

# HYDRAULIC SERVICES RETURN BRIEF

Barangaroo South Building C1  
Commercial Building with Ground Floor Retail



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# Hydraulic Services

## 1. General

This brief covers the Hydraulic services, which will be provided to serve Building C1 at Barangaroo South. Building C1 consists of six (6) levels of commercial office space and a ground floor retail level with street front tenancies. Hydraulic connection points will be provided to all levels of the building, to allow for the servicing of both the commercial and the retail tenancies. It does not cover the basement infrastructure which is provided by Lend Lease Design under a separate documentation package.

The brief is based on the following reference documents;

- Current architectural drawing plans and elevations

The base building hydraulic services that will be provided for the commercial and retail will include:

- Sanitary plumbing and drainage connection points
- Trade waste plumbing and drainage connection points
- Trade waste pre-treatment grease arrestors within podium footprint at Basement Level
- Stormwater drainage to awnings
- Potable cold water supply connection points
- Recycled cold water supply connection points
- Natural gas connection points
- Sanitary fixtures and fittings to central common amenity areas
- ESD initiatives

The hydraulic services provided in the Basement are:

- Sewer connections at the podium footprint boundary & basement B1 slab level
- Sewage pump stations within the basement levels
- Potable cold water infrastructure from Sydney Water main
- Recycled cold water infrastructure from treatment plant
- Natural gas service from Jemena gas main

The hydraulic services will be designed to a minimum of the following Standards:

- National Construction Code (NCC)
- AS 3500 – Plumbing and Drainage Code
- AS 5601 – Gas Installation Code
- EPA – Rules and Guide lines
- Sydney Water trade waste requirements
- Local Council Stormwater requirements

## 2. Sewer Drainage & Sanitary Plumbing

### 2.1 Generally

Sewer drainage will be provided with a connection point into the main basement drainage system (within the footprint of building C1 over) which shall drain the tenant and base building amenity fixture outlets at Ground floor level and the sanitary plumbing stacks which provide drainage provisions to levels 1 to 6.

Trade waste will be provided for the connection of grease waste outlets from the retail tenancy at ground floor. The retail trade waste will be piped to retail grease arrestors, which will be located at basement B1 within two (2) separate grease arrestor rooms.

For the commercial floor levels (L1 to L6), provisional capped grease waste connection points will be provided to allow a total of three (3) commercial kitchens to be drained from building C1 to a grease arrestor/s located at basement B1. Any proposed tea points / sinks located on the perimeter of the floor plate are proposed to be serviced by local tenant installed pumping systems where required.

Hydraulic services riser ducts throughout all levels will be sized so that they can accommodate both the sanitary plumbing pipework described above, as well as grease waste drainage stacks and vent pipework.

Horizontal pipework routes and offsets for any future grease waste drainage will be considered through services co-ordination, so that sufficient space is available and any future service installation can be achieved without too great a difficulty.

Vent pipework from both the sanitary plumbing system and the retail grease waste system, serving all floor levels will terminate at roof level, within or adjacent to the discharge points of mechanical exhaust stacks.

### 2.2 Materials

The sewer drainage system will consist of 'green best environmental practice' uPVC pipe and solvent welded fittings, and the grease trade waste drainage system will consist of HDPE pipe and fusion welded fittings.

### 2.3 Trade Waste Pre-Treatment Capacity

For the retail component of building C1, the current design brief nominates for the provision of a grease waste treatment capacity of 3,000 litres (hourly volume).

Grease arrestors to serve the commercial tenants within building C1 will be sized for a total treatment volume of 3,000 litres (hourly volume). The maximum seating population of diners that can be catered for will be dependent on the final configuration and size/s of grease arrestors installed. Should a single GA of 3,000 litre volume be installed, then connection of commercial kitchens serving a maximum seating population 599 diners is permitted.

If the configuration was arranged to have two (2) x 1,500 litre grease arrestors, then the maximum seating population of diners will be limited to 398 (seats). Any alternative arrangement consisting of 1,000 litre and/or 2,000 litre volume grease arrestors would restrict the number of diners that can be served to an even lower population.

### 3. Stormwater Drainage System

#### 3.1 General

The Stormwater drainage system for building C1 will consist of drainage from the main roof, from any courtyards or green roof areas, and from all street level awnings.

The roof of the building will be drained through a syphonic drainage system, where ever suitable and practical. Conventional drainage systems will be provided to all other areas. All Stormwater drainage systems from gutter, roof, and planter outlets will be piped back into the core risers. Within the risers, the system will continue to be piped down through the building to ground floor level, from where the drainage will connect into the civil drainage road system.

