

Warren Smith & Partners

# **WESTMEAD REDEVELOPMENT**

## **TOWN PLANNING – UTILITIES STATEMENT**

**WATER DEMAND, SEWER DISCHARGE & GAS LOADS**

**HYDRAULIC SERVICES**

## DOCUMENT INFORMATION

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## DOCUMENT CONTROL

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## APPROVALS

05	Tom Wise <i>Associate</i>	Tom Wise <i>Associate</i>
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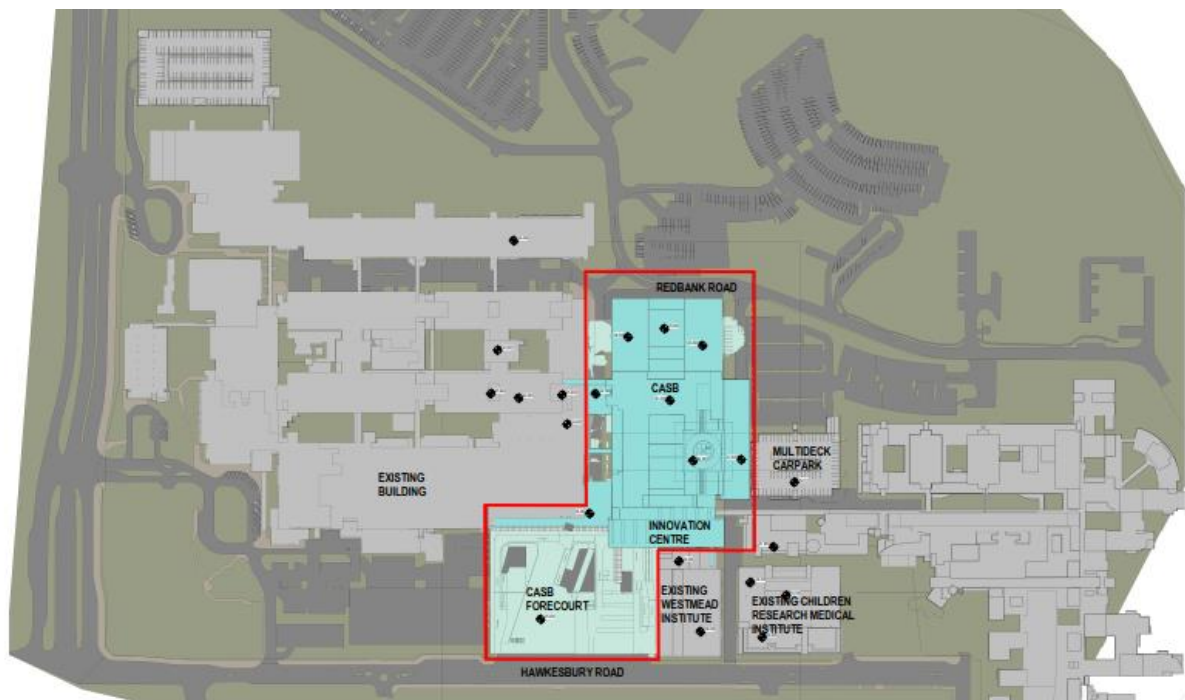
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## 1. INTRODUCTION

Warren Smith & Partners (WS+P) has been engaged by Health Infrastructure to prepare a Town Planning – Utilities Statement for the proposed construction forming of the new Westmead Redevelopment. This report aims to address the following SEARs condition 9. Utilities; Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure. Prepare an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water.

Please refer to Figure 1 for an aerial view of the proposed new Westmead Redevelopment site (identified in red).



**Figure 1:** Aerial View of Development Site

The redevelopment includes:

### 1. Acute Services Building (ASB):

- Building heights indicatively ranging from 4 - 13 storeys
- Approximately 82,571 sqm gross floor area.
- ASB comprising the following facilities/services:
  - Acute inpatient;
  - Emergency Department;
  - Paediatric Emergency Department;

- Operating theatres;
  - Surgical wards;
  - Intensive care / high dependency unit;
  - Acute admissions;
  - Acute Medical Imaging;
  - Cardiac comprehensive care centre;
  - Clinical support / pharmacy;
  - Central support areas;
  - Rooftop helipad.
2. Innovation Centre (approximately 8187 sqm gross floor area) comprising University of Sydney innovation hub and teaching and learning support incorporating conference suite, multi-function work zone, auditorium, and Westmead biobank repository facility.
3. Forecourt:
- The forecourt will provide the main entry to the ASB and the Innovation Centre, emergency department drop off, and access to proposed car park;
  - Two separate set-down/pick-up loops with access to the Westmead Hospital main entry to the east and the CHW main entry to the west;
  - Undercroft car park accommodating approximately 200 spaces for use primarily by visitors. This would be accessed via the entry forecourt area from Hawkesbury Road.

