

PYMBLE LADIES' COLLEGE - GREY HOUSE PRECINCT

HYDRAULIC REPORT

SSDA - INFRASTRUCTURE MANAGMENT

Prepared for: Pymble Ladies' College

Attention: Kate Bimson

Date: 12th October 2021

Prepared by: Matt Mee - Hydraulic Services Project Engineer

Ref: 301350239

Stantec Australia Pty Ltd

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Revision

Revision	Date	Comment	Prepared By	Approved By
001	30.07.21	Draft Issue	JZK	MHM
002	12.08.21	Final Issue	JZK	MHM
003	12.10.21	Final Issue - Revised	JZK	MHM

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1. Introduction

This report has been prepared to accompany a detailed State Significant Development Application (SSDA) for Pymble Ladies College (PLC) Grey House Precinct (GHP), located within the PLC grounds at Avon Road, Pymble 2073. This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) Specifically, in response to the following SEARs:

SEARs Reference	SEARs Description	Report Section
14.1. Infrastructure	<ul style="list-style-type: none">Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.	Section 2

1.1 Description of Site and Locality

Address: Avon Road, Pymble 2073

Pymble Ladies College

Lot 1, DP69541

Total Site Area: 21.1Ha

Building : COMPLETED

The proposed development of the Grey House Precinct is the first major project to come from the Pymble Ladies College Master Plan. The multistorey complex will include space for an Early Learning Centre, Out of School Hour Care, Health Services, Dance Studios and classroom spaces accommodating approx. 400 students.

As can be seen in the site location aerial photo, the site is within the Avon Rd Campus and backs on to low density residential sites to the South East on Pymble Avenue and Avondale Golf Course to the West.





