

# FRASERS PUTNEY PROJECT

## Hydraulic and Fire Services PA Report

### Description of Services

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## **1 INTRODUCTION**

### **1.1 GENERAL**

Harris Page and Associates Pty Limited has been engaged to undertake the concept design of the Hydraulic Services for the proposed redevelopment of Royal Rehabilitation site – Frasers Putney Project.

### **1.2 PROJECT DESCRIPTION**

The proposed Residential Development of Lot 8 (Stage 1 - Phase 1) consists of the construction of;

- Residential single dwellings with Torrens titles,
- Residential multi-storey building with Strata titles,

with Proposed Dwelling Numbers:

Total 118

- Detached/Semi Detached: 58
- Apartments : 60

### **1.3 SCOPE OF WORK**

The scope of the Hydraulic Services includes:

- Sanitary plumbing and drainage systems from Authority mains / site infrastructure services to all fixtures
- Drinking cold water system from Authority mains / site infrastructure services to all fixture outlets
- Internal hot water systems
- Roof and ground stormwater drainage and downpipes with building alignment connected to civil stormwater drainage and detention systems
- Building sub-soil drainage
- Gas services systems from Authority mains / site infrastructure services to appliances
- Fire hydrant and Fire hose reel services from Authority mains / site infrastructure services
- Fire services from Authority mains / site infrastructure services
- Sanitary Fixtures and tapwares
- Water conservation and roof stormwater re-use / harvesting

## 1.4 AUTHORITIES AND STANDARDS

<b>Services</b>	<b>Authorities Code</b>
Sanitary Plumbing & Drainage	AS3500 National Plumbing and Drainage Code and Sydney Water requirements
Stormwater Plumbing and Drainage & Sub-soil	Ryde City Council DCP Requirements, AS 3500
Cold Water	AS3500 National Plumbing and Drainage Code and Sydney Water requirements
Hot Water	AS3500 National Plumbing and Drainage Code and Sydney Water requirements
Fire Hydrant and Fire Hose Reel	Building Code of Australia (BCA and AS2419 & AS2441)
Natural Gas	AS601 Gas Code and Authority Requirements
Fire Sprinkler System	AS2118.1 2006 & National Fire Brigade
Portable Fire Extinguisher	AS2444 & Building Code of Australia

## 2 SANITARY PLUMBING AND DRAINAGE SERVICES

### 2.1 GENERAL

The sanitary plumbing and drainage systems shall be provided in accordance with the requirement of:

- AS 3500
- NSW Code of Practice
- Sydney Water Corporation Requirements

### 2.2 SANITARY PLUMBING AND DRAINAGE

The sanitary plumbing and drainage systems comprise the connection of sanitary drainage from the Authorities mains / site infrastructure services and gravity sewer reticulation to all sanitary fixtures and fittings within new residential single dwellings and multi-storey buildings / block.

The sanitary plumbing system shall gravitate to the infrastructure point of connection. Fixtures unable to gravitate shall discharge to the gravity reticulation system via a collection pit and pump assembly.

Sanitary plumbing vents shall extend from the waste system and terminate above the roof.

Where piping passes through fire rated wall or floor, fire stop collars, complying with AS 4072 shall be provided and upon the completion of the installation, certification will be provided by the Sub-contractor responsible for the works.

#### Materials

Service	Size	Material
Sanitary Drainage	65-100	PVC
Sanitary Vents	50-100	PVC
Sanitary & Waste Plumbing	40-100	PVC
Sanitary & Waste Vents	50-100	PVC
Trade Waste Drainage	65-100	PVC
Trade Waste Vents	40-100	PVC

## **2.3 AUTHORITY SITE SERVICES AVAILABILITY**

In accordance with the site's new infrastructure services requirement, Sydney Water Corporation sewer services shall be available during initial stage of the development.

### **3 WATER SERVICES**

#### **3.1 GENERAL**

The water services (drinking cold water, hot water & stormwater re-use cold water) shall be provided in accordance with the requirement of:

- AS 3500
- NSW Code of Practice
- Sydney Water Corporation Requirements

#### **3.2 POTABLE COLD WATER**

The potable cold water systems comprise the connection from the Authorities mains / site infrastructure services and reticulation to all fixture outlets throughout, including the 'top up' supply to the stormwater re-use cold water, within new residential single dwellings and multi-storey buildings / block. The minimum pressure of 250kPa faucet outlets shall be maintained.

The metering of the water supply shall be incorporated to the requirements of Sydney Water Corporation and generally to each individual residential building / block.

#### **3.3 STORMWATER RE-USE COLD WATER**

The stormwater re-use cold water systems comprise the reticulation from the stormwater re-use collection tank and reticulation throughout to flushing sanitary fixtures (WC's) and landscape irrigation provisional points, within new residential buildings / block.

