

Warren Smith & Partners

NORTHSIDE CLINIC
10 HERBERT STREET, ST LEONARDS

WATER MANAGEMENT PLAN

HYDRAULIC SERVICES

DOCUMENT INFORMATION

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1. INTRODUCTION

Warren Smith & Partners (WS+P) has been engaged by Ramsay Health Care to prepare a Water Management Plan for Northside Clinic. This Water Management Plan aims to provide detailed information regarding the use of water on site.

Please refer to Figure 1 for an aerial view of the existing site where the Northside Clinic is to be constructed (identified in red).



Figure 1: Aerial View of Development Site

All existing buildings on the site will be demolished to make way for the new Northside Clinic. The new Northside Clinic will consist of 112 mental health beds contained within an eight storey building with the possibility of a future IPU level with an extra 24 beds.

2. DEMAND CALCULATIONS

2.1 WATER SUPPLY DEMAND CALCULATIONS

The assumption taken in determining the average daily potable water demands for the proposed 112 beds were taken from the Sydney Water table, "Average Daily Water Use by Property Type" and is presented in Table 1 below. Please refer to *Schedule 1* for the Sydney Water table.

Table 1: Average Daily Water Demand

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

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

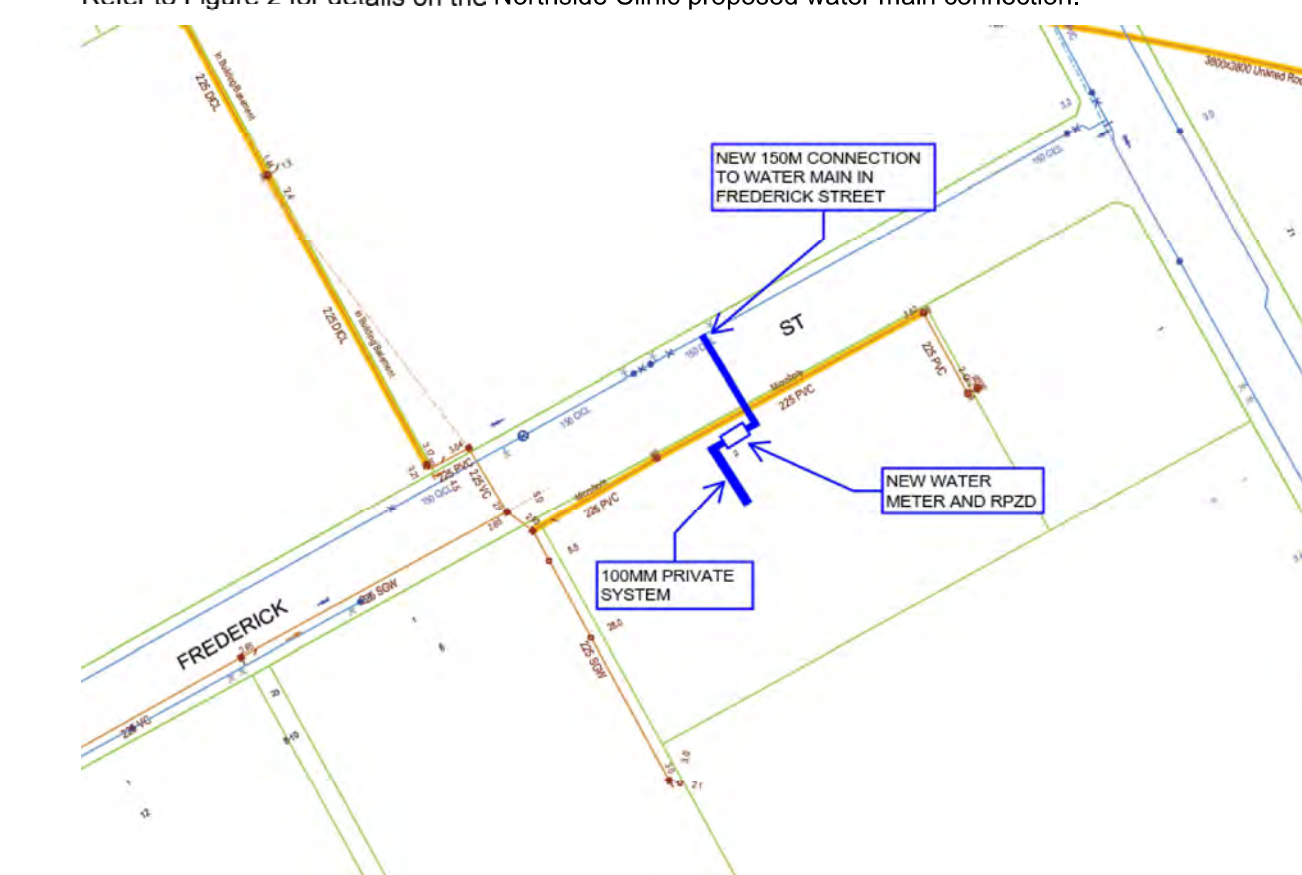
Table 2: Average Daily Water Demand Calculation

Total Beds	Average Demand (L/Metric Unit/Day)	Total Average Daily Water Demand (kL)
112	271	30.35

The following flows have also been calculated:-

- Probable simultaneous flow – 5.2 L/sec
- Fire flow for hydrants – 20 L/sec
- Fire flow for sprinklers – 20 L/sec

A new connection to the DN150mm water main in Frederick Street is proposed to service the development. The Sydney Water water meter and RPZD is to be located in the garden area on Level 01.