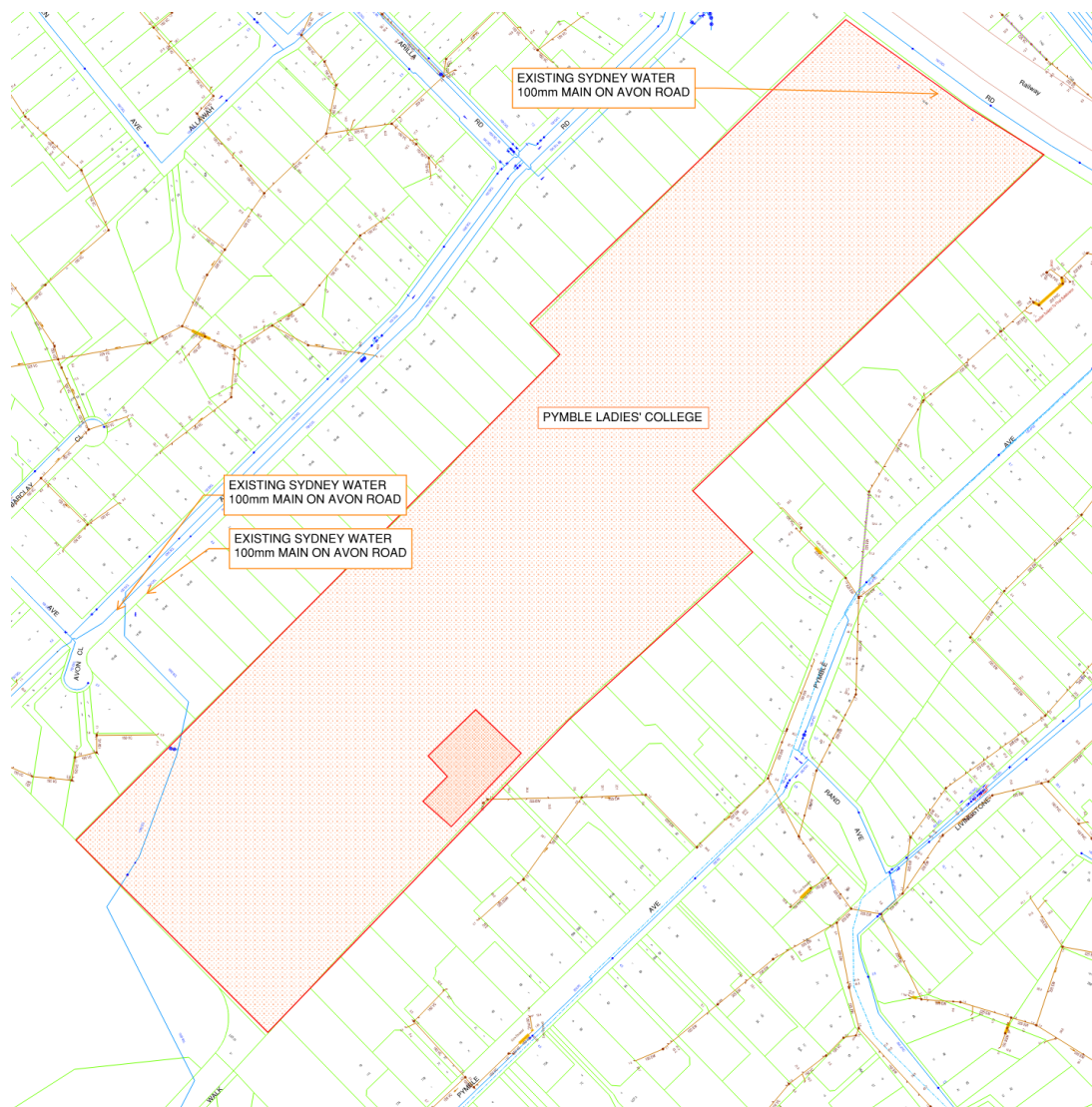
Figure 1: Site Location Plan

2. Hydraulic Services

2.1 Water & Fire Infrastructure

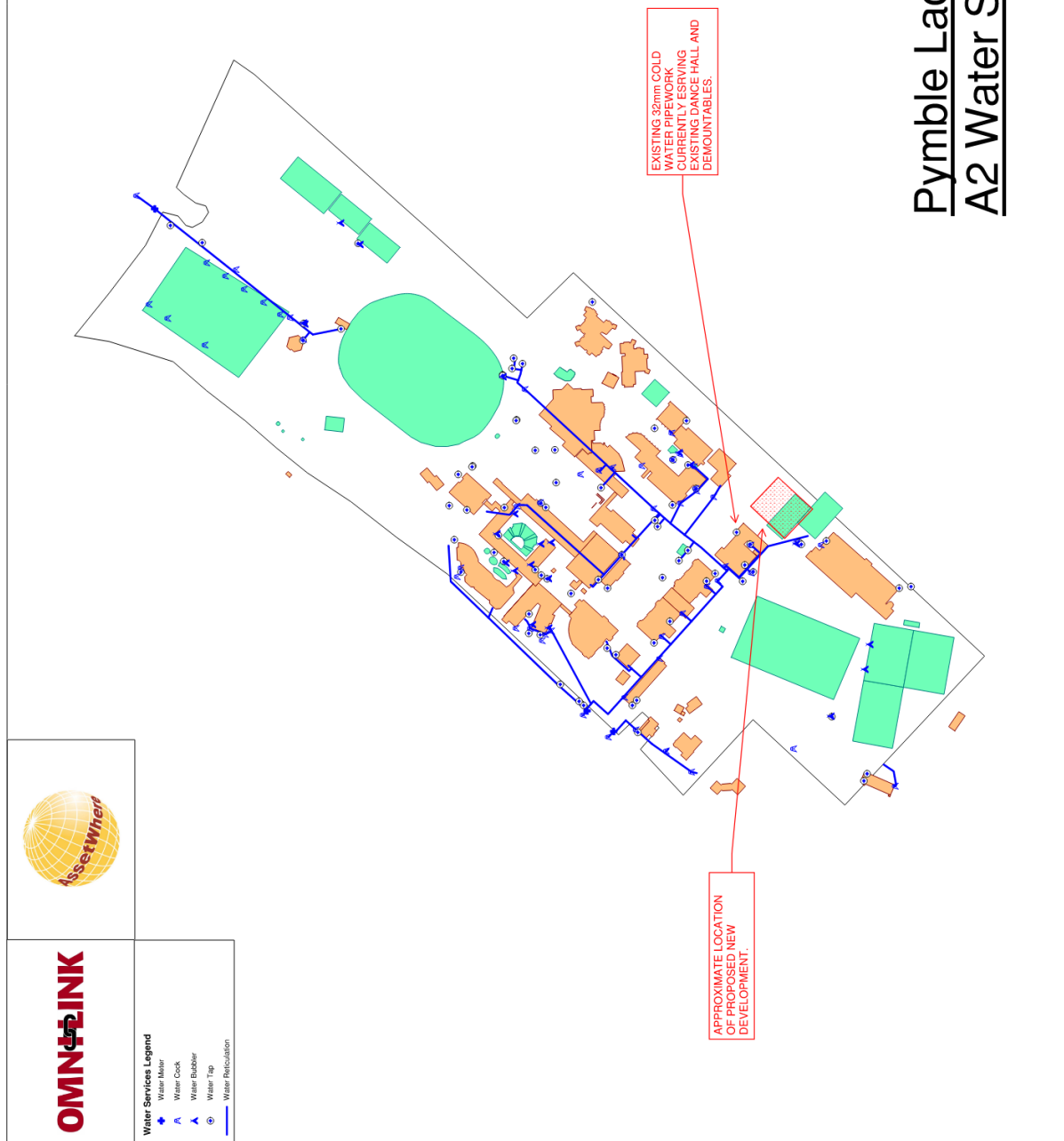
Existing Infrastructure

The local Water Authority for the site is Sydney Water. The existing site is serviced by three existing potable water connections of varying diameter located on the Northern side (adjacent to Gate 3) & Eastern Side of the site adjacent to Avon Road. These water mains are part of the wider Pymble network providing supply to the greater parts of the suburb with high levels of pressure, flow and reliability. The existing connection to the proposed site comes via 32mm cold water pipework currently serving the existing dance hall and demountable building adjacent to Goodlet house.



