



MACQUARIE UNIVERSITY
RYDE CAMPUS MASTER PLAN
SEWERAGE RETICULATION

EXISTING SEWERAGE SYSTEM

The main Campus is serviced by two sewer carriers known as the Mars Creek Carrier and the Balaclava Road Carrier, both of which are Sydney Water assets. The accompanying plan shows the location of these sewers and their respective catchments.

In addition there is a Sydney Water sewerage system that services the University's housing villages on the north-western side of Culloden Road.

Apart from the Sydney Water sewers shown on the plan, the Campus is serviced by a network of sewerage reticulation lines owned and maintained by the University.

MASTER PLAN PROPOSALS

1. Commercial Development Sites

In accordance with Sydney Water's servicing policies, individual points of connection to a sewer main will be required for each leasehold parcel of land excised by subdivision. To comply with these policies, it will be necessary to extend Sydney Water's sewer system to provide a connection point within the boundaries of each parcel.

2. Impacts on Sydney Water's Infrastructure

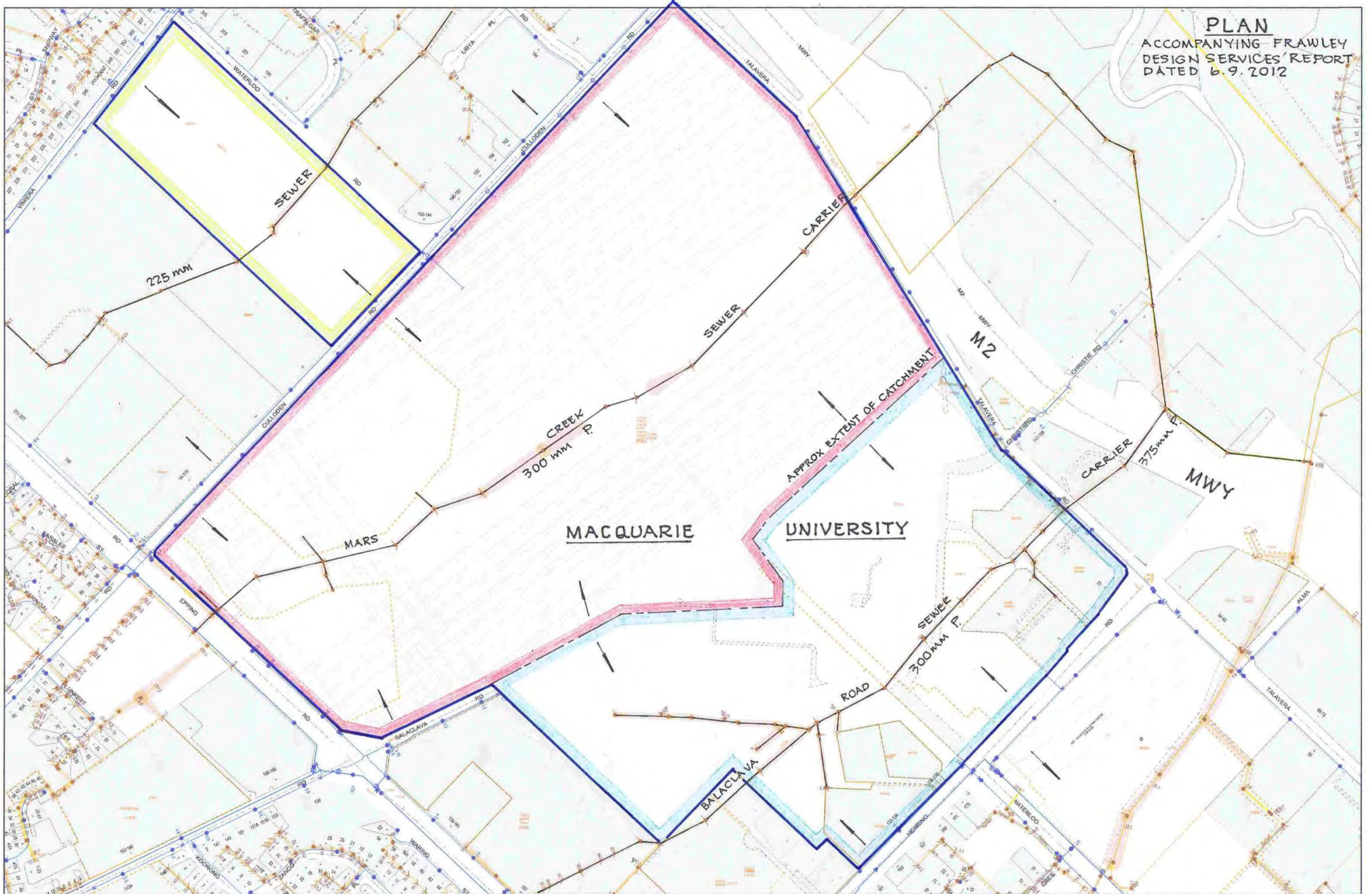
a) In early 2008 discussions were held with Sydney Water regarding the proposed expansion of Gross Floor Areas (GFA) within precincts Station South and Epping Road West. At that time it was estimated that expansion would proceed in keeping with the following timeframes:

- 2007-2012: - 75,000m² GFA
- 2012-2017: - another 75,000m² GFA
- 2017-2031: - a further 200,000m² GFA

In response, Sydney Water determined that the existing sewer system had sufficient capacity for the proposed developments of 2007-2012 and 2012-2017. However the development planned for 2017-2031 would require amplification of the Balaclava Road Carrier beneath the M2 Motorway.

b) The extent of mains augmentation based upon the current Master Plan cannot be determined accurately without further study. All the same, a preliminary examination clearly indicates that there will be no spare capacity in either sewer Carrier beyond 2017 and as a consequence, upsizing will be necessary.

Brian Frawley
MIS Aust



Appendix C – Electrical Services

28 May 2015

Level 3 Accredited Service Provider

Green Futures Pty Ltd

A.C.N. 078 387 489

Suite 407 Atlas Norwest

2-8 Brookhollow Ave

Baulkham Hills NSW 2153

Ph: 02 8861 1888

Fax: 02 8861 1899

www.jdgconsulting.com.au

Email: jdg@jdgconsulting.com.au

Mr Stephen Brain,
Taylor Thomson Whitting Pty Ltd
L3, 48 Chandos Street
St Leonards NSW 2065

Our ref: 15-2133

MACQUARIE UNIVERSITY AUTHORITY ELECTRICAL AND TELECOMMUNICATIONS INFRASTRUCTURE

Electrical

Ausgrid currently provide electricity supply to the Macquarie University site with High Voltage feeders from both Epping Zone Substation which is located to the West of the site and Macquarie Zone Substation to the East.

Internal to the University campus, High Voltage conduits and cables reticulate within the footpaths. HV feeders from Epping Zone substation enter the site from Herring Road to the north, Balaclava Road to the South West and also Culloden Road to the North West. More recent connections from Macquarie Zone substation enter the site via Waterloo Road with the majority of the site electricity supply capacity available from Macquarie Zone Substation at the South Eastern end of the site.

The greater part of the proposed development within the Macquarie University is within the South East portion of the site adjacent the Waterloo Road entry. HV feeders run within Waterloo Road footpath from Macquarie Zone substation providing supply to existing private development along University Ave and Research Park Drive. Current Ausgrid works are providing additional feeder connections along Waterloo Road from the Macquarie Zone Substation into University Avenue that will provide supply for future development around the Macquarie Park station precinct and existing buildings will be replaced with new high rise mixed development north and south of the station precinct.

Further development within the Macquarie University is proposed in the short term including refurbishment of existing buildings and existing HV infrastructure is sufficient to provide supply to these developments.

Development for the Macquarie University site within the long term will require augmentation of the current Ausgrid network to enable connection of supply including new conduit and HV cabling within the footpaths of the future roads that will be constructed to strengthen the connection between Culloden Road, University Ave and Macquarie Drive. Limited capacity for connection of additional HV feeders from Epping Zone substation and Macquarie Zone Substation are available due to existing road infrastructure constraints and the reducing capacity of the electricity supply available from the existing Ausgrid network infrastructure due to the rapidly developing commercial district of Macquarie Park adjacent to Macquarie University. It is envisaged that a new Ausgrid Zone Substation will be required to be constructed at a location that allows for connection to the existing transmission cabling to support long term development within the Macquarie University site.

Telecommunications

Telstra Corporation currently serves the site via the local Telstra telephone exchange to the north-west of the University Campus. Residential Colleges are supplied via the existing telecommunication services running along Herring Road.

New underground telecommunication conduits and pits connect services running from the Herring and Waterloo Road intersection and can accommodate additional proposed telecommunication requirements of proposed new developments.

It is important to note that at this stage no copper or fibre services have been set aside to accommodate the new developments.

New Telecommunications conduits and pits will be required to be installed within the footpath of all new road infrastructure to provide the capacity for new development to connect copper and fibre services.

Yours faithfully,

JDG Consulting



Cheralee Heynes

Director

6.4 TRANSPORT AND ACCESSIBILITY REPORT

6. SUPPORTING DOCUMENTS

Macquarie University
**Macquarie University Design
Guidelines**
Transport and Accessibility Report

Rev A | 16 March 2017

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 224322-09

Arup
Arup Pty Ltd ABN 18 000 966 165



Arup
Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney 2000
Australia
www.arup.com

ARUP

Contents

	Page	
1	Introduction	3
1.1	Background	3
1.2	Macquarie University Master Plan	3
1.3	Report Structure	3
2	Existing Transport Conditions	4
2.1	Road Network	4
2.2	Car Parking	6
2.3	Public Transport	7
2.4	Walking	9
2.5	Cycling	10
2.6	Travel Patterns	11
3	Design Objectives	14
3.1	User Groups	14
3.2	Hierarchy of Movement	15
3.3	Design Principles	16
4	Transport Strategy	17
4.1	Overview	17
4.2	Opportunities and Constraints Analysis	17
4.3	Pedestrians	18
4.4	Cyclists	19
4.5	Bus Movements	20
4.6	Future Public Transport Upgrades	22
4.7	Road Network	24
4.8	Road Cross Sections	26
4.9	Parking	27

Tables

Table 1	Macquarie University bus services
Table 2	Journey to Work Census Data – Trips to Macquarie Park
Table 3	MQU road hierarchy

Figures

Figure 1	Road Network Surrounding Macquarie University
Figure 2	Existing onsite parking
Figure 3	Bus stop locations
Figure 4	Existing pedestrian desire lines
Figure 5	Existing cycling routes
Figure 6	Main mode of transport to Macquarie University
Figure 7	MQU travel trends
Figure 8	Home location of MQU students and staff
Figure 9	Hierarchy of movement
Figure 10	Proposed pedestrian network
Figure 11	Proposed bicycle network
Figure 12	Bus services through MQU
Figure 13	Sydney Metro Northwest map
Figure 14	Sydney Metro Project
Figure 15	New access road into Precinct E
Figure 16	Changes to access arrangements and internal road network
Figure 17	Cross section – primary road
Figure 18	Cross section – secondary road
Figure 19	Car parking strategy

1 Introduction

1.1 Background

This report has been prepared to provide transport design guidelines, supporting the Campus-wide Macquarie University Design Excellence Strategy and Urban Design Guidelines.

The Design Excellence Strategy and Urban Design Guidelines are required under Condition B4 of the Concept Plan approval, and will act as a guiding document in implementing the recently completed Macquarie University Campus Master Plan 2014.

In addition to the Design Excellence Strategy and Urban Design Guidelines, the Concept Plan conditions of approval also require detailed management plans to support new development in each precinct. These include the requirement to prepare a transport and accessibility report as contained in this document.

This document supports the transport principles and objectives outlined in the Transport Accessibility Constraints and Design Solutions Report (Arup, 2010) developed for the Precinct E Concept Plan.

1.2 Macquarie University Master Plan

Macquarie University (MQU) has previously developed a Concept Plan which was granted approval on 13 August 2009. The previous Concept Plan looked at an increase in commercial and academic space within the university. The plan also proposed additional housing precincts for university purposes, upgrading the road network and rationalisation of University car parking locations.

In 2014, MQU revisited the campus vision to address the next 50 year phase of the University's growth, reflected in the Macquarie University Campus Master Plan 2014. Importantly, the Master Plan does not represent a significant change to the development potential achieved during the timeframe of the approved Concept Plan.

1.3 Report Structure

This Transport and Accessibility report, which supports the *Macquarie University Design Excellence Strategy and Urban Design Guidelines* addresses the following issues:

- Section 1 Introduction
- Section 2 Existing Transport Conditions
- Section 3 Design Objectives
- Section 4 Transport Strategy

2 Existing Transport Conditions

2.1 Road Network

2.1.1 Major Roads

MQU is surrounded by a number of major roads which carry significant traffic volumes. These roads, including the administrative classification, are:

- Epping Road (State road)
- M2 Motorway (State road)
- Herring Road (Regional road between Epping Road and Talavera Road)
- Talavera Road (Regional road between Lane Cove Road and Talavera Road)
- Waterloo Road (Local road)
- Balaclava Road (Local road)
- Culloden Road (Local road)

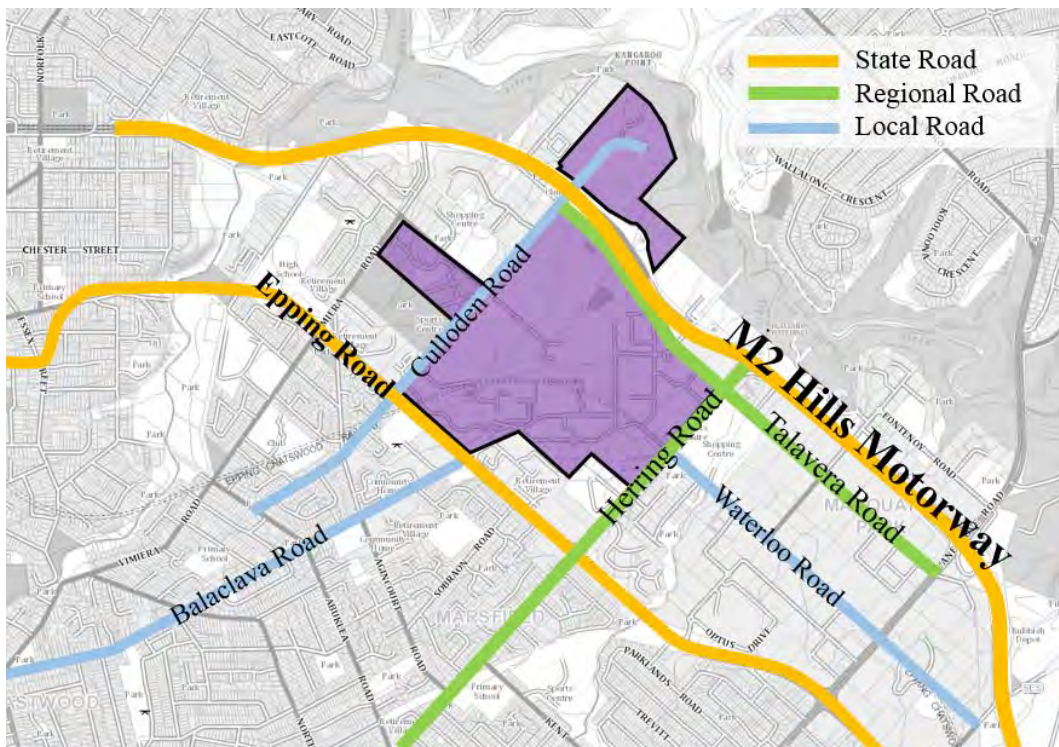


Figure 1 Road Network Surrounding Macquarie University

Source: SixMaps 2015

2.1.2 Key Intersections

The operation of the Macquarie Park road network is primarily a function of the performance of key intersections including:

- **Waterloo Road / Herring Road:** Directly adjacent to MQU and Macquarie Shopping Centre, this intersection is signalised with pedestrian crossing facilities on all approaches. The northern leg of this intersection provides direct access to MQU.
- **Epping Road / Balaclava Road:** Controlled by traffic signals with pedestrian crossing facilities on all approaches. Left turn slip lanes are provided on the north, south and west approaches. Bus priority lanes exist on Epping Road.
- **Epping Road / Herring Road:** Controlled by traffic signals with pedestrian crossing facilities on all approaches. Bus priority lanes exist on Epping Road.
- **Herring Road / Talavera Road / M2 Ramps:** The eastern leg of this signalised intersection provides vehicular access to the westbound on-ramp of the M2 Motorway. The western leg provides access to Talavera Road from the new M2 off ramp, with only left and right turn movements permitted. Pedestrian crossing facilities are provided on the eastern and northern legs. Right turn movements from Talavera Road into Herring Road are for buses only.
- **Talavera Road / Technology Place / Christie Road:** This intersection is controlled by traffic signals, with pedestrian crossing facilities on all four legs. The Christie Street leg of the intersection is an extension of the eastbound off-ramp and on-ramp of the M2 Motorway.
- **Culloden Road / Waterloo Road:** At the northern end of the campus, this intersection is controlled by a roundabout. There are no dedicated pedestrian crossing facilities provided. The southern leg (Gymnasium Road) of the intersection is off-centre with the other three approaches.

2.2 Car Parking

There are currently in the order of 4,000 on-site parking spaces across the campus in a mixture of multi-storey and at-grade car parking areas. These areas are accessed from a number of internal circulation roads. All parking is operated under a restricted parking area scheme. Short term parking and annual permits are available for students and staff.

During peak semester periods, the demand for parking near the Academic Core can significantly exceed supply, while more remote parking areas typically have some spare capacity.

Current parking areas within MQU are indicated in Figure 2.

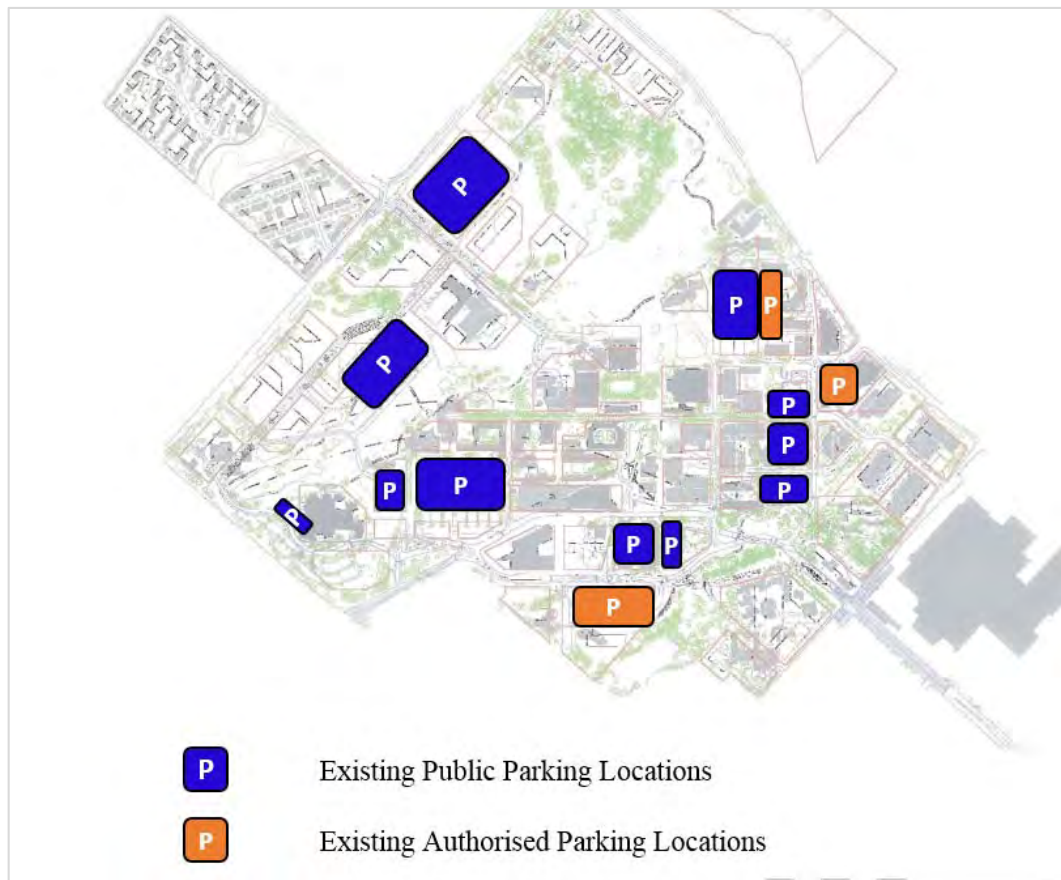


Figure 2 Existing onsite parking

2.3 Public Transport

2.3.1 Buses

MQU is served by 24 different bus routes, running to and from the campus throughout the day. Additionally, some further bus services utilise the nearby bus interchange on Herring Road adjacent to Macquarie Shopping Centre.

Bus services run at high frequencies in both the morning and evening peak periods (approximately 70 services in the peak hours) with lower frequencies at off-peak times.

University Avenue currently provides bus stop locations within MQU. Further interchange facilities are provided both within the campus and at the Macquarie Shopping Centre. The area between University Avenue and Balaclava Road is currently used as a layover facility for some terminating buses, prior to commencing their next route service.

A summary of existing bus services through MQU is presented in Table 1 and bus stop locations illustrated in Figure 3.

Table 1 Macquarie University bus services

Route No.	Route	Frequency during peak hour		Operator
		8.00am to 9.00am	5.00pm to 6.00pm	
M41	Hurstville to Macquarie	6	6	Metro Bus
M54	Parramatta to Macquarie Park	6	6	Metro Bus
140	Manly to Epping	1	1	Sydney Buses
197	Macquarie University to Mona Vale	1	3	Forest Coach Lines
288	Epping to City	3	3	Sydney Buses
290	Epping to City	5	2	Sydney Buses
292	Marsfield to City	2	2	Sydney Buses
294	Macquarie Centre to City	2	1	Sydney Buses
295	North Epping to Macquarie Centre	4	4	Sydney Buses
459	Macquarie University to Strathfield	2	2	Sydney Buses
506	Macquarie University to City	3	3	Sydney Buses
507	Macquarie University to City	2	3	Sydney Buses
518	Macquarie University to City	2	3	Sydney Buses
544	Auburn to Macquarie Centre	2	2	Sydney Buses
545	Parramatta to Chatswood	6	6	Sydney Buses
550	Chatswood to Parramatta	0	0	Sydney Buses
565	Chatswood to Macquarie University	1	2	Transdev NSW Buses

Route No.	Route	Frequency during peak hour		Operator
		8.00am to 9.00am	5.00pm to 6.00pm	
575	Macquarie University to Hornsby	4	4	Transdev NSW Buses
611	Macquarie University to Blacktown	5	7	Hills Bus
619	Castle Hill to Macquarie Park	4	2	Hills Bus
621	Castle Hill to City	2	3	Hillsbus
630	Blacktown to Macquarie Centre	2	2	Hillsbus
651	Castle Hill to Macquarie and City	2	3	Hillsbus
740	Plumpton to Macquarie Park	3	2	Busways

Source: Sydney Buses, Hills Buses, Transdev, Busways and Forest Coach Lines 2015

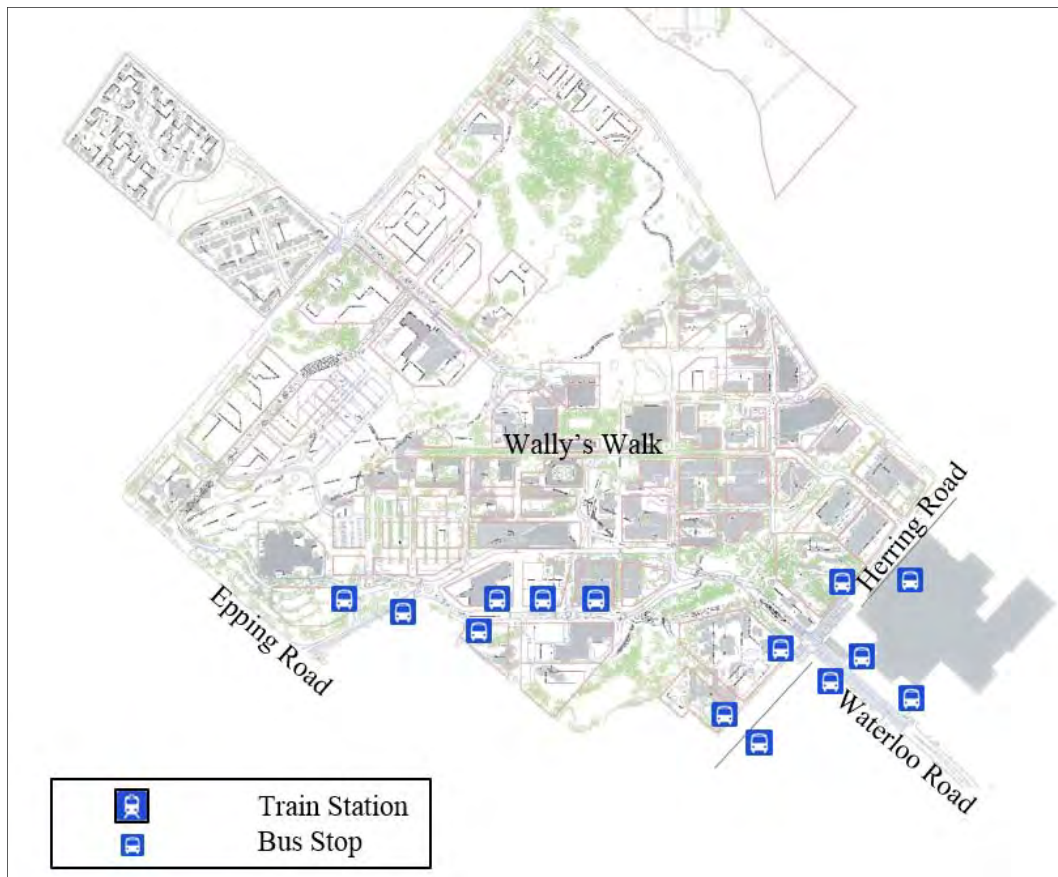


Figure 3 Bus stop locations

2.3.2 Trains

MQU is unique in that it is the only metropolitan university in Sydney with a dedicated railway station. Macquarie University Station is located only a short walk from the Academic Core, providing services between 5am and 11pm on a typical weekday. Since the integration of the station with the CityRail network in October 2009, 13 train services every hour (nine towards the city) arrive at the station during peak hours. These services provide direct rail access to Epping and Chatswood.

