

DUBBO HOSPITAL REDEVELOPMENT STAGE 4

State Significant Development Application

Integrated Water Management Plan

HYDRAULIC SERVICES

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Issue Number	Issue Description	Reason for Issue	Date	Author
A	Preliminary	For comment	30.11.2016	Brian Alcasid
B	Preliminary	For Information	08.12.2016	Brian Alcasid

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1 EXECUTIVE SUMMARY

This report addresses overall the waste water and potable systems for the proposed Stage 4 Dubbo Hospital Redevelopment.

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

Other related SEARs covered in other reports:

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 sewer and water mains infrastructure and have found them to be acceptable for connection.
- Sewer and trade waste water from the site to discharge to Dubbo City Council sewer main via existing internal 'house drainage' system in accordance with AS.3500 2003 and Dubbo City requirements.
- Water pressure/flow result was obtained from Dubbo Regional Council existing available flow and pressure.
- Water supply provided will be in accordance with Australian drinking water guidelines.
- Rain water from roof areas **will not** be collected, stored and re-used.
- Roofwater will drain/discharge through a series of rainwater outlets and eaves gutters systems designed in accordance with AS.3500 2003 and Dubbo City Council requirements.
- Environmental sensitive design (ESD) principles as nominated in Section 4.3 of this report will be incorporated within the hydraulic services.

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, Dubbo Hospital 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 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 for full list of available hydraulic services drawings)

- Building code compliance
- Health Infrastructure requirements
- Effective use and waste minimisation of limited water resource
- Authority infrastructure availability and capacity
- ESD principles

The hydraulic services systems currently documented will:

- Ensure the safety of building occupants and patients
- Minimize water wastage
- Minimize initial capital cost and ongoing maintenance and energy costs
- Ensure effective use of energy and resource

3 INTRODUCTION

ACOR Consultants Pty Ltd has been engaged by Health Infrastructure to design and document hydraulic engineering services for the proposed new building works within the Dubbo Hospital campus (Stage-4).

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.

3.1 The Development Site

The development site is located at the main campus of Dubbo Hospital, adjacent to existing main hospital entry.

Stage-4 is located in the centre of the campus and will be built directly over the existing Surgical/Imaging and Emergency Department Buildings. (Refer Appendix B for Locality Plan)

Dubbo Hospital Redevelopment Stage 4 project scope is described as follows:

- Stage 4 – Site preparation works
 - Demolition of George Hatch and Existing Nurses Administration
 - Demolition of Existing Surgical Ward ('S' Block)
 - New Construction – Temporary Corridor Bypass Link
 - New Construction – 1 x permanent corridor bypass link south
- A new 3-storey clinical building comprising:
 - o Ground Level
 - Medical Imaging
 - Emergency Department, including Short Stay Unit
 - A refurbished and expanded Main Entry
 - o Level 1
 - Renal Dialysis Unit
 - Ambulatory Care Services
 - o Level 2
 - 20 bed CCU/ Cardiovascular/ Stroke Unit
 - 12 bed ICU
 - Cardiovascular Suite
 - o Level 3 – Plant Area
- Other associated works
 - Expansion of on grade car parking facilities and improved access and wayfinding.
 - Dedicated ambulance access off Myall Street
 - Amendments to the Cobbora Road roundabout to facilitate entry to the Hospital
 - Demolition of Playmates/Doctors Accommodation
 - Demolition of external component of existing Ambulatory Care Unit
 - Landscaping including tree removal and other public domain works

- Upgrades of related engineering services infrastructure supporting Stages 4.
- Refurbishment of the two ICU ensuites within the medical inpatient ward (G-ward).

3.2 Design Standards

All hydraulic 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 June 2016
- Dubbo City Council
- Environment Protection Authority
- Building Code of Australia / National Construction Code
- Statutory Australian Standards
- WorkCover Authority

4 OUTLINE OF PROPOSED WATER MANAGEMENT SYSTEMS

4.1 Hydraulic Services

Potable Water

Potable water systems for human consumption, hygiene purposes, cistern flushing and process equipment for the site will be supplied directly from an existing main reticulation and designed in accordance with AS3500.1 2003, AS3500.4 2003, Dubbo City Council requirements and Australian Drinking Water Guidelines.