Pymble Ladies' College - Sydney Water Dial Before You Dig Water Infrastructure Map

Pymble Ladies College A2 Water Services Plan



Pymble Ladies' College – On site Water Infrastructure Map

Water Capacity

Population Density:

940 persons

Average demand of floor area:

20L/ per child/ per day

Total Potable Water Demand:

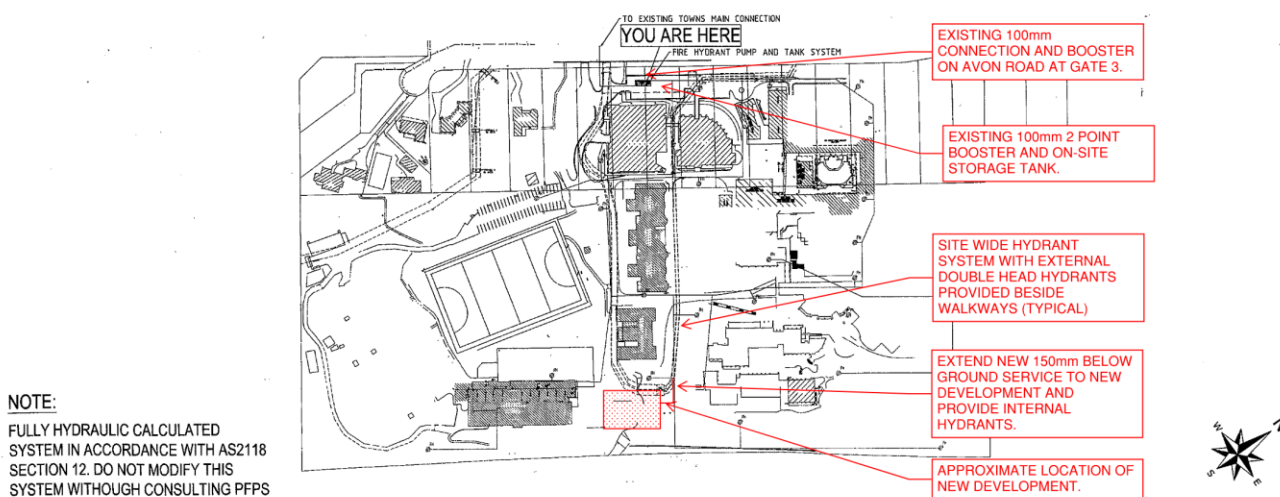
19kL/day

Proposed Development Supply

The proposed development of the Grey House Precinct (GHP) requires a potable water supply and fire water supply from the common site infrastructure. The approximate domestic potable cold-water demand for the development is 19kL/day based on Sydney Water's average daily water usage data for the property development type and a probable simultaneous demand (PSD) of 2 L/s. We can confirm the water main infrastructure serving this site is of adequate capacity. However, the existing 32mm supply adjacent to the proposed GHP development is insufficient to cater for the PSD allowance. We have proposed a 5,000L buffer storage tank and dual pump booster set for the development to be topped up by the 32mm existing service to suit the potable water demand for the building.

The fire hydrant demand for the site is 20L/s @ 700kPa at the two most disadvantageous hydrant landing valves assisted by the existing on-site fire hydrant pump and on-site storage tank. Two fire hydrants are to operate simultaneous to achieve this requirement. Pressure and flow enquiry confirms that on-site fire hydrant infrastructure is adequate to be employed.

FIRE HYDRANT SYSTEM BLOCK PLAN



IN CASE OF EMERGENCY CALL '000' TO ENSURE FIRE BRIGADE RESPONSE

Site Fire Hydrant Block Plan

Please refer to Appendix 4 for the fire hydrant memorandum Stantec collated for this project. The document outlines the existing fire hydrant system capacities and the subsequent suitability for the Grey House Precinct. We have been notified by the client and on-site maintenance personnel that the existing fire hydrant pump can deliver a buffer of 70kPa over and above the expected delivery which we have been advised to proceed with. We have allowed for a 150mm diameter lead in pipe from the existing hydrant infrastructure into the GHP



development risers to assist with mitigating friction losses to achieve the required flow rates and pressures at the topmost level hydrants. As cited within the Multi Discipline Services Brief, in the event of any performance shortfalls at the testing and commissioning phase of the project, consequent upgrades will be required at additional cost to this project.

2.2 Sewer Infrastructure

The Sewer Network Authority for the area is Sydney Water. The site has one existing sewer connection via a 225mm sewer main located at the base of the site. It is proposed to reuse the existing sewer connection adjacent to our proposed development.

