

Wagga Wagga Base Hospital – Stage 3 Development

State Significant Development Application

SSD – 18_9033

Integrated Water Management Plan



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Revision C - For SSD Approval

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A	Preliminary	For comment	16-03-2018	Rob Gruber
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1 Executive Summary

This report addresses overall the waste water and potable systems for the proposed Wagga Wagga Base Hospital Stage 3 Redevelopment, which includes:

- New Ambulatory Care Building and associated external works

This report is based on Secretary's Environmental Assessment Requirements (SEARs) for application and the associated Schematic Design drawings, Health Infrastructure briefing documents and subsequent ancillary information provided.

Scope of services covered within the hydraulic services water management report include:

- Sanitary and trade waste discharge
- Roof water plumbing and drainage systems connecting to existing civil trunk stormwater
- domestic potable water supply systems
- Water supply for fire fighting purposes

Note: Stormwater flow and water quality management related to the SEARs application is covered in other reports prepared by the Civil Engineer.

The hydraulic services water management can be summarised as follows:

- Consultation with relevant utility supply agencies has been conducted to verify the condition, capacity, compliance reliability and efficiency of the existing Wagga Wagga City Council sewer mains and Riverina water mains infrastructure and have found them to be acceptable for connection.
(Refer also Infrastructure management report)
- Sewer and trade waste water from the site to discharge to Wagga Wagga City Council sewer main via existing internal "house drainage" system in accordance with AS3500 2015 and Wagga Wagga City Council requirements.
- Riverina Water pressure/flow computer model on 15TH March 2018 confirming water main for fire fighting purposes is adequate.
- Riverina Water recent infrastructure upgrades providing Grade 2 water connection, and existing 50,000 litres potable emergency water storage and booster pumps, ensure adequate hospital water supply security.
- Potable water chemical analysis confirming that water supply provided is in accordance with Australian drinking water guidelines.
- Rain water from roof areas **will not** be collected, stored and re-used due to current site constraints and negligible landscaped areas available*
- ***Environmental sensitive design (ESD) principles as nominated in Section 4.2 of this report will be incorporated within the hydraulic services***

*Considering all stormwater runoff from the subject site discharges to the Murrumbidgee River and it utilized by other communities downstream, Health Infrastructure has determined that rainwater will not be used as non-potable water supply for water closet flushing or landscape irrigation.

Given the additional requirements associated with the disinfection of water to ensure patient and public health safety. As such rainwater collection and re-use is not being considered for this project, which is consistent with Health Infrastructure's technical engineering guidelines.

2 Key Design and Performance Principles

A major element of this report is to outline the minimum building services design criteria to deliver compliance with Health Infrastructure, NSW Department of Health Engineering guidelines, NSW Department of Health, Wagga Wagga Base Hospital (WWBH) Stage 3 briefing documents, user groups and all relevant statutory authority requirements, so that the most cost effective and energy efficient, maintainable solutions are achieved for the WWBH Stage 3 Project, with patient care and safety the main priority.

This report is to be read in conjunction with the Hydraulic Services Schematic Design drawings (Refer appendix A and will consider:

- Statutory building code compliance
- Health Infrastructure requirements
- Effective use and waste minimization of limited water resource.
- Authority infrastructure availability and capacity
- ESD principles

The hydraulic services systems currently documented will:

- 1 Reduce site potable water consumption.
- 2 Ensure the safety of building occupants and patients
- 3 Minimize water wastage
- 4 Minimize initial capital cost and ongoing maintenance and energy costs.

3 Introduction

ACOR Consultants Pty Ltd has been engaged by Health Infrastructure to design, document and construct building hydraulic engineering services for the proposed new building works within the Wagga Wagga Base Hospital campus.

The report is based on hydraulic services schematic design drawings using the current architectural background plans. Refer Appendix A for full list of available hydraulic services drawings.

