

# INFRASTRUCTURE REPORT

## Penrith Lakes Urban Lands Development DA5.2 at Cranebrook

Electrical, Water and Sewer Servicing for a proposed 138 lot subdivision



Prepared for:

**Penrith Lakes Development Corporation**

12<sup>th</sup> December 2013

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### - DOCUMENT CONTROL SHEET -

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## 1 INTRODUCTION

Penrith Lakes Development Corporation invited J. Wyndham Prince to provide an infrastructure report confirming whether electricity, water and sewer can service the proposed 141 lot subdivision of the future urban area at Penrith Lakes.

The proposed development is part of a staged development DA5.2 for a 141 lot subdivision, including 138 rural residential allotments with a minimum 2Ha lot size plus 3 additional allotments for open space.

A desktop assessment has been undertaken on the proposed subdivision and current information available from Sydney Water and Endeavour Energy to assess the serviceability of the site.

Qalchek, located at Penrith, who are a Sydney Water recognised Water Service Coordinator have reviewed the proposed subdivision layout and provided information on the serviceability of the site.

A Technical Review Request application was lodged with Endeavour Energy to provide information on the electrical serviceability of the site. Endeavour have verbally confirmed the serviceability of the site, their written confirmation has not yet been received.

A brief outline of the development and design approval process is provided to inform the landowner/developer of the necessary steps to receive an approval from the service Authorities to construct the infrastructure and service the site

The following advice is based on the current:

- information available from service Authorities,
- existing infrastructure servicing Cranebrook, and
- current Authority development and design policies.

The conclusion of this report is the proposed 138 minimum 2Ha rural residential allotments can be serviced by electricity, water and sewer.

This report can be used to support a Development Application for the proposed subdivision.

## 2 DEVELOPMENT APPROVALS

### 2.1 Subdivision of land

The proposed subdivision will require approval from Penrith City Council in the form of a staged Development Consent. Council's development consent will condition the land owner/developer to issue a certificate from the service Authorities confirming adequate provisions have been arranged to service the site.

Typically, a Section 73 Certificate from Sydney Water is required to confirm satisfactory arrangements are in place for the provision of water and sewer services to the proposed development.

Typically, a Notice of Requirements from the electrical Authority, in this case Endeavour Energy, is required to confirm satisfactory arrangements are in place for the provision of electrical services to the proposed development.

A copy of each certificate will need to be issued to Council to complete the subdivision certification allowing the land owner/developer to finalise the subdivision process.

## 2.2 Electrical Design and Notice of Requirements

To obtain a Notice of Requirements to satisfy Councils Development Consent, the following process needs to be followed.

- Engage a Level 3 accredited service provider (L3 ASP) to undertake an electrical design and submit a design to Endeavour Energy for approval.
- The design process involves:
  - L3 ASP to submit application for Method of Supply
  - Endeavour Energy issues a Design Brief outlining the design requirements to adequately service the proposed subdivision
  - Developer enters into an agreement with Endeavour Energy by signing the Design Brief
  - Preparation of electrical reticulation design in accordance with the Design Brief
  - Prepare street light design if required, street light certification and signoff by Council
  - Submission of design to Endeavour Energy for certification
  - Endeavour issue design /monopoly fees
  - Client pays Endeavour fees
  - Endeavour Energy issues Letter of Intent along with certified designs
- Construct the electrical works
- Submit a subdivision plan and an 88b instrument to Endeavour Energy along with an application for a Notice of Requirements
- Endeavour Energy will sign-off the electrical works, sign the 88b instrument and issue a Notice of Requirements.

## 2.3 Water Design and Section 73 Certificate

To obtain a Section 73 Certificate to satisfy the development consent issued by Council, the following process needs to be followed.

- Engage a Water Service Coordinator (WSC) to undertake the water design and submit the design to Sydney Water for approval.
- The design process involves:
  - WSC to submit a Section 73 Certificate application to Sydney Water
  - Sydney Water will issue a Notice of Requirements outlining the design requirements to adequately service the proposed subdivision
  - Developer enters into a Works Deed with Sydney Water
  - WSC prepares a design and submits the design to Sydney Water for approval
  - Sydney Water certifies the design
  - WSC prepares a constructors package and submits to Sydney Water
  - WSC issues the authority to undertake the works
- Construction of the water works
- WSC submits a completion package to Sydney Water
- Sydney Water issues a Section 73 Certificate

The detailed design process outlined above must be completed to satisfy Sydney Water servicing requirement.

