

# Building Services Infrastructure Report

## SINSW Ryde Secondary College Development

5 Malvina Street  
Ryde Park 2112

**Client:**

Lipman Pty Ltd  
Level 6, 66 Berry Street  
North Sydney NSW 2060

**Project Number:**

NP753535

**File:**

NP753535 Building Services Infrastructure Report



**Author:** RW/ AR

**Published:** 28/08/22

**Document Revision:** B

**Intrax Consulting Engineers Pty Ltd**

ABN: 31 106 481 252

**Sydney CBD Office**

Suite 13.02, Level 13, 44 Market  
Street,  
Sydney NSW 2000

p: 02 8355 1250

w: [www.intrax.com.au](http://www.intrax.com.au)

## Table of Contents

<b>1</b>	<b>Executive Summary</b> .....	<b>4</b>
1.1	Infrastructure Summary .....	4
1.2	Limitation Of Review .....	5
<b>2</b>	<b>Introduction</b> .....	<b>6</b>
2.1	Introduction .....	6
2.2	Purpose of this Report.....	6
2.3	Briefing Documents .....	6
2.4	Project Description.....	6
2.5	Proposed Upgrades .....	7
2.6	National Construction Code Classifications .....	8
<b>3</b>	<b>Electrical Services</b> .....	<b>9</b>
3.1	Electrical Services Generally .....	9
3.2	Electrical Infrastructure.....	9
<b>4</b>	<b>Communications Services</b> .....	<b>11</b>
4.1	Communications Services Generally.....	11
4.2	Communications Infrastructure .....	11
<b>5</b>	<b>Sanitary Drainage Services</b> .....	<b>13</b>
5.1	Sanitary Drainage Services Generally .....	13
5.2	Authority Infrastructure.....	13
5.3	Sanitary Drainage Requirements.....	13
5.4	Anticipated Works .....	13
<b>6</b>	<b>Potable Cold Water Services</b> .....	<b>14</b>
6.1	Potable Water Services Generally .....	14
6.2	Authority Infrastructure.....	14
6.3	Potable Cold Water Requirements .....	14
6.4	Fire Services Cold Water Requirements .....	14
6.5	Anticipated Works .....	14
<b>7</b>	<b>Natural Gas Services</b> .....	<b>15</b>
7.1	Natural Gas Services Generally .....	15
7.2	Authority Infrastructure.....	15
7.3	Natural Gas Requirements.....	15
7.4	Anticipated Works .....	15
<b>8</b>	<b>Appendix</b> .....	<b>16</b>
8.1	Proposed Electrical & Communications Infrastructure Works .....	16
8.2	Sydney Water Corporation Mains Diagram.....	17
8.3	Sydney Water Corporation Sewer Service Diagram.....	18
8.4	Existing Fire Hydrant Layout .....	19

**Confidentiality**

All documents are subject to the 'Intrax Terms and Conditions' and 'Intrax Terms and Conditions -NAC' documents. These documents are available on our website for your perusal.

**Conditions of Use**

This report is not intended for use by any other person or third party other than the named client.

**Copyright**

©2022 Intrax Consulting Engineers Pty Ltd (ABN 31 106 481 252).

This document has been produced expressly for the client. The 'client' is defined as the person or persons named in this report/proposal or the purchaser of the services.

No part of this report/proposal including the whole of same shall be used for any other purpose nor by any third party without the prior written consent of Intrax Consulting Engineers Pty Ltd.

Document Revision History

Date	Rev	Author	Reviewed by	Approved by	Comments
25/08/2022	A	Rod Ware Alexander Rodriguez	Brett Lipscombe	Brett Lipscombe	First Issue
29/08/2022	B	Rod Ware Alexander Rodriguez	Brett Lipscombe	Brett Lipscombe	Second Issue

# 1 Executive Summary







This Building Services Infrastructure Report outlines a review of the existing Authority Infrastructure that may be available to service the proposed SINSW development site at 5 Malvina Street, Ryde Park.

The information contained herein is of a preliminary nature as the actual connection loads and locations are not yet finalised.

Notwithstanding that there are some significant Authority issues that have been identified which will need to be dealt with as the planning develops to ensure that an integrated strategy can be achieved across the site.

