

Royal Rehabilitation Centre Sydney

Hydraulic Services

Return Brief

Prepared for:
ROYAL REHABILITATION CENTRE SYDNEY
58 Charles Street
Ryde

Architects:
BATES SMART
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East Sydney NSW 2010
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Prepared by:
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JOB NO: 5079
DATE: 19.12.07



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1. Design Objectives

The return brief for Hydraulic Services has been prepared to set the design criteria for incorporation into the various buildings within the site.

There is no provision in this brief for services associated with the amphitheatre.

During the design process consideration will be taken in regards to:

- Capital costs
- Running and operating costs
- Maintenance
- Energy costs
- Future requirements
- Ease of maintenance

2. Authorities

The Hydraulic installation will be designed in accordance with the following:

- NSW Code of Practice Plumbing and Drainage 2006
 - AS3500 Parts 1 – 4 2003
 - AGL Australian Gas Standards 2004
 - Ryde Municipal Council
 - Building Code of Australia Part 3
-

3. Sanitary Drainage

Connections will be made to Sydney Water's sewer mains in location to be determined upon receipt of the Feasibility letter or Section 73 Notice of Requirements from Sydney Water Authority.

The sewer drainage system will extend to each building providing connection points to all fixtures and sanitary plumbing stacks.

Fixtures below gravity level will be serviced by sewer pump wells complete with dual automatic pump sets.

4. Trade Waste Drainage

Trade Waste Systems will be provided to the kitchen, waste management and research facilities.

A grease arrestor would be provided for the pre-treatment of wastes from the kitchen servery – prior to connection to the sanitary drainage system.

The waste management facility will be provided with bucket trap arrestors.

Subject to further design development and usage details it is intended to provide dilution pits to receive the waste from research areas.

5. Stormwater Drainage System

Roof drainage and downpipes shall discharge to the stormwater drainage system and connection to civil site infrastructure stormwater reticulation system.

Localised ground surface stormwater adjacent to buildings shall be collected by a system of grated inlet pits, reticulated and connected to the civil services site infrastructure reticulations system.

A rainwater harvesting of 150m³ in capacity shall be provided on basement level complete with dual variable speed pump set to supply water for irrigation purposes.

A top up system connected to the potable cold water supply shall be provided for periods of low rainfall.

6. Potable Cold Water Service

Water requirements from the site will be provided from Sydney Water mains. The connection point(s) will be determined upon receipt of Section 73 Notice of requirement from Sydney Water Authority.

The water service will extend through the site providing connection points to each building, metering will be provided with the full extent and number of meters to be determined within the design development phase.

There may be a case for pressuring the potable cold water service, this will be determined after pressure enquiries are complete and further design development has been undertaken.

If required the pumping system will comprise of triplex variable speed automatically controlled pump sets to maintain system pressures.

7. Hot Water System

Separate hot water services and systems will be provided for each separate building (subject to further design development).

Hot water service design will be in accordance with AS3500.4 – 2003 Plumbing and Drainage Heated Water Services and B.C.A part J.

The types of hot water systems to be adopted will be decided upon completion of E.S.D considerations, which will include consideration of solar panels with 100% gas boost.

The systems will be designed to minimize dead legs and water will be supplied at 50°C to ablution and 43.5°C to health care facilities.

8. Gas Service

Connections will be made to Alinta's existing main in Morrison Road and reticulated to all buildings and pool area (capped provision for pool plant). Final authority main point of connection and supply capacity is subject to confirmation by Alinta.

Provide extension of natural gas connection point including regular and meter provisions.

Connection points to all appliances and plant will be included in scope of work including:

- Hot Water Plant
- Mechanical Plant

9. Ecologically Sustainable Development (E.S.D)

Consideration will be given to areas where energy savings and use minimisation.

Items for consideration:

- Tapware, selection of tapware with a wells rating greater than 3
 - Water closets, selection of dual flush units
 - Urinals, consideration to be given to waterless urinals
-

- Harvested water for irrigation purposes
- Installation of sub water meters for monitoring of usage, including data logging to central P.C
- Solar Hot Water systems with 100% Gas Boost.

