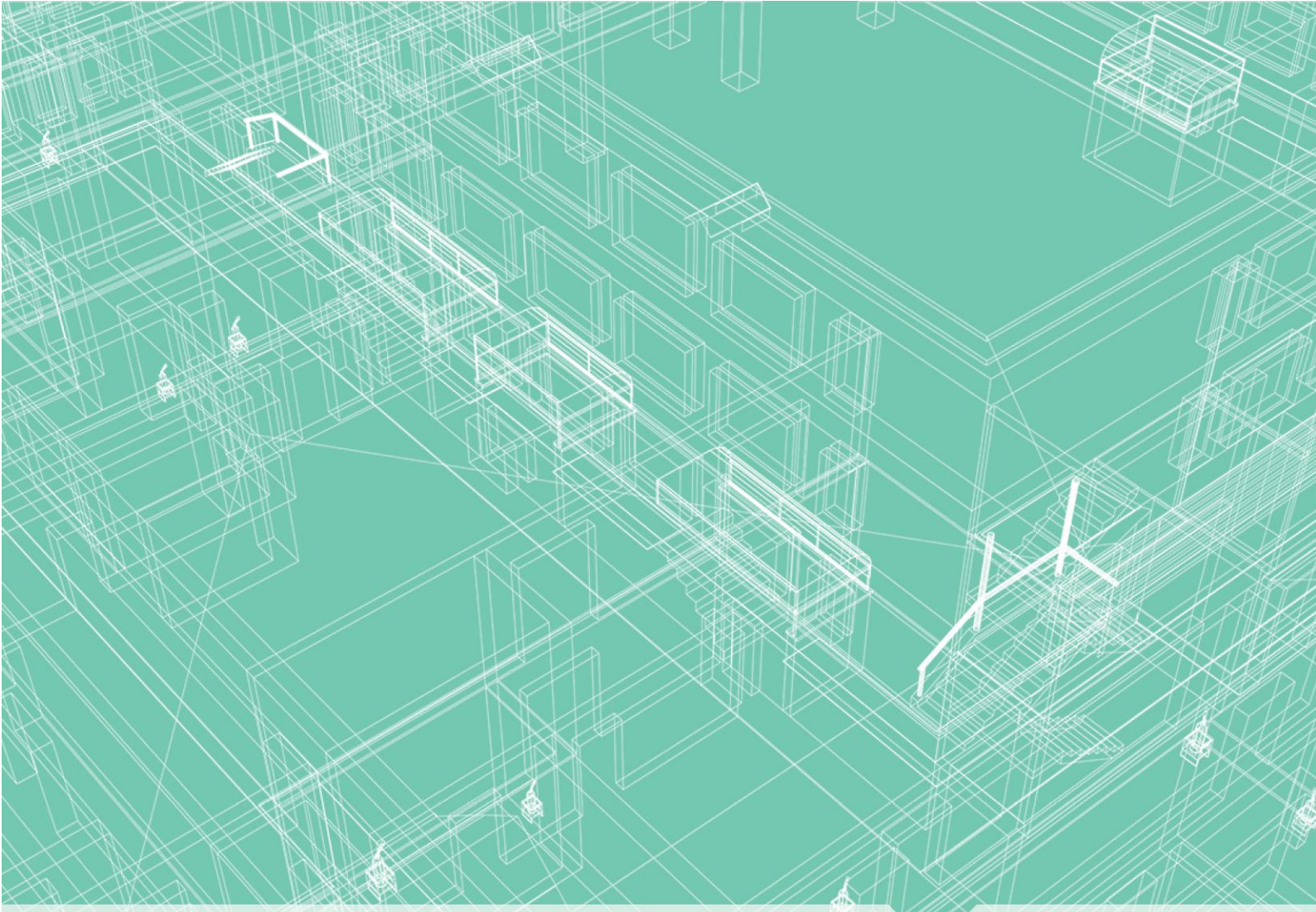


SSDA REPORT

SAINT IGNATIUS' COLLEGE RIVERVIEW

IGNIS STAGE 2

HYDRAULIC SERVICES Integrated Water Management Plan

JHA

JHASERVICES.COM

This report is prepared for the nominated recipient only and relates to the specific scope of work and agreement between JHA and the client (the recipient). It is not to be used or relied upon by any third party for any purpose.