The purpose of this application is to understand the capacity of the existing Sydney Water assets and identify if any amplifications are required due to the proposed new development.

## 2. DEMOLITION

Demolition works are not being undertaken as part of the SSD. Details on the demolition works from the proposed development are provided in a separate REF document.

**3. DEMAND CALCULATIONS**

**3.1 ACUTE SERVICES BUILDING**

**3.1.1 WATER SUPPLY DEMAND CALCULATIONS**

The assumption taken in determining the average daily potable water demands for the proposed 440 beds were taken from the Sydney Water table, “Average Daily Water Use by Property Type” and is presented in Table below.

**Table 1: Average Daily Water Demand**

Classification	Metric Unit	Average Demand (L/Metric Unit/Day)
<b>Healthcare</b>		
Hospital Beds	Bed	271

Please refer to Table 2 below for the average daily water demand calculation.

**Table 2: Average Daily Water Demand Calculation**

Total Beds	Average Demand (L/Metric Unit/Day)	Total Average Daily Water Demand (kL)
440	271	119.24

The following flows have also been calculated:-

- Probable simultaneous flow – 30 L/sec
- Cooling towers flow – 9 L/sec
- Fire flow for hydrants – 20 L/sec
- Fire flow for sprinklers – 20 L/sec

## 3.1.2 SEWER DISCHARGE CALCULATIONS

The assumption taken in determining the average daily sewer discharge for the proposed floor area were taken from the Sydney Water table, "Average Daily Water Use by Property Type" and is presented in Table 3. We used this table as the water demand figure does not include cooling towers; therefore the water demand and sewer discharge should be approximately equal.

**Table 3: Average Daily Sewer Discharge**

Classification	Metric Unit	Average Demand (L/Metric Unit/Day)
<b>Healthcare</b>		
Hospital Beds	Bed	271

Please refer to Table 4 below for the average daily sewer discharge calculation.

**Table 4: Average Daily Sewer Discharge Calculation**

Total Beds	Average Demand (L/Metric Unit/Day)	Total Average Daily Sewer Demand (kL)
440	271	119..24

## 3.1.3 GAS LOAD CALCULATIONS

Please refer to Table 5 below for the gas loads associated with the proposed development.

**Table 5: Average Gas Loads**

Appliance	Total (Mj/hr)
HVAC Heating Water Plant	70,000
DHW Heating Water Plant	10,000

## 3.2 INNOVATION CENTRE

### 3.2.1 WATER SUPPLY DEMAND CALCULATIONS

The assumption taken in determining the average daily potable water demands for the proposed floor area were taken from the Sydney Water table, "Average Daily Water Use by Property Type" and is presented in Table 6.

**Table 6: Average Daily Water Demand**

Classification	Metric Unit	Average Demand (L/Metric Unit/Day)
<b>Commercial</b>		
Office	Square Meter	8187

Please refer to Table 7 below for the average daily water demand calculation.

**Table 7: Average Daily Water Demand Calculation**

Total Square Meters	Average Demand (L/Metric Unit/Day)	Total Average Daily Water Demand (kL)
8187	2.27	18.58

The following flows have also been calculated:-

- Probable simultaneous flow – 3 L/sec
- Cooling towers flow – 2.4 L/sec
- Fire flow for hydrants – 20 L/sec
- Fire flow for sprinklers – 20 L/sec

### 3.2.2 SEWER DISCHARGE CALCULATIONS

The assumption taken in determining the average daily sewer discharge for the proposed floor area were taken from the Sydney Water table, “Average Daily Water Use by Property Type” and is presented in Table 8. We used this table as the water demand figure does not include cooling towers; therefore the water demand and sewer discharge should be approximately equal.

**Table 8: Average Daily Sewer Discharge**

Classification	Metric Unit	Average Demand (L/Metric Unit/Day)
<b>Commercial</b>		
Office	Square Meter	8187

Please refer to Table 9 for the average daily sewer discharge calculation.

**Table 9: Average Daily Sewer Discharge Calculation**

Total Square Meters	Average Demand (L/Metric Unit/Day)	Total Average Daily Sewer Demand (kL)
8187	2.27	18.58

### 3.2.3 GAS LOAD CALCULATIONS

Please refer to Table 10 below for the gas loads associated with the proposed development.

