



SCHEME DESIGN REPORT

Ingham Health Research Institute Liverpool Hospital

Issue **P3**

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Document History

Revision	Date	Amendments
P1	19.02.10	Preliminary Issue
P2	25.02.10	Revised issue incorporating internal design considerations
P3	25.05.10	Final Issue

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1.1 DESCRIPTION OF PROJECT

This preliminary brief has been prepared on behalf of McConnel Smith & Johnson Architects for the Ingham Health Research Institute.

The purpose of the Brief is to identify the proposed hydraulic servicing strategy and options for the proposed works at the Ingham Health Research Institute. The findings nominated in this brief should be considered as draft only and are subject to further clarification and investigation.

In addition to the above it is assumed that the site for the new building is a consolidated site comprising the land bounded by the Ambulance Station, Goulburn, Campbell and Forbes Streets.

1.2 EXISTING CONDITIONS

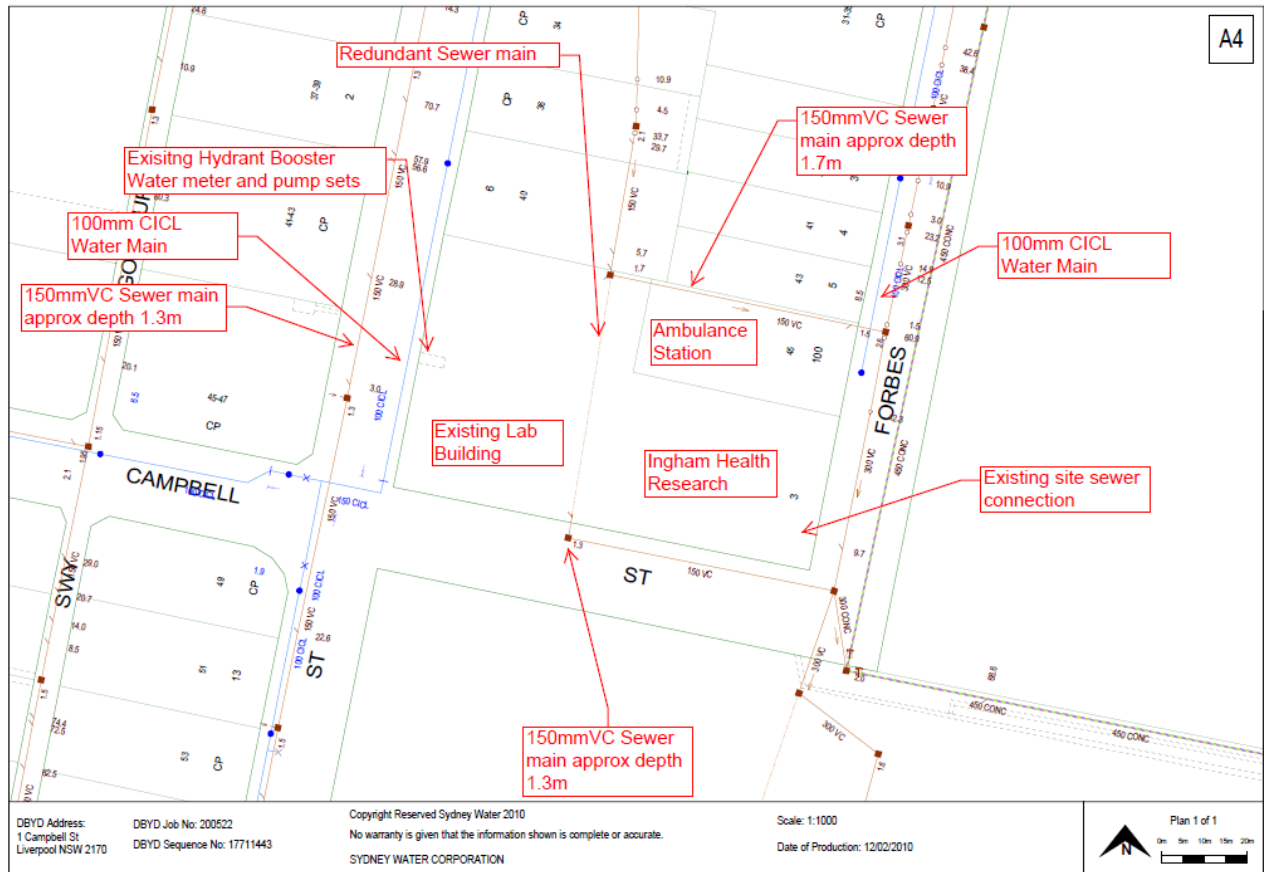
The existing site for the Research Institute is located on the Campbell and Forbes Streets, Liverpool within the Liverpool Hospital Campus. We understand that it is proposed to demolish a number of existing structures on the current site and construct the new Institute adjacent to an existing research facility (HSB building). Further we understand that it is proposed to link the new and existing buildings with air bridges.

Based on information obtained from the various infrastructure authorities and our own preliminary site investigations carried out on February 17, 2010, we have noted a number of significant hydraulic related issues which need to be addressed. These items include a proposed new internal water main from the current water meter location on Goulburn Street around the existing HSB building to the IHRI Development. In addition it also appears that a new sewer main connection shall be required in Forbes Street.