DOCUMENT CONTROL SHEET

Project Number	190462
Project Name	Saint Ignatius' College
Description	Hydraulics Services SSDA Report
Key Contact	George Koutoulas

Prepared By

Company	JHA Consulting Engineers (NSW) Pty Ltd
Address	Level 23, 101 Miller Street, North Sydney NSW 2060
Phone	61-2-9437 1000
Email	George.Koutoulas@jhaengineers.com.au
Website	www.jhaservices.com
Author	George Koutoulas
Checked	Alex Bartley
Authorised	George Koutoulas

Revision History

Issued To	Revision and Date								
PMDL	REV	A							
Deborah Yong	DATE	31/03/2020							
PMDL	REV	B							
Deborah Yong	DATE	16/10/2020							
	REV								
	DATE								

CONTENTS

1 INTRODUCTION

1.1 OVERVIEW

This Hydraulics Services report has been prepared by JHA Consulting Engineers on behalf of the Saint Ignatius' College Riverview (the Applicant).

The Hydraulics Services report accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application for the Saint Ignatius' College Riverview Redevelopment - Ignis Stage 2 project.

The purpose of this Hydraulics Services report is to demonstrate compliance with the SEARs. This report shall be read in conjunction with the Architectural design drawings and other consultant design reports submitted as part of the application.

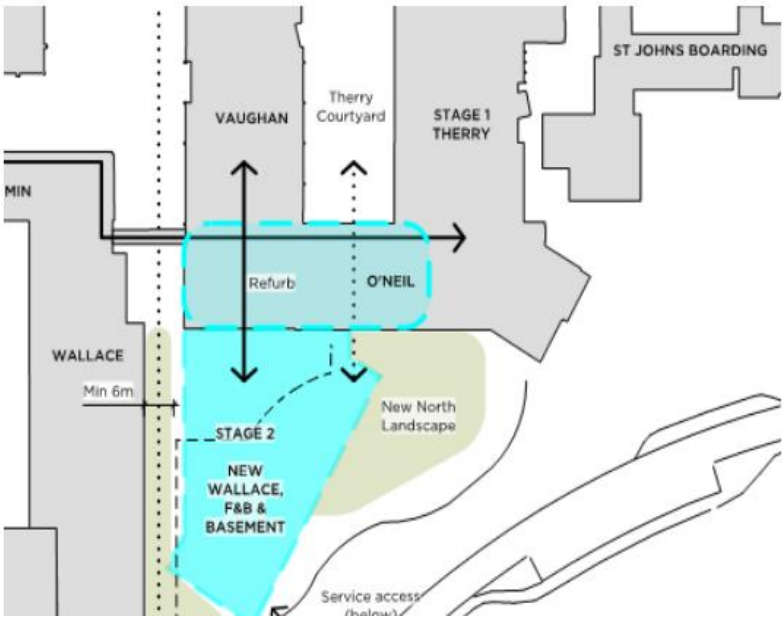
The objectives of this Hydraulics Services assessment are:

- Establish the availability of authority sewer, water and gas services detailing information on the existing capacity and any augmentation requirements.

2 PROJECT INFORMATION

The project works to be completed for the St Ignatius' College Redevelopment – Ignis Stage 2, located at Tambourine Bay Road, Lane Cove NSW 2066. It is understood that the main components of the 'Ignis Stage 2' development include:

1. Construction of the new 'Wallace' building, comprising a five storey general learning and science, technology, engineering and mathematics (STEM) precinct, food and beverage service.
2. Refurbishments of the existing connecting elements of the O'Neil building, which also have internal links to the 'Vaughan' and 'Therry' buildings, both of which were recently refurbished.
3. New north landscaped area.
4. New 'Wallace' landscaped area.



STAGE 2 REDEVELOPMENT AREA

3 HYDRAULIC SERVICES

The hydraulic services infrastructure will be incorporated into the design and construction phases of the development as follows:

