

Hydraulic Fire Environmental

Hydraulic Services Report

Project Application

Barangaroo South

R8 & R9 Residential Development

Client:

Lend Lease 30 The Bond 30 Hickson Road Millers Point, NSW 2000

Hydraulic Consultant:

SPP Group Pty Ltd Level 3, 432 Kent Street SYDNEY NSW 2000 (T) 9261 1300 (F) 9261 1600 Email: sydney@sppgroup.com.au





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INDEX

1	INTRODUCTION4
1.1	Overview of Proposed Development
1.2	Site Location
2	HYDRAULIC SERVICES
2.1	Introduction
2.2	Proposed systems
2.3	Codes and Standards
2.4	Design Criteria7
2.5	Water Conservation7
2.6	Stormwater Drainage7
2.7	Rainwater Plumbing7
2.8	Sanitary Drainage & Plumbing
2.9	Tradewaste Drainage & Plumbing8
2.10) Potable Cold Water Service
2.11	Potable Hot Water System
2.12	2 Non-potable Cold Water System
2.13	3 Natural Gas System10
2.14	4 Conclusion 11



1 Introduction

This report supports a Project Application (MP11_0002) submitted to the Minister for Planning pursuant to Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act). The application seeks approval for construction of two (2) residential flat buildings (known as Buildings R8 and R9) and associated works at Barangaroo South as described in the Overview of Proposed Development section of this report.

1.1 Overview of Proposed Development

The R8 & R9 Project Application seeks approval for the construction and use of two (2) residential flat buildings comprising 161 apartments, ground floor retail, allocation of car parking spaces from the Bulk Excavation and Basement Car Parking Project Application, and the construction of the surrounding ancillary temporary public domain and landscaping.

1.2 Site Location

Barangaroo is located on the north western edge of the Sydney Central Business District, bounded by Sydney Harbour to the west and north, the historic precinct of Millers point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and bounded to the south by a range of new developments dominated by large CBD commercial tenants.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Central and Barangaroo South.

The R8 and R9 project Application Site area is located within Barangaroo South as shown in Figure 1. The project Application Site extends over land generally known and identified in the approved Concept Plan as Block X.





Figure 1: R8 and R9 Residential Building Project Application (MP11_0002) Aerial Site Location Plan



2 Hydraulic Services

2.1 Introduction

This section provides a description of the intended hydraulic services strategy outlining proposed concepts for the development whilst aiming to achieve the buildings green star targets.

2.2 Proposed systems

The systems proposed include the following:

- i. Stormwater Drainage
- ii. Rainwater Plumbing
- iii. Sanitary Drainage
- iv. Tradewaste Drainage (including grease arrestors for retail areas)
- v. Sanitary Plumbing
- vi. Tradewaste Plumbing
- vii. Potable Cold Water Service
- viii. Potable Hot Water Service
- ix. Non-potable Cold Water Reticulation
- x. Natural Gas Service

2.3 Codes and Standards

The sanitary plumbing, drainage and water supply systems shall be designed to comply with the requirements of the following, where relevant:

- i. Australian Standards:
 - a. AS3500 Parts 1, 2, 3, 4 & 5,
 - b. AS5601,
- ii. The Building Code of Australia.
- iii. The Plumbing Code of Australia.
- iv. Sydney Water Corporation
- v. Sydney City Council
- vi. Jemena Gas Networks



2.4 Design Criteria

The design criteria shall include but shall not necessarily be limited to the following:

- Rainwater roof drainage shall be based on rainfall intensity for a 1:100 year average recurrence interval for a storm event of 5 minute duration.
- Complete sanitary system shall be provided to residential areas of the building only. All retail areas of the development shall only be provided with capped waste and vent branches for future fit out.
- Complete domestic hot/warm and cold water system shall be provided to residential areas of the building only. All retail areas of the development shall be provided with capped valves for future fit out.
- Domestic hot water shall be delivered at 60-65°c to temperature control devices within each residential apartment.
- Temperature control of the domestic hot water delivery at respective outlets shall be capable of a maximum temperature setting of:
 - o General fixtures 50°c
 - Disabled fixtures 43.5°c
- Thermal insulation to pipework to maintain required water supply temperatures to hot/warm water.
- Acoustic treatment to all pipework services running through sound sensitive areas.