10. Plant & Equipment Specials

Main Building

Item	Location	Size (m)
Rain water harvesting tanks, main building	In ground	
Rain water reuse pump and filtration room	Basement level	4m x 3m
5000 litre grease arrestor	In ground, north east side	6m x 3m
Hot water generation plant	Roof level 1	15m x 7 m 2 off
Solar panels	Level 2	5m x 3m 3 off
Hot water storage	Level 2	10m x 3m 1 off
Sub soil plumbing station	Basement level	3m x 2m
Boundary regulator in cage	Charles Street carpark	4m x 4m
Water meter room	Ground floor	3m x 500mm

Weemala

Item	Location	Size (m)
Rain water harvesting tanks	Charles Street carpark	3.5m x 3m 2 off
Rain water reuse pump/filtration room	In ground Charles Street car park	4m x 3m
Hot water generation plant	Roof levels 2 off	8m x 3m
Solar plant	Ground level	3m x 1.5m

2nd April 2008

BATES SMART
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East Sydney NSW 2010

Ph: 9380 7288

Attention: Julian Anderson

Dear Sir,

**Re: ROYAL REHABILITATION CENTRE
FIRE SERVICES**

**HARRIS PAGE
& Associates**
Pty.Limited

ABN 79 008 548 098

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FIRE SERVICES DESIGN CERTIFICATE

On behalf of Harris Page & Assoc, I hereby advise that the Fire Services associated with the above development, have been designed in accordance with the requirements of the Building Code of Australia 2005, Environmental Planning and Assessment Act 1979, The Development consent, and local authority requirements.

The design is in accordance with the following relevant Australian Standards listed below:

- | | | |
|---|--------------------------------|--------------|
| • Automatic Fire Sprinkler Systems | AS2118.1 1999 | E1.5 |
| • Fire Hydrant System | AS2419.1 2005 | E1.3 |
| • Fire Hose reel System | AS2441.1 2005 | E1.4 |
| • Fire Detection Systems | AS1670.1 2005
AS1668.1 1998 | E1.7
E2.2 |
| • Emergency Warning &
Intercommunication Systems | AS1670.4 2005 | E4.9 |
| • Portable Fire Extinguishers | AS 2444 | E1.6 |

Final installation certificates will be issued by the Fire services installation sub contractor on completion of the installation.

Yours faithfully

HARRIS PAGE & ASSOCIATES PTY LIMITED

TONY NAUMOVSKI
Director

ROYAL REHABILITATION CENTRE SYDNEY

59 CHARLES STREET, RYDE

FIRE SERVICES

RETURN BRIEF

Client:

ROYAL REHABILITATION CENTRE SYDNEY

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RYDE NSW 2000

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Date: 2.04.08 DA issue



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SECTION 1. FIRE SERVICES DESCRIPTION

1.01 SCOPE OF PROPOSED FIRE SYSTEMS

The project comprises new mixed use buildings as follows:

- Rehabilitation Building
- Wemala Building
- Child Care Building

The development will be provided with fire services as detailed below:

Fire Service	Rehab Building	Wemala Building	Child Care centre
Automatic Fire Sprinkler System	Yes	Yes	No
Emergency Warning & Intercommunication System	Yes	Yes	No
Fire Detection System	Yes	Yes	Yes
Fire Hydrant System	Yes	Yes	No
Fire Hose Reel System	Yes	Yes	No
Portable Fire Extinguishers	Yes	Yes	Yes

1.02 DESIGN INTENT

The fire services will be designed and installed in accordance with the requirements of The Building Code of Australia, associated Australian Standards and any fire engineering alternatives as listed below:

- Automatic Fire Sprinkler Systems AS2118.1 1999 E1.5
 - Fire Hydrant System AS2419.1 2005 E1.3
 - Fire Hose reel System AS2441.1 2005 E1.4
 - Fire Detection Systems AS1670.1 2005 E1.7
AS1668.1 1998 E2.2
 - Emergency Warning & Intercommunication Systems AS1670.4 2005 E4.9
 - Portable Fire Extinguishers AS 2444 E1.6
-

SECTION 2. FIRE SERVICES GENERAL DESCRIPTION

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

2.01 AUTOMATIC FIRE SPRINKLER SYSTEM

The fire sprinkler system will be designed in accordance with the BCA, AS 2118.1 2006, NSW Fire Brigade authority requirements and fire engineering design brief.