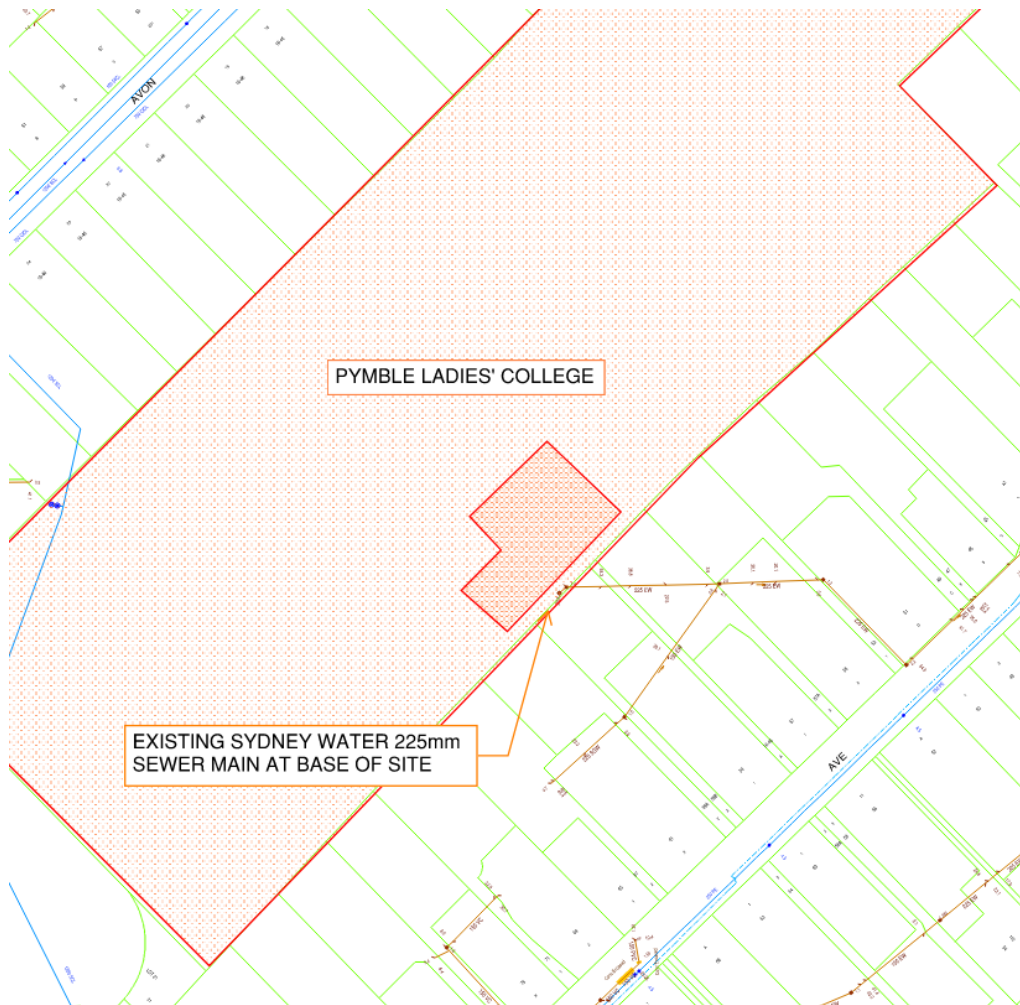
Sewer Capacity

Population Density:	940 persons
Average demand of floor area:	20L/ per child/ per day

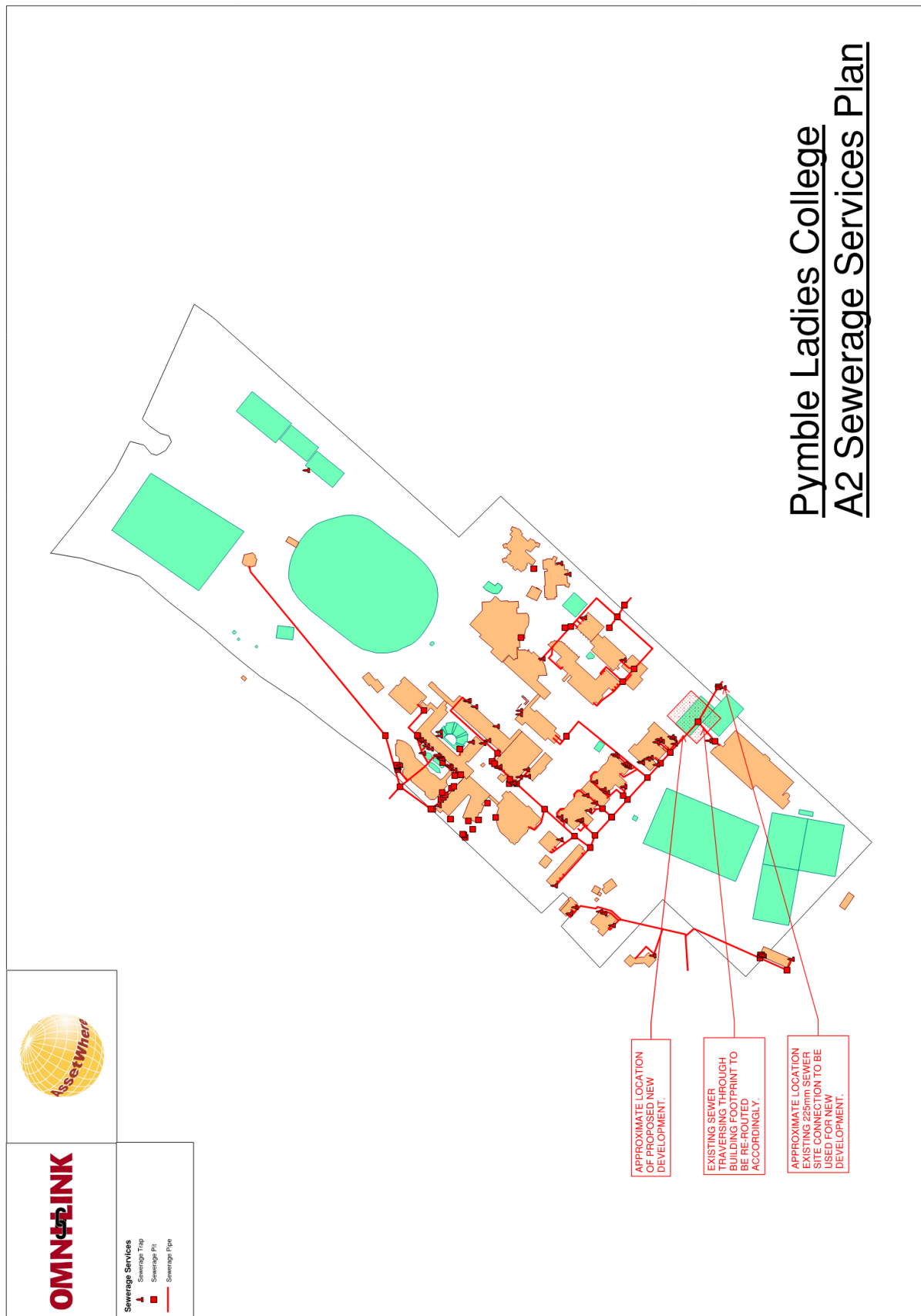
Total Discharge to Sewer (80% of Water Usage)	15kL/day
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The approximate sewer demand for the development is 15kL/day (80% of Water Usage) based on Sydney Water's average daily water usage data for the property development type. This may vary depending on the final development product and system selections. It is anticipated the sewer mains that are available for connection are capable of meeting the above demand.