Potable water cross contamination prevention with hazardous areas (Laboratories, dirty utility rooms, operating theatres and alike), as nominated in AS3500.1 2003, will be achieved by the installation of approved backflow prevention valves.

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

Sanitary and Trade Waste Drainage

Sanitary waste generated by the site will be designed in accordance with AS3500.2 2003, Dubbo City Council Water requirements and industry best practice and discharge directly to existing house drainage sewer infrastructure.

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

Designated hydraulic trade waste will be pre-treated in accordance with AS3500.2 2003, Dubbo City Council Water requirements and industry best practice and discharge directly to internal house sewer reticulation system.

Roof Water / Podium Drainage

Generally above ground rainwater collection systems will interconnect with the existing civil stormwater system and will be designed in accordance with AS3500.3 2003, Dubbo City Council requirements, and Australia Rainfall and Runoff, based on the following minimum criteria:

- Eaves gutters – 1 in 20 year 5 minute storm event
- Podium areas – 1 in 20 year 5 minute storm event
- Box gutters – will not be utilised for the development

4.2 Fixtures, Fittings and Tapware

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 on 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.

4.3 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)
- Recycling of the fire test water back into fire water storage tank(s)

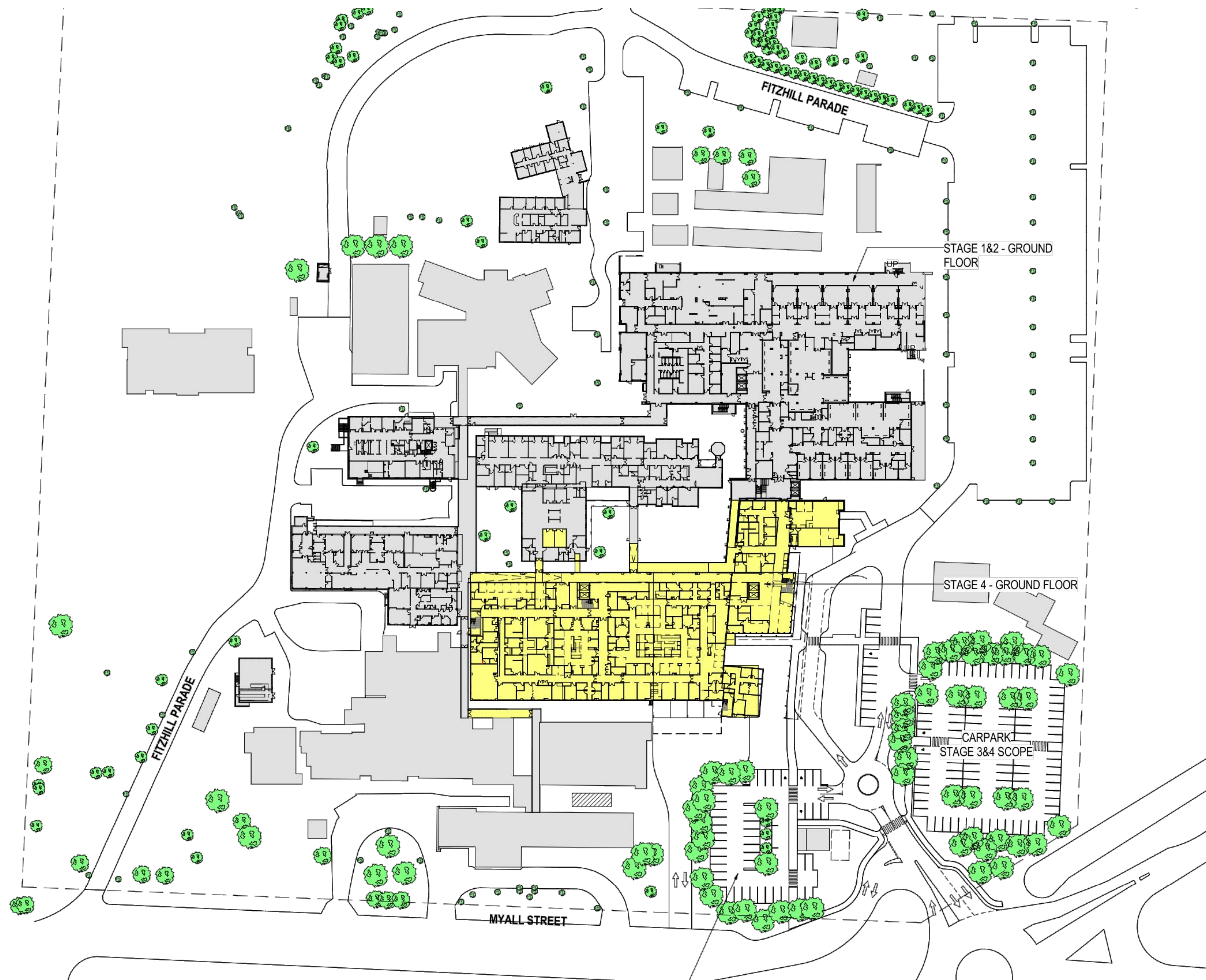
A Appendix A – Hydraulic Services Reference Drawings

