

aurecon

Project: Hornsby MHU
Phase 6 Design Development Report
Project No. 216141


Prepared for:
Hornsby MHU

Report ref: 216141
17 June 2011

Document prepared by:

Aurecon Australia Pty Ltd
ABN 54 005 139 873
116 Military Road
Sydney (Neutral Bay) NSW 2089
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@ap.aurecongroup.com
W <http://www.aurecongroup.com>

Document control						
Rev No	Date	Revision Details	Typist	Author	Verifier	Approver
01	17/6/11	40% Preliminary Issue	AJM	AJM		

Current Revision: 01

A person using Aurecon documents or data accepts the risk of:

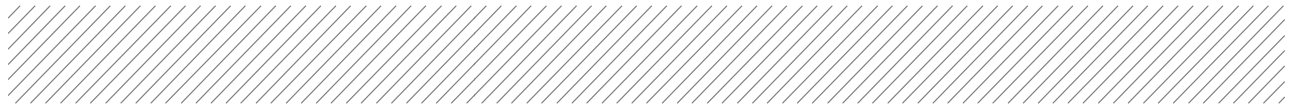
- a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version.
- b) Using the documents or data for any purpose not agreed to in writing by Aurecon.

Hornsby MHU

Date | 17 June 2011
Reference | 216141
Revision | 01

Aurecon Australia Pty Ltd
ABN 54 005 139 873
116 Military Road
Sydney (Neutral Bay) NSW 2089
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@ap.aurecongroup.com
W <http://www.aurecongroup.com>



Executive Summary

The purpose of the Design and Development Report is to establish the design parameters for hydraulic & fire services.

The report is designed to achieve a summarized and coherent written description of the scope of services to be designed. The document is not designed as a specification or bill of materials. Nor is it intended to provide detail of the equipment selection. The document provides for a description of the end outcome services to be provided within the building.

The report will be revised and amended during the early stage of Design Development and ultimately will need to be endorsed and accepted by User Group and Health Infrastructure.



Contents

1	Hydraulic services	1
1.1	Scope of works	1
1.2	Standards, codes, regulations and NSW Health Policy etc	1
1.3	Sanitary drainage (inground)	2
1.4	Downpipes and gutters	2
1.5	Cold water	2
1.6	Hot water	3
1.7	Sanitary Fixtures and fittings	3
2	Fire services	4
2.1	Scope of works	4
2.2	Sprinkler	4
2.3	Fire hose reel service	4
2.4	Fire hydrant service	4
2.5	Portable fire extinguishers	5
2.6	Emergency Warning and Intercommunication Systems (EWIS)	5
2.7	Smoke detection	5
	Appendix G Infrastructure Risk Assessment	6



1 Hydraulic services

1.1 Scope of works

- Sanitary drainage
- Sanitary Plumbing
- Downpipes
- Cold Water Service
- Hot water Services
- Sanitary fixtures & tapware

1.2 Standards, codes, regulations and NSW Health Policy etc

The following documents have been used as design and installation of hydraulic services for Hornsby MHU. The relevant version of all codes and documents are to be used for all projects:

- AS/NZS 3666 Air Handling and Water Systems of Buildings – Microbial Control.
- AS/NZ 3500 Series – Plumbing and Drainage
- New South Wales Government Gazette No. 126 dated July 1999 of New South Wales Code of Practice Plumbing and Drainage. The introduction of requirements where water temperatures exceed 50°C at taps, backflow prevention, storage water tanks and expanded range of approved non metallic water pipes for use in potable water supply systems.
- WorkCover Authority of NSW Safety Guide No. 4517 in regard to Thermostatic Mixing Valves installed in Healthcare and Accommodation Industries.
- NSW Health Department Circulars outlining requirements for the provision of cold and heated water. The circulars have both management and operational implications which must be addressed before decisions on the type of hot water generation and system can be decided. Additionally, the circulars describe the type and style of taps to be provided.
- NSW Health Department Policy Directive PD2005/344 – Requirements for the Provision of Cold and Heated Water.
- AS 4032 series – Water supply – Valves for the control of hot water supply temperatures.
- Standards Australia of the Standard MP52 requiring all components, plant and equipment installed within cold and hot water piping systems to which potable water supply pipelines connect to be certified.
- Requirements of the Building Code of Australia
- PCA204 Plumbing Code of Australia 2004
- Manufacturers' requirements and recommendations
- Occupational health and safety requirements
- The requirements of all water and statutory authorities.
- The requirements of Hornsby local council.



