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# SSD – 10371

## Trinity Grammar School, Summer Hill Campus - The Renewal Project

Infrastructure Management Plan

Hydraulic, Electrical and Communication Services

**ACOR Project No.: SY180898**

**Revision No.: 04**

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## REVISIONS

Revision	Date	Purpose	Prepared By	Approved By
01	29/10/2019	Preliminary Issue	P. Kniest/ S. McCartney	W. Nel
02	27/11/2019	For Information	P. Kniest/ S. McCartney	W. Nel
03	05/12/2019	Final Issue	P. Kniest / S. McCartney	W. Nel / R. Edwards
04	04/02/20	SEARS Issue	P. Kniest / S. McCartney	W. Nel / R. Edwards

Review Panel	
Division/Office	Name
Building Services / Sydney	R. Edwards

Unless otherwise advised, the parties who have undertaken the Review and Endorsement confirm that the information contained in this document adequately describes the conditions of the site located at corner of Seaview St, Prospect Rd and Victoria St, Summer Hill, NSW.

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# 1 Project Overview

## 1.1 Aims and Objectives

The following objectives have been identified as forming the basis of the proposed development of the existing educational establishment:

- Create an education precinct to create a high-quality teaching and learning environment for staff and students;
- Establish additional floor space to increase availability and efficiency of teaching functions for Trinity Grammar School Summer Hill Campus;
- Improve site access, car parking and surrounding traffic functions in the precinct;
- Strengthen pedestrian linkages throughout the campus;
- Enhance the overall campus aesthetic, upgrade the public domain to create visually interesting transitions through the campus, and promote the heritage elements of the campus;
- Ensure minimal environmental impact;
- Maintain the significant green fields assets and provide opportunities for new outdoor environments;
- Ensure development is compatible with surrounding development and the local context; and
- Create a safe environment to support and nurture the boy's growth.

The site and proposed design are considered to meet the objectives of the project as it allows for development on land that has been previously used for educational purposes.

## 1.2 Description of the Proposal

The proposed development seeks detailed built form approval of new teaching and educational facilities, as detailed below:

- New building at the heart of the Campus to accommodate contemporary, flexible teaching and learning spaces;
- Improve movement and flow for students, with better east-west and north-south links across the school grounds and between levels, including more accessible connections between the Junior School, ovals and car park, and providing strong visual and physical connections;
- Renewal and Refurbishment of existing teaching and learning facilities;
- Reconfiguration and connection of underground car park improve traffic flow for the school drop-off and pick-up zone and improve the safety of boys and visitors who enter the school grounds as pedestrians from Victoria Street;
- New multipurpose pavilion between Ovals 1 and 3 containing a championship size basketball court with practice overlay, spectator seating and amenities;
- Demolition of school-owned residences at 46, 48, 50 and 52 Seaview Street, improving the existing service, maintenance and delivery facilities; and
- Improvement and extension to Junior School outdoor teaching, assembly and recreational area.



## **2 Hydraulic Infrastructure**

### **2.1 Overview**

Existing Sydney Water authority services are present around the Trinity Grammar School site, including sewer drainage connection points and potable water connection points. There are also connections points to Jemena authority natural gas main supplies.

The existing sewer drainage connections points and reticulated pipelines are of adequate size to accommodate the increase of load, and do not require augmentation.

The existing authority potable water supply is of adequate size to accommodate the increase of load, however the reticulated pipelines within the site will require augmentation during the construction phase of the project.

It is envisaged the existing gas authority (Jemena) mains have sufficient capacity for the additional load, however the existing metering equipment, and reticulated pipelines will more likely than not, require augmentation.

### **2.2 Staging Strategy**

Strategies for protection of utility and school's infrastructure will need to be undertaken during the construction stage of the building to ensure that disruption to the operation of the education campus is minimised.

The existing site infrastructure for potable water supply pipeline will require tracing prior to site works to locate and confirm the impact of its current location on the building.