Scope of services covered within the hydraulic services water management report, include:

- Sanitary and trade waste discharge
- roof water plumbing and drainage systems connecting to existing civil trunk stormwater
- domestic potable water supply systems and water supply security measures
- Alternative non-potable water supply systems and reclaimed rainwater
- Demonstration of water conservation measures

3.1 The Development Site

The WWBH Stage 3 project is located with the WWBH health campus, bounded by Docker Street, Edward St, Lewis Drive, Yathong Street and Rawson Lane.

Refer also Appendix A - Site Plan.

The proposed WWBH Stage 3 project main building is located on the north west corner of the site campus and will replace existing buildings to be demolished under Stage 3 enabling works contract.

3.2 Design Standards

All building services will be designed in compliance with the Building Code of Australia (prescriptive or performance based requirements), all relevant Australian Standards and local Authority requirements.

Hydraulic Services Systems will be designed and documented in accordance and fully comply with the requirements of the following client engineering briefing documents, guidelines and statutory bodies:

- NSW Health Department Engineering Guidelines
- Department of Energy, Utilities and Sustainability
- NSW Health Department policy directive PD2005_344 (Requirements for the provision of cold and heated water)
- Wagga Wagga City Council
- Riverina Water
- APA (Australian Gas Networks) Group
- Fire and Rescue NSW
- Department of Environment and Climate Change (DECC)
- Environment Protection Authority
- Building Code of Australia / National Construction Code
- Statutory Australian Standards
- WorkCover Authority

4 Outline of Proposed Water Management Systems

4.1 Potable Water

Potable water systems for human consumption, hygiene purposes, cistern flushing and process equipment for the site will be supplied directly from Riverina Water main reticulation and designed and constructed in accordance with AS3500.1 2015, AS3500.4 2015 and Australian Drinking Water Guidelines.

Existing 50,000 litre water storage tank with associated pumps (connected to essential electrical supplies) and equipment provide approximately 8 hours of managed supply to the hospital during a potential utility mains failure.

Additionally, Riverina Water have completed recent watermain upgrade works within Docker Street, which now provide improved reliability to the Health Campus with a Grade 2 Water supply

Potable water cross contamination prevention with hazardous areas (Laboratories, dirty utility rooms, operating theatres and alike), as nominated in AS/NZS 3500.1 2003, will be achieved by the installation of approved backflow prevention valves.

Refer also "additional ESD initiatives" section for incorporated waste minimization measures.

4.2 Sanitary and Trade Waste Drainage

Sanitary waste generated by the site will be designed and constructed in accordance with AS3500.2 2015, Wagga Wagga City Council requirements and industry best practice and discharge directly to Wagga Wagga City Council sewer infrastructure.

Refer also "additional ESD initiatives" section for incorporated waste minimization measures.

Designated hydraulic trade waste (Laboratories, commercial kitchens and alike) will be pre-treated in accordance with AS3500.2 2015, Wagga Wagga City Council requirements and industry best practice and discharge directly to internal house sewer reticulation system.

4.3 Roof Water / Podium Drainage

Generally rainwater collection systems will interconnect with the existing civil stormwater system and will be designed in accordance with AS3500.3 2015, State Office of Water, Wagga Wagga City Council requirements, and Australia Rainfall and Runoff, based on the following minimum criteria:

- eaves gutters – 1 in 20 year 5 minute storm event (230mm/hr)
- eaves gutters (Collection for re-use) – 1 in 100 year 5 minute storm event (300mm/hr)
- podium areas – 1 in 20 year 5 minute storm event (230mm/hr)
- box gutters – 1 in 100 year 5 minute storm event (300mm/hr).

Rain water collection and re-use for non-potable purposes has been considered, however rejected based on, maintaining flows to the Murrumbidgee River system, capital / life cycle cost, ESD initiative analysis, available landscape area and building occupants and patient safety.

4.3.1 Advantages of current design

- 1 Does not restrict flows to Murrumbidgee River System for community use downstream
- 2 Nil additional capital construction cost
- 3 Nil Maintenance of pumps, tanks, filter equipment and piping systems
- 4 Nil energy consumption by pumps and filter equipment.
- 5 Nil risk of contaminated water affecting patients and building occupants.

