

# Warren Smith & Partners Pty Ltd

## **Nepean Integrated Mental Health Unit Hydraulic Services Utilities Report Rev B**

Client

## **Sydney West Area Health Authority**

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## 1. Introduction

This report briefly outlines the Existing Hydraulic Services Utilities Infrastructure to service the Proposed Mental Health Unit at Nepean Hospital Campus.

## 2. Potable Cold Water Supply

Enquiries lodged to Sydney Water have determined:-

The Nepean Hospital Campus is currently serviced by Sydney Water watermains network located as follows (refer to attached Sydney Water diagram):-

- 225mm diameter Sydney Water watermain located in Barber Avenue;
- 150mm diameter Sydney Water watermain located in Parker Street;
- 150mm diameter Sydney Water watermain located in Somerset Street;
- 100mm diameter Sydney Water watermain located in Derby Street.

These (4) four local watermains interconnect, providing a reliable authority ring main system surrounding the site.

The proposed site which adjoins Derby Street could be supplied as follows:-

- New connection to 100mm diameter Sydney Water watermain in Derby Street and;
- New upgraded connection to 150mm diameter Sydney Water watermain in Somerset Street and extension to site.

Statutory required Fire Services would also be supplied from these authority watermains. Any shortage in fire flow provisions could be made up by the installation of storage tanks to meet BCA requirements.

### Proposal to Reduce the Development's Potable Cold Water Demand

The incorporation of on-site potable cold water storage tanks will greatly reduce peak demand supply directly off the Authorities watermain. The water tanks located at roof plantroom will be approximately 10,000 Litres in storage capacity and provide a minimum three (3) hours storage, so as to provide a continuous supply of potable cold water to the Hospital during Sydney Water maintenance procedures or watermain failure.

On-site Rainwater Harvesting will also assist in reducing potable cold water demand. Rainwater from all new major roof areas will gravitate and connect to a 50m<sup>3</sup> recycling/non potable water storage tank. The non potable water will be used for irrigation purposes and sanitary flushing throughout the new Mental Health Building.

The following water saving conservation devices with high WELS star rating will be incorporated within the development:-

- ❑ 3/4.5 Litre WC cisterns
- ❑ 0.8 L/sec automatic urinal flushing
- ❑ Low flow tapware and appliances

The potable and non potable cold water service will be designed and constructed in accordance with AS 3500.1, National Plumbing and Drainage Part 1: Water Supply, New South Wales Code of Practice and Sydney Water requirements.

NOTE: A formal Section 73 Application to Sydney Water will be submitted to confirm the adequacy of the Sydney Water mains.

### **3. Sewer and Trade Waste Discharge**

Enquiries lodged to Sydney Water have determined:-

The Nepean Hospital Campus is currently serviced by three (3) Sydney Water sewer main connections located as follows (refer to attached Sydney Water diagram):-

- 300mm diameter Sydney Water sewer main located adjacent Parker Street;
- 100mm diameter Sydney Water sewer main located cnr of Parker and Derby Street; and
- 225mm diameter Sydney Water sewer main located in Somerset Street.

The proposed site which adjoins Derby Street and would discharge to the 300mm diameter Sydney Water sewer main located in Parker Street.

The sewer drainage systems will be designed and constructed in accordance with AS 3500.2, National Plumbing and Drainage Part 2: Sanitary Plumbing and Sanitary Drainage, New South Wales Code of Practice and Sydney Water requirements.

All Trade Waste Drainage Systems will be designed and constructed in accordance with AS 3500.2, National Plumbing and Drainage Code Part 2: Sanitary Plumbing and Sanitary Drainage, New South Wales Code of Practice, Sydney Water and EPA requirements.

NOTE: A formal Section 73 Application to Sydney Water will be submitted to confirm the adequacy of the Sydney Water mains.

