Warren Smith & Partners Pty Ltd

JUSTINIAN HOUSE REDEVELOPMENT

18-22 SINCLAIR STREET, WOLLSTONECRAFT

RETURN BRIEF ON PROPOSED HYDRAULIC AND FIRE SERVICES SYSTEMS

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Prepared by:

WARREN SMITH & PARTNERS PTY LIMITED
Consulting Hydraulic and Fire Protection Engineers
ACN 002 197 088
ABN 36 300 430 126
1st Floor
123 Clarence Street
SYDNEY NSW 2000

Telephone: (02) 9299 1312
Facsimile: (02) 9290 1295
Email: wsp@warrensmith.com.au

Prepared for:

ST VINCENT'S & MATER HEALTH SYDNEY

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1 INTRODUCTION

The purpose of this Return Brief is to explain the Hydraulic and Fire Services that are necessary and proposed to support the functions required for the proposed Justinian House Redevelopment at the corner of Rocklands Road, Sinclair and Gillies Streets, Wollstonecraft.

This application is a Part 3A application through the Department of Planning. Further details of the areas of each proposed usage are contained in the Statement of Environmental Effects (SEE) accompanying that application.

This Return Brief provides both qualitative and quantitative description of the proposed Hydraulic and Fire Services systems to the Development.

1.1 SITE DESCRIPTION

The site was formerly known as the Justinian House Nursing Home.

The site is described as Part Lot 1 on Deposited Plan (DP) 802791.

2 HYDRAULIC SERVICES

2.1 DESIGN CRITERIA TO BE SATISFIED

The design criteria requirements to be satisfied for the project are as follows:

- Provide a hydraulic services system to comply to current statutory authorities regulations.
- Provide a hydraulic services system to the Commercial, Clinical Carparking components with flexibility for future modifications to Commercial and Clinical Areas for fitout.

2.2 AUTHORITIES AND CODE REQUIREMENTS

The design of the Hydraulic Services will conform with the following Authorities and Code Requirements:-

- Sydney Water
- North Sydney Council
- Environmental Planning and Assessment Act, 1979
- Environmental Planning and Assessment Regulations
- New South Wales Fire Brigades
- Insurance Council of Australia
- Building Code of Australia
- Department of Planning
- Department of Natural Resources
- Environmental Protection Authority
- Australian Gas Light Company
- Alinta
- Australian Competition and Consumer Commission
- NSW Department of Energy
- Energy Australia, Integral Energy
- Telstra, Austel, Optus
- Roads and Traffic Authority
- All relevant Australian Standards and Referenced International Standards
- Australian Rainfall and Runoff

2.3 HYDRAULIC SYSTEMS

Hydraulic Systems will comprise:

1.2.1 Stormwater and Subsoil Drainage

1.2.2 Rainwater Reuse

1.2.3 Sewer Drainage including Trade Waste Grease Drainage

1.2.4 Rainwater Downpipes Drainage

1.2.5 Sanitary Plumbing including Trade Waste Grease Plumbing

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2.4 STORMWATER DRAINAGE SYSTEM

General

The site will be provided with a stormwater drainage connection to the Council drainage system at the corner of Rocklands Road and Gillies Street.

Stormwater drainage from roof outlets and downpipes will consist of a syphonic downpipe and drainage system to convey stormwater which will gravitate to a 75m^3 capacity rainwater reuse tank. The rainwater reuse tank when full will overflow to connect to the site stormwater drainage system.

Basement levels will be provided with subsoil drainage and perimeter dish drains and the drainage pipework will gravitate to a drainage pump out pit. Dual drainage pumps will be provided to the drainage pump out pit to pump drainage water to the site gravity stormwater drainage system.

Materials

The Stormwater drainage system will consist of HDPE (High Density Polyethylene) and UPVC pipework and fittings as required throughout the development. Subsoil drainage will consist of slotted UPVC pipework in a 150mm thickness surround of blue metal overwrapped with Bidum sheeting.

Sizing

The stormwater drainage system will be sized for a 1 in 20 year rainfall intensity. Over flow systems will be sized for a rainfall intensity in excess of the 1 in 100 years.