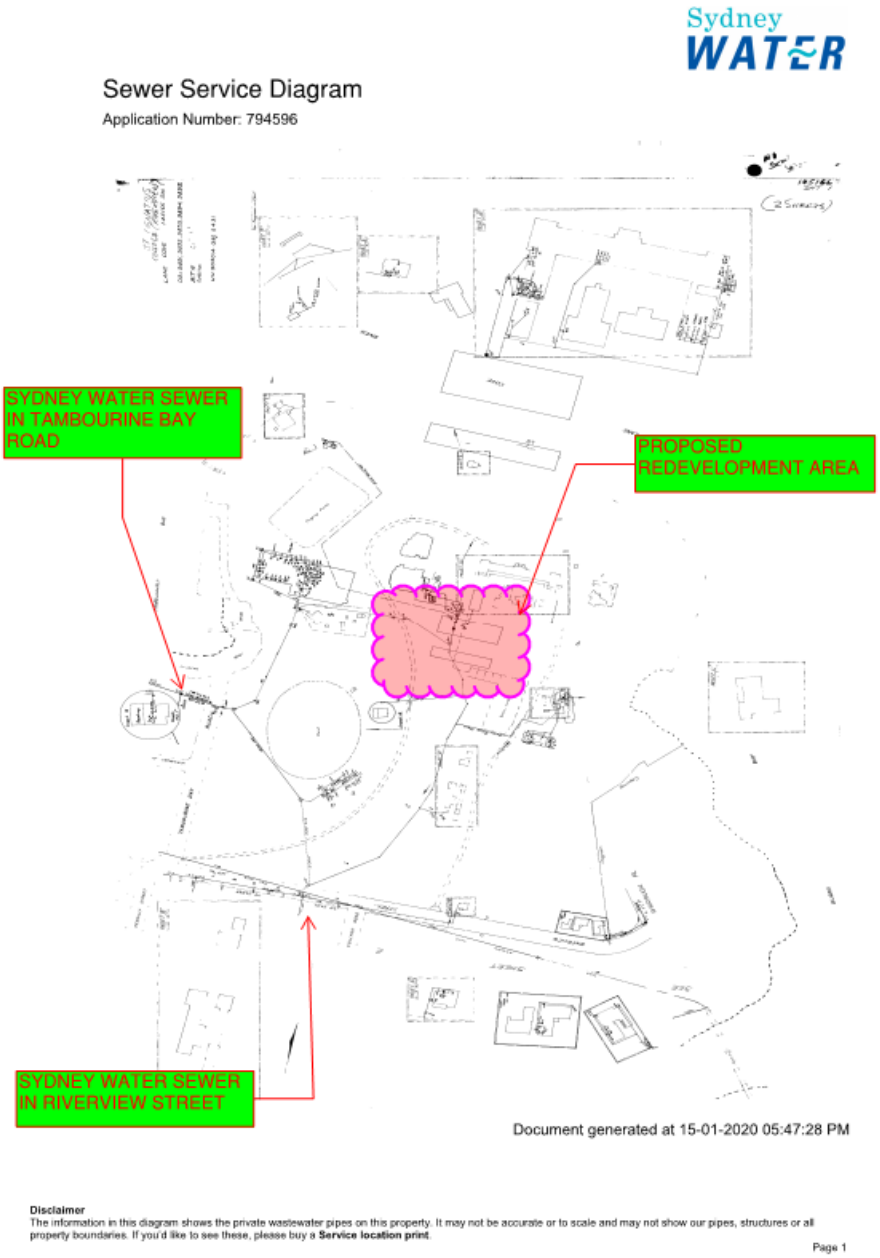
3.1 EXISTING SEWER INFRASTRUCTURE

Sydney Water records indicate the site discharges to the Sydney Water sewer in Riverview Street and the 225mm Sydney Water sewer in Tambourine Bay Road.

The diagrams below indicate the location of the Sydney Water sewer mains.

The new development will drain to the existing 225mm Sydney Water sewer main in Tambourine Bay Road.

The Sydney Water 225mm sewer in Tambourine Bay Road has sufficient capacity to serve the development.



SITE SEWER SERVICE DIAGRAM

3.2 POTABLE COLD WATER SERVICE

The site is served with two incoming water services.

There is an incoming 100mm service from the Sydney Water Cast Iron Concrete Lined (CICL) street main located in Riverview St.

The water meter is 80mm with 2 off RPZD assemblies.

This connection is not currently proposed to be utilised to serve the Stage 2 redevelopment.