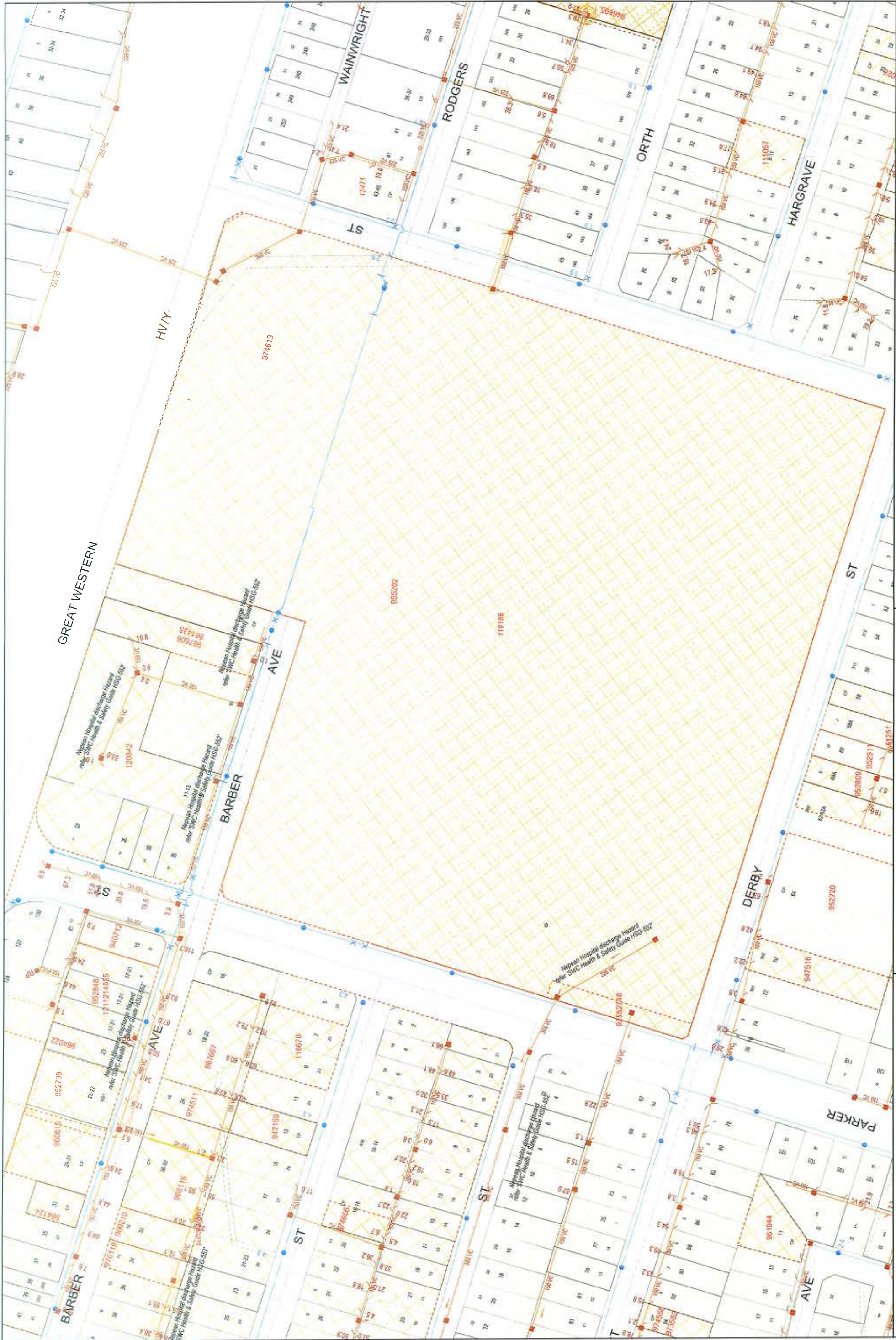
#### 4. **Natural Gas Supply**

Enquiries lodged to Jemena have determined:-

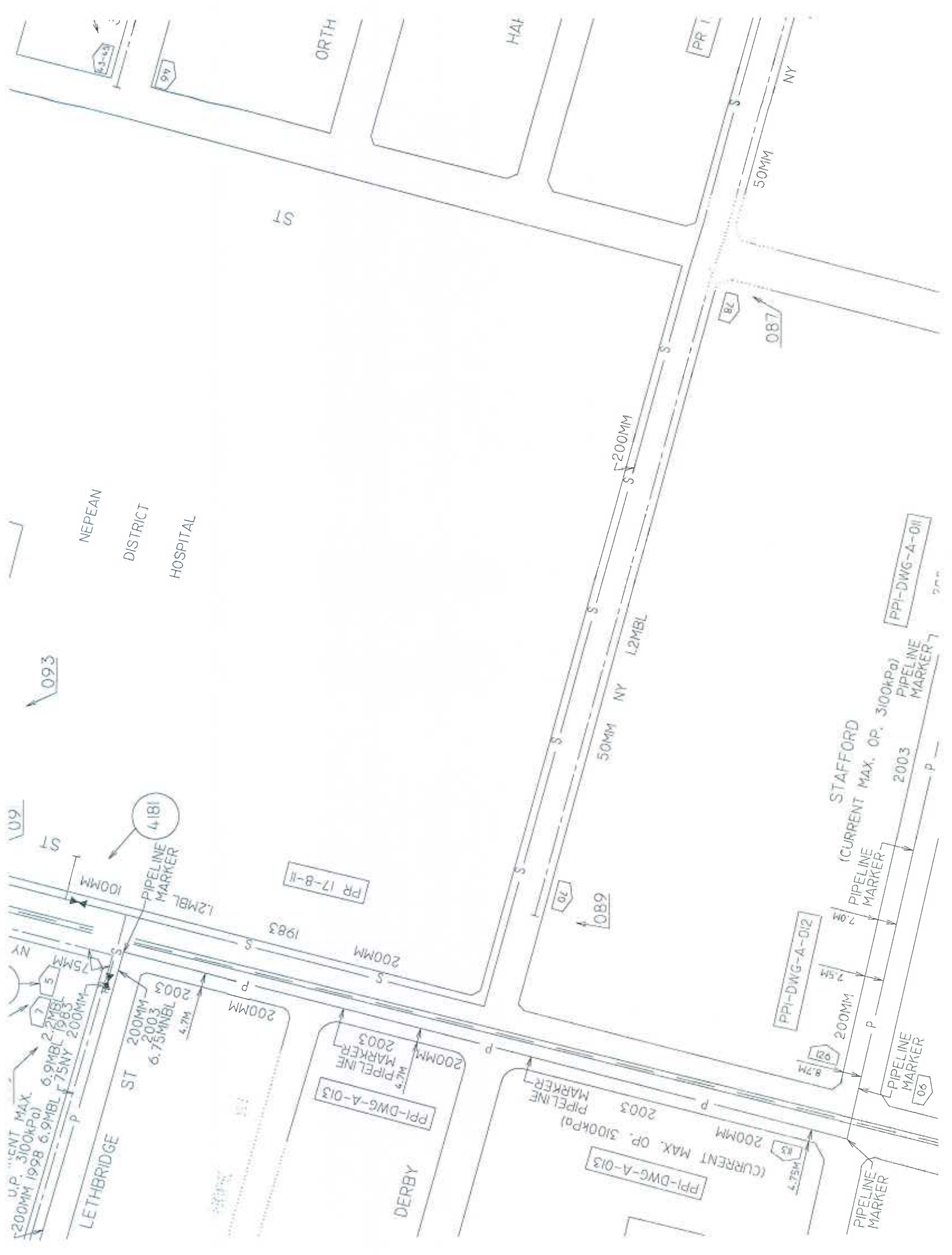
The Nepean Hospital Campus is currently serviced by Jemena natural gas secondary mains (1,050 kPa) located in Derby and Parker Streets respectively. A 100mm diameter main is located on the west side of Derby Street and a 200mm diameter main is located on the north side of Derby Street. (Refer natural gas mains diagram)

A 100 diameter 1050 kPa high pressure gas service currently supplies the Hospital via a connection from Parker Street. The proposed site, which adjoins Derby Street, would be supplied from this incoming service or be provided with it's own incoming supply and meter from Derby Street.

Mechanical heating boilers and potable hot water heaters will be supplied with natural gas. The high pressure gas supply from the Jemena mains would be adequate to service the Project's requirements.







