-Part D – Locality Based/ Precinct Plans

# Chapter D14: Wollongong Innovation Campus

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## Document Control

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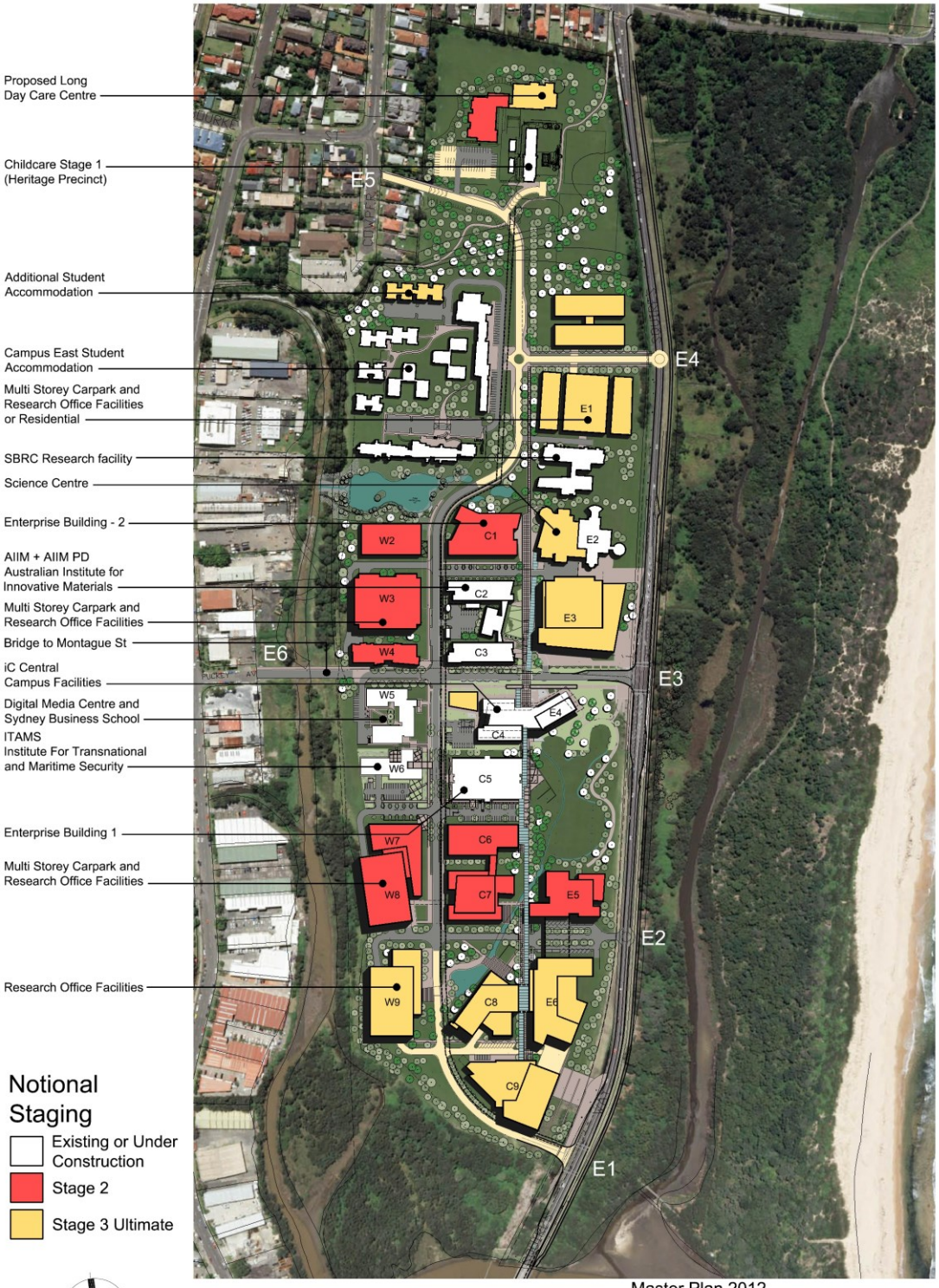



Master Plan 2012

GBB Drawing Number 775 00
Date 04.07.2012

# PART A

# 1 INTRODUCTION

## 1.1 General

1. This chapter of the DCP sets out the precinct controls for development within the Wollongong Innovation Campus precinct.

2. It applies to land previously described as Lot 200 DP1127540 (Wollongong Innovation Campus). Formal development approval to carry out a sub-division of the land (for the purposes of management and leasehold) was granted on 9th November 2011 via DA-2011/1205. Noting that the site has subsequently been subdivided.

3. This precinct plan contains the updated Wollongong Innovation Campus Master plan following the Stage 1 review. The original Campus Masterplan was approved by Development Consent No. 2003/1411 issued by Council on 10 February 2004 and provided a summary of the key development concepts and proposed type of land uses contained in the Wollongong Innovation Campus Master Plan. The precinct plan also outlines the specific planning controls for setbacks, building character and streetscape appearance, landscape character and other issues.

4. The precinct plan should be read in conjunction with the Wollongong Local Environmental Plan 2009. Clause 7.15 of the LEP 2009 (copied below) sets out the principle controls and objectives for the Innovation Campus including land use, development heights and total gross floor area;

### *LEP 2009 - 7.15 Wollongong innovation campus*

*(1) The objectives of this clause are as follows:*

*(a) to permit the establishment of a research and development campus that includes a hotel, student and campus related residential accommodation and necessary support services and facilities,*

*(b) to provide an area where enterprises that carry out research and development as an integral part of their operations can be located,*

*(c) to promote collaborative research and development between users of the land to which this clause applies and the University of Wollongong and other enterprises in the Illawarra region,*

*(d) to promote links between the University of Wollongong's research activities and the initiatives of the business community,*

*(e) to ensure that the development of the site is undertaken in a manner that demonstrates design of a high quality with respect to the context of the site, scale, built form and density of the development, resources, energy and water efficiency, landscape, amenity, safety and security, social dimensions and aesthetics,*

*(f) to ensure that development of the site is in harmony with the coastal and foreshore landscape,*

*(g) to permit the provision of university related facilities including student and campus related residential accommodation and support services, incidental or ancillary to research and development activities.*

*(2) This clause applies to land shown as being within the Wollongong innovation campus on the Wollongong Innovation Campus Map.*

*(3) Development consent must not be granted for the subdivision of land to which this clause applies unless the consent authority is satisfied that the subdivision is for the purpose only of defining the boundaries of lots that are to be the subject of leases.*

*(4) Development consent must not be granted to development for the purposes of building on land to which this clause applies if the gross floor area of the building would be greater than 135,000 square metres.*

5. The staged development of the Wollongong Innovation Campus is being undertaken by the University of Wollongong.

## 1.2 Relationship to other parts of the DCP

1. The Wollongong Innovation Campus Precinct Master Plan is included in Part D of the DCP. Parts A and E of the DCP generally apply to all lands contained within the Wollongong Innovation Campus. Part C of the DCP relates to Development within the Industrial Zone and Development within the Business Zone and hence, these chapters may apply to specific developments within the subject site. Part B may also apply to specific developments.

2. In the event that the provisions contained in the Wollongong Innovation Campus Precinct Master plan are inconsistent with the provisions of any other part of the DCP, the provisions of the Wollongong Innovation Campus Precinct Master plan shall prevail to the extent of the inconsistency.

# PART B

# 1 INTRODUCTION

## 1.1 Key Master Plan Outcomes

1. The key outcomes of the Wollongong Innovation Campus Precinct Plan are to:

(a) Generate employment and promote economic growth in the Illawarra Region;

(b) Promote and foster collaborative research and development initiatives involving tenants of the Wollongong Innovation Campus, the University of Wollongong and other enterprises in the Illawarra Region;

(c) Encourage creative interaction between organisations and individuals on the campus and the development of a sense of community;

(d) Provide offices and facilities for organisations involved in a range of research and development activities;

(e) Integrate workplace and educational environments with social, retail, service and recreational facilities in a landscaped campus setting; and

(f) Provide on-site residential accommodation linked to the University student accommodation and Wollongong Innovation Campus facilities.

## 1.2 Innovation Evidence

1. Innovation will be evident:

(a) In the research and development processes and outcomes from activities on the site;

(b) In the stimulus for new high technology businesses to establish in the region;

(c) In the development partnership for the project involving the University of Wollongong, Wollongong City Council and the NSW State Government;

(d) In the relationship between the Precinct plan and the various statutory planning requirements;

(e) In the integration of commercial workplace environments with social, retail, residential, service and recreational facilities in a landscaped campus setting;

(f) In the physical development of the site including: (a) landscaping / riparian setback (b) rehabilitation (c) transport strategy initiatives (d) incorporation of ecologically sustainable development initiatives (e) water sensitive urban design; and

(g) In architectural and built environment outcomes.

## 1.3 Precinct Plan Objectives

1. The key objectives of the Precinct plan are:

a) To state the goals of the planning process in support of the project vision;

b) To establish the intended future character of the development;

c) To provide the site with a sense of place that proclaims its purpose, distinction and domain;

d) To provide a planning framework to facilitate the staged development of the site by the University of Wollongong;

e) To establish a framework flexible enough to accommodate changing circumstances and conditions;

f) To provide a plan to facilitate and ensure that physical resources are effectively managed; and

g) To provide guidelines for the development of individual buildings.

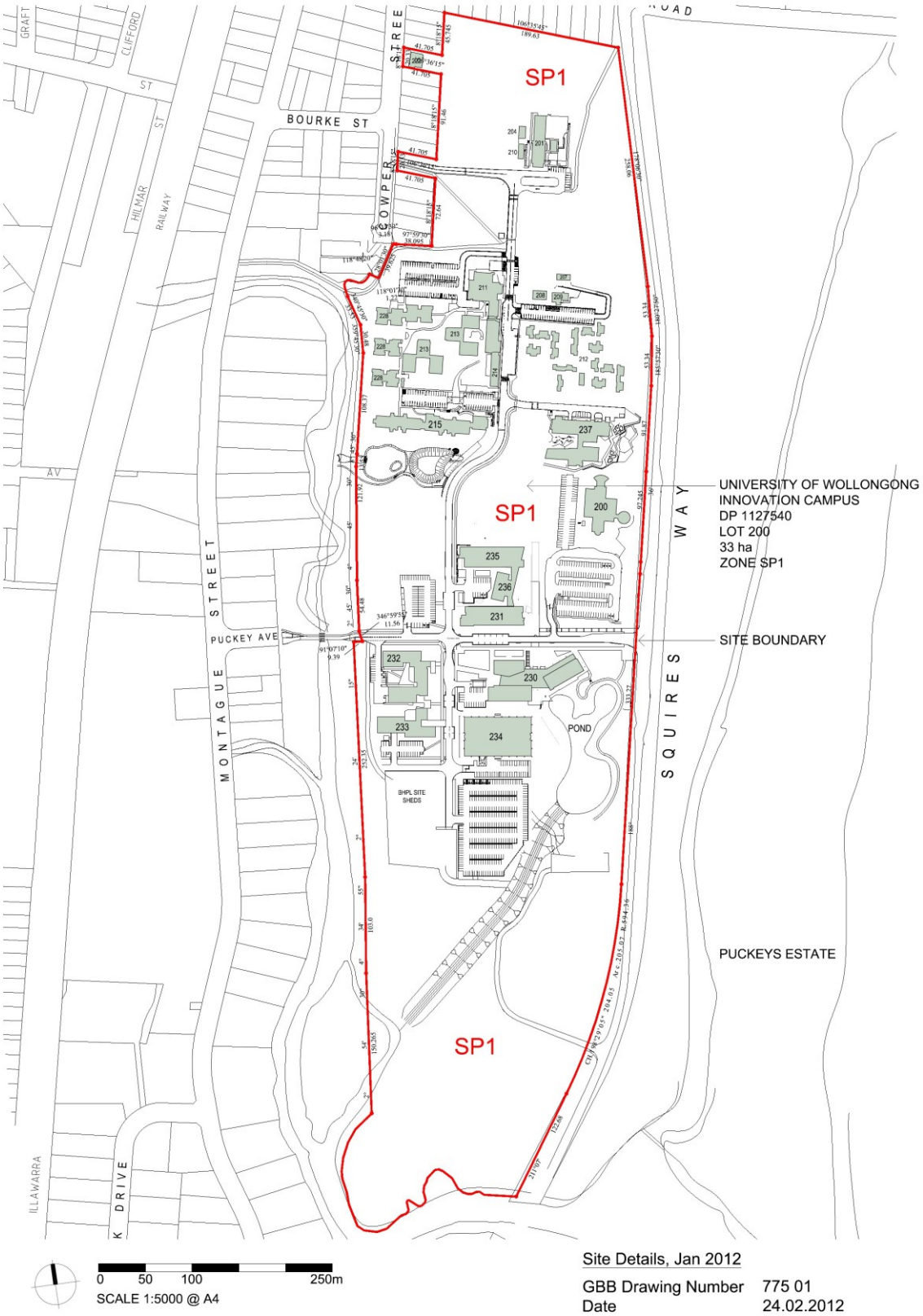



**Figure 1: Land to which the Precinct Plan applies.**

# 2 PLANNING CONTEXT

## 2.1 Development process

1. The building and development application process, as defined by Wollongong City Council, will be followed for individual projects. The Development Application will be prepared in accordance the DCP and other relevant legislation.

2. The University, being the owner of the various development sites, will undertake a review of all applications with the Precinct Plan (DCP).

## 2.2 Development Application Requirements

1. Wollongong City Council is the consent authority for the developments within Innovation Campus.

2. Development Applications will need to comply with Wollongong City Council submission requirements.

3. Development Applications will not need to include the existing background reports for the following areas provided the development application demonstrates that the objectives and performance guidelines in this Precinct plan are complied with:-"

   - Flood Management Strategy;
   - Flora and fauna assessment;
   - Heritage (European) assessment;
   - Aboriginal Heritage assessment;
   - Traffic / Transport study.

## 2.3 Master Plan Review

1. Development Applications that are consistent with the Precinct plan will not require a formal review of the Precinct plan to be undertaken.

2. The following circumstances will require a formal review of the Precinct plan:

   (a) A change to project objectives; or

   (b) An increase in total Gross Floor Area (GFA) for the site; or

   (c) An increase in building heights.

3. Periodic formal reviews of the Precinct plan must in any case be undertaken by the University of Wollongong. The initial review was carried out when development reached 55,000m2 (GFA) during 2011. A further formal review must be carried out when development reaches 95,000m2 (GFA).

4. The detailed traffic assessment (refer Section 11) accommodates trip generation growth to circa 75,000 sqm (GFA). A review of "Section 11 – Transport and Access" must be undertaken by the University of Wollongong once the total development of the iC site reaches 75,000 m2. The

scope of this review must be agreed by the University and Wollongong City Council prior to the commencement of the review.

5. Formal reviews of the Precinct plan should be undertaken at intervals not to exceed five years.

6. The scope of each review must be agreed in writing by the University, Department of Planning and Wollongong City Council, prior to commencement of the review.

7. A formal review of the Precinct plan must include an assessment of the following issues and incorporate the impacts of completed development and changes in the planning context of the site:

   - Transport and Access Strategy initiatives as described in Section 11 of the approved Precinct plan;
   - Referral to the NSW Roads and Maritime Services pursuant to State Environmental Planning Policy (Infrastructure) 2007;
   - Floodplain management;
   - Ecologically sustainable development;
   - Services infrastructure;
   - Staging strategy;
   - Gross Floor Area (GFA) summary;
   - Site water balance plan;
   - Water quality data;
   - Status of 'Forward Planning Strategy' initiatives as described in Section 20.

8. The need to review other Precinct plan Development Objectives and Development Guidelines would depend on the scope of any proposed amendments by the University.

9. A revised Precinct plan will need to be endorsed by Wollongong City Council.

# 3 ENVIRONMENTAL PLANNING CONTEXT AND SITE ANALYSIS

## 3.1 Site investigations

1. A number of site investigations and reports have been undertaken in the preparation of the Precinct plan and development (since 2003). Current reports which are relevant to further development are noted below (Note: for site reference locations refer to Fig. 10):

   **Geotechnical and Environmental Assessment:**

   - Preliminary Geotechnical Investigation Brandon Park Fairy Meadow, Coffey Geosciences (August 2002)
   - Stage 1 Geotechnical Investigations and Environmental Assessment, Innovation Campus, Volume 1 of 2, Coffey Geosciences (July 2004)
   - Stage 1 Geotechnical Investigations and Environmental Assessment, Innovation Campus, Volume 2 of 2, Coffey Geosciences (July 2004)
   - Acid Sulfate Soil management plan, Innovation Campus, Coffey GeoSciences (Oct 2004)
   - Additional Geotechnical Investigations Central Facilities Building, Pond and Waterway, Innovation Campus, Coffey GeoSciences (January 2007)
   - Site C3 Geotech Investigations, Innovation Campus, Coffey GeoSciences (August 2007)
   - Site C5 and W6, Geotech Investigations, Innovation Campus, Douglas Partners (Nov 2007)
   - Site W6, Phase 2 Contamination Report, Innovation Campus, Douglas Partners (Jan 2008)
   - Site W5, Geotech Investigations, Innovation Campus, Douglas Partners (Dec 2008)
   - Waste Classification Assessment, Southern Stockpile, Innovation Campus, Douglas Partners (June 2010)
   - Electrical Resistivity Testing, Innovation Campus, Coffey GeoSciences (August 2004)
   - Groundwater Inflow Assessment, Central Facilities Building, Innovation Campus, Coffey GeoSciences (April 2005)
   - Stage 2.1 GeoTechnical Investigations, Stormwater Pond, Innovation Campus, Douglas Partners (August 2009)
   - Stage 2.1 Geotechnical Investigations, Road Extensions, Innovation Campus, Douglas Partners (August 2009)
   - Stage 2.1 GeoTechnical Investigations, Pond Basin Lab Testing, Innovation Campus, Douglas Partners (September 2009)
   - Wind Turbine, GeoTechnical Investigations, Coffey GeoTechnics (Nov 2009)
   - Site C5 GeoTech Investigations, Innovation Campus, Douglas Partners (August 2009)
   - Site C2 GeoTech Investigations, Innovation Campus, Douglas Partners (Sept 2009)

- Site SBRC GeoTech Investigations, Innovation Campus, Coffey GeoTechnics (June 2011)
- Puckey Avenue Bridge, Contamination Assessment Rht, Innovation Campus, Douglas Partners (Dec 2011)
- Puckey Avenue Bridge, GeoTech Investigations, Innovation Campus, Douglas Partners (Dec 2011)

**Heritage**

- Assessment Study of European Heritage, Brandon Park, Fairy Meadow, Colin Brady Architect & Planning (August 2002)
- Aboriginal archaeological Assessment, Navin Officer Heritage Consultants (July 2002)
- Assessment of Heritage Significance, Nissen Huts, Campus East, Civic Lucas Stapleton & Partners (Aug 2002)
- Statement of Assessment (Preliminary) proposed options, Nissen Type Huts, Borst Architects Pty Ltd (Nov 2002)

**Flora and Fauna**

- Flora and Fauna Assessment, Innovation Campus, Kevin Mills & Associates (July 2002)
- Cabbage Tree Creek, Vegetation Management Plan, Southern Habitat (June 2008)
- Stage 2.1 Flora and Fauna Assessment, Innovation Campus, Kevin Mills & Associates (June 2009)
- Puckey Avenue Bridge, Flora and Fauna Assessment, Innovation Campus, Kevin Mills & Associates (Dec 2011)

**Flood Management**

- Flood Management Study, Masterplan Review 2011-12, Innovation Campus, Cardno (July 2012)
- Flood Management Strategy, Innovation Campus, Cardno (July 2016)