The fire sprinkler system will comprise a single water supply connection into the towns main in Morrison st and boosted by diesel and electric booster pumps.

The sprinkler control valve / pump room, will be located within the building and shall be provided with direct access from the street.

The fire sprinkler system will extend from the sprinkler control valves and reticulate via steel pipework to sprinkler heads installed throughout the carpark.

Sprinkler heads will be installed below all exposed slabs, below suspended ceilings and within ceiling voids (where applicable).

A Fire Brigade booster valve will be located at the main entry to site in a location acceptable to the Fire Brigade.

Activation of the automatic fire sprinkler system shall be indicated on the fire indicator panel and shall be monitored via an independent security company for automatic fire brigade call out.

2.02 FIRE HYDRANT SYSTEM

The fire hydrant system will be designed in accordance with the BCA, AS 2419 2005, NSW Fire Brigade authority requirements and fire engineering design brief.

The fire hydrant system will comprise a single water supply connection into the towns main in Morrison rd boosted by a diesel booster pump.

Fire hydrant landing valves shall be located on each level within each fire isolated stairwell, and shall provide the required 30m hose length + 10m spray coverage to all parts of the building.

A Fire Brigade booster and suction assembly shall be located adjacent to the main entry of the site, complete with all signage.

2.03 FIRE HOSE REEL SYSTEM

The fire hose reel system will be designed in accordance with the BCA, AS 2419 2005, NSW Fire Brigade authority requirements and fire engineering design brief.

The fire hose reel system will comprise a connection into the incoming domestic water supply, boosted by an electric booster pump.

Fire hose reels shall be located on within 4m of a fire isolated stairwell or required exit and shall provide the required 36m hose length + 4m spray coverage to all parts of the building.

A Fire hose reels shall be located in cupboards, complete with all signage.

2.04 FIRE DETECTION SYSTEM

The fire alarm system shall be designed in accordance with AS 1670.1, NSW Fire Brigade and Authority requirements.

The fire alarm system shall consist of smoke or thermal detectors installed throughout the building in accordance with AS1670.1 and within specific air handling plant as required by AS 1668.

Break glass alarms shall also be provided and connected to the FIP.

A fire indicator panel (FIP) shall be located within the main entry lobby and shall incorporate detectors flow switch and all other field device

indications.

A fire fan control panel incorporating all AS 1668 controls shall be installed and integrated within the FIP.

Fire mimic panels (FIP repeater panel) shall be located in the main entry lobby of the building.

2.05 EMERGENCY WARNING AND INTERCOMMUNICATION SYSTEM

The emergency warning and intercommunication system will be designed in accordance with AS 1670.4

The system will consist of an MECP (master evacuation control panel) and will extend to audible speakers located throughout the building.

Warden intercom phones shall also be located at exit points

The MECP shall be located within the main entry lobby.

2.06 PORTABLE FIRE EXTINGUISHERS

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

SECTION 3. PLANT AND EQUIPMENT SPACIALS

3.01 GENERAL

The following is a schedule of plant space and equipment associated with the proposed fire services.

