HYDRAULIC SERVICES REPORT for
Waterbrook Care at Wahroonga

35 WATER STREET
WAHROONGA

Project No 0608 0008

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Prepared For

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Revision Control

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TABLE OF CONTENTS

SECTION - HYDRAULIC SERVICES

1 ESSENTIAL SERVICES

1.1 GENERAL REQUIREMENTS

The following Hydraulic and Fire Services will be designed in accordance with the Building Code of Australia and the relevant Australian Standards as listed below:

Essential Service	BCA Clause / Australian Standard	
Fire Sprinkler System	E1.5	AS 2118.4 - 1995
Fire Hydrants	E1.3	AS 2419.1 - 2005
Fire Hose Reels	E1.4	AS 2441 - 2005

Plumbing Service	Code / Australian Standard
Hot & Cold Water Services	NSW Code of Practice & AS3500
Sanitary Plumbing Services	NSW Code of Practice, AS3500 & AS1547
Gas Services	AS 5601 - 2004 & AGL Gas rules
Rainwater Drainage	NSW Code of Practice & AS3500 Stormwater Drainage, BCA Clause F1.1

Pursuant to the provisions of Clause A2.2 of the Building Code of Australia, the above will be in accordance with standard engineering practice and meet the requirements of the Building Code of Australia and relevant Australian Standards.

1.2 SERVICES PROPOSED FOR THE SITE

- Stormwater Drainage
- Sanitary Drainage
- Sanitary Plumbing
- Domestic Cold Water
- Domestic Hot Water
- Non Potable Water Supply (irrigation)
- Fire Hydrant Service
- Fire Hose Reel Service
- Downpipes
- Gas Service

1.3 AVAILABILITY OF SERVICES

- STORMWATER DRAINAGE

It is proposed to connect the stormwater discharge from the site to the Council stormwater drainage main in Billyard Avenue.

- SEWER DRAINAGE

It is proposed to connect the sanitary drainage discharge from the site to the Sydney Water Corporation's 150mm diameter sewer at the intersection of Young Street and Randolph Street.

- DOMESTIC COLD WATER

It is proposed to connect the water service to the existing 150mm diameter water main in Water Street.

- FIRE HYDRANT AND FIRE SPRINKLER SERVICE

It is proposed to connect the water service to the existing 150mm diameter water main in Water Street.

- GAS

It is proposed to connect the gas service to the existing 75mm diameter gas main in Water Street.

- PIPES INGROUND

Notwithstanding the indicative location of in ground pipework on the drawings, all in ground pipework is to be located clear of the critical root zone of all retained trees and vegetation and co-ordinated with any hydrogeology relief measures that may be required.

1.4 SECTION 73 APPLICATION

An application is to be made to Sydney Water Corporation. Sydney Water has issued their guidance notes for the proposal and confirmed the availability of water and drainage services and their capacity to service the site. In addition Sydney Water has advised of capital works contribution charges that will apply to the development of the site. This will also be set out in Sydney Water Corporation's Section 73 Notice of requirements.

2 SERVICES

2.1 BLUE GUM HIGH FOREST HABITAT AND INGROUND SERVICES

It is generally not required at DA stage to provide sewer, water and gas services concept plans. Commentary is however provided for this DA to establish parameters for the design development and installation of all inground services to the property, due to the presence of Blue Gum Habitat and heritage landscape items.

All new inground services connections and pipework will be designed and installed to avoid interference with the Blue Gum habitat as documented in the Species Impact Statement by Cumberland Ecology and heritage landscape items as identified in the Conservation Management Plan as prepared by Rod Howard and Associates. Where it is not possible to locate inground pipework outside the Blue Gum habitat then it is to be installed to enable adequate spacing between the pipelines and trees so not to damage tree roots during construction. Excavation to these areas will be by hand (boring may be an alternative in certain locations such as in critical root zones) and proper erosion control measures will be used to minimise any disturbance to the existing natural ground. Drainage installation will also be co-ordinated with any hydrogeology relief measures that may be required.