**Transportation and Traffic**

- Transport Study (original) Innovation Campus, Forbes Rigby (Dec 2002)
- Car Parking Strategy, Innovation Campus, Cardno FR (March 2008)
- Traffic and Transport Assessment Innovation Campus, AECOM (March 12)
- Paramics Base Year Model Calibration and Validation Report, AECOM (March 12)

**Sustainability**

- Water Sensitive Design Issues, Innovation Campus, Forbes Rigby (Dec 2002)
- Water Sensitive Urban Design, Innovation Campus, Cardno (May 2012)

2. The attached: Figure 2, Figure 3, Figure 4,indicate a summary of the existing conditions.

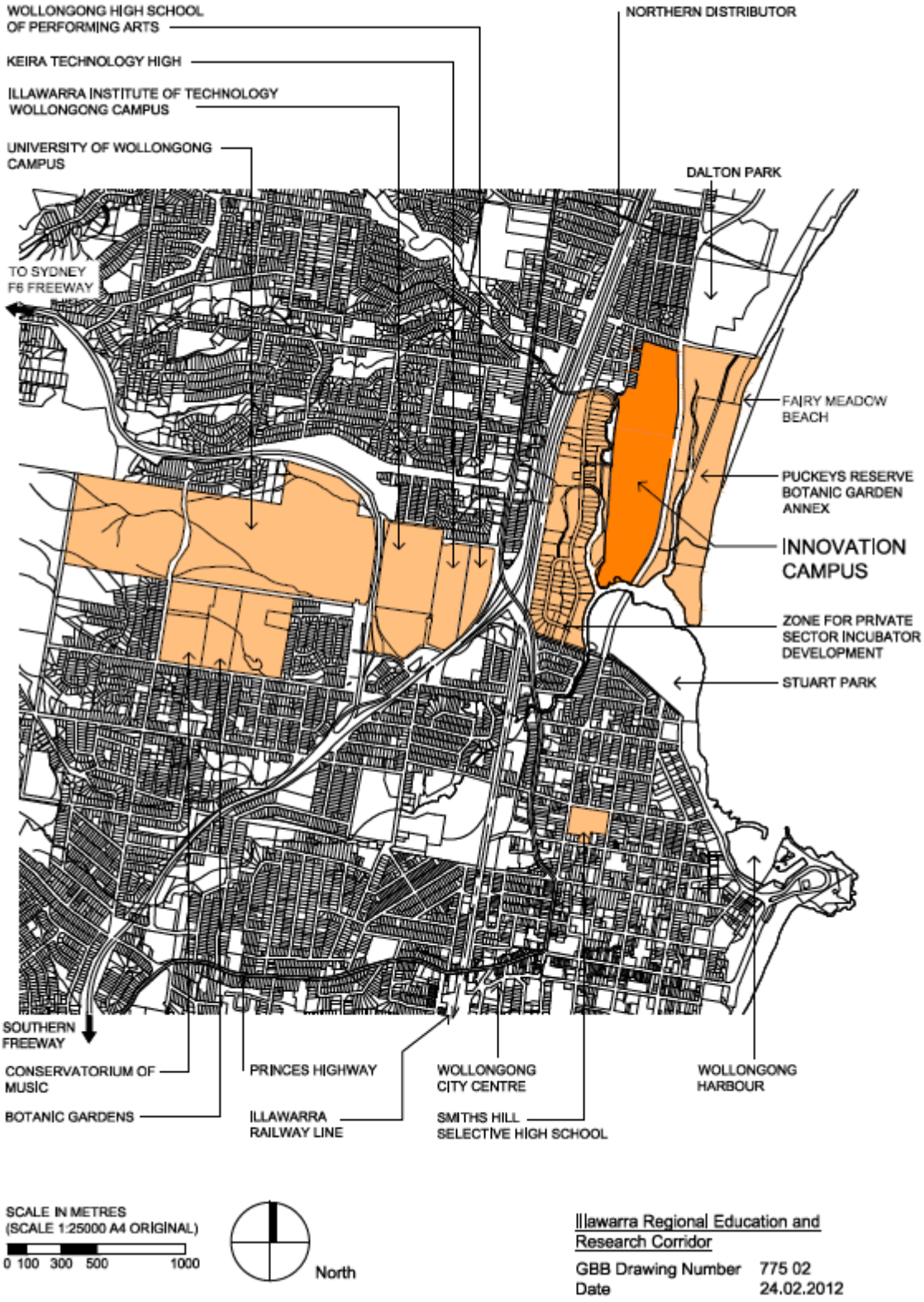



**Figure 2: Illawarra Regional Education and Research Corridor**

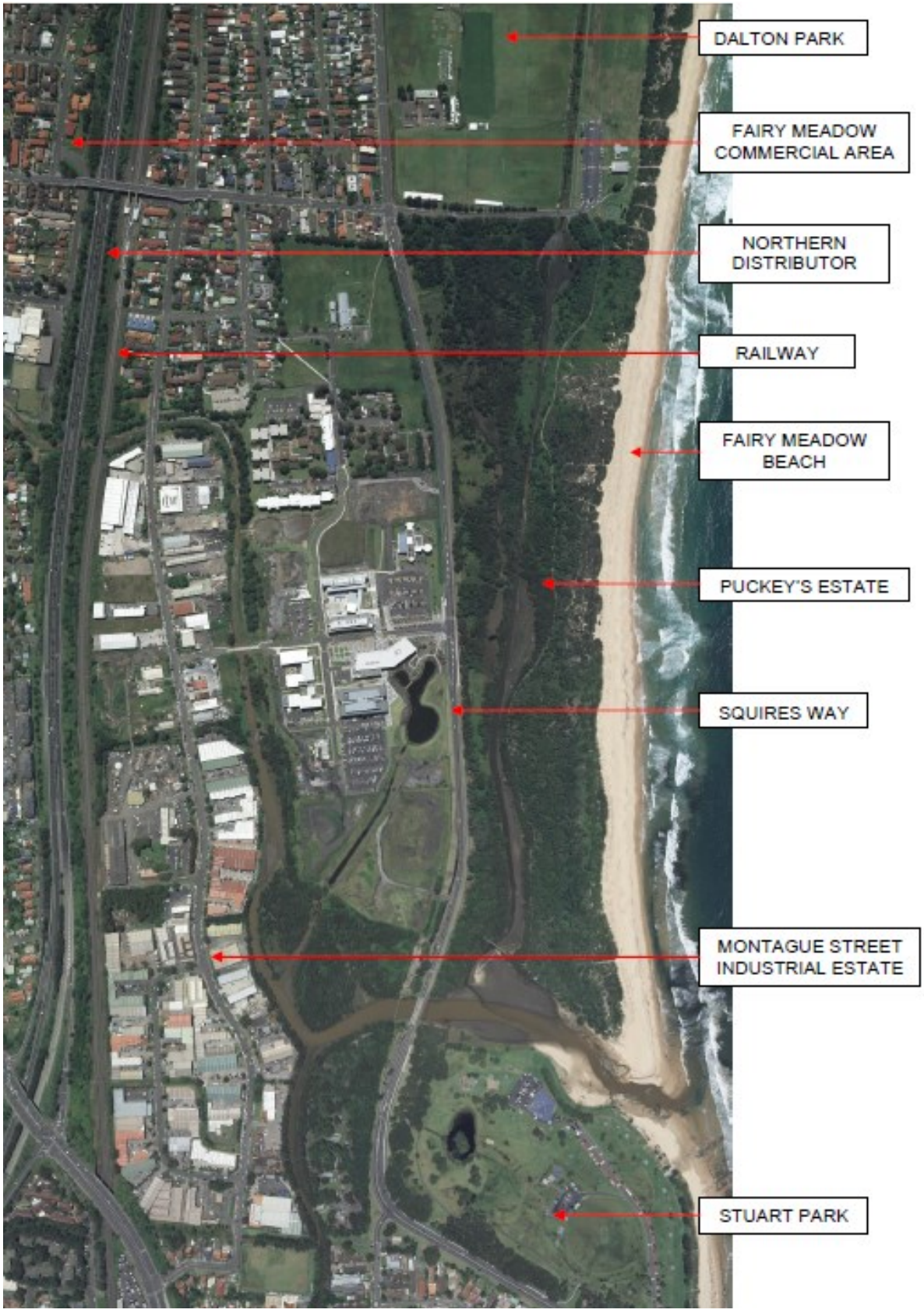



**Figure 3: Site Context**

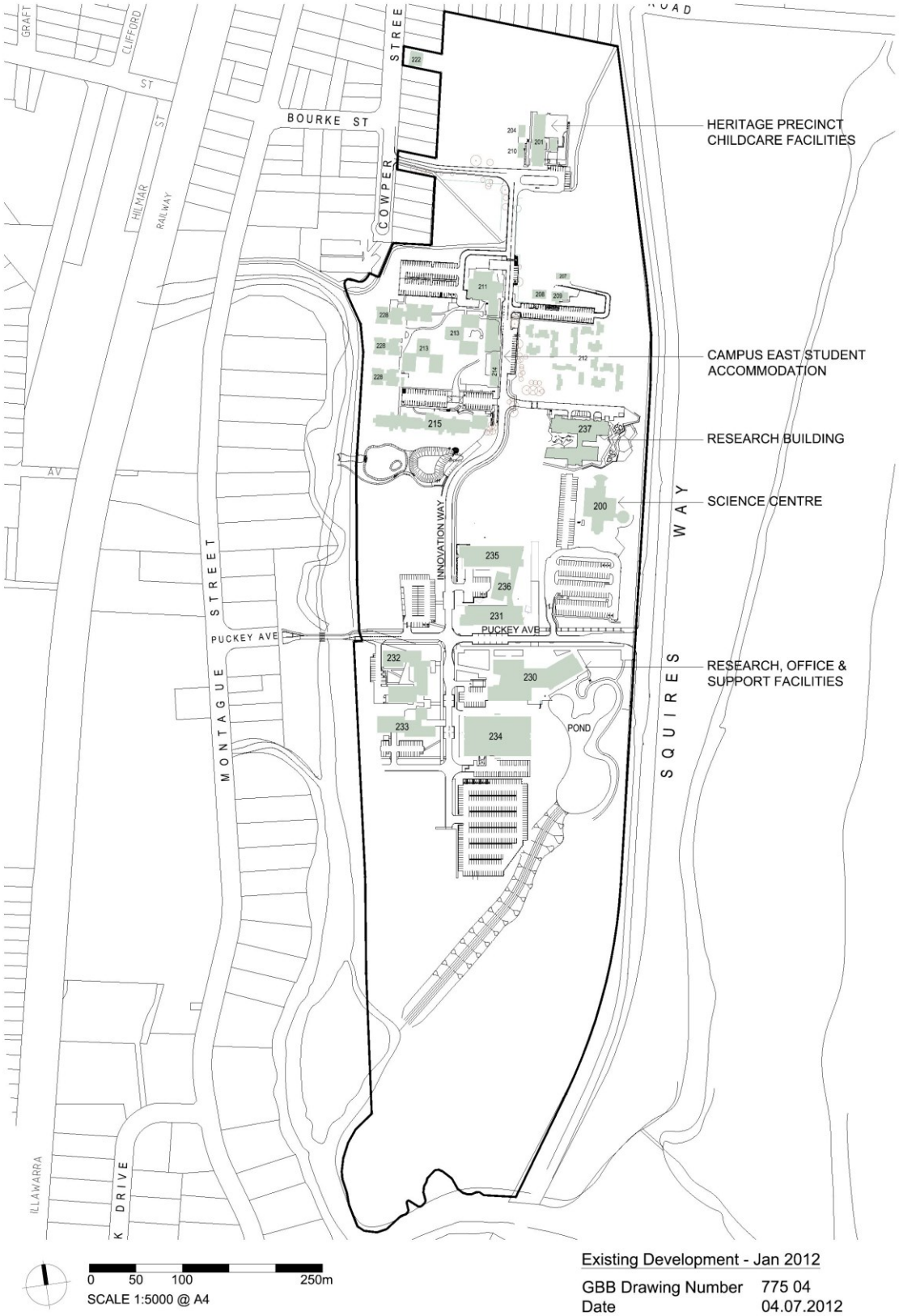



**Figure 4: Existing Development**

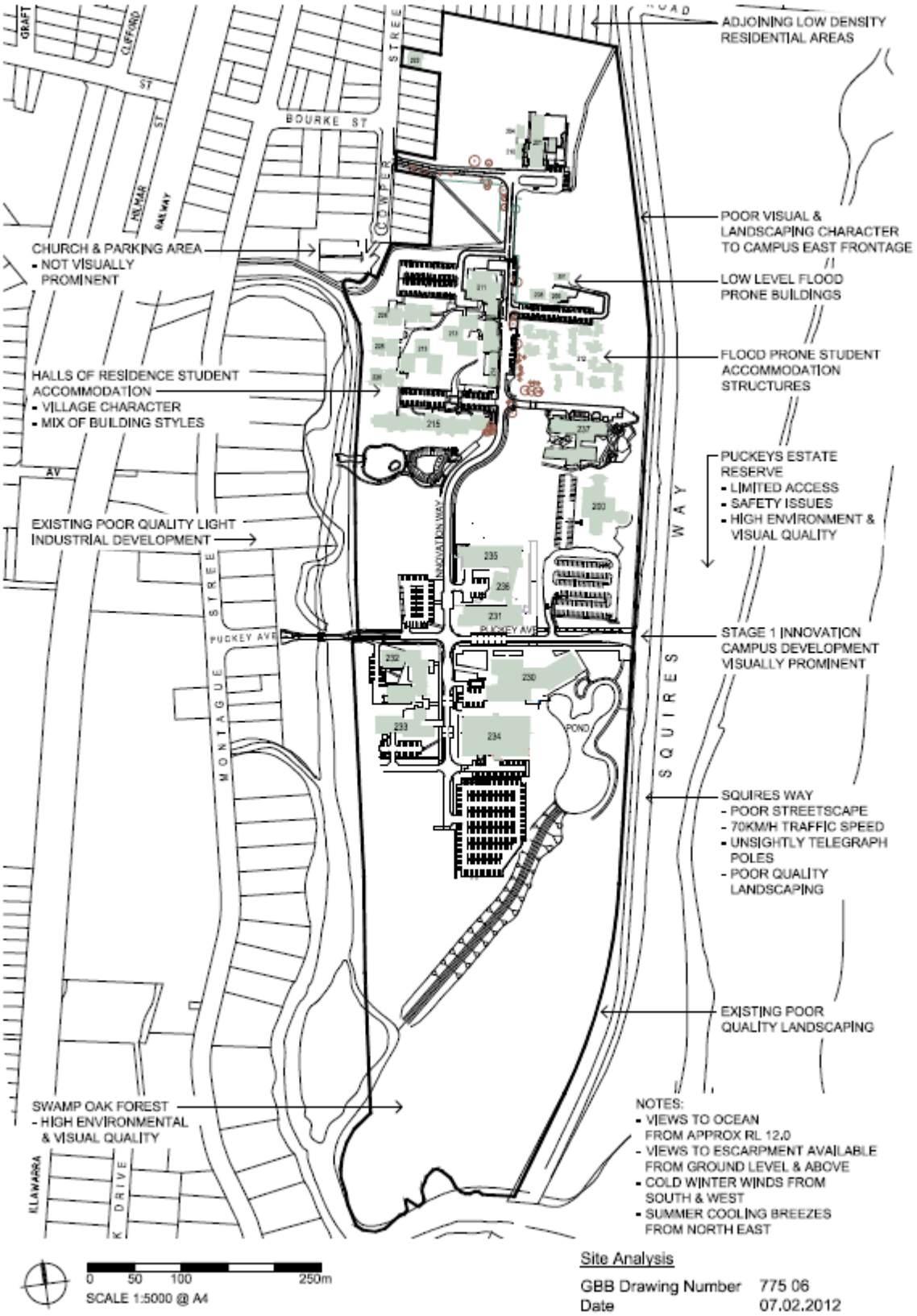



**Figure 5: Site Analysis**

# 4 DEVELOPMENT CONCEPT

## Objectives

1. The key development concept objectives of the Wollongong Innovation Campus are:

a) To create a university campus environment supportive of research, business and development activities;

b) To achieve an appropriate campus scale and character by:

   i) Providing buildings in a landscaped setting;

   ii) Providing a well defined pedestrian spine and network to link activity zones and precincts and a series of landscaped features including:

      - Playing fields;
      - Parks;
      - Building forecourts / plazas;
      - Sculpture forecourt;
      - Campus green;
      - Rainforest gully / creek;
      - Swamp oak forest.

   iii) Developing a chain of ponds / stormwater management system as an integral feature of the campus;

   iv) Reducing the visual impact of surface parking by provision of carparks under buildings and multi storey parking facilities;

   v) Consistency of landscape detail including street furniture, paving, lighting, signage and other elements;

   vi) Landscaping used as a positive element to unify site;

   vii) Consistency in architectural design taking into account project objectives and commercial realities;

   viii) Consistency of buildings scale and height;

   ix) Providing an accessible and legible campus structure.

c) To provide opportunities for formal and informal interaction;

d) To develop a sense of community;

e) To provide a stimulating working environment integrated with social, recreation, cultural and support services;

f) To encourage a positive lifestyle mix of 'work, live and play' activities;

g) To incorporate best practice ecologically sustainable development principles;

h) To create a physical setting which helps to reshape the image of Wollongong as a City of Innovation;

i) To ensure the Wollongong Innovation Campus becomes an integral part of the life of the region;

j) To rehabilitate riparian corridors to Cabbage Tree Creek, preserve the existing Swamp Oak forest and reinforce the landscaped character of Puckey's Estate;

k) To implement a transport and access strategy to encourage pedestrian and cycle access to the site and reduce the dependence on private cars;

l) To develop and improve the streetscape character of Squires Way as the main entry to the site;

m) To reinforce the community character of the existing Campus East student accommodation;

n) To develop residential development to meet the short, medium and long term needs of students, staff, employees, tenants, visitors and others involved in the activities of the University of Wollongong and the Wollongong Innovation Campus.

2. The development is to be undertaken in stages generally as shown in the Precinct plan.

## Performance Guidelines

1. The development of the site must be consistent with the Precinct plan – Development Concept which is shown in the following: Figure 6, Figure 7, Figure 8, Figure 9 and Figure 10.