Document Number	Title	Revision
4A-0001	Stage 4 Locality Plan	P1
4A(i)-H1.01	Existing hydraulic Services Site Plan	P1
4A(i)-H1.02	Enabling Works And Infrastructure	D
4A(i)-H2.01	Demolition and Infrastructure Stage 4A Ground Floor Drainage	P1
4A(i)-H2.02	Demolition and Infrastructure Stage 4B Ground Floor Drainage	P1
4A(i)-H2.03	Demolition and Infrastructure Stage 4A (Fire Pump Room) Drainage	P1
4A(i)-H2.04	Demolition and Infrastructure Stage 4C Ground Floor Drainage	P1
4A(i)-H3.01	Demolition and Infrastructure Stage 4A Ground Floor Water and Gas	P1
4A(i)-H3.02	Demolition and Infrastructure Stage 4B Ground Floor Water and Gas	P1
4A(i)-H3.03	Demolition and Infrastructure Stage 4A (Fire Pump Room) Water and Gas	P1
4A(i)-H3.04	Demolition and Infrastructure Stage 4C Refurbishment work Water and Gas	P1
Stage 4A/B&C	Building Service Plans	
4A-H2.01	Hydraulic Services Ground Floor Drainage	P1

4A-H2.02	Hydraulic Services Level1 Drainage	P1
4A-H2.03	Hydraulic Services Level2 Drainage	P1
4A-H2.04	Hydraulic Services Level3 Drainage	P1
4A-H2.05	Hydraulic Services Roof Drainage	P1
4A-H3.01	Hydraulic Services Ground Floor Water and Gas	P1
4A-H3.02	Hydraulic Services Level1 Water and Gas	P1
4A-H3.03	Hydraulic Services Level2 Water and Gas	P1
4A-H3.04	Hydraulic Services Level3 Water and Gas	P1
4A-H4.01	SCHEMATICS SHEET 1	P1
4A-H4.02	SCHEMATICS SHEET 2	P1
4A-H4.03	SCHEMATICS SHEET 3	P1
4A-H4.04	SCHEMATICS SHEET 4	P1
4A-H4.05	SCHEMATICS SHEET 5	P1