The stormwater drainage from the awnings will be drained conventionally, with box gutters and sumps connecting to downpipes, which then connect via gravity drains to the civil drainage road system at the Hickson Road eastern site boundary.

A rainwater collection system is proposed to drain portion of the roof area to be collected in 2 x 2,000 Litre tanks. The stormwater drainage will pass through a storm filter prior to the tanks.

Collected rainwater will be re-used for plantroom wash down and ground floor irrigation.

#### 3.2 Materials

- Suspended gravity drainage will be 'green best environmental practice' uPVC pipe and solvent welded fittings
- Suspended syphonic drainage will be HDPE pipe with fusion welded joints.
- Exposed downpipes will be to architectural finishes schedule.

#### 3.3 Sizing

The rainfall intensity that the stormwater drainage system will be sized to will be a 1 in 100 years ARI storm event over a 5 minute duration. The over flow system will also be sized to capacitate a rainfall intensity of 1 in 100 years for a 5 minute duration.

### 4. Water Services

#### 4.1 Mains Water Connections

The incoming potable cold water service, with supply coming from the site infrastructure mains will feed the commercial floor levels via a water meter and pressure pump set, which is to be located within a plantroom at level 1. The pressurisation set will ensure that the upper floor levels are supplied with water at an adequate pressure to operate all tenant fixtures and equipment.

Retail areas will have water supplied to tenancies directly from the mains connection, as the pressures within the authority's mains are adequate to supply fixtures to all areas up to ground floor level.

Automatic backwash filters will also be provided within the plantroom to ensure water quality of a high grade is provided to all areas of building C1.

## 4.2 Water Metering

It is intended that one 'Sydney Water' owned and read meter will be installed for the retail potable cold water supply, and a separate 'Sydney Water' owned and read meter will be installed for potable cold water supply to the commercial portions of the building.

Additionally, Client owned and read meters (with EWMS interface) would be installed as follows:-

- Water meter to read water consumption of combined commercial area.
- Water meter to read water consumption of combined retail area.
- Water meters for supply to the commercial hydraulic services potable hot water systems.
- Water meters for supply to the commercial mechanical services heating water systems.
- Water meters for supply to the commercial mechanical services chilled water systems.
- Water meters for supply to the commercial mechanical services heat recovery systems.
- Water meters for supply to the retail cleaners areas and for individual amenities.
- Water meters for supply to individual retail tenancies.
- Water meters to read water consumption for the landscape watering and for wash down points.

## 4.3 Materials

- Main distribution pipe work will be copper tube (type B) with press fit crimped joints.
- Amenity rough in will be REHAU XPLE.

## 4.4 Potable Cold Water Service

Potable cold water will generally be reticulated horizontally at high level within ceiling voids throughout all floor levels. A capped isolation valve shall be provided within each individual commercial and retail tenancy.

The potable cold water service which will rise vertically through the levels up to level 6 will be installed within services ducts and 'back of house' areas such as plantrooms. An isolation valve will be provided at each riser tee branch which connects to and supplies reticulation pipework to tenancies.

## 4.5 Hot Water Service

Hot water will be provided to the commercial base building amenities and cleaners' areas, as well as the retail public and staff common amenities and cleaner's areas using localised electric hot water heaters.

Thermostatic mixing valves will be installed in amenity areas to provide a maximum hot water temperature of 50°C.

## 4.6 Recycled Water Service

Recycled water will be provided to the plantroom wash down and Ground Floor irrigation.

# 5. Natural Gas System

## 5.1 General

The incoming natural gas service for the buildings commercial and retail tenancies and plant areas will be supplied from a connection to the site infrastructure natural gas mains. The pressure at which gas will be supplied at from the site infrastructure will be a maximum of 7 kPa and a minimum of 5 kPa.

A gas ball valve will be provided outside the boundary alignment (recessed below ground within a pit in the roadway) to allow emergency isolation of the mains supply, with a labelled plaque fixed to the pit cover which shall read "building C1 emergency shut of valve". The fire brigade sprinkler and hydrant booster cupboards shall all have signage provided to indicate the location of the main isolation valve.

Natural gas will be reticulated horizontally throughout the retail ground floor 'back of house' areas at high level within ceiling voids. A capped isolation valve shall be provided within each individual retail tenancy.