80mm METER AND RPZD ASSEMBLIES

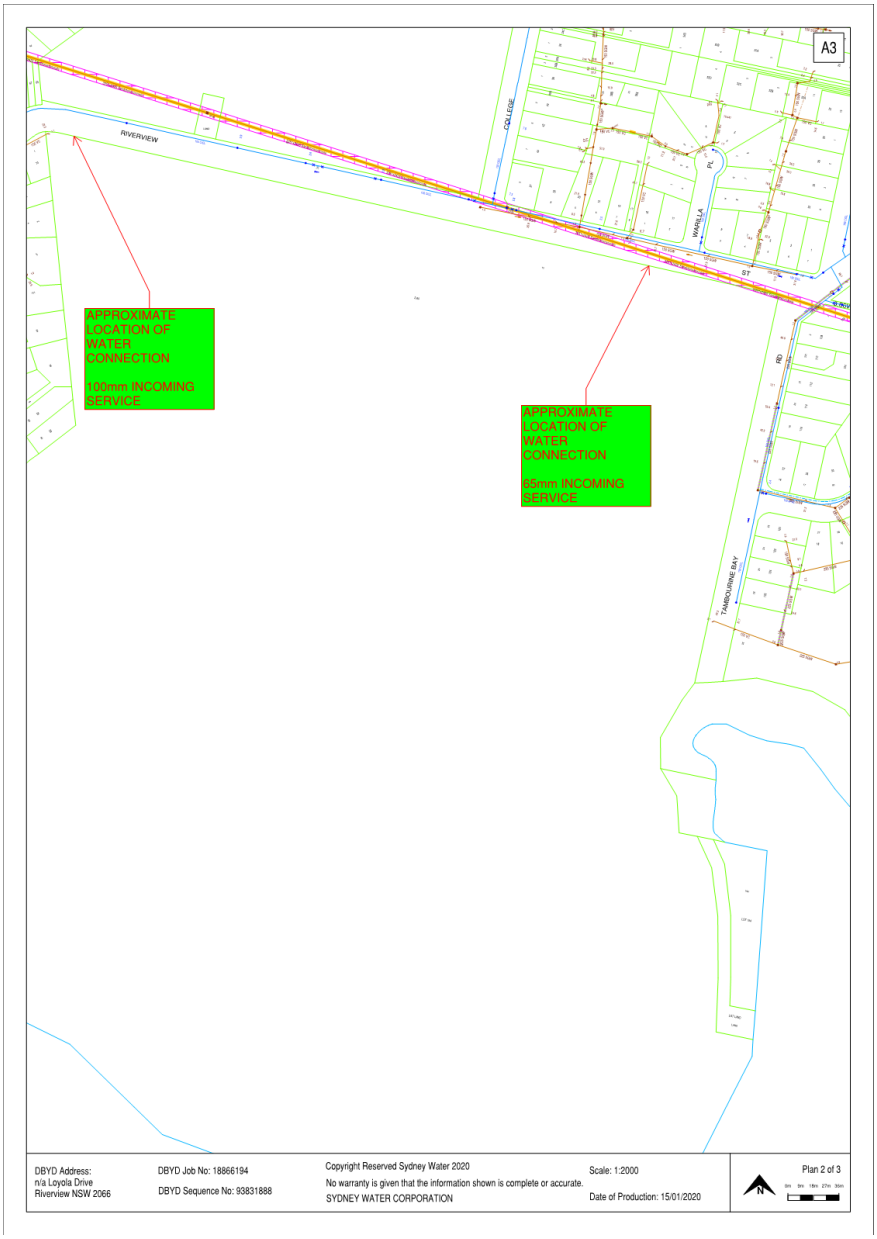
There is an incoming 65mm supply from the Sydney Water Cast Iron Concrete Lined (CICL) street main located in Riverview St.

The water meter assembly is located on the boundary between College Road South and Warilla Place.

The water meter is 50mm, with 2 X 65mm RPZD's with an 80mm service to the site.

This is the proposed water service to utilise for the Stage 2 redevelopment.

65mm METER AND RPZD ASSEMBLIES



WATER METER SITE LOCATIONS

The existing incoming 65 mm water service and associated water meter and RPZD assemblies will not be required to be upgraded to accommodate the additional requirements of the Stage 2 redevelopment.

The new fixtures will be serviced from a connection to the existing 80mm water service, in the vicinity of the proposed Stage 2 redevelopment.

The cold water and fire hose reel water services will be constructed in compliance with AS/ NZS 3500.1.

Cold water only will be provided to the fixtures in learning and other student areas.