1.3 AUTHORITIES AND EXTERNAL SERVICES INFORMATION

The following outlines the authorities' services currently connected to the site and the extent of the existing services:

SYDNEY WATER INFRASTRUCTURE DIAGRAM



1.4 SERVICES

1.4.1 WATER SUPPLY - POTABLE / DRINKABLE WATER SUPPLY	
Supply Authority	Sydney Water
Infrastructure	Currently supplied from 100mm water main located in Goulburn Street.
Description of connection	The entire site including the adjacent HSB building appears to be connected to a single water meter located on the Goulburn Street boundary. However, the exact location of this meter is yet to be established. Further it is noted that the water supply pressures to the existing site are supplemented by a cold water booster pump.
Water service Size	The route or size of the existing service from the meter to the various building is currently unknown

ISSUES

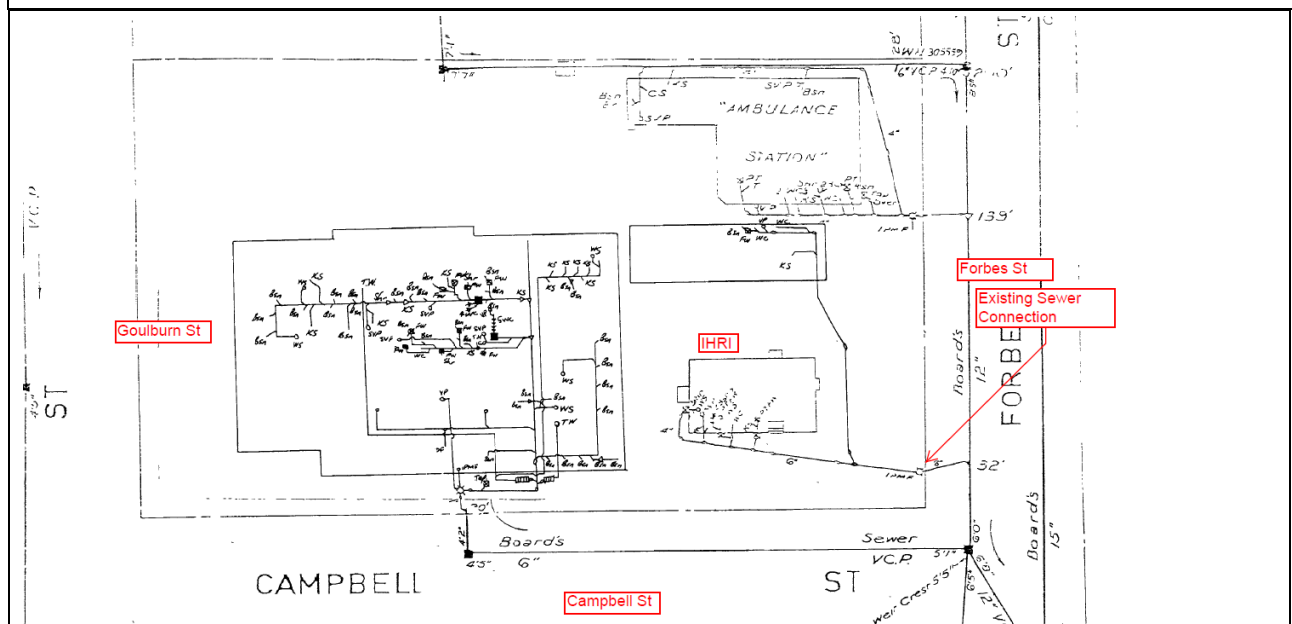
Metering	Based on the assumption the site comprises a single title it may be possible upgrade the existing water meter and provide a separate water line between the meter and new building
Backflow	An RPZD (Reduced Pressure Zone Device) backflow prevention device will be required on the new connection
Pressure inquiry	Information from Sydney Water in reference to the water mains in the vicinity of the site indicates that the pressures and flows from the main in Goulburn Street are higher than the main in Forbes Street. However, preliminary calculations indicate that the existing cold water booster pump located on the Goulburn Street boundary will require replacement to accommodate the pressure demands of the new building.

1.4.2 SEWER DRAINAGE SYSTEM	
Supply Authority	Sydney Water
Infrastructure	Currently connected to a 100mm sewer main located in Forbes Street.
Description of connection	Sanitary drainage appears to currently drain to the Eastern side of the site an onto a connection point in Forbes Street
Service Size	The existing services appears to be 150mm

ISSUES

Material and condition	The existing drainage is constructed in Earthenware pipe which is not suitable for reuse and should be replaced
Surcharging sewer	The existing sewer is a non surcharging sewer
Proposed system	The existing sewer drainage system installed onsite appears to be inadequate for the proposed new building. Trade waste will need to be provided to the new building.

SYDNEY WATER SEWER DR



1.4.3 STORMWATER DRAINAGE	
Responsible Authority	Liverpool Council
Infrastructure	Currently discharges to Council infrastructure located on the corner of Forbes and Campbell Street.
Description of connection	The existing site stormwater appears to be collected via a piped gravity system and discharges to a Council kerb inlet pit that is located on the corner of Forbes and Campbell Street
service Size	The existing services appears to be 150mm
Material and condition	The existing drainage is constructed in Earthenware pipe which is not suitable for reuse and should be replaced