2.5 Water Conservation

Water conservation measures to be incorporated into the building will include the following:

- Reducing town's water main supply;
 - o Building integration with central black water treatment for water reuse
- Reducing water usage by the use of;
 - o Dual flush WC's
 - o Low flow tapware
 - Hot water system management

The building will be designed to target a 5 star Greenstar water rating through incorporation of these measures.

2.6 Stormwater Drainage

The stormwater drainage system shall collect runoff from the podium areas including landscaped areas and balconies for discharge to the civil stormwater drainage system located in Globe Street. All site stormwater will be pre treated and discharge through a gross pollutant trap prior to connection to the civil stormwater system.

2.7 Rainwater Plumbing

The rainwater plumbing system shall extend from all roof areas of the building discharging to the stormwater drainage system located at ground level.



Rainwater from the roof areas shall be discharged via a system of downpipes and connect to the drainage system.

2.8 Sanitary Drainage & Plumbing

The sanitary drainage system will convey wastes from basins, baths, showers, WC's, sinks etc. to the central Barangaroo South black water treatment plant with an overflow discharge via gravity to the local authority sewer main in Hickson Road.

2.9 Tradewaste Drainage & Plumbing

System Description

A tradewaste drainage system shall be provided to treat waste from retail food tenancy on ground level. The trade waste drainage system shall be located at high level under the ground floor slab and shall discharge to four (4) grease arrestors of 5000 litres nominal capacity, two (2) for each retail stratum, and located on basement level 1.

The retail garbage room shall also discharge to the trade waste drainage system.

The outlet from the grease arrestor shall discharge to the sanitary drainage system. Vent pipes extending from the trade waste drainage system and grease arrestors shall extend up through the residential stratum to discharge above roof level.

2.10 Potable Cold Water Service

System Description

The potable cold water shall be provided from the Authority main and reticulated throughout the buildings.

Engagement has commenced between Lend Lease and Sydney Water to provide site wide infrastructure for potable water reticulation. The potable water system will supply both R8 and R9 buildings and will be design and implemented prior to commencement of construction.

The potable cold water reticulation shall extend from the R8 & R9 water mater rooms located within the basement level 1.to the water meter and pressure boosting pump. After metering the water service the reticulation shall pass through a backflow prevention device for zone protection of each building before being boosted by triplex variable speed pumps to maintain adequate cold water pressure throughout all levels of the buildings. Pumps shall be sized as a duty/duty/standby arrangement whereby each pump has the capacity to provide 50% of the required duty, therefore providing redundancy to the system in the event of a single pump failure. A water supply shall also extend to the retail areas.

From the cold water booster pump set, the reticulation shall extend up through the buildings in hydraulic services risers attached to each core.

At each level of the building a branch line shall extend from the riser, to reticulate to each apartment. Each apartment shall be provided with a 20mm isolation valve located beneath the laundry tub within the apartment.

Each retail tenancy shall be provided with a 25mm isolation valve and water meter for separate billing purposes.

Common areas shall be provided with a water meter and reticulation system for separate billing purposes.

Flow Control



The potable cold water to all tapware shall be controlled to significantly reduce the permissible water flow from the outlets. Flow rates for the various fixtures and associated tapware shall be as noted in the Basix Certificate and Greenstar assessment.

2.11 Potable Hot Water System

System Description

Each core in each building shall be served by a central gas fired hot water plant located in the plant rooms at roof level.

The hot water reticulation shall extend from the plant, dropping down through the building located in hydraulic services risers attached to the each core.