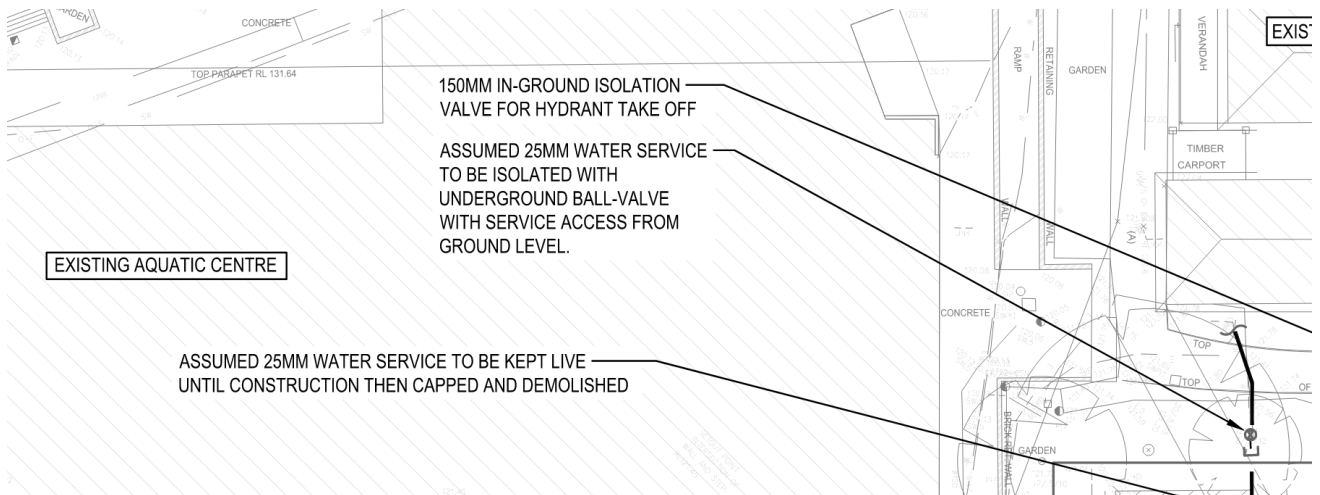


Pymble Ladies' College - Sydney Water Dial Before You Dig Sewer Infrastructure Map



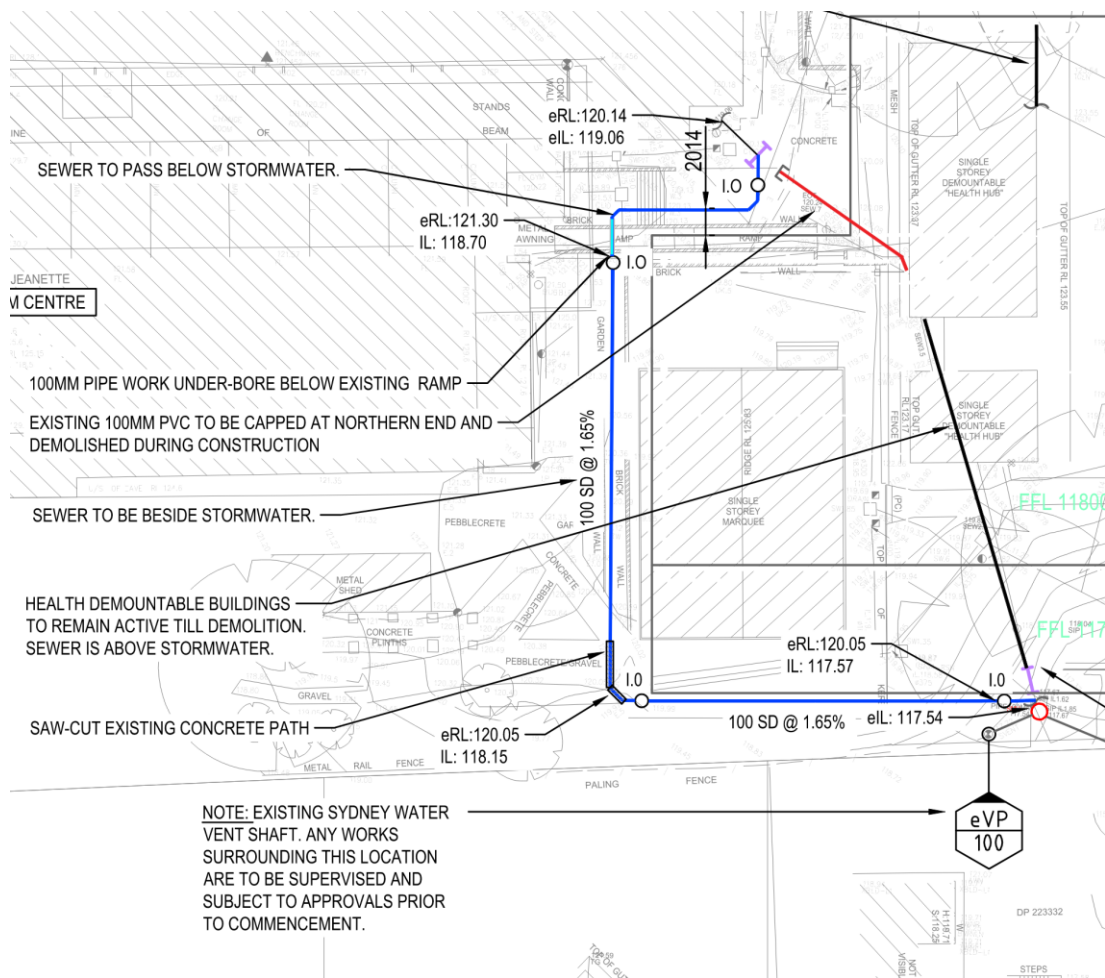
Pymble Ladies College A2 Sewerage Services Plan