## 1.1 Infrastructure Summary

A summary of our preliminary infrastructure review for the proposed development is as follows;

Service	Assessment	Comment
<b>Electrical Supply</b>		The school appears to currently have a 250A/ph supply from an on-site kiosk substation. It is understood that this existing substation is being decommissioned and replaced with a substation with a subsequent supply increase to 667A/ph as part of a separate scope of works. The calculated maximum demand for the proposed new development is 177A/ph. It is anticipated there will be adequate electrical supply available following the substation upgrade to accommodate this new development. Electrical infrastructure across the site will likely require modification for cable reticulation.
<b>Communications</b>		The existing on-site communications network will be extended to accommodate the new building. There appears to be adequate space within the communications room to run additional cables to the new building.
<b>Sewer Drainage</b>		The school has an existing Sewer connection to the Sydney Water Corporation 450mm sewer main in the south-west corner of the site. This will remain as installed and likely has capacity for the proposed additions.  New sewer drainage connections for the proposed development will connect into existing private drainage systems on site. No new Authority connection is required.
<b>Potable Cold Water</b>		The school has an existing Cold Water connection to the 100mm SWC water main in Malvina Street. This connection provides an 80mm service into the school which includes a meter and backflow set at the front boundary. This connection has capacity for the proposed development.  All new services required for the proposed development will connect to existing pipework within the property. No new Authority connection is required.
<b>Natural Gas Service</b>		The school has an existing Gas connection to the 50mm Nylon Jemena Natural Gas main (210kPa) in Malvina Street with a regulator/meter set at the front boundary.  It is noted that natural gas will not be utilised in the proposed building. Therefore, there are no changes to the existing system.
<b>Fire Hydrant</b>		The school has an existing Fire Hydrant connection to the 100mm SWC water main in Malvina Street. This connection provides a 100mm service into the school which includes a fire hydrant booster valve assembly at the



		<p>front boundary. This connection has capacity for the proposed development.</p> <p>All new services required for the proposed development will connect to existing pipework within the property. No new Authority connection is required.</p>
--	--	---

Infrastructure Services have been assessed as follows;

- Infrastructure connection is readily available.
- Infrastructure connection requires minor adjustment of existing services.
- Infrastructure connection requires significant amplification or diversion of existing services.

## 1.2 Limitation Of Review

Review provided by Intrax Consulting Engineers Pty Ltd as presented in this report contains the following general limitations;

- The information contained herein is of a generic nature as the actual connection loads and connection locations are not yet able to be finalised due to the preliminary nature of planning for this site.
- The program allowed is not adequate to undertake detailed investigations with Authorities, as such the information provided will be limited to high level estimation infrastructure capacity based upon assumptions which are not yet able to be validated by Authority correspondence.

## 2 Introduction

### 2.1 Introduction

Intrax Consulting Engineers Pty Ltd have been engaged by Lipman Pty Ltd to provide a desktop Building Services Infrastructure Report for the proposed SINSW development site at 5 Malvina Street, Ryde Park. Specifically, this report will include reference to the following Authority infrastructure;

- Power Supply
- Communications
- Sanitary Drainage
- Potable Cold Water
- Natural Gas
- Fire Hydrant

The aim of this review is to provide a high level understanding of the existing building services infrastructure, with a view to identifying the potential capacity of such infrastructure to support further development.

### 2.2 Purpose of this Report

This report forms part of an environmental assessment under Part 5 of the *Environmental Planning and Assessment Act, 1979* for proposed upgrades to Ryde Secondary College. The proposed works are deemed permitted without consent by Section 3.37 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* which provides that:

- (1) *Development for any of the following purposes may be carried out by or on behalf of a public authority without development consent on land within the boundaries of an existing school –*
  - (a) *Construction, operation or maintenance, more than 5 metres from any property boundary with land in a residential zone and more than 1 metre from any property boundary with land in any other zone, of –*
    - (ii) *a portable classroom (including a modular or prefabricated classroom that is not more than 2 storeys high*
  - (b) *Minor alterations and additions*
  - (c) *Demolition of structures or buildings*

### 2.3 Briefing Documents

The building services engineering elements considered in this report have taken into account the following preliminary documentation and investigations;

- Preliminary architectural scheme prepared by Bennett And Trimble Pty Ltd,
- Dial Before You Dig inquiry,
- On-Site Inspection dated 18/08/2022,
- SWC Sewer Service Diagram,
- Existing Fire Hydrant layout provided by Ryde Secondary College.