At each level of the building a branch line shall extend from the dropper, to reticulate to the apartments. Each apartment shall be provided with a 20mm isolation valve and meter located beneath the laundry tub within the apartment. All meters shall be wired back to a central data logger in the gas meter room for billing purposes.

The potable hot water reticulation within the apartments shall be installed within walls and ceiling spaces as required for connection to the following fixtures:

- a) Basins
- b) Showers
- c) Baths
- d) Kitchen Sinks

Hot Water Reticulation

The hot water reticulation system shall be a flow and return system through the central core risers and a "Dead Leg" run out from central core services risers to individual apartments. Thermostatic mixing valves shall be provided in all services cabinets to reduce the draw off temperature to apartments to 50°C. The "Dead Leg" system will be electrically heat traced and lagged to maintain temperatures within the system.

Flow Control

The potable hot water to all tapware shall be controlled to significantly reduce the permissible water flow from the outlets. Flow rates for the various fixtures and associated tapware shall be as noted in the Basix Certificate and Greenstar assessment.

2.12 Non-potable Cold Water System

System Description

A central black water treatment plant shall be provided in the common basement of the Barangaroo South development. This shall treat waste to a Grade A standard where it shall be distributed across the development including R8 and R9 buildings. The central non-potable water supply will enable both the R8 & R9 buildings to minimize potable water demand.

The non-potable cold water reticulation shall extend from the non-potable water meter located in the basement level 1 no-potable water meter room. After metering the non-potable water service it shall reticulate to a pump room at the basement level where it shall be boosted by triplex variable speed pumps to maintain adequate water pressure throughout all levels of the buildings. Pumps shall be sized as a duty/duty/standby arrangement whereby each pump has the capacity



to provide 50% of the required duty, therefore providing redundancy to the system in the event of a single pump failure.

From the non-potable cold water booster pump set, the reticulation shall extend up through the buildings in hydraulic services risers attached to the main core.

At each level of the building a branch line shall extend from the riser, to reticulate to each apartment. Each apartment shall be provided with a 20mm isolation valve located beneath the laundry tub within the apartment.

Each retail tenancy shall be provided with a 25mm isolation valve and water meter for separate billing purposes.

Common areas shall be provided with a water meter and reticulation system for separate billing purposes.

Flow Control

The non-potable cold water to all tapware shall be controlled to significantly reduce the permissible water flow from the outlets. Flow rates for the various fixtures and associated tapware shall be as noted in the Basix Certificate and Greenstar assessment.

2.13 Natural Gas System

System Description

Engagement has commenced between Lend Lease and Jemena Gas Networks to provide site wide infrastructure for the distribution network supply.

The natural gas service shall extend from the Authority Gas main located in Globe Street to the main meter/regulator assembly located in the gas meter rooms of the common basement.

The gas reticulation shall extend from the meter/regulator assembly through the site. Branch pipes shall extend from the main reticulation to each building.

Retail Stratum

The reticulation within the retail stratums shall extend to those tenancies nominated as requiring a gas supply.

Gas Isolation valves shall be provided in the ceiling space of those tenancies nominated as requiring a supply. The tenant shall be responsible for arranging the installation of the gas meter from the gas supplier, the location of which shall be within the gas meter room at basement level 1.

Residential Stratum

The gas supply shall extend from the main reticulation to the residential buildings and extend up through the buildings in hydraulic services risers attached to the main core. At each level of the building a branch line shall extend from the riser, to reticulate to each apartment. Each apartment shall be provided with a 20mm isolation valve and meter assembly within the designated services cabinet located in the corridor servicing the apartments. All meters shall be wired back to a central data logger in the gas meter room for billing purposes.

A branch line shall extend to the central hot water plants located at roof level and mechanical equipment as required.



2.14 Conclusion

SPP has prepared this hydraulic services report to inform and accompany the Project Application for the R8 and R9 residential buildings at Barangaroo South.

The proposed R8 and R9 buildings can be designed and constructed utilizing industry standard practices and proven design and construction methodologies.