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# Nepean Integrated Mental Health Unit

## Electrical, Mechanical and ICT Planning Application - Utilities Report

**Rev B**

**SYD1014800  
9th September 2010**

Client

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09.09.10

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Revision No.	Section & Page No.	Issue/Amendment	Author	Project Engineer	Approved	Date
A		Draft	KDS	KDS,JCO		27.08.10
B		Revised Draft	KDS	KDS,JCO		09.09.10

## **1. INTRODUCTION**

### **1.1 AIM OF REPORT**

This report briefly outlines the extent of the initial infrastructure design, strategy and the associated utility liaison for the Integrated Mental Health Unit at Nepean Hospital.

### **1.2 GENERAL INFORMATION**

The initial assessment of the existing and proposed infrastructure is based on:

- Steensenvarming Campus Infrastructure Report (Rev 09, 2008)
- Arup's Scheme Design Report (Appendix 8 of the Combined Service Procurement Plan and Project Definition Plan)
- Integral Energy Plans (Enquiry Number 19330874).
- Correspondence and discussions with Brian Holdsworth (Integral Energy) and Ron Deans (Nepean Hospital Building Services)
- Visual site inspections.
- Discussions with the neighbouring East Block Building design and construction teams.

## **2. ELECTRICAL SERVICES**

### **2.1 EXISTING INCOMING POWER SUPPLY SERVICES**

The overall hospital site is supplied at 11kV via a dedicated High Voltage network. The hospital is an HV customer and is responsible for the HV distribution on the campus, from two points of supply.

The principal feeder originates from Parker St, served by the Kingswood Zone Substation. A secondary supply originates from Derby St and serves as a back up to the principal feeder in the event of maintenance.

Distribution to the various buildings located across the site is provided by HV radial feeders, supplying localised load centres. The main HV switch room is located below the Main Hospital Building.

Under the current proposed infrastructure master plan, the existing Parker St feeder is to be upgraded under a separate contract during the winter of 2011.

The existing Derby St feeder runs adjacent to the proposed new Mental Health Unit building.

### **2.2 EXISTING SUPPLY CAPACITY & ADDITIONAL LOAD REQUIREMENT**

Overall Campus:

The current load application enquiry to Integral Energy identifies an increase of the Campus load to 6MVA. As indicated above, the existing Parker St feeder to the campus is to be upgraded to provide additional capacity under a separate contract, including the proposed new Mental Health Unit.

Mental Health Facility:

Initial load estimates indicate a maximum demand of approx. 600kVA for the new Mental Health Facility.

An existing 500kVA rated kiosk substation (Substation J) is located adjacent to the proposed new building.

### **2.3 PROPOSED INCOMING SERVICES ARRANGEMENT & SUPPLY AUGMENTATION**

Derby St Feeder:

The existing secondary feeder will need to be diverted as part of the proposed new development.

Mental Health Unit

As illustrated above, the existing Substation J does not have sufficient capacity to service the proposed new Mental Health Unit and the existing local buildings.

The existing substation is to be replaced by a larger 1MVA rated substation, relocated as part of the new site layout for the Mental Health Unit Building.

The existing HV radial feeder has capacity and can be reused but will need to be rerouted to avoid the proposed new Mental Health Unit building.

Low voltage consumer mains will then feed the new Mental Health Unit.

### **2.4 INCOMING COMMUNICATIONS**

The new building is to be supplied from the existing Hospital PABX and Main Communications Room.

New services will be reticulated in-ground conduits from this point, via the proposed new route to the East Building, currently under construction.

Any necessary diversions will be undertaken as part of the new building works.

## **3. MECHANICAL SERVICES**

### **3.1 EXISTING MECHANICAL SERVICES ARRANGEMENT**

As described within the Steensenvarming Campus Infrastructure Report (Rev 09, 2008), there is no spare cooling or heating capacity in the existing Central Plant.

This plant would require significant upgrades in capacity to provide heating and cooling for the Mental Health building.

This is not practical for either spatial or financial reasons and therefore the new building will be serviced by dedicated plant.

### **3.2 PROPOSED MECHANICAL SERVICES ARRANGEMENT**

The dedicated mechanical plant will be located on level 3 of the Mental Health building. Due to the low-rise profile of the building, the air handling plant will be decentralised and mounted close to the respective conditioned zones. The dedicated thermal plant containing the chillers and boilers will be located within the eastern wing.

**APPENDIX**

Plan of Existing and Proposed HV Infrastructure    DWG EB – E1008