4.3.2 Disadvantages of current design

- 1 Community expectations to include rainwater re-use for government buildings.
- 2 Limited contribution to overall building environmentally sustainable design.

4.4 Fixtures, Fittings and Tap Ware

Sanitary fixtures, fittings and tapware where nominated on architectural plans and room data sheets will be in accordance with NSW Department of Health. Final selections will be based whole of life cost, water/energy efficiency, W.E.L.S registration (4 star minimum except showers to be minimum 3 star), availability, ease of maintenance, aesthetic appearance and durability.

4.5 Additional ESD Initiatives

The design and installation of the hydraulic and fire protection services will be designed to ensure:

- Effective use of energy and resources
- Waste minimisation
- Recyclable construction materials with low embodied energy and environmentally friendly manufacture, where practical.
- Reduction in ongoing life cycle costs

ESD options to be incorporated include:

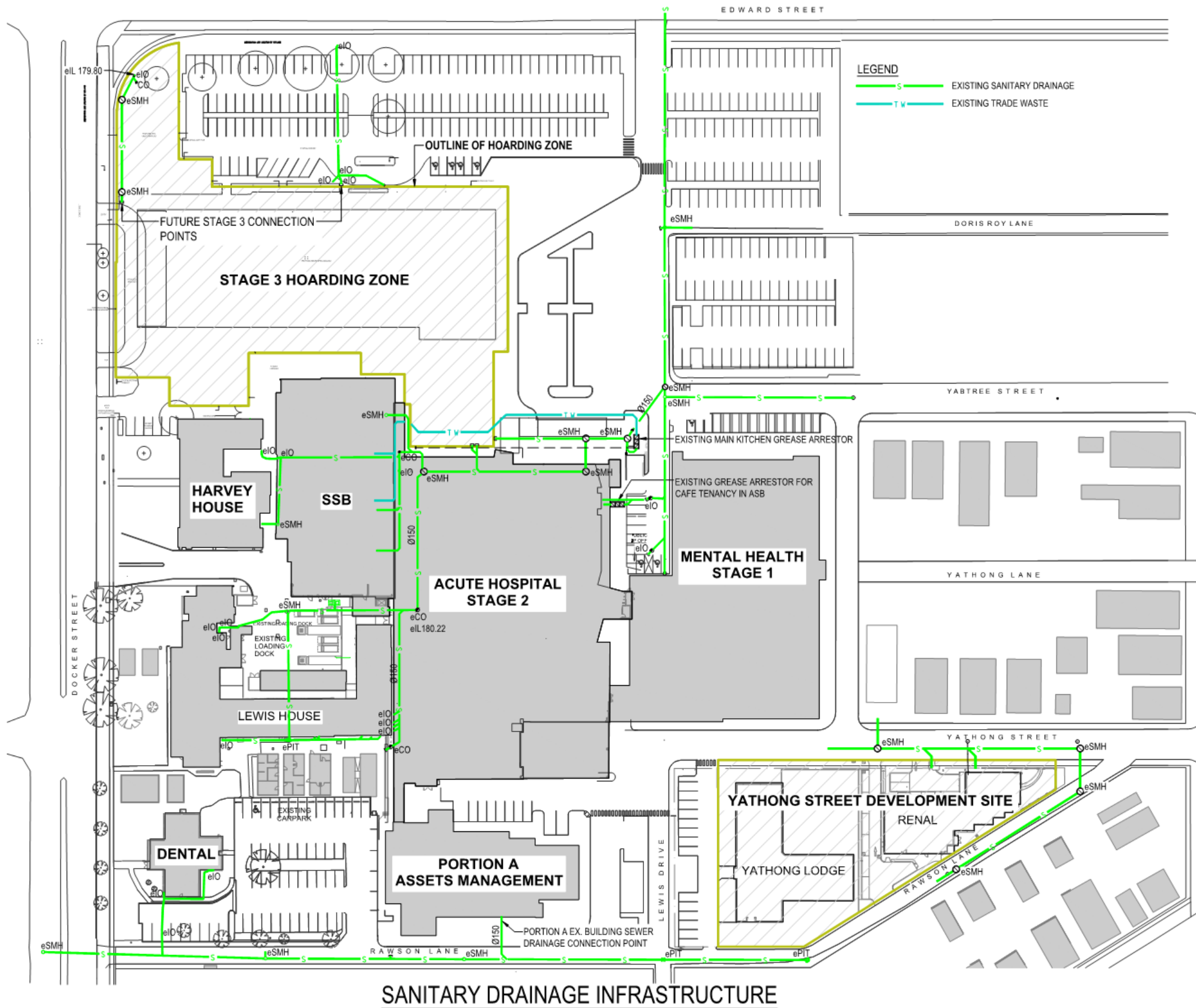
- Water flow monitoring of the main water meter and sub meters to monitor excessive wastage or leakage - these meters are to be pulse type meters wired back to the BMS system.
- Selection of local manufacturers for pipe material and fittings, where appropriate.
- Minimum 4 star equivalent fixtures and fitting selections (showers minimum 3 star)