The natural gas service supplying the commercial component of the building shall rise vertically through the building up to level 6, which generally will be installed within services ducts and in 'landlord' areas such as corridors and plantrooms. An isolation valve will be provided at each riser tee branch which connects to and supplies reticulation pipework to commercial tenancies.

## 5.2 Materials

The pipework system for the natural gas service will consist of copper tube (type B) and fittings, joined with press fit crimped joints.

## 5.3 Metering

Each commercial and retail tenant will be responsible for applying and entering into a retail gas supply contract with an energy retailer, as well as arranging to obtain their own gas meter from the utility/retailer.

## 5.4 Tenant Fitout Gas Service Installation

The natural gas equipment in each tenancy will need to comply with AS 5601 (Clause 6.5) and shall be provided with individual flame failure devices, or the particular gas appliance / equipment installed by a tenant will need to be provided with a gas shut off system, interlocked to the automatic fire equipment.



## 6. Sanitaryware & Taps

### 6.1 General

Sanitary fixtures and tapware will be selected to provide durability, serviceability and readily available spare parts.

### 6.2 Water Efficiency

- WC's will have a 4 star WELLS rating
- Urinals will have a 6 star WELLS rating
- Basins will have a 6 star WELLS rating

## 7. Retail Tenancy Provisions

The following services will be provided to each tenancy as part of the base building.

### Restaurant Food Retail Tenancies

Services will be provided at the rear of the tenancy for:

- One (1) 100mm sewer drainage point with branch and 50mm waterless trap for AC drain.
- One (1) 100mm trade waste drainage point.
- One (1) 25mm (0.7 L/sec @ 350 kPa) cold water point at high level.
- One (1) 50mm (1200 MJ/hr) natural gas point at high level.

### Café Food Retail Tenancies

Services will be provided at the rear of the tenancy for:

- One (1) 100mm sewer drainage point with branch and 50mm waterless trap for AC drain.
- One (1) 100mm trade waste drainage point.
- One (1) 25mm (0.7 L/sec @ 350 kPa) cold water point at high level.
- One (1) 40mm (500 MJ/hr) natural gas point at high level.

### Non-food Retail Tenancies

Services will be provided at the rear of the tenancy for:

- One (1) 100mm sewer drainage point with branch and 50mm waterless trap for AC drain.
- One (1) 25mm (0.7 L/sec @ 350 kPa) cold water point at high level.

## 8. Works by Other Trades

The following work associated with the Hydraulic Services is performed by other trades.

### 8.1 Building Trade

- Datum level set out points in each room where sanitary fixtures are to be installed.
- Access panels to ducts, inspection panels in walls and false ceilings.
- Sealing toilet room floors with specified epoxy membrane or method to the room floor waste.
- Provision of all shower bases and hobs where required.
- Roof Gutters.
- Overflows and spitters from roof, terrace and balcony areas.
- 150mm high hobs to Roof pipework penetrations.
- All concrete sumps that form part of the concrete floor slabs of the building or are constructed on top of concrete floor slabs of the building.
- All concrete sumps and grated drains that form part of the structural floor slab on suspended floors of the building.
- Forming up and construction of concrete hobs around pipe slot floor penetrations in plantroom floors.
- Concrete equipment plinths for:-
  - o All water pumps.
  - o Hot water heaters.
- Boxing in all exposed downpipes, soil stacks, vent pipes, etc.
- Casting in but not supply or locate any pipe cores or sleeves which are to be provided.
- Construction of all spoon drains, channel drains or dish drains complete with falls to the outlets provided.
- Signage to every water outlet downstream of backflow prevention valves which reads – “CAUTION NOT FOR DRINKING”.

### 8.2 Electrical Trade

Electrical power wiring to;

- Hot water heater for amenities
- Power supply to urinal flush valves (1 each per urinal 240 V power outlet)
- Power supply to automatic back wash filter (2 off 240 V power outlets.)

### 8.3 Mechanical Trade

- Extensions of cold water service to A.C. plant from control valves provided.
- Extensions of condensate drainage from AC equipment and plant to tundishes or floor wastes provided.
- Mechanical ventilation of Pump Rooms.

## 8.4 Landscape Trade

- Drainage Cell to Planter Boxes and Landscaped areas.
- Automatic Landscape Watering System.

## 8.5 BMCS Trade

Wiring to all hydraulic plant and equipment;

- Retail main Sydney Water meter
- Retail main recycled water meter
- Retail tenancy water meters
- Amenities potable cold water meter
- Amenities recycled water meter
- Retail automatic backwash filter "Fail" signals (2 off)