Pymble Ladies' College – On site Sewer Infrastructure Map



Sewer

Existing private 100mm sanitary drainage services to be diverted around the proposed building footprint and re-connected downstream to the existing private infrastructure network at the base of the site. Redundant drainage pipework to be no longer in use in the area is to be demolished, terminated and capped off beyond the building line.



3.1.2 Authority Services

The proposed development does not impact on any authority assets including water, gas and sewer. There is a Sydney Water vent pipe adjacent to the GHP development on the property boundary which will remain in place as is.

A Building Plan Approval (BPA) assessment has been done with Sydney Water and can be found in Appendix 2 below.



4. Appendix 1 – Pressure and Flow Data



Statement of Available Pressure and Flow

John Knezevic
207 Pacific Highway
St Leonards NSW 2065

Attention: John Knezevic

Date: 12/03/2021

Pressure & Flow Application Number: 1071309
Your Pressure Inquiry Dated: 2021-02-22
Property Address: 16-46 Avon Road, Pymble NSW 2073

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Avon Road	Side of Street: South
Distance & Direction from Nearest Cross Street	255 metres West from Pymble Street
Approximate Ground Level (AHD):	144 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	121 metre head
Minimum Pressure	54 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	55
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5	54
	10	38
	15	10
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5	53
	10	33
Maximum Permissible Flow	15	4

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au



5. Appendix 2 – Building Plan Approval



Building plan assessment application

Application number: 1158809
Property address: 16-46 Avon Rd, Pymble 2073
Lot details: Lot 1, Deposited Plan 69541

07/06/2021

Dear Amie Patty

Your building plan assessment application has been

APPROVED

This Approval is provided subject to the Conditions and Important Information issued to you by Sydney Water, which you are taken to have accepted by using the approval.

This Approval is based on the information you provided to us through Sydney Water Tap in.

If any of the information you have provided is incorrect or incomplete, Sydney Water may revoke this Approval.

This approval is valid until 07/06/2022 (one year).

ANY QUESTIONS?

Email us
swtapin@sydneywater.com.au

Call us
1300 082 746

STRUCTURES

The structures and information you supplied are displayed below.

Structure(s) that will not impact Sydney Water infrastructure

Structure 1	School Building	81.0 m x 50.0 m x 0.9 m
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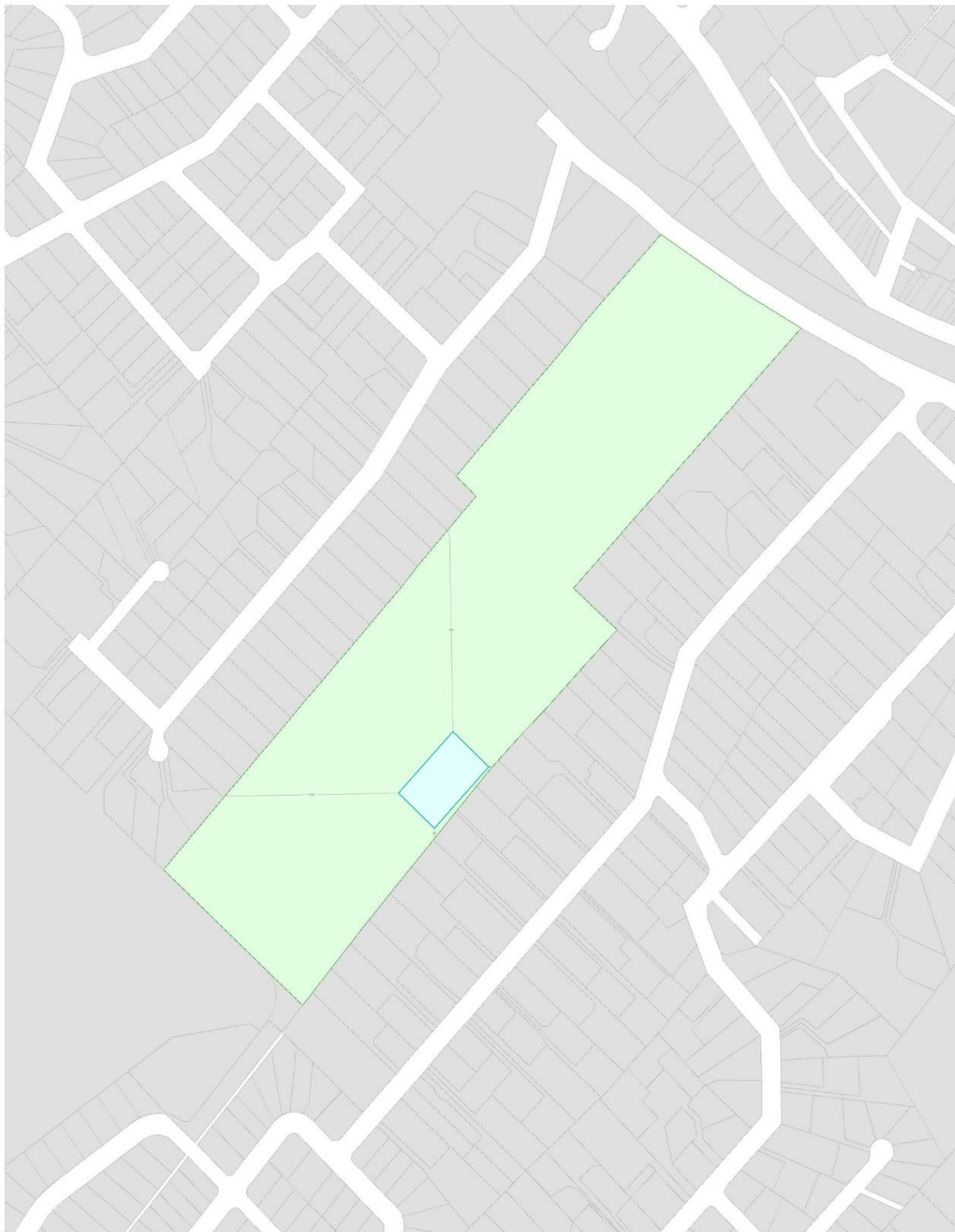
Structure 1 of 1: School Building