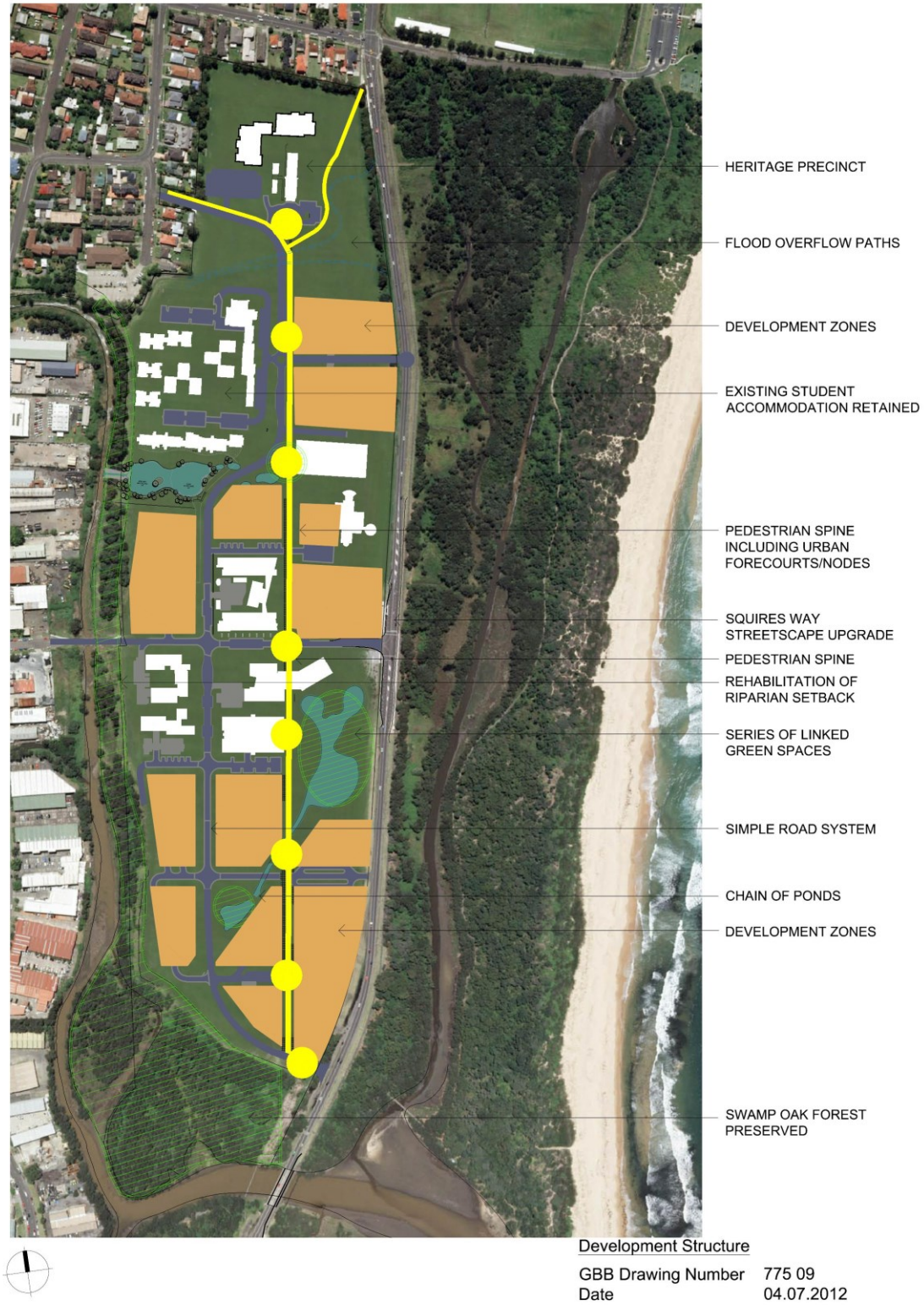



**Figure 6: Development Structure**

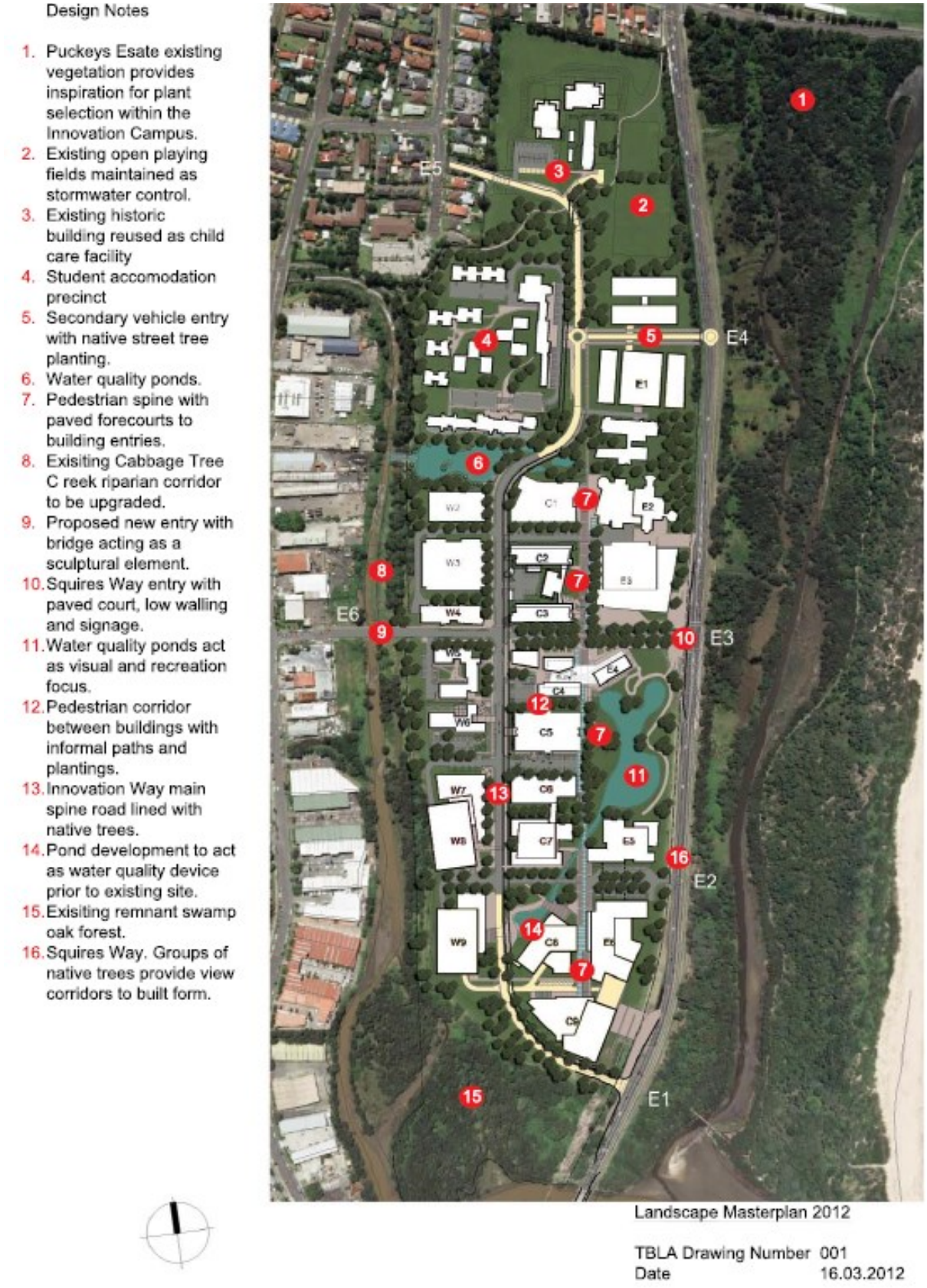



**Figure 7: Precinct Plan - Landscape Structure**

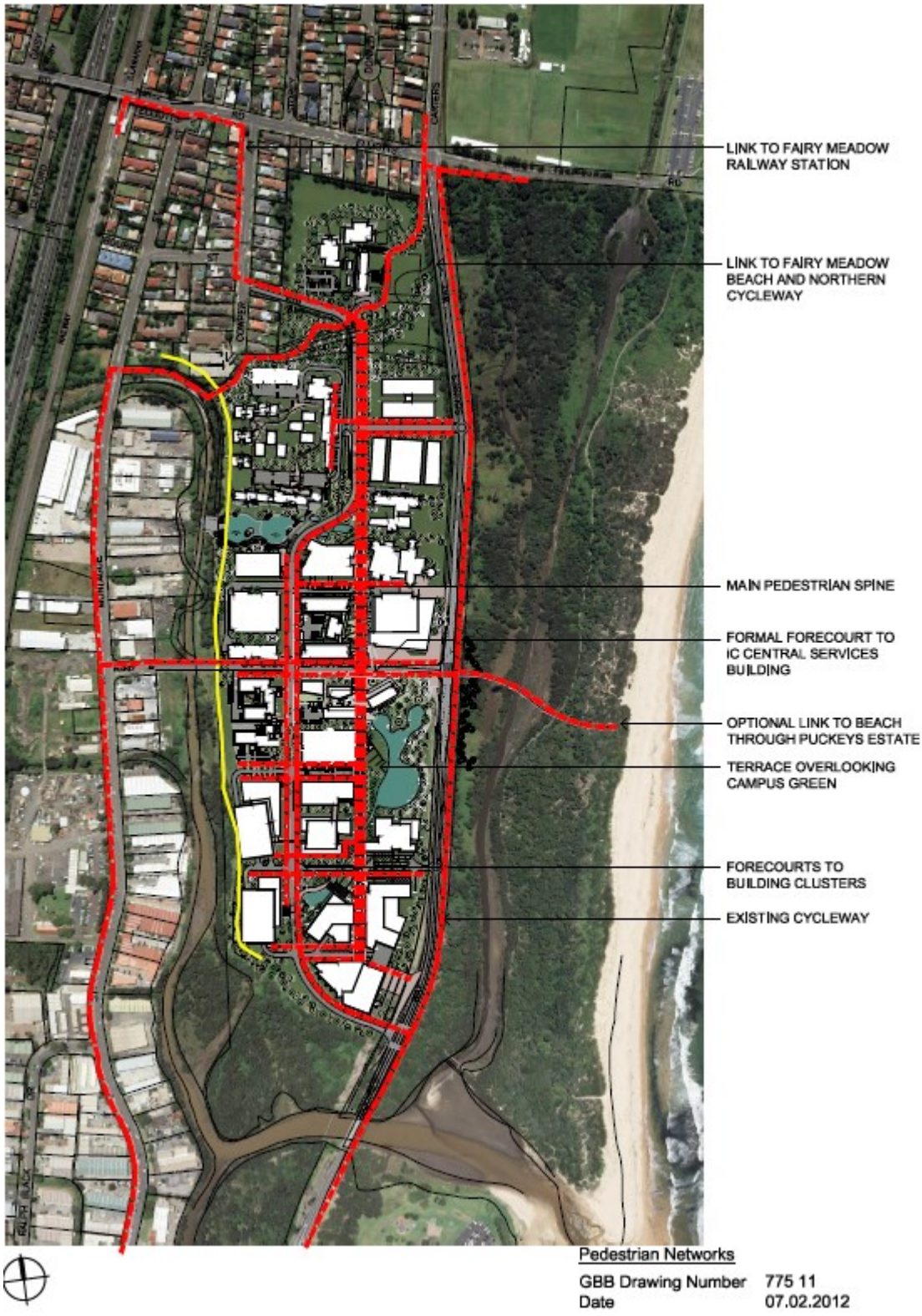



**Figure 8: Precinct Plan - Pedestrian Network**

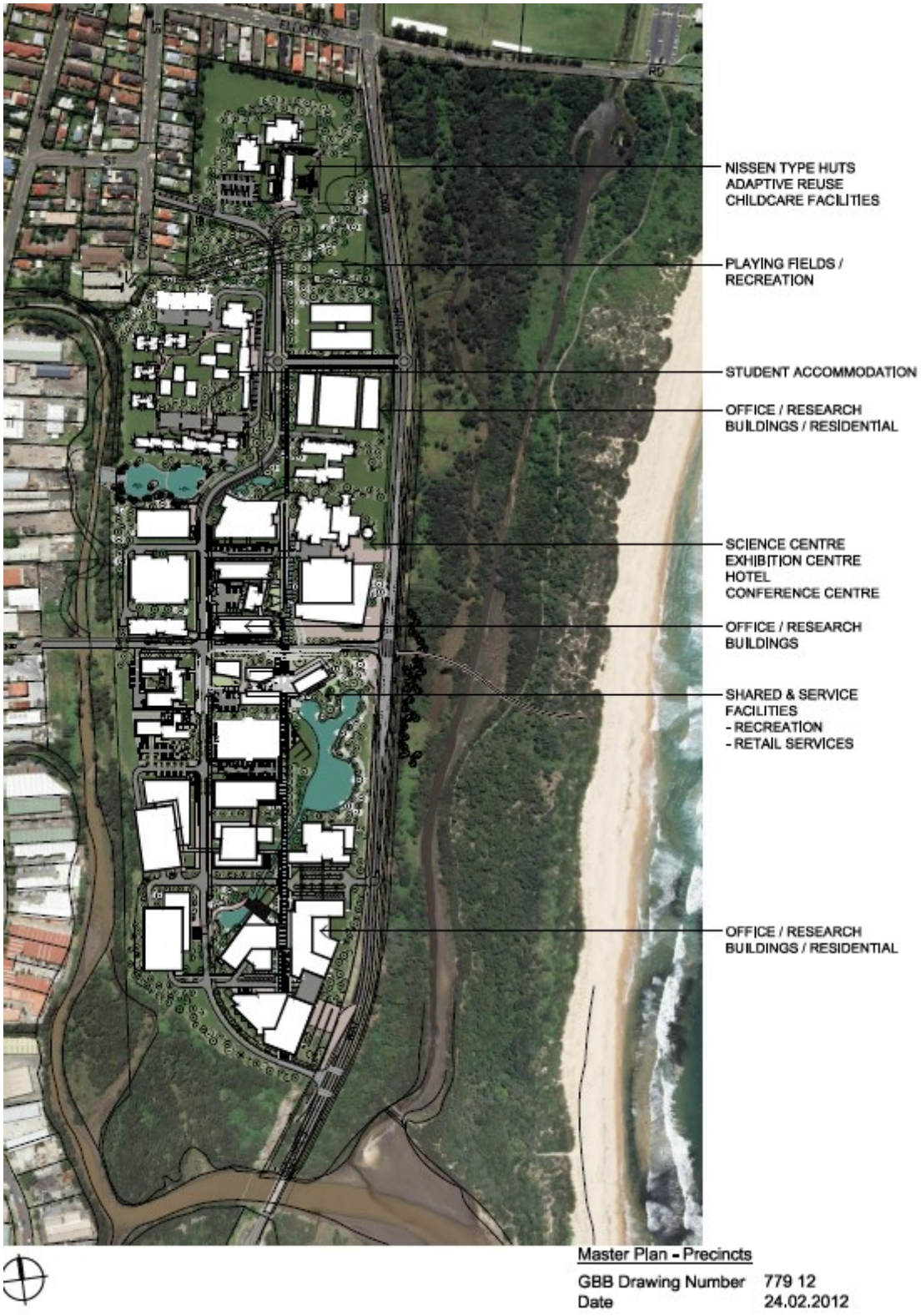



**Figure 9: Precinct Plan - Precincts**

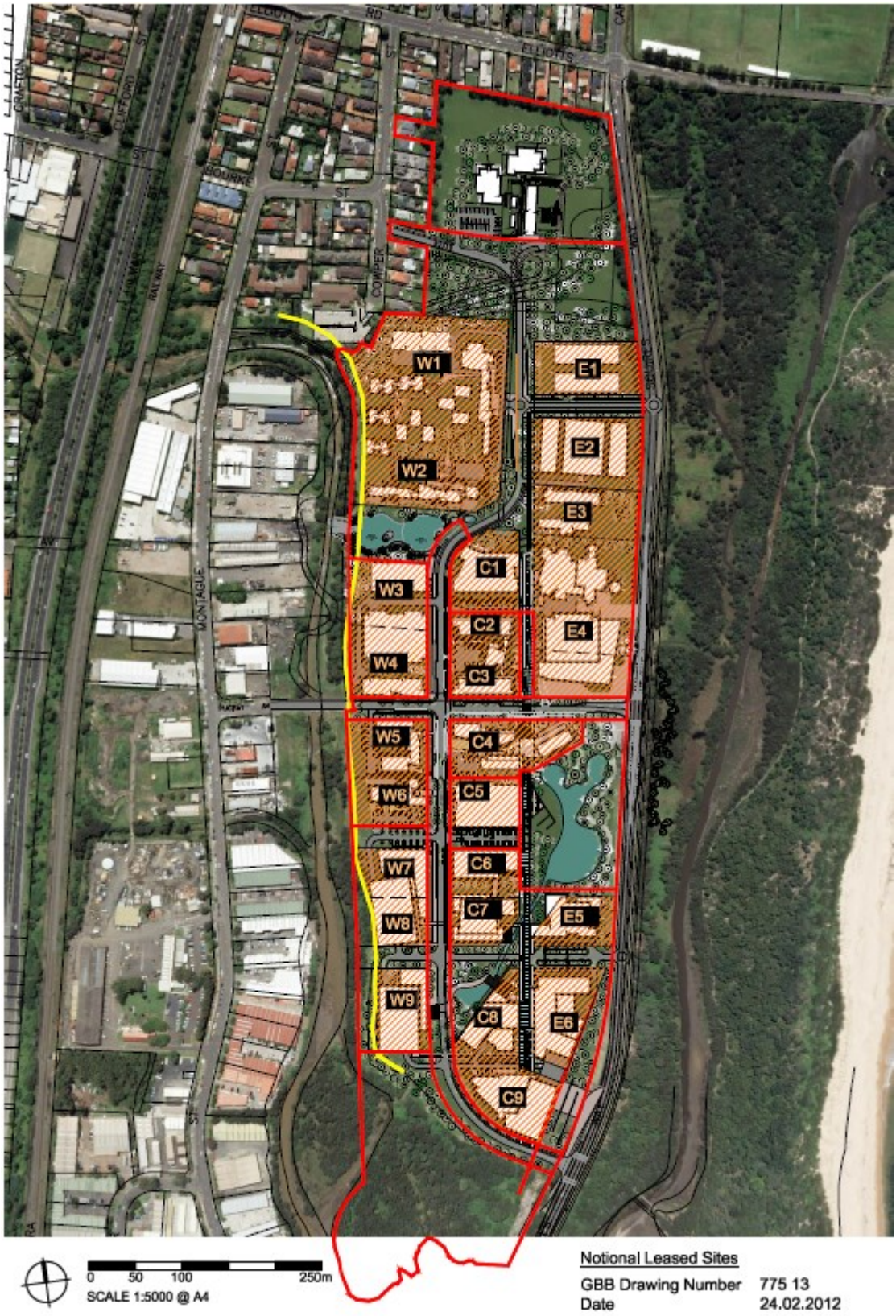



**Figure 10: Notional Development Sites**

# 5 SITE USES

## OBJECTIVES

a) To provide education and research facilities supported by residential, social, recreational, cultural and commercial services.

### Performance Guidelines

1. The following range of site and building uses should be provided:

- Offices / Research facilities for firms involved in research and development;
- Buildings for academic, education and training purposes;
- Conference centre / meeting facilities;
- Hotel;
- Serviced Apartments;
- Recreation Facilities;
- Gallery / Theatre / Exhibition Areas;
- Student Accommodation;
- Residential development to meet the short, medium and long term needs of students, staff, employees, tenants, visitors and others involved in the activities of the University of Wollongong and the Wollongong Innovation Campus;
- Services / Commercial Facilities ancillary to previous building uses, including:
  - Campus Management Offices / Support;
  - Sales and Marketing Offices;
  - Food Services Outlets;
  - Cafes / restaurants;
  - Newsagent / convenience store;
  - Business supplies;
  - Business Facilities Support;
  - Serviced Offices;
  - Student Support Services;
  - Retail Outlets;
  - Childcare Facilities;
  - Medical / Health Services.

# 6 GROSS FLOOR AREA (GFA)

### Objectives

a) To develop the site at a campus scale as described in section 4 of the approved Precinct plan;

b) To provide sufficient floor area to generate a critical mass of activity to support 'interaction' and other project objectives;

c) To meet project feasibility requirements.

## Performance Guidelines

a) The site may be developed to provide a maximum gross floor area as defined in the LEP.

b) The following schedule of development is indicative and the floor areas of various building uses may vary.

Existing development

| | |
|---|---|
| – Science Centre | 2,514m$^2$; |
| – Campus East Student Accommodation | 18,682m$^2$; |
| – Central Facilities / Services | 6,642m$^2$; |
| – Research / Innovation Offices / Academic / Training | 30,059m$^2$ |

Proposed development

| | |
|---|---|
| – Hotel / Conference Centre | 8,000m$^2$; |
| – Stage 2 Science Centre | 2,000m$^2$; |
| – Research / Innovation Offices / Academic / Training Facilities | 46,603m2 |
| – Residential development | |
| In 'existing' Student Accommodation Area | 2,500m$^2$; |
| – Squires Way sites | 18,000m$^2$. |
| **TOTAL** | **135,000m$^2$** |

# 7 BUILDING HEIGHTS AND FLOOR LEVELS

## Objectives

a) To meet the density and development floor area objectives required for the project;

b) To achieve the character and scale of a university campus by limiting site coverage and providing buildings in a landscaped setting.