1.3 Sanitary drainage (inground)

1.3.1 New Main MHU building

The Main MHU building shall drain to the existing 150mm hospital drainage system located to the eastern side of the new development.

Calculations based on the architectural drawings received on the 9 June 2011, clarify that the existing hospital drainage system can accommodate the additional 526 fixture units.

All WCs located on ground level shall be provided with a clear-out for maintenance access to the drainage systems.

1.3.2 Sanitary plumbing

Sanitary plumbing shall be designed to comply with AS3500.2 sanitary plumbing and drainage code and be located within internal plumbing ducts with access from internal corridors.

All water closets located on level 1 will be provided with a clear-out flush and level slab for maintenance access to the drainage systems.

1.4 Downpipes and gutters

The downpipes & gutters shall be designed to comply with AS/NZS 3500.3 Stormwater Drainage.

Rainwater shall be collected from the roof via the downpipes and terminate 1 metre from the building footprint.

The civil engineer documentation shall provide stormwater drainage provision for the interface between downpipes and civil drainage.

1.5 Cold water

1.5.1 Mains connections

A new water supply connection to the existing Ø150 Sydney water main located on Lowe Road is required, for the main MHU building.

1.5.2 Metering arrangement

A new Sydney Water master meter and reduced pressure zone device immediately downstream of the meter shall serve the new main MHU building.

The master water meter shall be located near the boundary line adjacent to Lowe Road.

Febco backflow prevention valves shall be installed to be consistent with other existing backflow prevention valves.



1.5.3 Water filtration

At the incoming water supply immediately downstream of the meter, supply and fit dual automatic in-line filters 100 micron mesh size. Provide a suitable tundish and drainage to receive backwash waste water from filters.

1.5.4 Reticulation generally

From the main connections reticulated via internal ring main to all sanitary fixtures within the main MHU building.

1.5.5 Pumps

A dual cold water booster pump will be required for the main MHU building, with an arrangement of hydro-vane inline variable speed pumps of 50% duty to the calculated Probable simultaneous demand.

This ensures 100% standby facilities.

1.6 Hot water

1.6.1 Generally

A complete network of flow and return pipes and fittings shall reticulate to the sanitary taps, faucets and fixtures from a centralised hot water plant located on level 1.

1.6.2 Centralised hot water system

The centralised hot water plant shall consist of 3 off Rheem internal 275 litre gas hot water units.

This shall provide up to 5130 litres of hot water over the peak period.

The gas hot water heater flues shall individually terminate above the roof level.

1.6.3 Thermostatic mixing valves

Thermostatic mixing valves shall be provided as illustrated on the hydraulic drawings.

Rada 215BK thermostatic mixing valves shall be installed to be consistent with other existing thermostatic mixing valves.

1.7 Sanitary Fixtures and fittings

To be nominated by the hydraulic consultant/ architect and submitted for client approval.



2 Fire services

2.1 Scope of works

The fire services provided for the proposed development shall be in accordance with the requirements of the Building Code of Australia (BCA), Australian Standards, Fire Engineered solution prepared for the building and the requirements of all the relevant authorities.

The services included in the fire services scope of work will include the following: -

- Portable Fire extinguishers to AS2444
- Emergency Warning and Intercommunication System to AS1670.4 - 2004.
- Smoke detection to AS1668 & AS/NZS 1668.1
- Fire Hydrant System to AS2419.1-2005 & AS 2118.6-1995.
- Fire Hose Reels AS2441
- Smoke Alarm AS3786

2.2 Sprinkler

No sprinkler system is required for the building in accordance with the BCA/fire engineers

2.3 Fire hose reel service

Fire hose reels are to be located within 4 metres of an exit, each to be 36 metres in length & 4 metres of spray. Where there is hose reel coverage shortfall, additional hose reels shall be installed.

The fire hose reels shall be connected to the metered cold water service.


Currently there is no preliminary fire engineer report available to clarify fire hose reel coverage strategy.

2.4 Fire hydrant service

A new dedicated fire hydrant system shall be designed for the main MHU building.

A new connection to the Sydney Water main located in Palmerston Road is required for the water supply.