2.4 Walking

Universities are unique in the sense that they concentrate a variety of functions within reach of pedestrians and are considered as self contained neighbourhoods where classrooms, offices, apartments, student centres, child care facilities, performance halls, art galleries, gymnasiums, swimming pools, sports arenas, shopping places etc are all in close proximity.

Campus design is based on the notion that walking is an expected mode of transport within the university.

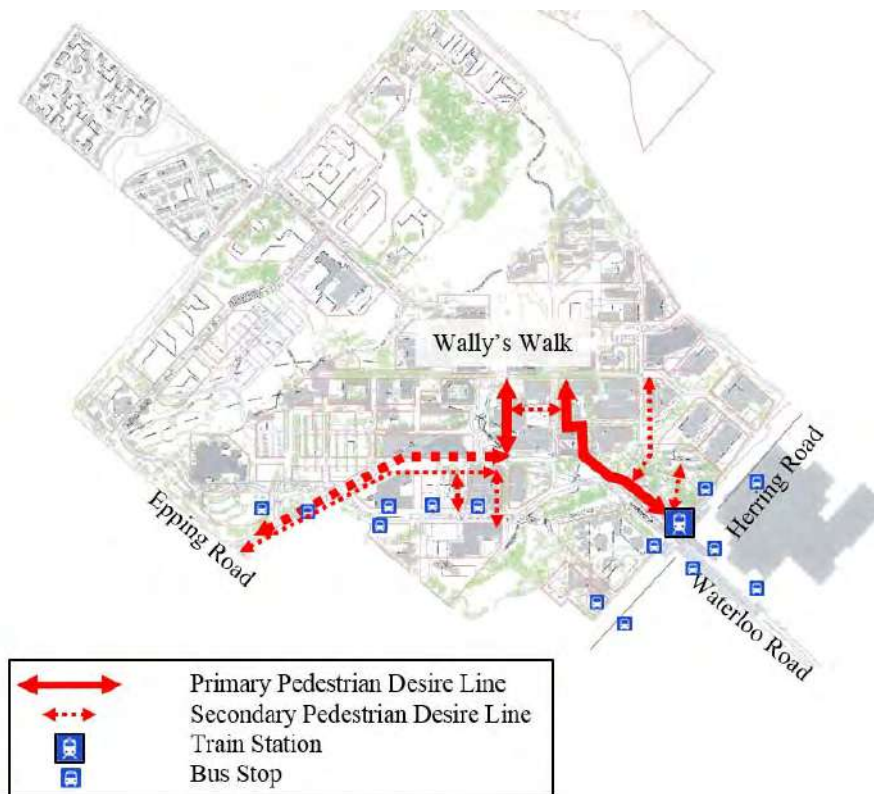


Figure 4 Existing pedestrian desire lines

The key pedestrian desire lines, shown in Figure 4 are focused on the Academic Core and transport nodes such as the railway station, bus stops and parking areas. These paths are well defined through the use of lighting, wide footpaths and seating. A series of small pathways run through the Academic Core, providing

students access between the various land uses contained within MQU. The local vehicle circulation roads within the campus do provide for pedestrian movements.

2.5 Cycling

There are presently no dedicated cycling facilities (i.e. on road bike lanes, shared paths) within MQU. Some end of trip facilities are provided, such as parking, showers and lockers. Two additional bike hubs have recently been constructed on campus, adjacent to both Eastern Road near the Central Courtyard and Western Road near the W4 car park. Each of these hubs include capacity to store 26 bikes in a secure cage, 2 solar powered showers and 28 lockers.

Cycling currently makes up only a small proportion of overall trips to MQU. Reasons for this may include:

- The University is surrounded by high traffic, major arterial roads which are not conducive to walking and cycling.
- Isolated on and off-road cycle facilities currently exist in the vicinity of the campus, but these do not yet constitute a comprehensive network.

A summary of the existing cycle network surrounding MQU is shown in Figure 5. The majority of the cycle routes located within MQU are shared with pedestrians.



Figure 5 Existing cycling routes

2.6 Travel Patterns

Existing data relating to student and staff travel patterns to MQU has been taken from 2011 Journey to Work Census data, and a user travel survey undertaken as part of a campus sustainability strategy in 2014. The 2006 census data is also analysed to gain and understanding the travel habits before the opening of the Epping to Chatswood rail line.

2.6.1 Journey to Work

The Journey to Work Census data for all trips with a final destination of Macquarie Park is presented in Table 2. It should be noted that this data only includes those people who consider Macquarie Park to be their location of full time employment and therefore excludes student trips.

Table 2 Journey to Work Census Data – Trips to Macquarie Park

Mode	2006	2011
Car as driver	74%	67%
Bus	8%	7%
Car as passenger	6%	4%
Train	5%	16%
Walked only	5%	4%
Other mode	2%	2%

As seen from the table, more recent census data indicates a mode shift from car users to public transport as a journey to work method. The proportion of car users decreased from 74% to 67%, while train users increased from 5% to 16% following the opening of the Epping to Chatswood rail line in 2009.

2.6.2 2014 Travel Survey

GTA Consultants was commissioned by MQU in July 2014 to undertake a travel demand survey of the site. A total of 967 students, staff and employees completed both physical and online surveys. The results of the travel survey with respect to access mode into MQU is shown in Figure 6. This indicates that private vehicle at 30% is still the most popular mode of transport to the University, however access by bus (21%) and rail (27%) are also popular modes of transport.

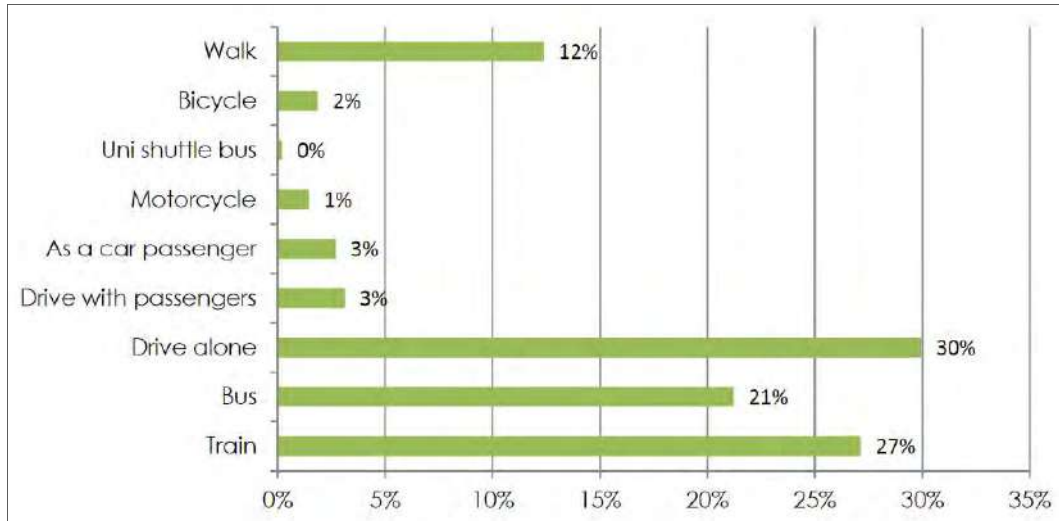


Figure 6 Main mode of transport to Macquarie University

Source: 2014 Macquarie University travel survey report (GTA Consultants)

The level of public transport usage (train and bus) has increased significantly from 13% in 2010 to 37% in 2012 (plus a proportion of 14% multi-modal trips) and 48% in 2014. Bus usage has increased from 8% to 21% over this period, whilst train usage has increased from 6% to 27%. The increase in train patronage is reflective of the improved train frequencies servicing the Macquarie University Railway Station. A summary of the travel trends to MQU is shown in Figure 7.

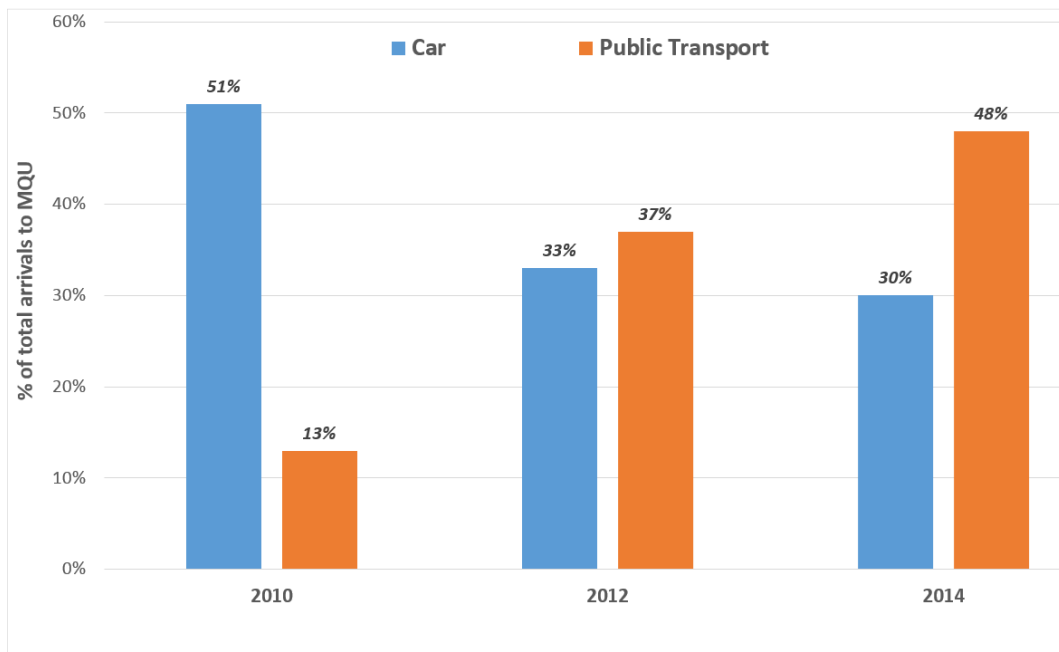


Figure 7 MQU travel trends

2.6.3 Demographic Data

The 2014 Macquarie University Travel Survey analysed the distribution of the home location of students and staff. This distribution is presented in Figure 8, and demonstrates a high proportion of students and staff live within close proximity (5km) to the campus. This is within feasible cycling distance. Further, a high number of students and staff live within a 2km radius of the campus which is a viable walking distance.

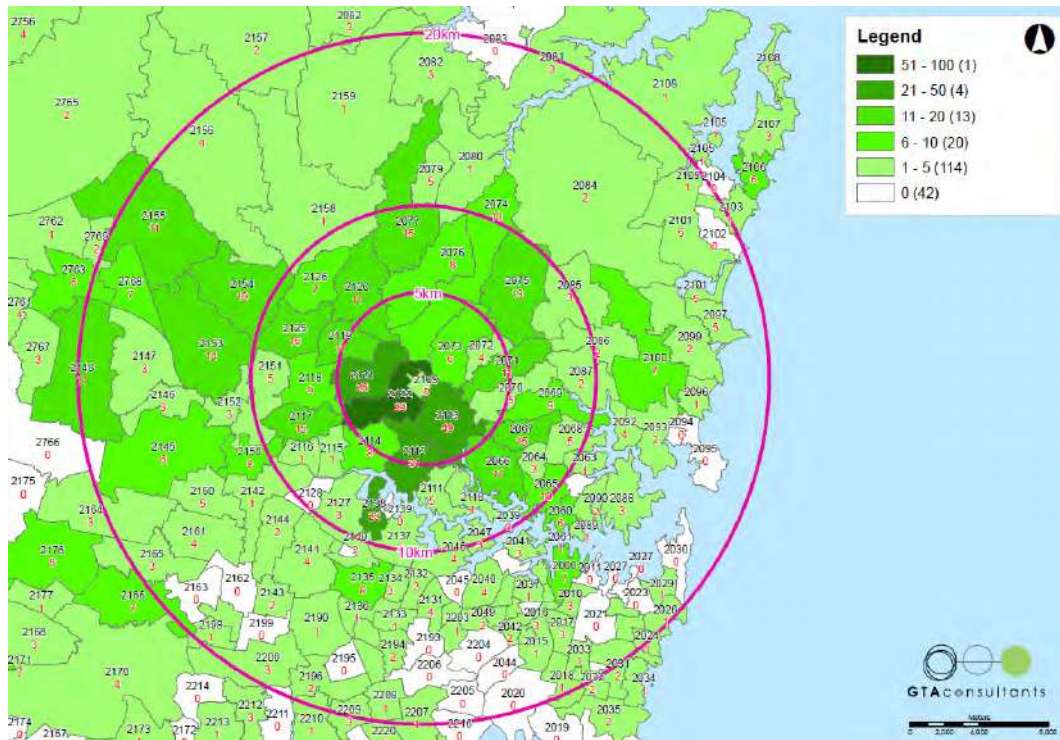


Figure 8 Home location of MQU students and staff

Source: 2014 Macquarie University travel survey report (GTA Consultants)

The majority of staff and students were found to reside in the northern Sydney area. The top five postcodes for student/staff population were as follows:

- 2122: Eastwood, Marsfield
- 2133: Macquarie Park, North Ryde, East Ryde
- 2112: Putney, Ryde, Denistone East
- 2121: Epping, North Epping
- 2138: Rhodes, Liberty Grove, Concord

3 Design Objectives

3.1 User Groups

Universities are unique in the sense that they hold distinct communities. They concentrate a variety of functions within reach of pedestrians and are considered as self contained neighbourhoods where classrooms, offices, apartments, student centres, child care facilities, performance halls, art galleries, gymnasiums, swimming pools, sports arenas and shopping places are all in close proximity. They have their own streets, squares and open spaces, where people can stroll and get together. Campus design is based on the notion that walking is an expected mode of transport within the university.

The various land uses within the Macquarie University campus define the user groups of the campus. The key land uses of Macquarie University include:

- Academic Core
- commercial and research precinct
- open space
- university housing
- parking
- sporting fields

User groups for the purposes of transport are then defined as:

- students
- staff
- commercial employees
- visitors
- through traffic
- deliveries

It will be an integral part of the wider university campus and master planning strategy to consider the needs of all of these user groups.

The flexible nature of classes and timetables influence pedestrian environment and movement. Recreational facilities invite a wide range of patrons to the university outside typical university times including weekends. University housing on the periphery of the campus also provides people presence outside typical university times. Patronage to the campus is also influenced by semester dates with typical class timetables run for approximately half of the year.

Traffic and observational data suggests that movements to the Macquarie University campus follow typical peak periods, that is, they have strong weekday AM and PM peaks although these peaks are not as pronounced as an office development.

3.2 Hierarchy of Movement

The transport strategy for the Macquarie University campus is based on a hierarchy of movement as illustrated in Figure 9.

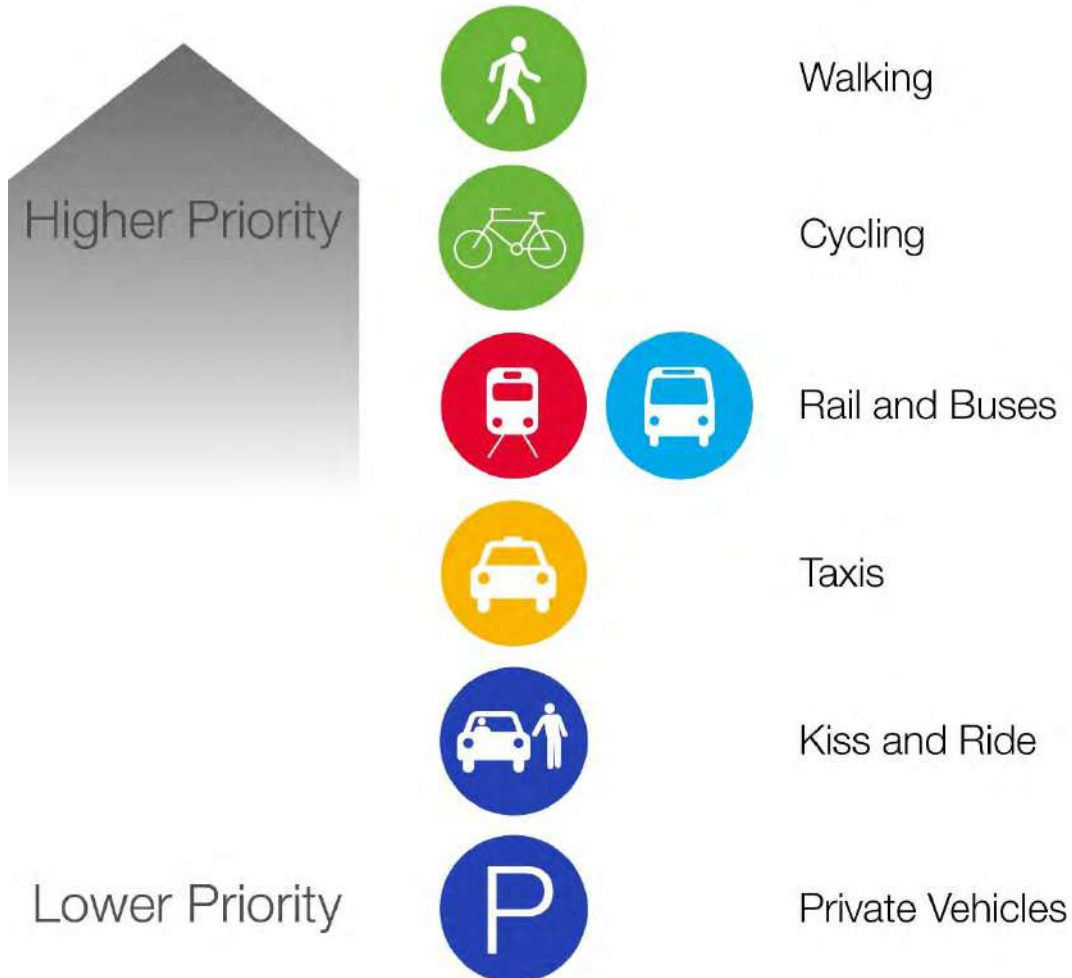


Figure 9 Hierarchy of movement

The hierarchy assumes that priority will be given to non-motorised forms of transport – walking and cycling, in addition to public transport – bus and train. The lowest priority will be given to the private car and parking. Walking is the primary mode of transport within the campus.

The hierarchy of movement supports the intention of the Macquarie University Concept Plan including:

- a 40% non-car mode share target for both academic and commercial uses.
- a cap on the total car parking supply.

Existing travel data suggests the current non-car mode share across the campus is currently significantly below the 40% non-car mode share target.

3.3 Design Principles

The following transport design principles have been developed for the Macquarie University campus:

- to provide a road, pedestrian and bicycle network for the precinct that is consistent with the intention of the Concept Plan for the overall campus
- to provide high quality, direct pedestrian access to Macquarie University Station the Academic Core and other key areas
- to provide good access to bus stops
- to separate pedestrian and vehicular traffic by providing convenient and safe movement paths for pedestrians, and, wherever possible, giving pedestrians priority at conflict points such as intersections
- to provide high quality facilities for bicycle traffic
- to minimise vehicular traffic as much as possible, particularly non-university 'rat-running' traffic
- to permit efficient access to the various car parking facilities which will generally consist of basement parking within new commercial developments
- to provide an attractive urban environment with high levels of amenity including the creation of 'entry statements' at the Balaclava Road and Herring Road entrances to the Campus
- to protect the environmental qualities and water management function of University Creek, Mars Creek and College Creek by minimising the number of water crossings
- to minimise vehicular traffic movements through the Academic Core and direct private vehicles to the periphery of the campus
- to remove all bus layovers within the campus

4 Transport Strategy

4.1 Overview

The Macquarie University Master Plan has been developed to enhance connectivity, safety and amenity for all campus users – particularly pedestrians. It is intended to direct vehicular traffic to the periphery of the campus to improve the pedestrian environment within the campus core. A new pedestrian focused landscaped entry from Herring Road is planned which will provide a direct, uninterrupted pedestrian link between Macquarie University railway station and the core of the campus.

4.2 Opportunities and Constraints Analysis

Specific opportunities and constraints that were identified in developing the transport strategy for the Macquarie University campus include:

Opportunities

- re-configured road network leading to improved facilities for pedestrians and cyclists
- enhanced access between the Academic Core and public transport nodes including Macquarie University station and the Herring Road bus interchange
- improved intersections and pedestrian road crossing points
- improved gateway to the university from external roads, particularly at the Herring Road gateway

Constraints

- limited number of vehicular and pedestrian crossings of University Creek
- topography of precinct with a significant fall from the Academic Core towards University Creek
- conflict between high volumes of pedestrians and vehicular traffic
- need to provide vehicular access to all development parcels rather than providing access to a small number of perimeter car parks
- the need to retain vehicular access to railway station service building
- potential for changes to road network to lead to an increase in non-university through traffic
- requirement to maintain bus movements (including bus layover) within the campus in the short term

4.3 Pedestrians

Macquarie University campus has been designed on the basis that walking is an expected and primary mode of transport.

The proposed pedestrian network for the Macquarie University campus is based on a network of primary, secondary and tertiary links. It is based on key attractors and the likely intensity of pedestrian movement on each link. Pedestrian desire lines will be characterised by movements between the rail station, Herring Road bus interchange, car parks, Macquarie Centre and the Academic Core. Other key nodes include student housing, recreational facilities and the private hospital. Pedestrian crossings will be provided on major desire lines, to cater for the future north-south walking links

Fundamental to the transport strategy for the MQU campus is the establishment of the Academic Core as a pedestrian precinct, with vehicular access north of Macquarie Walk (previously known as Western Road) generally limited to service and emergency vehicles.