Connections to the existing sewer drainage pipeline shall be done out of hours to minimise disruption and possible shutdowns to the School's sewer drainage network.

All works regarding to the existing natural gas pipeline shall be confirmed once the total load has been determined. It is envisaged the entire pipeline supplying the school's canteen shall be augmented during school holidays, to minimise the impact on school operations.

### **2.3 Existing Sewer Drainage**

Existing Sydney Water authority services are present around the Trinity Grammar School site. The site has two DN150mm, Vitrified Clay Pipe (VCP) authority connection points, located on Prospect Rd and Seaview St.

The pipelines then continue within the site, to serve the existing building's drainage requirements, by way of gravity drainage.

### **2.4 Existing Potable Water**

Existing Sydney Water authority services are present around the Trinity Grammar School site. Authority potable water is available in Prospect Rd, Seaview Street and Victoria Street

- Prospect Rd has a DN100mm diameter Cast Iron Cement Lined (CICL) main
- Seaview St has a DN150mm Ductile Iron Cement Lined (DICL) main, and two DN500mm diameter CICL mains
- Victoria St has a DN375mm diameter CICL main and a DN150mm diameter CICL main

The site has two authority connections points, one DN100mm connection on Victoria St, and one DN50mm connection point, located on Prospect Rd. These two connections will be retained.

## **2.5 Existing Natural Gas**

Existing Jemena authority natural gas mains are available in Prospect Rd, Seaview St and Victoria Street.

- Seaview St is served by a DN50mm nylon pipeline with 210 kPa pressure
- Prospect Rd is served by a DN75mm nylon pipeline with 210 kPa pressure
- Victoria St is served by a DN50mm nylon pipeline with 210 kPa pressure

The site has three gas meters, two located on Prospect Rd, and one located on Seaview St. The augmentation of the internal gas pipelines is subject to the additional load to the service.

## **2.6 Augmentation Requirements**

### **2.6.1 Sewer Drainage**

The existing sewer drainage connections points and site infrastructure reticulated pipelines are of adequate size to accommodate the increase of load, and do not require augmentation. It is envisaged the existing VCP is reaching the end of its service life, and as such, the sewer drainage pipeline shall be upgraded to new, unplasticised Polyvinyl Chloride (uPVC) pipework. Alternatively, the existing pipework could be relined, should the integrity of the pipework withstand this approach.

### **2.6.2 Potable Water**

The existing DN100mm connection point located on Victoria St shall remain. The reticulated pipeline will remain in-situ during the construction of the new building. During the various stages of the build, branch lines shall be constructed and capped off, to allow connection to at later stages of the school's lifecycle. It is proposed that the entire school's potable supply shall be supplied off a ring main type arrangement, utilising the capped off branches that were installed during earlier stages of the project.

### **2.6.3 Natural Gas**

The requirements for gas as a fuel source are still unknown, however the School has advised that natural gas is the preferred fuel source for mechanical heating. Based on information, it is envisaged that the existing gas meter and pipeline will require augmentation. It is unknown if the existing authority pipeline has sufficient capacity for the increase of load, and as such, the augmentation works may also apply to the authority pipelines.