## Performance Guidelines

a) Buildings and structures must conform with the maximum heights defined in the LEP.

b) All rooftop exposed structures including lift motor rooms and plant rooms together with air conditioning, ventilation and exhaust systems must be suitably screened and integrated with the building design and set back 6 metres from all sides of the building to minimise any visual impact.

c) The following elements may exceed the general height limitations:

   i) Communications towers;

   ii) Fume cupboard ventilation stacks;

   iii) Service installations and antennas integral to specific energy management installations.

d) The design and colour of all telecommunications facilities, including towers, antennae and equipment rooms must be sympathetic to the character and appearance of the surrounding area in terms of scale, colour, building dominance and form.

e) The design of any telecommunications facility must include an appropriate height and setback to ensure the facility does not dominate adjacent properties, significant views or focal points.

f) The design of individual buildings must incorporate the following requirements related to ground levels:

   i) Minimum floor levels must comply with the Floodplain Management Strategy as outlined in Section 11 of the approved Precinct plan.

   ii) Buildings adjacent to the main pedestrian spine (nominal RL 6.0 AHD) must provide access at the level of the main pedestrian spine.

   iii) Buildings on the East / West link should provide access as close as possible to the street levels.

   iv) The first habitable floor level of all buildings should be as close as possible to finished ground levels and must not be more than 1500mm above finished ground levels.

g) The scale and visual impact of maximum height facades should be reduced by the detailed building design objectives as outlined in the approved Precinct plan.

h) Building designs must demonstrate:

   i) A positive relationship of the proposed building to the landscape, streets and adjoining pedestrian and public areas; and

   ii) The effect of the proposed building on views from adjoining areas, the main pedestrian spine, main loop street and from Squires Way. Perspectives, photomontages, sections and other appropriate diagrams are to be submitted at Concept and Development Application Stage.

# 8 SETBACKS

## Objectives

a) To achieve a university campus character of buildings in a landscaped setting;

b) To provide riparian corridors to Cabbage Tree Creek and Fairy Creek; and

c) To locate buildings to reinforce activity on the main pedestrian spine and East / West link.

## Performance Guidelines

a) Buildings and associated site development must be setback from Cabbage Tree Creek and Fairy Creek as shown in Figure 11 of the approved Precinct plan.

b) Works within riparian setbacks are to be carried out in accordance with the Vegetation Management Plan.

c) Works within the riparian setback must be consistent with the Plan of Management and may include:

   i) Stormwater and floodway improvements;

   ii) Pedestrian access;

   iii) Landscaping rehabilitation works;

   iv) Vehicular, pedestrian and cyclist access to Puckey Avenue and Montague Street;

d) Setbacks should be provided from notional leased site boundaries as shown in Figure 12 and as follows:

   i) Buildings adjacent to the main pedestrian spine must have a zero setback for at least 75% of the frontage.

   ii) Buildings sharing common leased site boundaries should be setback 10 metres to preserve solar access and environmental conditions.

   iii) Site coverage within individual leased sites should not exceed 60%.

   iv) Buildings must address main pedestrian links and forecourts.

   v) Buildings must reinforce the street character objectives described in section 9.10 of the approved Precinct plan.

e) The connection of buildings across leased sites at various levels may be considered provided the following is demonstrated:

   - The connection is primarily to improve access for occupants of the Wollongong Innovation Campus;
   - The physical size, height and architectural appearance of the connection is consistent with the building character and appearance objectives outlined in the approved Precinct plan; and
   - The connection does not significantly impact on solar access or environmental conditions to adjoining buildings or public areas.

f) Buildings adjacent to the main pedestrian spine must provide covered access in the form of undercrofts, covered ways and the like for a minimum width of 2500mm.

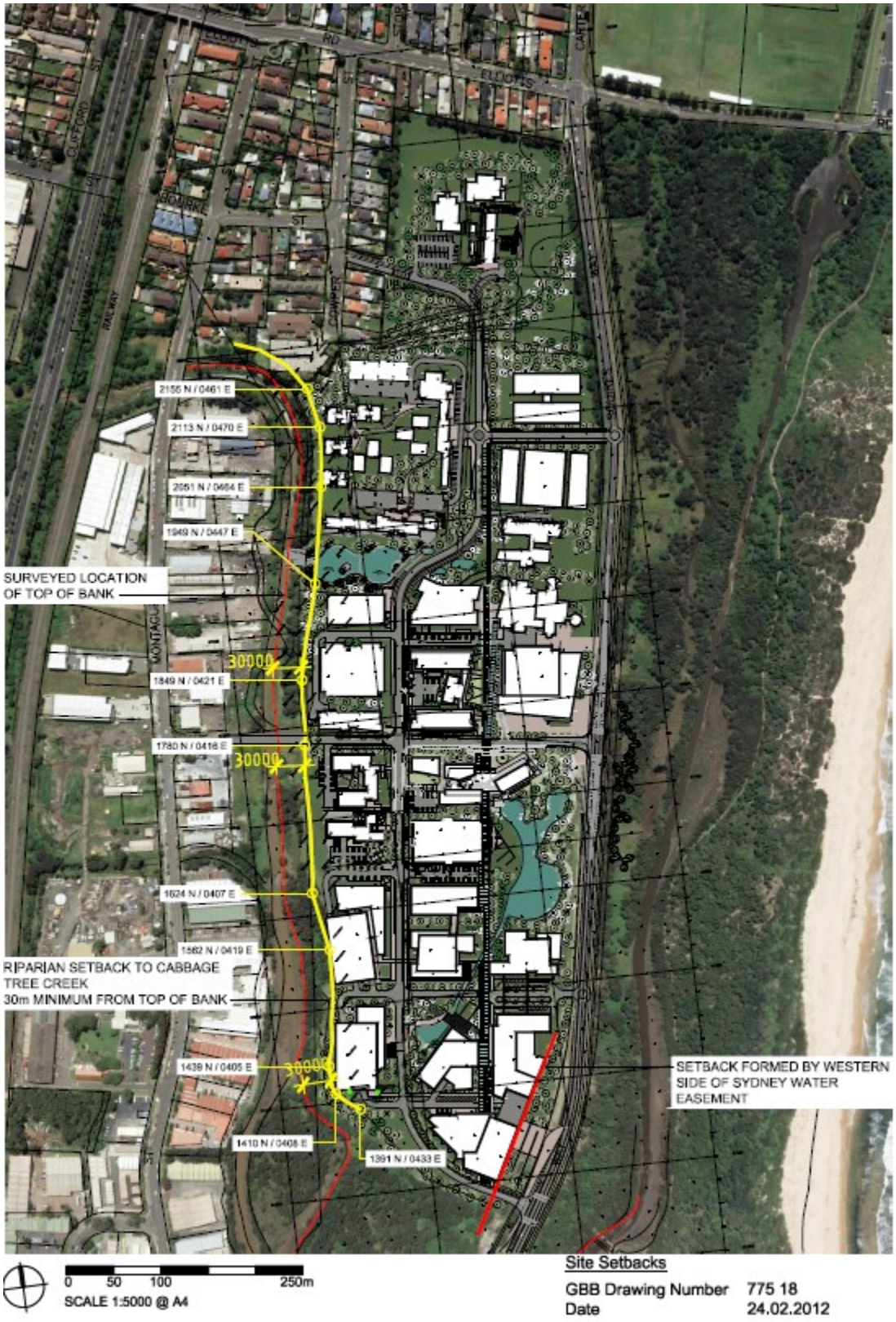



**Figure 11: Site Setbacks**

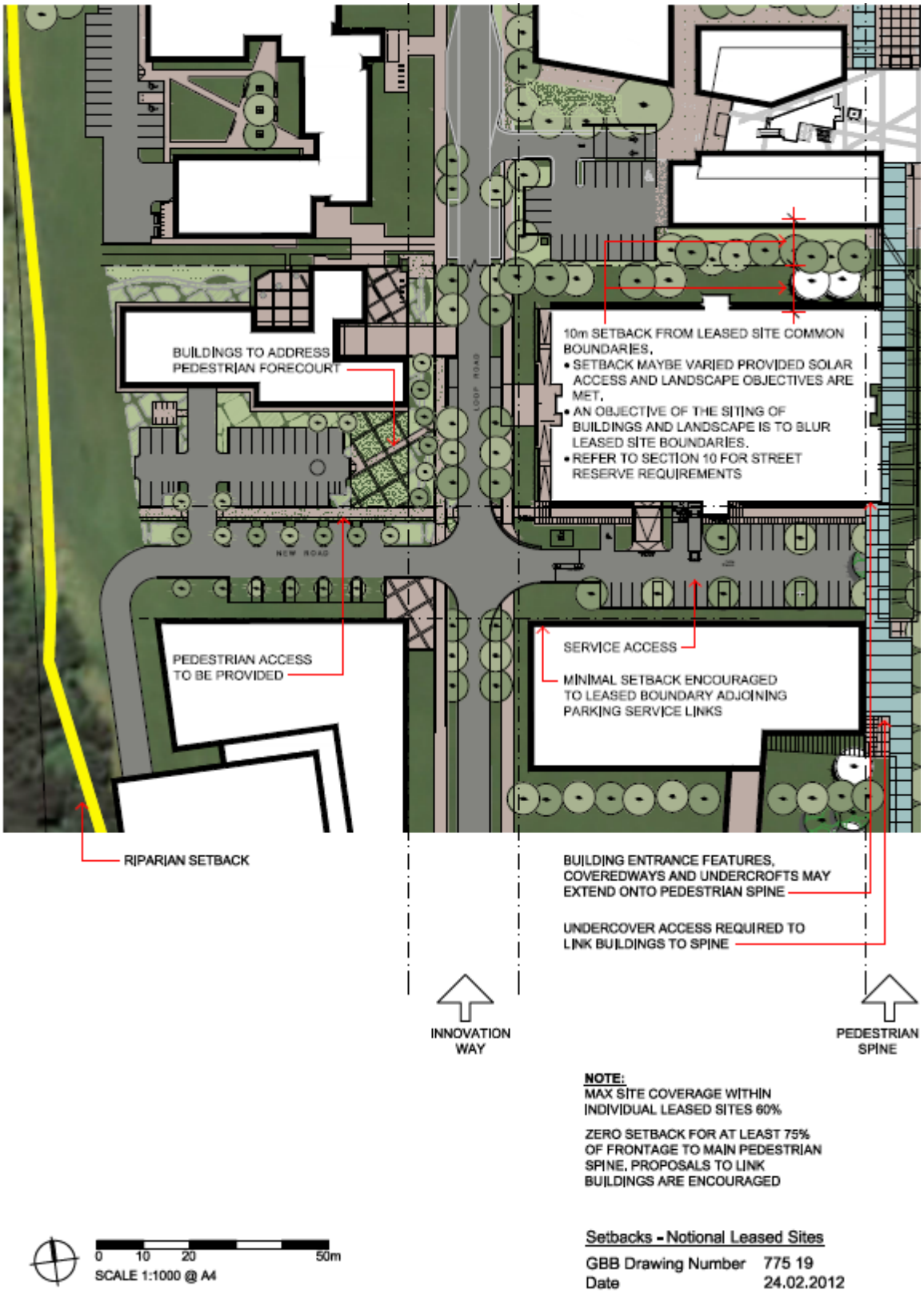



**Figure 12: Setbacks - Notional Leased Sites**

# 9 BUILDING CHARACTER AND APPEARANCE

## Objectives

a) To ensure a high standard of urban and architectural design in the development of the site and buildings;

b) To ensure buildings contribute architecturally to the university campus character of the development;

c) To achieve an overall consistency in the design of buildings and the selection of façade systems, materials and finishes; and

d) To encourage innovative design solutions.

## Performance Guidelines

a) Buildings must be designed by a qualified and registered architect.

b) The siting and design of individual buildings should incorporate the following 'campus character' unifying elements:

   i) Common scale of buildings;

   ii) Use of landscape as a unifying feature;

   iii) Use of common landscape elements including paving, lighting, street furniture and the like;

   iv) Provision of multiple entries to buildings and simple access to the site pedestrian structure;

   v) Linking of forecourts and landscaped areas across leased site boundaries;

   vi) Use of undercrofts and covered ways to facilitate all weather pedestrian access particularly along the main pedestrian spine and East / West link;

   vii) All sides of the building must have a positive relationship to the streetscape, landscape and pedestrian areas.

c) Building design should incorporate the following elements:

   i) Extensive use of glass, expressed steelwork and louvers;

   ii) Use of panelised materials for general external cladding;

   iii) A generally monochromatic colour scheme based generally on the use of off-white / light greys / natural / aluminium / stainless steel tones;

   iv) Contrast or feature elements should be generally organic in character and may include:

   - timber;
   - stone faced cladding;
   - terracotta tiles cladding;
   - bronze or other metal finish colours.

   v) Use of strong colours should be generally restricted and considered on merit for each proposed building and application.

d) The visual impact of facades should be reduced by detailed architectural treatment which may include:

   i) Use of podiums and forecourts at ground level;

   ii) Attached structures at main access levels;

   iii) Setbacks and articulation of facades;

   iv) Modulation of sun-shading and other façade elements.

e) For each development, a site analysis must consider:

i) The location, height and use of existing buildings surrounding the development;

ii) Views and solar access to surrounding buildings;

iii) Private open space and windows of habitable rooms of nearby properties which have an outlook to the proposed building;

iv) Location, height and materials of walls built to the boundaries;

v) Major and significant trees or landscape features;

vi) Street frontage features including poles, trees, kerbs, crossovers, bus stops and other services

vii) The built form, scale and character of surrounding and nearby development, including fencing and landscaping;

viii) Any significant local noise, odour or pollution sources;

ix) Pedestrian amenity for each building and its surroundings.

The image, character and appearance of buildings should be consistent with the recent development at Innovation Campus shown in the attached, Figure 13, Figure 14, Figure 15 and Figure 16, to the approved Precinct plan.

**Figure 13: Building Image Office/ Research**

**Figure 14: Building Image - Research**

**Figure 15: Examples - building character and appearance**

**Figure 16: Examples - building character and appearance**

# 10 LANDSCAPE

## 10.1 Landscape Character

### Background

1. The Wollongong Innovation Campus is a unique coastal site within an urban context. The landscape Precinct plan reflects the character of the site and its context, the objectives of the Wollongong Innovation Campus and provide a linkage to the landscape qualities of the existing University of Wollongong campus.

### Objectives

a) To reinforce the site as part of the regional coastal landscape particularly in its relationship to Puckeys Estate, surrounding creeks and its visual connection to the Illawarra escarpment;

b) To promote the relationship of the character of the Wollongong Innovation Campus to the landscape character of the University of Wollongong;

c) To create a landscape setting that reflects the campus scale and character qualities of the project;

d) To create a landscape setting which encourages the public to interact visually and physically with the Wollongong Innovation Campus; and

e) To establish a landscape framework which unifies the various elements and structures of the development.

f) To reinforce ESD principles in landscape design, plant selection and built form.

### Performance Guidelines

a) The landscape character of the development must be consistent with the requirements of the approved DCP.

b) The plant species selected must be consistent with those found on-site and in the immediate local environment. Plant species should be suited to the existing site conditions and environment.

c) Public artwork should be considered for key points within the Campus to act as visual and physical focus for pedestrian activity.

d) A chain of ponds should play a positive role in stormwater management. The ponds provide an opportunity for a consistent landscape approach through the Campus and relate to the character of the main University of Wollongong campus.

e) Landscaping between and around buildings should blur the leased site boundaries and create the sense of an informal campus setting. Landscaping should enhance building entrances and forecourts and facilitate pedestrian movement between built structures.

## 10.2 Open Space

### Background

1. Open space forms a key component in the overall Wollongong Innovation Campus site planning. The intent is to provide a central “Campus Green” with a pedestrian spine linking a series of parks and pedestrian plazas in association with consistent landscape themes.

### Objectives

a) To provide a central open space or “Campus Green” as a focal point for the Wollongong Innovation Campus;

b) To create a visually strong, attractive and safe series of public open spaces;

c) To create a series of pedestrian forecourts and green spaces linked by a pedestrian spine;

d) To provide positive and safe linkages to open spaces adjoining the Innovation Campus;

e) To integrate open space and stormwater design to create a functional and aesthetic landscape; and

f) To provide both passive and active recreation opportunities.

### Performance Guidelines

a) Open space must be consistent with the Landscape Precinct plan (Figure 17).

b) Within main communal landscaped areas active recreation should be included in the form of open grassed areas for informal sporting activities.

## 10.3 Vegetation

### Background

1. The existing site was originally devoid of significant vegetation except for the "Swamp Oak Forest" at the southern end and some riparian vegetation associated with Cabbage Tree Creek.

### Objectives

a) To preserve the "Swamp Oak Forest" at the southern end of the site;

b) To preserve, revegetate and rehabilitate the riparian corridor to Cabbage Tree Creek adjoining the site;

c) To create a "green campus" by use of appropriate native vegetation;

d) To integrate the proposed vegetation with that found in Puckeys Estate, the escarpment and the existing University of Wollongong;

e) To consider planting locations to maximise solar access to key areas.

### Performance Guidelines

a) The perseveration of the Swamp Oak Forest and works to the riparian corridor shall be carried out in accordance with the Cabbage Tree Creek Vegetation Management Plan (prepared by Southern Habitat – June 2008 – for WCC and UOW);

b) Riparian plant species should be planted along the embankment of the creek.

c) Planting design should comply with the Crime Prevention through Environmental Design (CPTED) principles.

d) Indicative plant species should be in accordance with;

| Botanical Name | Common Name |
|---|---|
| **Street Trees** | |
| Acmena Smithii | Lilly Pilly |
| Alphitonia excelsa | Red Ash |
| Banksia integrifolia | Coastal Banksia |
| Glochidon ferdinandi | Cheese Tree |
| Syzygium paniculatum | Brush Cherry |
| Cupaniopsis Anacardioides | Tuckeroos |
| | |
| **Significant / Landmark Trees** | |
| Ficus rubiginosa | Port Jackson Fig |
| Ficus macrophylla | Moreton Bay Fig |
| Syzygium paniculatum | Brush Cherry |

| | |
|---|---|
| Syzygium australe | Brush Cherry |
| | |
| **Tree Planting** | |
| Banksia integrifolia | Coastal Banksia |
| Banksia serrata | Old Man Banksia |
| Casuarina glauca | Swamp Oak |
| Eucalyptus amplifolia | Cabbage Gum |
| Eucalyptus botryoides | Bangalay |
| Eucalyptus robusta | Swamp Mahogany |
| Euroschinus falcata | Ribbonwood |
| Ficus rubiginosa | Port Jackson Fig |
| Hibiscus heterophyllus | Native Hibiscus |
| Melaleuca ericfolia | Swamp Paperbark |
| Melaleuca linariifolia | Narrow-leaved Paperbark |
| Synoum glandulosum | Rosewood |
| Pittosporum undulatum | Sweet Pittosporum |
| | |
| **Shrubs and Groundcovers** | |
| Correa alba | White Correa |
| Indigofera australis | Austral Indigo |
| Leptospermum laevigatum | Coast Tee Tree |
| Myoporum acuminatum | Boobialla |
| Hardenbergia Violacea | Native Sarsaparilla |
| Hibbertia scandens | Twining Guinea Flower |
| Kennedia rubicund | Dusky Coral-pea |
| Lomandra longifolia | Spiny-headed Mat-rush |
| | |
| **Riparian Planting** | |
| In accordance with Cabbage Tree Creek Vegetation Management Plan (prepared by Southern Habitat – June 2008 | |
| | |
| **Wetlands** | |
| Baumea articulate<br>(At pond wet edge only) | Jointed twig rush |
| Bolboschoenus caldwelli | Club Rush |
| Carex appressa | Tussock Sedge |
| Isolepis nodosa | Isolepis |
| Juncus kraussi | Common Rush |
| Phragmites australis | Common Reed |
| | |

## 10.4 Safety and Security

### Background

1. The Wollongong Innovation Campus is to be designed to provide a safe and secure environment.

### Objectives

a) To incorporate "Crime Prevention through Environmental Design (CPTED) principles into the detailed site landscaping; and

b) To provide a safe environment for the Campus Community and Campus Visitors.