The transport strategy proposes some key amendments to the road network layout and configuration servicing the campus compared to that presented in the initial Concept Plan. These amendments are targeted to enhance pedestrian safety and connectivity, and include

- Removal of vehicular traffic along Macquarie Drive to pedestrianise this route from Balaclava Road to Waterloo Road.
- Closure of Research Park Drive near University Avenue. This measure would facilitate the provision of a continuous, uninterrupted pedestrian connection between Macquarie University railway station and the Academic Core of the campus. This will include a new pedestrian bridge across University Creek.
- Reducing the width of the University Avenue road carriageway to support a widened footpath on the northern side of the road. The Herring Road entry to the University will require a major reconfiguration to create a 'gateway' – incorporating a wide, tree lined pedestrian oriented environment. This will create a public realm commensurate with a private road serving a pedestrian oriented campus, accommodating the increased pedestrian movements expected as the campus grows over the coming years.
- Conversion of Macquarie Drive north of Western Road (now known as Macquarie Walk) from a bus link to a pedestrian only route
- Provision of a new vehicle and pedestrian connection from Talavera Road serving Precinct E

There will also be provision of tactile pavement surfacing along Waterloo Road within the University campus. This will have the effect of slowing vehicle speeds as drivers realise they are no longer travelling along an arterial road. This will discourage drivers from utilising this road as a through route, reducing traffic volumes and providing an improved environment for both pedestrians and cyclists.

The proposed pedestrian network for the MQU campus is shown in Figure 10. The network will be a combination of footpaths along road corridors and other walkways.

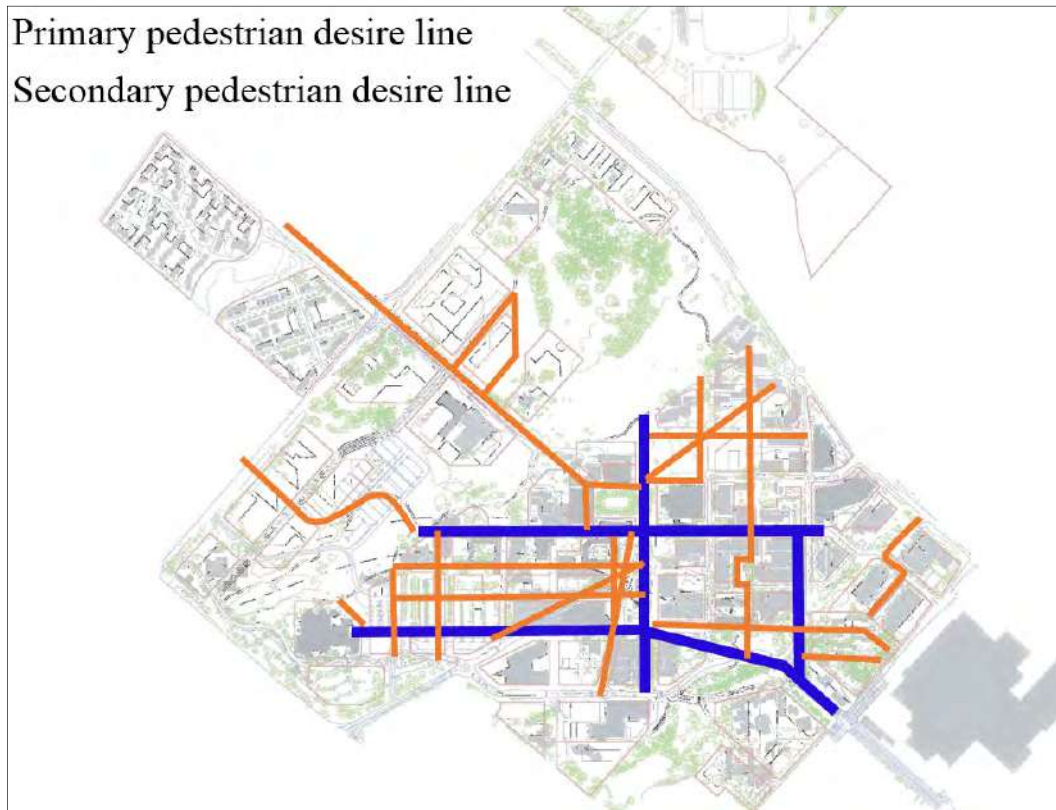


Figure 10 Proposed pedestrian network

4.4 Cyclists

Macquarie University has long promoted cycle access to the campus. The Master Plan formalises the main cycle corridors around the campus provides links to regional and district networks.

The proposed bicycle network for the MQU campus is shown in Figure 11. The network will include connections to key external bicycle routes including:

- Waterloo Road and Shrimptons Creek
- Talavera Road and Brown's Waterhole
- Culloden Road
- Epping Road

University Avenue will be the primary bicycle route though the campus. This will provide for a direct connection to the shared path on the eastern side of Epping Road and will also minimise conflicts with pedestrians in the Academic Core.

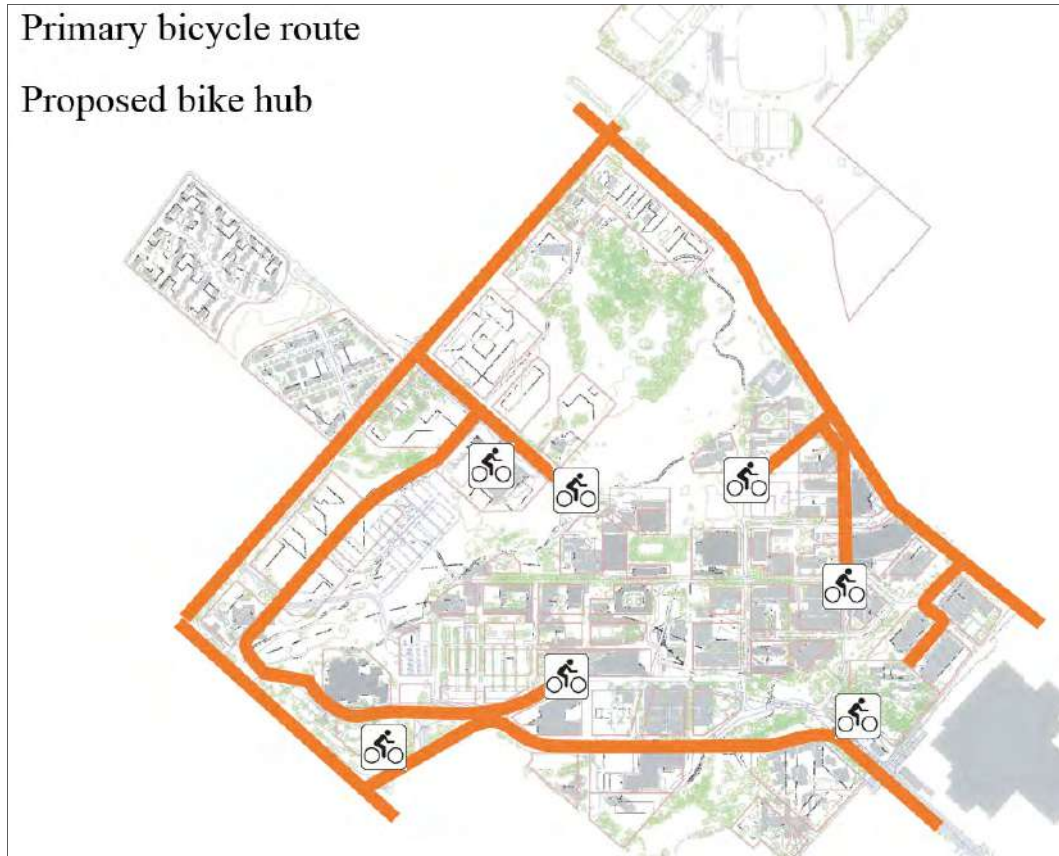


Figure 11 Proposed bicycle network

In addition to the marked bicycle routes, all roads within the university will support cycling by maintaining low vehicular traffic speeds with low vehicular traffic volumes.

Bike hubs are located on the fringe of the Academic Core so that cyclists can conveniently park their bikes close to where they need to go.

4.5 Bus Movements

Approximately 70 bus services per hour currently pass through the MQU campus. While the movement of buses through the campus is integral to providing good public transport access for students and staff, the transport strategy has been developed to minimise their impact on pedestrian movements and safety within the core of the campus.

The routing of buses through the campus has therefore been modified as part of the long term Concept Plan road layout. The transport strategy proposes to re-route all eastbound bus services that currently utilise Macquarie Drive to University Avenue. This is shown in Figure 12. Bus stops are to be located on University Avenue, with good pedestrian connections to be provided into the Academic Core.

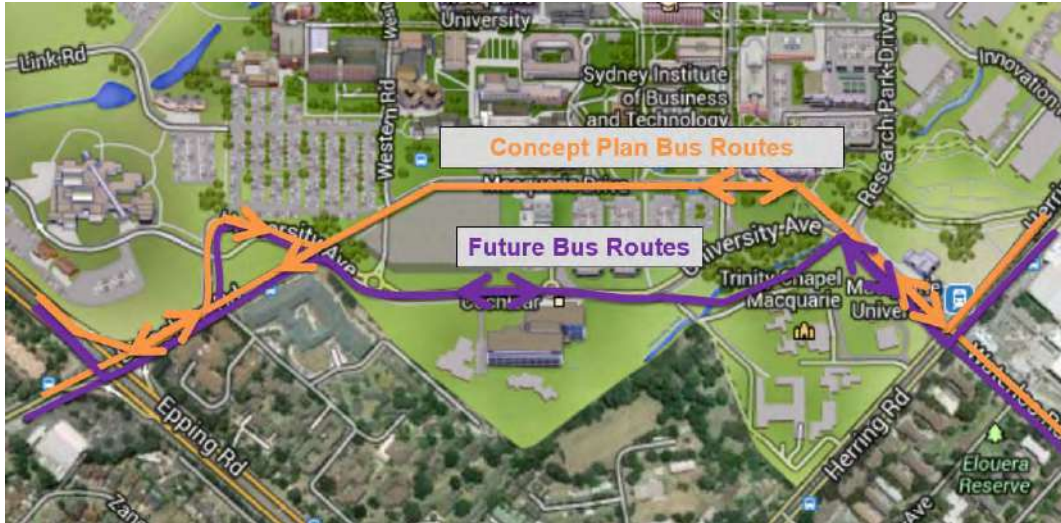


Figure 12 Bus services through MQU

Transport for NSW are currently investigating the provision of an improved bus interchange on Herring Road adjacent to Macquarie Centre to replace the existing bus interchange. It has been assumed that if this interchange is constructed, a significant proportion of existing campus bus services will continue to be routed through the university. However, the new interchange, with increased capacity, would allow for some of the less frequent services to be removed from the campus road network.

A number of bus services currently layover (i.e. extended stays between services) within the campus. The transport strategy makes provision for layover bays however these should be located well away from the Academic Core. The longer term plan is that no buses will layover on the MQU campus. This is in association with the development of the Herring Road bus interchange.

4.6 Future Public Transport Upgrades

Several public transport enhancements have the potential to benefit MQU in the future. These are described in the section below.

4.6.1 Sydney Metro Northwest

Sydney Metro Northwest (previously known as the North West Rail Link), is the first stage of Sydney Metro. The project is scheduled for completion in 2019 and will deliver eight new railway stations to Sydney's North West, providing a connection into Chatswood and the Sydney CBD. Passengers will be provided with rail services every four minutes during peak periods and every 10 minutes across the day.

The new rail line will ultimately connect with Metro City & Southwest - the second stage of the Sydney Metro network. This will provide residents of the Riverstone Town Centre with direct rail services between Bankstown, the Sydney CBD, North Sydney, Macquarie Park and the North West Growth Centre.

The Sydney Metro Northwest map is illustrated in Figure 13.

MQU will benefit from this new rail system which will have trains operating every four minutes during peak hours.

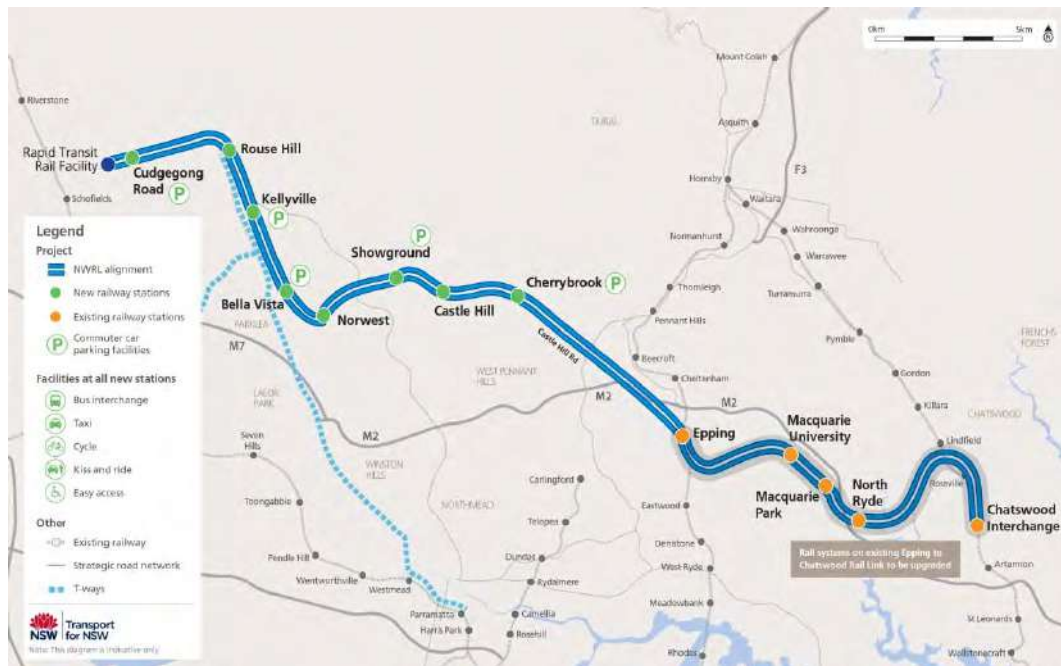


Figure 13 Sydney Metro Northwest map

Source: Transport for NSW, 2014

4.6.2 Sydney Metro City and Southwest

Sydney Metro is the next major rail project identified in Sydney’s Rail Future. Sydney Metro scope has been developed to meet the Project objectives and deliver key elements of Stages 4 and 5 of Sydney’s Rail Future.

In June 2014 the NSW Government announced the Sydney Metro concept, including the Sydney Harbour Crossing and Western Extension to Bankstown proposals. The project would extend rapid transit under Sydney Harbour, through the central business district (CBD) of Sydney and west to Bankstown, with capacity to run up to 30 trains per hour in each direction through the city on the new line.

The Project represents a major increase in the capacity of Sydney’s rail network, providing a 60 per cent increase in the number of trains in the peak periods and catering for an extra 100,000 customers per hour. Sydney Metro would significantly improve reliability across the rail network by addressing current and emerging constraints such as train crowding, platform and station crowding, and network complexity.



Figure 14 Sydney Metro Project

Source: Transport for NSW

4.7 Road Network

The road network supporting the campus will generally be based on the road alignments presented in the Concept Plan with no additional roads proposed. The plan includes a hierarchy of roads that contributes to an understanding of the land requirements, alignment and design.

The proposed road hierarchy is summarised in Table 3.

Table 3 MQU road hierarchy

Primary road (17.5m – 30m)	Secondary road (17.5m – 20m)
<ul style="list-style-type: none"> • Balaclava Road • University Avenue • Innovation Road • West Precinct Road • Research Park Drive (northern end) • Hadenfield Road 	<ul style="list-style-type: none"> • Eastern Road • Technology Place • Western Road • Gymnasium Road

Since the development of the MQU Concept Plan, there have been a number of variations to the envisaged road network layout. These variations are primarily the result of enhancements to the pedestrian network within the campus. Variations to the road network compared to that initially envisaged in the Concept Plan includes the following:

- The primary roads are no longer 3 or 4 lanes as described in the Concept Plan, they are now 2 lanes. The secondary roads and shareways are the same as the Concept Plan
- Closure of the southern end of Research Park Drive (connecting with University Avenue) to facilitate the provision of a continuous, uninterrupted pedestrian connection between Macquarie University railway station and the Academic Core of the campus
- Conversion of Macquarie Drive north of Western Road (now known as Macquarie Walk) from a bus link to a pedestrian only route
- Realignment of University Avenue to support vehicular access into commercial developments with Precinct E
- Conversion of the existing one-way section of Balaclava Road to two-way operation to enhance pedestrian and vehicular movements in the precinct. This measure would alleviate the existing issue of buses impacting on traffic movements as they turn left into Hadenfield Avenue, as well as safety issue of bus passengers having to cross two lanes of northbound traffic on Hadenfield Avenue.
- Provision of a new access road into Precinct E which connects to Talavera Road (see Figure 15)

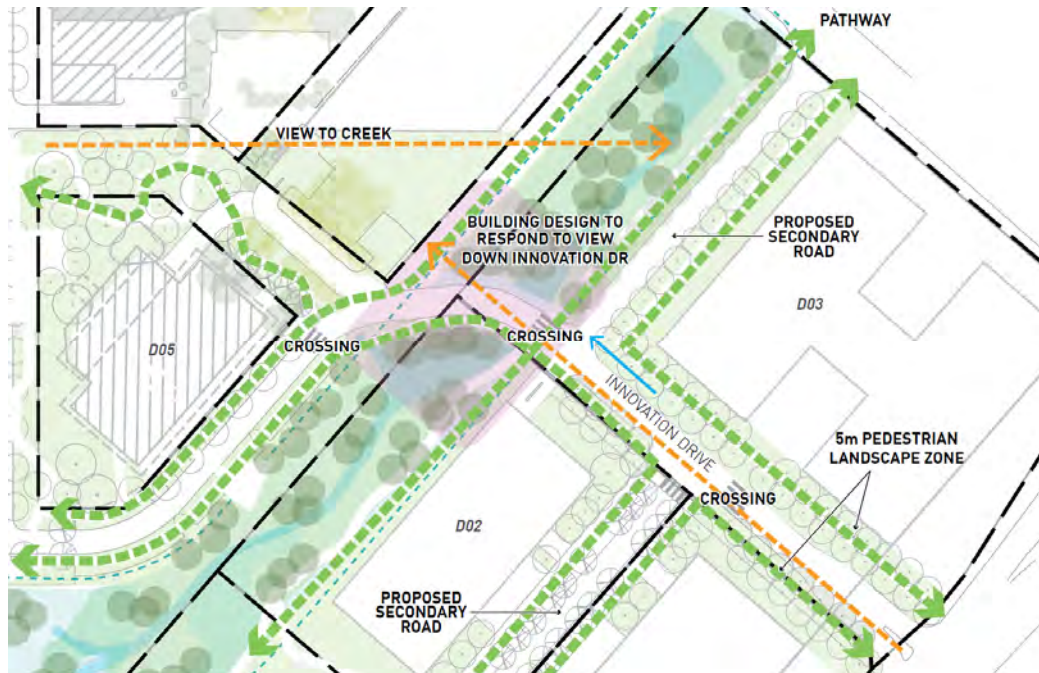


Figure 15 New access road into Precinct E

- Reducing the width of the University Avenue road carriageway to support a widened footpath on the northern side of the road.

These changes to the road network are summarised in Figure 16 below.

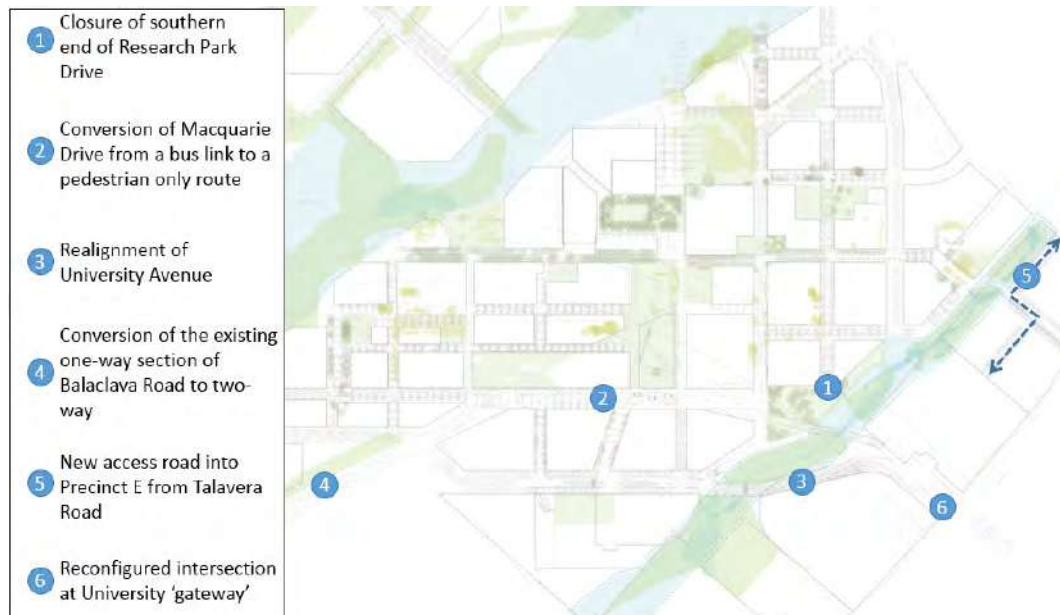


Figure 16 Changes to access arrangements and internal road network

4.8 Road Cross Sections

Road cross sections for primary and secondary roads within the campus are illustrated in Figure 17 and Figure 18 respectively.

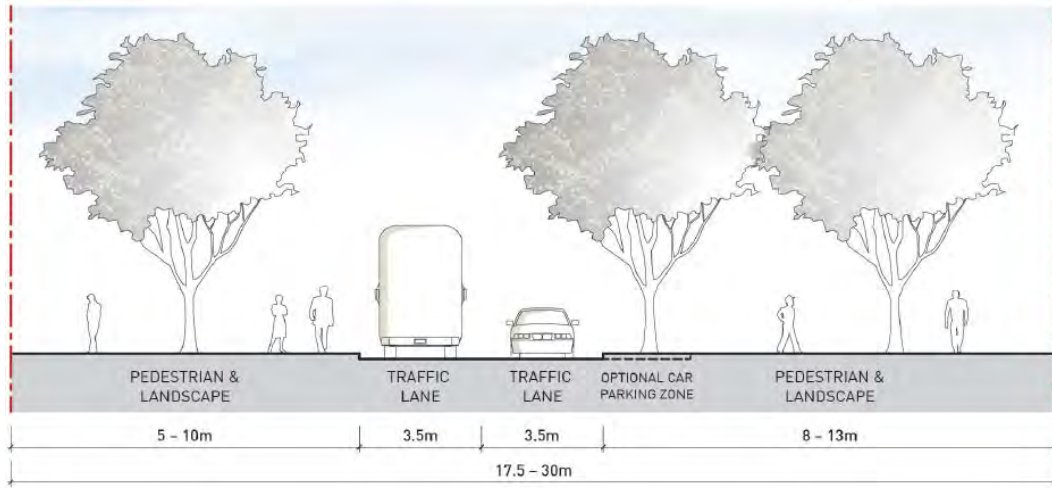


Figure 17 Cross section – primary road

Source: Cox Richardson architects

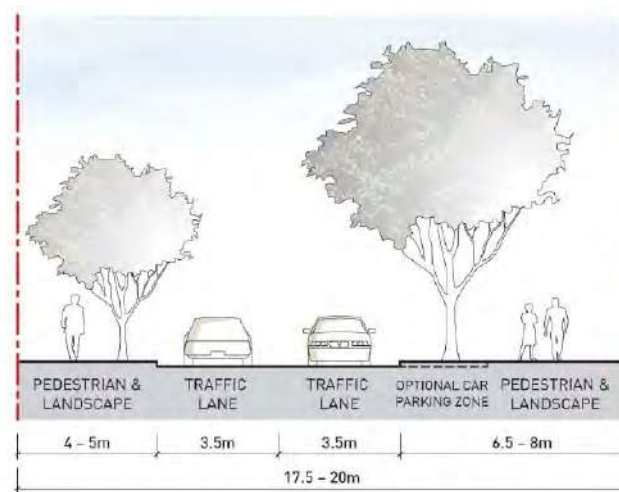


Figure 18 Cross section – secondary road

Source: Cox Richardson architects

4.9 Parking

4.9.1 Parking Strategy

The transport strategy has been developed to remove traffic from the campus core by locating car parking areas at the periphery of the campus. As presented in Figure 19 below, three new major car parking areas are proposed on the western and northern boundaries of the campus – providing over 3,000 parking bays. The parking structures will be linked directly to the pedestrian network, providing convenient and safe access to and from the Academic Core.