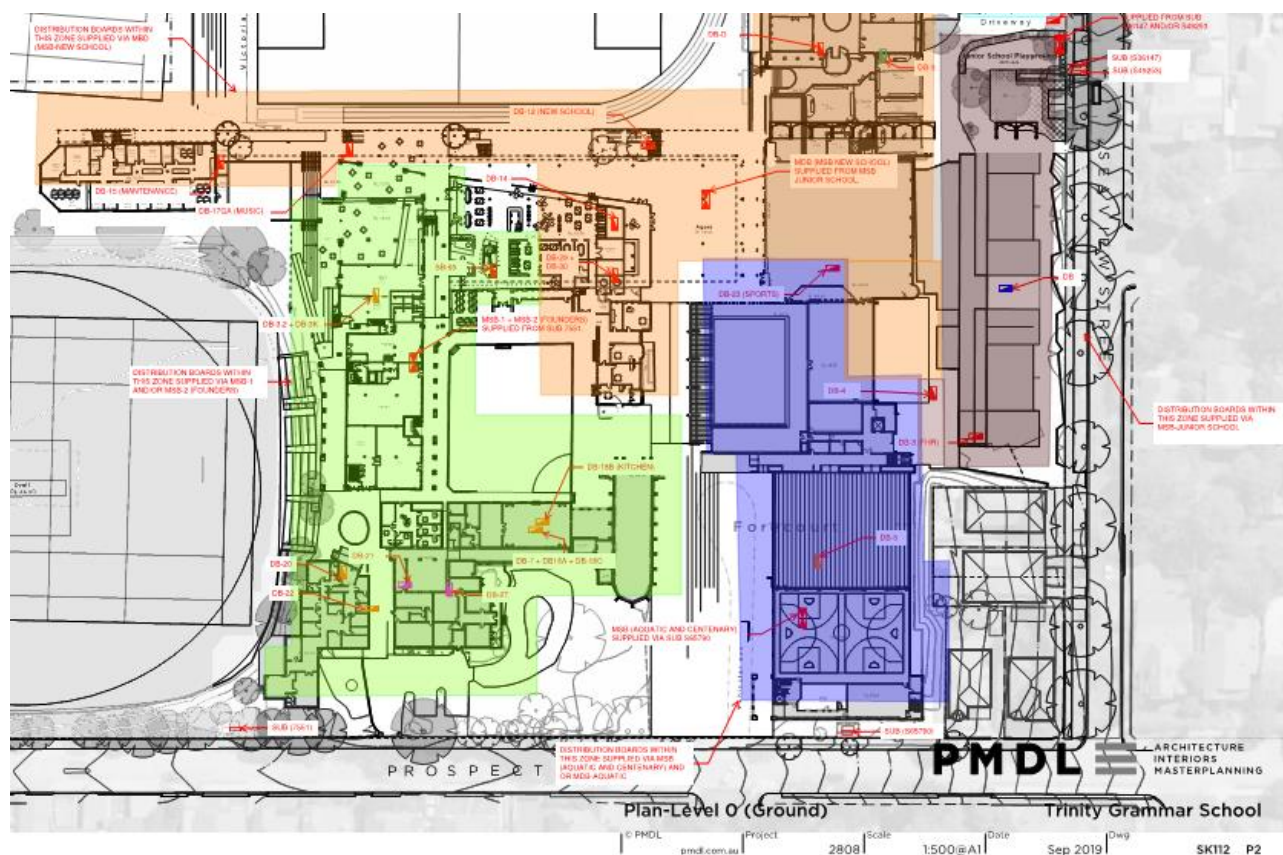
## 3 Electrical Infrastructure

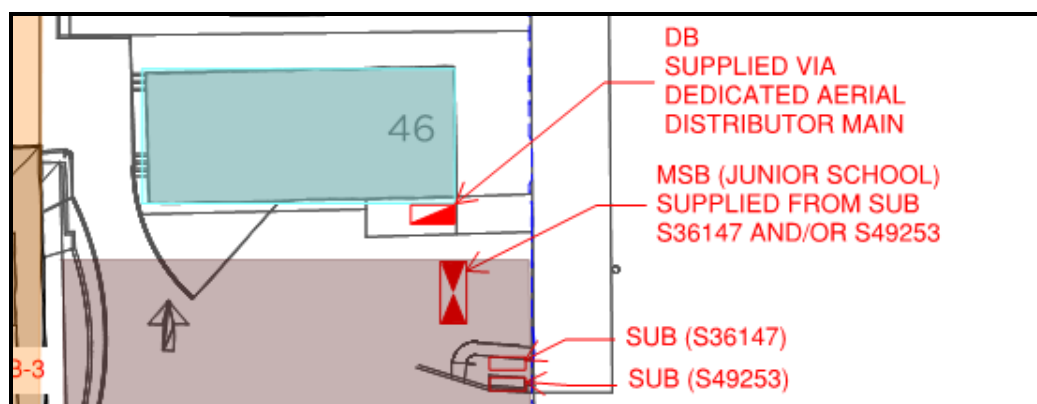
### 3.1 Existing

The electrical distributor for the area is Ausgrid. The school is served by a number of pad mounted kiosk substations:

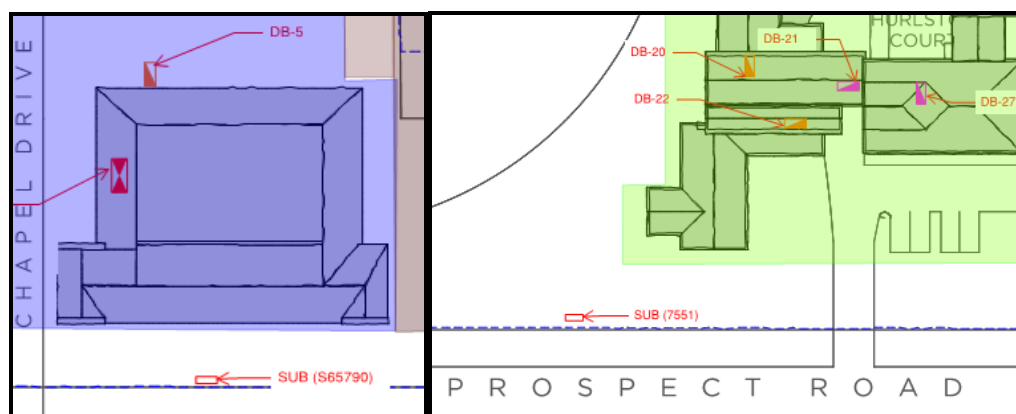
- Seaview Street
  - Substation No. S49253 - Distributor Feeder No. 1 services the adjacent Main Switchboard
  - Substation No. S36147
- Prospect Road
  - Substation No. S65790
  - Substation No. 7551
- Refer Electrical drawings for site plan

### New concept Plan with existing electrical Infrastructure





**Figure 1: Seaview Street SUB S49253 & S36147**



**Figure 2: Prospect Road SUB S65790 and 7551**

The high voltage supply to the kiosk substations is via underground cables using specifically installed underground conduits along Seaview Street and Prospect Road

The kiosk substations in turn supplies the school low voltage main switchboards in various locations on site.

Based on the maximum demand meter readings provided with the Energy Australia energy invoices, each substation is underutilised by more than 50%.

The key consideration for Electrical Services is the matter of power supply adequacy. This demand is a function of both building area and building type. In summary, a final site maximum demand is:

- Existing Retained                      267 kVA
- Existing Refurbished                  757 kVA
- New Buildings                          3020 kVA
- TOTAL                                      4,044 kVA

Whilst it is likely that this total is relatively conservative, it is unlikely that there will be sufficient capacity within the existing site substation infrastructure to accommodate for these loads and new central mechanical plant.

It is highly likely that additional – or replacement - substation infrastructure will be required. Given the present underutilisation of existing substations, there will likely be a strong preference from Ausgrid for the school to use all the existing capacity before additional is provided.