4. PRIVATE SYSTEM

4.1 POTABLE WATER

The location of the isolation valves and their accessibility are:

- In the main riser providing individual floor isolation (easy access)
- At 25% intervals of the ring main (access via ceiling hatch)
- At the branch off connection from the ring main (access not commonly required, only in a refurb situation)
- Within TMV/RPZD boxes for hot, cold and warm water (easy access)

The ring mains will be a single size to enable fixture loads to be relocated to other areas of the floor plate, which allows for flexibility, ease of maintenance and system reliability.

Non-clinical areas will be provided with a dead leg system that diminishes in size.

Where the static pressure exceeds 500kPa pressure reduction valves will be provided, to meet the requirement of Clause 3.3.4 of AS3500.1 these valves shall not be installed within a ceiling or when ladder access would be required. Point of use pressure reductions valves will be provided within the thermostatic mixing valve boxes or backflow prevention device boxes.

A main water services cupboard will be located on every floor level in an accessible location as shown on the architectural drawings. These cupboards will contain the isolation valves, water meters and balancing valves (at an accessible height) for the individual floor level. Main floor isolation valves and balancing valves must not be installed within ceilings.

Hose taps are to be provided throughout the property's plant rooms, loading dock and car parks for wash down. Hose taps and irrigation connection points with backflow prevention devices will also be provided within the gardens and courtyard area.

The hot water services within the building will be provided with separate 60-65°C flow and return mains on each floor level. The pipework will be insulated sufficiently to reduce the heat loss within the system.

Heat lost from hot water within the potable hot water flow and return pipe work systems will be replenished by a pump recirculating the water back to the hot water generation plant for reheating. The design criteria for return pipework to the plant will be 5°C loss with a maximum velocity of 0.6m/sec.

There shall be no more than one balancing valve per floor level per water service cupboard.

Warm water to all patient care and staff area fixtures will be mixed and temperature limited using localised Thermostatic Mixing Valves (TMV). The TMVs will generally be shared between adjacent similar wet areas.

4.1.1 WATER QUALITY

Water treatment devices such as filters will be used to treat the water before the cold water is delivered to the fixtures. These devices are as follows:-

- Two (2) 100 micron automatic backwash filters to have a new automatic backwash filter installed in parallel
- Two (2) 5 micron automatic backwash filters installed in parallel
- Two (2) UV filters installed in parallel

4.1.2 POTABLE COLD WATER PUMPS

Based on the attached pressure and flow enquiry, a pump set with a duty of 53mH @ 5.2L/s will be required to pressurise the water from the water main to the fixture.

4.1.3 PRESSURE AND TEMPERATURE GAUGES

Pressure and temperature gauges shall be provided on the system to facilitate fault finding within major plant areas and located at the most advanced and disadvantaged pressure and temperature areas.

4.2 NON-POTABLE WATER

Non-potable cold water will be supplied from the potable cold water service with a reduced pressure zone device preceding the first take off where zone protection is required in accordance with AS 3500.1 as required to areas such as Dirty Utility Rooms, Clean-up Rooms, Cleaners' Rooms and Mechanical Plant. The RPZs are to be set at a height of 1500mm (to the top of the box) and must be easily accessible and not installed in inaccessible positions. There must be a clear height above the valve to allow the test gauge to be positioned above the top level of the valve during the annual test.

5. WATER USAGE REDUCTION

5.1 LOW FLOW TAPS

Where possible, 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

Low flow taps are only to be used if the fixtures chosen comply with the AusHFG and STH are satisfied with them.

5.2 WATER METERING

The development will be metered by both utility-owned water meters at the property boundary, and client-owned and read water meters.

These water meters will have the capability for connection to the BMCS via pulse read-out and will be monitored by the BMCS for water demand and leak monitoring.

Privately owned (and read) sub meters shall be provided to meter the usage of the following:-

- Domestic hot water supply
- Kitchen
- Fire services tank make-up water

5.3 RAINWATER REUSE

On previous projects, holistic life cycle reviews on rainwater reuse systems have been undertaken. These reviews have generally found that rainwater reuse systems have not been cost effective for the project with a payback of greater than 7 years.

Further to the cost considerations above, within a clinical environment the prevention of infection is a priority. The storage of collected rainwater may contain or breed legionella, dead animals, mosquitoes, chemicals, microbial hazards and escherichia coli.

The maintenance involved with the general upkeep of rainwater reuse tanks and ensuring the stored collected rainwater is not harbouring infections is laborious and often budget driven which may reduce the prudent level of maintenance to ensure the public and hospital are comfortable with the level of public health.

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