies.

The proposed contributions framework for the Concept Plan is based separately on the provisions of local and regional infrastructure. The infrastructure to be provided is generally related to the provision of road and intersection upgrades at and around the Campus. The scope of road improvements required and recommended is contained within Section 4.0 of the revised TMAP – see Appendix E of Volume 2.

The University has agreed to enter into a VPA with the City of Ryde in relation to local infrastructure contributions. The framework for the VPA is based on an earlier Memorandum of Understanding and Council's current Section 94 Plan. Macquarie University will contribute either works in-kind or a monetary contribution on a sliding scale based on the development type towards:

- Civic and Urban Improvements;
- Roads and Traffic Management Facilities;
- Cycleways;
- Stormwater Management Facilities; and
- Plan Administration.

The sliding scale is related to:

- University Housing (payment of a residential rate based on the number of beds);
- Research and Development and Business Incubation uses (payment of a modified commercial rate based on function);
- Commercial Development (payment of a modified commercial rate); and
- Academic, Medical and Scientific Uses (no contribution).

The schedule informing the VPA is included at Appendix P of Volume 2 and is currently being negotiated and finalised.

The revised TMAP has assisted with the scope for the agreement relating to road network improvements and any other infrastructure to facilitate sustainable transport. In addition to the City of Ryde VPA a further agreement will be struck between the University and the RTA.

It is proposed that these negotiations occur during assessment and where necessary following approval of the Concept Plan, with appropriate measures with State agencies to address regional traffic and transport matters. A Statement of Commitment is included indicating that Macquarie University shall provide for regional road upgrades in negotiation with RTA consistent with the relevant sections of the revised TMAP which will seek to determine the appropriate schedule of works, value, responsibilities, and timing.

In circumstances outside of the above framework, Educational (and ancillary uses) consistent with the uses permissible under Special Uses 5(c) are expected to be exempted from payment of contributions as a result of their contribution to social and essential infrastructure within the locality and region. This is consistent with existing legislation (Part 5A of the EP&A Act) and the Department of Planning's existing policies and Circulars concerning Crown development. A University within the meaning of the Higher Education Act 2001 is a prescribed person and hence a Crown applicant under Part 5A of the EP&A Act. Should an application be made under Part 3A of the EP&A Act, the same principles shall apply.

Under the Department's policies and Circulars, Crown development is exempted from all contributions other than drainage, and local road upgrades and traffic management (at the site's entrance). Even then, there must be suitable nexus and apportionment principles applied to ensure equitable contributions ensue.

## 8.8 Statement of Commitments

The following commitments have been compiled based on the environmental assessment undertaken in the preparation of this report. They provide a commitment by Macquarie University indicating the responsibilities and timing to implement measures to prevent potential environmental impacts that have been identified through this assessment to ensure that the project is environmentally, socially and economically sustainable, and to outline a program of works to take forward the staged development of the Macquarie University site under future project applications.

Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
<p>Environmentally Sustainable Development</p>	<p>Commercial development on the site shall be capable of achieving the following targets:</p> <ul style="list-style-type: none"> <li>• Buildings should achieve a minimum 4-star Green Star rating.</li> <li>• Buildings should achieve a minimum 4.5-star NABHERS rating.</li> <li>• Retail development will comply with any reasonable future rating tool provided by the Australian Greenhouse Rating Scheme.</li> </ul> <p>Each development is to provide measures to capture, retain, and minimise litter, oil, sediment, nutrients, and pollutants prior to stormwater runoff discharge to the receiving creeks.</p> <p>A precinct-based supply vs. demand analysis will be performed at the detailed design stage of the development to provide water re-use storage system to service non-potable use such as irrigation for landscape areas and for toilet flushing.</p>	<p>Director – General of the Department of Planning</p>	<p>Prior to or with submission of each Project Application for building works</p>	
<p>Access, Traffic and Transport</p>	<ul style="list-style-type: none"> <li>• A University Travel Plan (UTP) will be formulated by Macquarie University for the academic / educational uses at the site only.</li> <li>• Development on the site (academic and commercial) shall be consistent with the aim of the Macquarie Park Traffic Study which seeks a target of 40% non-car modal split over time. Details of the academic mode share targets (staging/mode split) will be incorporated in the UTP and will be reviewed on a regular basis against achievement as per the timing above.</li> <li>• A car parking management strategy will be developed as part of the UTP.</li> <li>• A strategy for bicycle parking including end of trip facilities will be developed as part of the UTP.</li> <li>• A strategy for intra-university travel will be developed as part of the UTP and will include recommendations on travel to/from university housing, connections to the rail station, and night travel. Consideration will be given to the development of a campus shuttle bus service in the UTP.</li> <li>• A detailed micro-simulation transport model of the University internal road network and surrounding “area of influence” will be developed. The model will be used to assess in detail proposed changes to the internal road network and review internal intersection performance. The model will be utilised for assessment of project applications and to determine staging of works. The timing of the model would be based on full operation of the Epping-Chatwood rail link being realised and any major redevelopment of the Station South portion of Precinct E.</li> <li>• Development on the site shall promote as far as practicable reduced use of private single occupant vehicles and promote public transport use, walking and cycling – including implementation of the Macquarie University Cycle Access Plan.</li> <li>• Commercial developments will be required to prepare a Workplace Travel Plan (WTP) for individual sites in accordance with City of Ryde DCP 2006 Part 4.5 (Section 6.3.9).</li> <li>• All internal roads are to be designed and constructed consistent with the requirements of all relevant Australian Standards, and the requirements of Council and Austroads as applicable.</li> </ul>	<p>Director – General of the Department of Planning</p>	<p>Ongoing and prior to or with submission of each Project Application for building works</p>	

Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
Access, Traffic and Transport Continued...	<ul style="list-style-type: none"> <li>The design facilities will permit effective, appropriate and safe use by all people, including those with disabilities in accordance with the Building Code of Australia and Australian Standard AS 1428.</li> <li>4800 car parking spaces are to be retained for academic (4,095) and existing commercial and MURP related (705) uses on site. New car parking for non-academic uses shall be at a maximum rate as identified within the Concept Plan for each precinct.</li> </ul>	Director – General of the Department of Planning	Ongoing and prior to or with submission of each Project Application for building works	
RTA Roads	<ul style="list-style-type: none"> <li>Macquarie University shall provide for regional road upgrades in negotiation with the RTA consistent with recommendations contained in the revised TMAP as prepared by Cardno Eppell Olsen.</li> <li>The negotiated position shall seek to determine the appropriate schedule of works, value, responsibilities, and timing.</li> </ul>	Minister for Planning	As part of the Concept Plan approval and as determined by the negotiations with the RTA.	
Environmental Management and Contamination	<ul style="list-style-type: none"> <li>A hazardous material audit which will include sampling and identification of asbestos and Polychlorinated Biphenyls (PCBs) will be completed to determine the extent and integrity of the hazardous building materials which exist on the site.</li> <li>Any demolition / removal of Polychlorinated Biphenyls (PCBs) and asbestos containing material will be conducted in accordance with current NSW EPA waste classification and disposal guidelines, and WorkCover occupation health and safety procedures.</li> <li>A targeted Phase 2 intrusive contamination assessment to assess whether any contamination, from potential sources outside the site, has migrated onto the property. This would involve the drilling and collection of soil samples as the installation of ground water wells. In addition, limited surface soil sampling as will be conducted across any sporting fields and open spaces which may have been treated with organochlorine / organophosphate pesticides. The result of Phase 2 soil and groundwater investigations will be assessed against the relevant land-use criteria stated by NSW EPA, NEPM and ANZECC guidelines. If concentrations of contaminants exceed the relevant land-use guideline, a remedial action plan will be developed, with remediation and validation works completed in accordance with EPA guidelines, CLM Act (1997) and SEPP 55.</li> <li>Development at particular sites (including the Australian Film and Television School and the site of the existing service station) will include a detailed soil investigation and appropriate management of any contamination, if determined.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works, based on assessment on a precinct by precinct basis.	
Geotechnical and Construction Impacts	<ul style="list-style-type: none"> <li>A report detailing the existing geotechnical conditions of each development site (within the relevant precinct) and any potential geotechnical impacts of development consistent with the Concept Plan shall be submitted with future project applications.</li> <li>A Construction Management Plan will be submitted with subsequent applications to address issues related to construction impacts such as, but not limited to, noise, vibration, dust, soil and erosion and waste materials.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	



Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
Geotechnical and Construction Impacts continued...	<ul style="list-style-type: none"> <li>An Erosion and Sedimentation Control Plan will be developed to address both the construction phase to ensure erosion and sedimentation controls will be put in place prior to any works beginning to ensure that any potential increase in run-off from removal of vegetation or leaf litter does not impact on downstream or off-site environments and development does not contribute to environmental damage if the waterways, bushland or air quality.</li> <li>Buildings around the new rail station will be designed having regard to the Epping-Chatswood Rail Link Underground Infrastructure Protection Guidelines (TIDC – May 2008), with future applications accompanied by appropriate engineering advice and design measures to protect TIDC infrastructure.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	
Flora and Fauna	<ul style="list-style-type: none"> <li>Ecological restoration management plans will be developed for retained flora remnants and include pest and weed management.</li> <li>As part of each Project Application that potentially affects Remnant Areas 1 – 4 of STIF, a Vegetation Management Plan (VMP) is to be submitted that addresses the restoration and rehabilitation of the STIF, as relevant.</li> <li>Where possible, endangered vegetation remnants will be retained and protected from further encroachment/degradation or supplemented with appropriate offsets at other remnants.</li> <li>Where possible, individual remnant trees outside remnant areas will be retained.</li> <li>Detailed flora and fauna surveys and assessments will be undertaken as part of each future application where development is proposed that may impact upon flora and fauna and STIF remnants or areas nominated as potential endangered ecological communities (EEC).</li> <li>Indirect impacts on bushland such as weeds and fire will be managed by the implementation of management plans and strategies including: <ul style="list-style-type: none"> <li>A Threatened Species Management Plan will be prepared to address relevant actions to conserve threatened species across the site.</li> <li>A Weed Management Plan will be prepared as part of Project Applications to link into stormwater control strategies.</li> </ul> </li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	
Trees	<ul style="list-style-type: none"> <li>A Landscape Management Plan will be prepared for each site that will address: <ul style="list-style-type: none"> <li>Retention or replacement of planting of suitable tree species (preferably endemic and mature where possible); and</li> <li>Long term preservation and maintenance of tree assets.</li> </ul> </li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	
Bushfire Protection	<ul style="list-style-type: none"> <li>All habitable development will comply with the requirements of Planning for Bushfire Protection 2006 (NSW Rural Fire Service), particularly with Precinct B.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	

Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
Infrastructure	<ul style="list-style-type: none"> <li>A detailed water supply infrastructure needs analysis will be undertaken to allow for identification and controlled connection of the Mobbs Hill and Marsfield reservoirs, in consultation with Sydney Water.</li> <li>Duplication of the existing sewer system will be investigated with Sydney Water as development envisaged under the Concept Plan progresses, to ensure existing services may remain and new services provided as development occurs.</li> <li>Macquarie University will investigate all opportunities to maximise efficiency of existing Energy Australia assets in consultation with Energy Australia.</li> <li>Macquarie University will investigate additional power generation opportunities beyond that supplied by Energy Australia.</li> <li>New medium pressure gas mains will be provided as required, dependent upon take-up of existing gas supply and cogeneration power options.</li> <li>Water detention areas are to be provided within the development area.</li> <li>All relevant certificates and approvals, including those required under Section 68 of the Local Government Act 1993 or section 73 of the Sydney Water Act 1994 will be obtained.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of any subsequent Project Application or commencement of building works (as applicable).	
Heritage / archaeology	<ul style="list-style-type: none"> <li>The Metropolitan Local Aboriginal Land Council will be requested to monitor surface works during initial construction phase.</li> <li>Should any Aboriginal relics or artefacts be unexpectedly discovered, then all excavations or disturbances to the area will cease and National Parks and Wildlife will be informed in accordance with section 91 of the National Parks and Wildlife Act 1974.</li> <li>Should any historical relics be unexpectedly discovered, all excavations and disturbance to the area will stop immediately, and the Heritage Council of NSW will be informed in accordance with section 146 of the Heritage Act 1977.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works.	
Design Excellence and Urban Design Guidelines	<ul style="list-style-type: none"> <li>A Design Excellence Strategy will be prepared to ensure a quality built form and public domains achieved during the life and construction of the project.</li> <li>The Strategy will clearly articulate a process to achieve design excellence, and may include the preparation of site specific design guidelines and principles.</li> <li>Urban design guidelines will be developed to ensure design excellence is achieved in the architecture of the buildings and public domain (streets, parks and squares). This will include building designs and standards.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works and on a precinct by precinct basis.	

Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
Design Excellence and Urban Design Guidelines continued...	<ul style="list-style-type: none"> <li>• The detailed urban design guidelines will be provided as part of precinct plans and a detailed urban design guideline will be provided. The guidelines will address the following:                             <ul style="list-style-type: none"> <li>- Building form;</li> <li>- Heights;</li> <li>- Road widths;</li> <li>- Streetscape character;</li> <li>- Civic spaces;</li> <li>- Parking provision;</li> <li>- Lighting, safety and security;</li> <li>- Water sensitive urban design;</li> <li>- Energy efficiency; and</li> <li>- Materials and colours.</li> </ul> </li> <li>• The guidelines will address CPTED principles for Safer by Design best practice models, to which all future applications will need to accord.</li> </ul>	Director – General of the Department of Planning	Prior to or with submission of each Project Application for building works and on a precinct by precinct basis.	
Riparian Zone, Flooding and Stormwater	<ul style="list-style-type: none"> <li>• Adoption of the 100-year storm event as the interim design flood level standard and that proposed structures to have 500mm freeboard to the finished floor level, 300mm freeboard for flood egress roads, and 150mm freeboard for flood egress footpaths.</li> <li>• Location of the proposed development outside the 100-year storm flood extent as shown in the TTW report.</li> <li>• Location of the proposed development outside the riparian zone (except for development for approved revegetation and creek rehabilitation and stabilisation works).</li> <li>• Provision of a flood management/evacuation plan for proposed development within the PMF flood extent as shown in the TTW report.</li> <li>• Precinct-based stormwater detention storages are to be implemented to limit flow to that of the pre-development flowrates, from the 5-year to the 100-year ARI storm events.</li> <li>• A detailed creek rehabilitation and riparian vegetation management plan will be prepared to establish a short, medium and long-term revegetation and rehabilitation strategy for the Mars and University Creeks beds, banks, and riparian zones.</li> </ul>			
Other Matters	<ul style="list-style-type: none"> <li>• The payment of the Long Service Levy under section 34 if the Building and Construction Industry Long Service Levy Payment Act 1986 will be paid for any works costing \$25,000 or more.</li> <li>• The University will prepare a childcare strategy, based on, amongst other things, ensuring timely notification, relocation, decanting and reopening of childcare facilities within the campus as a result of new development.</li> </ul>	Director – General of the Department of Planning	Prior to the commencement of building works for each individual application.	

Subject	Commitments	Approved by Whom	Timing	Compliance (notes)
Transitional issues	<ul style="list-style-type: none"> <li>As the Triangle South of University Avenue is developed, at-grade parking required in the earlier stages of development will be relocated into basements of new buildings so that when the Triangle is fully developed, the open space will be provided in accordance with the Concept Plan.</li> </ul>	Director – General of the Department of Planning	Prior to the Triangle South of University Avenue being fully developed by 2031.	
Contributions / VPA	<ul style="list-style-type: none"> <li>Developer Contributions will be made consistent with the terms of the Macquarie University VPA(s) presently being prepared and formalised in consultation with Macquarie University, City of Ryde Council, and other relevant parties.</li> <li>See above for relevant arrangements for contributions to the RTA.</li> </ul>	Minister or Director – General of the Department of Planning (as relevant).	Consistent with the terms of the VPA	

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Conclusion

The development of the Macquarie University Campus in accordance with the Concept Plan will allow for the development of the Campus' Academic Core to accommodate an increased student population to 2031 and well beyond. At the same time it will allow for the development, for commercial purposes, of excess land at the perimeter of the Campus in proximity to the new Macquarie University rail station.

Development of commercial uses within the proposed commercial precincts will have a number of positive impacts including:

- Enhancement of the nexus between commercial uses and University/research-related uses in accordance with the original Stanford model for the Campus;
- Allow for the concentration of commercial uses in proximity to a major new public transport node in accordance with State government objectives for increasing public transport use; and
- Provide additional commercial floor area within the Macquarie Park Corridor (an identified Strategic Centre) allowing for the attraction of additional investment to the area and ensuring that the predicted shortfall in commercial floor area within the Sydney area is met.

The original vision for the Campus, in particular its landscaped setting and grid structure, has been retained and enhanced. The Concept Plan allows for the development of a comprehensive open space network to augment existing significant open space areas, and is complemented by a broad cycle and pedestrian network. The EAR and accompanying specialist reports address the environmental issues associated with the development of the Campus under the Concept Plan. Issues associated with traffic impacts, infrastructure and stormwater requirements can be appropriately addressed through augmentation of existing systems.

Potential environmental impacts (such as flora and fauna impacts and bushfire risk) generally relate to specific areas on the Campus and can be appropriately addressed through mitigation measures when design details for development in affected areas are being implemented. Potential boundary issues are limited to the western boundary to residential development and are addressed through adequate setback and height measures. It is considered that all potential impacts associated with the Concept Plan development can be appropriately addressed.

The Concept Plan seeks to establish the parameters for the strategic development of the Macquarie University Academic Core, as well as allow for the development, for commercial purposes, of excess land outside of the Academic Core in proximity to, and with good access to, the new Macquarie University rail station. The division of the Campus into appropriate land-use Precincts, as well as the provision of design guidelines and design parameters for each Precinct has been undertaken in response to a detailed analysis of the constraints and opportunities on the Campus.

The design parameters established within the Concept Plan, together with the proposed amendment to the Major Projects SEPP will enable the suitable development of the Campus and allow for the continued growth of Macquarie University as a landmark research and commercial Campus consistent with State government planning objectives.