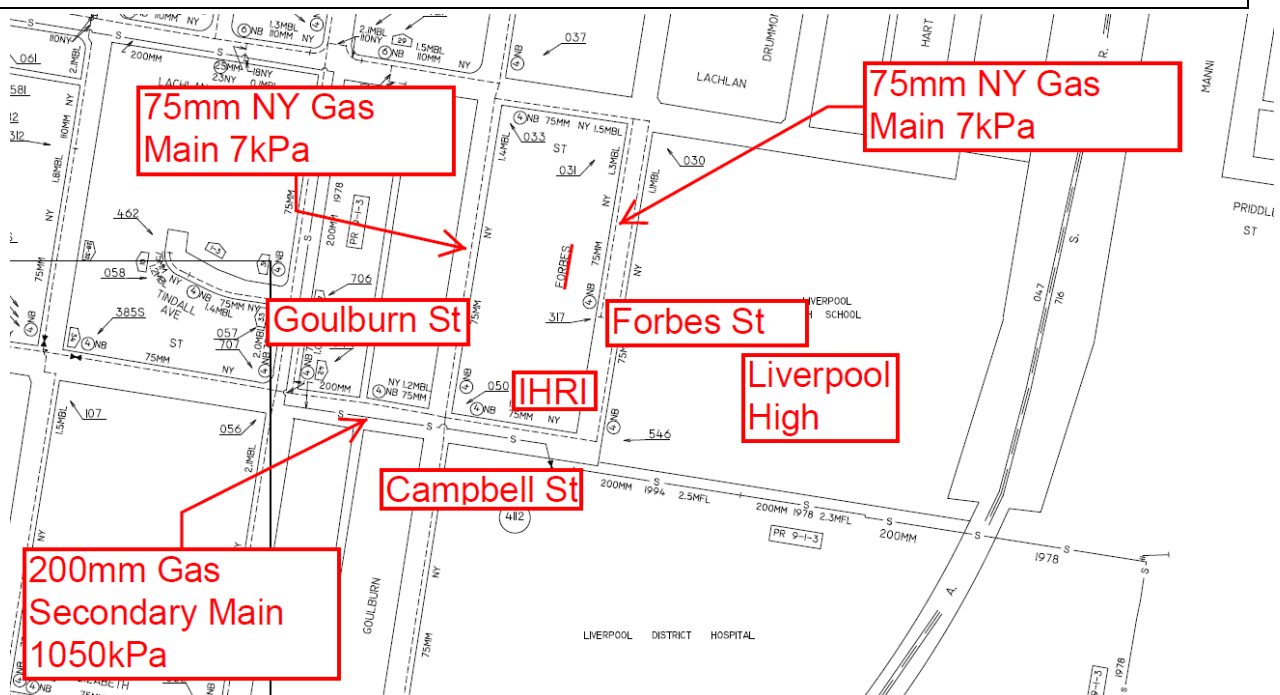
ISSUES

Flooding issues	The site is considered by Council to be in a low risk flood area
Design requirements	The Development Engineer at Liverpool Council, Mr Stephen Monty, has indicated that the on-site detention system is not required for the development. However, details regarding erosion and sediment control plans will be required with any submission.

1.4.4 FIRE HYDRANT SYSTEM	
Existing System Description	The existing hydrant system comprises of a booster valve and pump located near the existing water meter on the Goulburn Street boundary. Currently the hydrant system only extends into the existing HSB Building.
Proposed system	The NSW Fire Brigades have indicated their preference to relocate the fire hydrant booster valve to the corner of Goulburn and Campbell Streets in order that it is visible from the main building entrances, in accordance with the code requirements. The booster valve and pump shall also require replacement to comply with the current code requirements.

1.4.5 GAS SERVICE	
Supply Authority	Jemena (Gas Supply Authority)
Infrastructure	A 200mm high pressure gas main is located in Campbell Street, with lower pressure main located in Forbes and Goulburn Streets. Current indications are that Jemena will only permit a connection to the lower pressure gas mains
Existing System Description	Currently it appears that gas is not connected to the site

NATURAL GAS MAINS DIAGRAM



1.5 SECTION 73 CERTIFICATE

The development shall require Sydney Water approval in the form of a section 73 certificate.

The Section 73 notice of requirements will indicate any sewer main extensions to the site and water connection requirements.

Sydney Water will not accept a section 73 application without either a development consent or complying development certificate.

Following receipt of the application Sydney Water will require between 4 weeks to 2 months to assess the application. Once the application is assessed Sydney Water will supply a Notice of Requirements, which may stipulate mains upgrades or similar. The Client is then required to undertake the nominated works if they are specified or if no works are required then the client signs the relevant forms which are then submitted back to Sydney Water. Once this paperwork is complete Sydney Water will provide a certificate.

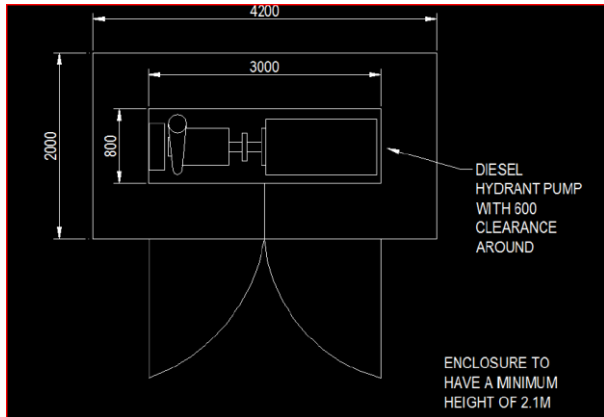
Based on the above this item is time critical and should be undertaken immediately once the development consent or complying development certificate is available.