### **3 PROVISION OF SERVICES**

Information from Sydney Water's Hydra database and Endeavour Energy's Network Plans have been reviewed to identify what infrastructure existed around the site. Sydney Water and Endeavour Energy have been consulted to advise on the serviceability of the proposed subdivision.

An overview of the supply zones was also undertaken.

This information along with the knowledge of the site supports the following opinions in determining the serviceability of the proposed development.

#### **3.1 Electrical Supply**

The Cranebrook area is serviced by the Endeavour Energy's Cranebrook zone substation located on Andrews Road, Cranebrook. It is understood this substation has sufficient capacity to service the proposed subdivision. The substation is located 1.5km from the site.

According to Endeavour Energy, their preliminary investigation suggests their network also has sufficient capacity to service the proposed development.

The proposed subdivision would require an extension of Endeavour Energy's assets in accordance with their requirements and the requirements of Penrith Council. New feeder mains will need to be constructed between the site and the zoned substation. The zoned substation may require amplification; this will be confirmed during the design process.

Attached is a copy of Endeavour Energy's network plans detailing the existing High Voltage lines along Cranebrook Road.

#### **3.2 Water Supply**

The Cranebrook area is serviced by Sydney Water's Cranebrook reservoirs located on The Northern Road at Cambridge Park. The bulk water supply comes from the Bringelly Water Treatment Plant

Sydney Water confirmed via a feasibility letter, their preliminary investigations indicate the water trunk system has capacity to service proposed development.

There is an existing 450mm diameter water main in Castlereagh Road between Andrews Road and Nepean Street, and a 300mm main along Cranebrook Road.

Sydney Water's Hydra information shows no water infrastructure along the new Castlereagh Road alignment north of Nepean Street.

A watermain extension may be necessary to create a looped water supply to the subdivision via two water lead-ins, one at the southern entry and the other at the northern entry. The watermain extension will be approximately 4.0km along Castlereagh Road.

Refer to Appendix C for Sydney Water's Hydra information detailing the existing water service surrounding the site

### 3.3 Sewer Service

The Cranebrook area is serviced by Penrith Sewer Treatment Works.

Sydney Water confirmed via a feasibility letter, their preliminary investigations indicate the sewer trunk system has capacity to service proposed development.

Approximately 500m east of Castlereagh Road there is a 750mm sewer carrier that can service the site. The carrier is connected to the Andrews Road sewer pumping station SP0883. SP0883 is approximately 1km from the site and pumps effluent 1.5km to the Penrith Waste Water Treatment Plant.

Sydney Water's Farrell's Lane sewer pumping SP0888 is centrally located on the eastern side of the development site. This pumping station is a small station servicing a local catchment. The sewer rising main from the pumping station connects to the Castlereagh carrier approximately 750m away from the site.

The ground level at SP0883 is AHD 24.6m. The ground level of the lowest sewer catchment within the subdivision will be around 1.0m below SP0883. The southern entry from Castlereagh Road is around 1.5m lower than SP0883. The proposed grading of the site indicates sewer from the subdivision will need to be pumped from the development site to the Castlereagh carrier or to SB0883.

Gravity sewer could service the proposed subdivision within the development area, draining to the lowest area/s within the site. A local pumping station/s could pump sewer from within the site to either the Castlereagh Carrier or directly to SP0888.

Although Sydney Water stated the sewer trunk system has capacity to service the site, the configuration of the pressured sewer will need to be confirmed by sewer modelling and an options assessment. This will be undertaken as part of Sydney Water's Detailed Planning Process.

Attached is Sydney Water's Hydra information detailing the existing sewer service surrounding the site

## 4 SUMMARY

The proposed 138 lot subdivision can be serviced by electricity, water and sewer.

### 4.1 Electrical

The site can be serviced by power:

- Endeavour Energy's existing network has capacity to service the site
- New feeder mains from the Castlereagh zoned substation may be need to be constructed to service the site.