Design Standards

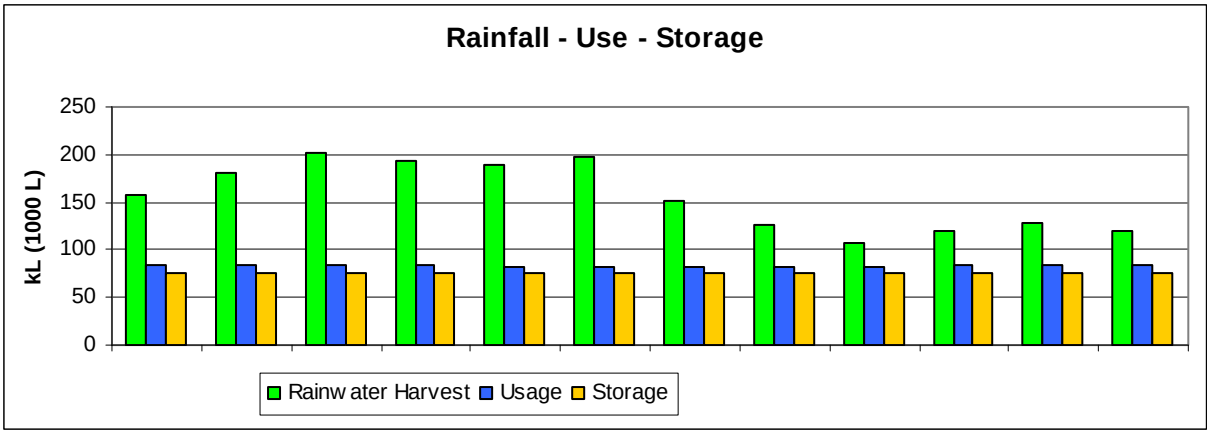
The Stormwater Drainage System will be designed and constructed in accordance with Australian rainfall and runoff calculated as 211mm per hour for a 5 minute duration storm, AS 3500.3, National Plumbing and Drainage Code Part 3: Stormwater Drainage, New South Wales Code of Practice and Sydney City Council.

2.5 RAINWATER REUSE SYSTEM

The Development will be provided with a 75m^3 rainwater reuse tank that will receive rainwater from downpipes from the roof areas of the buildings only.

The rainwater will be treated and reused for WC flushing and irrigation.

When the rainwater reuse exceeds the roofwater storage capacity, the tank will be topped up from the potable domestic cold water service supply to 10% of the overall storage capacity. Therefore, when the tank is topped up, the tank will always have at least 90% of the reuse tank capacity available for filling from the next rainfall event.
The rainwater re-use system is designed to replace up to 85% of the domestic water requirement for the toilet flushing and irrigation.



Dual pressure pump sets will be provided adjacent to the base of the rainwater reuse tank.

Materials

- Stormwater drainage connecting to the rainwater reuse tanks will consist of HDPE (High Density Polyurethane) pipework and fittings.
- Rainwater reuse pipework will consist of Type B copper tube and fittings.

Design Standards

The Stormwater Drainage System will be designed and constructed in accordance with Australian rainfall and runoff calculated as 211mm per hour for a 5 minute duration storm, AS 3500.3, National Plumbing and Drainage Code Part 3: Stormwater Drainage, New South Wales Code of Practice and Sydney City Council.

The Rainwater Reuse 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.

2.6 SEWER DRAINAGE

General

The site is serviced by a 225mm diameter Sydney Water sewer situated in Gillies Street. Sewer drainage from the development will gravitate to connect to the Sydney Water sewerage system.

Materials

- Sewer waste drainage in ground will be constructed of HDPE pipe and fittings.
- Suspended sewer drainage will be constructed of cast iron and copper tube in the Carparks (where damage is likely to occur) and constructed of HDPE pipe and fittings in all other areas.
- Suspended trade waste discharges pipework will be constructed of fusion welded high density polypropylene (HDPE) pipe and fittings.

Trade Waste Pre-Treatment

- Workshop area

Trade Waste drainage where required, will be provided to Laboratory areas which will gravitate to the Trade Waste general purpose pit.

Design Standards

The Sewer 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 and Sydney Water requirements.

2.7 RAINWATER DOWNPIPES AND ROOF OUTLETS

General

Syphonic rainwater downpipes will be provided to receive discharge from surface roof outlets to all roof areas and balconies.

Pipe Materials

Downpipes will be constructed of HDPE (High Density Polyethylene) pipes and fittings with electro fusion joints.