Item	Location	Size (m)
Fire Sprinkler Valve & sprinkler Pump and Fire Hydrant Pump Room	1 Level below ground with direct access from fire stair or street level with direct access from road or open space	5.0m x 5.0m
Fire Hydrant Brigade Booster/ Suction Valve Assembly cupboard (with backflow in room)	External – Adjacent to site entry- enclosed or unenclosed	3m long x 1.8m high x 500mm deep
Fire sprinkler Brigade Booster/ Suction Valve Assembly cupboard (with backflow in room)	External – Adjacent to site entry	3m long x 1.8m high x 500mm deep
Fire Hose Reel Cupboards	Within 4m of required exits or fire stairs.	2m x 900mm x 450mm deep
Fire indicator Panel	Main building entry	600mm x 450mm
EWIS Panel	Main building entry	900mm x 600mm
Fire Mimic panels	.Pump room .Ground floor entry .foyer .Staff reception areas	300mm x 300mm

SECTION 4. SCHEDULE OF ASSOCIATED WORKS

4.1 WORK BY BUILDER

- Penetrations and risers to the extent shown on drawings.
- The removal and replacement of ceiling tiles in conjunction with the fitting of sprinkler heads, smoke detectors and Ewis speakers
- 200mm high concrete plinth for each pump.
- The provision of the sprinkler valve / pump room complete with door, lighting, etc.
- All necessary signs and directional notices required by the Fire Brigade.
- Temporary lighting and power at each section of the work at no cost to the contractor.
- Washing and toilet facilities.

4.2 WORK BY ELECTRICAL CONTRACTOR

- 415 volt 3 phase power supply to the electric sprinkler booster pump in the sprinkler pump room. Final connection of power is by the Fire Services Contractor.
 - Uninterrupted AC power supply to main fire indicator panel and Ewis panel
 - 240 volt uninterrupted power supply to diesel booster pump panels in the sprinkler valve room.
 - Emergency lighting over all booster pumps.
 - Emergency lighting in sprinkler valve room.
 - 240 volt uninterrupted power supply to the main FIP
 - 240 volt uninterrupted power supply to the main FIP
-

4.3 WORK BY HYDRAULIC CONTRACTOR

- Drain sump (900 X 900) located in the sprinkler valve room.
- Waste drains at all booster pumps.
- Incoming towns main supply flanged off with Table E flange in valve room including Fire Brigade booster valve and suction points.

4.4 WORK BY MECHANICAL CONTRACTOR

- Contacts and final connection within the mechanical switchboards for the Fire trip signal.
-

SECTION 5. COST ESTIMATE

5.01 GENERAL

The following are preliminary costs estimates associated with the fire services nominated in this report but do not include costs associated with the works by other.

Service	Costs estimate
Fire Sprinkler System	\$110,000
Fire Hydrant System	\$105,000
Fire Hose Reel System	\$50,000
Fire Extinguishers	\$8,000
Fire Detection System	\$140,000
EWIS	\$130,000

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ROYAL REHABILITATION CENTRE SYDNEY

RYDE CAMPUS

PROJECT APPLICATION

ELECTRICAL SERVICES REPORT

CONSULTING ENGINEERS

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Project No: 10239
Version: A
Date: April 08

MEINHARDT



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1.0 Introduction

This report is provided as part of the Project Application for the Royal Rehabilitation Centre Sydney redevelopment.

The report outlines design concepts for electrical and telecommunications issues in support of the Project Application, including the following:

- The proposed method of Electrical Supply and reticulation.
- The proposed method of Telecommunications Supply and reticulation.



2.0 Electrical Services

The electrical installation will be designed in accordance with the following:

- Building Code of Australia, including Section J.
- Local Supply Authority Service and Installation Rules.
- Relevant Australian standards.
- The requirements of other relevant regulatory authorities.

Incoming Power Supply and Substation

In discussion with Energy Australia, and based on the estimated diversified maximum demand of 1600 kVA, a pad-mounted substation will be established and fitted with two (2) 1000 KVA transformers. This will allow for some spare capacity for future development. In the event of major expansion, the 1000 kVA transformers can be upgraded to 1500 kVA units.

Transformers voltages will be 11 kV / 433 Volts with taps at +/- 2.5% and +/- 5.0%.