Appendix A - Hydraulic Services Reference Drawings

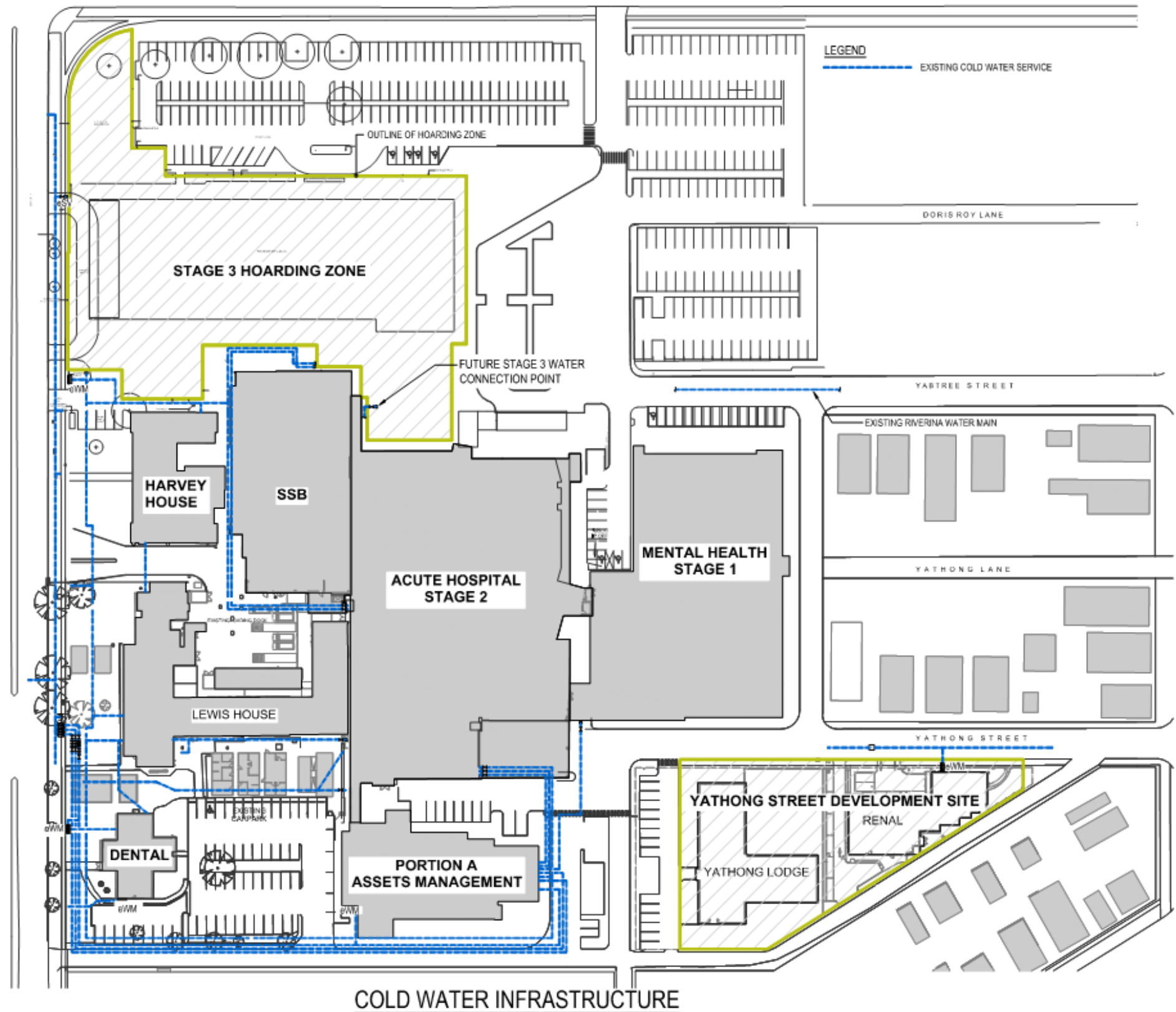
Drawing No.	Drawing Name
SY140217-NEWB-HY-DG-0001	COVER SHEET
SY140217-NEWB-HY-DG-0002	SITE PLAN
SY140217-NEWB-HY-DG-0101	GROUND FLOOR DRAINAGE
SY140217-NEWB-HY-DG-0102	LEVEL 1 DRAINAGE
SY140217-NEWB-HY-DG-0103	LEVEL 2 DRAINAGE
SY140217-NEWB-HY-DG-0104	LEVEL 3 DRAINAGE
SY140217-NEWB-HY-DG-0105	LEVEL 4 DRAINAGE
SY140217-NEWB-HY-DG-0106	LEVEL 5 DRAINAGE
SY140217-NEWB-HY-DG-0107	LEVEL 6 DRAINAGE
SY140217-NEWB-HY-DG-0108	LEVEL 7 DRAINAGE
SY140217-NEWB-HY-DG-0109	LEVEL 8 DRAINAGE
SY140217-NEWB-HY-DG-0110	LEVEL 9 DRAINAGE
SY140217-NEWB-HY-DG-0111	ROOF LEVEL DRAINAGE
SY140217-NEWB-HY-DG-0201	GROUND FLOOR WATER & GAS
SY140217-NEWB-HY-DG-0202	LEVEL 1 WATER & GAS
SY140217-NEWB-HY-DG-0203	LEVEL 2 WATER & GAS
SY140217-NEWB-HY-DG-0204	LEVEL 3 WATER & GAS
SY140217-NEWB-HY-DG-0205	LEVEL 4 WATER & GAS