Figure 19 Car parking strategy

4.9.2 Parking Controls

Each new development within the MQU campus will generally be self-sufficient in terms of parking with parking to be contained within the basement of each development where appropriate. The Macquarie University Concept Plan condition (B1) permits a maximum of 10,800 spaces across the campus.

Parking for commercial uses will generally be provided at a rate of no more than 1 space per 80m² GFA. There is, however, some flexibility in the provision of parking across the campus, i.e. some developments could have a higher rate of parking and others a lower rate of parking, as long as the overall maximum number of spaces for the precinct is not exceeded.

It would be expected that on full-development of the campus, sites closest to the railway station would have lower parking rates than those located furthest from the railway station.

6.4 CONSULTATION REPORT

6. SUPPORTING DOCUMENTS

Consultation Report

Background

The Campus-wide Design Excellence Strategy and Urban Design Guidelines were initiated by Macquarie University in 2014. The objective of the Guidelines is to develop the Concept Plan for the whole Campus (with the exception of Precinct E and the part of Precinct D which is subject to the Urban Activation Precinct) and satisfy those Concept Plan Conditions of Approval required to enable submission of Development Applications within the Campus.

Status

Meetings have taken place with City of Ryde Council and the Department of Planning and Environment to discuss the Guidelines. Consultation has also been undertaken with the relevant service providers. Consultation will be ongoing with Council and the Department up until finalisation of the Guidelines. Further consultation and meetings will be undertaken with RMS, Transport for NSW, Council and the Department to develop the guidelines for Precincts E and D when the Urban Activation Precinct is gazetted.

Email and Written Correspondence			
Date	Subject	Between / To / From	Company
18 December 2015	University Creek, Macquarie University Notification under <i>State Environmental Planning Policy (Infrastructure) 2007</i>	Tim Henderson	TTW
		Guna Verrasingham	City of Ryde
20 January 2015	Notification of changes to works in University Creek	Guna Verrasingham	City of Ryde
		Tim Henderson	TTW
2 May 2011	Controlled Activity Approval – Modification works along Macquarie University Creek, Macquarie University	Greg Brady	NSW Office of Water
		Mark Broomfield	MQU
Various	Macquarie University – University Creek CAA - Macquarie University, University Creek CAA changes	Gina Potter	NSW Trade and Investment
		Stephen Brain	TTW
26 May 2015	MQU Current Ausgrid works and current and proposed developments	Cheralee Heynes	JDG Consulting
		Cedric Halforty	Ausgrid
3 June 2015	Preferred point of entry and high voltage connection for the establishment of customer substation	Cheralee Heynes	JDG Consulting
		Cedric Halforty	Ausgrid
Various	Multiple statements of available pressure and flow – Balaclava and Culloden Roads	Robert Wickham	Sydney Water
N/A	Macquarie University Ryde Campus Master Plan sewerage reticulation	Brian Frawley	Frawley Design Services Pty Ltd
N/A	Sydney Water services plans	N/A	Sydney Water
N/A	Jemena services plans	N/A	Jemena

Meetings (refer to attached meeting notes)

Date	Subject	Between	Company
18 March 2015	Briefing on Campus-wide Guidelines with Department of Planning and Environment		
		Simon Bennett	DPE
		Mark Broomfield	Macquarie University
		Cameron Kline	Macquarie University
		John Richardson	Cox Richardson
		Ian Connolly	Cox Richardson
		Kim Vandenberg	Cox Richardson
		Kate Tudehope	JBA
16 April 2015	Briefing on Campus-wide Guidelines with City of Ryde Council		
		Dominic Johnson	City of Ryde
		Lexie Macdonald	City of Ryde
		Meryl Bishop	City of Ryde
		Mark Broomfield	Macquarie University
		Cameron Kline	Macquarie University
		John Richardson	Cox Richardson
		Kim Vandenberg	Cox Richardson
		Kate Tudehope	JBA
29 May 2015	Follow-up Discussion on Campus-wide Guidelines with City of Ryde Council		
		Lexie Macdonald	City of Ryde
		Meryl Bishop	City of Ryde
		Cameron Kline	Macquarie University
		Ian Connolly	Cox Richardson
		Kate Tudehope	JBA

Macquarie University Correspondence

1. TTW correspondence with Council and Office of Water
2. JDG correspondence with Ausgrid
3. DBA correspondence with Sydney Water and Jemena

1. TTW correspondence with Council and Office of Water



TaylorThomsonWhitting

18/12/2014

131406

John Neish
General Manager
Ryde City Council
Locked Bag 2069
NORTH RYDE NSW 1670

Attention: Guna Verrasingham

**UNIVERSITY CREEK, MACQUARIE UNIVERSITY
NOTIFICATION UNDER STATE ENVIRONMENTAL PLANNING POLICY
(INFRASTRUCTURE) 2007**

Dear Guna,

We refer to the above application for the rehabilitation and enhancement of University Creek within the grounds of Macquarie University. This letter follows on from earlier consultation undertaken in 2010 between Macquarie University and Council officers on this proposal.

The proposal involves a range of works, including re-aligning and re-contouring University Creek, stabilisation works, re-vegetation of the riparian corridor, and provision of a new pedestrian bridge. Overall, the proposed works seek to provide an improved water quality, flooding and public domain outcome for Macquarie University and the City of Ryde. The Stormwater Management Plan and Plans of the proposed rehabilitation works are attached for your information.

NSW Office of Water provided a Controlled Activity Approval for the works under the Water Management Act 2000 on 2 May 2011 (10 ERM2010/0230).

Under clause 111(1) of the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP), development for the purposes of stormwater management systems may be carried out by or on behalf of a public authority without consent on any land.

For the purposes of the Infrastructure SEPP:

- Macquarie University is a public authority; and
- a stormwater management system means works for the collection, detention, distribution or discharge of stormwater, stormwater quality control devices, and stormwater reuse schemes.

Structural

Civil

Traffic

Facade

Engineers

TTW Group

Directors

RT Green BE Hons MEngSc FIE Aust
D Carolan BE Hons MEngSc MIEAust
R Mackellar BE Hons MIEAust
B Young BE Hons MIEAust
M Eddy BE Hons MIEAust
R McDougall BE MIEAust

Technical Directors

P Yannoulatos BE Hons Dip LGE MIEAust
D Genner BE Hons MIEAust
S Brain BE Hons MIEAust
D Jeffrey BE MIEAust
N Burdon ME(Civil) MIPENZ MIEAust
H Nguyen BScEng MIEAust
R Pratikna BE MConstMgt MIEAust

Associate Directors

S Schuetze BE Hons MIEAust
M Rogers BSc Hons MIEAust
D Taylor BE Hons MIEAust
J Tropiano BE MIEAust
P Lambley BE MIEAust
J Haling BE Hons MIEAust
D Mayne MEng Hons MIEAust
K Berry BE Hons MIEAust
G Fowle BE Hons MIEAust
W Alexander BE Hons MIEAust
R Milsted MEng Hons MIEAust

Associates

S Nixon BE Hons MIEAust
N Biason BE MIEAust
N Khambatta BE Hons BCom MIEAust
M King BE Hons MIEAust
Jonathan Miles BE Hons
G Petschack JP
M Raddatz

Manager Facade

N McClelland BSc BE Hons MBA MIEAust

The proposed rehabilitation and enhancement works to University Creek are therefore classified as Development Permitted Without Consent under the Infrastructure SEPP.

Pursuant to clause 15 of the Infrastructure SEPP (consultation with Councils – development with impacts on flood liable land), we are now formally notifying you of the proposal, and we request that you provide any comments within 21 calendar days of the date of this letter.

It should be noted that Cox Richardson are also currently notifying RailCorp in accordance with clause 85/86 of the Infrastructure SEPP. We have notified the Office of Water of the changes to the approved scheme.

Should no correspondence be received in writing within the requested timeframe, we will assume that Council has no comment regarding this amended development and we will finalise the proposed works.

Should you require anything further please contact the undersigned.

For and on Behalf of

Taylor Thomson Whitting (NSW) Pty Ltd



TIM HENDERSON

Engineer

P:\2013\1314\131406\Letters\141216 Council notification.doc

*Attached: Original and amended plans
Stormwater Management Plan*

Tim Henderson

From: Guna Veerasingham [GVeerasingham@ryde.nsw.gov.au]
Sent: Tuesday, 20 January 2015 3:04 PM
To: Tim Henderson
Subject: RE: Notification of changes to works in University Creek (5 of 5)

Categories: 131406

Hi Tim,

I have reviewed the University Creek Stormwater Managements Plan. I also refer to TTW letter dated 18 December 2014.

The report confirmed that post developed outflow rate (Basin 1) from the Macquarie University will be much less than the pre developed flow rate. This is acceptable to City of Ryde. Please note that the models were not provided to City Ryde for its review. It is noted the report did not address the water quality component in details.

Therefore, City of Ryde is unable to comment on the report findings.

Please note that, I did not receive any formal letter from the Macquarie University.

Kind Regards

Guna Veerasingham
**Team Manager Stormwater
Infrastructure Integration**



This email is privileged and confidential. If you are not the intended recipient please delete the message and notify the sender. The use, copying or distribution of this message or any information it contains, by anyone other than the intended recipient is prohibited. Unless stated otherwise, this email represents only the views of the sender and not the views of the City of Ryde. Please note: information provided to Council in correspondence may be made publicly available, in accordance with the Government Information Public Access Act (GIPA Act) 2009.

From: Tim Henderson [<mailto:Tim.Henderson@ttw.com.au>]
Sent: Thursday, 18 December 2014 3:39 PM
To: Guna Veerasingham
Cc: Stephen Brain; robert.alcock@mq.edu.au; Ian.Connolly@cox.com.au; Cameron Kline
Subject: Notification of changes to works in University Creek (5 of 5)

Email 5 of 5

Tim Henderson
Civil Engineer



L3, 48 Chandos St, St Leonards, NSW 2065

T: +61 2 8437 7206

W: www.ttw.com.au



TTW Sydney will be closed from the 24th December 2014 and re-open on the 5th January, 2015. We wish you a safe and joyous break and a happy New Year.



Please consider the environment before printing this email

From: Tim Henderson

Sent: Thursday, 18 December 2014 3:36 PM

To: 'gunav@ryde.nsw.gov.au'

Cc: Stephen Brain; 'robert.alcock@mq.edu.au'; 'Ian.Connolly@cox.com.au'; 'Cameron Kline'

Subject: Notification of changes to works in University Creek (1 of 5)

Guna,

Find attached our covering letter for the amended works on University Creek.

Also attached is the updated Stormwater Management Plan.

The following emails contain the drawings showing the proposed changes.

Regards,

Tim

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

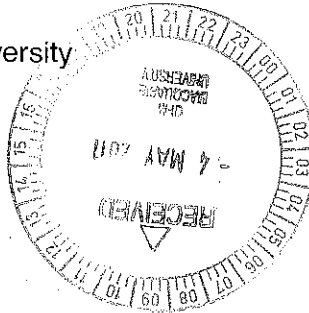


Contact: Greg Brady
Phone: 02 9895 6154
Fax: 02 9895 7501
Email: greg.brady@ohn.nsw.gov.au

Macquarie University
Office of Major Projects
Building Y6A Macquarie University
North Ryde NSW 2109

Our ref: 10 ERM2010/0230
File No: 9053772
Your Ref:

Attention: Mark Broomfield



2 May 2011

Dear Mr Broomfield

Re: Controlled Activity Approval – ERM2010/0230 - Issue Date 2 May 2011
Modification works along Macquarie University Creek, Macquarie University

I refer to your application dated 15 June 2010 for a Controlled Activity Approval under the Water Management Act 2000. The NSW Office of Water acknowledges receipt of your application fee of \$1,757.

Controlled Activity Approval

The NSW Office of Water has determined to grant you a Controlled Activity Approval. Please find enclosed the Notice of Determination together with your Controlled Activity Approval.

Your Controlled Activity Approval will expire on 2 May 2016.

Please read carefully the conditions of the Controlled Activity Approval and seek clarification from the NSW Office of Water for any condition not fully understood.

You are required to provide a copy of this Approval and any annotated documentation to your certifier and to all contractors engaged in the implementation of these works or the Vegetation Management Plan (VMP) to ensure they are also aware of the conditions.

The Controlled Activity Approval must be kept current until all works have been completed. Applications for extension of the Controlled Activity Approval should be made to the NSW Office of Water, in writing, at least one month prior to the expiry date.

Security Deposit

The NSW Office of Water acknowledges receipt of your security which will be held until such time as the works, rehabilitation and any specified maintenance period related to this Controlled Activity Approval are complete. If the application is amended or the scope of the works are changed, then the value of the security may also be amended. Details of the security are as follows:

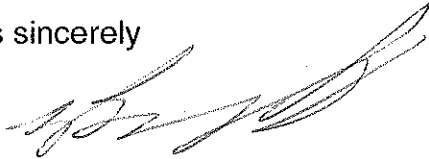
Table with 3 columns: Registration Number, Provider, Value. Rows include registration numbers 195448840 and 194025395, both provided by NAB, with a value of \$132,500.

Any security held by the NSW Office of Water for these works will only be returned after the reporting requirements and conditions of the approval have been met. If necessary, the works will be inspected by an officer from the NSW Office of Water to confirm that the requirements and conditions of the approval have been met. The current fee includes an inspection for each stage as listed. However, if extra inspections are required then additional fees will be incurred.

Additional fees may also apply if amendments or an extension to this Controlled Activity Approval are requested. Please contact the NSW Office of Water for advice on fees and charges.

Any questions regarding this correspondence should be directed to Greg Daley,
greg.daley@water.nsw.gov.au

Yours sincerely



Greg Brady
Licensing Officer
NSW Office of Water
Licensing South

Enc:
Notice of Determination
Controlled Activity Approval
Annotated plans

Tim Henderson

From: Stephen Brain
Sent: Monday, 2 February 2015 2:57 PM
To: Tim Henderson
Subject: FW: FW: 10 ERM 2010/0230/File No: 9053772 for Macquarie University - University Creek CAA - Macquarie University, University Creek CAA changes

From: Gina Potter [mailto:gina.potter@dpi.nsw.gov.au]
Sent: Friday, 16 January 2015 5:27 PM
To: Stephen Brain
Subject: Re: FW: 10 ERM 2010/0230/File No: 9053772 for Macquarie University - University Creek CAA - Macquarie University, University Creek CAA changes

Ok.

I would like you to send me the plans by mail.

this is to include:

- a cover sheet that references exactly what plans are changing from existing CAA to new CAA
- 1 x overall plan that clearly shows old works vs new works
- 2 x altered plans

A cheque for \$298. This is our hourly charge x 2. If it takes longer than 2 hours there will be a further charge. Please note that this CAA expires in June 2016. If the works are not completed by that time an extension will be required. The bonds we are currently holding for ERM10-0230 will remain in place.

regards,

Gina Potter | Water Regulation Officer
Water Regulation Group
NSW Trade & Investment | Level 11, 10 Valentine Avenue Parramatta | P O Box 3720 Parramatta 2124
T: +61 2 8838 7566 | F: +61 2 8838 7554
E: gina.potter@dpi.nsw.gov.au

On 14 January 2015 at 15:12, Stephen Brain <Stephen.Brain@ttw.com.au> wrote:

Gina

Kate Tudehope from JBA advised that:

The works are being undertaken as 'Development without Consent' under the Infrastructure SEPP. We're preparing a Review of Environmental Factors (REF) to accompany the application. The REF will be authorised / approved by the University, not Council.

As you know, we had a CAA for a previous REF. Whilst this is as completely new REF, we're just seeking to have the CAA amended.

As part of the consultation requirements under the Infrastructure SEPP, and separate to the CAA, we intend to consult with Council about the proposal.

Do Macquarie University need to provide anything further for your requirements?

Kind regards

Stephen Brain

From: Kate Tudehope [mailto:KTudehope@jbaurban.com.au]

Sent: Wednesday, 14 January 2015 1:45 PM

To: Stephen Brain

Cc: 'Robert Alcock'; 'Ian Connolly'; Darren Mansfield; Choong Oi

Subject: RE: 10 ERM 2010/0230/File No: 9053772 for Macquarie University - University Creek CAA - Macquarie University, University Creek CAA changes

Hi Stephen,

That's correct. The works are being undertaken as 'Development without Consent' under the Infrastructure SEPP. We're preparing a Review of Environmental Factors (REF) to accompany the application. The REF will be authorised / approved by the University, not Council.

As you know, we had a CAA for a previous REF. Whilst this is as completely new REF, we're just seeking to have the CAA amended.

As part of the consultation requirements under the Infrastructure SEPP, and separate to the CAA, we intend to consult with Council about the proposal.

Happy to discuss,

Kate.

Kate Tudehope / Senior Planner / JBA



Office [+61 2 9956 6962](tel:+61299566962) Direct [+61 2 9409 4932](tel:+61294094932)

JBA - urban development services / jbaurban.com.au / [@JBAnsw](https://twitter.com/JBAnsw)

Level 7, 77 Berry Street, North Sydney (PO Box 375, North Sydney NSW 2059)

This e-mail is intended only for the use of the individual or entity named above and may contain information that is confidential and privileged. If you are not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this e-mail is strictly prohibited. If you have received this e-mail in error, please notify us by return e-mail or telephone, and delete the original message.

From: Stephen Brain [<mailto:Stephen.Brain@ttw.com.au>]
Sent: Wednesday, 14 January 2015 11:31 AM
To: Kate Tudehope
Cc: 'Robert Alcock'; 'Ian Connolly'; Darren Mansfield; Choong Oi
Subject: FW: 10 ERM 2010/0230/File No: 9053772 for Macquarie University - University Creek CAA - Macquarie University, University Creek CAA changes

Kate

I understand the works are not a section 96 or a new DA, can you confirm?

Thanks

Steve Brain

From: Gina Potter [<mailto:gina.potter@dpi.nsw.gov.au>]
Sent: Tuesday, 6 January 2015 12:42 PM
To: Stephen Brain
Cc: Robert Alcock; Ian Connolly; Choong Oi; Darren Mansfield
Subject: Re: 10 ERM 2010/0230/File No: 9053772 for Macquarie University - University Creek CAA - Macquarie University, University Creek CAA changes

Hi Stephen,

Will this be submitted to Council as an s96? Or will this be a new DA? In any case, changes will have to be referred to us from Council.

regards,

Gina Potter | Water Regulation Officer

Water Regulation Group

NSW Trade & Investment | Level 11, 10 Valentine Avenue Parramatta | P O Box 3720 Parramatta 2124

T: [+61 2 8838 7566](tel:+61288387566) | F: +61 2 8838 7554

E: gina.potter@dpi.nsw.gov.au

On 18 December 2014 at 08:34, Stephen Brain <Stephen.Brain@ttw.com.au> wrote:

Gina

Attached are overlays showing the proposed works in the riparian zone amended from that previously approved under the CAA.

The original planting plan will be amended to reflect the new works.

Please call to discuss when you have a chance

Thanks

Stephen Brain

0413 153 883

Stephen Brain

Technical Director

L3, 48 Chandos St, St Leonards, NSW 2065

T: [+61 2 9439 7288](tel:+61294397288)

M: [+61 413 153 883](tel:+61413153883)

W: www.ttw.com.au

TTW Sydney will be closed from the 24th December 2014 and re-open on the 5th January, 2015. We wish you a safe and joyous break and a happy New Year.

Please consider the environment before printing this email

From: Stephen Brain
Sent: Monday, 15 December 2014 8:48 AM
To: 'gina.potter@dpi.nsw.gov.au'
Cc: 'Robert Alcock'; 'Ian Connolly'; john.macris@mq.edu.au
Subject: Macquarie University, University Creek CAA changes

Gina

Attached are overlays showing the proposed works in the riparian zone amended from that previously approved under the CAA.

The original planting plan will be amended to reflect the new works.

Please call to discuss when you have a chance

Thanks

Stephen Brain

From: Robert Alcock [<mailto:robert.alcock@mq.edu.au>]
Sent: Wednesday, 19 November 2014 2:00 PM
To: Stephen Brain
Cc: John Macris; Ian Connolly
Subject: University Creek CAA

Stephen,

I have been advised that both Greg Brady and Greg Daley have parted from Office of Water and the new contact is Gina Potter ph 8838 7566 or gina.potter@dpi.nsw.gov.au

Regards

Rob Alcock

Senior Project Manager Infrastructure

PROPERTY

MACQUARIE UNIVERSITY NSW 2109

Ph: [+61 \(0\)2 9850 1362](tel:+61(0)298501362)

Fax: [+61 \(0\)2 9850 7181](tel:+61(0)298507181)

Mb: [+61 427 871 537](tel:+61427871537)

Email: robert.alcock@mq.edu.au

This message is intended for the addressees named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of the Macquarie University Property or Macquarie University.

Please consider the environment before printing this email.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.



TaylorThomsonWhitting

10.02.2014

131406 P

Water Regulation Group
NSW Trade & Investment
P O Box 3720
Parramatta NSW 2124

Attention: Gina Potter

**Macquarie University - University Creek
CAA changes**

Dear Gina,

As requested in your email to Stephen Brain on 16/01/2015, please find attached:

- Approved plans for the Controlled Activity Authority - C104 [P5] and C106 [P8]
- Amended plans for the creek works in University creek - C104 [P6] and C106 [P9]
- A cheque for \$298. (Your hourly charge x 2)

The key change between the approved plans and the amended plans is the removal of the road crossing and culvert control, and replacement with an elevated pedestrian bridge and a flood control weir which has equivalent hydraulic capacity as the previously approved system.

Should you require anything further please contact the undersigned.

For and on Behalf of

Taylor Thomson Whitting (NSW) Pty Ltd

**Tim Henderson
Civil Engineer**

P:\2013\1314\131406\Letters\150205 Office of Water letter.doc

Structural

Civil

Traffic

Facade

Engineers

TTW Group

Directors

RT Green BE Hons MEngSc FIE Aust
D Carolan BE Hons MEngSc MIEAust
R Mackellar BE Hons MIEAust
B Young BE Hons MIEAust
M Eddy BE Hons MIEAust
R McDougall BE MIEAust

Technical Directors

P Yannoulatos BE Hons Dip LGE MIEAust
D Genner BE Hons MIEAust
S Brain BE Hons MIEAust
D Jeffree BE MIEAust
N Burdon ME(Civil) MIPENZ MIEAust
H Nguyen BScEng MIEAust
R Pratikna BE MConstMgt MIEAust

Associate Directors

S Schuetze BE Hons MIEAust
M Rogers BSc Hons MIEAust
D Taylor BE Hons MIEAust
J Tropiano BE MIEAust
P Lambley BE MIEAust
J Haling BE Hons MIEAust
D Mayne MEng Hons MIEAust
K Berry BE Hons MIEAust
G Fowle BE Hons MIEAust
W Alexander BE Hons MIEAust
R Milsted MEng Hons MIEAust

Associates

S Nixon BE Hons MIEAust
N Biason BE MIEAust
N Khambatta BE Hons BCom MIEAust
M King BE Hons MIEAust
Jonathan Miles BE Hons
G Petschack JP
M Raddatz

Manager Facade

N McClelland BSc BE Hons MBA MIEAust



Controlled Activity Approval-(amended)

issued under the Water Management Act 2000 - for controlled activity on waterfront land in New South Wales

Reference No: 10 ERM2010/0230		File No: 9053772	
Controlled Activity Approval issued to: (Approval Holder)			
Name of Approval Holder:	Macquarie University Office of Major Projects		
Postal Address:	Building Y6A Macquarie University		
	Town/City North Ryde	State NSW	P/Code 2109
Company Name:	Macquarie University Office of Major Projects		
Office Address:	Building Y6A Macquarie University		
	Town/City North Ryde	State NSW	P/Code 2109
Property Owner/s:			
Name of Owner/s (1)	Macquarie University		
Postal Address:	Macquarie University		
	Town/City North Ryde	State NSW	P/Code 2109
Name of Owner/s (2)			
Postal Address:			
	Town/City	State	P/Code
At the site described as:			
Property Address:	Macquarie University Creek, Macquarie University		
Lot 7	DP: 1047085	Portion	Parish
Lot 114	DP: 1129623	Portion	Parish
Name of watercourse	Macquarie University Creek		
Local Council: Ryde City Council		Development Reference:	
Details of Controlled Activity to be undertaken: ('the Controlled Activity')			
Modification works along Macquarie University Creek – reconstruct 2 road crossings with reconfigured culverts and road layouts – reconstruct 1 pedestrian crossing to accommodate future road with reconfigured culverts – bed and bank stabilisation – weed eradication – bed and bank planting – rectify existing pipe outfalls with rip rap and planting			
Period of Approval:			
Date of amended Issue: 09 April 2015		Date of Expiry: 2 May 2016	



Reference No: 10 ERM2010/0230

File No: 9053772

Conditions of Approval: This controlled activity approval is granted subject to the conditions listed.