**Table 10: Average Gas Loads**

Appliance	Total (Mj/hr)
HVAC Heating Water Plant	20,000
DHW Heating Water Plant	5,000

## 3.3 FORECOURT & CAR PARK

### 3.3.1 WATER SUPPLY DEMAND

There will be no water demand created from the forecourt and car park.

### 3.3.2 SEWER DISCHARGE CALCULATIONS

There will be no sewer discharge created from the forecourt and car park.

### 3.3.3 GAS LOAD CALCULATIONS

There will be no gas demand created from the forecourt and car park.

#### 4. UTILITY CONNECTIONS

##### 4.1 SYDNEY WATER – WATER MAIN CONNECTION

###### Existing

The existing Westmead Hospital site has two existing connections; one in Hawkesbury Road and one in Darcy Road. The two water supplies interconnect within the site boundary and flow through a single water meter. The two connections to the water main do not provide a reliable backup supply due to insufficient valving. Both connections are normally open i.e. both used to supply the hospital's demand.

Note: there are currently no water meters at the boundaries.

###### Proposed

The proposed Westmead Hospital site is to utilise two 200mm water main connections; one in Hawkesbury Road and one in Darcy Road covered within other Refs. There will be new water meters and RPZDs installed at the boundary of each connection and the private system will interconnect to provide a backup supply if required.

The new private water service infrastructure will connect to the 200mm system and extend to the new buildings.

The pipe sizes within the Westmead Hospital site are sized to suit the existing loads and proposed current loads with allowance for future demands.

Refer to Figure 2 for details on the Westmead Hospital proposed water main connections.