The stormwater re-use cold water system shall incorporate pressure pumps to maintain supply pressure (250kPa) at faucet outlets and be supplemented from the potable cold water to maintain operation of the system during periods of insufficient rainfall.

#### **3.4 HOT WATER**

The hot water systems comprise of energy efficient hot water plant (ie. gas fired and solar-assisted) suitable for each residential buildings / block draw-off demands.

Single residential dwellings with Torrens titles shall have the solar hot water system with a gas fired booster and reticulate hot water throughout dedicated single dwelling at a maximum temperature of 50 °C to all fixture outlets.

The residential multi-storey buildings / block with strata titles shall have centralised hot water reticulation systems comprising of connection to centralised gas fired hot water units / plant and dual pumps assisted flow and return piping reticulation to all unit fixtures and fittings including basins, showers, sinks and other facilities requiring hot water. This hot water system may incorporated with solar panels to preheat the water supply to the hot water units/plant.

*Note:* Solar panel min areas shall be in accordance with final BASIX certificates.

All main reticulation piping shall be insulated (minimum 25mm/38mm thickness in accordance with final BASIX certificates) complete with proprietary vapour shield.

Isolation valves shall be located at each of the hot water plant installations for total zone shutdown and individual isolation valves located in an accessible position within units to allow for local shut down of the service.

Temperature control valves shall be located to control hot water outlet temperature to a maximum of 50 °C (42 °C for disabled) to all fixture outlets.

MDL Pulse meters shall be incorporated to all hot water draw off points (i.e. apartments) to monitor user consumption and for authority billing. Pulse meters shall be incorporated as part of the Meter Data logger (MDL) system and wired to central data logger panels for remote connection to the service provider. (Meters by Hydraulic Services, wiring MDL panels by Electrical Services consultant). Generally meters shall be located within apartment laundry tub cabinets.

Calculation of energy usage will be achieved by means of gas meters fitted to the incoming gas supply of the hot water plant.

**Materials**

<b>Service</b>	<b>Size</b>	<b>Material</b>
Building Reticulation (below ground)	32-100	Copper type 'B'
Building Reticulation Main Risers	32-100	Copper type 'B'
Apartment Reticulation	15-25	Rehau Pex

### **3.5 AUTHORITY SITE SERVICES AVAILABILITY**

In accordance with the site's new infrastructure services requirement, Sydney Water Corporation water services shall be available during initial stage of the development.

## **4 STORMWATER PLUMBING AND DRAINAGE SERVICES**

### **4.1 GENERAL**

Stormwater systems shall be provided in accordance with the requirement of Ryde City Council Stormwater Management Control Plan.

### **4.2 STORMWATER PLUMBING AND DRAINAGE**

The stormwater plumbing and drainage systems comprise collection from roof, balcony and terrace areas, sub-soil, local pits and grates within new residential single dwellings and multi-storey buildings / block, and connection to 'point of connection' from the civil road works stormwater drainage systems (civil services and detention by others).

Portions of roof catchment areas shall reticulate and discharge to inground stormwater reuse tanks located within each dwellings / in the common area for re-use. Overflow from the stormwater reuse tanks shall discharge to the gravity stormwater system.

### **4.3 SUB-SOIL DRAINAGE**

The sub-soil drainage systems comprise of network of sub-soil drainage systems for each residential single dwellings and multi-storey buildings / block to relieve ground water and connection to the civil / stormwater drainage network.

Generally the sub-soil drainage systems below gravity stormwater system level shall discharge to 'pump out' collection pits and pumped out to connect to the gravity stormwater system.

### **4.4 STORMWATER RE-USE**

The stormwater re-use cold water systems comprise the reticulation from the stormwater re-use collection tank and reticulation throughout to flushing sanitary fixtures (WC's) and landscape irrigation provisional points, within new residential single dwellings and multi-storey buildings / block.

The stormwater re-use cold water system shall incorporate pressure booster pumps to maintain supply pressure at fixture outlets and be supplemented from the drinking cold water to maintain operation of the system during periods of insufficient rainfall.

## **5 GAS SERVICES**

### **5.1 GENERAL**

The gas services throughout shall be provided in accordance with the requirement of:

- AS 5601
- Jemena (Gas authority)

### **5.2 GAS SERVICES**

The gas reticulation systems comprise of connection from the Authority mains / site infrastructure services and reticulation throughout to all appliance outlets, including residential single dwellings and multi-storey buildings / block and hot water plant equipment via Authorities gas meter / regulator assemblies.

The metering of the gas services supply system shall be to the requirements of the provider authority.