Number Condition

Plans, standards and guidelines

- 1 This Controlled Activity Approval number 10 ERM2010/0230 only applies to the controlled activity carried out at the location marked on Plan No. 1 (i.e. **Overview of Geomorphological Condition and Sediment Dynamics of University Creek and Dwr SKC05, rev 1**) as approved by the NSW Office of Water and stamped on 2 May 2011 and 12 July 2012 and 09 April 2015. This Controlled Activity Approval does not permit controlled activities at any other site.
- 2 The approval holder must not transfer this Controlled Activity Approval 10 ERM2010/0230 without the written approval of the NSW Office of Water.
- 3 The approval holder must keep a copy of the current Controlled Activity Approval 10 ERM2010/0230 on site at all times and make this approval available to officers from the NSW Office of Water on request.
- 4 If the controlled activities described in this Controlled Activity Approval 10 ERM2010/0230, have not commenced or been completed within the period of this approval, the approval holder must apply to the NSW Office of Water for a new approval or seek an extension prior to the lapsing of the consent.
- 5 The approval holder must notify the NSW Office of Water in writing within 14 calendar days of any change in (i) site management; (ii) land ownership; (iii) land occupation.
- 6 The approval holder must comply with the requirements of each of the plans approved by the NSW Office of Water and stamped on 2 May 2011 and/or 12 July 2012 to the extent where the new works replace the old as follows:

Overview of Geomorphological Condition and Sediment Dynamics of University Creek; dwg no. Drawing 5; dated 27 Oct 09; by Coffey Geotechnics

Plan Showing Cross Section And Setout Stakes And Location Of Photographs Taken At University Creek, Macquarie University, Macquarie Park; dwg no. 34939S0 sheet 1, 2 and 3; dated 18-06-2012; by Lockley Land Title Solutions

University Avenue Waterloo Road, Job No 111484, dwg SKC05, rev P1, SKC06, sheets 1 and 2, Rev P2, all by Taylor Thomson Whitting

Macquarie University Creek Civil and Stormwater Masterplan; Job no: 111484: dwg No's:

C102; issue P1 dated 15.06.12;

C105, issue P1 dated 14.06.12

C106, issue P1 dated 14.06.12

C107, issue P1 dated 14.06.12

C109, issue P1 dated 27.06.12

C110, issue P1 dated 27.06.12

C111, issue P1 dated 27.06.12

C113, issue P1 dated 18.06.12

C114, issue P1 dated 18.06.12, all by Taylor Thomson Whitting

Landscape Plan – Sheets 1 to 9; dwg no. 10526_LWD_4001_D; issue D dated 14.07.10; by Context

Landscape Sections – Sheet 1; dwg no. 10526_LWD_5001_B; issue B dated 01.06.10; by Context

Macquarie University University Creek Rehabilitation Works, drawing set: dwg No's: 10526_LWD_0000, 4001 to 4004, 5001, all issue F, 8001 and 8002, all issue C, by Context

Typical Landscape Details And Planting Schedules; dwg no. 10526_LWD_5001_B; issue B dated 01.06.10; by Context

Macquarie University University Creek, Landscape Rehabilitation Plan (incorporating Vegetation



The approval holder must comply with the requirements of each of the plans approved by the NSW Office of Water and stamped on 09/04/2015 as follows:

- i. Plan No. C106, Siteworks Sht 2, Rev P8, dated 07/02/2013, prepared by Taylor Thomson Whitting
- ii. Plan No. C106, Siteworks Sht 2, Rev P9, dated 28/11/2014, prepared by Taylor Thomson Whitting
- iii. Plan No. C104, Civil & Stormwater Masterplan, Rev P5, dated 30/11/2012, prepared by Taylor Thomson Whitting
- iv. Plan No. C104, Civil & Stormwater Masterplan, Rev P6, dated 28/11/2014, prepared by Taylor Thomson Whitting 28/11/2014

7 N/A

8 The approval holder must submit for approval, by the NSW Office of Water, any amendments to a plan listed in Condition 6 (six) prior to carrying out any works in relation to the approved controlled activity.

9 The approval holder must clearly mark on the ground, the boundaries of the areas where the controlled activity is to be carried out before commencement of the controlled activity, and maintain the markings until the works are completed.

10 - 15 N/A

16 The approval holder must maintain the approved controlled activity on waterfront land for a period of two (2) years from the date of completion of the controlled activity works.

17 The approval holder must complete a maintenance period of two (2) years after final planting for all areas described in the Vegetation Management Plan approved by the NSW Office of Water and stamped on 12 July 2012.

18 - 20 N/A

21 At practical completion and/or at the end of the maintenance period, the approval holder must provide a final written report to the NSW Office of Water evidencing completion of the approved controlled activity.

22 The approval holder must provide a report on the implementation of the vegetation management plan (VMP) to the NSW Office of Water at the completion of the revegetation works and at every twelve (12) months up to the end of the maintenance period that must include: (i) a schedule and map showing the vegetation species, number and location of initial and any replacement plantings and propagation materials, and (ii) the date of planting of vegetation, and (iii) the percentage cover of groundcover, shrubs, trees and weeds, and (iv) any problems that impacted on the survival rates of plants including climatic, fire, flooding and vandalism, and (v) a map of the location of any staged activities, and (vi) photographs showing the revegetation works during the reporting period.

23 N/A

24 The approval holder must provide a progress report to the NSW Office of Water every twelve (12) months.

25 The approval holder must notify the NSW Office of Water in writing within seven (7) days if the controlled activity (i) ceases for a period of more than 30 calendar days; or (ii) is terminated before its full completion, or (iii) is resumed.

26 The approval holder must provide security of \$265,000 by way of bank guarantee to the NSW Office of Water prior to commencing the controlled activity work. The security deposit will be held until such time as the controlled activity, together with any rehabilitation or revegetation works, have been completed in accordance with the conditions of this approval. The approval holder must certify compliance with the conditions of this Controlled Activity Approval (certificate of compliance) prior to the release of any security being held for the controlled activity.

27 - 34 N/A

34 The approval holder must construct the box culverts so that the level of the bottom surface of the box



culverts are at the same level as the natural bed level of the river.

35 - 36 N/A

37 The approval holder must remove surplus material when operations cease and the controlled activity is completed.

38 - 41 N/A

42 The approval holder must establish erosion and sediment control works prior to the commencement of any other works on the site.

43 N/A

44 The approval holder must use only biodegradable materials for any erosion control matting in the riparian corridor.

45 The approval holder must decommission all erosion and sediment control works using a suitably qualified person when the site has stabilised.

46 The approval holder must (i) implement erosion and sediment control measures in accordance with the requirements of the Managing Urban Stormwater Manual, Volume 1, Soils and Construction (Landcom, 4th Edition, March 2004) prior to any works commencing at the site; and (ii) maintain the control measures for the duration of the approval to prevent sediment and dirty water entering the waterway.

47 - 59 N/A

60 The approval holder must ensure that all rock rip-rap surfaces are rough and aligned with the adjoining bed, bank and floodplain profile.

61 - 64 N/A

65 The approval holder must not use wire mesh structures, concrete, spray concrete, concrete grouting, crib walling, masonry or car tyres for bank stabilisation.

66 - 67 N/A

68 The approval holder must delineate, protect and maintain a riparian corridor as shown in the VMP in condition 69.

69 The approval holder must revegetate all areas identified in the approved Vegetation Management Plan stamped by the NSW Office of Water on 12 July 2012. The approval holder must monitor and maintain revegetation works for a period of 2 (two) years in accordance with the approved vegetation management plan.

70 N/A

71 The approval holder must not remove or damage native vegetation on waterfront land.

72 The approval holder must not compromise the implementation of the Vegetation Management Plan (VMP) for any work and/or controlled activity at the site.

73 - 75 N/A

END OF CONDITIONS

Fee: Amendment fee \$298 has been paid exclusive of GST

Receipt No: PAP1053862

Controlled Activity Approval 10 ERM2010/0230 issued by: Gina Potter

2. JDG correspondence with Ausgrid

Tim Henderson

From: Cheralee Heynes [cheralee@jdg.com.au]
Sent: Tuesday, 26 May 2015 5:31 PM
To: 'Cedric Halforty'
Cc: 'David Matley'; Stephen Allan
Subject: MQ Current Ausgrid works and current and proposed developments
Attachments: 2067 - MQ Staging Proposal to Ausgrid 260515.pdf

Cedric,

Please find attached details of the current and future development for MQ University that is associated with the current Ausgrid projects SC05544 and the cable remediation project.

Please note loading and approximate dates of connection and the proposed connection staging for the new feeders.

Please provide this detail to HV planning to enable progression of the current projects.

Cheers,
Cheralee



Cheralee Heynes Associate | Electrical Engineer

Suite 407, Level 4, 2-8 Brookhollow Ave, Baulkham Hills NSW 2153 | PO Box 8114 Baulkham Hills BC NSW 2153

P: 02 8861 1888 F: 02 8861 1899 M: 0422 244 316 E: cheralee@jdgconsulting.com.au W: www.jdgconsulting.com.au

CONFIDENTIAL NOTICE

The contents of this email and its attachments are for the named recipient only, confidential, the subject of copyright & may be privileged. Any unauthorised use or distribution of the contents is expressly prohibited and will be considered a breach of the Company's copyright. If you receive this email in error, please contact us & delete the email. Any electronic version of an attachment does NOT represent professional advice by the Company. Only the signed original, hard copy version of the document represents the professional advice provided by the Company. Liability limited by a scheme approved under Professional Standards Legislation.

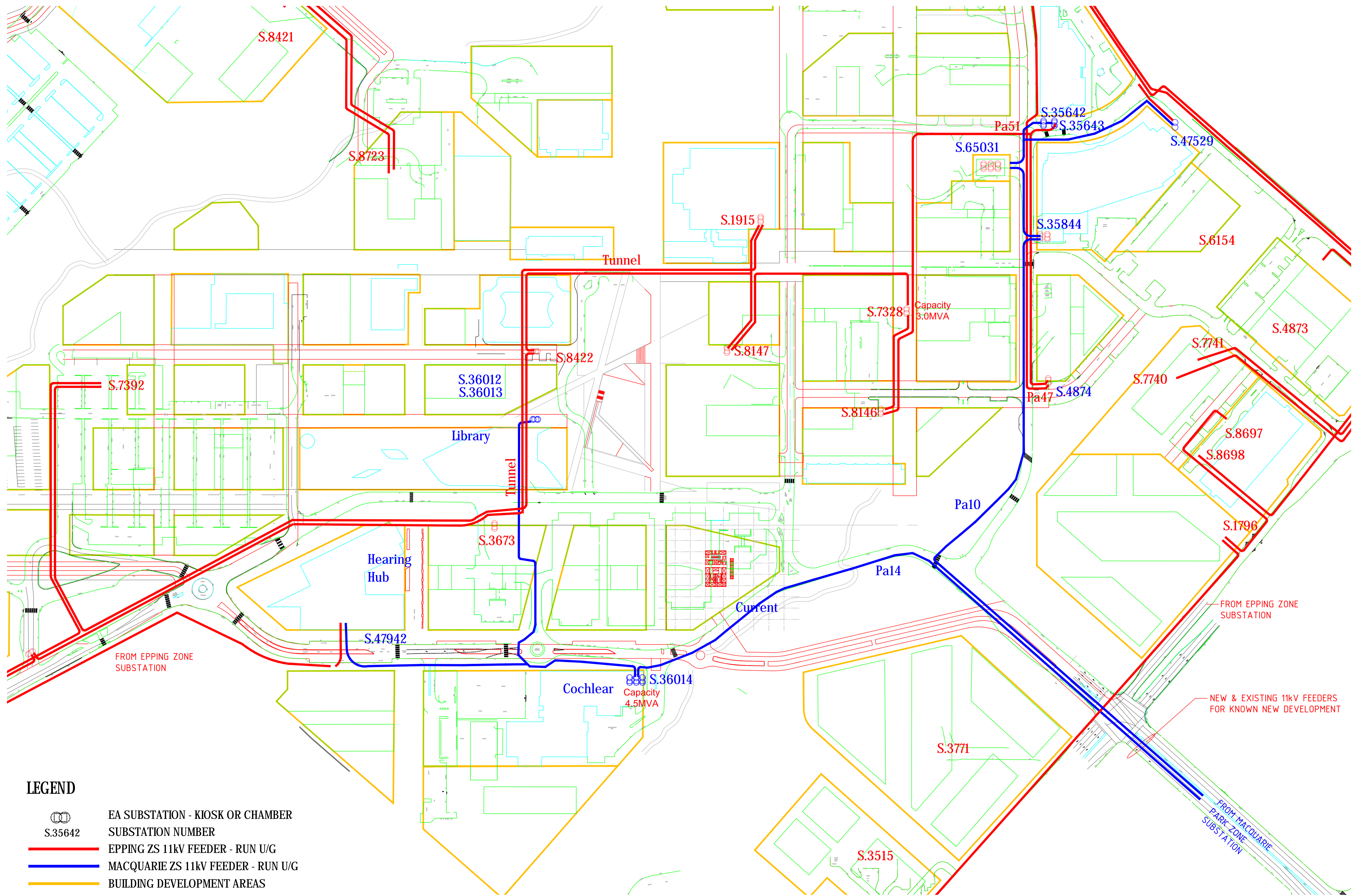
Macquarie University - Campus Electrical Infrastructure future Operational requirements as at May 2015.

Timeframe	Ausgrid Projects	Current & Planned Campus Building & Infrastructure Projects	Proposed GFA	Current GFA	Precinct Supplied from	Current Rating	Current Max Load	Anticipated Load on Completion of Project	Anticipated Load 2016	Anticipated Load 2017	Anticipated Load 2018	Anticipated Load 2019	Anticipated Load 2022	Estimated Cost	Status
Delivery May 2016	NEW CHAMBER SUBSTATION (Ausgrid project No. SC05544)	Construction of new Science Precinct Buildings with staged construction.	To serve proposed new buildings - GFA 60,000 sqm	Two existing buildings to be transferred for initial load	MPZSS	0 Amps	0 Amps	900 Amps	900 Amps	900 Amps	3500 Amps	5500 Amps	5500 Amps	\$2M	Tendered for Construction
Delivery March 2016	New Kiosk Substations	A staged project to refurbish buildings E7A, E7B, Stage 1 of 3 to provide new infrastructure for replacement of existing Chamber Substation S1915 in stage 3.	38,000sqm	36,600sqm	EZSS	4000 Amps	2690 Amps	3350 Amps	3350 Amps	3350 Amps	3350 Amps	3350 Amps	3350 Amps	\$40M	Tendered for Construction
Delivery March 2016	HV Feeders from Macquarie Zone Substation Completion Project	Station North Precinct Development Station South Precinct Development	240,000 GFA	University housing to be demolished.	MPZSS	0 Amps	0 Amps	800 Amps (*Stage 1)	800 Amps	3500 Amps (*Stage 2)	7500 Amps	7500 Amps	15000 Amps (*Stage 3)	\$0.6M	Ready for tender


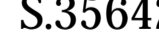



Macquarie Zone Substation Feeder establishment staging of connection of Load		Expected new load required for development.
Stage 1	Connection of 2 new 500AL3 HV cables from Macquarie Zone Substation to Macquarie University. Proposed connection point is existing substation S.4874 Macquarie Uni Becton currently on Epping Zone Panel 47. Proposal is to cut the existing HV cables in Research Park Drive and join together to complete the Panel 47 feeder cable connection and then join the two HV cables connected to substation S.4874 to the two new feeders from Macquarie Zone Substation. Alternatively, one cable could remain connected from Panel 47 and one new feeder TJointed to Panel 47 to provide connectivity to Panel 47 from the new Macquarie Zone Substation Feeders.	No new load for Macquarie University is required at commissioning of the cables. Proposed connection into S.4874 allows for 800Amps to be connected to new feeders and shifted from existing Epping Zone Panel 47 depending on approved arrangement. Temporary builders supply will be requested for stage 2 works.
Stage 2	Establish new chamber substations for supply to Station North Precinct. Expected connection will be 2 off 2 (or 3) x 1500kVA substations to be connected into one of the new feeders Panel 2L and 29L as shown on Stage 2 sketch (sheet 3) dated 25 May 2015. Substation S.4874 will remain connected feeding the existing Becton building. Concept design and marketing for Station North Precinct commencing June 2015. Construction expected to commence 2017 with completion and full connection of load 2018.	Development will be mixed residential/commercial multi storey towers positioned behind the train station accessed from both Herring and University Avenue. Expected diversified load is 7500Amps. Temporary builders supply will be required at construction commencement.
Stage 3	Establish new chamber substations for supply to Station South Precinct. Expected connection will be 2 off 2 (or 3) x 1500kVA substations to be connected into one of the new feeders as shown on Stage 3 sketch 25 May 2015. Existing buildings to be demolished. Works are expected to commence 2019 with completion 2020.	Development will be mixed residential/commercial multi storey towers positioned at the current location of the Robert Menzies building. Expected diversified load is 7500Amps.

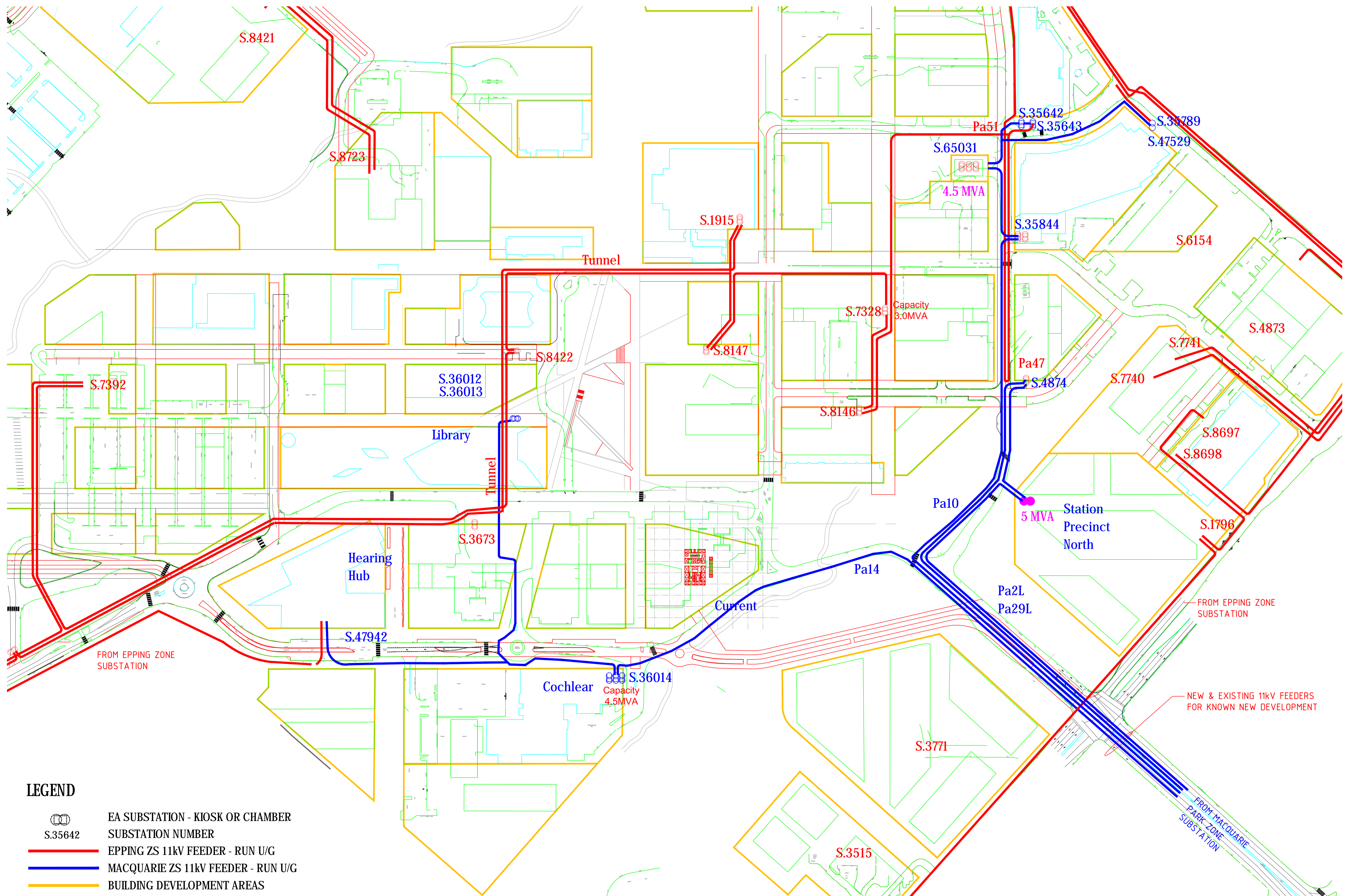
Notes:

1. New Science Precinct chamber substation to supply new buildings with initial load from adjacent buildings F7B & F9B. New Science buildings to have staged construction commencing 2017 with completion 2019.
2. Chamber Substation S1915 is located inside building E7B, from which electrical sub-mains radiate to supply 6 other buildings, thus E7B MSB is a precinct MSB, the refurbishment project provides the opportunity to replace S1915, with a new dual kiosk installation, to allow transfer of the existing electrical loads from E7B MSB and a new precinct switch room.
3. Incomplete HV feeder installation to be completed. The project was originally stopped by Ausgrid due with water at MQ Zone. Existing non energised Cables to be tested and extended at both ends and commissioned. Transfer of existing Kiosk substation S4874 from existing Epping Zone Panel 47 supply to feeder cables for an initial load to allow energising of the cables and connection to the zone for future loads. Refer Staging below and on attached diagrams.