The fire hydrant system shall comprise of the following;

- 
- Fire hydrant booster assembly with testable double check valve & by pass meter.
 - Fire hydrant pump
 - Internal fire hydrants
 - External fire hydrants
 - Reticulation hydrant pipework

Currently there is no preliminary fire engineer report available to clarify fire hydrant coverage strategy.

2.5 Portable fire extinguishers

The building will be provided with portable fire extinguishers in accordance with Building Code of Australia table E1.6 and AS2444. This will include;

- CO₂ extinguishers in lift motor room
- CO₂ extinguishers in hose reel cupboards.
- Dry chemical extinguishers at main switchboard.
- Fire blanket to kitchens

2.6 Emergency Warning and Intercommunication Systems (EWIS)

The building will be provided with an Emergency Warning and Intercommunication System in accordance with AS1670.4-2004.

The Master Emergency Control Panel will be located in the main entry on ground floor adjacent to the fire indicator panel. The Master Emergency Control Panel will receive zoned inputs from the Fire Indicator Panel, via a high level interface, to allow automatic cascading evacuation.

The Emergency Warning and Intercommunication System will also serve as the Building Occupant Warning System function required by the smoke detection systems.

2.7 Smoke detection

The building will be provided with automatic smoke detection complying with AS1668. The system will be monitored by control and indicating equipment comprising a Fire Indicator Panel located in the main entry on the ground floor.

The system will be an analogue or digital addressable system and will use fire signatures or multiple detection criteria to eliminate false alarms.

The Fire Indicator Panel will incorporate a Fire Fan Control Panel (FFCP) with AS1668 controls to provide manual control of fans and essential dampers. The FFCP will communicate via the Fire Indicator Panel with addressable relay modules located adjacent to the mechanical services switchboards.

The Fire Indicator Panel will be located on the ground floor main entry to building, with a wiring to the master FIP (indicate alarm on a LED on master panel) located in the main MHU building.

Appendix G

Infrastructure Risk Assessment

Appendix G INFRASTRUCTURE RISK ASSESSMENT	
Engineering Systems	<ul style="list-style-type: none"> • Sewer: New gravity sanitary drainage to interface with existing hospital sanitary drainage system.. • Cold Water: New water service shall be extended from the existing Sydney Water main.
Alternative Engineering Systems	<ul style="list-style-type: none"> • Sewer: Where gravity connection cannot be achieved, a sewer pump station shall be installed.
Condition and Age	<ul style="list-style-type: none"> • Sewer: Condition and age of existing hospital sanitary drainage to be determined during Design Development stage.
Likelihood of failure	<ul style="list-style-type: none"> • Sewer: Blockages due to misuse/sewer blockages (Likelihood: Rare) • Cold Water: Failure due to Sydney Water Maintenance and failure due to excavation (Likelihood: Rare)
Consequence of failure	<ul style="list-style-type: none"> • Sewer: Potential damage from flooding • Cold Water: No domestic cold water, no hose reels, no mech cold water
Single point of failure	<ul style="list-style-type: none"> • No drainage or cold water to the individual fixture.
Business continuity issues/staging	<ul style="list-style-type: none"> • Capping off of existing services during demolition and decanting
Integrated services review	<ul style="list-style-type: none"> • Cold water to mechanical
Back-up	<ul style="list-style-type: none"> • No back-up is currently provided to domestic cold water or sewer
Maintenance and maintainability	<ul style="list-style-type: none"> • Sewer: Flushing of drainage system on a six-monthly basis • Cold water: Visual inspection of cold water service on a six-monthly basis



Aurecon Australia Pty Ltd

116 Military Road
Sydney (Neutral Bay) NSW 2089
Australia
T +61 2 9465 5599
F +61 2 9465 5598
E sydney@ap.aurecongroup.com

Key Contact

Adam martin,
116 Military Road
Sydney (Neutral Bay) NSW 2089
Australia
T (02) 9465 5705
E martinaj@ap.aurecongroup.com

Aurecon offices are located in:
Angola, Australia, Bahrain, Botswana,
China, Ethiopia, Hong Kong, Indonesia,
Lesotho, Libya, Malawi, Mozambique,
Namibia, New Zealand, Nigeria,
Philippines, Singapore, South Africa,
Swaziland, Tanzania, Thailand, Uganda,
United Arab Emirates, Vietnam.

For more information please visit
www.aurecongroup.com