All in ground services installations must observe the constraints and management systems established in the Tree Impact Statement as prepared by Treewisemen and the Vegetation Management Plan as prepared by Urban Bushland Management

2.2 STORMWATER DRAINAGE

The site area is approximately 2.20ha with about 1.0ha of the existing site developed and the remaining in a state of natural conditions.

The proposed redevelopment of the site as a Private Hospital consisting of health care facilities and beds in 2 attached new buildings with associated amenities will cover approximately 1.0ha.

The proposed development is classified as Type 5 with Location A. In terms of stormwater catchment area, the site lays within the Lovers Jump Creek catchment (LJ1) for which Permissible Site Discharge (PSD) and Site Storage Requirement (SSR) are being set up as follows:

PSD = 94l/s/ha
SSR = 417m3/ha

A rainwater on-site retention provision of 115m3 for re-use is proposed; this being for landscape watering.

We anticipate from discussions with Council that their assessment will be based on the redeveloped area (approximately 0.85ha). This requires storage

provision of 458m3 as on-site detention and the 100year ARI runoff from site at a rate of 495l/s.

Discharge of stormwater from the site will be via a 450mm-diameter pipe connected to council's drainage system at Billyard Avenue.

Roof drainage capacity will be for 1 in 20 year rainfall, with 1 in 100 year rainfall drainage capacity in areas at higher risk of ponding and water damage such as box gutters and enclosed courtyards. Overflows will be provided to all building areas.

External areas will be served by drains having capacity for 5 –20 year rainfall intensities subject to location and tolerance of ponding. Areas at risk to flooding and water damage shall have 1 in 100 year rainfall capacity and overflow back-up. Note that all rainfall run-off must be drained to the detention and retention storage tanks regardless of capacity of various sections of the drainage system.

Rainfall runoff from surrounding properties and roads will be diverted in grass swales around the site drainage system and be directed to flow to the streets below the site (Young Street).

2.3 SANITARY DRAINAGE & PLUMBING

The site will have a load of approximately 1300 fixture units and will discharge to the sewer at the intersection of Young and Randolph Street.

2.4 DOMESTIC COLD WATER

The maximum site water demand is likely to be around 14.0 litres/second and should be capable of being supplied by the existing 150mm diameter water main in Water Street.

2.5 DOMESTIC HOT WATER

The hot water heating plant is likely to be a gas fired hot water system. Heating plant could be 5 mains pressure gas hot water heaters manifolded to provide simultaneous supply.

Hot water control in the building can be at the heaters and circulated at 39^{o}C temperature to patient areas and ablutions and at 65^{o}C temperature to non patient areas not including ablutions.

2.6 NON POTABLE WATER

Storage for 115m3 of rainwater is to be provided for landscape irrigation water. This water supply is only going to be available following periods of reasonable rainfall and will need to be backed up with main's pressure potable water. The main's pressure water will be protected from contamination by suitable backflow protection devices such as an air gap or Reduced Pressure Zone device and valve assembly.

2.7 FIRE HYDRANT SERVICE

The buildings will require hydrant protection and the system is likely to be designed to provide 20 litres/second water flow. The service could be best supplied by the existing 150mm diameter water main in Water Street.

2.8 FIRE HOSE REEL SERVICE

The buildings will require internal hose reel protection and the system would be connected to the domestic potable cold water service.

2.9 FIRE SPRINKLER SERVICE

The basement car park areas for the buildings form a combined parking area for more than 40 cars. This area will require fire sprinkler protection unless the basement car park areas are compartmentalised into fire separated areas containing less than 40 car spaces. Fire sprinkler installation is to comply with AS2118.1 – 1999. The service could be best supplied by the existing 150mm diameter water main in Water Street.

2.10 GAS SERVICE

The site will require gas for domestic hot water heating, pool heating and cooking. Total gas demand is expected to be up to 3,000MJ/hour. The supply will be from the existing 210 kPa 75mm diameter gas main in Water Street.