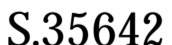





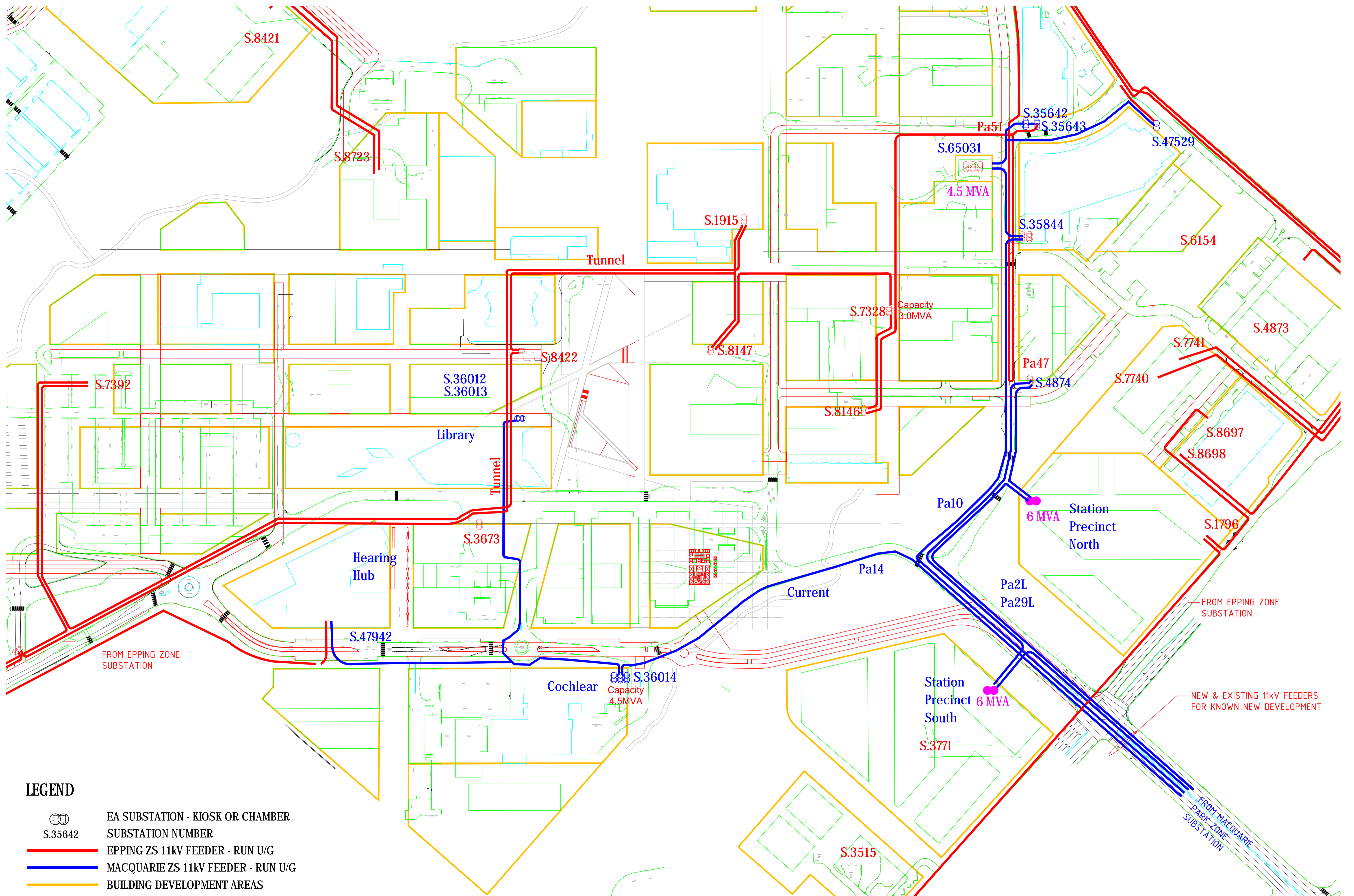
LEGEND

-  EA SUBSTATION - KIOSK OR CHAMBER
-  SUBSTATION NUMBER
-  EPPING ZS 11kV FEEDER - RUN U/G
-  MACQUARIE ZS 11kV FEEDER - RUN U/G
-  BUILDING DEVELOPMENT AREAS








LEGEND

-  EA SUBSTATION - KIOSK OR CHAMBER
-  SUBSTATION NUMBER
-  EPPING ZS 11kV FEEDER - RUN U/G
-  MACQUARIE ZS 11kV FEEDER - RUN U/G
-  BUILDING DEVELOPMENT AREAS



LEGEND

-  EA SUBSTATION - KIOSK OR CHAMBER
-  S.35642 SUBSTATION NUMBER
-  EPPING ZS 11kV FEEDER - RUN U/G
-  MACQUARIE ZS 11kV FEEDER - RUN U/G
-  BUILDING DEVELOPMENT AREAS

Tim Henderson

From: Cedric Halforty [chalfort@ausgrid.com.au]
Sent: Wednesday, 3 June 2015 12:02 PM
To: Cheralee Heynes
Subject: Macquarie University
Attachments: D15 371802 SC05544 - XCH013324 - HVCon Response Amendment A.pdf

Hi Cheralee,

Just want to say thank you for the load forecast plan. Our Distribution Planning Section is satisfied with the plan and hence has advised that connection details will be issued for both the Science Precinct substation and the feeder cable project. I have meanwhile received the connection details for the Science Precinct Substation and it is attached. Nic Lamb is now looking after this project. Regarding the feeder cable project could you please advise whether a new kiosk substation is to be connected to the feeder cables or do you still want to connect an existing substation to the feeder cables

Regards,

Cedric

From: "Cheralee Heynes" <cheralee@jdgconsulting.com.au>
To: "Cedric Halforty" <chalfort@energy.com.au>,
Date: 02/06/2015 10:27 AM
Subject:

Cedric,

I could only find the response which I flicked to you. I have to go and will look later if needed. Please let me know.

Cheers,
Cheralee



Cheralee Heynes Associate | Electrical Engineer

Suite 407, Level 4, 2-8 Brookhollow Ave, Baulkham Hills NSW 2153 | PO Box 8114 Baulkham Hills BC NSW 2153

P: 02 8861 1888 F: 02 8861 1899 M: 0422 244 316 E: cheralee@jdgconsulting.com.au W: www.jdgconsulting.com.au

CONFIDENTIAL NOTICE

The contents of this email and its attachments are for the named recipient only, confidential, the subject of copyright & may be privileged. Any unauthorised use or distribution of the contents is expressly prohibited and will be considered a breach of the Company's copyright. If you receive this email in error, please contact us & delete the email. Any electronic version of an attachment does NOT represent professional advice by the Company. Only the signed original, hard copy version of the document represents the professional advice provided by the Company. Liability limited by a scheme approved under Professional Standards Legislation.

This e-mail may contain confidential or privileged information.

If you have received it in error, please notify the sender immediately via return e-mail and then delete the original e-mail.

If you are the intended recipient, please note the change of sender email address to @ausgrid.com.au.

Ausgrid has collected your business contact details for dealing with you in your business capacity. More information about how we handle your personal information, including your right of access is contained at <http://www.ausgrid.com.au/>

ASSET AND NETWORK PLANNING

DP / AC / CK / M:\NETWORK PLANNING@HOB\WORK FILES\DISTRIBUTION PLANNING\HV CONNECTIONS\2014\HVCON2014_255A.DOC

HVCON2014_255A

Project Number: SC-05544

02 June 2015

Sent to: "Manager – Distribution Planning" (Mark Appleton) / Negotiating Officer – Hornsby (Nic Lamb)

Copy to: Branch File 342.081 General (Macquarie Park)

PREFERRED POINT OF ENTRY AND HIGH VOLTAGE CONNECTION FOR THE ESTABLISHMENT OF CUSTOMER SUBSTATION S.65031 MACQUARIE UNI NO.15, MACQUARIE UNIVERSITY

Following is a reply to your initial request dated 2nd July 2014 and subsequent correspondence requesting the Preferred Point of Entry and the HV connections for the above project.

PREFERRED POINT OF ENTRY

The preferred point of entry for the proposed substation is from the Research Park Dr entrance to the site.

HV CONNECTIONS

- 1) Refer to attached diagrams.
- 2) Close a normally open point at Sw/B at S.35643 Talavera Christie No.3.
- 3) Form a normally open point at Sw/A at S.35642 Talavera Christie No.2.
- 4) Close a normally open point at Sw/A at S.47529 Talavera Technology.
- 5) Form a normally open point at Sw/B at S.47529 Talavera Technology.
- 6) Where trenching works are required install a 4 x 150mm conduit bank suitable for HV use.

VOLTAGE DROPS AND NOMINAL 3 PHASE FAULT LEVELS

- 1) Assuming a source three phase Fault Level on the Tx1 11kV group busbar at S.8000 Macquarie Park zone substation of 8.87kA, the three phase fault level* on the HV side of the proposed substation S.65031 is anticipated to be 6.40kA.
- 2) Assuming a maximum voltage level on the Tx1 11kV group busbar at S.8000 Macquarie Park zone substation of 10.55kV, the voltage level* at the proposed substation S.65031 is anticipated to be 10.46kV (0.84% VD).

*Please note this data is NOMINAL, and for a NORMAL network configuration. It is based on the current data in the GIS, and on the 11kV Busbar fault information provided by Subtransmission Planning. The actual Voltage Drop and 3 Phase Fault Levels may differ (for example) due to network switching, paralleling of Transformers, the effects of future projects, Transformer tap settings, and the currency / accuracy of the GIS data and the 11kV busbar fault level provided. The Fault Level is not the minimum Fault Level for equipment ratings. See NS-114 (Chamber Substations), NS-117 (Kiosks Substations), NS-122 (Pole Mounted Substation) and also refer to “Clause 1.10.4 and 7.5.4” of the New South Wales Service and Installation Rules dated October 2006 Amendment 2: January 2009 for further information.

Notes:-

1. Where single core cables are to be installed for lengths greater than 10 metres, always use 300mm² Cu bundled single core cables ie. Triplex, unless stated otherwise by Distribution Planning.
2. When cables are installed in Thermally Stable Bedding (TSB) material the data capture must include the appropriate Conductor Codes and geo spatial of the cross section. If TSB needs to be installed then Distribution Planning will specify requirements.
3. When additional ducts (such as LV ducts) are combined with HV ducts in the same trench, if > 4 ducts are installed (excluding communication ducts) then TSB should be installed. Please contact Distribution Planning to discuss TSB requirements.
4. To minimise the effect of mutual heating on parallel sections of mains, whenever new cable/s are installed (for parallel lengths in excess of 10m) a minimum separation of 4 meters is to be maintained from all Transmission assets (33-330 kV) and 2m is to be maintained from existing distribution mains (415V/11kV) (transverse crossings are not a significant issue), unless stated otherwise by Distribution Planning.
5. Wherever excavation is carried out, please email Andrew Lloyd- Engineer- Standards & Communications to determine if an additional duct suitable for Fibre/Communications will be required.
6. These HV Connections are only valid for a period of 12 months from the day of issue.

There are no other special planning requirements, however should there be any further changes to the loading information, substation design or site details please discuss with Ahmad Chehade on telephone extension 34639.

Ahmad Chehade
Engineering Officer - Distribution Planning Sydney

PROPOSED

10R

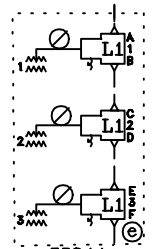
Proposed
HVCon2014_355
(SC-06098)

65245
WATERLOO
KHARTOUM 0.2

HVCon2014_039
(SC-05160)

64706
WATERLOO
NOVARTIS NO.1

64707
WATERLOO
NOVARTIS NO.2



35844
TALAVERA
CHRISTIE No.4

Use 500mm² Al3
cable and 300mm²
triple tails (or
equivalent).

HVCon2014_255A
(SC-05544)

Form a
normally open
point at Sw/A at
S.35642
Talavera
Christie No.2

35642
TALAVERA
CHRISTIE No.2
No.3 Dist NO
from S.35844
No.2 Dist NO
from S.35645

Close a
normally open
point at Sw/B at
S.35643
Talavera
Christie No.3

35643
TALAVERA
CHRISTIE No.3
No.5 Dist NO
from S.47529

47529
TALAVERA
TECHNOLOGY

Close normally
open point at
Sw/A & form
normally open
point at Sw/B at
S.47529
Talavera
Technology

TO:S.4874 MACQUARIE
UNI BECTON, S.1915
MACQUARIE UNI No.1
S.8147 MACQUARIE
UNI No.7
EPPING ZN.54
(SHT.2 A/6)

TO:S.7391
MACQUARIE
UNIVERSITY No.6
& S.8154
TALVERA CHRISTIE
EPPING ZN.54
(SHT.1 C/2)



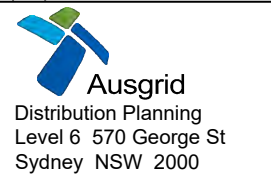
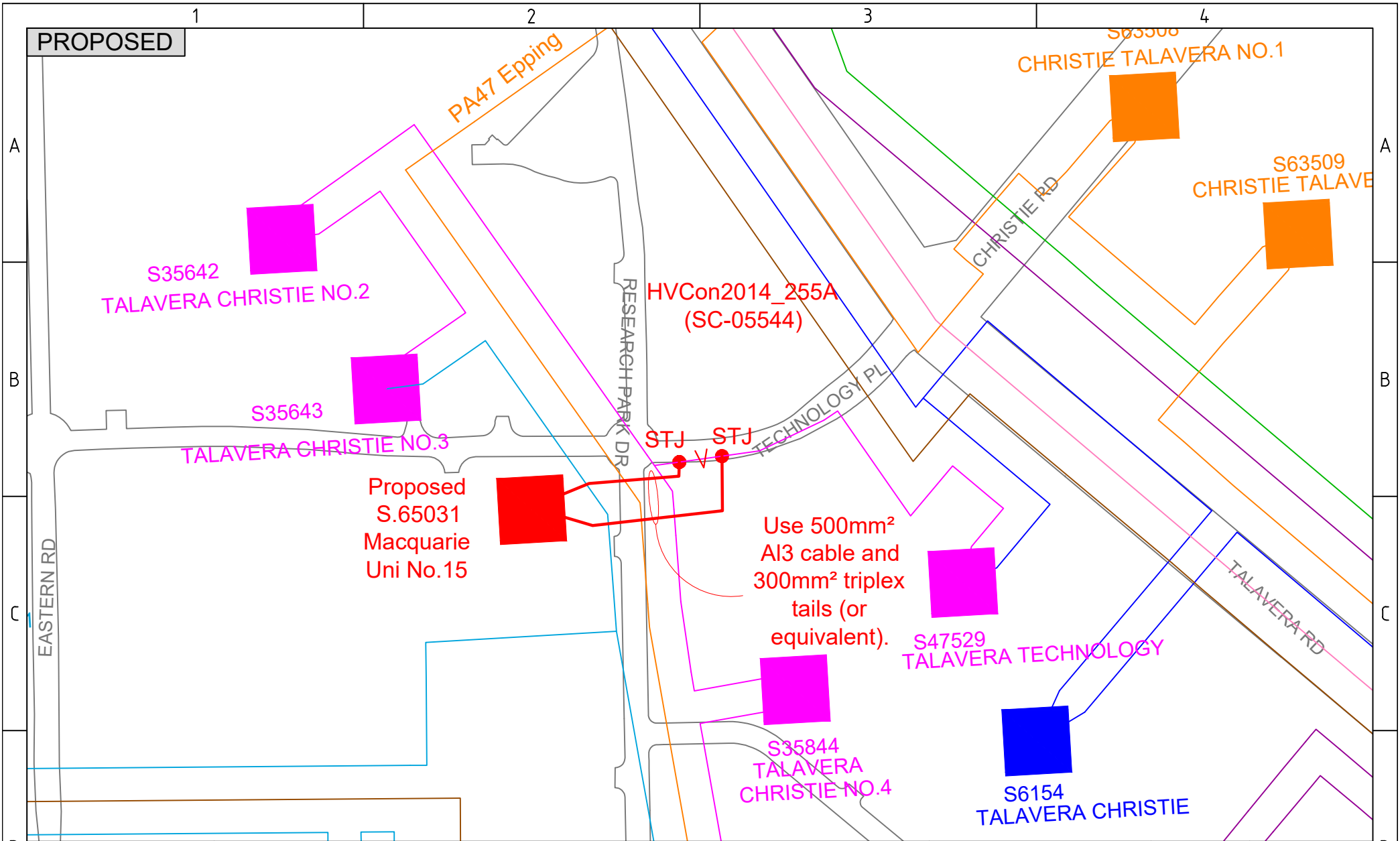
HIGH VOLTAGE CONNECTION FOR
THE ESTABLISHMENT OF
CUSTOMER SUBSTATION S.65031
MACQUARIE UNI NO.15, MACQUARIE
UNIVERSITY

MACQUARIE PARK 81
HVCON2014_255A

SAP NUMBER	SC-05544
PROJTRAK No.	----
2 JULY 2015	
Sheet 3 of 4 Sheets	

©

PROPOSED



HIGH VOLTAGE CONNECTION FOR THE ESTABLISHMENT OF CUSTOMER SUBSTATION S.65031 MACQUARIE UNI NO.15, MACQUARIE UNIVERSITY

MACQUARIE PARK 81		SAP NUMBER	SC-05544
		PROJTRAK No.	----
		2 JULY 2015	
A4	HVCON2014_255A	AMD 1	Sheet 4 of 4 Sheets

3. DBA correspondence with Sydney Water and Jemena

Tim Henderson

From: Rami Osman [Rami.Osman@jemena.com.au]
Sent: Wednesday, 24 June 2015 7:02 AM
To: David Buckle
Subject: D87373-Mac Uni Waterloo and Herring Rds valve covers
Attachments: b1sp6049.pdf; 20111104_003.jpg

Importance: High

Hi David,

Earlier, I have sent you the preliminary design and an example of what type of lids we can provide, the best way to match the landscaping is to sand blast the lids, it will not be a 100% match (like what you proposed earlier) but within acceptable level.

Furthermore, the syphon stones are the existing small yellow ground markers, the colour of these markers will stay the same to comply with the Australian Standard.

Finally, our designer has highly recommended that the lids and the syphon stones shall be installed when the installation of the new landscape will commence, so we can match the levels. Therefore, I would appreciate if you can give me a 2months early notice before commencing landscaping, so I can proceed with this project.

If you need any further information please contact me,
Thanks & Regards,

Rami Osman

Project Manager
External Works Team

Jemena

4A Bellevue Circuit, Pemulwuy, NSW 2145
Postal Address: P.O.Box 1220, North Sydney, NSW
2059

(02) 9867 7250 | 0437 274 46

rami.osman@jemena.com.au | www.jemena.com.au



From: David Buckle [mailto:david@davidbuckle.com.au]
Sent: Tuesday, 23 June 2015 4:29 PM
To: Rami Osman
Subject: RE: D87373-Mac Uni Waterloo and Herring Rds valve covers

Rami,

The architect and the uni need confirmation of what action you are taking.

We expressed a strong preference for gatic infill covers with infill to match the pavement as per the station covers..
Can you please confirm what you propose to do to improve the appearance of these multiple covers.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Rami Osman [mailto:Rami.Osman@jemena.com.au]
Sent: Tuesday, 23 June 2015 10:57

To: David Buckle
Subject: RE: D87373-Mac Uni Waterloo and Herring Rds valve covers

Hi David,

I tried to call you earlier and I left a message, can you please clarify your email? What do you mean by "we are ok to document the 3 Gatic infill covers for this now"?

Happy to discuss it on the phone.

If you need any further information please contact me,
Thanks & Regards,

Rami Osman
Project Manager
External Works Team

Jemena

4A Bellevue Circuit, Pemulwuy, NSW 2145
Postal Address: P.O.Box 1220, North Sydney, NSW
2059
(02) 9867 7250 | 0437 274 46
rami.osman@jemena.com.au | www.jemena.com.au



From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Sunday, 21 June 2015 12:16 PM
To: Rami Osman
Subject: RE: D87373-Mac Uni Waterloo and Herring Rds valve covers

Rami,

Could you advise the status of this please

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: David Buckle
Sent: Wednesday, 29 April 2015 04:52
To: 'Rami Osman'
Subject: FW: D87373-Mac Uni Waterloo and Herring Rds valve covers

Rami,

Can you confirm we are ok to document the 3 Gatic infill covers for this now.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: David Buckle
Sent: Wednesday, 1 April 2015 03:26
To: Rami Osman
Subject: RE: D87373-Mac Uni Waterloo and Herring Rds valve covers

Hi Rami,

Confirming our desire to have Cast Iron Inset type covers equal to those supplied by Aco Polycrete.
<http://www.acoaus.com.au/access/acctrix.php>

They provide design assistance and have all the technical information.

I spoke to the Architect and they do intend to use the same paving as is currently laid on the Station side.

Your pits will be secure once the covers and frames are installed and the veneer finishes would be installed by the paving contractor.
This would all be to your approval.

Please let me know if you need anything further.
I'll catch up with you next week and hopefully confirm the cover types.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Rami Osman [<mailto:Rami.Osman@jemena.com.au>]
Sent: Wednesday, 1 April 2015 12:12
To: David Buckle
Subject: D87373-Mac Uni Waterloo and Herring Rds valve covers
Importance: High

Hi David,

As per our site meeting, we are still waiting to receive the information from you.

If you need any further information please contact me,
Thanks & Regards,

Rami Osman
Project Manager-External Works
Jemena
4A Bellevue Circuit, Pemulwuy, NSW 2145
(02) 9867 7250 | 0437 274 467
rami.osman@jemena.com.au | www.jemena.com.au



From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Thursday, 19 March 2015 11:44 AM
To: Rami Osman
Cc: Robert Alcock; Stephen Brain; Danny Guerrero; Adrian Gallegos
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

Thanks Rami,

I will forward the latest pavement drawing.

Confirming our meeting Wed 25/3 at 12 midday to discuss.
I've sent a meeting invite via outlook.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Rami Osman [<mailto:Rami.Osman@jemena.com.au>]
Sent: Monday, 16 March 2015 03:41
To: David Buckle
Cc: Robert Alcock; Stephen Brain; Danny Guerrero; Adrian Gallegos
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers
Importance: High

Dear David,
I tried to call you earlier and I left a message.
Just a follow up email regarding the Landscaping design drawing and colour, can you please provide me these information, so I can liaise with the designer for the panels.

If you need any further information please contact me,
Regards,

Rami Osman
Project Manager
Jemena
100 Bennelong Parkway, Sydney Olympic Park, NSW 2127
(02) 9397 9440 | 0437 274 467
rami.osman@jemena.com.au | www.jemena.com.au



We are moving! As of Monday 30 March 2015, Jemena's new depot will be located at 4 Bellevue Circuit, Pemulwuy NSW 2145

As of Monday 30 March, Jemena will be moving to two new Sydney locations.	North Sydney Office 99 Walker Street North Sydney NSW 2060	Greystanes Depot 4 Bellevue Circuit Pemulwuy NSW 2145
	Our postal address is PO box 1220, North Sydney NSW 2060	

From: Adrian Gallegos
Sent: Friday, 13 March 2015 3:39 PM
To: David Buckle
Cc: Robert Alcock; Stephen Brain; Rami Osman; Danny Guerrero
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

Thanks for meeting with me yesterday David.

Rami Osman will oversee the project on behalf of Jemena. He will be in contact to look at your landscape plan, and is already in touch with one of our designers looking at options.

He will arrange a budget price for you and organise a pipeline locator for the mains crossing of Waterloo Road and the front of the University.

Rami's contact details are as follows:



Rami Osman – Project Coordinator

Jemena
External Works
100 Bennelong Road
Sydney Olympic Park, NSW 2127, Australia

Email: rami.osman@jemena.com.au
Phone: [0293979](tel:0293979)
Mobile: [0437274](tel:0437274)
Fax:

Danny Guerrero from Land Services will be in contact to arrange for an easement of Jemena assets on University grounds.

Regards

Adrian Gallegos

Program Manager

Jemena

100 Bennelong Parkway, Sydney Olympic Park, NSW 2127
(02) 9397 9272 | 0407 910 756

Adrian.gallegos@jemena.com.au | www.jemena.com.au



**As of Monday 30 March,
Jemena will be moving to
two new Sydney locations.**

North Sydney Office
99 Walker Street
North Sydney NSW 2060

Greystanes Depot
4 Bellevue Circuit
Pemulwuy NSW 2112

Our postal address is PO box 1220, North Sydney NSW 2060

From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Friday, 13 March 2015 3:22 PM
To: Adrian Gallegos
Cc: Robert Alcock; Stephen Brain
Subject: FW: Mac Uni Waterloo and Herring Rds valve covers

Hi Adrian,

Thanks for your time on site yesterday, much appreciated. Hopefully we can work to tidy all this up and get a good result.

Here are my notes, please feel free to add or amend if you see anything I've missed.

- . The University are redeveloping the area and want to rationalise the various valve boxes and the regulator under 3 rectangular inset covers similar to the attached images.
- . New pavement levels will be very close to existing, say within 50mm.
- . We need to accurately locate the existing 1050 kPa and 210 gas lines gas lines as the records seem to conflict with what we see on site
- . We need to confirm the pipework arrangement and valving.
- . The existing retaining wall is moving and the risers need to be relocated as per my sketch.

Could you put me in touch with the correct people in Jemena who can assist in resolving the details and commit to actions.

Thanks again,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: David Buckle
Sent: Wednesday, 4 March 2015 11:14
To: adrian.gallegos@jemena.com.au
Subject: FW: Mac Uni Waterloo and Herring Rds valve covers

Adrian,

Neale Hilton passed on your name as being the right person to contact so hopefully that is ok.
We are hydraulic services consultants acting for Macquarie University.
There is a Jemena district regulator on University land, in the footpath of the extension of Waterloo Road, corner Herring Road North Ryde.
The University has a Gateway Project which will result in significant improvements to pavements and amenity. Levels over the Jemena equipment will remain substantially unaltered but the University wants to rationalise the existing valve and regulator covers preferably under 1 or 2 gatic insert covers so all that is visible would be the edge strips, similar to a sewer manhole in decorative pavement.
I have attached a street view image.
This infrastructure is inside the University Boundary.