For block of units MDL Pulse meters shall be incorporated to all gas draw off points to monitor user consumption and authority billing. Pulse meters shall be incorporated as part of the Meter Data Logger (MDL) system and wired to central Data logger panels for remote connection to the service provider. (Meters by Hydraulic Services, wiring and MDL panels by Electrical Services consultant.)

Generally unit meters shall be located within kitchen joinery adjacent the cooktop.

#### **Material**

<b>Service</b>	<b>Size</b>	<b>Material</b>
Gas	20-100	Copper Type B

### **5.3 AUTHORITY SITE SERVICES AVAILABILITY**

In accordance with the site's new infrastructure services requirement, Jemena's gas services shall be available during initial stage of the development.

## 6 FIRE HYDRANTS AND FIRE HOSE REELS

The fire hose reel system shall interconnect to the cold water service and be located to provide adequate coverage to floor areas as required by the building code of Australia (B.C.A)

The combined cold water and fire hose reel system shall be boosted to the required pressure for discharge outlets.

The fire hydrant system shall connect to the Authority's potable cold water main and reticulate throughout the site via a dual point Fire Brigade booster valve (located externally to multi-storey buildings / block.), a diesel driven booster pump and reticulation pipework.

A diesel driven booster pump may be incorporated to maintain adequate pressure throughout the system within a dedicated room adjacent the carpark entry ramp.

### Materials

Service	Size	Material
Fire Hydrant (Above ground)	100 – 150	Galvanised mild Steel
Fire Hose Reel	25 – 50	Galvanised mild steel

## **7 FIRE SERVICES GENERAL DESCRIPTION**

The following is a general description for each of the proposed fire services to be provided within the buildings.

### **7.1 PORTABLE FIRE EXTINGUISHER**

Portable fire extinguishers will be designed in accordance with BCA, AS.2444, Authority requirements, Fire Engineering Design Brief and will be located throughout the building adjacent to main electrical switch rooms, plant rooms, carpark level and residential areas.

## 8 RESIDENTIAL MULTI-STOREY UNIT PROVISIONS

ITEM	GENERAL LOCATION
Potable cold water isolation valve	Within laundry tub cabinet
Recycle cold water isolation valve	Within laundry tub cabinet
Hot water temperature control valve assembly	Within laundry tub cabinet
Hot water meter assembly	Within laundry tub cabinet
Gas meter/regulator assembly	Within kitchen joinery adjacent cooktop
Balcony/terrace gas bayonet point	To be advised by Frasers (note: no internal bayonet points for room heating)
Balcony/terrace hose taps	To be advised by Frasers

## 9 SANITARY FIXTURES AND TAPWARE

Generally fixtures and faucets shall be in accordance with architectural schedules and as follows:

Faucets	–	Chrome plate finishes
Sanitary Fixtures	–	White vitreous china
Floor & Shower Wastes	–	Chrome plate brass

All sanitary fixtures and tapware will be of first quality and fit for purpose to the relevant areas.

## **10 BASIS OF CALCULATIONS**

### **Sanitary / Trade Waste Plumbing and Drainage**

Sanitary and trade waste systems shall be calculated to the strict requirements of AS 3500 and Sydney Water.

### **Stormwater Plumbing and Drainage**

Stormwater plumbing and drainage shall be calculated in accordance with the requirements of Ryde City Council and as follows:

Box Gutters	–	1:100 year storm intensity
Eaves Gutters	–	1:20 year storm intensity
External Catchments Areas	–	1:20 year storm intensity

### **Cold Water**

Cold water reticulation pipework shall be sized in accordance with Industry Publication 'Selection and Sizing of Copper Tubes for water Piping Systems' as produced by the Institute of Plumbing Australia and AS 3500.

Pipework velocity for above ground pipework shall be limited to a probable simultaneous flow and maximum velocity of 1.6 metres / second.

### **Hot Water**

Hot water plant shall be sized to provide a peak one (1) hour period calculated for a usage draw of as follows:

- 1 bedroom apartment – 40 litres per apartment
- 2 bedroom apartment – 75 litres per apartment
- 3 bedroom apartment – 90 litres per apartment

Pipework velocity for above ground pipework shall be limited to a probable simultaneous flow and maximum velocity of 1.6 metres / second

### **Fire Hydrants and Fire Hose Reels**

Fire hydrant and fire hose reel flow, pressure and coverage requirements shall be in accordance with the Building Code of Australia (B.C.A)

## **11 WATER AND ENERGY CONSERVATION**

Further to the development, the Hydraulic Services may incorporate the following features to provide water and energy efficiencies:

- 4.5/3 litre dual flush WC cisterns
- Water flow controlled tapware
- Variable speed portable cold water booster pump assemblies
- Gas fired hot water plant
- Stormwater harvesting re-use