### Performance Guidelines

a) Planting, lighting and furniture design should be co-ordinated to ensure maximum pedestrian safety.

b) Tall dense planting should be kept clear of pathways to ensure pedestrian safety.

c) Open spaces and courtyards should be developed to minimise concealment opportunities.

d) Crime Prevention through Environmental Design (CPTED) principles should be considered In the design process.

e) Well lit pathways with clear sight lines must be provided particularly where providing access to accommodation and public transport.

f) Safe, well lit routes must be provided from carparks to buildings for evening and late night access.

g) Clear identification and lighting at the entries to the Wollongong Innovation Campus must be provided.

h) CCTV to internal road and pedestrian areas and all pedestrian and vehicle entrances should be provided.

i) Natural surveillance of carparks must be provided.

j) Bollards or protective structures should be provided to prevent ram raid type offences or accidental collisions.

k) Building materials should be selected to deter criminal activity and provide protection from criminal actions.

l) Critical service supply points and installations should be secured against vandalism.

## 10.5 Furniture

### Background

1. Furniture design is an integral part of the landscape infrastructure for Wollongong Innovation Campus. A furniture theme reinforces the project identity and provides a further layer of detail to the landscape.

### Objectives

a) To provide a consistent range of furniture and detailing to the landscape;

b) To incorporate furniture into the landscape as part of the landscape development;

c) To ensure furniture is located in useful and safe areas; and

d) To integrate furniture design with public art opportunities.

### Performance Guidelines

a) Furniture should be located in areas that permit maximum surveillance during day and night.

b) Furniture should be of a consistent theme and high quality.

c) Furniture should be designed to be comfortable, aesthetically pleasing and to be low maintenance / vandal resistant.

## 10.6 Lighting

### Background

1. Lighting of outdoor areas is essential to provide a safe and pleasing environment for pedestrians at night and can be used as a feature in the landscaping.

### Objectives

a) To provide attractive and functional lighting of outdoor spaces in order to provide a safe and pleasant pedestrian environment.

### Performance Guidelines

a) Lighting must be consistent to reduce any contrast between shadows and illuminated areas.

b) Lighting must be integrated with proposed vegetation / planting schemes.

c) Public areas must be lit in accordance with Australian Standard 1158.3.1.

d) “Safe” routes such as the pedestrian spine must be lit at higher levels than the code.

e) Lighting must provide clear identification of building entrances.

## 10.7 Public Art

### Background

1. The incorporation of public artwork is an important component of the Wollongong Innovation Campus landscape development.

### Objectives

a) To facilitate and incorporate the creation of artworks throughout the site as a component of the landscape development of the Innovation Campus;

b) To use public art as a means of promoting and celebrating the identity of the Innovation Campus;

c) To ensure that public art is an ongoing component of the Innovation Campus;

d) To ensure that any artwork contributes to the “Innovation” aspect of the project;

e) To provide a character linkage to the existing University of Wollongong main campus;

f) To integrate aspects of heritage interpretation of the Campus East site with an artworks strategy;

g) To identify opportunities for significant artworks which may include:

   i) Entrance statements to the site;

   ii) Interpretative artworks in association with the heritage buildings retained on the site;

   iii) Artworks integrated with the chain of ponds and site water features;

   iv) Artworks developed in association with the Science Centre which may form the basis of school student interaction with the Wollongong Innovation Campus;

   v) Artworks integrated with Energy Management and ESD initiatives;

   vi) A sculpture forecourt to the central services facilities; and

   vii) Artworks incorporating aspects of wind, music, Light and movement as a focus to building forecourts; and

h) To provide opportunities for artworks by the University of Wollongong, School of Creative Arts.

### Performance Guidelines

a) Public art should be incorporated into the landscape and architecture of the Innovation Campus.

b) The provision of public art should be demonstrated at each Precinct plan review.

## 10.8 Signage

### Background

1. Integrated and consistent signage is a critical element in a University campus.

### Objectives

a) Signage should contribute to the campus character of the development and be uncluttered and reserved in appearance.

b) Signage should provide clear and legible instructions for staff, students and visitors.

c) Entry statement and other main signage should convey the significance of the Wollongong Innovation Campus.

### Performance Guidelines

a) Signage must be consistent across the campus and conform with the following general guidelines:

b) Significant entrance statement structures and signage should be provided at the main entry points to Innovation Campus:

c) Campus way finding signage should be in the form of monolith signs

d) Campus directories and the like should be standardised and located at critical locations on the campus

e) Building signage must:

   i) Integrate with the architectural character of the subject building and adjacent buildings

   ii) Harmonise with other features, particularly the size and placement of other signs in the immediate vicinity

   iii) Not threaten the safety of pedestrians and traffic

   iv) Enhance the attractiveness and character of the streetscape

   v) Consider the visibility of the sign from street level and other public areas

f) Signage should be illuminated by lighting in the landscape. Neon type signage is not permitted.

g) The Signage Suite should include international symbols where possible and include the following safety information:

   i) The location of telephones, public transport and toilets

   ii) Expected behaviour throughout the campus

   iii) Where help can be found in the case of an emergency

   iv) Location of walking/cycling routes

## 10.9 Fencing

### Background

1. The intention of the campus is to provide for a fence free environment. Localised fencing is permitted in locations where security or legislation requirements determine it appropriate.

2. In other areas of the campus a safe environment will be provided by implementing strategies outlined in other sections of this Precinct Plan.

### Objectives

a) To reinforce the existing well defined and secure environment for students in the halls of residence style accommodation, Childcare Facilities and areas requiring security (such as the Science Centre).

### Performance Guidelines

a) Security fencing should be integrated with the building and landscape design

b) Fencing of the individual leased sites elsewhere on the campus is not permitted

c) Where particular parts of buildings require access control or security enclosure the installations must be integrated with the building design

## 10.10 Streets

### Objectives

a) To create an accessible, safe, legible and permeable system for vehicular and pedestrian traffic

b) To create a hierarchy of streets with characteristics as follows:

Innovation Way

i) Primary functional access through the site

ii) Formal and regular tree planting to both sides of the street

iii) Swales, building forecourts and other landscaping to reinforce image of a 'leafy' campus street

iv) Limited kerbside parking provided for taxis, couriers and other short stay vehicles

Puckey Avenue

i) The main entrance to the Wollongong Innovation Campus

ii) Landscaping, paving, lighting and other elements to provide an appropriate sense of entry.

Service/Parking Links

i) Provision of surface parking for visitors and users of the Wollongong Innovation Campus and access to basement parking and service facilities

ii) Pedestrian access provided to both sides of street

Residential

i) 'Leafy' streets providing on street parking for residents and visitors and access to under building parking and other service functions

### Performance Guidelines

a) Streets should be constructed to create the street system indicated in Figure 17

b) Street sections should be constructed according to the sections set out in Figures 18 - 22 (inclusive)

Design Notes

1. Puckeys Esate existing vegetation provides inspiration for plant selection within the Innovation Campus.
2. Existing open playing fields maintained as stormwater control.
3. Existing historic building reused as child care facility
4. Student accomodation precinct
5. Secondary vehicle entry with native street tree planting.
6. Water quality ponds.
7. Pedestrian spine with paved forecourts to building entries.
8. Exisiting Cabbage Tree C reek riparian corridor to be upgraded.
9. Proposed new entry with bridge acting as a sculptural element.
10. Squires Way entry with paved court, low walling and signage.
11. Water quality ponds act as visual and recreation focus.
12. Pedestrian corridor between buildings with informal paths and plantings.
13. Innovation Way main spine road lined with native trees.
14. Pond development to act as water quality device prior to existing site.
15. Exisiting remnant swamp oak forest.
16. Squires Way. Groups of native trees provide view corridors to built form.


Landscape Masterplan 2012

TBLA Drawing Number 001
Date 16.03.2012

**Figure 17: Landscape Precinct Plan**

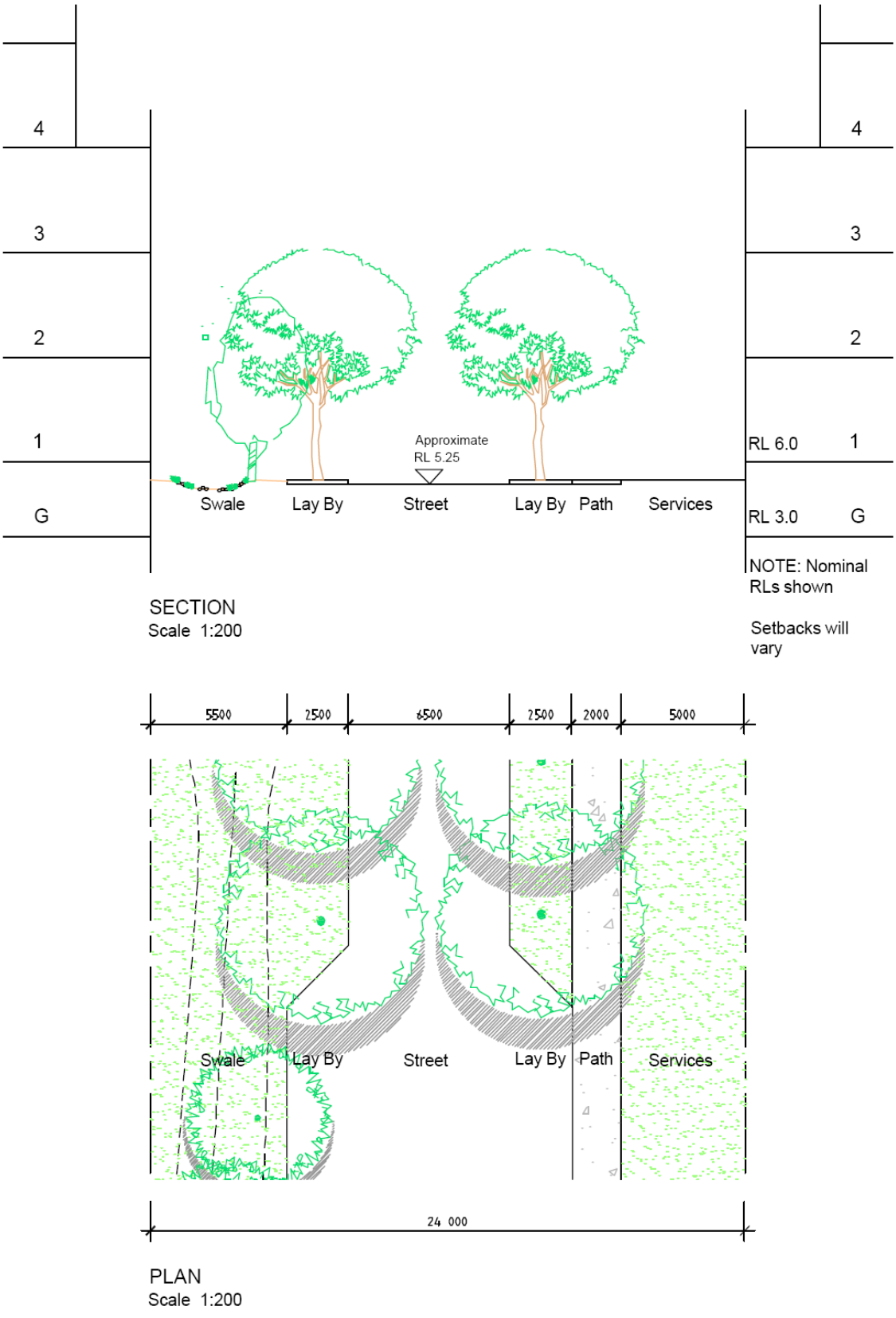
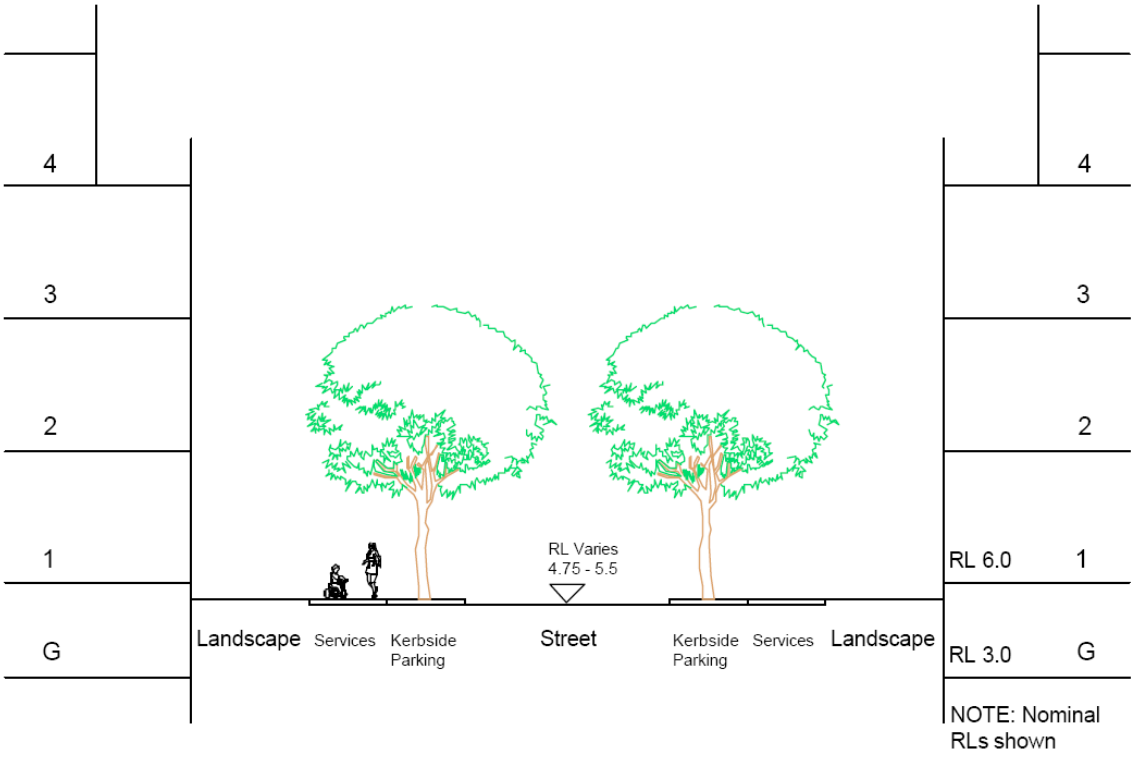
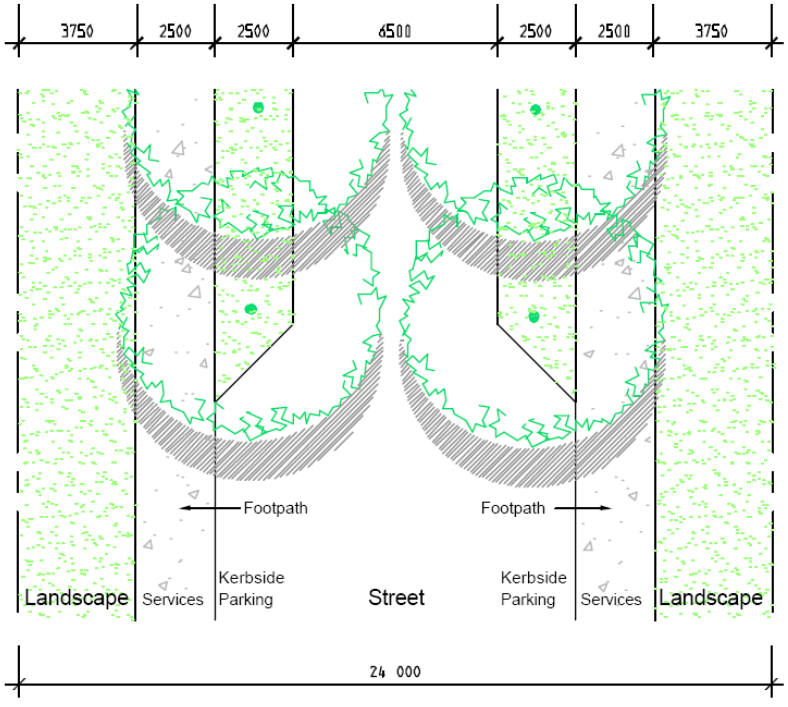