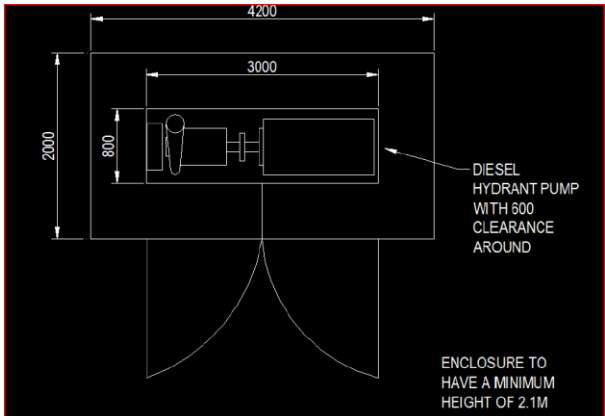
1.6 SUMMARY

There are a number of critical external services issues that need to be reviewed and addressed as the design progresses. These issues include the provision of new pumps and booster valves in addition to the determination of a services corridor from the existing services on the Goulburn Street boundary to the IHRI site. In addition, confirmation will be required from the other services consultants in relation to the requirement for gas and the nominated gas pressures.

1.7 PROPOSED INTERNAL SERVICES INFORMATION

1.7.1 HYDRAULIC SPACE REQUIREMENTS

ITEM	HYDRANT PUMP ROOM
Clear Space Requirements	For Diesel Pump only 3m x 2.3m x 2.2m High
Standard or Code	AS 2419.1, BCA
Authority Requirements	Located in a clearly indicated room. Access to the pump room has to be from a fire isolated exit having direct egress to road or open space in accordance with the BCA (Clause E1.3(iv)).
Power requirement	Lighting, control panel and pumps
Location / Level	It is proposed that the location of the pump remain on the Goulburn Street Boundary
Signage	In accordance with AS 2419.1 Clause 7.10
Doors	In accordance with AS 2419.1 Clause 7.9.2
 DIESEL HYDRANT PUMP WITH 600 CLEARANCE AROUND ENCLOSURE TO HAVE A MINIMUM HEIGHT OF 2.1M	

Item	1.7.2 SPRINKLER PUMP ROOM.
Clear Space Requirements	For Diesel Pump only 3m x 2.3m x 2.2m High
Standard or Code	AS 2118.1
Authority Requirements	Located in a clearly indicated room. Access to the pump room has to be from a fire isolated exit having direct egress to road or open space in accordance with the BCA (Clause E1.3(iv)). Mechanical exhaust and fresh air intake required. Diesel Pump exhaust pipe 100 Dia Double Doors required for maintenance
Power requirement	Lighting, control panel and pumps
Mechanical requirement/ Ventilation	To be confirmed (Subject to Job)
Location / Level	Goulburn st
Signage	In accordance with AS 2118.1
Doors	In accordance with AS 2118.1
 DIESEL HYDRANT PUMP WITH 600 CLEARANCE AROUND ENCLOSURE TO HAVE A MINIMUM HEIGHT OF 2.1M	

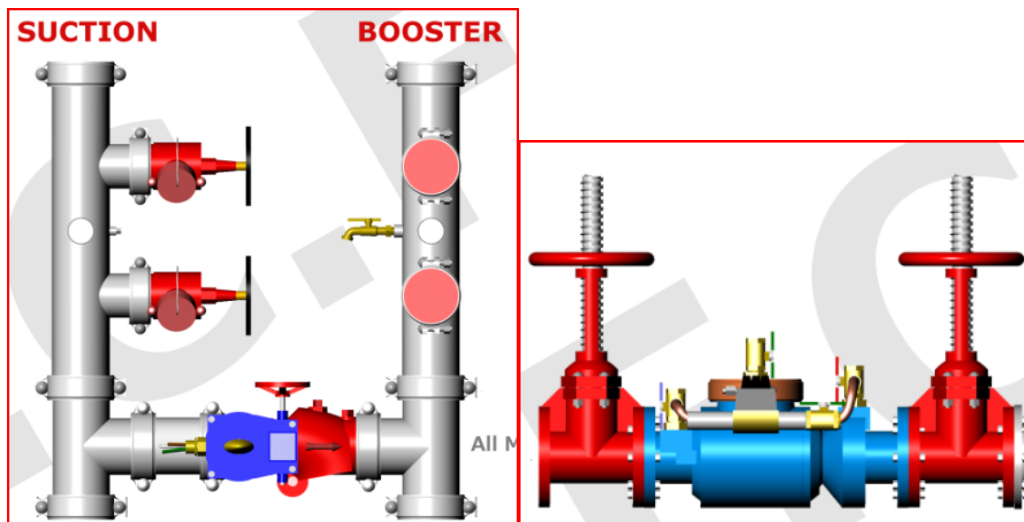
Item	1.7.3 FIRE HYDRANT BOOSTER CABINET
Clear Space Requirements	1.5w x 1.1H x .5m deep. To be confirmed (Subject to Job)
Standard or Code	AS 2419.1
Authority Requirements	Located within site of the main entrance to the building – Facing Campbell St. A 2hr fire rated wall is required 3m above and 2m each side of the cabinet.
Power requirement	None
Mechanical requirement	None
Location / Level	Corner of Goulburn st and Campbell st