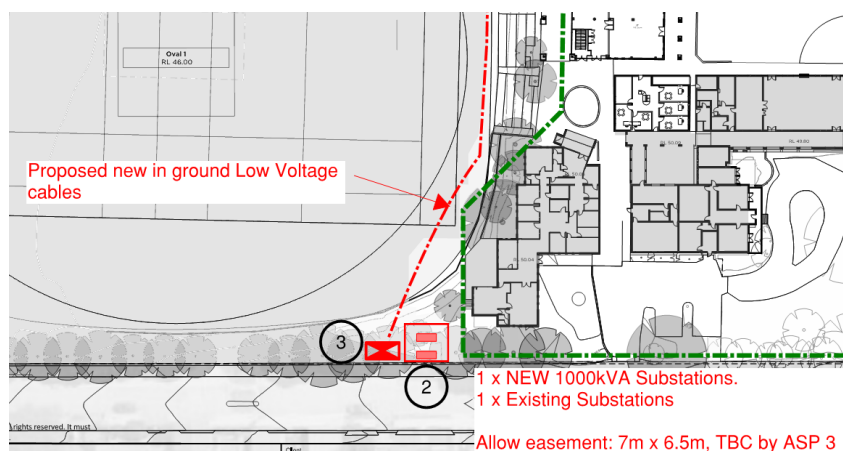
This might present some staging challenges and the strategy adopted for power infrastructure across the campus is also contingent upon the approach for mechanical services.

With a “central” plant system adopted for mechanical services, a large portion of electrical load will be concentrated in a single location. A new substation would most likely be required adjacent to existing sub No 7551.

From access to Ausgrid databases, it is highly unlikely that there will be a need to upgrade the Ausgrid HV infrastructure to accommodate for the above predicted Trinity Grammar Masterplan loads. However, there should be an expectation that, over time, the available spare capacity on these feeders will be “consumed” elsewhere on the Ausgrid network.







Underground HV cabling will reticulate from an existing kiosk substation in 7551 to the new dedicated kiosk substation as shown on the site plan. A nominated Accredited Service Provider (ASP) Level 3 will design the pad mounted kiosk substation and high voltage cable path between the existing kiosk substation in Prospect Road and the new adjacent substation based on the Design Information Package (DiP) and Network Standards from Ausgrid.

The Electrical Distributor's main requirements for a kiosk substation to be established on site include:

- a) Dedicated easement of 5,300 x 3,300mm (excluding existing substation easement);
- b) No services and structures above/below or through the easement;
- c) Above 1:100yr flood level;
- d) No non combustible building elements within 3,000mm of the kiosk housing;
- e) No supply or exhaust openings and the like within 6,000mm of the kiosk housing.
- f) 24/7 access to the substation must be provided with parking at the frontage of the substation

The new location must be level and clear of all construction

The installation of high voltage cabling and associated works such as trenching, backfilling etc will be governed by Ausgrid Network standards for laying underground cables up to and including 11kV. No roadway trenching is envisaged hence Prospect Road will not need to be opened and as such disruption to traffic is not expected.

Backfilling of excavations shall be undertaken to restore the sub-grade to its original condition and shall be compacted as required by Ausgrid Standards. Reinstatement of the pavement will be to local Council requirements to match the existing surfaces. All works will be undertaken at a selected time and day to cause minimal disruption to the public.

### 3.4 Accredited Service Provider

The school will commission a Level 3 Accredited Service Provider to design the contestable works of the Ausgrid network, including the design of the extension / augmentation of the underground cables and conduits. All installation works on public infrastructure shall be carried out by a Level 1 Accredited Service Provider with suitable field, technical and engineering staff experienced in projects of this nature.





The copper lead-in cables terminate on the MDF frame within the Founder's building MSB room. The majority of copper services are no longer used.

The communications services consist of telephone and information technology for the transmission of voice and data. The existing services supplying the School are undergrounded and terminate within a main frame / data server room. From this main server room optical fibre and / or copper cabling are reticulated to the server room located within each individual building of the School.

## **4.2 Proposal**

The existing main data room will remain as part of the redevelopment. The main services will originate from the existing School infrastructure and will therefore not necessitate public road closures and the like.

The redevelopment communications cabling will be reticulated internally using dedicated risers and ducts specifically set aside for this purpose.

The existing communications services provided to the School do not require augmentation by the services provider beyond the property boundary.