Application number: 1158809

Property address: 16-46 Avon Rd, Pymble 2073

Lot details: Lot 1, Deposited Plan 69541

This structure will not impact Sydney Water infrastructure.





6. Appendix 3 – Fire Hydrant System Memo



Project: Pymble Ladies College – Grey House Precinct

Project No: 301350239

To: Kate Bimson

Date: 16 March 2021

From: Matt Mee

RE: Fire Hydrant System Performance Memorandum

Dear Kate,

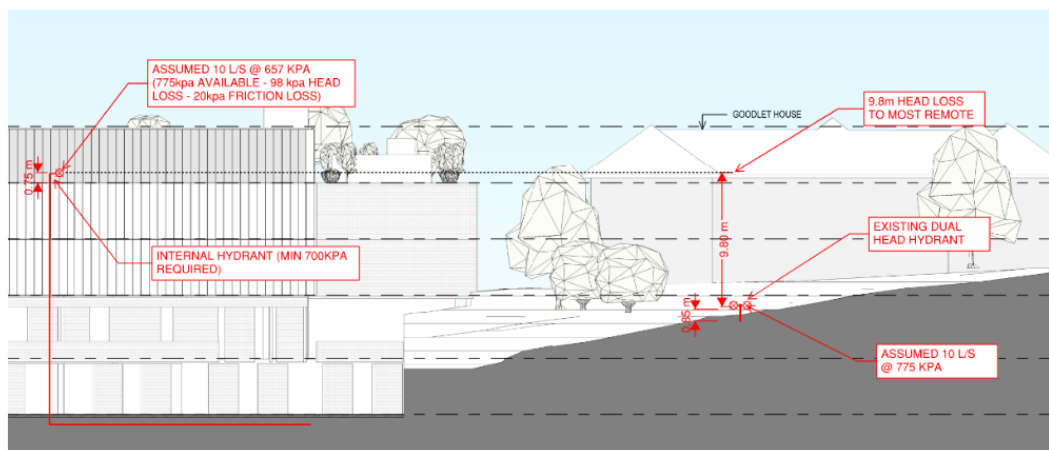
We write this memorandum to identify and report on the existing fire service infrastructure available to protect the newly proposed Pymble Ladies College (PLC) Building. Utilising the information received to date, Stantec have identified a deficiency in the existing fire hydrant diesel pump-set head duty performance.

As per the testing data below, the diesel fire hydrant pump set is delivering 10 L/s @ 775 kPa. As per 2419.1 2005, the 700 kPa is the minimum pressure required at an internal hydrant when being supplied from a fire system with a booster assembly and corresponding pump. It has not been disclosed as to which hydrant the test has taken place.

Fire Hydrant System							
Fire Hydrant		Control Data		Static Pressure	System Requirements		
Hydrant Position		NOZZLE SIZE	Flow Rate (L/Sec)	Discharge Pressure	Pressure (kPa)	Flow (L/S)	Pressure (kPa)
			5.00	850	850	10	700
			10.0	775			
			15.0	675			
Pump Details							
Pump Mfg		Kw		Engine/Driver:			
Model		Impeller Size		Serial:			
Pump Duty		L/S @		M/h			