### 4.2 Water

The site can be serviced by water:

- Sydney Water's existing water infrastructure has trunk capacity to service the site
- Watermain extensions will be necessary to service the site



### 4.3 Sewer

The site can be serviced by sewer:

- Sydney Water's existing sewer infrastructure has trunk capacity to service the site
- The internal sewer network can be a gravity system draining to local pumping stations within the site.
- The local pumping stations would pump the sewer to either the Castlereagh Carrier or Andrews Road Sewer Pumping Station SP0888
- A new trunk main/s need to be constructed to connect the site to Sydney Water's sewer network.
- Detailed sewer modelling will be necessary to determine the most appropriate sewer system.
- Sydney Water's Detailed Design Process will need to be completed to determine the existing sewer infrastructure capabilities, network amplification requirements, and design an appropriate service for the site.

#### *Limitations*

*This report outlines the possible ways to service the proposed subdivision with electricity, water and sewer. The derived outcomes are based on the current and available information from the service Authorities and our knowledge of the area.*

*The servicing of the site should be verified with the service Authorities by submitting the relevant applications and completing the design processes outlined in this report.*

Should Penrith Lakes Development Corporation require any further clarification or have any queries regarding the information enclosed please contact J. Wyndham Prince on 4720 3322.

Yours faithfully

**J. WYNDHAM PRINCE**



**ANDREW TAYLOR**

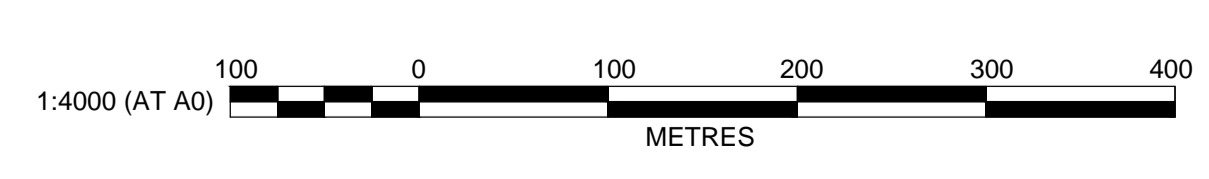
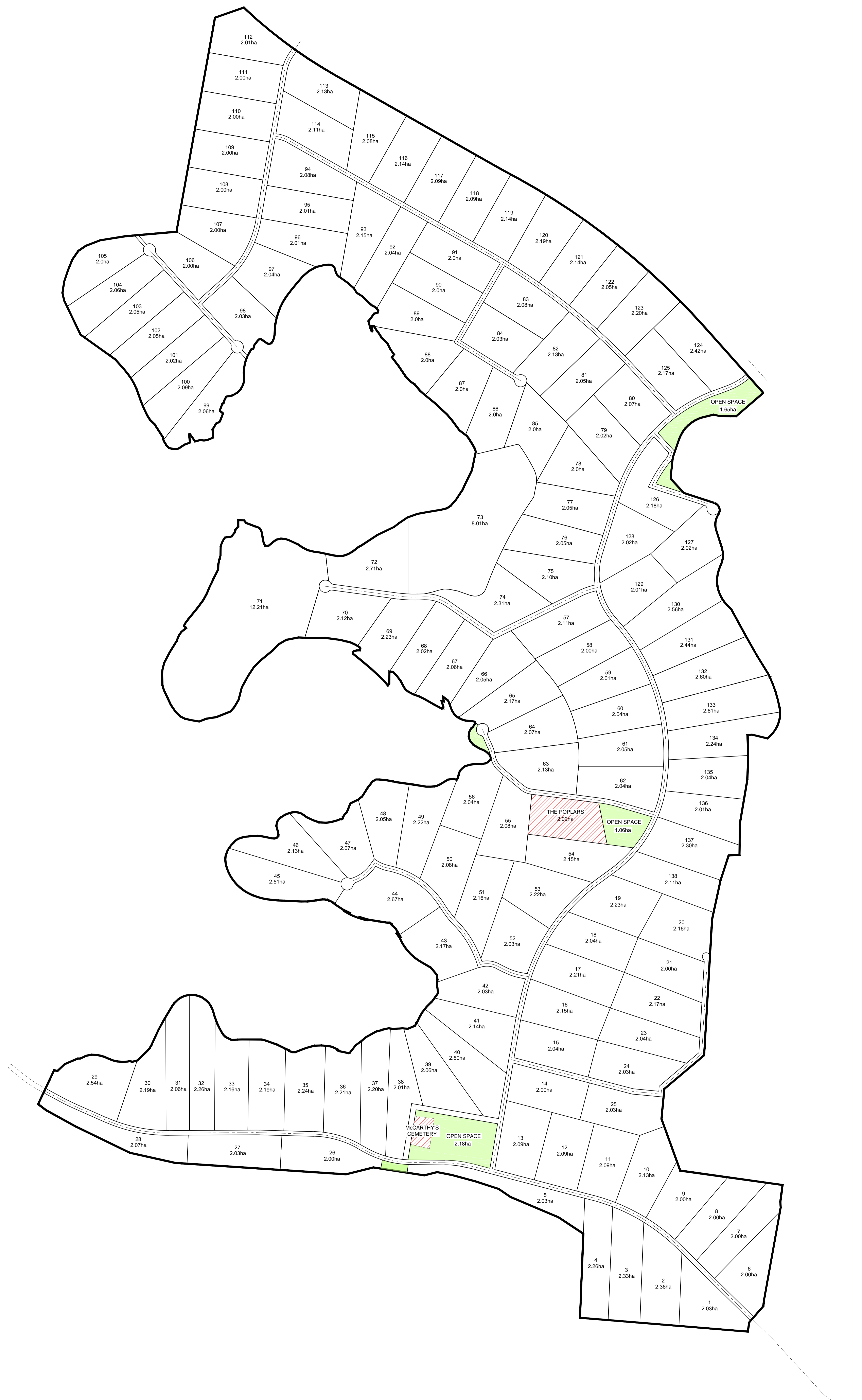
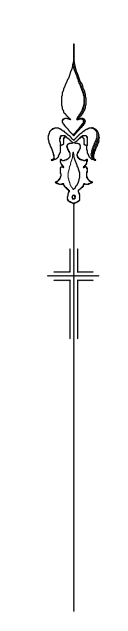
Project Manager