The Sydney Water 100mm main in Riverview Street has sufficient capacity to serve the redevelopment

3.3 GAS SERVICE

There are two existing gas meter connections serving the existing appliances installed on the site.

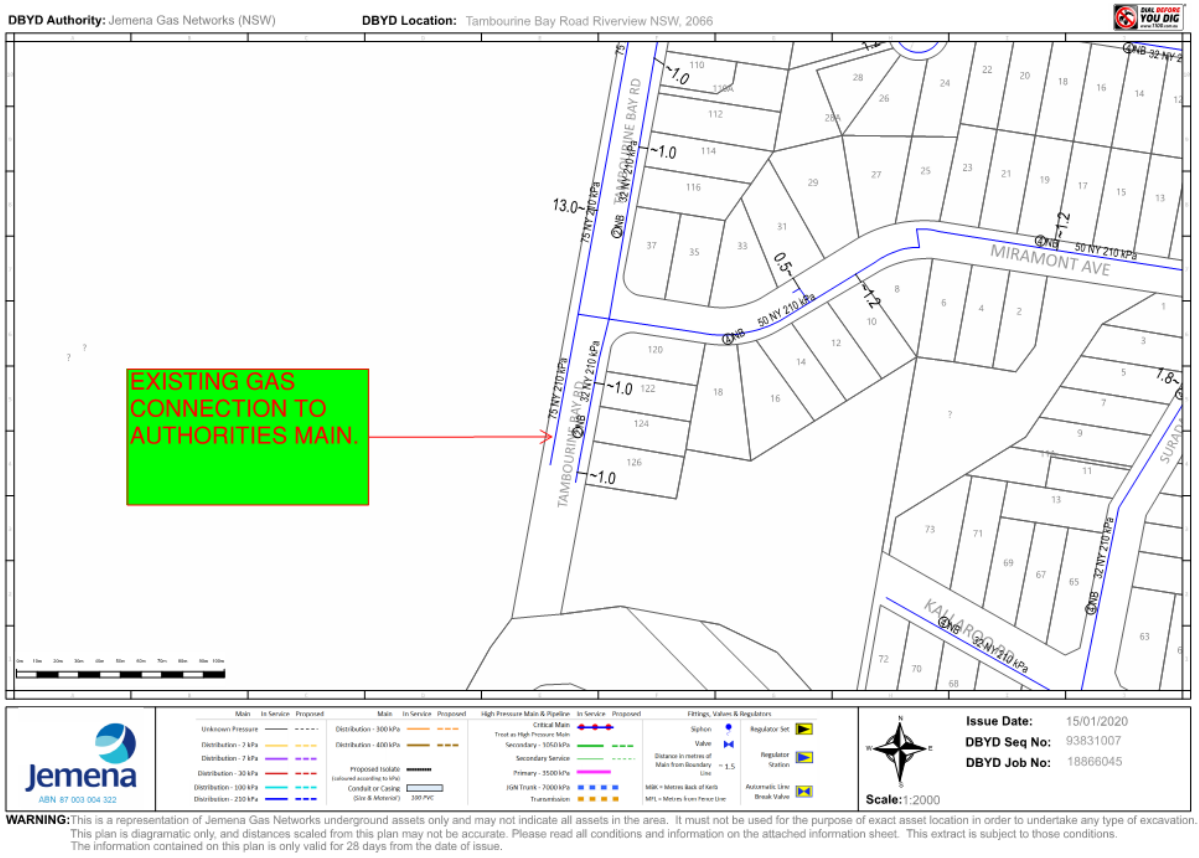
The existing gas meter and regulator assembly number 1 is located adjacent to the site entry on Riverview Street and is fed from the Authorities main located in the street. This service will not be utilised to serve the redevelopment.

Gas meter and regulator assembly number 2 is located on the internal roadway nominated as Loyola Drive in the vicinity of the oval.

It is understood that this service is connected to the Authorities 75mm, 210 kPa gas main in Tambourine Bay Road and crosses the adjacent playing field to the meter and regulator assembly.

It is expected that the regulator at the meter assembly reduces the pressure from 210 kPa to approximately 3.0 kPa.

The 75mm Jemena gas main has sufficient capacity to serve the redevelopment



LOCATION OF GAS MAINS IN TAMBOURINE BAY ROAD

3.4 ESD INITIATIVES

WATER SAVINGS

The use of rainwater reuse systems and water efficiency appliances and fittings will reduce water consumption and subsequently reduce demand on potable water supplies and reduce the water costs for new building and site irrigation water usage.