Could we meet to discuss this.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Neale Hilton [<mailto:Neale.Hilton@jemena.com.au>]
Sent: Thursday, 26 February 2015 07:17
To: David Buckle
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

Neither has the service going to Trinity Chapel
Looks like there are two issues for the Uni, 1 to get an easement/s created, and 2 renew the proposed new hard surfacing to the current levels.
Technically I am not knowledgeable to advise of what is required to change the type of covers or raise or lower any component of this Regulator Station. I suggest that this be itemised and sent to
Jemena – Land Services
Attn A. Gallegos
PO Box 6507
SILVERWATER NSW 2128

Neale Hilton
Network Development Manager
Jemena
Level 20, 111 Pacific Hwy, North Sydney, NSW 2060
M 0402 060 151
neale.hilton@jemena.com.au | www.jemena.com.au



From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Thursday, 26 February 2015 5:14 PM

To: Neale Hilton
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

No it's University land.
The boundary is shown on the attached Survey and runs with the property line along Herring Rd crossing the old Waterloo Rd road reserve.
I can't see an easement either.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Neale Hilton [<mailto:Neale.Hilton@jemena.com.au>]
Sent: Thursday, 26 February 2015 02:23
To: David Buckle
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

Isn't this a public street?

Neale Hilton
Network Development Manager
Jemena
Level 20, 111 Pacific Hwy, North Sydney, NSW 2060
M 0402 060 151
neale.hilton@jemena.com.au | www.jemena.com.au



From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Thursday, 26 February 2015 2:20 PM
To: Neale Hilton
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

Neale,

Ok fair enough. If there is no option on the type of covers what is the best way to ensure they are flush or does it happen after the new pavement?
Can our contractor liaise at the time? Do they still have to be yellow?
The architect will ask!

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: Neale Hilton [<mailto:Neale.Hilton@jemena.com.au>]
Sent: Thursday, 26 February 2015 02:00
To: David Buckle
Subject: RE: Mac Uni Waterloo and Herring Rds valve covers

David

Hans is not part of Jemena and as such may have given the impression that your request can be sustained. As I understand the components associated with this District Regulator are ISO 9000 approved and there is no selection of various lids/covers.

Jemena has ground restoration agreements with local Councils to rectify hard surfaces and what looks like from the photo this will need to be done. Would you like me to advise accordingly.

Neale Hilton

Network Development Manager

Jemena

Level 20, 111 Pacific Hwy, North Sydney, NSW 2060

M 0402 060 151

neale.hilton@jemena.com.au | www.jemena.com.au



From: David Buckle [<mailto:david@davidbuckle.com.au>]
Sent: Thursday, 26 February 2015 11:37 AM
To: Neale Hilton
Subject: FW: Mac Uni Waterloo and Herring Rds valve covers

Hi Neale,

We are looking to tidy up the valves and covers under one or 2 gatic infill covers so we can match the finishes of new pavement planned by Macquarie University.

I contacted Hans as he knows the site and he doesn't think a 'beautification' project would be an issue provided access is maintained to the valves and below ground regulator.

Would you know the correct person to approach for approval of this?

Pavement levels will be very close to existing.

Regards,

David Buckle

David Buckle & Associates (NSW) Pty.Ltd. Suite 8, 38 Rowe Street Eastwood NSW 2122
Ph: 02 9804-8086 Fax: 02 9804-8685 Mob: 0438-007277 email:david@davidbuckle.com.au

From: David Buckle
Sent: Thursday, 26 February 2015 11:25
To: Hans Foertsc (hfoertsc@agl.com.au)
Subject: Mac Uni Waterloo and Herring Rds valve covers

Hi Hans,

Hope you are well.

We are getting closer to tidying up the Herring Rd entrance to Macquarie Uni and as part of the project they want to do something about these existing valves and the regulator cover in the pavement.

They are re-paving and we wonder if there could be 1 or 2 larger inset type covers that would be less obtrusive.

Levels of the new paving will be very close to existing.

I'll call you to discuss.

Regards,

David Buckle

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

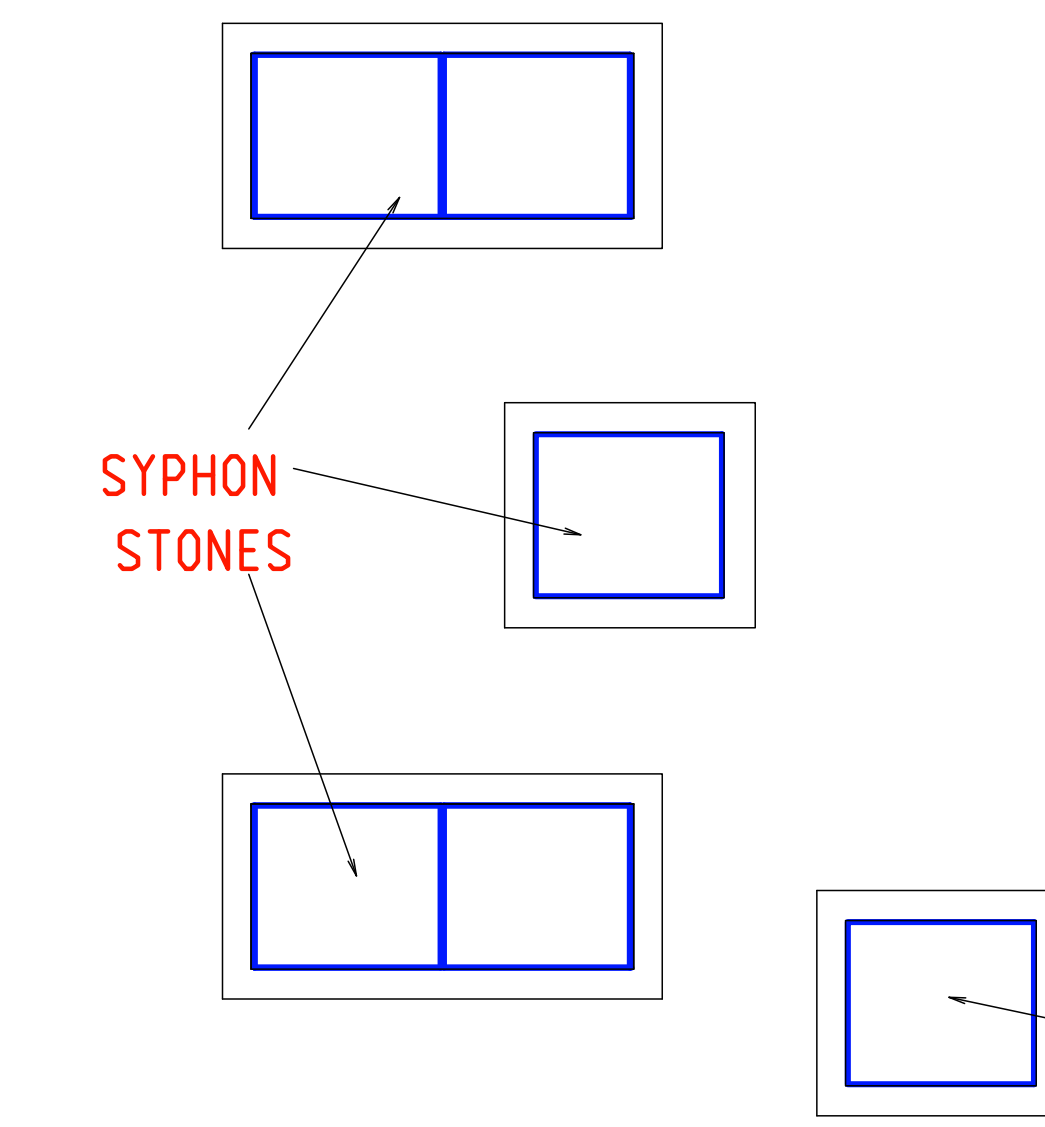
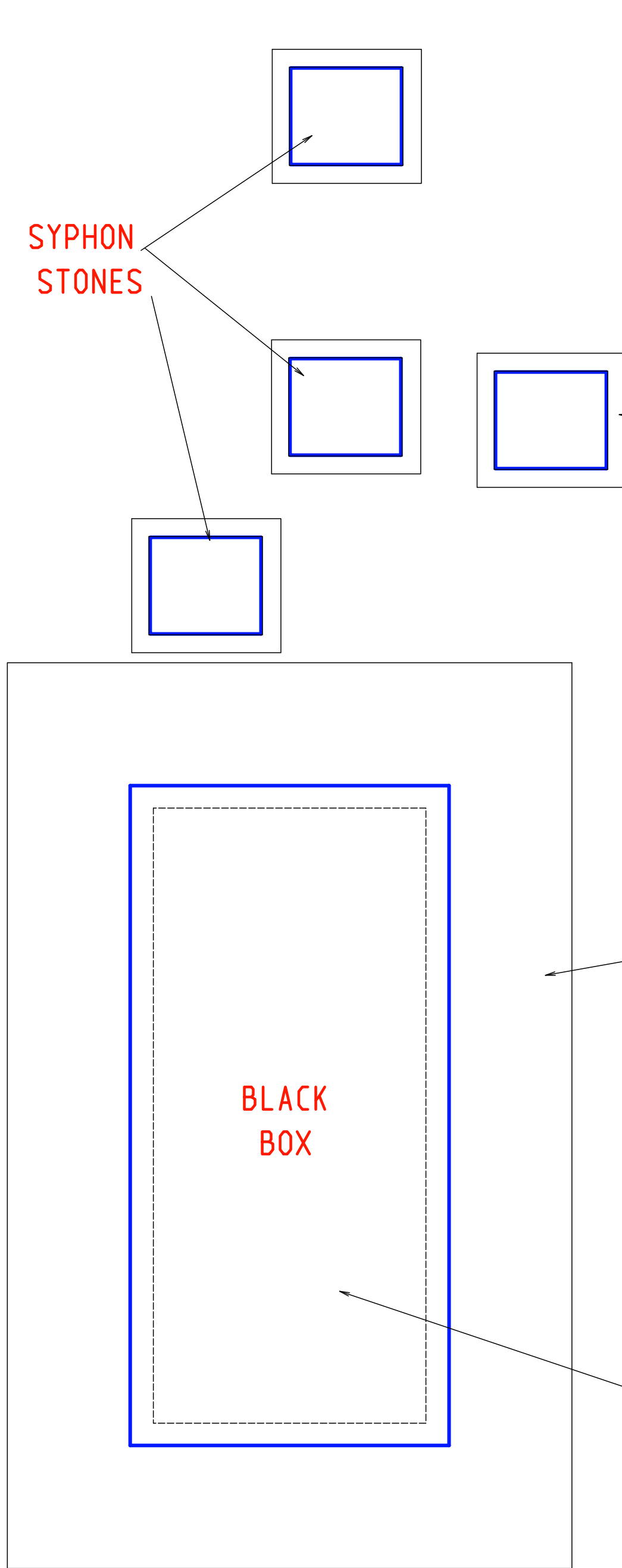
This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.

This is a confidential message intended for the named recipient(s) only. The contents herein are privileged to the sender and the use thereof is restricted to the intended purpose. If you have received this e-mail in error, please do not use, disclose, distribute, copy, print or relay on this email. If receipt is in error, please advise the sender by reply email. Thank you.





EXISTING LAYOUT

PAVEMENT TILES NOT SHOWN

REMOVE CONCRETE SYPHON STONES, RE-PLACE WITH NEW CAST IRON SYPHON STONES, PAINTED THE SAME COLOUR AS THE PAVEMENT SLABS. MAKE SURE EACH NEW CAST IRON SYPHON STONE IS PARALLEL TO THE BLACK BOX

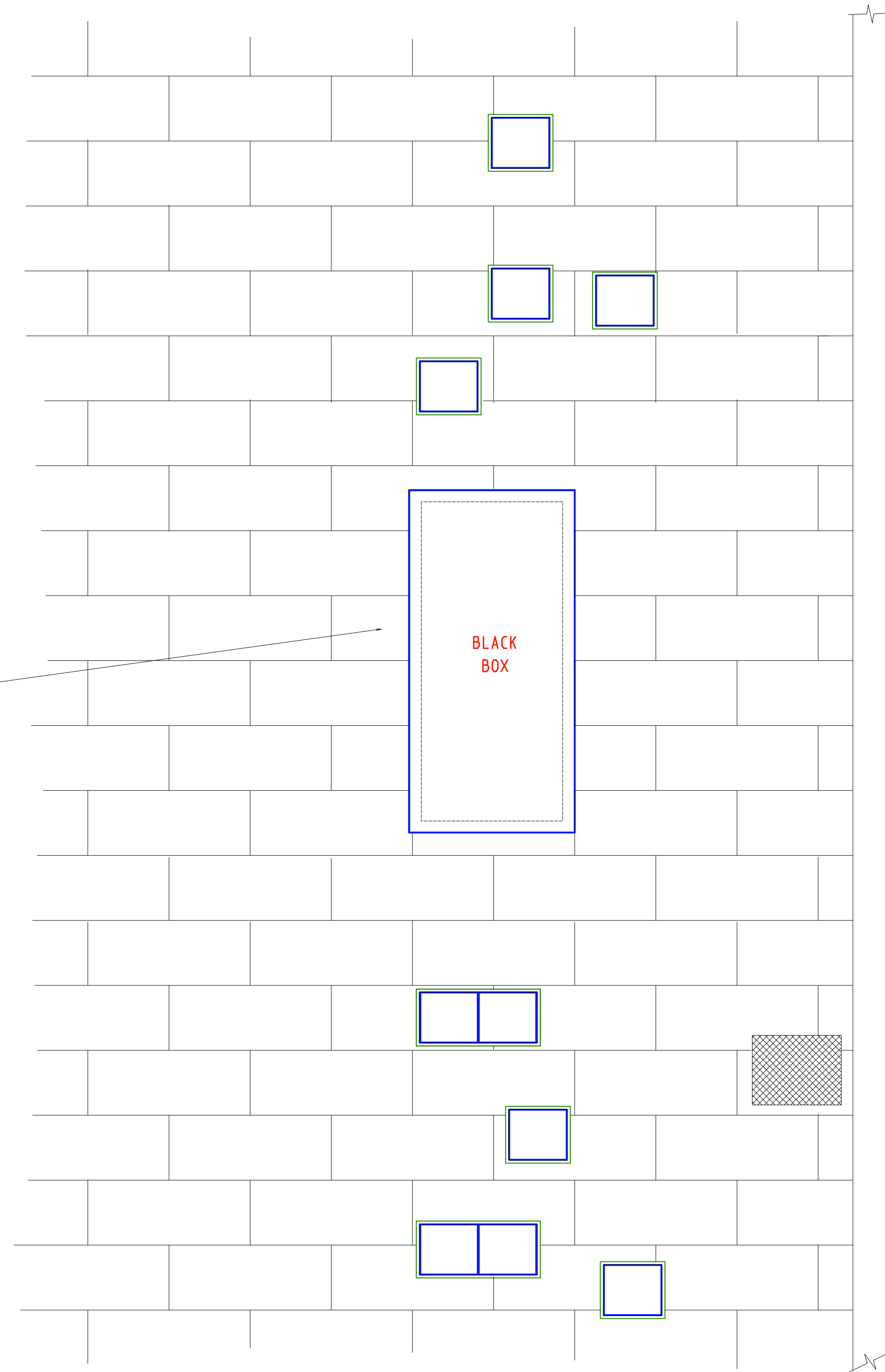
REMOVE CONCRETE COLLAR

NOTE ARRANGE PVEMENT SLABS, SO THAT THERE IS A RUN OFF AWAY FROM THE LID.

NOTE LID TO BE SAND BLASTED ON THE TOP SURFACE AND EDGES, THEN COATED WITH A NON SLIP PAINT, THE SAME COLUUR AS THE PAVING SLABS.

REMOVE CONCRETE SYPHON STONES, RE-PLACE WITH NEW CAST IRON SYPHON STONES. TO PAINTED THE SAME COLOUR AS THE PAVEMENT SLABS.

NOTE THE EXISTING SYPHON STONE LIDS MUST BE RE-PAINTED IN THEIR EXISTING COLOURS IE. LIGHT OR DARK YELLOW, WHICH INDICATES THE SYSTEM PRESSURE



PROPOSED ARRANGEMENT

ISSUED FOR COMMENT

Date Stamp: 23-04-2015 Time: 10:30

This drawing is designed by Jemena Asset Management for the Client and is held by JAM on behalf of the Client. No part of this drawing may be reproduced, stored in a retrieval system in any form or transmitted by any means or used for any other purpose including manufacture without the prior written permission of the Company.

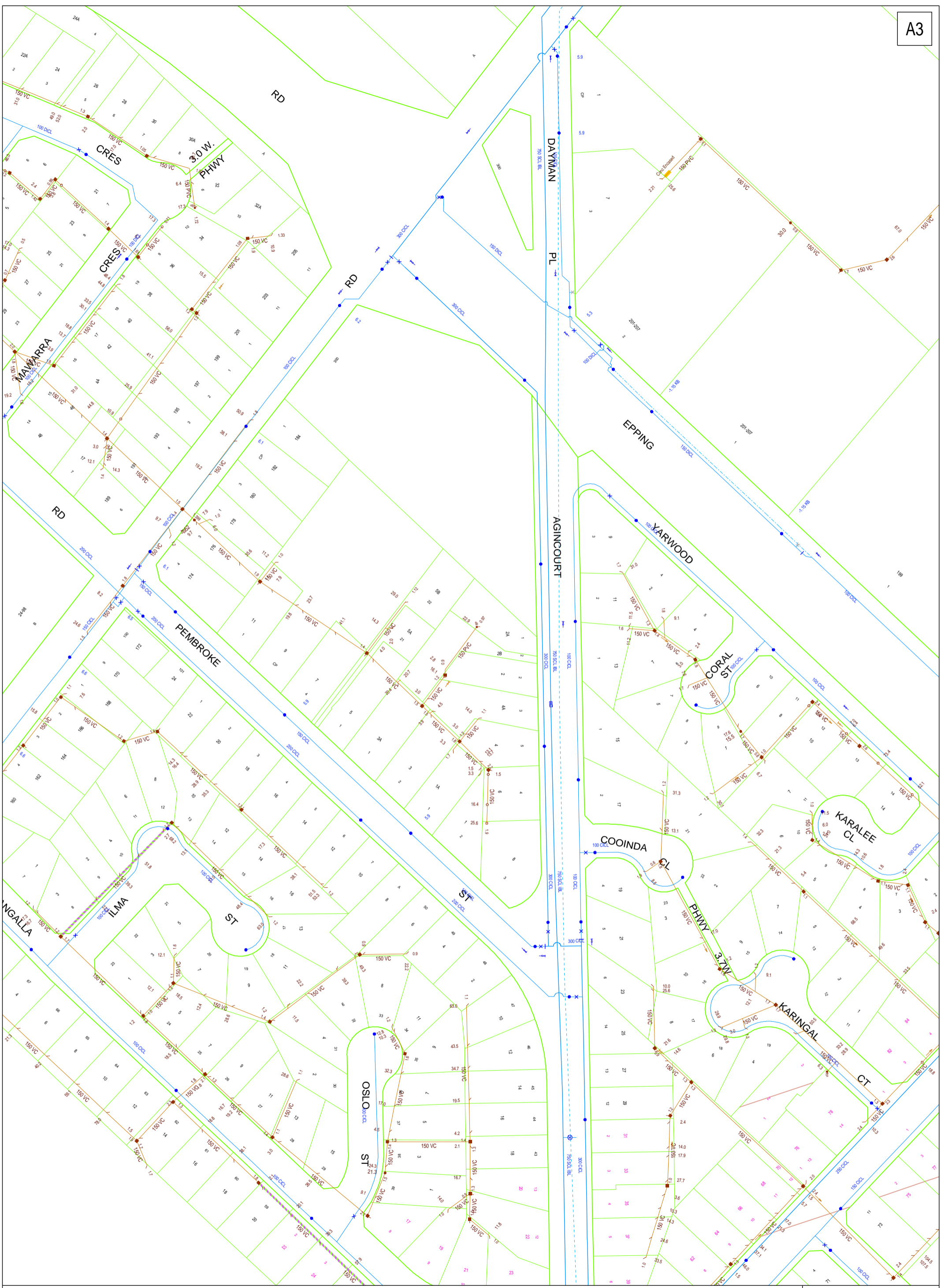
REV	PARTICULARS	CHKD/ENG	DATE	DRAWN	APPR	REV	PARTICULARS	CHKD/ENG	DATE	DRAWN	APPR
~	~	~	~	~	~	A	ISSUED FOR COMMENT.	~	23-4-2015	KW	~

Jemena Asset Management Pty Ltd ABN 53 086 013 461 COMP REF: //G/SOP/AE_CAD/JOBS/METSET/M209

SECONDARY PRESSURE UPGRADE TO SYPHON STONES AND BLACK BOX LID, AT THE ENTRANCE TO MAQJARIE UNIVERSITY.