**Appendix A**

Site Plans

J. Wyndham Prince Plan 9600SK40 Revision A



CLIENT:



DATE:

ORIGIN:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

**ADVANCE COPY ONLY**  
**NOT FOR CONSTRUCTION**

**PENRITH LAKES**  
**PROPOSED RURAL SUBDIVISION**  
2ha ROAD AND LOT LAYOUT  
UTILISING PROPOSED URBAN ROAD LAYOUT

PLAN No:	9600/SK40	A
FILE No:	9600SK40	
SHEET SIZE:	A1 ORIGINAL	

**J. WYNDHAM PRINCE** CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

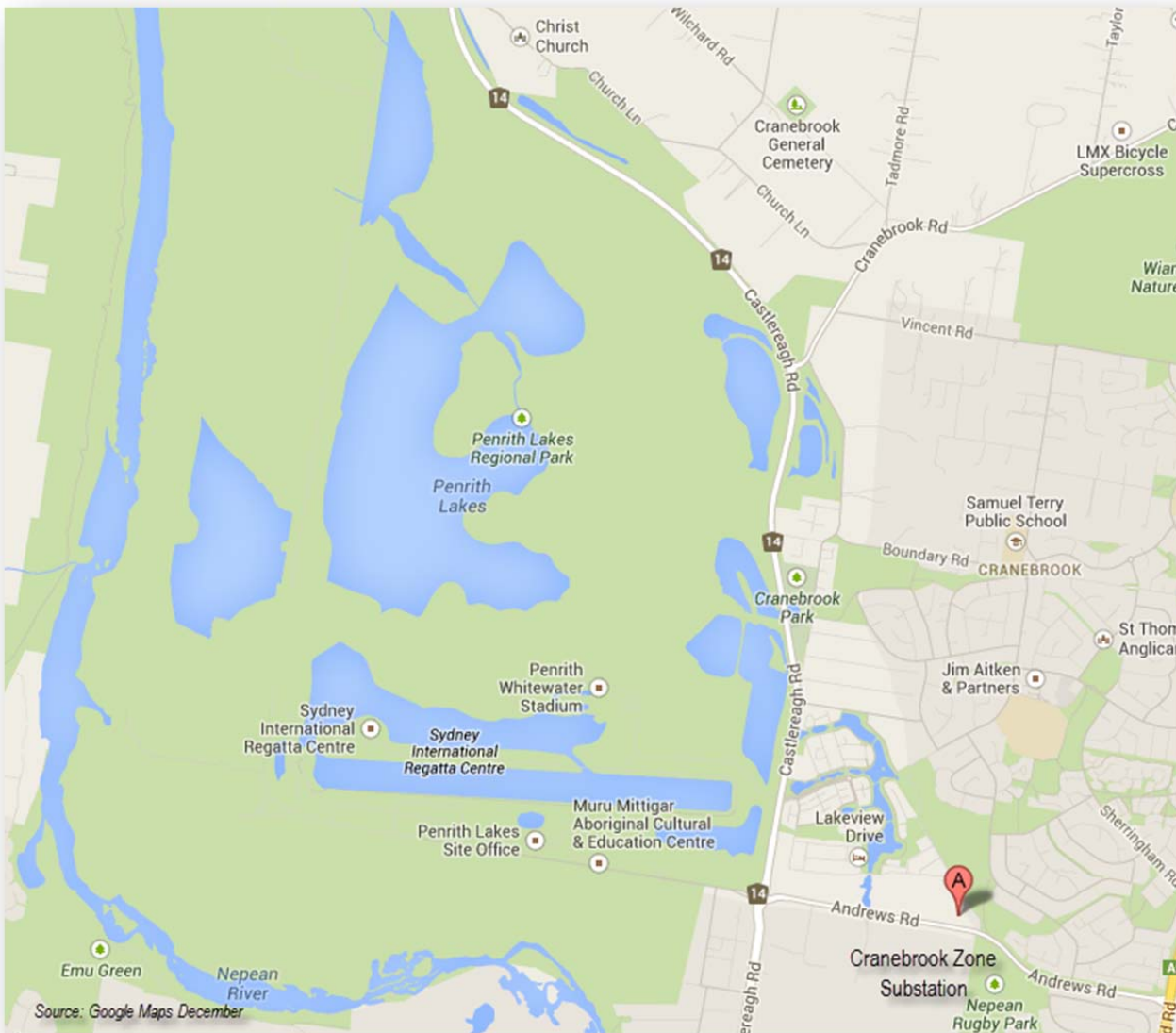
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ISSUED FOR INFORMATION	AM	AM	13/11/13
AMENDMENT	DES	DRN	CKD
			APR
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Appendix B

Electrical Plans

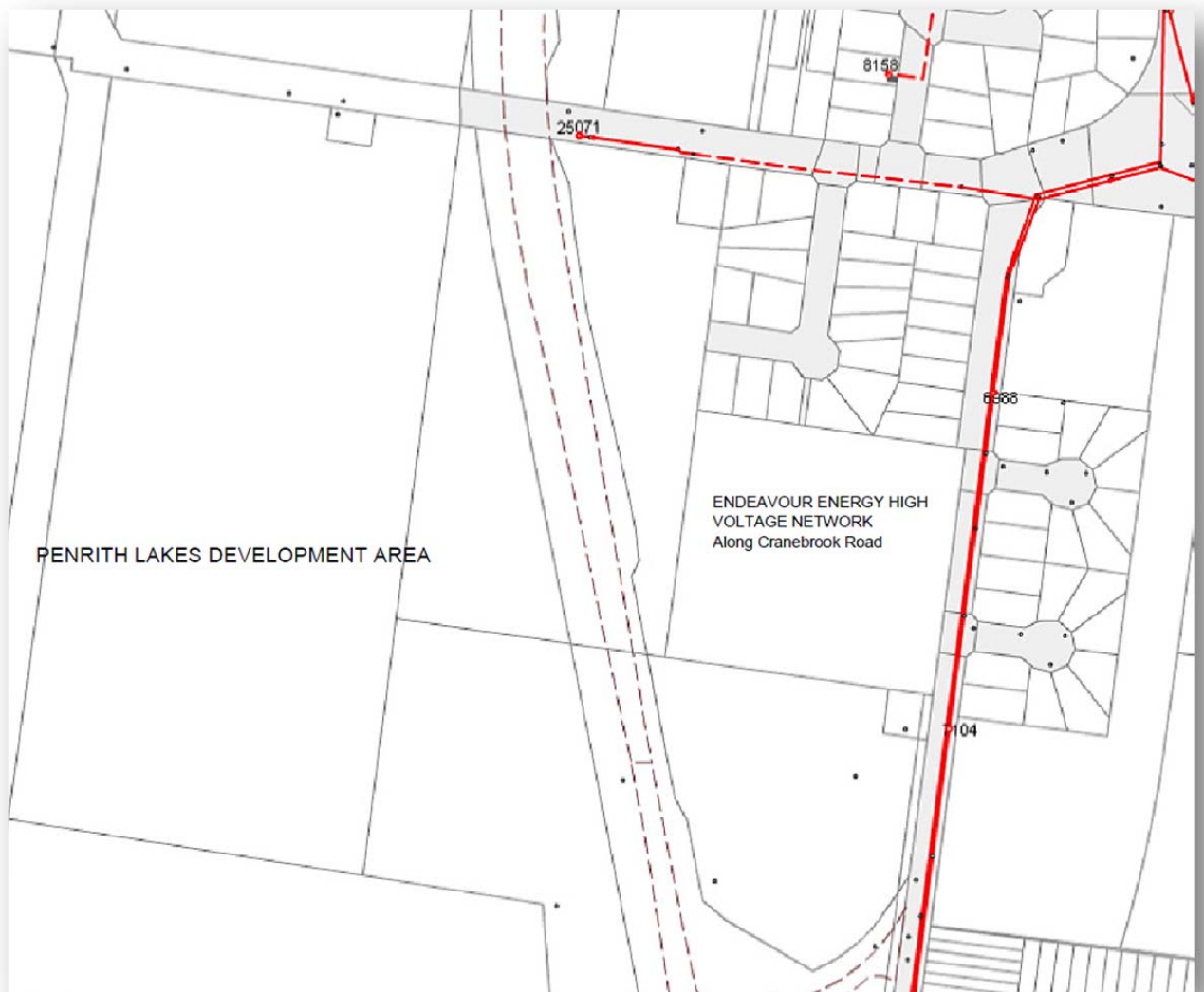
Endeavour Energy Low Voltage and High Voltage Network Plans