### 2.4 Project Description

Ryde Secondary College is located at 5 Malvina Street, Ryde (Lot 284 and 285 in DP752035) within the City of Ryde Local Government Area. Ryde Secondary College has approximately 1,362 students currently enrolled. An aerial photograph of the site is provided in **Image 1** below.

Existing development includes single and double storey classrooms buildings, a multipurpose hall, covered outdoor learning areas, sports courts, demountable classrooms, landscaping, pathways and hardstand areas, vehicle

circulation and carparking.

The site has frontage to Malvina Street (north-western boundary) and Forrest Road (north-eastern boundary) with low density residential development along the opposite road frontages. The site adjoins low density residential on the south-western boundary, Buffalo Creek along the southern boundary and Barton Reserve along the south-eastern boundary.



Image 1 Aerial Photograph

## 2.5 Proposed Upgrades

The scope of works subject to this environmental assessment are known as Stage 1 works in the master-planned redevelopment of Ryde Secondary College. Stage 1 works include:

- Demolition in the vicinity of the proposed pavilion;
- Two (2) storey pavilion building comprising:
  - Thirteen (13) GLS;
  - Learning commons;
  - Fitness lab;
  - Seminar spaces;
  - Staff room;
  - Store; and
  - Change rooms;
- Lift, stair and ramp access;
- Associated adjustments to the existing sports court; and
- Removable of demountable classrooms.

## 2.6 National Construction Code Classifications

The building services design for this project shall be prepared in accordance with the 2022 National Construction Code (NCC), specifically Volume One (The Building Code of Australia Class 2 to Class 9 Buildings) and Volume 3 (Plumbing Code of Australia). With respect to the NCC we understand that the buildings classifications are as follows;

Building Area	NCC Classification
Secondary School	Class 9b

- For the purposes of fire safety requirements the building has an effective height less than 25m as classified by the NCC.

### 3 Electrical Services

#### 3.1 Electrical Services Generally

Specifically, this Due Diligence Review shall cover the following services:

- Authority Infrastructure
- School Low Voltage Infrastructure

#### 3.2 Electrical Infrastructure

Ausgrid are the electricity supply authority in terms of high voltage power infrastructure reticulation throughout the locality of the proposed development site.

Intrax Projects has undergone an early electrical maximum demand calculation to ascertain approximate total electrical load of the proposed new building. The calculated electrical maximum demand for the site based on AS/NZS 3000:2018 is calculated to be 177A/ph (122kVA). The school currently has a kiosk substation located within the site with a 250A/ph supply to the existing school main switchboard.

It is understood that existing substation is being decommissioned and replaced with a new 1000kVA with the school electrical supply being upgraded to 667A/ph under a separate scope of works. It is anticipated that the electrical supply upgrade will be sufficient to accommodate the electrical demand for the proposed new building.



Figure 1 Existing Substation with New Main Switchboard



Figure 2 New Main Switchboard

It is anticipated that the low voltage electrical infrastructure around the existing school will require modification to accommodate the electrical supply to the new building. Refer to Appendices for proposed electrical infrastructure scope.

## 4 Communications Services

### 4.1 Communications Services Generally

Specifically, this Due Diligence Review shall cover the following services:

- On site communications services

### 4.2 Communications Infrastructure

Our assessment of the communications infrastructure indicates that there is sufficient telecommunications infrastructure on site to provide fibre communications services to the new building.

Street fibre appears to be available within the school and is anticipated to be sufficient for the proposed development. Existing on site communications reticulation infrastructure is anticipated to require modifications to accommodate communications services to the proposed new building. Refer to Appendices for proposed communication infrastructure scope of works.

Input and coordination from SINSW Information & Communications Technology (ICT) department is required to develop the scope of works.