**Figure 18: Street Reserve Innovation Way**

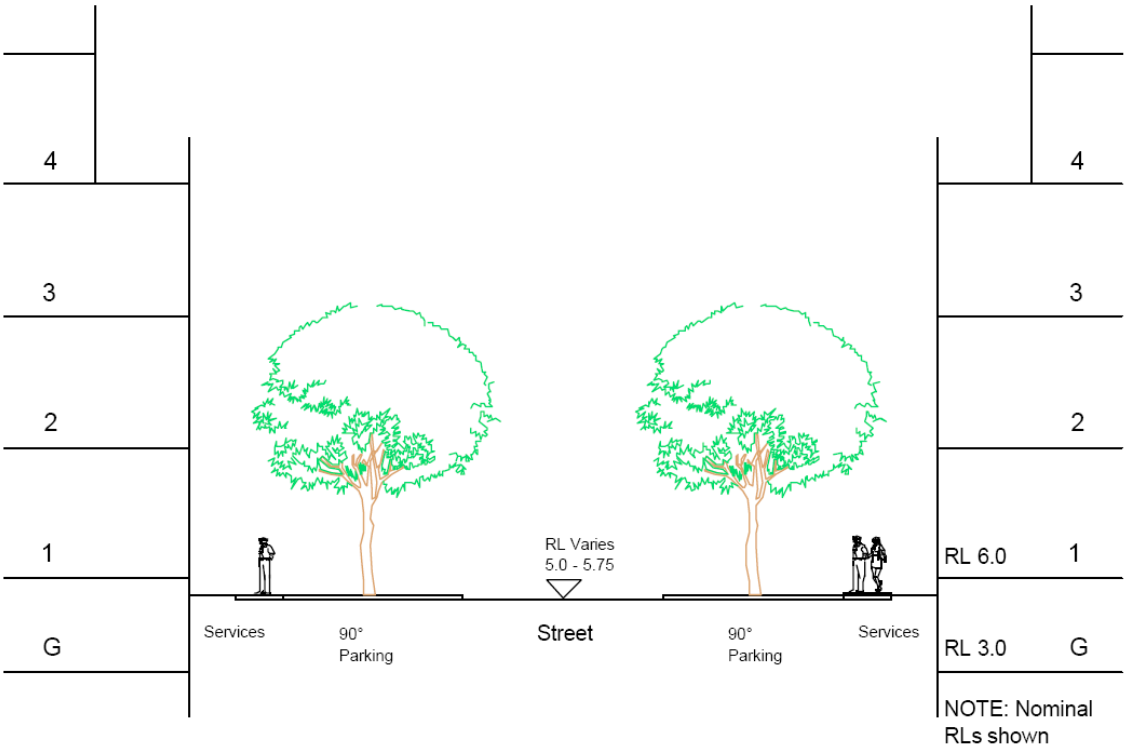



SECTION
Scale 1:200




PLAN
Scale 1:200

**Figure 19: Street Reserve Puckey Avenue**




SECTION
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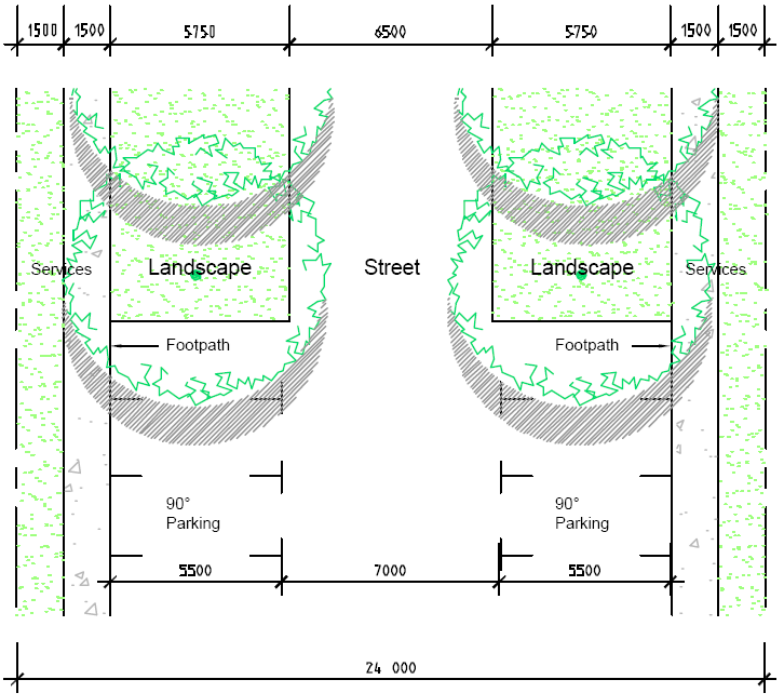
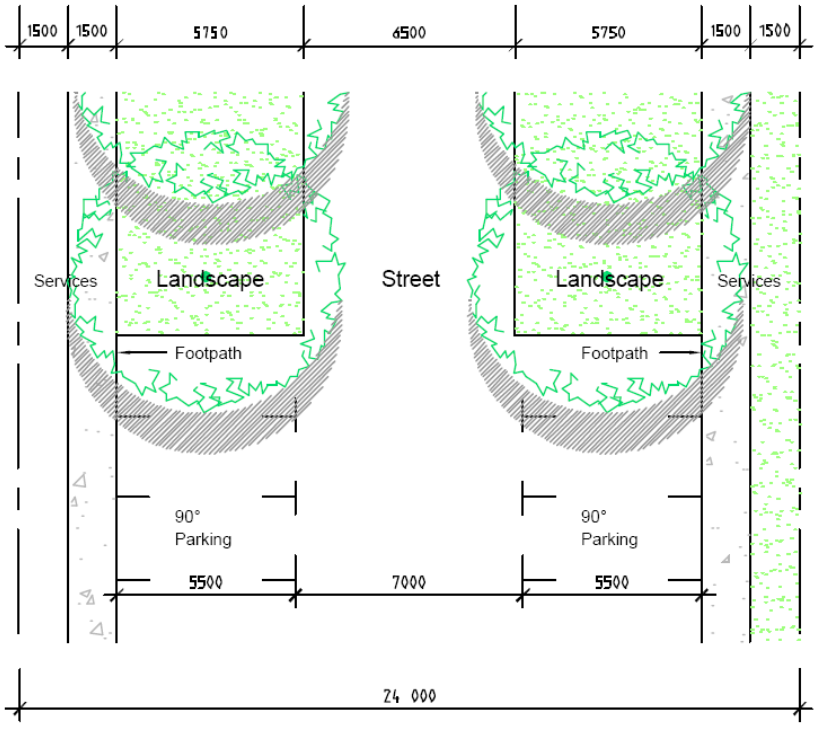



PLAN
Scale 1:200

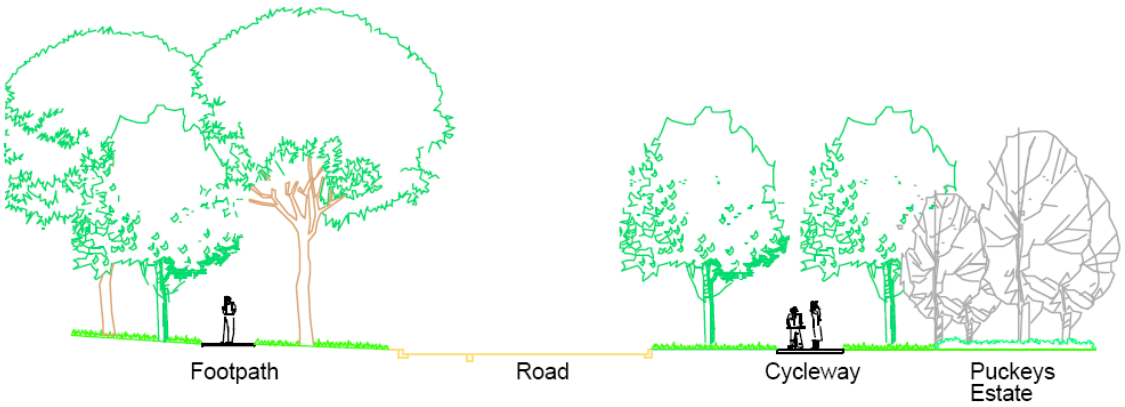
**Figure 20: Street Reserve Service Access Links**


SECTION
Scale 1:200

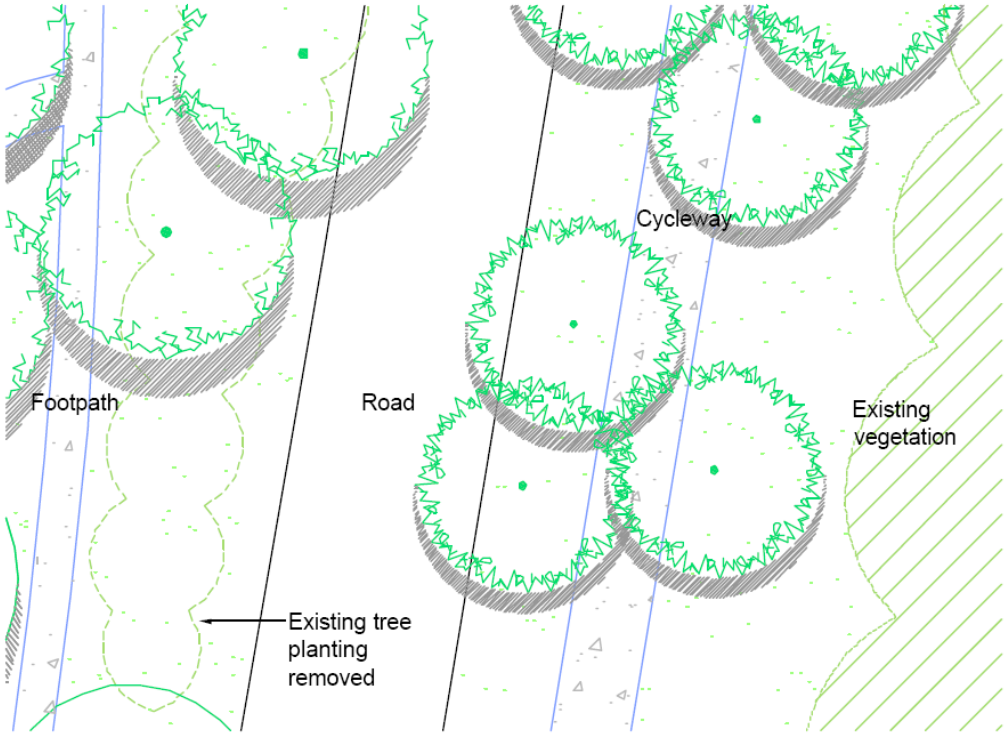



PLAN
Scale 1:200

**Figure 21: Street Reserve Residential**




TYPICAL SECTION
Scale 1:250




PLAN
Scale 1:250

**Figure 22: Squires Way**

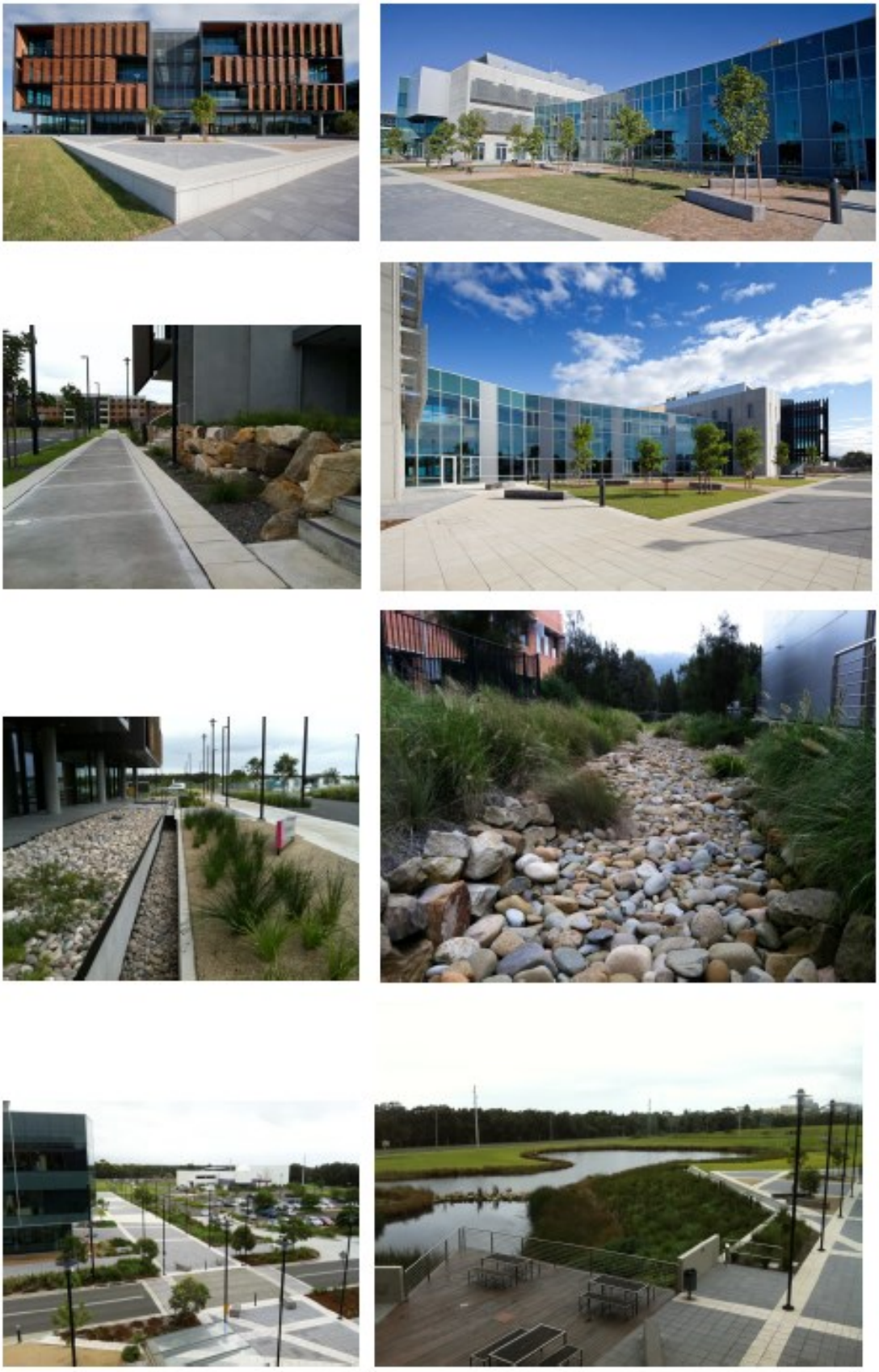


**Figure 23: Landscape themes**

# 11 TRANSPORT AND ACCESS

## Background

1. A number of transport studies and reports have been prepared to assess the capacity and characteristics of the existing transport network impacted by the growth, over time, of the Innovation Campus. A brief summary of these studies is outlined below;

   i. 2002 : TRANSPORT STUDY – iC – Prepared by Forbes Rigby and Gabites Porter.

   This initial Transport Study was undertaken by Forbes Rigby (now Cardno) and Gabites Porter in 2002 to support the initial Masterplan. It was completed prior to any research or commercial development and included an assessment of:

   - A review of local and state planning initiatives which emphasised the need for an integrated approach to transport planning, increased use of public transport and a reduction in car dependency,
   - Traffic modelling outcomes based on a range of development scenarios,
   - Proposed local intersection treatments,
   - Parking demand,
   - Safety impacts,
   - Public transport opportunities, and
   - Pedestrian and cycle access opportunities.

   This report formed the basis of the objectives and performance guidelines, defined in the initial Masterplan and subsequent 2009 DCP, which guided the initial stages of the transport and access development at iC.

   ii. 2008 : CAR PARKING STRATEGY REPORT – iC – Prepared by Cardno (Forbes Rigby)

   By 2008 the Stage 1 development at iC was well advanced with over 30,000 sqm of new development completed or underway. The operational requirements of the iC required a detailed strategy for vehicle parking control and growth, beyond the Objectives and Performance guidelines outlined in the original Masterplan. This Strategy Report was approved by Wollongong City Council (DA-2008/568) and included;

   - Operational parameters for centralised car parking areas for the different User types that permitted a payment and practical enforcement structure, and
   - Staged growth strategies for parking spaces that met the Masterplan Objectives.

   iii. 2010-2012 : iC TRANSPORT AND TRAFFIC MASTERPLAN REVIEW, TRAFFIC AND TRANSPORTATION ASESSMENT – Prepared by AECOM (2012)

   During 2010 to 2012 a comprehensive review of traffic and transportation was carried out by the University in consultation with Wollongong City Council and the NSW Roads and Maritime Services. The review included;

   - Traffic counts to validate traffic simulation models,
   - Updated staged modelling for forecast years 2016 (Stage 2) and 2026 (Ultimate Development), and
   - Assessment of alternative access scenarios (via Squires Way only or Squires Way and Montague Street).

Updated staged TRACKS modelling was presented to Wollongong City Council and RMS in December 2010. This modelling assessed two network scenarios for local area roads / intersections for the iC ultimate growth (forecast year 2026);

Option 1 : Existing surrounding road network, access to the Innovation Campus via Squires Way and Cowper Street, and

Option 2 : Existing surrounding road network, access to the Innovation Campus via Squires Way, Cowper Street and Montague Street (at Puckey Ave);

The University's preference was for Option 2. This was generally supported by the RMS as this option distributes traffic to different locations and reduces the number of access points required on Squires Way (Note: whilst the Notional Ultimate Masterplan Drawing illustrates up to 6 vehicle entrances to iC with 4 shown along Squires Way - Option 2 only requires up to 3 entrances off Squires Way).

The 2012 Traffic and Transport Assessment therefore provides for iC growth to 2016 (or approximately a further 20,000 sqm of development to circa 75,000 sqm). The outcome of the assessment supports the traffic growth via the adoption of the Montague Street Access Bridge (on the Puckey Ave. alignment) as the second major entrance to iC – in line with the ultimate Option 2 solution.

A future iC Transport Review is required when the development is at 75,000 sqm (GFA).

2. A number of organisations and authorities including the University of Wollongong, Wollongong City Council and State Government Agencies are responsible for the implementation of the initiatives.

3. The initiatives need to be integrated with Wollongong CBD traffic and access studies and other regional transport proposals.

## Objectives

1. Access and transport objectives for the Wollongong Innovation Campus include:

a) To provide a convenient and safe transport system for users of the Wollongong Innovation Campus

b) To reduce car dependency by encouraging alternative modes of transport

c) To cater for non-vehicular transport such as cycling and walking

d) To minimise the environmental impact of transport

e) To improve air quality

f) To maintain the transport network in good order

g) To maximise the efficient use of transport infrastructure – both existing and proposed

## Performance Guidelines

### *Integration of Transport and Access Planning*

a) Transport and access planning must be integrated and implemented to include the following initiatives:

   i) Bus priority measures along major trunk roads and "hail and ride"/demand responsive bus services as part of a WIC/UOW/CBD Shuttle

   ii) Locating bus stops to maximise the patronage catchment and to consider personal safety, lighting and traffic management

   iii) Providing sheltered bus stops with seats, adequate lighting and timetable information for people with disabilities

   iv) Providing street, footpath and open space networks for multiple pedestrian and cycle routes

v) Providing within each building suitable facilities including storage, shower and changing facilities at work and other end-of-trip locations to encourage greater use of bicycles

vi) Providing parking incentives such as cheaper rates or reserved spaces for high occupancy vehicles including car pools and community buses

vii) Encouraging cycle routes and providing bike facilities at public transport interchanges

viii) Providing an integrated network of on and off road cycleways and walkways

ix) Shaping parking policies to support public transport use, walking and cycling

x) Progressively reducing the availability of car parking within the Wollongong Innovation Campus

xi) Promoting car pooling and park and ride transport options

xii) Providing incentives to employees to encourage journey to work by public transport

xiii) Promoting and/or subsidising cheaper off peak travel by public transport

xiv) Preparation of workplace travel plans

The status of measures that have been introduced to satisfy the Performance Guidelines for Transport and Access Planning integration (at the time of the 2012 Precinctplan review) include;

- The "Gong Shuttle" was introduced in 2009 by the NSW Government as a public transport initiative for the Illawarra and directly serves the Innovation Campus. Currently two bus stops, on the "Gong "Shuttle" route serve the Innovation Campus providing good catchment for the current development. Bus stops are provided with shelters and lighting.

- New development from 2006 to 2012 incorporates end-of-trip bicycle facilities which are promoted and gaining in patronage.

- The street, footpath and pedestrian spine network is expanding from the central area north and south with development. The existing Campus East student residential area is now connected by both road and pathway.

- A parking payment regime has been introduced which promotes the use of public transport as an alternative journey to work.

## *Traffic*

a) A number of road network changes should be implemented to offset the impact of traffic generated by the Innovation Campus and background growth in the local road network. The timing and nature of the works is subject to detailed evaluation of the traffic growth and Innovation Campus vehicle trip generation.

Evaluation and works completed or underway (at the time of the 2012 Precinct plan review) include;

- Detailed evaluation of an additional vehicle access point was completed in 2011 which led to a bridge between the Innovation Campus and Montague Street (along the Puckey Ave alignment) being adopted. The proposed Bridge received separate Development Approval from WCC (DA-2012/5 on 6th July 2012) and is programmed to be open to traffic in 2014.

## *Pedestrian and Cycle Access*

a) The pedestrian and cycle infrastructure should be extended and upgraded. The following proposed pedestrian and cycleway connections options shall be considered:

i) Montague Street Pedestrian/Cycleway

ii) Puckey Avenue Extension

iii) Porter Street Cycleway

iv) Stuart Park Cycleway

v) George Hanley Drive

b) Storage, shower and changing facilities for cyclists must be provided within each building.

The status of measures that have been introduced to satisfy the Performance Guidelines for Pedestrian and Cycle Access (at the time of the 2012 Precinct plan review) include;

- The Causeway across the Fairy Meadow Creek to Montague St (Puckey Ave alignment) was rebuilt by the University in 2009 to provide both a dedicated Construction access (remove construction traffic from internal Campus roads to improve pedestrian safety) and a dedicate shared pedestrian / cycle pathway link to Montague Street. Shared pedestrian / cycle pathway is also incorporated inot the Montague Street access bridge which will replace the causeway during 2013.

- All new development (from 2006) has included end-of-trip facilities for cyclists.

## *Rail Infrastructure*

a) The Innovation Campus is within the service area of the Fairy Meadow and North Wollongong railway stations. Connections between the Campus and rail services are achieved through a combination of walking (see Figure 26) or the 'Gong Shuttle', which has dedicated stops at Fairy Meadow and Wollongong Railway Stations, as well as the Innovation Campus.

b) The Innovation Campus has identified that rail accessibility can be improved through:

- Extension of Fairy Meadow Railway Station platforms to link with Bourke St. This will improve the reach of the ped-shed as shown in Figure 26.
- Provision of disabled access lifts and a pedestrian overpass
- Modifications to timetables to increase number of express services to and from Sydney.
- Modifying the signage to incorporate the Wollongong Innovation Campus into the name of the station
- Providing integrated bus tops and improved pedestrian access to and from the railway station.

c) Consultation with NSW Transport (City Rail) has determined that Fairy Meadow Railway Station is not on the express timetable and North Wollongong Station is currently the nominated station for the express services to Sydney. The Innovation Campus will continue to regularly undertake transportation surveys of the Campus occupants as well as continue discussions with Transport for NSW to ensure rail infrastructure and connecting services can accommodate the demand / patronage arising from the Campus.