Image



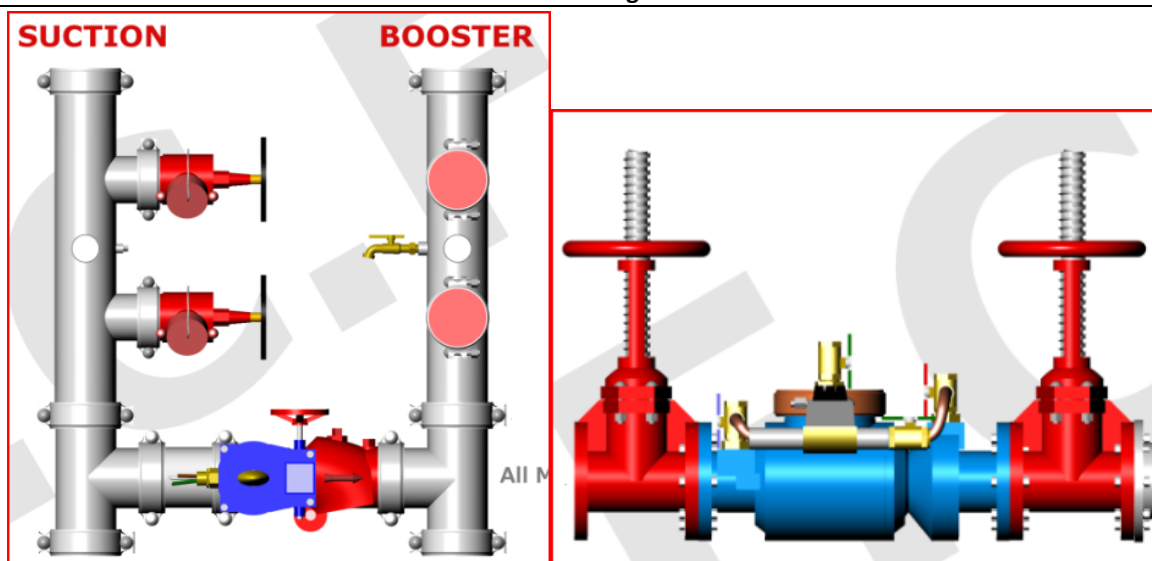
Item	1.7.4 FIRE HYDRANT BACKFLOW PREVENTER & BOOSTER VALVE
Clear Space Requirements	3.0m long x 0.5m deep x 2.2m High To be confirmed (Subject to Job)
Standard or Code	AS 2419.1
Authority Requirements	Booster to be within sight of main entrance
Power requirement	None
Mechanical requirement	None
Location / Level	Booster in cabinet on Corner of Goulburn st and Campbell st Backflow installed at location of existing booster.

Image



Item	1.7.5 FIRE SPRINKLER BACKFLOW PREVENTER & BOOSTER VALVE
Clear Space Requirements	3.0m long x 0.5m deep x 2.2m High
Standard or Code	AS 2419.1
Authority Requirements	Booster to be within sight of main entrance
Power requirement	None
Mechanical requirement	None
Location / Level	Booster in cabinet on Corner of Goulburn st and Campbell st Backflow installed at location of existing booster.

Image



Item	1.7.6 COLD WATER PUMP ROOM
Clear Space Requirements	2m x 2m Upgrading Existing Pump to satisfy requirements of new building
Standard or Code	AS 3500.1
Authority Requirements	None
Power requirement	Lighting, control panel, pumps
Mechanical requirement	To be confirmed (Subject to Job)
Location / Level	Existing external Pump enclosure shown below

Image



1.7.7 RAINWATER REUSE SYSTEM

Description	Rainwater harvested from roof areas is to be considered as an option for landscape irrigation and may comprise a 20 thousand litre tank, depending on final space constraints
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1.7.8 STORMWATER REUSE SYSTEM

Description	Stormwater harvesting has not been considered at this time
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1.7.9 GREYWATER HAS NOT BEEN CONSIDERED AT THIS TIME

Description	Grey Water Reuse System
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1.7.10 BLACKWATER REUSE SYSTEM

Description	Blackwater has not been considered at this time
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1.7.11 REVERSE OSMOSIS SYSTEM

Proposed System Description	A preliminary assessment of the requirements for an RO system indicate that the most appropriate would be the provision of Central Elix system (type II water) with large tank reticulated to wet labs and the basement wash areas only. Individual point of use units will then be placed where required off the central Elix system to provide other levels of water quality i.e. type I water. The animal facility within the basement would be supplied from a separate Elix system and acid dosed RO loop.
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Item	1.7.12 RAINWATER RE-USE TANK
Clear Space Requirements	2.5m x 3.5m x 2.5m Deep
Standard or Code	BCA Clause / Council / Basix
Power requirement	240v for rainwater re-use plant
Location / Level	Under Driveway

Image



Item	1.7.13 REVERSE OSMOSIS PLANTS
Clear Space Requirements	Level 5 plant – 4m x 2m x 2m High (type II water) Basement - 1m x 1m x 1m High (type III water) Where required – 0.5mx0.5mx0.5m 4m x 2m x 2m High (type I water)
Power requirement	240V
Mechanical requirement	None
Location / Level	Multiple units around building
System Proposal	Central Large Elix System (20-100LPH) (type II water) with large tank reticulated to wet labs on level 3 & 4 and down the building to wash up area for feed to dishwashers. A small RO system(type III water), for the animal feeding which is acid dosed. This loop would be based in the animal section and only reticulate around that part. Milli Q units(type I water) will then be placed where required off the Elix(type II water) feedwater loop. Client will need to decide where they want the MQ located (Wall, on the bench, underbench) as this determines where the RO outlet from the loop is located.