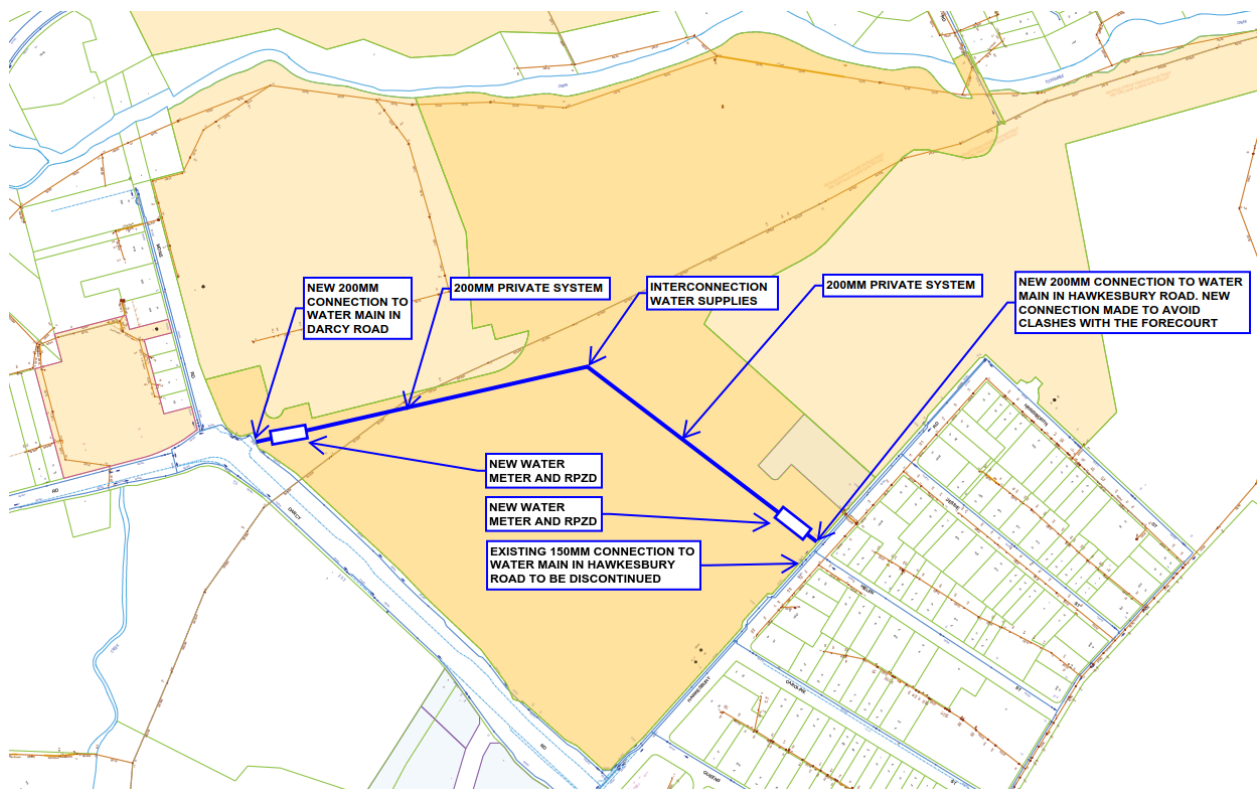


Figure 2: Proposed Sydney Water, Water Main Connections

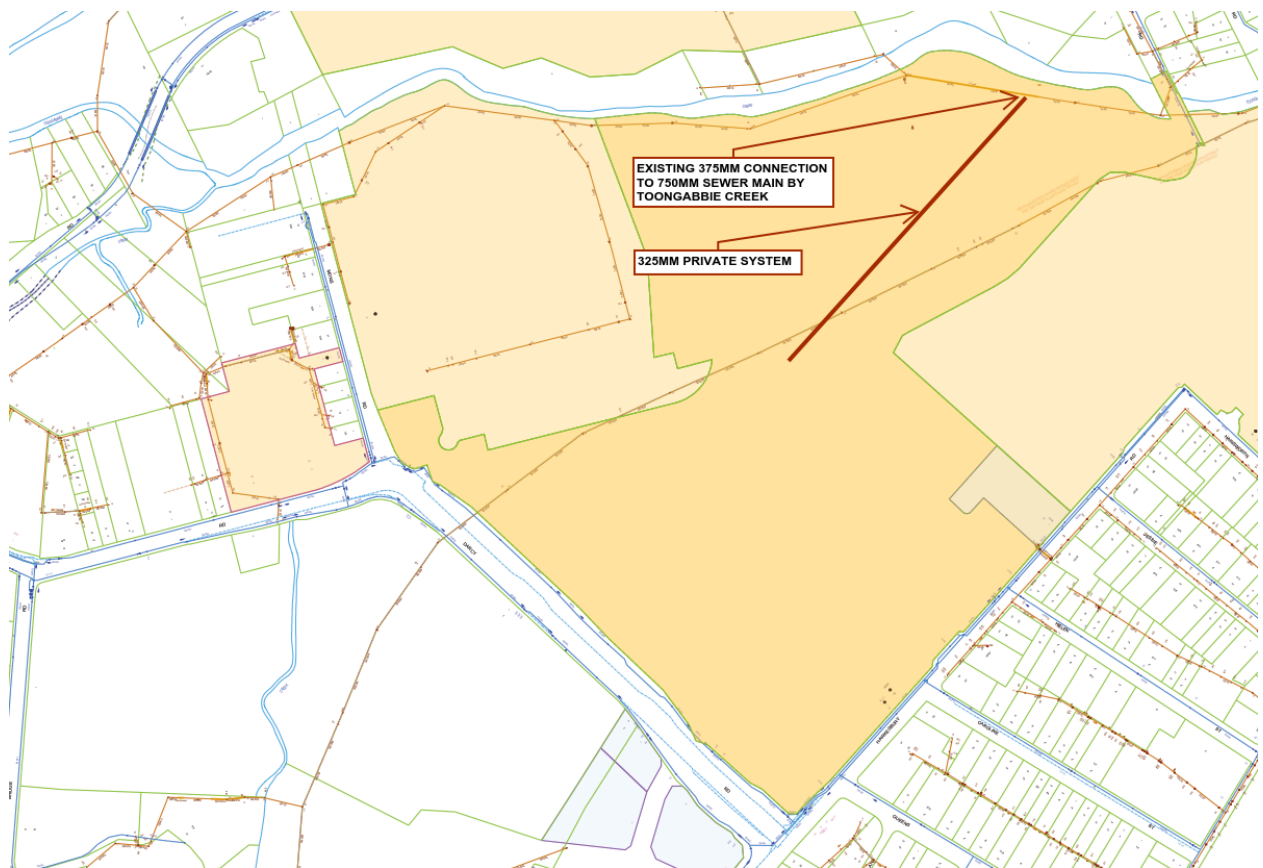
## 4.2 SYDNEY WATER - SEWER MAIN CONNECTION

The Westmead Hospital site has an existing 375mm sewer connection to the 750mm sewer main which is located parallel to Toongabbie Creek.

The new private sewer drainage infrastructure will connect to the existing 375mm sewer and extend to the new buildings covered within other Refs.

The pipe sizes within the Westmead Hospital site are sized to suit the existing loads and the proposed current loads with allowance for future demands.

Refer to Figure 3 for details on the existing sewer connection point by Toongabbie Creek.



**Figure 3:** Existing Sydney Water, Sewer Main Connections

### 4.3 JEMENA- GAS MAIN CONNECTION

The Westmead Hospital site has an existing connection to the 150mm, 1050kPa gas main which is located in Redbank Road.