Figure 3 – Existing Communications Rack with Spare Capacity





**Figure 3 – Existing Street Fibre Incomer**



## 5 Sanitary Drainage Services

### 5.1 Sanitary Drainage Services Generally

Specifically, this section of the Due Diligence Review shall cover the following services;

- Sanitary Drainage

### 5.2 Authority Infrastructure

Sydney Water Corporation (SWC) are the Authority who provide sanitary drainage infrastructure in the locality of the development site. Currently there is one SWC sewer mains located within the development site, described as follows:

- **Robinson Street (450)** – an existing 450mm reinforced concrete sewer main runs along Robinson Street, parallel with the sites southern boundary and falling towards the east.

### 5.3 Sanitary Drainage Requirements

The proposed development will provide facilities in accordance with the Development Description as detailed herein.

The load of the proposed development has been calculated using fixture quantities nominated on the Architectural Plans provided by Lipman.

The proposed development we have estimated load of 62 Fixture Units (FU), nominally requiring a 100mm sewer connection to existing private services within the site boundary.

### 5.4 Anticipated Works

The proposed development will not require any new connection to Authority mains.

Sydney Water Corporation (SWC) will determine the available capacity of their network and the suitability of existing mains for connection of this development via the Section 73 application process. It is not anticipated that SWC will require any addition works for this project.

## 6 Potable Cold Water Services

### 6.1 Potable Water Services Generally

Specifically, this section of the Due Diligence Review shall cover the following services;

- Potable Cold Water Supply
- Fire Services Water Supply

### 6.2 Authority Infrastructure

Sydney Water Corporation (SWC) are the Authority who provide potable cold water infrastructure in the locality of the development site. Currently there is one water main located within close proximity to the development site, described as follows;

- **Malvina Street (100)** – an existing 100mm CICL water main runs along Malvina Street. The main is accessible for the entire length of the sites north-western boundary.

### 6.3 Potable Cold Water Requirements

The proposed development will provide facilities in accordance with the Development Description as detailed herein.

The load of the proposed development has been calculated using fixture quantities nominated on the Architectural Plans provided by Lipman.

The total diversified flow rate has been based on 33 Loading Units (LU) requiring 0.49L/s. Due to the nature of the building, Intrax proposed an additional diversity factor of 75% to be used. Thus, the design flow rate would be 0.36L/s, nominally requiring an 20mm connection. This will be connected to existing services within the site boundary.

### 6.4 Fire Services Cold Water Requirements

The proposed development will provide facilities in accordance with the Development Description as detailed herein.

The final design of fire services requirements will be based upon actual building uses and fire compartment areas. In terms of a preliminary estimate we have based our fire service water supply requirements on the following system allowances;

- The building being less than 25m in height.
- A worst case fire hydrant system fire compartment up to 10,000m<sup>2</sup>, requiring a design flow of 20L/s.

The total fire hydrant system flow rate has been estimated at 20L/s. This is equal to the current design flow for the existing Fire Hydrant system on site.

It would be reasonable to assume that this flow rate can be supplied by the 100mm water mains located within Malvina Street. New FH's will be provided to ensure coverage of the proposed building.

### 6.5 Anticipated Works

The proposed development will not require any new connection to Authority mains.

Sydney Water Corporation (SWC) will determine the available capacity of their network and the suitability of existing mains for connection of this development via the Section 73 application process. It is not anticipated that SWC will require any addition works for this project.

## 7 Natural Gas Services

### 7.1 Natural Gas Services Generally

Specifically, this section of the Due Diligence Review shall cover the following services;

- Natural Gas

### 7.2 Authority Infrastructure

Jemena are the Authority who provide natural gas infrastructure in the locality of the development site. Currently there is one natural gas main located within close proximity to the development site, described as follows;

- **Malvina Street (50)** – an existing 50mm nylon 210kPa gas main runs along Malvina Street, parallel with the sites north-western boundary. The main is accessible for the entire length of the sites north-western boundary.

### 7.3 Natural Gas Requirements

The proposed development will provide facilities in accordance with the Development Description as detailed herein.

It is noted that Natural Gas will not be connected to the new building.

### 7.4 Anticipated Works

The proposed development will not require any new connection to Authority mains.



## 8.2 Sydney Water Corporation Mains Diagram