Roof outlets will be cast iron type in general roof areas and bronze or stainless steel in special areas where architectural presentation is desirable. All outlets will have membrane flanges.

Sizing

The stormwater drainage system will be sized for a 1 in 20 year rainfall intensity. The over flow system from roof and podium areas will be sized for a rainfall intensity in excess of the 1 in 100 year event.

Design Standards

The rainwater downpipes and roof outlets will be designed and constructed in accordance with Australian rainfall and runoff calculated as 211mm per minute per hour for a 5 minute duration storm, AS 3500.3, National Plumbing and Drainage Code Part 3: Stormwater Drainage, New South Wales Code of Practice and Sydney City Council.

2.8 SANITARY PLUMBING

General

A system of sanitary plumbing, relief vents and back vents is proposed to convey soil and waste water from sanitary fixtures to the sewer drainage system.

Sanitary plumbing pipework that is installed in noise sensitive areas will be acoustically treated with sound insulation to achieve a satisfactory noise level, to be determined.

Offset risers for inspection outlets (IO's) are to be installed for rodding purposes.

Soil pipes will be installed at a gradient of 1:60 and waste pipes will be installed at a gradient of 1:40 in accordance with the Australian Standard.

Sanitary Plumbing, soil waste and vent pipes will be located in close proximity to wet area facilities ensuring that horizontal pipework length is kept to a minimum. Soil stacks will be provided with 100mm diameter inspection access fittings close to drainage connection and at each floor connection.

Pipe Materials

General Sanitary Plumbing, relief vents and back vents will be constructed of HDPE pipes with solvent cement joints.

Pipe conveying grease and hot wastes will be constructed of fusion welded HDPE pipe and fittings.

Design Standards

The Sanitary Plumbing 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 and Sydney Water requirements.

2.9 COLD WATER SERVICES

General

The site is serviced by a 200mm diameter Sydney Water watermain situated in Sinclair Street. Cold water for the Development will connect to the Sydney Water watermain.

Cold water will be reticulated throughout the project using copper tube and fittings. All risers and individual zones will have isolation valves.

All branch lines will be fitted with pressure limiting valves to ensure that equal pressures are maintained.

Cold water variable speed dual pressure booster pumps will be provided to boost the cold water to all fixtures and fittings throughout the Development.

Pipework will be sized to achieve flows with a maximum velocity of 3.0m/s in accordance with the Australian Standard.

Valving of the main distribution water services pipes within the buildings will be provided to allow maintenance shut downs to occur on portions of the service not entire floors.

A boundary protection backflow prevention valve will be provided on the outlet side of the water meter. Other areas that will require zone or individual protection, but not limited to, will be food preparation areas, landscaped irrigation or where hoses are installed adjacent to sanitary fixtures, plantrooms and garbage rooms. All valves will be located in accessible locations for maintenance purposes.

Five (5) star rated flow control devices will be provided within each tap set to limit the amount of water outflow from taps to reduce water wastage.

Materials

The Domestic Cold Water Service will consist of Type B copper tube and fittings with silver soldered joints. Branch pipework to fixtures will consist of cross linked polyethylene (XLPE) pipework sizing and fittings equal to Rehau manufacture.

Design Standards

The Domestic 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.

2.10 HOT WATER SERVICES

Hot water will be provided as follows:-

- All basins, sinks and showers will be supplied by gas fired mains pressure hot water heaters located in the Roof Plantroom.
- Garbage rooms etc will be provided with hot water utilising individual electric hot water heaters.

Hot water from the gas fired hot water heaters will be reticulated throughout the project using copper tube and fittings. All risers and individual zones will have isolation valves.

All branch lines will be fitted with pressure limiting valves to ensure that equal pressures are maintained.

Hot water circulating pumps will be provided to circulate the hot water to all fixtures and fittings as required.

Pipework will be sized to achieve flows with a maximum velocity of 3.0m/s in accordance with the Australian Standard.

Valving of the main distribution water services pipes within the buildings will be provided to allow maintenance shut downs to occur on portions of the service not entire floors.

Five (5) star rated flow control devices will be provided within each tap set to limit the amount of water outflow from taps. These devices will also reduce water wastage.

Materials

The Domestic Hot Water Service will consist of Type B copper tube and fittings with silver soldered joints. Branch pipework to Amenities will consist of cross linked polyethylene (XLPE) pipework sizing and fittings equal to Rehau manufacture.