## *Parking Strategy*

a) Parking within Innovation Campus should be provided to satisfy the Campus demand diveristy, including visitors, events, students, residential and staff.

b) Parking should be provided on site at an average rate between the range of 1 space per 40 to 80 sqm of Gross Floor Area. The ratio at completion will reflect the final mix of development type, ongoing monitoring of demand and take-up of public and alternative transportation strategies. Note; at the 2013 review the ratio of spaces to GFA was 1 space per 60 sqm GFA (with development around 40% of the total permissible).

c) The parking provisions should be configured to provide adequate parking controls and enforcement regimes, this will include;

i) Identified visitor parking,

ii) Centralised staff parking

iii) Secure reserved / allocated parking for staff and residents.

iv) Parking bays for service vehicles, taxis, bus bays and the like.

d) Parking spaces will generally be provided within development lots and / or in centralised locations such as Multi-Storey Car Parks. Temporary on-grade parking stations will be progressively reduced as the Campus is developed and land is utilised for development.

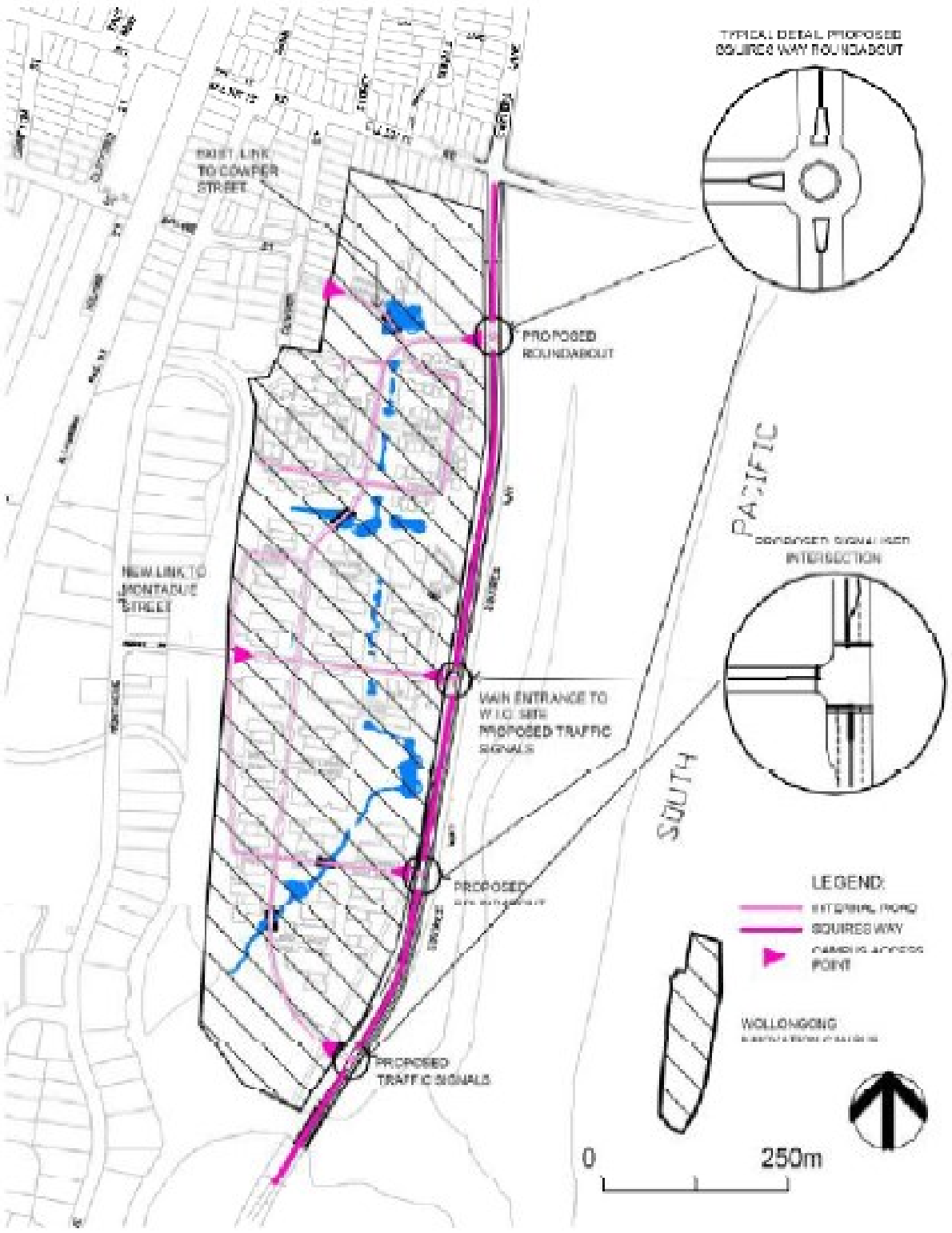



Figure 24: External Road Network (Squires Way)

Note: Potential Ultimate Intersection Options subject to further review

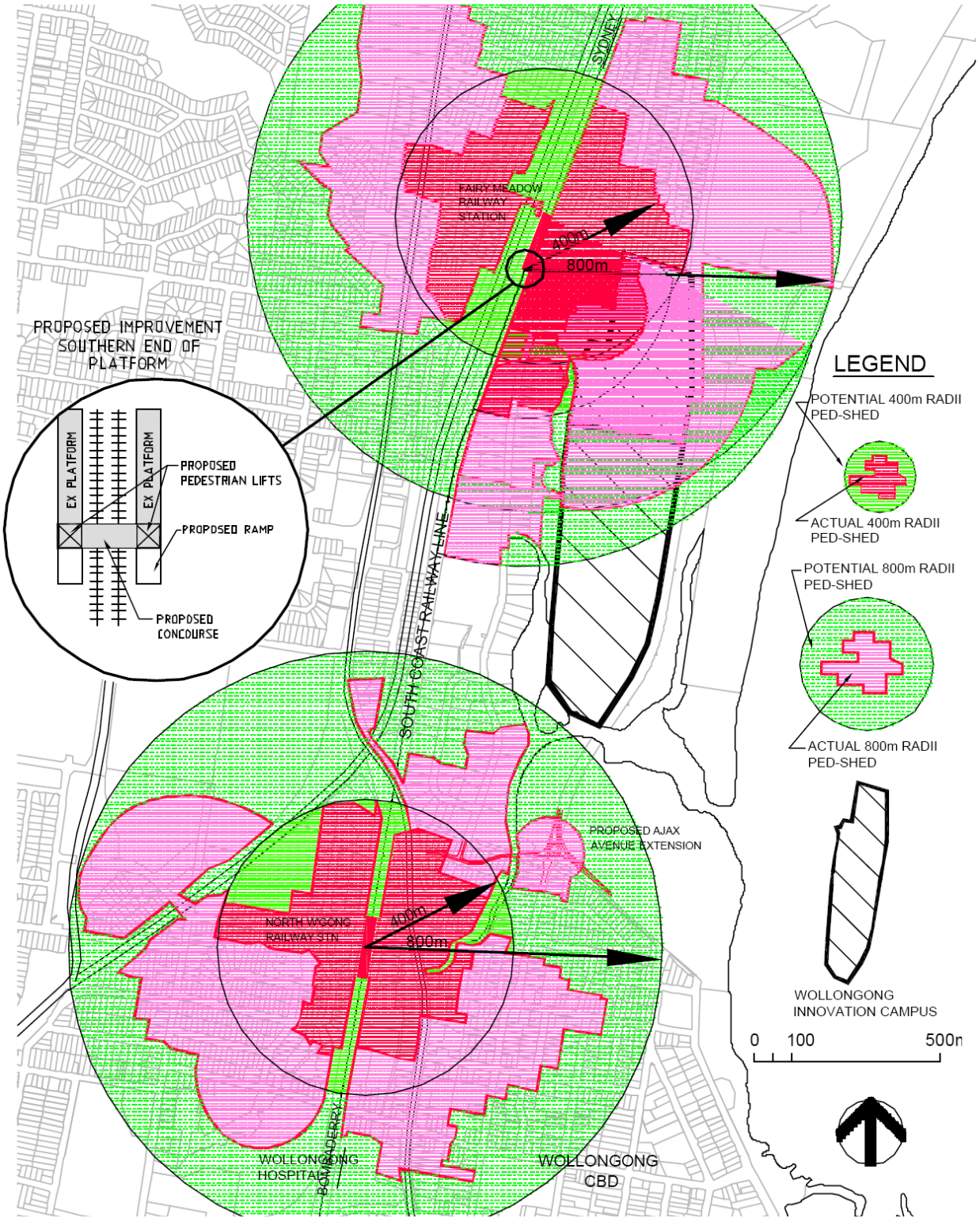



**Figure 24: Proposed Rail Network & Ped - Sheds**

# 12 FLOODPLAIN MANAGEMENT

## 12.1 Flooding

### Background

1. A comprehensive review of floodplain management was undertaken by the University in 2011 /12 as part of the Stage 1 Precinct plan Review. The University commissioned Cardno to undertake the Flood Management Study ("Flood Management Study – Master Plan Review 2011-12 – Innovation Campus") which included up to date flood modelling for the revised fully developed Precinct Plan built contours. For full details and findings refer to the full Flood Management Study – Master Plan Review 2011-12 – Innovation Campus (iC-FMS-2012).

### Objectives

1. The Flood Management Strategy aims to:

   a) To ensure the safety of existing and future occupants of the floodplain

   b) To maximise the development potential for the site

   c) Ensure compliance with appropriate guidelines and policies, including:

      i) Wollongong City Council's Development Control Plan (Chapter E13); and

      ii) NSW Government Policy

### Performance Guidelines

a) Set minimum floor levels for the ultimate development at iC at the 100 year ARI flood level + 0.9m freeboard (based on the results of the 2016 flood modelling). Refer Fig. 27.

b) Maintain the existing surface topography through the northern floodway area of the site, which currently behaves as an informal floodway between Cabbage Tree Creek and the Towradgi Arm in major storm events.

c) Incorporate flood compatible building materials for all structures at or below the 100 year ARI level + 0.9m freeboard.

d) All internal roads to achieve trafficability during 100 year ARI storm events.

e) Protect basement carparks from floodwater up to at least the 100 year ARI flood +0.2m freeboard, to minimise the risk to life during a flood.

f) Elevate open car parks above the 100 year ARI flood level +0.9m freeboard to ensure that externally parked vehicles do not become moving debris during flood events.

## 12.2 Flood Access and Evacuation

### Background

1. Floodwaters around the site are generally slow moving being a result of 'backwater' from the restricted beach bar opening. Although slow moving, the depth of flooding around the site does not allow flood free access in the 1% AEP event. Squires Way, the main access road to the Innovation Campus is under 1.0 to 1.5 m of water in this event. There is an existing road link between Campus East and Cowper Street to the north but this is also flood affected, although to a lesser extent. The bridge access to Montague Street at Puckey Ave is also affect by flooding along Montague Street.

### Objectives

a) To provide for occupant safety during flood events.

## Performance Guidelines

a) Provide safe refuge within the site including:

   i) Minimum floor levels set at 100 year ARI flood level + 0.9m freeboard..

   ii) Multi storey buildings with upper floor levels several metres above PMF.

   iii) The central section of the main pedestrian spine set at a minimum elevation equal to 100 year ARI flood level +0.9m freeboard.

b) A detailed Flood Safety Strategy must be maintained by the University.


**Figure27: Minimum Floor Levels**

# 13 HERITAGE

## 13.1 Objectives

To ensure that the heritage value of the site is recognised.

## 13.2 Aboriginal Archaeological Assessment

### Performance Guidelines

1. The recommendations of a study undertaken in July 2002 by Navin Officer Heritage Consultants should be noted:

   *There are no known Aboriginal heritage constraints to the proposed development If any Aboriginal relics as defined in the NPWS Act are identified in the course of construction activities then works should cease in the vicinity of the finds. The NPWS zone archaeologist should be contacted and an appropriate course of action decided upon.*

## 13.3 European Heritage - Brandon Park

### Performance Guidelines

a) The recommendations of an Assessment Study of European Heritage for the Brandon Park site completed in October 2002 by Colin Brady Architects + Planning should be noted. The recommendation included:

   i) The peripheral landscape and stream shoreline to the site should be maintained and enhanced.

   ii) No activity or works should be allowed that would have a substantial detrimental effect on the significance, landscape and environmental qualities of the shoreline.

## 13.4 European Heritage – Campus East

### Background

1. The northern end of the site was used as a migrant hostel in the period 1950 – 1982.

2. In 2004, two Nissen type huts were relocated adjacent to an existing hut to form a heritage precinct. Refer fig. 31.

3. This precinct is listed on the NSW State Heritage Register.

### Performance Guidelines

a) The following information may be required to be submitted with a Development Application which relates to any item of environmental heritage.

   i) A statement of heritage impact

   ii) A statement of compliance with the relevant provisions of Wollongong LEP, the Heritage Act 1977 (if relevant) and Wollongong City Council's Development Control Plan 2009 Chapter E11 Heritage Conservation

   iii) Application made under Section 60 of the Heritage Act 1977 to the NSW Heritage Office

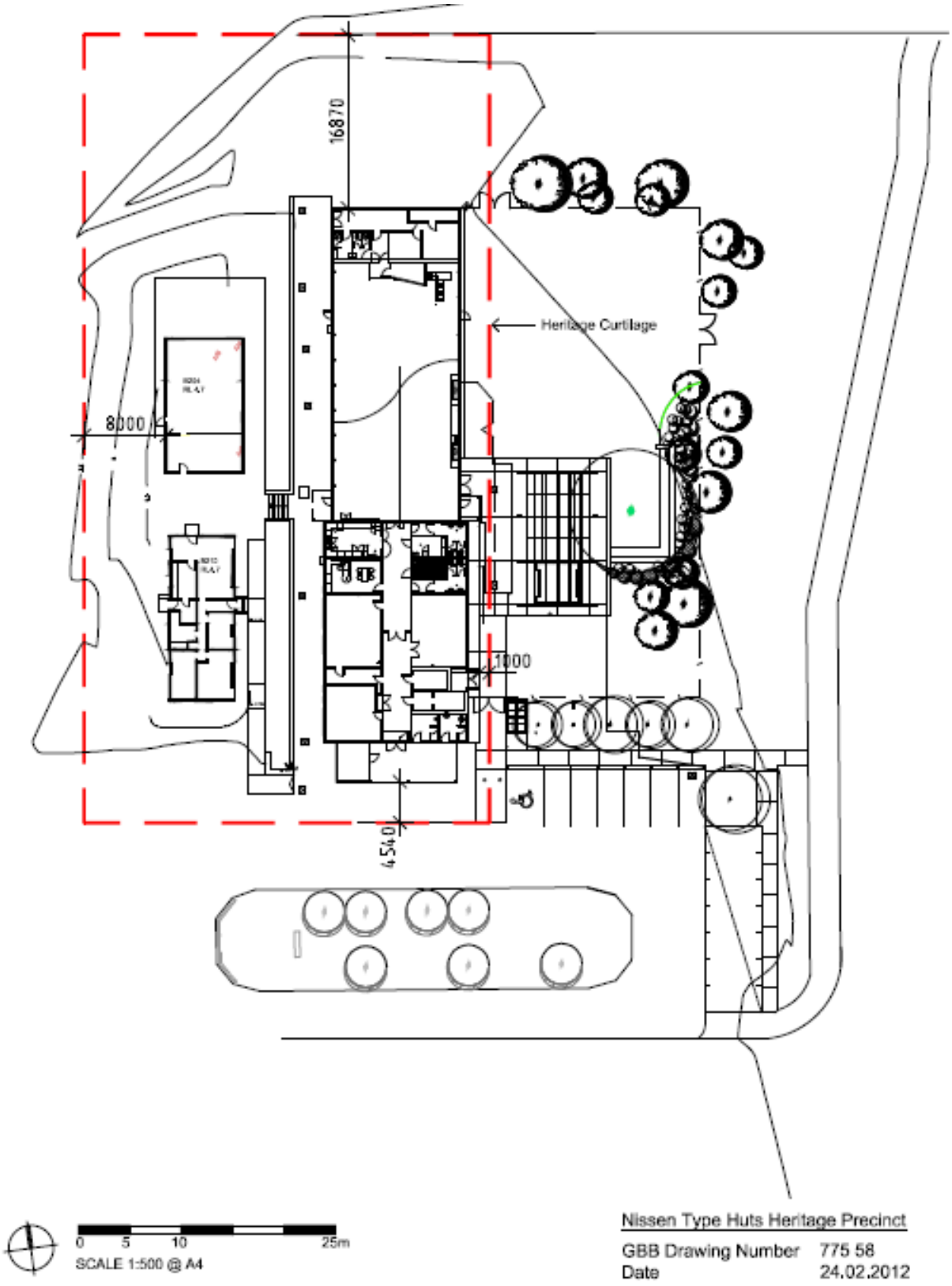



**Figure 28: Nissen Type Huts – Heritage Precinct**

# 14 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

## 14.1 General

### Objectives

a) To incorporate into the Innovation Campus site, buildings and infrastructure best practice Ecologically Sustainable Development strategies.

### Performance Guidelines

a) Reduce $CO_2$ emissions by applying energy efficient design principles and utilising low or zero carbon technologies;

b) Reduce water use by integrating water re-use strategies, efficient plant, appliances and fittings;

c) Reduce construction and demolition waste to landfill and enable in use recycling by following an agreed waste hierarchy;

d) Increase the use of sustainable modes of transport;

e) Improve the capacity of the built structures to operate under the different and changing conditions predicted in the future;

f) Mitigate the risk of flooding and design for flood resilience;

g) Material selection that reduce the embodied lifetime environmental impacts by considering selections on the basis of environmental preferences, e.g. proximity to site, recycled content, etc.;

h) Reduce unavoidable building related emissions and the risk of accident pollution or impact on the environment;

i) Enhance the ecology and biodiversity of the Innovation Campus by protecting existing habitat and by introducing new habitats for endemic flora and fauna.

j) Provide for a safer, more accessible, healthy and comfortable campus environment; and

k) Develop a campus and built environment that reduces crime and adverse impacts on neighbours throughout the lifetime of the development through design and good practice in construction and operation.

Additional Campus specific guidelines and requirements for some of the performance requirements nominated above are included in other sections of this DCP including Landscape, Transport and Access, Floodplain Management, Heritage, Environmental Design and Management, Water Sensitive Design and Lifestyle Health Sections.

The Innovation Campus encourages the adoption of ESD rating tools (where practical). Developments during Stage 1 have adopted various ESD initiatives and met or exceeded the minimum legislative and benchmark requirements at the time. These include;

a) iC Central : Design 2005/6, Construction 2007/8. Design ABGR of 4.0 Stars. Extensive naturally ventilated glass atrium.

b) iC Enterprise 1 : Design 2008/9 Construction 2010/11. Base building NABERS commitment of 4.5 star. Three level atrium providing natural light and internal street.

c) iC SBRC : Design 2010/11 Construction 2012/13. Design Greenstar rating of 6 stars. Adoption of Living Building Challenge – zero net energy and zero net water.

All development in Stage 2, where practical, must be designed to have equal or better rating compared to the previous equivalent type of building / development constructed at iC.