Drawing No.	Drawing Name
SY140217-NEWB-HY-DG-0206	LEVEL 5 WATER & GAS
SY140217-NEWB-HY-DG-0207	LEVEL 6 WATER & GAS
SY140217-NEWB-HY-DG-0208	LEVEL 7 WATER & GAS
SY140217-NEWB-HY-DG-0209	LEVEL 8 WATER & GAS
SY140217-NEWB-HY-DG-0210	LEVEL 9 WATER & GAS
SY140217-NEWB-HY-DG-0211	ROOF LEVEL WATER & GAS
SY140217-NEWB-HY-DG-0300	SCHEMATICS SHEET 1
SY140217-NEWB-HY-DG-0301	SCHEMATICS SHEET 2
SY140217-NEWB-HY-DG-0302	SCHEMATICS SHEET 3
SY140217-NEWB-HY-DG-0303	SCHEMATICS SHEET 4
SY140217-NEWB-HY-DG-0401	GROUND FLOOR DRAINAGE REFURBISHMENT AREAS
SY140217-NEWB-HY-DG-0401	LEVEL 1 DRAINAGE REFURBISHMENT AREAS
SY140217-NEWB-HY-DG-0401	LEVEL 2 DRAINAGE REFURBISHMENT AREAS
SY140217-NEWB-HY-DG-0401	GROUND FLOOR WATER & GAS REFURBISHMENT AREAS
SY140217-NEWB-HY-DG-0401	LEVEL 1 FLOOR WATER & GAS REFURBISHMENT AREAS
SY140217-NEWB-HY-DG-0401	LEVEL 2 WATER & GAS REFURBISHMENT AREAS