Image

RO unit on left and Milli Q on right



Type II plant shown below



Item	1.7.14 GAS METERS
Clear Space Requirements For each meter	1.5m x 0.4m x 2.2m High 1.5m clear space in front for servicing
Standard or Code	AG 5601
Authority Requirements	Adequate ventilation and access for servicing and meter reading from the street
Power requirement	Flash proof lighting in each enclosure
Mechanical requirement	None
Location / Level	Boundary on Campbell st. Meter size may vary according to Mechanical loads for boilers(yet to be confirmed).

Image

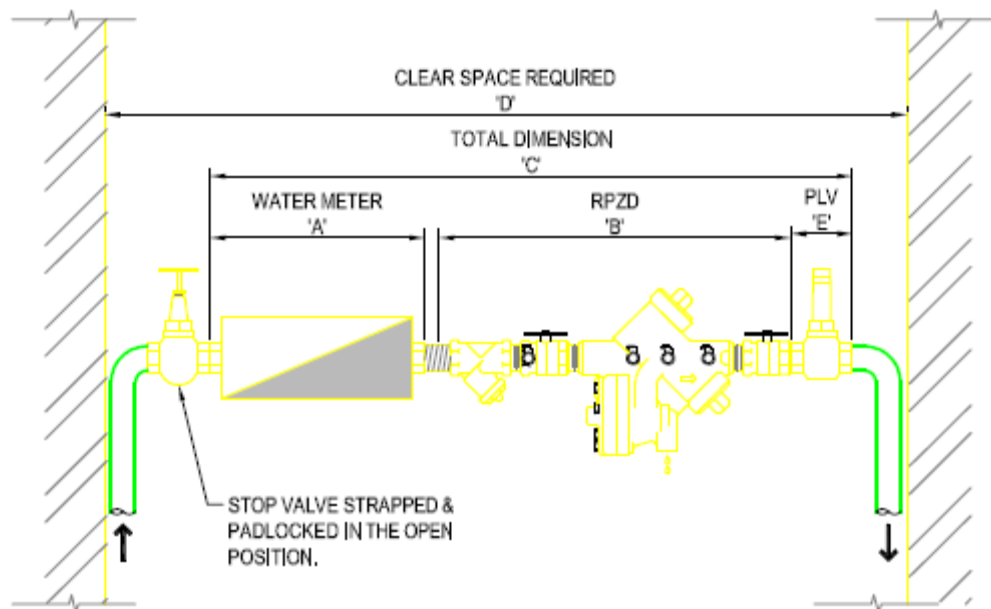


HSB Gas Meter

IHRI Gas Meter

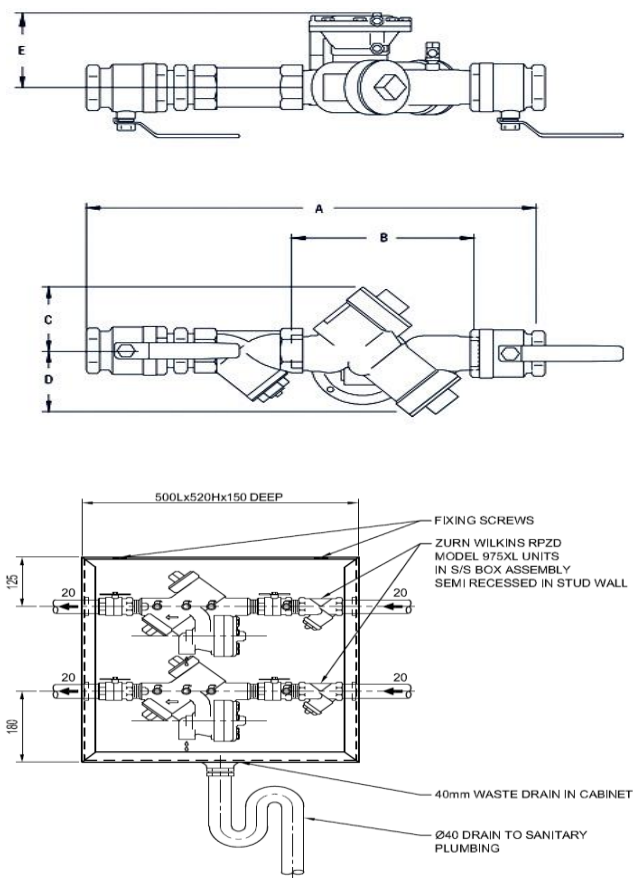
Item	1.7.15 WATER METER
Clear Space Requirements	100mm Meter for whole site: Clear Space Required D= 3200mm 50mm Meter for IHRI: Clear Space Required D= 2160mm 50mm Meter for HSB: Clear Space Required D= 2160mm
Standard or Code	AS 3500.1
Authority Requirements	Meter to be accessible from the street for reading
Power requirement	None
Mechanical requirement	None
Location / Level	Goulburn st adjacent to hydrant booster backflow - in a seperate enclosure

Image



Item	1.7.16 RPZD
Standard or Code	AS 3500.1
Authority Requirements	Annual Testing
Power requirement	None
Mechanical requirement	None
Location / Level	Basement wall for lab water and RO water and other areas