During Stage 1 Development various site wide options for water reduction were analysed including grey water / black water treatment and rain water reuse. Most systems require a minimum volume (critical mass) for treatment plants to be economically feasible. To facilitate the future adoption of the various options the following infrastructure has been installed;

a) Buildings have generally been constructed with dual plumbing to separate grey and black water.

b) Buildings have been dual plumbed for water use – potable and recycled.

c) Buildings have been installed with rain water collection tanks.

d) Infrastructure pipe work has been installed in the main services spine (along Innovation Way).

This infrastructure provides for various centralised water saving options to be implemented including;

i. Site wide rain water collection, centralised treatment, distribution and re-use in building non-potable appliances / uses.

ii. Site wide grey (and/or black water collection), centralised treatment, distribution and re-use in building non-potable appliances / uses.

Currently, collected rain water is used for irrigation (whilst landscaping is established) and façade washing. Further studies will carried out during Stage 2 development to revisit the feasibility of the centralised treatment options and possible implementation.

# 15 ENVIRONMENTAL DESIGN AND MANAGEMENT

## 15.1 Acoustics

### Objectives

a) To minimise the impact of the development on adjoining residential development.

b) To generally reduce the background acoustic levels within the site consistent with a campus environment.

### Performance Guidelines

a) Noise levels at boundaries of the site should not exceed:

   i) Day 40dB(A);

   ii) Evening 38dB(A);

   iii) Night 35dB(A).

b) Provide an acceptable acoustic environment.

c) Demonstrate that external ambient noise from traffic, other buildings and adjoining properties has been considered in determining design details for buildings and site works.

# 16 SERVICES INFRASTRUCTURE

## Objectives

a) To provide services to meet the specialist and general requirements of the Wollongong Innovation Campus.

b) To allow for the orderly, cost effective, staged upgrading of the existing services network to meet demand.

c) To provide for the on-going maintenance and upgrading of the services infrastructure within the site.

d) To support the site wide ESD objectives by incorporating services infrastructure to transport, treat and re-use water.

## Performance Guidelines

a) Services infrastructure should be developed to incorporate the following requirements:

## Water (Sydney Water)

a) The site will be serviced progressively utilising a new 150mm dia. Sydney Water Main installed within the iC services spine (adjacent Innovation Way) with connections to Sydney Water's external water main infrastructure on Squires Way, Cowper Street and Puckey Avenue.

b) The internal Sydney Water Main will be a combined Fire and potable Water Service and each development lot will have their own dedicated connections.

## Electricity (Endeavour Energy)

a) The site will be serviced progressively with Endeavour Energy infrastructure consisting of high voltage power lines and a series of substations.

b) A high voltage back-bone will be installed within the iC services spine (adjacent Innovation Way). This back-bone is connected to the Endeavour Energy grid via a dedicated connection to their North Wollongong Zone Substation and further supplementary connections to their HV network in Montague Street and Squires Way. As the HV load grows within the Campus additional HV cables are installed to increase the available capacity.

c) Ultimate development of the iC will require the augmentation of the existing supply arrangements via a dedicated HV feed from their Mount Ousley Zone Substation.

d) Development sites are supplied with power from local pad mounted Endeavour Energy sub-stations.

## Communication Services

a) A network of communication pathways shall be installed along the main services spines throughout the iC to facilitate the provision of Carrier Communication Services. At the completion of Stage 1 Development both Telstra and Optus have installed communication hubs on iC to service the Campus tenants with a range of voice and data products. Pathway provisions to roll out the National Broadband Network (NBN) to the Campus tenants are in place.

b) A network of private communication pathways shall be installed throughout the iC to facilitate the provision of private communication services to the University of Wollongong facilities.

## Sewer (Sydney Water)

a) A network of private sewer infrastructure will be installed throughout the iC to serve the developments.

b) Sewer infrastructure is installed, to suit the staging of the the development, within the main services spine (adjacent Innovation Way).

c) The private sewer network discharges to the Sydney Water external sewer infrastructure in Squires Way

d) A detailed iC water balance study was carried out at the end of stage one development (in 2011 – 2012) to review water demand and sewer discharge flows, findings were presented to Sydney Water. Sydney Water have confirmed that based on actual Stage 1 flows and forecasting to ultimate development their existing Squires Way infrastructure has sufficent capacity for the ultimate development.

## Gas (Alinta)

a) A network of private gas infrastructure will be installed throughout the iC to serve the developments. The private infrastructure is connected to Alinta gas supplies at the site boundary.

# 17 WATER SENSITIVE DESIGN

## Background

1. The development of Water Sensitive Urban Design (WSUD) on the Innovation Campus is a key objective. At the time of the initial Master Plan (2002) a Water Sensitive Design Aspects Report was prepared by Forbes Rigby (now Cardno). This Report set out the initial goals and objectives for the development of water sensitive design solutions on the iC.

2. As part of the 2011 – 2012 Precinct Plan review the University commissioned Cardno to review the Water Sensitive Urban Design principles established in 2002 and the various elements of the design implemented on site during Stage 1 development. Their report "Innovation Campus – Precinct Plan Review – 2012 – WSUD" sets out the findings and confirms the WSUD objectives for further iC Development.

3. A précis of the updated objectives and performance guidelines is presented below.

## Objectives

1. The following objectives recognise the environmentally sensitive nature of the estuarine reaches of Fairy and Cabbage Tree Creeks and the need to prevent water quality degradation.

2. The Wollongong Innovation Campus should:

   a) Encourage a flexible strategy for water re-use in order to reduce demands on potable 'town water' supply and encourage self-sufficiency with respect to high demand water use components such as garden watering and toilet flushing.

   b) Provide at source treatment solutions which target pollutants at an early stage within the urban water cycle.

   c) Provide effective control of a range of diffuse urban pollutants including suspended solids, nutrients, heavy metals and oil and grease. There should be no net increase in pollutant loads resulting from the development.

   d) Limit the transport of coarse debris and litter into waterways to reduce pollution and enhance, visual amenity.

   e) Encourage development of healthy natural aquatic systems through appropriate design of stormwater treatment wetlands.

   f) Integrate water quality controls into the built form to meet architectural and landscape objectives.

   g) Minimise long term maintenance requirements for the University of Wollongong, Wollongong City Council and the community.

   h) Balance capital costs against environmental benefits and ensure good environmental 'value for money' is achieved.

## Performance Guidelines

## Clean water

1. The cleanwater component of the water cycle includes potable water from the reticulated 'town water' supply system and run-off from 'clean' roof surfaces. These sources represent the cleanest water that is used or generated on site and is therefore, most suitable for re-use requiring only limited treatment.

a) Water efficient fittings to be installed in all new buildings.

b) New buildings to be dual plumbed to allow an alternative water source to be used for toilet flushing.

c) Treated (re-used) water plumbing to be extended in buildings to allow future connection to cooling towers.

d) Treated and untreated wastewater or recycled water mains be continued throughout the iC to allow future flexibility in alternative water source connections to each development.

e) Following Stage 1 development and moving into Stage 2 it is proposed to use the captured rainwater for recycled use within buildings. This will reduce potable water consumption and improve water quality during storm events.

## Stormwater

1. Stormwater is generated by surplus roofwater (not captured and retained by the clean water re-use system) and run-off from paved surfaces such as roadways, car parking and landscape areas. Roadways and carparks have the potential to contribute fine sediment and other pollutants such as heavy metals and trace hydrocarbons. Landscape areas also contribute fine sediments, Biological Oxygen Demand and excess nutrients.

   As anticipated in the Stage 1 Master Plan the following stormwater infrastructure has been constructed;

   i) Stormwater wetland / pond A – serving the middle portion of the site;

   ii) Stormwater wetland / pond B – serving the northern portion of the site;

   iii) Vegetated buffer strips and bio-retention swales located along the western side of Innovation Way;

   iv) Gross pollutant traps;

   v) Buffer strips along minor internal roads.

a) The storm water treatment elements already constructed on site are to be expanded and / or enhanced to include the following (refer to Fig. 29 and 30);

   i) Weir overflow to Squires Way from Pond A;

   ii) Pond C and channel link to Main pond A;

   iii) Pond D and discharge to Cabbage Tree Creek;

   iv) Vegetated buffer strips and bio-retention swales;

   v) Gross pollutant traps;

   vi) Buffer strips along minor internal roads.

## Wastewater (Grey and Blackwater)

1. The 2011 – 2012 review undertook a comprehensive analysis of grey and black water production. Grey water streams comprise wastewater generated from showers and hand basins and ‘black water’ from toilets and kitchen waste. Refer to the “iC Masterplan Review – 21012 – WSUB Rpt” for full details.

2. There has been significant reductions in estimated grey and black water production for the fully developed Innovation Campus - based on the Stage 1 analysis. This can be attributed to the implementation of water saving initiatives within the building such as water efficient appliances. Predicted grey water volumes result in unfeasible collection, treatment and re-use of this waste stream. The practice of dual plumbing new developments to split grey water from black water will therefore not be adopted for future stages of development. Sydney Water have confirmed that their existing infrastructure can accommodate the updated predicted black water flows.

   a) The wastewater performance guidelines for further development shall include;

      i) Focus on re-use of rainwater for toilet flushing / cooling tower make up purposes rather than grey water reuse;

ii) Continue to monitor sewer flows at regular intervals to ensure actual waste water flows are consistent with revised predictions.

iii) Current NSW Legislation (Water Industry Competition Act) makes treatment of wastewater for the Innovation Campus not feasible. It is understood the Legislation will be undergoing review in the future. The University will update the analysis on sewer mining in the future to see the impact on the revised Legislation.

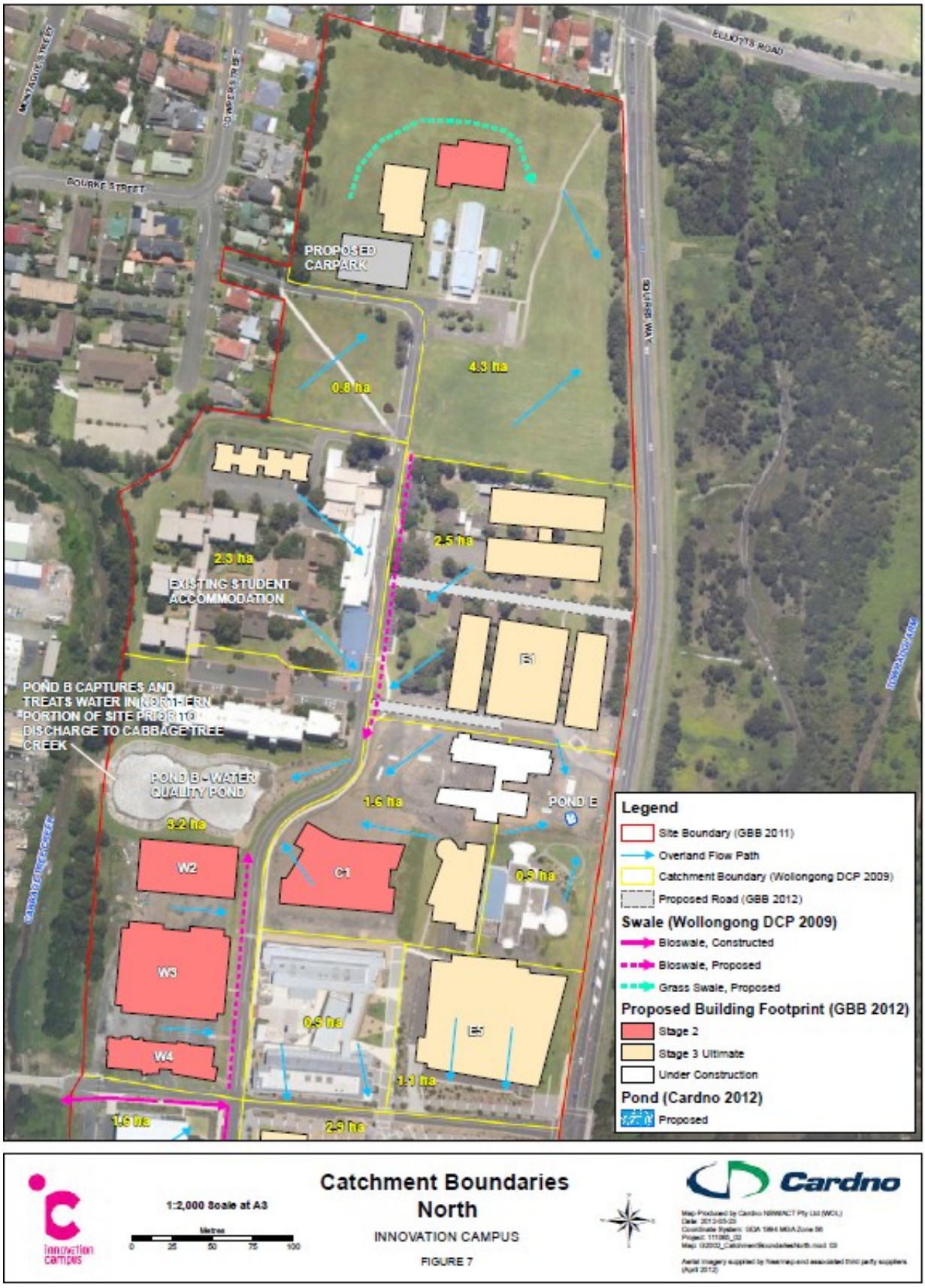



**Figure 29: Water Sensitive Design North**


**Figure 30: Water Sensitive Design South**

# 18 LIFESTYLE HEALTH

## Objectives

a) To provide a healthy environment and improved lifestyle opportunities for workers, residents, visitors and others.

Other lifestyle health requirements are described in the following sections of the Precinct Plan:

i) Landscape; and

ii) Ecologically Sustainable Development.

## Performance Guidelines

a) A walking and jogging track should be provided.

b) Opportunities for informal group recreation should be provided. Facilities may include:

i) Half court basketball; and

ii) Playing fields.

c) Staff facilities should be provided including:

i) Large staff lockers to store clothing / shoes to encourage staff to cycle to / from work;

ii) Staff showers;

iii) Bike lockers;

iv) Filtered water drinking fountains within the tea making and other similar areas;

v) Healthy food options available at on-site outlets;

vi) Condom vending machines provided;

vii) Medical services available on-site.

# 19 DISABLED PERSONS REQUIREMENTS

## Objectives

a) To provide best practice in the design of access provisions and facilities for people with a disability.

## Performance Standards

a) Site and building development must demonstrate compliance with the requirements of the Disability Discrimination Act 1992 (DDA), Building Code of Australia and all the referenced Australian Standards.

# 20 FORWARD PLANNING

## 20.1 Forward Planning Strategy

### Background

1. From the inception of the Innovation Campus Precinct Plan (in 2003) to 2012 significant infrastructure and development works have been completed.

2. The following strategy identifies further infrastructure and development works to be planned and implemented concurrently with the remaining stages of development of the Innovation Campus.

3. A number of organisations and authorities including the University of Wollongong, Wollongong City Council and State Government Agencies are responsible for the implementation of the strategy and undertaking the works.

4. The University of Wollongong will co-ordinate the planning and implementation of the works in accordance with the staging outlined in this section.

5. The Forward Planning Strategy is linked to the following stages of development

#### Total Development ($GFAm^2$)

| | | |
|---|---|---|
| 55,000m2 | Stage 1 | Complete |
| 95,000m2 | Stage 2 | |
| 135,000m2 | Stage 3 (Ultimate) | |

Section 19.2 of this Precinct Plan identifies the general order of works as a notional staging strategy.

## 20.2 Notional Staging Strategy

### Background

The staging and timing of the development of Innovation Campus will be determined primarily by tenant demand and University development.

### Objectives

a) To facilitate the effective staged development of the site.

### Performance Guidelines

a) The project should be developed from the centre outwards. Development should not occur randomly over the site.

b) Services and site infrastructure works should proceed to meet building requirements. It is not proposed to complete all roadworks or landscaping to the site in the early stages for example.

c) The Transport and Access Strategy must be reviewed and updated match the impacts of the development and Staging.

d) The Innovation Campus should generally be developed in accordance with the notional staging strategy indicated in the attached Figures.

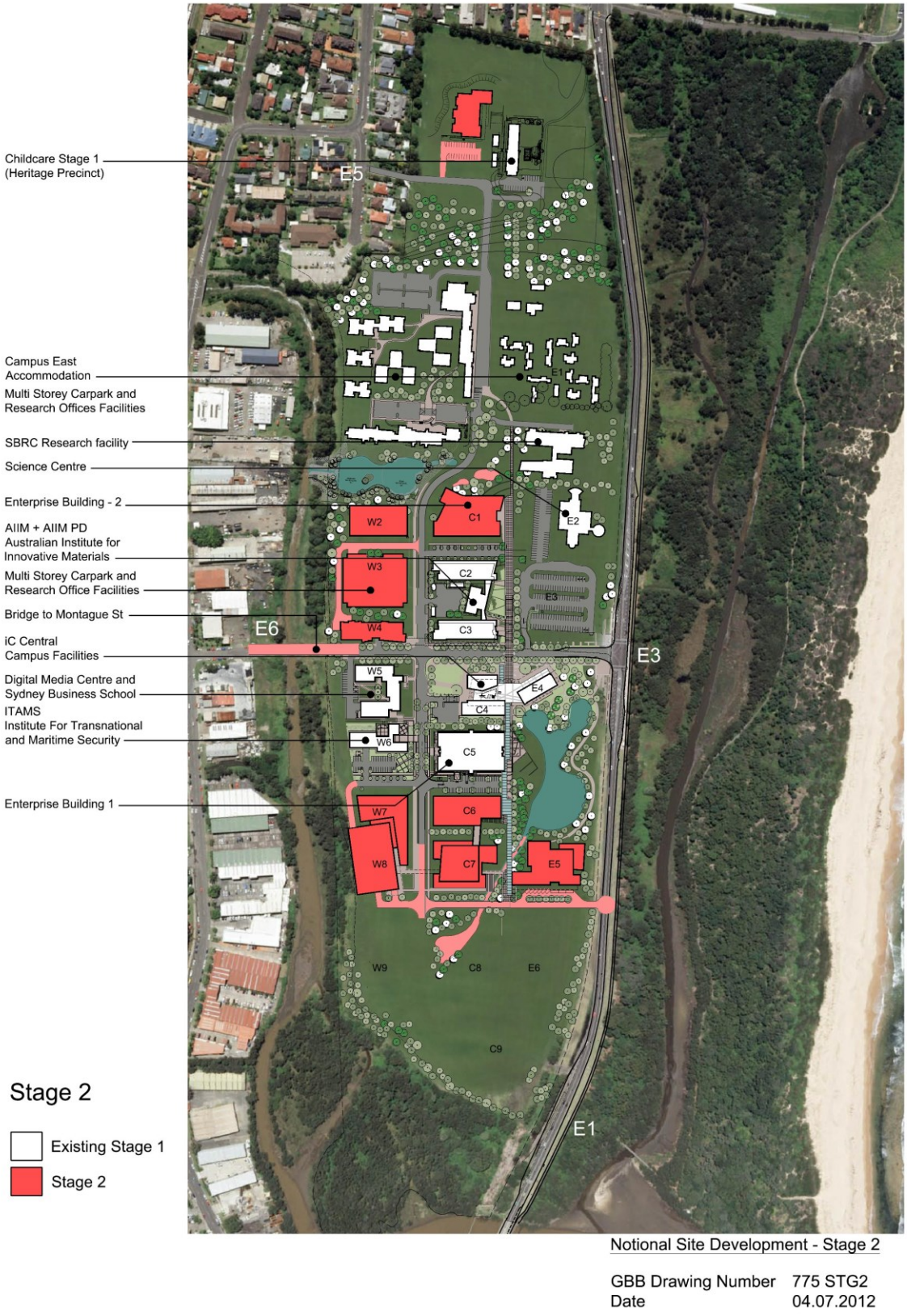



**Figure 31: Notional Staging - Stage 2**


**Figure** 32**: Notional Staging - Ultimate**