High Voltage network adjacent to the Urban Lakes development site. High Voltage feeders run from the Cranebrook Zone Substation on Andrews Road, along Andrews Road, Castlereagh Road and Cranebrook Road

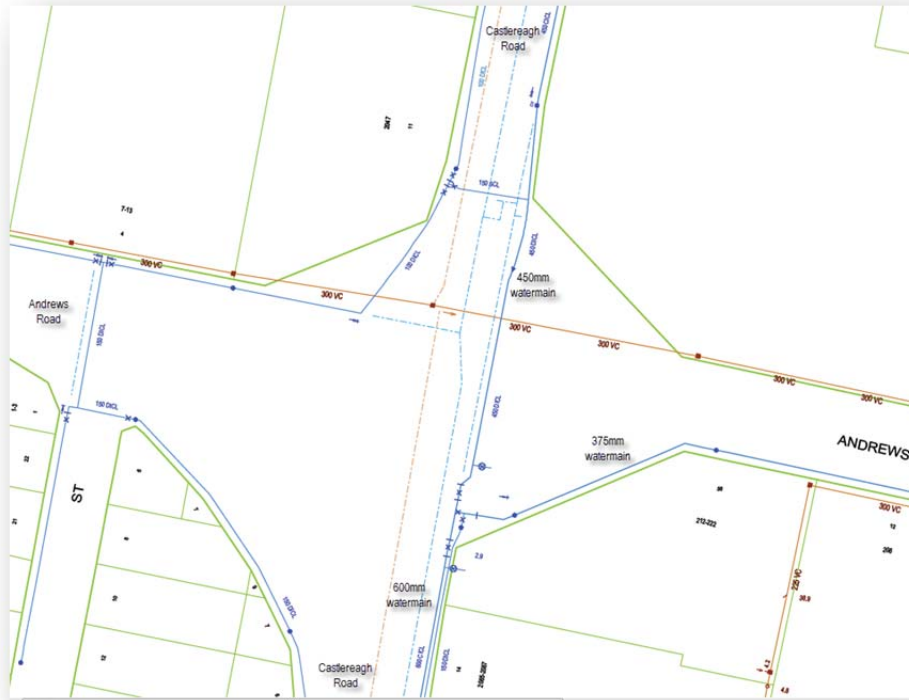


High Voltage network along Cranebrook Road and Farrells Lane