## Appendix A - Electrical Power Augmentation



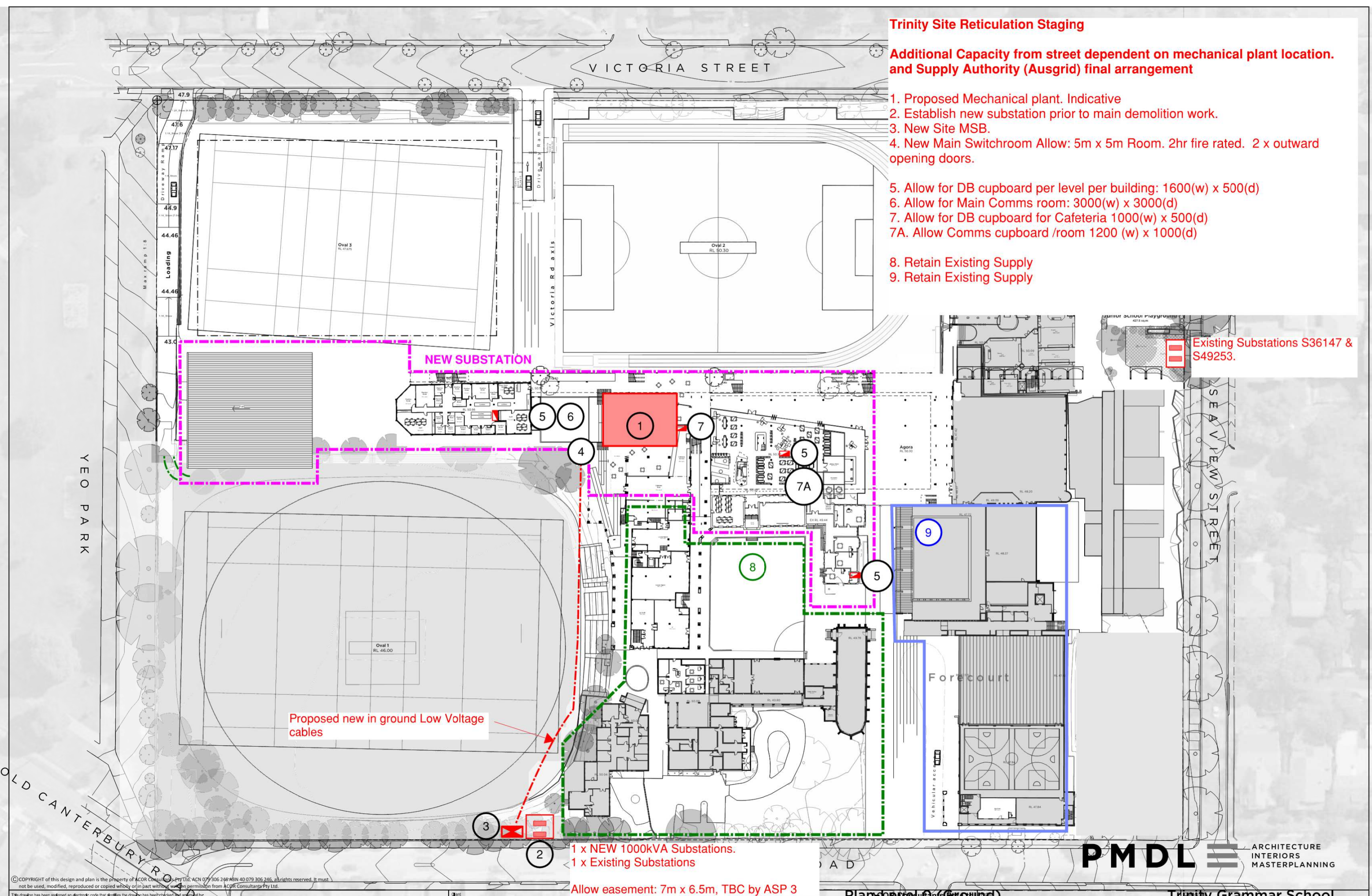


Trinity Site Reticulation Staging

Additional Capacity from street dependent on mechanical plant location and Supply Authority (Ausgrid) final arrangement