Design Standards

The Domestic Hot Water Service will be designed and constructed in accordance with AS 3500.4 National Plumbing and Drainage Part 4: Hot Water Supply Systems, New South Wales Code of Practice and Sydney Water requirements.

2.11 FIRE HYDRANT AND FIRE HOSE REEL SERVICE

The proposed development will be provided with a fire hydrant and fire hose reel service to satisfy the requirements of all current BCA requirements, Authority Codes, Standards and Regulations. The Fire Hydrant service for the Development will connect to the 200mm diameter Sydney Water watermain in Sinclair Street.

A diesel Fire Hydrant pump will provide adequate water pressures to all fire hydrants throughout the Development.

Fire Hydrants will be installed in the Fire Stairs and Fire Exit corridors on all floors of the Buildings and fire hose reels will be installed within four (4) metres of all Fire Stairs and Fire Exits.

Separate Fire Brigade booster valve assemblies will be installed at the site entry area adjacent Sinclair Street.

2.12 SANITARYWARE AND TAPWARE

Generally, the Sanitaryware and Tapware will be selected by the Architect and Client and mid range quality is anticipated.

As a general performance guide line the following will apply:-

- Five (5) star rated electronic mixer taps.
- Five (5) star rated shower heads and tapware water outlets will be provided.
- Four (4) star rated WC 3/4.5 litre flush.

2.13 NATURAL GAS SERVICE

General

The site is serviced by an Alinta natural gas main situated in Sinclair Street.

The Development will be provided with a natural gas connection to the Alinta natural gas main in Sinclair Street.

The natural gas service will extend to supply natural gas to the Domestic Hot Water Heaters situated in the Roof Plantroom.

Materials

The natural gas service will consist of type B copper tube and fittings

Metering

- The natural gas service will be provided with a natural gas meter which will be read and billed by the appropriate energy provider.

Design Standards

The Natural Gas Services will be designed and constructed in accordance with AG 601 – 1995 – Gas Installation Code.

3 FIRE SERVICES

3.1 DESIGN CRITERIA TO BE SATISFIED

The design criteria requirements to be satisfied for the project are as follows:

- Provide a fire protection system to comply to current statutory authorities regulations including Performance Based Fire Engineered Solutions.
- Provide a fire protection system with flexibility for future modifications to the Commercial and Clinical Areas for fitout.

3.2 AUTHORITIES AND CODE REQUIREMENTS

The design of the Fire Services will conform with the following Authorities and Code Requirements:-

- North Sydney Council
- Environmental Planning and Assessment Act, 1979
- Environmental Planning and Assessment Regulations
- New South Wales Fire Brigades
- Insurance Council of Australia
- Sydney Water
- Building Code of Australia
- Department of Planning
- Department of Natural Resources
- Environmental Protection Authority
- Australian Gas Light Company
- Agility
- Australian Competition and Consumer Commission
- NSW Department of Energy
- Energy Australia, Integral Energy
- Telstra, Austel, Optus
- Roads and Traffic Authority
- All relevant Australian Standards and Referenced International Standards

3.3 FIRE SYSTEMS

Fire Systems will comprise;

- Fire Sprinkler Service
- AS 1668 Fire Detection (Skeleton Detection System) and Alarm System in association with Essential Smoke Service Control System Interface
- Emergency Warning Intercommunication System (EWIS)
- Fire Extinguishers

3.4 FIRE SPRINKLER SYSTEM

General

The proposed development will be provided with a fire sprinkler service throughout the development in accordance with the requirements of AS 2118.1, BCA, NSW Fire Brigade and the Fire Engineered Report. The fire sprinkler service will be supplied from a Grade 3 water supply.

The development will be provided with a 100mm diameter fire sprinkler connection to the 200mm diameter Sydney Water watermain in Sinclair Street.