The new private gas infrastructure will connect to the existing utility gas meter and extend to the new buildings covered within other Refs.

The pipe sizes within the Westmead Hospital site are sized to suit the existing loads and the proposed current loads with allowance for future demands.

Refer to Figure 4 for details on the existing gas connection point by Redbank Road.

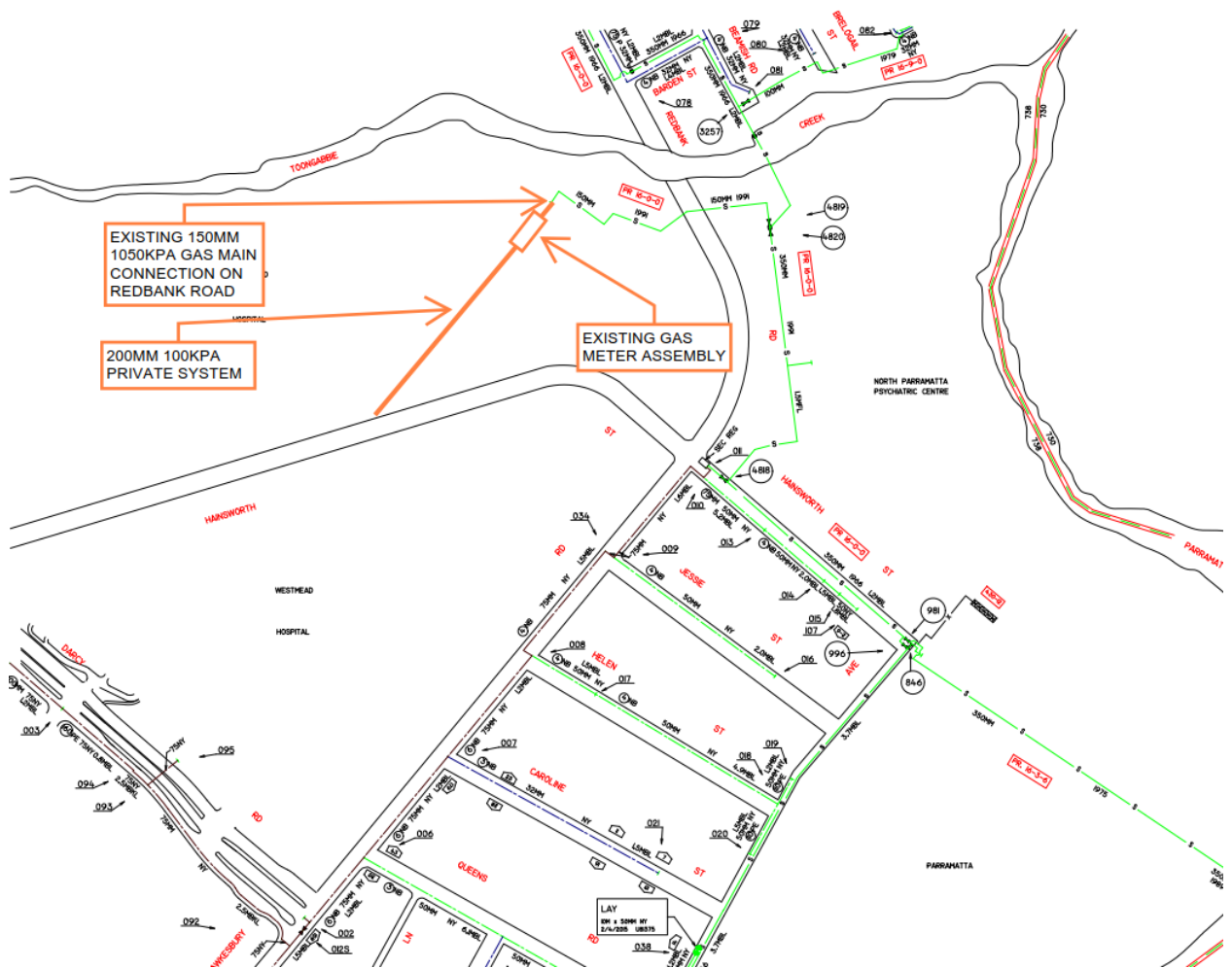


Figure 4: Existing Jemena Gas Main Connections

### 5. WATER USAGE REDUCTION

Potable water usage will be reduced by the use of low flow taps and sanitary fixtures, typically using the following flow rates;

- Shower 9.0L/m
- Basin 7.7L/m
- Sink 7.7L/m
- Scrub trough 7.7L/m

The reuse of Non-potable water will not be utilised due to the unfavourable life cycles and potential risks to public health due to lack of preventative maintenance.

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