B Appendix B – Site

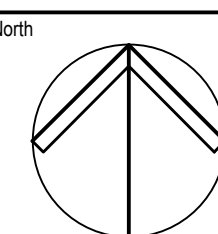
STAGE 4(i) 4A/B/C - SCHEMATIC DESIGN



DRAWING LIST - HYD SERVICES		
DRAWING No	DRAWING NAME	REV
0000	COVER SHEET NOTES AND LEGEND	P1
0001	LOCALITY PLAN	P1
STAGE 4A(i)	DEMOLITION AND INFRASTRUCTURE	
4A(i)-H1.01	EXISTING HYDRAULIC SERVICES SITE PLAN	0
4A(i)-H1.02	ENABLING WORKS AND INFRASTRUCTURE	P1
4A(i)-H2.01	DEMOLITION AND INFRASTRUCTURE STAGE 4A GROUND FLOOR DRAINAGE	P1
4A(i)-H2.02	DEMOLITION AND INFRASTRUCTURE STAGE 4B GROUND FLOOR DRAINAGE	P1
4A(i)-H2.03	DEMOLITION AND INFRASTRUCTURE STAGE 4A DRAINAGE (FIRE PUMP ROOM)	P1
4A(i)-H2.04	DEMOLITION AND INFRASTRUCTURE STAGE 4C DRAINAGE	P1
4A(i)-H3.01	DEMOLITION AND INFRASTRUCTURE STAGE 4A GROUND FLOOR WATER AND GAS	P1
4A(i)-H3.02	DEMOLITION AND INFRASTRUCTURE STAGE 4B GROUND FLOOR WATER AND GAS	P1
4A(i)-H3.03	DEMOLITION AND INFRASTRUCTURE STAGE 4A (FIRE PUMP ROOM) WATER AND GAS	P1
4A(i)-H3.04	DEMOLITION AND INFRASTRUCTURE STAGE 4C REFURBISHMENT WORK WATER AND GAS	P1
STAGE 4A/B/C	BUILDING PLANS	
4A-H1.01	COVER SHEET	
4A-H2.01	HYDRAULIC SERVICES GROUND FLOOR DRAINAGE	P1
4A-H2.02	HYDRAULIC SERVICES LEVEL 1 DRAINAGE	P1
4A-H2.03	HYDRAULIC SERVICES LEVEL 2 DRAINAGE	P1
4A-H2.04	HYDRAULIC SERVICES LEVEL 3 DRAINAGE	P1
4A-H2.05	HYDRAULIC SERVICES ROOF DRAINAGE	P1
4A-H3.01	HYDRAULIC SERVICES GROUND FLOOR WATER AND GAS	P1
4A-H3.02	HYDRAULIC SERVICES LEVEL 1 WATER AND GAS	P1
4A-H3.03	HYDRAULIC SERVICES LEVEL 2 WATER AND GAS	P1
4A-H3.04	HYDRAULIC SERVICES LEVEL 3 WATER AND GAS	P1

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Project	
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DUBBO HOSPITAL
STAGE 3 & 4
MYALL STREET, DUBBO
NSW