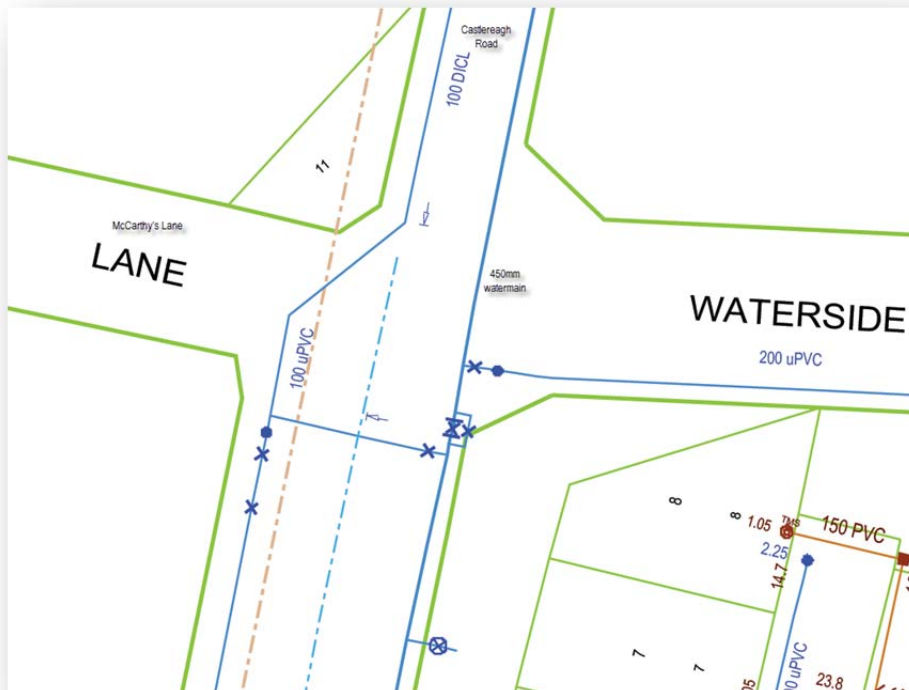
Appendix C

Water and Sewer Plans

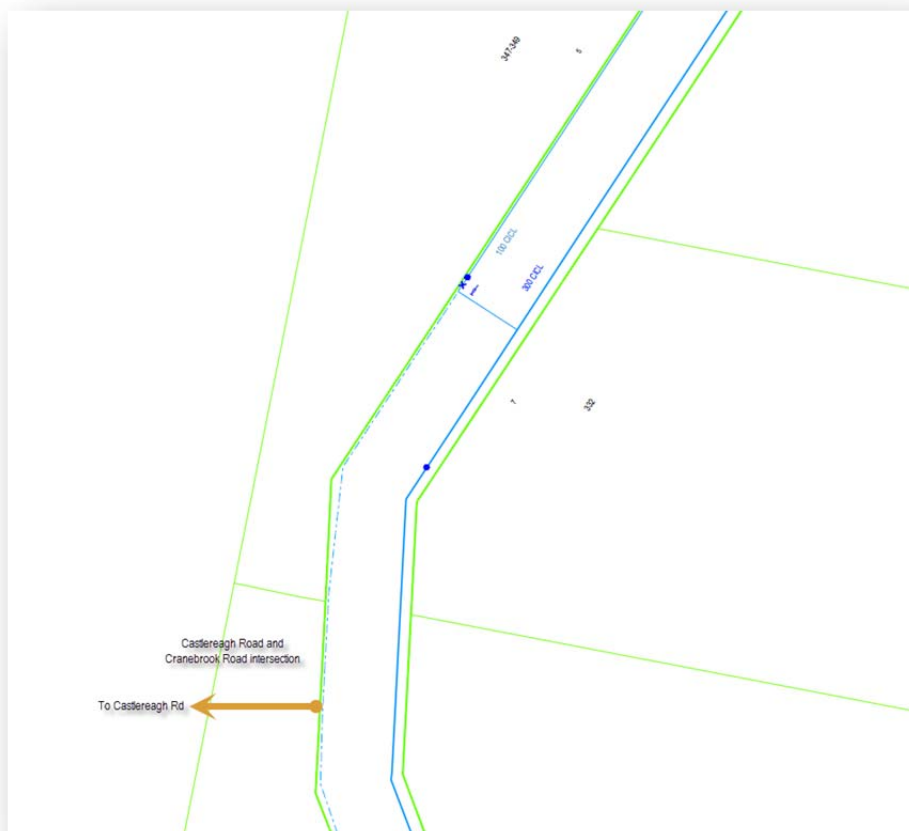
Sydney water Hydra Plans



Watermain infrastructure – 450mm main along Castlereagh Road connected to a 600mm main south of Andrews Road and a 375mm main in Andrews Road