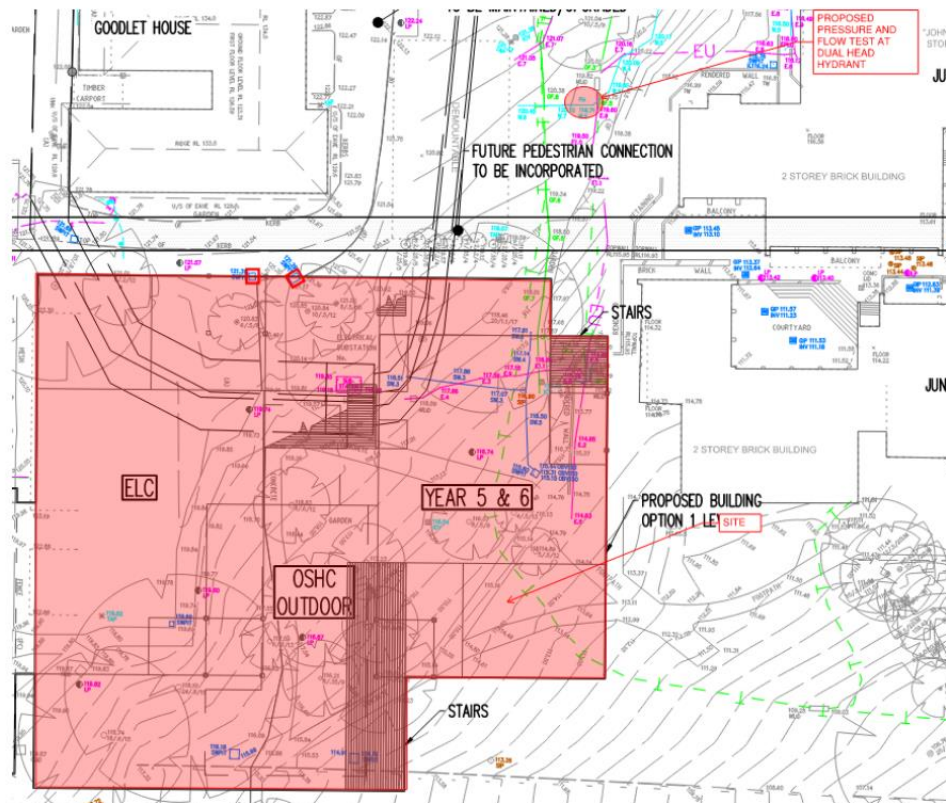
Hydrant Test Data

The proposed Grey House Precinct will comprise of multiple storeys above ground in the order of 8-10m. As a result of this, the existing fire hydrant pump-set will not provide sufficient pressure to achieve the minimum requirement at the top most hydrant (700kPa).



Head Loss due to required system rise

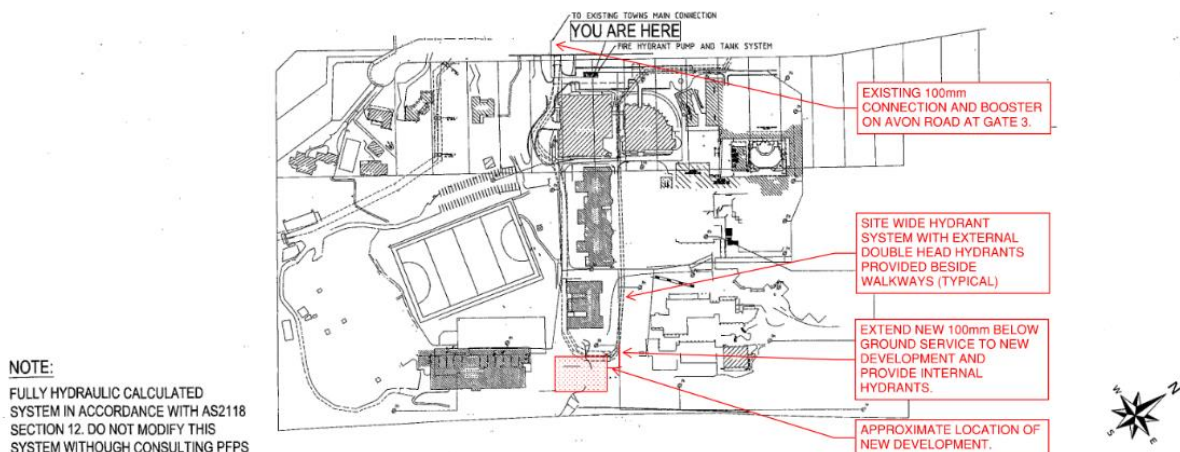
Stantec recommends that an on-site pressure and flow test is undertaken at the closest available dual head hydrant to the Grey House precinct. See proposed test location below. The results from this test will enable Stantec to determine the duty required of the existing fire hydrant pump-set to adequately supply the Grey House Precinct project.



Proposed Test location

As the Grey House precinct is at the most hydraulic disadvantaged location on the site, Stantec anticipate that by increasing the capability of the existing pump-set, this will allow for future provisioning capacity for the planned project located between the Grey House Precinct and the hydrant booster set located on Avon Road. For reference, please see below location marked on the existing hydrant block plan.

FIRE HYDRANT SYSTEM BLOCK PLAN



IN CASE OF EMERGENCY CALL '000' TO ENSURE FIRE BRIGADE RESPONSE

Please confirm if you would like us to pursue the above further. Stantec recommend using the incumbent contractors to carry out the investigation.

Do not hesitate to get in touch should you wish to discuss any details and technicalities further.

Yours sincerely

Stantec Australia Pty Ltd



Matt Mee
Hydraulic Project Engineer

Design with
community in mind

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207 Pacific Highway
St Leonards NSW 2065
Tel +61 2 8484 7000

For more information please visit
www.stantec.com