Image



1.7.17 HOT WATER SYSTEM

Proposed system	A flow and return gas boosted solar hot water system is proposed to reticulate throughout the building to basins, sinks and amenities
Item	1.7.18 Gas Boosted Solar hot water
Clear Space Requirements	2m x 1m
Standard or Code	AS 3500.4 & AS 3500.1
Power requirement	3 x GPO's
Mechanical requirement	Ventilation and Flueing
Location / Level	Level 5 plant room
Item	1.7.19 SOLAR HOT WATER PANELS
Clear Space Requirements	A total of 3 panels are required. 3.2m x 2m at a pitch of 33° facing north/north east
Standard or Code	AS 3500.4 & AS 3500.1
Power requirement	N/A
Mechanical requirement	To be confirmed (Subject to Job)
Location / Level	Roof

Item	1.7.20 THERMOSTATIC MIXING VALVES
Clear Space Requirements	300 x 300 x 75
Standard or Code	AS 3500.1
Authority Requirements	Annual Testing
Power requirement	None
Mechanical requirement	None
Location / Level	In Bathrooms

Image

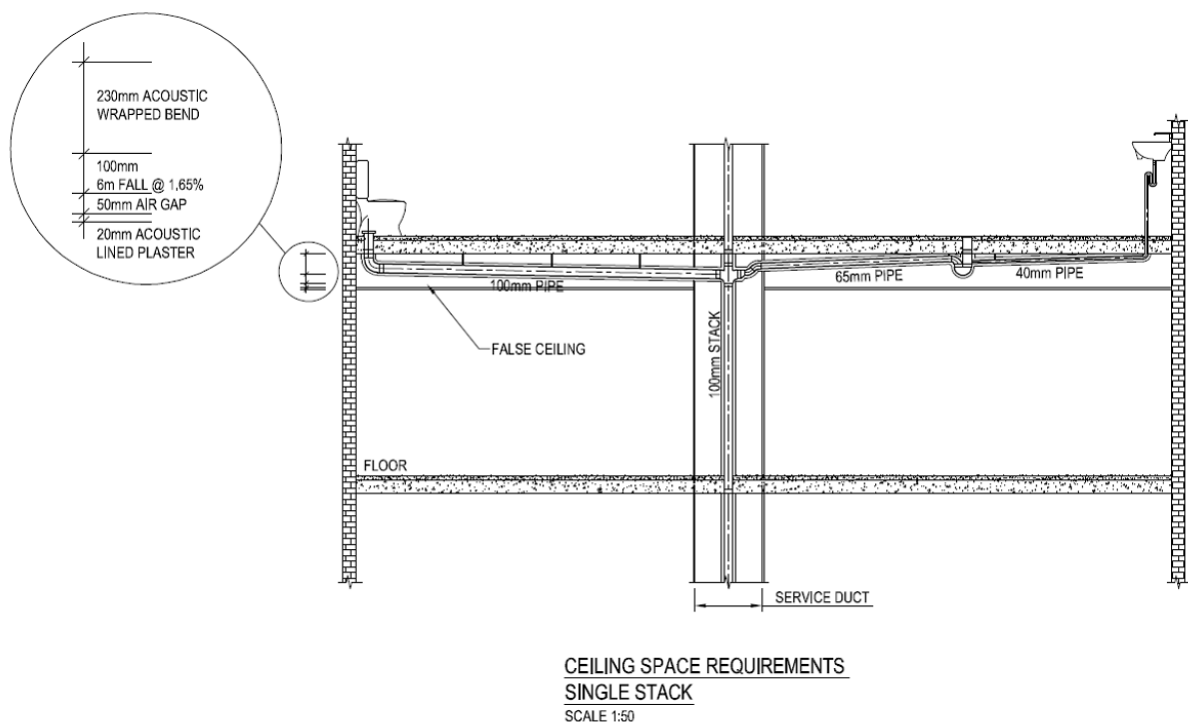


Item	1.7.21 SEWER OVERFLOW RELIEF GULLY.
Clear Space Requirements	300mm x 300mm To be confirmed (Subject to job)
Standard or Code	AS 3500.2
Authority Requirements	A minimum height of 150 mm shall be maintained between the top of the overflow gully riser and the lowest fixture connected to the drain. The minimum height between the top of the overflow gully riser, or the invert of the overflow pipe, and the surrounding ground surface level shall be 75 mm, except where the gully riser is located in a path or a paved area, where it shall be finished at a level so as to prevent the ponding and ingress of water.
Power requirement	None
Mechanical requirement	None
Location / Level	Ground Floor level



Item	1.7.22 CEILING SPACES UNDER THE WET AREAS FOR THE UNITS.
Standard or Code	BCA Clause
Installation Requirements	We will require 400mm clear space between the underside of the slab and the top of the ceiling structure
Power requirement	None
Mechanical requirement	None
Location / Level	Below all wet areas