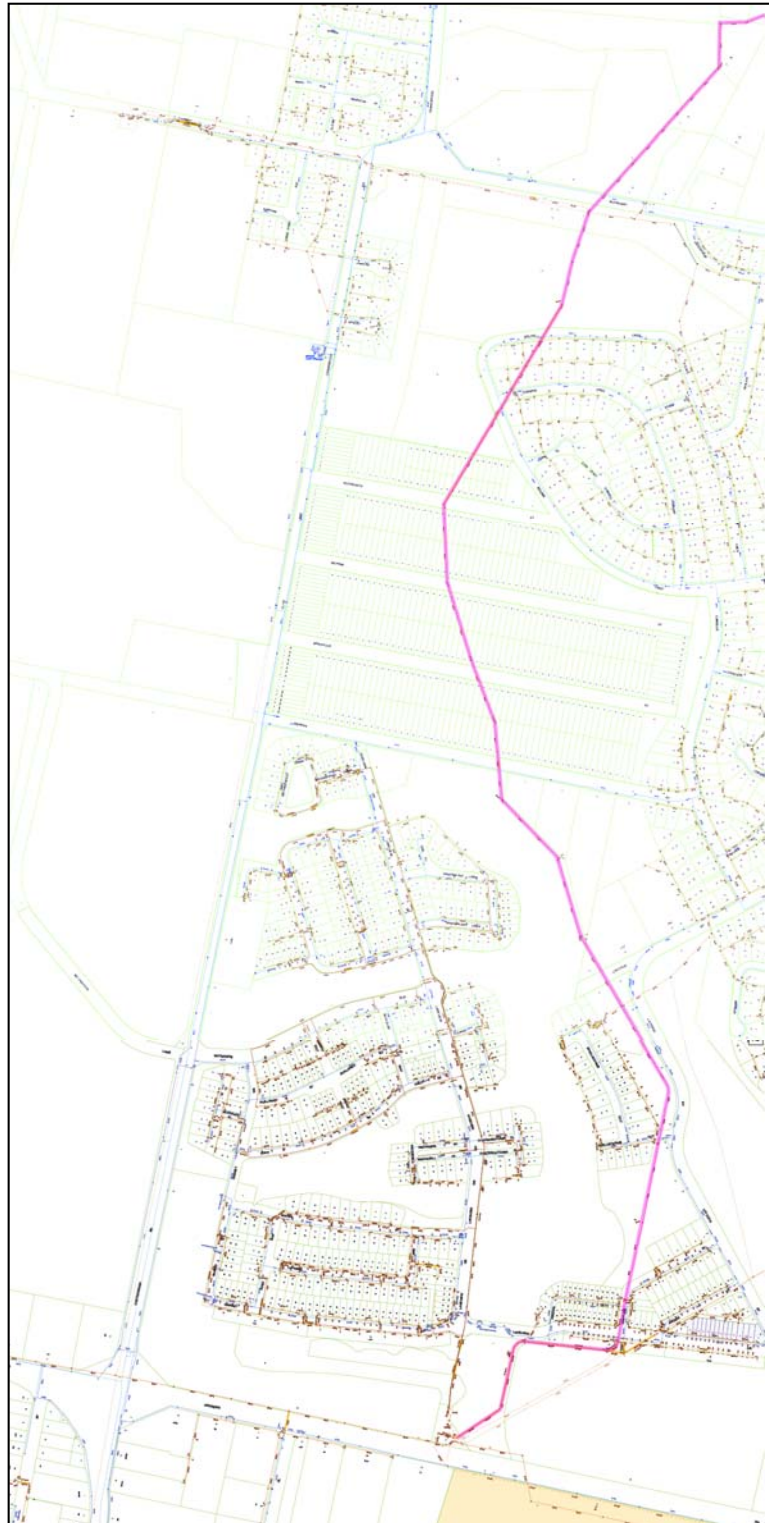


Watermain infrastructure – 450mm main at the intersection Castlereagh Road and McCarthy's Lane



Watermain infrastructure – 300mm main at the intersection of Castlereagh Road and Cranebrook Road





Cranebrook Sewer Carrier main 750dia from Andrews Road SPS0883 to Boundary Road