Location of substation

Energy Australia has advised that 11 kV supply HV supply is available from Morrison Road. The substation can be located near the Morrison Street boundary, in the vicinity of the carpark area.

Easement area required for the pad-mounted substation is in the order of 5.5 m x 3.3 m per transformer.

An underground LV supply will be provided from the substation to the Main switchboard.

Electrical Main Switchboard & Metering

The main switchroom will be located at close proximity to the substation, at the lower ground level carpark. Cable trays routes will be reticulated from the switchroom via the carpark to serve various DB's and switchboards.

The main switchboard (MSB) will be a back connected, floor mounted, bottom and top cable entry, totally enclosed unit of form 3B construction, to AS 3439. The MSB design will provide protection against internal faults causing major disruptions.



Submains protection will be by circuit breakers with suitable fault rating capacity to withstand the expected fault current. Circuit breakers will be selected for fault discrimination.

Each section of the MSB will have minimum 30% spare modules for future circuit breakers.

The main switchroom will have sufficient space for future expansion of the MSB to serve future expansion.

The board will be designed to cater for the possible upgrading of the transformers to serve future expansion.

AUTHORITIES / SUB METERING

Low voltage metering will be provided in the main switchroom, as required by Energy Australia. Separate meters will be provided to retailers and the Rehab Centre. Sub-meters will also be provided for various buildings / departments within the Rehab Centre to facilitate internal running cost allocation.

The meters will be a microprocessor type capable of:

- Monitoring a large range of parameters, including current, voltage, frequency, power factor, demand, maximum demand, energy etc.
- Storing a history of consumption patterns, and
- Being interrogated from a remote location.

The most favourable demand tariff plan will be negotiated with the energy retailers.



3.0 Telecommunications Services

A new Site Campus Distributor for telecommunications will be established within the main building adjacent to the main switchroom.

Two off 100 mm diameter white HD UPVC communications conduits will be provided from this room to a telephone pit in Morrison Road, for incoming lead-in copper and fibre optic cables.

The Campus Distributor Room will house, as a minimum:

- Campus Distributor (BD)
- Any additional requirements of the telephone service provider.

New underground block cabling will be reticulated from the new Campus Distributor to Building Distributors serving various buildings.

A tie cable will be provided from the BD to a Test Point Frame (TPF) adjacent to the PABX. The TPF, PABX, UPS, and the main communications cabinet will be located in a dedicated Network room.

Voice backbone copper and / or fibre optic cables will be provided to each Communication room or cupboard, which will accommodate Cat 6 patch frames and hub equipment.

Horizontal Cat 6 Voice and Data cabling will be provided from Comms rooms or Comms cupboards to RJ45 outlets throughout the Rehabilitation Centre as required.

Horizontal cabling will be run on a system of dedicated cable trays and catenary wires.

One or more dedicated data risers will be provided at each level in the building, with vertical cable trays to support backbone cabling.



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DESIGN INTENT STATEMENT for Mechanical Services

**Project: Royal Rehabilitation Centre Sydney
59 Charles Street, Ryde NSW**

I, **Sanjeet Singh**, of **Meinhardt (NSW) Pty Ltd** confirm that the following mechanical services systems:

- Mechanical Ventilation
- Air Conditioning

that will form part of the proposed development will be designed in accordance with normal engineering practice and will meet the requirements of:

- The relevant clauses of the Building Code of Australia (BCA), and
- The relevant Australian Standards listed in the BCA, in particular AS:1668.1 and AS:1668.2.

I also confirm that the above mechanical ventilation design work will be carried out by an appropriately qualified and competent person practising in the area of mechanical services design. This person or another similarly qualified person will certify that the design systems comply with the above requirements.

For this purpose, a Mechanical Services Design Certificate will be issued prior to the commencement of relevant works on site and Mechanical Services Installation Certificate will be issued by the installing Contractor following completion of the proposed mechanical services works.

Full Name of Designer:	Sanjeet Singh	Qualifications:	BE (Hons 1)
Signature:		Date:	4 th April 2008