The roof water will be collected and directed to a 10,000 litre rainwater storage tank and be utilised for the landscape watering.

WATER SAVING FIXTURES AND FITTINGS

Water efficiency labelling and standards (WELS) scheme will be adopted.

Water approved WaterMark scheme fittings and tapware will be adopted.

The table below gives the recommended WELS rating and associated water consumption for the various fittings and fixtures to be used in this development.

Fixture	WELS Rating Litres per minute	STAR RATING
Sinks	6.0	5 Star
Showers	7.5 - 9.0	3 Star
Basin	4.5 - 6.0	5 Star
Water Closets	4.5/3.0 litre flush	4 Star

3.4.1 ENERGY SAVINGS

The use of energy efficiency appliances and fittings will reduce energy consumption and help minimise greenhouse emission and energy bill for the School.

3.4.2 AIR QUALITY

Potential air quality hazard shall be avoided from the selected plumbing materials with this being the minimising of usage of materials with volatile organic compound (VOC).Material such as adhesive, sealant, paints and coatings shall be low in VOC.

3.4.3 NOISE

Noise transmission from pipework within the buildings shall be minimised.

Any sewer and water pipes installed above learning spaces shall be wrapped in acoustic material with a Sound Transmitting Rating of STC 45 or to Acoustic engineers report.

Water velocities in pipework in learning space areas will not exceed 1.2m/sec and 0.9m/sec for cold and hot water respectively which will reduce the noise level of pipe flow.

Maximum water pressure will be at 350-500 kPa which will also minimise the noise level within the pipework.

3.5 HOT WATER SERVICE

The hot and warm water services will be provided in compliance with AS/ NZS 3500.4.

Hot water will be provided to the cleaner's sinks, staff rooms, staff amenities and Food and Beverage fixtures.

Warm Water will be provided to the accessible basins, house amenities, change room amenities and Food and Beverage basin(s).

In accordance with regulations, the hot water temperature to sanitary fixtures will be limited to:

- 50°C for cleaners sinks
- 50°C for Staff amenities including shower, basins and sinks
- 43°C for the Accessible basins and change room amenities
- 50°C for the Food and Beverage facilities fixtures generally and
- 43°C to Food and Beverage facilities hand basins

The hot water outlets will be controlled by Tempering valves in staff areas and thermostatic mixing valves in other areas.

In areas requiring hot water, the hot water will generally be supplied via electric hot water heaters sized to suit the fixtures being served and generally located within the cleaner's room or within the sink cabinetry as appropriate.

The Food and Beverage hot water will be supplied via an instantaneous gas hot water unit fixed to an external wall adjacent to the Food and Beverage area

3.6 SEWER DRAINAGE AND SANITARY PLUMBING

The new fittings and fixtures will be connected to a system of gravity sewer drainage and sanitary plumbing stacks which will drain to the existing internal sewer drainage system.

The sanitary plumbing will generally be a single stack system designed as an AS3500.2 Sanitary Plumbing and Drainage modified vented system and will generally be of uPVC material connecting to the sewer drainage in the ground

The sewer drainage will comply with AS3500.2 –Sanitary Plumbing and Drainage and connect to the existing internal sewer drainage system.

3.7 TRADE WASTE DRAINAGE AND TRADE WASTE PLUMBING

The new fittings and fixtures within the science laboratories will be connected to a system of gravity trade waste drainage and trade waste plumbing stacks which will drain to a new treatment pit consisting of a 1000 litre dilution pit.

The trade waste plumbing will generally be a single stack system designed as an AS3500.2 Sanitary Plumbing and Drainage modified vented system. The piping and associated fittings will generally be of HDPE material connecting to the trade waste drainage in the ground. The trade waste drainage will also be of HDPE connecting to the treatment pit.

The trade waste drainage will comply with AS3500.2 –Sanitary Plumbing and Drainage and the discharge from the dilution pit will connect to the existing internal sewer drainage system.

The fixtures within the Food and Beverage area will all drain to a grease arrestor. The grease arrestor will be of 2000 litre capacity and installed below ground.

The drainage piping system will be HDPE from the Food and Beverage B fixtures to the grease arrestor. Traps and wastes within the Food and Beverage area connecting the fixtures to the drainage system will be chrome plated copper.