Jemena
ENGINEERING SERVICES

PROJECT No:	APPROVED	ENGINEER	CHECKED	DRAWN	DATE	SCALE	DRAWING No:	REV.
50068179	-	KW	-	KW	23-04-2015	NTS	B1-SP-6049	A



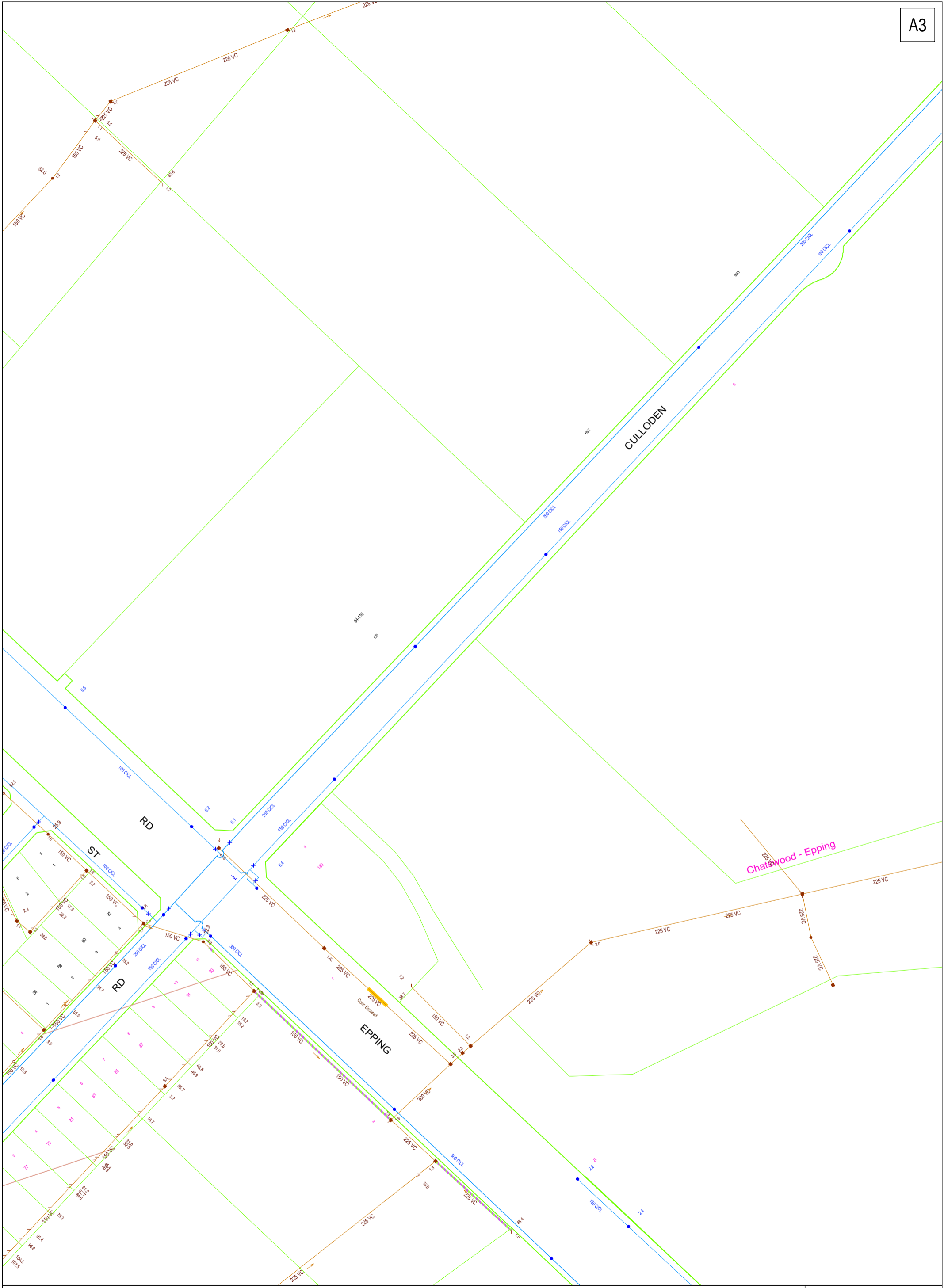
DBYD Address:
n/a Culloden Road
Marsfield NSW 2122

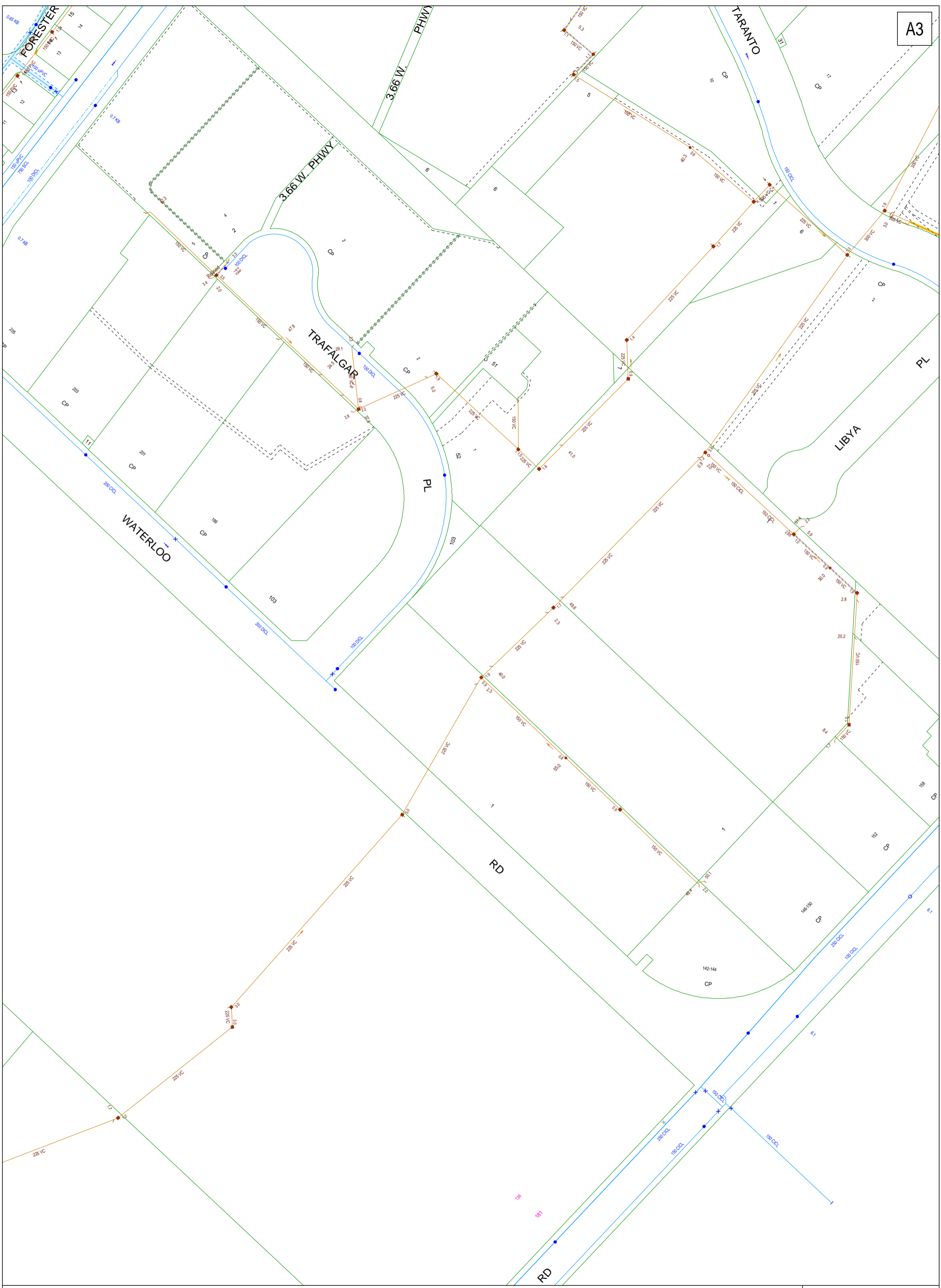
DBYD Job No: 9427836
DBYD Sequence No: 46731629

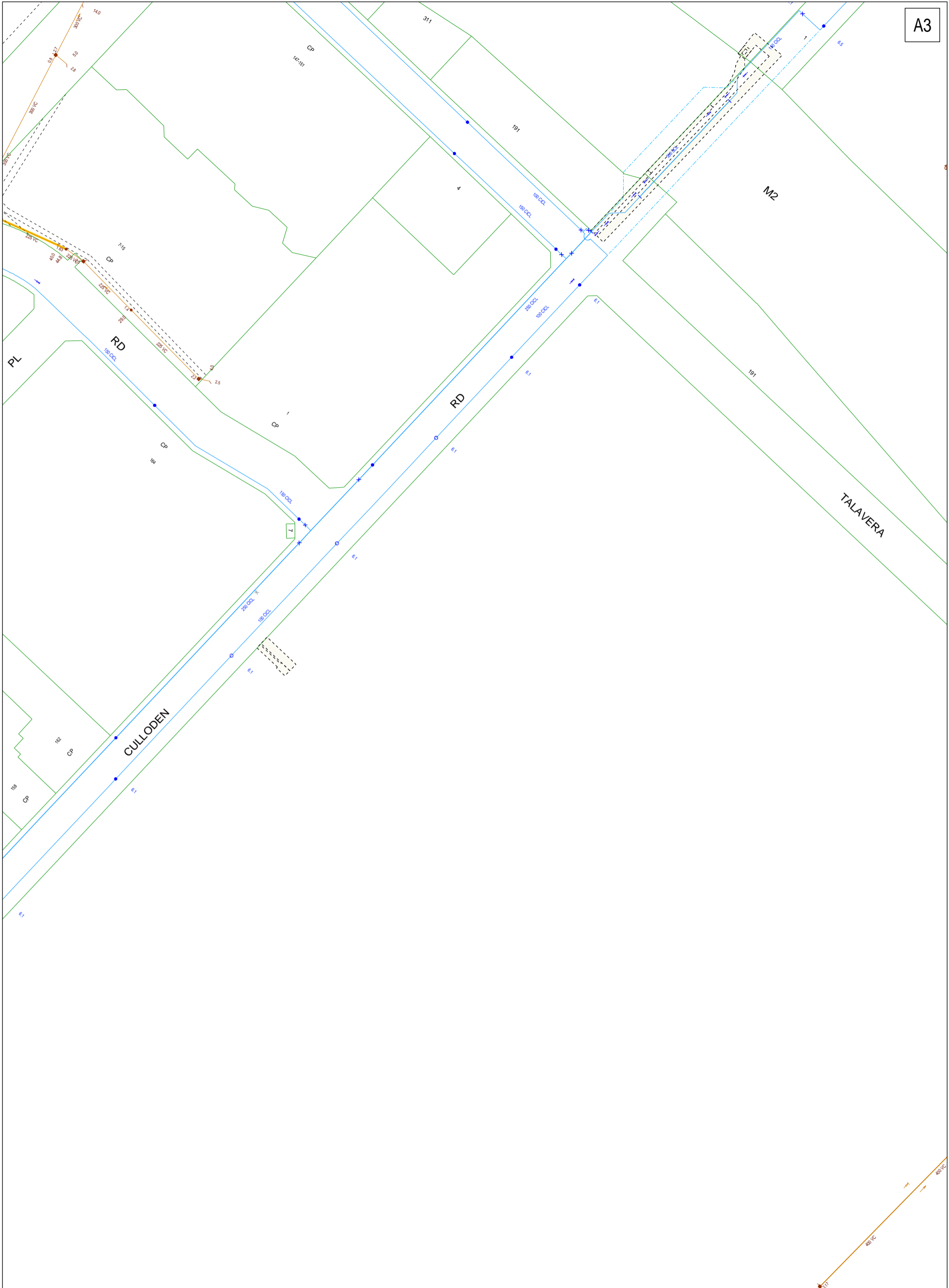
Copyright Reserved Sydney Water 2015
No warranty is given that the information shown is complete or accurate.
SYDNEY WATER CORPORATION

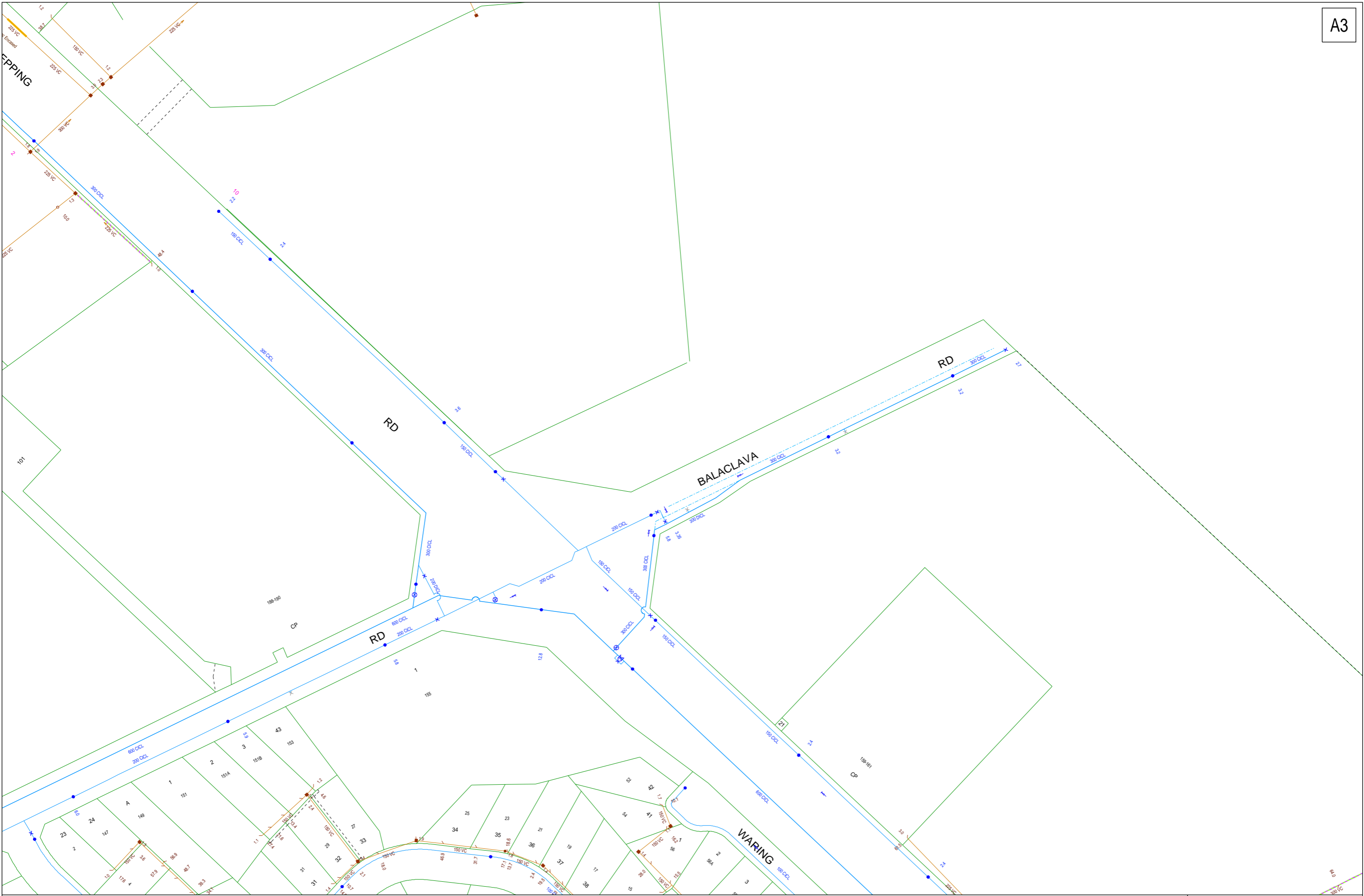
Scale: 1:1500
Date of Production: 16/07/2015

Plan 1 of 3







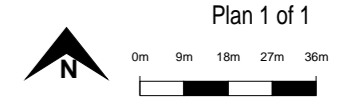


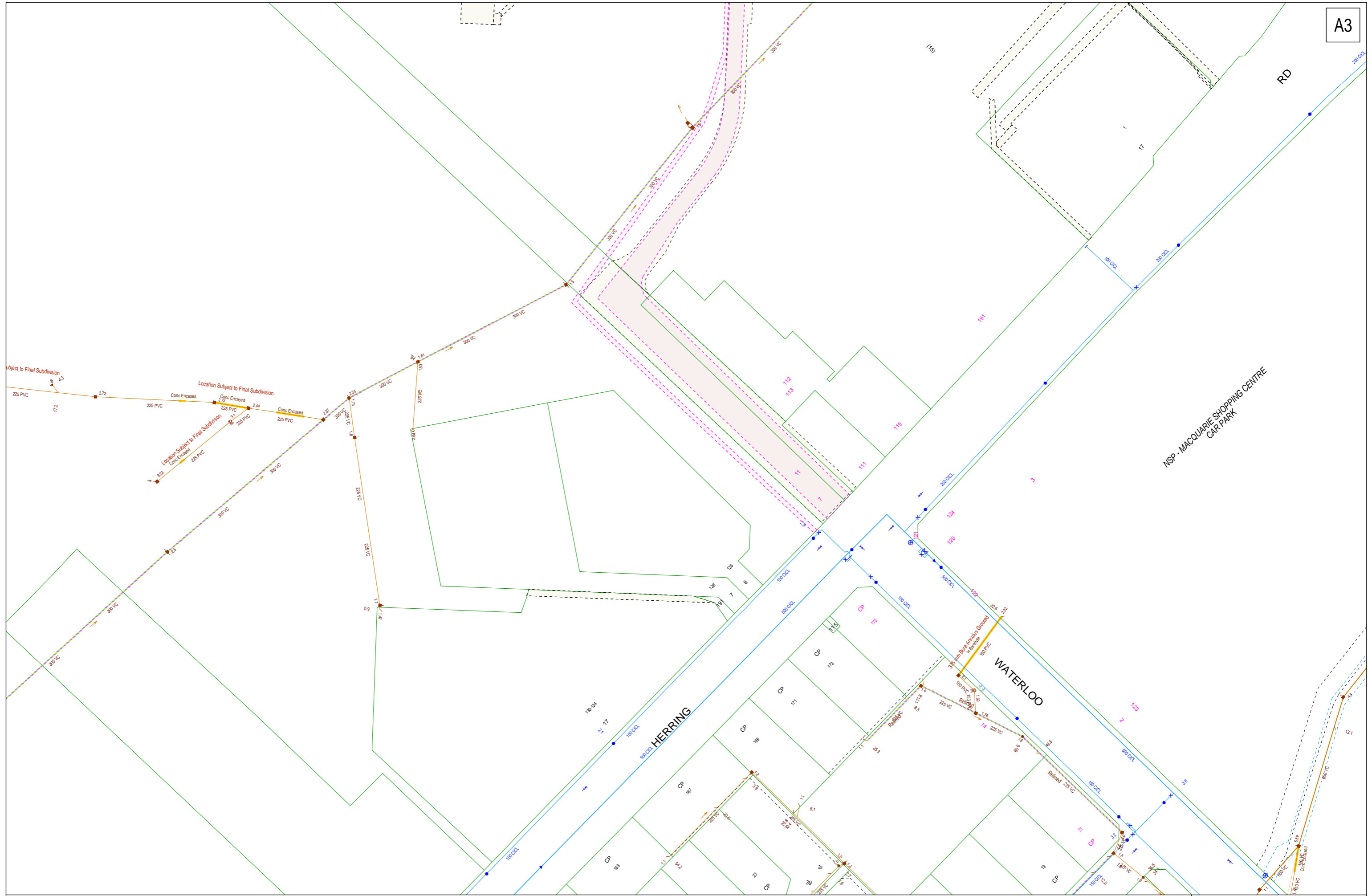
DBYD Address:
Epping Rd
North Ryde NSW 2113

DBYD Job No: 299459
DBYD Sequence No: 20458760

Copyright Reserved Sydney Water 2011
No warranty is given that the information shown is complete or accurate.
SYDNEY WATER CORPORATION

Scale: 1:1500
Date of Production: 19/01/2011





Statement of Available Pressure and Flow

David Buckle & Associates
Suite 8 / No. 38 Rowe Street
Eastwood, 2122

WMS No: **252910**
Contact No: 8849-3531
Fax No: 8849-3063

Attention: David Buckle

Date: 17/12/2012

Pressure & Flow Application Number: 8316035
Your Pressure Inquiry Dated: Fri December 14 2012
Property Address: 94-116 Culloden Rd, Marsfield 2122

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Balaclava Road	Side of Street: East
Distance & Direction from Nearest Cross Street	150 metres North from Epping Road
Approximate Ground Level (AHD):	77 metres
Nominal Size of Water Main (DN):	300 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	65 metre head
Minimum Pressure	35 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	35
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5	36
	10	35
	20	34
	25	33
	30	33
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	40	31
	5	34
	10	34
	20	33
	25	32
	30	31
	40	29
Maximum Permissible Flow	43	29

(Please refer to reverse side for Notes)

For 
Robert Wickham
Principal Planner
Urban Growth – Asset Services

E-MAIL

17/12/2012
OK

Statement of Available Pressure and Flow

David Buckle & Associates (NSW) Pty.Ltd
Suite 8, 38 Rowe Street
Eastwood, 2122

WMS No: 252710
Contact No: 8849-3531
Fax No: 8849-3063

Attention: Len Hutton

Date: 17/12/2012

Pressure & Flow Application Number: 8315486
Your Pressure Inquiry Dated: Fri December 14 2012
Property Address: 94-116 Culloden Rd, Marsfield 2122

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Culloden Rd	Side of Street: East
Distance & Direction from Nearest Cross Street	50 metres East from Waterloo Rd
Approximate Ground Level (AHD):	76 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	66 metre head
Minimum Pressure	34 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	34
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5	37
	10	36
	15	35
	20	34
	30	32
	40	29
	50	26
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)		
Maximum Permissible Flow	65	11

(Please refer to reverse side for Notes)

Robert Wickham
FOR Robert Wickham
Principal Planner
Urban Growth – Asset Services

E-MAIL

17/12/2012
lw

Statement of Available Pressure and Flow

David Buckle & Associates
Suite 8 / 38 Rowe Street
Eastwood, 2122

WMS No: **84486**
 Contact No: 8849 3531
 Fax No: 8849 3111

Attention: David Buckle

Date: 01/07/2010

Pressure & Flow Application Number: 2910065
 Your Pressure Inquiry Dated: Wed June 30 2010
 Property Address: Lot 114 Culloden Rd North Ryde 2113

FAXED

1/07/2010

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Balaclava Road	Side of Street: South
Distance & Direction from Nearest Cross Street	75 metres East from Epping Road
Approximate Ground Level (AHD):	78 metres
Nominal Size of Water Main (DN):	300 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	64 metre head
Minimum Pressure	36 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	36
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5	37
	10	36
	20	35
	25	34
	30	33
	40	30
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the watermain)	5	35
	10	35
	20	33
	25	32
	30	30
	40	28
Maximum Permissible Flow	77	13

(Please refer to reverse side for Notes)



RW
Robert Wickham
Team Leader
Asset Planning

Sydney **WATER**

Statement of Available Pressure and Flow

David Buckle & Associates
Suite 8 / 38 Rowe Street
Eastwood, 2122

WMS No: 163749
Contact No: 88493531
Fax No: 88493113

Attention: David Buckle

Date: 27/10/2011

Pressure & Flow Application Number: 3300376
Your Pressure Inquiry Dated: Wed October 19 2011
Property Address: 94-116 Culloden Rd Marsfield 2122

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Balaclava Road	Side of Street: South
Distance & Direction from Nearest Cross Street	75 metres East from Epping Road
Approximate Ground Level (AHD):	76 metres
Nominal Size of Water Main (DN):	250 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	66 metre head
Minimum Pressure	37 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	37
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5	38
	10	38
	20	36
	25	36
	30	35
	40	33
	50	30
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5	36
	10	36
	20	34
	25	33
	30	32
	40	29
50	26	
Maximum Permissible Flow	57	23

(Please refer to reverse side for Notes)


Robert Wickham
Team Leader
Asset Planning

General Notes

This report is provided on the understanding that (i) the applicant has fully and correctly supplied the information necessary to produce and deliver the report and (ii) the following information is to be read and understood in conjunction with the results provided.

1. Under its Act and Operating Licence, Sydney Water is not required to design the water supply specifically for fire fighting. The applicant is therefore required to ensure that the actual performance of a fire fighting system, drawing water from the supply, satisfies the fire fighting requirements.
2. Due to short-term unavoidable operational incidents, such as main breaks, the regular supply and pressure may not be available all of the time.
3. To improve supply and/or water quality in the water supply system, limited areas are occasionally removed from the primary water supply zone and put onto another zone for short periods or even indefinitely. This could affect the supply pressures and flows given in this letter. This ongoing possibility of supply zone changes etc, means that the validity of this report is limited to one (1) year from the date of issue. It is the property owner's responsibility to periodically reassess the capability of the hydraulic systems of the building to determine whether they continue to meet their original design requirements.
4. Sydney Water will provide a pressure report to applicants regardless of whether there is or will be an approved connection. Apparent suitable pressures are not in any way an indication that a connection would be approved without developer funded improvements to the water supply system. These improvements are implemented under the Sydney Water 'Urban Development Process'.
5. Pumps that are to be directly connected to the water supply require approval of both the pump and the connection. Applications are lodged through Quick Check Agents (List available on Sydney Water Website - www.sydneywater.com.au). Where possible, on-site recycling tanks are recommended for pump testing to reduce water waste and allow higher pump test rates.
6. Periodic testing of boosted fire fighting installations is a requirement of the Australian Standards. To avoid the risk of a possible 'breach' of the Operating Licence, flows generated during testing of fire fighting installations are to be limited so that the pressure in Sydney Water's System is not reduced below 15 metres. Pumps that can cause a breach of the Operating Licence anywhere in the supply zone during testing will not be approved. This requirement should be carefully considered for installed pumps that can be tested to 150% of rated flow.

Notes on Models

1. Calibrated computer models are used to simulate maximum demand conditions experienced in each supply zone. Results have not been determined by customised field measurement and testing at the particular location of the application.
2. Regular updates of the models are conducted to account for issues such as urban consolidation, demand management or zone change.
3. Demand factors are selected to suit the type of fire-fighting installation. Factor 1 indicates pressures due to system demands as required under Australian Standards for fire hydrant installations. Factor 2 indicates pressures due to peak system demands.
4. When fire-fighting flows are included in the report, they are added to the applicable demand factor at the nominated location during a customised model run for a single fire. If adjacent properties become involved with a coincident fire, the pressures quoted may be substantially reduced.
5. Modelling of the requested fire fighting flows may indicate that local system capacity is exceeded and that negative pressures may occur in the supply system. Due to the risk of water contamination and the endangering of public health, Sydney Water reserves the right to refuse or limit the amount of flow requested in the report and, as a consequence, limit the size of connection and/or pump.
6. The pressures indicated by the modelling, at the specified location, are provided without consideration of pressure losses due to the connection method to Sydney Water's mains.
7. Modern pipes have quality assured, factory applied, concrete lining. Some older pipes are, however, designated CICALIS (cast iron concrete lined in-situ). In this situation, results are obtained using conservative modelling techniques to account for the uncertain quality of the lining. However, it is recommended that the applicant obtains verification of any results by field-testing. Appropriate notification to Sydney Water by the accredited service provider shall be given before testing is undertaken (conditions may apply).