Drawing Title

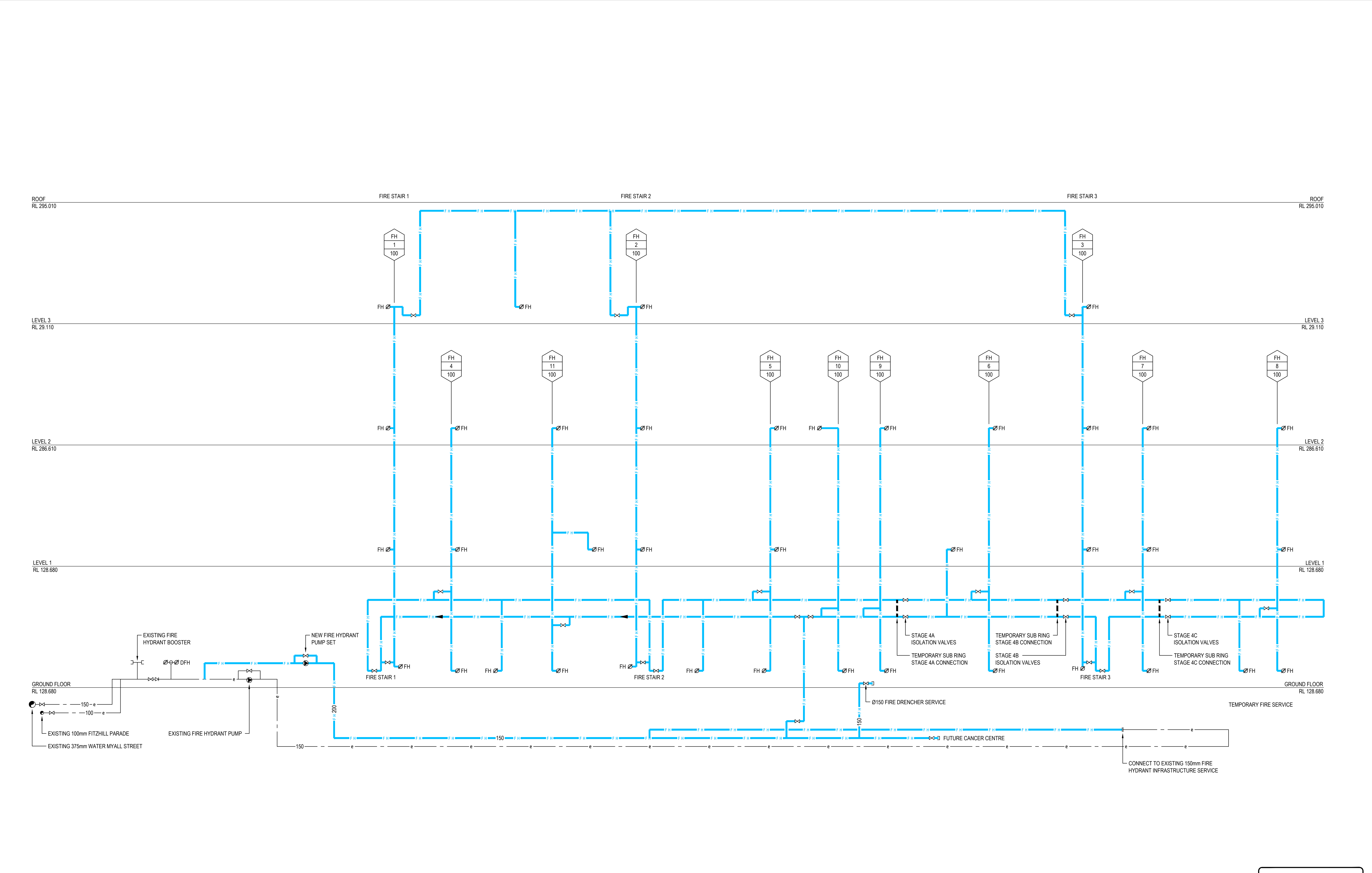
LOCALITY PLAN

Drawn D.M.	Date MAY, 16	Scale N.T.S.	A1	Q.A. Check Date	
Designed M.H.	Project No. NW150261		Dwg. No. 4A(i) - 0001		Issue P1

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C Appendix C – Water Systems Schematic Diagram



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P1	ISSUE FOR REVIEW	24.10.16	J.M. M.H.
Issue	Description	Date	Drawn Approved
10m or full size 10m 20m			