Image

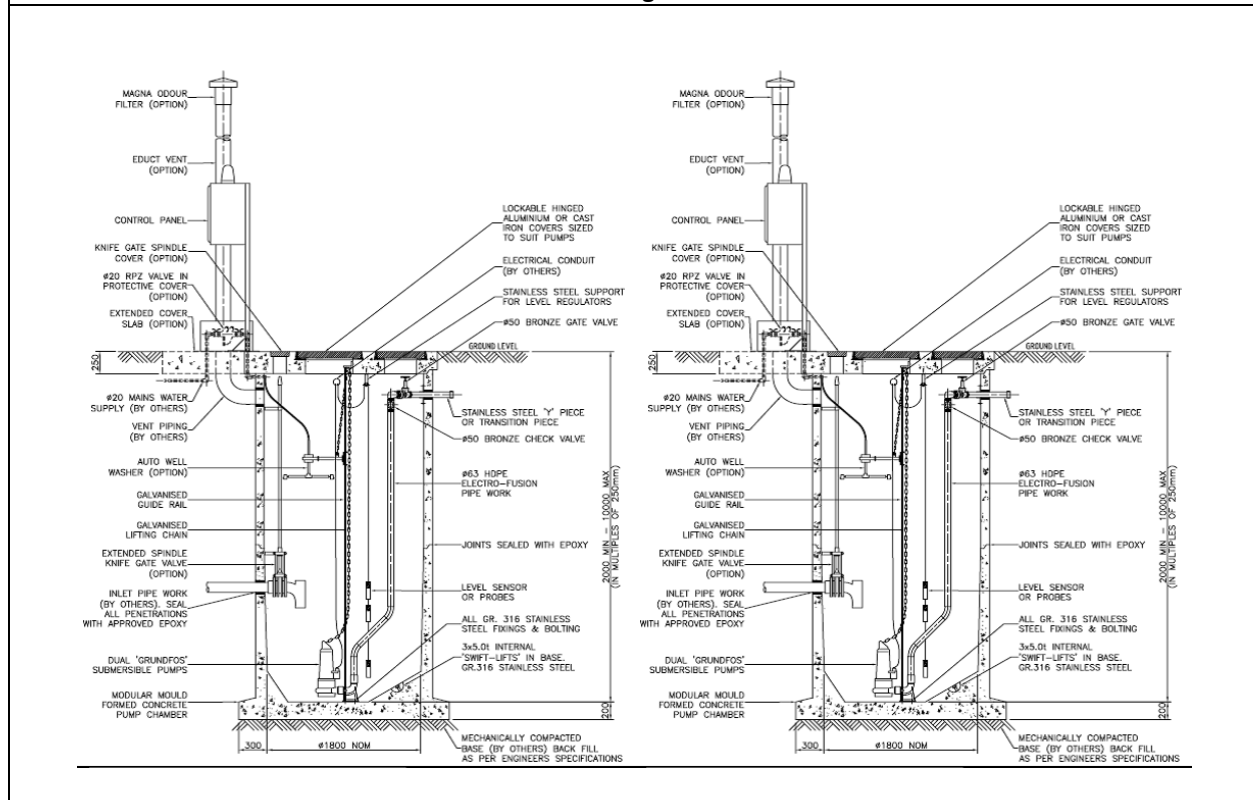


Item	1.7.23 FIRE HYDRANTS
Standard or Code	AS 2419.1
Authority Requirements	Fire hydrant and riser must be located within the fire isolated exits, on the landing of each floor. Coverage based on 30m hose and 10m spray of water
Power requirement	None
Mechanical requirement	None
Location / Level	2 on each floor – one in each fire stair

Item	1.7.24 FIRE HOSE REELS
Clear Space Requirements	Minimum internal clearance of 850 wide x 360 deep
Standard or Code	AS 2441
Authority Requirements	Fire hose reel cabinets / cupboard must be located within 4 metres of the fire-isolated exit. Coverage is based on 36m Hose and a 4m Spray of Water
Power requirement	None
Mechanical requirement	None
Location / Level	2 on each floor – one adjacent each fire stair

Item	1.7.25 SEWER PUMP OUT PIT & SUBSOIL PUMP OUT PIT
Clear Space Requirements	Sewer Pump Station – 1600mm Diameter x 2.5m deep Subsoil Pump Station – 1600mm Diameter x 2.5m deep
Standard or Code	AS 3500.2
Authority Requirements	Gas tight lids with vents to atmosphere
Power requirement	Pumps to have battery or generator backup for power failure
Mechanical requirement	To be confirmed
Location / Level	Basement

Image

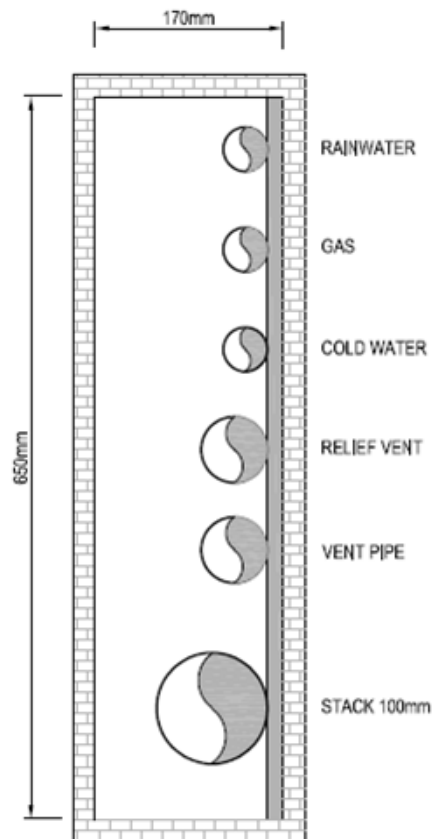


Item	1.7.26 OVERLAND FLOW PATH
Standard or Code	Council / AS 3500.3
Location / Level	Down Driveway running onto Forbes st between IHRI and ambulance station
Image	



Item	1.7.27 DUCT REQUIREMENTS
Clear Space Requirements	Varies
Location / Level	Main duct riser on every level

Image



TYPICAL DUCT CONFIGURATION
SCALE 1:5