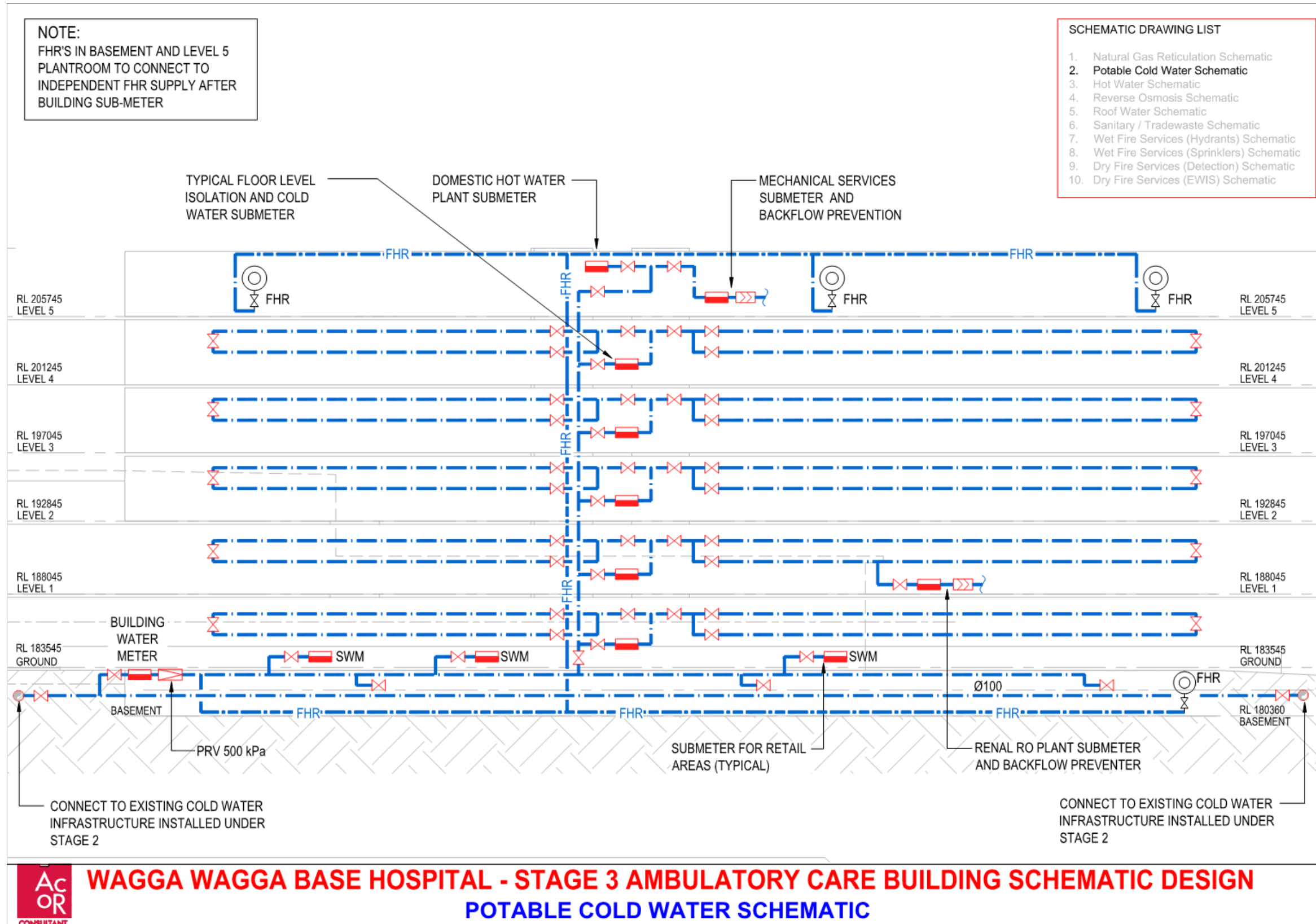
Appendix B - Site Plan – Sewer



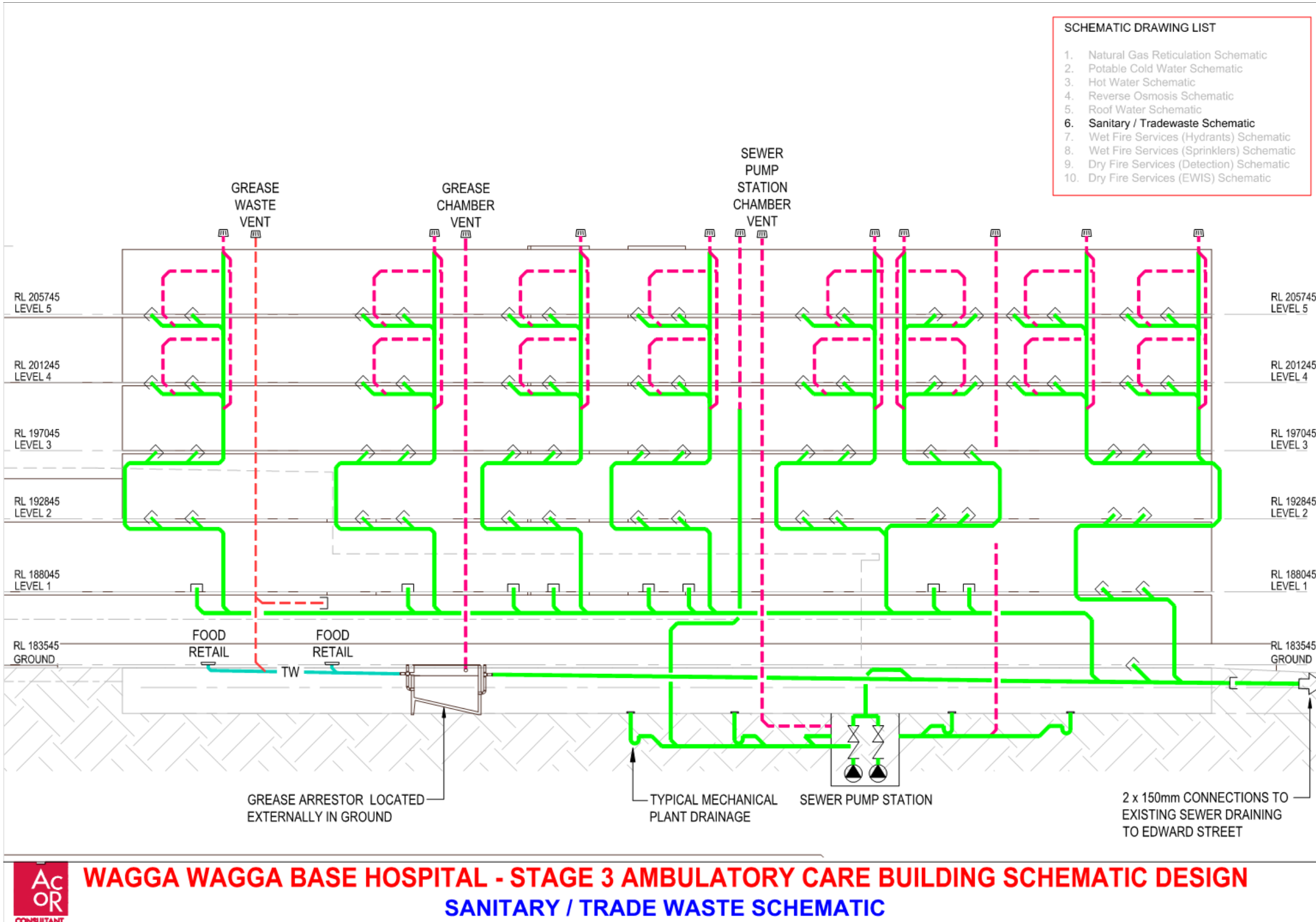
Appendix C - Site Plan – Water Supply



Appendix D - Water Systems Schematic Diagram



Appendix F– Sanitary Drainage Schematic Diagram



Appendix E - Roof Water Drainage Schematic Diagram