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Project

DUBBO HOSPITAL

STAGE 3 & 4

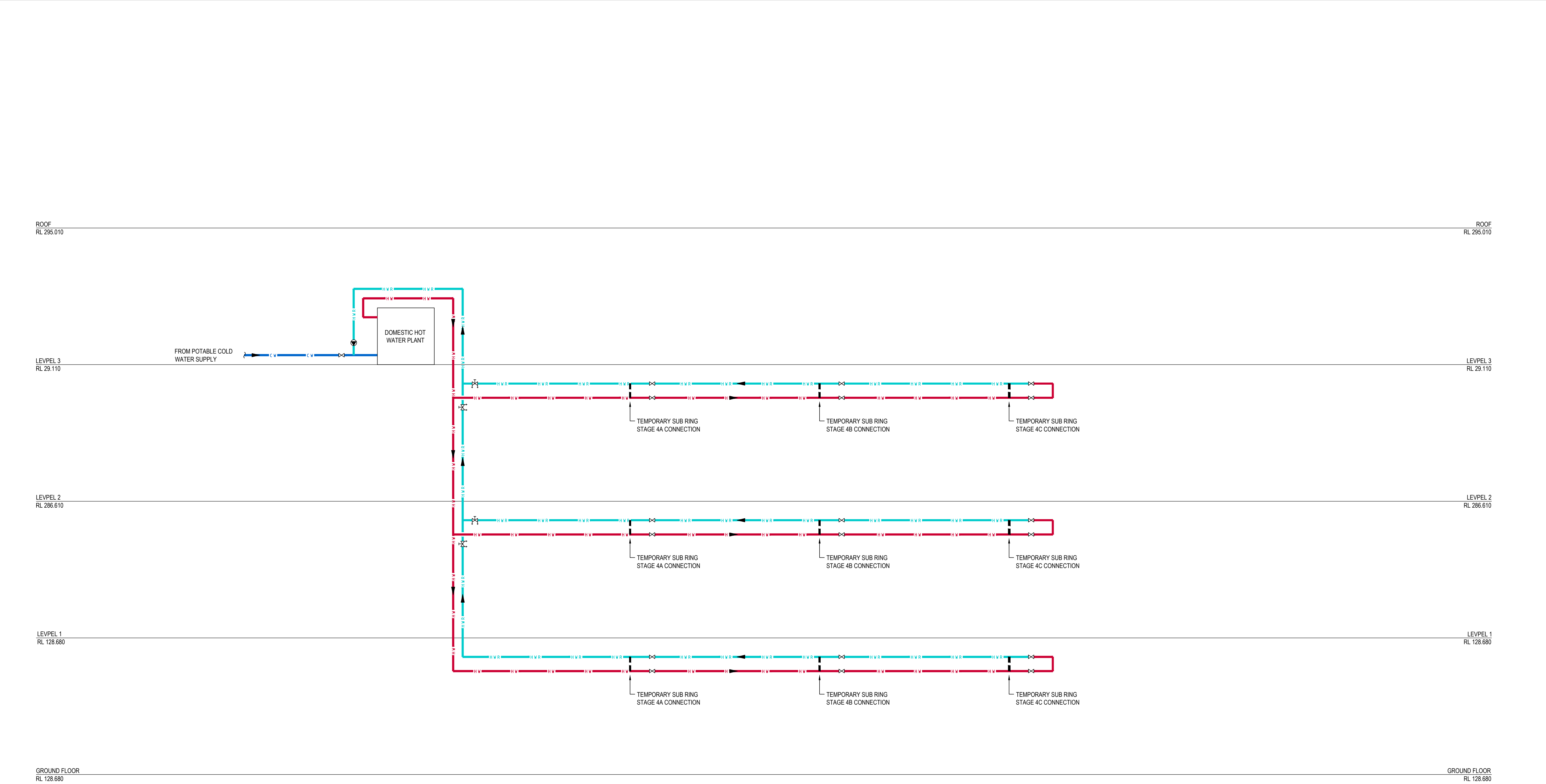
MYALL STREET, DUBBO

NSW

Drawing Title HYDRAULIC SERVICE FIRE HYDRANT SCHEMATIC STAGE 4A			
Drawn J.M.	Date OCTOBER 16	Scale N.T.S.	A1
Designed M.H.	Project No. NW150261	Q.A. Check 4A - H4.01	Date P1

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P1	ISSUE FOR REVIEW	24.10.16	J.M.	M.H.	
Issue	Description	Date	Drawn	Approved	
10m or full size 100m 200m					