The trade waste drainage will comply with AS3500.2 –Sanitary Plumbing and Drainage and the discharge from the grease arrestor will connect to the existing internal sewer drainage system.

3.8 FIRE HOSE REELS

It is not necessary to provide Fire Hose Reel (FHR) coverage to classrooms or associated corridors of schools.

However, for any other classification/use within the school, FHR coverage is required if the fire compartment is over 500 m^2 in area.

Fire hose reels will be required to be installed within 4m of fire exits and additional, located in the path of travel, to provide compliant coverage to non-classroom/corridor areas.

The fire hose reel system will connect to the cold water service and be of copper piping.

3.9 FIRE HYDRANTS

The Riverview campus is provided with an existing fire hydrant service via a site main arrangement which is reticulated around the site. The hydrant system serving the site includes a brigade booster adjacent to the main site entry from Riverview Street, which incorporates a 4-point boost connection capable of providing 40L/s into the system, a 150mm tank suction connection, and a 2-point brigade suction connection.

FIRE HYDRANT TANK SUCTION AND BOOSTER VALVE ASSEMBLY

The hydrant system is supplied via two diesel hydrant booster pumps served from a storage tank, which is located in a dedicated fire services plant room below ground level adjacent to the main site entry from Riverview Street.

It is intended to connect to the existing fire hydrant piping system and extend to serve both external and internal fire hydrants to provide compliant coverage for the Ingis Stage 2 redevelopment.

The fire hydrants will be located externally, within fire stairs and additional internal fire hydrant along the path of travel to provide compliant coverage.

The piping underground will be MDPE and will be galvanised mild steel internally aboveground.

It is expected that the capacity of the existing booster pump and associated water storage is sufficient to provide the required pressure, flows and water storage required for the proposed redevelopment. This will have to be confirmed at an early stage to ensure that it is adequate for the proposed redevelopment.

The fire hydrant system will comply with NCC 2019, AS 2419 and AS 2941 requirements.

3.10 GUTTERS, DOWNPIPES AND STORMWATER

The new buildings would have a system of gutters and downpipes and we expect that these would be directed to rainwater reuse storage tank or direct to the in ground stormwater drainage as designed by the Civil Engineering Consultant.

Above ground pipework shall be:

- Gravity downpipes shall be UPVC where concealed in the building.
- External downpipes shall be in accordance with the architectural requirements.

3.11 FIRE EXTINGUISHERS AND FIRE BLANKETS

Fire extinguishers and fire blankets will be provided in accordance with and distributed to achieve compliance to AS 2444 requirements.

3.12 FIRE SPRINKLER SYSTEM

A DTS solution using a drencher system at the interface with the O'Neil building as the existing balcony will be enclosed, can be connected to the existing hydrant system

There is sufficient capacity to supply the drenchers from the hydrant system.

3.13 NON POTABLE COLD WATER SERVICE – FOR IRRIGATION ONLY

A 10,000 litre rainwater reuse storage tank is proposed for the redevelopment.

Given that there are minimal water closets proposed for the redevelopment, the advantage and savings of providing a system of rainwater reuse to these water closets would be greatly outweighed by the additional, construction costs of an additional piping system to the water closets.

It is proposed to provide a booster pump set and minimal filtration to the rainwater reuse system suitable for the rainwater to be utilised for irrigation to the landscaped areas.

3.14 DESIGN CONSIDERATIONS

In preparing this Report, JHA has remained cognizant of the following design factors:

- A diligence process was undertaken to establish that the proposed design pathway is (a) compliant; (b) practical; and (c) most advantageous by comparison to any other options available.
- The design life of the services elements (excluding consumables) should to be a minimum of 50 years where possible and practical;
- All equipment and componentry selected needs to be reliable, sourced from a reputable manufacturer or supplier who has a proven history for ongoing service in Australia ;
- The design solution should be sustainably responsible and use low energy systems and equipment (while being cognizant of life cycle costings and capital cost implications);
- The design solution should be flexible and easily adaptable to accommodate changes in use and expansion (while being mindful of capital cost implications);
- The engineering design solutions should have aesthetic appeal that is consistent with the School's preferences and the Architect's vision for the development;
- The design solution should consider the School's existing operational parameters and systems;
- Safety in Design is a legislated requirement and forms part of our engineering design practice.
- Relevant Code compliances