Hazard Classification

The system will be provided to meet the design densities required for the following occupancies:

❖ Carpark Levels	Ordinary Hazard 2
❖ Commercial Office	Light Hazard to NFPA 13
❖ Clinical Areas	Light Hazard to NFPA 13
❖ Roof Plantrooms	Ordinary Hazard 1
❖ Auditorium and Storage Areas	Ordinary Hazard 3

Key Components

- Primary water supply consisting of a separate 150mm diameter connection to the 200mm diameter Sydney Water watermain in Sinclair Street to supply the development.
- One (1) Electric fire sprinkler pump is located in the Sprinkler Alarm Valve/Fire Pump Room to meet the system flow and pressure requirements for the development. The electric pump will connect to the primary water supply.
- Anti-tamper monitoring of fire services isolation valves and fire pump monitoring.
- Alarm Valve Assemblies will be located in the Sprinkler Alarm Valve/Fire Pump Room.
- Automatic Jacking Pump to retain the Alarm Valve pressures requirements.

- Fire Brigade Booster facilities accessible from Street level adjacent Sinclair Street.

Materials

All sprinkler service piping will be in accordance with AS 1074 and AS 4118-2.1 suitable for screwed, roll grooved or welding jointing.

Sprinkler Heads

Sprinkler heads will be of appropriate temperature rating for positions and of a pattern compliant with AS 2118 and all other Authorities concerned and will be suitably arranged on the distributing pipework.

Type of Heads

Location	Sprinkler Head Type or Equal	Temp. Rating ^{o}C	Size	Colour	Escutcheon Plate	Colour
Carpark Plantrooms Service Areas	Viking Micromatic Pendant / Upright	68	15	Brass	-	-
COMMERCIAL AND CLINICAL						
Concealed Spaces	Viking Micromatic Pendant / Upright	68 Fast Response	10	Brass	-	-
Below / False Ceiling Lobbies	Viking mirage pendant semi-recessed	68 Fast Response	15 / 10	Brass	Semi-recessed	White / Chrome

3.5 FIRE DETECTION AND ALARM SERVICE

General

The Fire Detection and Alarm System which will be designed in association with the required Mechanical Smoke Control System and as required by BCA 2004 E2.2. The system will be installed to the requirements of Part 4 of AS 1668.1 – 1998 where nominated by the BCA.

The addressable Fire Indicator Panel / Fire Fan Control Panel will be compatible with the addressable analogue Smoke Detection System to be provided and will be located in the Level 2 main entry.

The System will interface:-

- ❖ Addressable analogue Smoke Detection System (Skeleton)
- ❖ Mechanical Smoke Control
- ❖ Fire Pump Monitoring
- ❖ Occupant Warning System
- ❖ Fire Sprinkler Isolation Valve Monitoring

Smoke Detectors

Smoke detectors will be provided on a 'skeleton' layout to Part 4 of AS 1668.1.
Smoke detectors and probe type sampling detectors will be photo optical addressable analogue type or equal. Probe type detectors will be complete with detector housing and PVC sampling probes.

Wiring

All wiring will be in accordance with the requirements of AS 3000, AS 1668.1 and AS 1670.1.

3.6 OCCUPANT WARNING SYSTEM

An Occupant Warning System will be provided throughout the buildings to the requirements of AS 1670.4.

Emergency Control Panel (ECP)

An ECP will be located as part of the Fire Indication Panel.

Loudspeakers

Two types of speakers will be used where appropriate:

Plantrooms - Round type reflex horn type speakers. They will be weatherproof and have the following adjustable sound output - 107dB SPL, 110dB SPC, 113dB SPL referred to 1 metre from the horn mouth. The frequency range will be 300 to 8000Hz.

False Ceilings - 100mm round recessed panel high fidelity cone speakers. Type: Audio Telex or equal.

They will have the following sound output 87dB SPL, 90dB SPL, 93dB SPL, 96dB SPL, 99dB SPL referred to 1 metre from the speaker cone. This frequency range will be 50Hz to 15khz.

All loudspeakers will be adjusted for sound output in accordance with AS 1670.4.

Cables and Wiring

Wiring types to be used:

* Radox two hour fire rated cable for wiring runs from ECP to all loudspeakers on each floor and will also be used in plant areas. Minimum 1.5mm^2 conductors.
* 240V grade double insulated fixture 1.5mm^2 for speaker cabling intra floor.

All cabling will be installed in accordance with AS 3000 and AS 1670.4.

Inter Floor Cabling

Provide galvanised steel metal riser ducts or galvanised cable tray.

3.7 FIRE EXTINGUISHERS

Fire Extinguishers will be provided to the buildings in accordance with the requirements of Table E1.6 of the BCA.