North



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Project

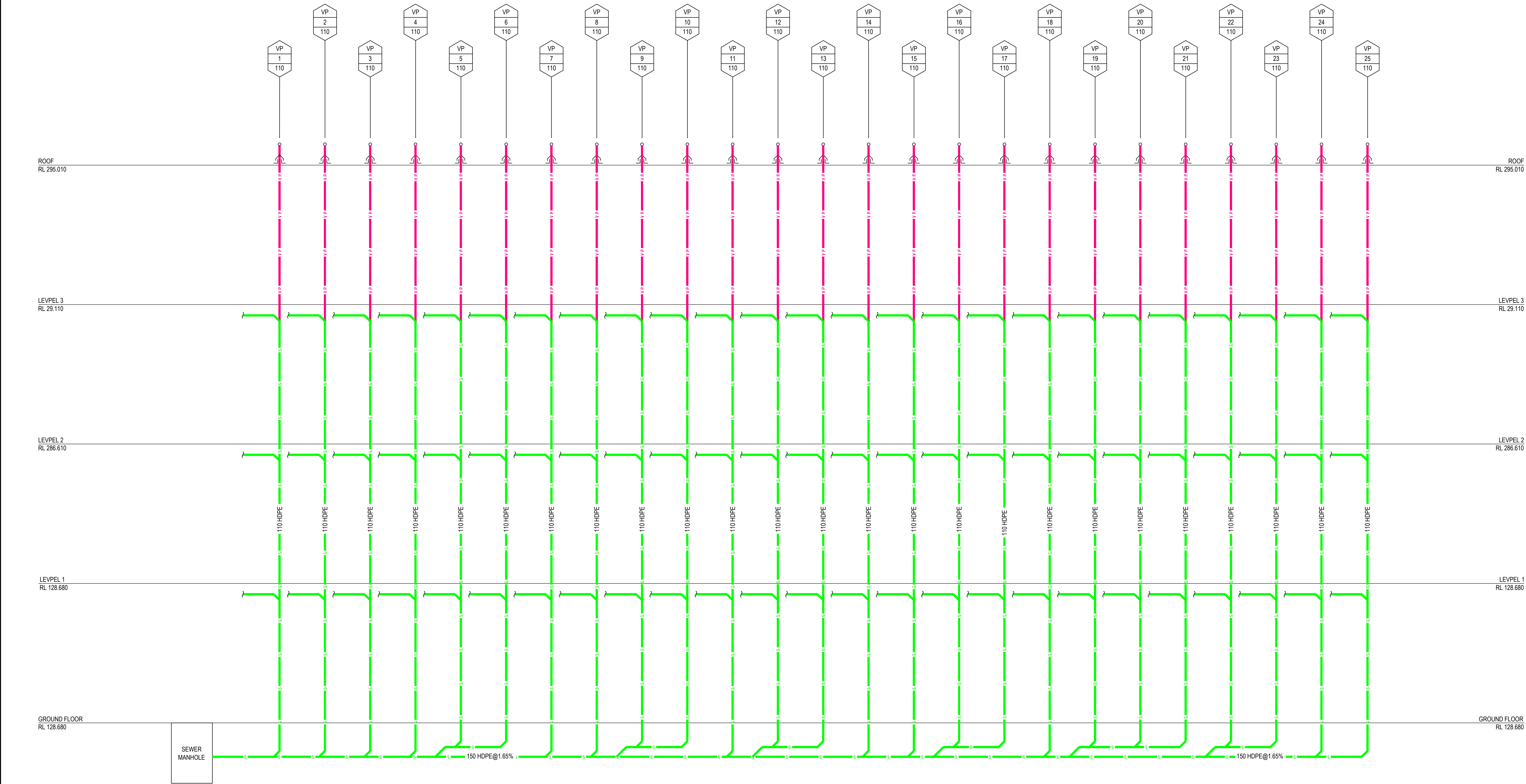
**DUBBO HOSPITAL
STAGE 3 & 4**
MYALL STREET, DUBBO
NSW

Drawing Title HYDRAULIC SERVICE HOT WATER SCHEMATIC STAGE 4A					
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J.M.	OCTOBER 16	N.T.S.			
Designed	Project No.	Dwg. No.	Issue		
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D Appendix D – Drainage Schematic



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P1	ISSUE FOR REVIEW	24.10.16	DM	MH		
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0	10m at full scale	100m	200m			

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Project

DUBBO HOSPITAL
STAGE 3 & 4

MYALL STREET, DUBBO
NSW

Drawing Title

HYDRAULIC SERVICES
DRAINAGE SCHEMATIC
STAGE 4A

Drawn	Date	Scale	AT	Q.A. Check	Date
D.M.	OCTOBER 16	N.T.S			
Designed	Project No.	Dwg. No.	Issue		
B.A.	NW150261	4A - H4.02	P1		

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E Appendix E – Staging Plans