1. Proposed Mechanical plant. Indicative
2. Establish new substation prior to main demolition work.
3. New Site MSB.
4. New Main Switchroom Allow: 5m x 5m Room. 2hr fire rated. 2 x outward opening doors.
5. Allow for DB cupboard per level per building: 1600(w) x 500(d)
6. Allow for Main Comms room: 3000(w) x 3000(d)
7. Allow for DB cupboard for Cafeteria 1000(w) x 500(d)
- 7A. Allow Comms cupboard /room 1200 (w) x 1000(d)
8. Retain Existing Supply
9. Retain Existing Supply

Existing Substations S36147 & S49253.



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A		SPATIAL PLANNING	05.10.19	RE	
Issue	Description	Date	Drawn	Approved	
1					

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TRINITY GRAMMAR RENEWAL PROJECT

Trinity Grammar School  
SY180989 E\_SK112\_Level 0\_OPT 2\_A

28081 1:500@A11

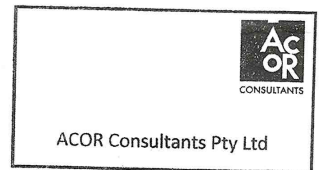
Set	Date	Scale	SK112_P2	Date
2019	OCT 19			
Designed	Project No.	Drawn	Issue	
	SY180989			



1. Relocate Main Sewer Pipes from MSB Room Founders.  CS.
2. Fibre Ties from Founders to New Campus Sewer Room  $\approx 300m$  
3. "BACKFEED" TO EXISTING SATELLITE COMMUS RACKS 

## STAGING NOTES:

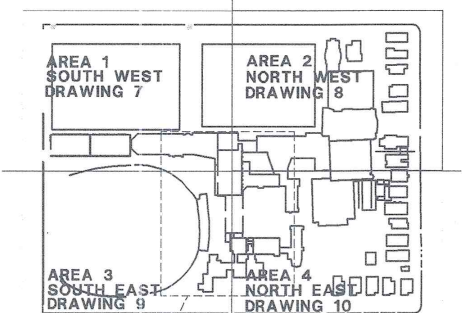
- ① ESTABLISH SITE FOR NEW CAMPUS COMMONS ROOM
- ② NEW INGROUND TIES TO EXISTING MAIN COMMONS ROOM - PERM?
- ③ NEW INGROUND/IN-BLDG OUTGOOLS TO EXISTING RACKS. ENABLE NEW.



## KEY TO SERVICES

- E— ELECTRICITY
- T— TELEPHONE
- IGT— IN GROUND TELEPHONE
- D— DATA
- S— SECURITY  
(BLUE BELDEN WIRE)
- VC— VIDEO COMMANDER

### KEY TO SITE ZONES



CENTRAL AREA DRAWING 12 5180989 190619

[illegible]

**TRINITY GRAMMAR SCHOOL  
SERVICES DRAWINGS**  
119 PROSPECT ROAD  
SUMMER HILL 2130

**TITLE**  
**SERVICES DRAWING**  
**SITE PLAN**  
**ELECTRICAL & DATA SERVICES**



**Gellard Group Pty.Ltd.**  
Gellard Clarke Jackson Architects  
A.O.M. 003 931 017  
155 Walker Street North Sydney  
P. (02) 9555 0637.  
F. (02) 9555 1191.

ORIGIN	DESIGNED	APPROVED	SCALE	DATE	SHEET No.
KD/MD	PC		1:500	03/07/98	
DRAWING NUMBER				PLOT DATE	REV
1067-02				06/07/98	1
BEFORE COMMENCING TO USE THIS IN PREFERENCE TO OTHER SCALED, CONTRACTOR MUST VERIFY ALL LEVELS AND DIMENSIONS BEFORE COMMENCEMENT OF THE WORK.					
THIS IS A P.D.W.G. DO NOT AMEND MANUALLY					



243

VICTORIA STREET

YEO PARK

SEA VIEW STREET

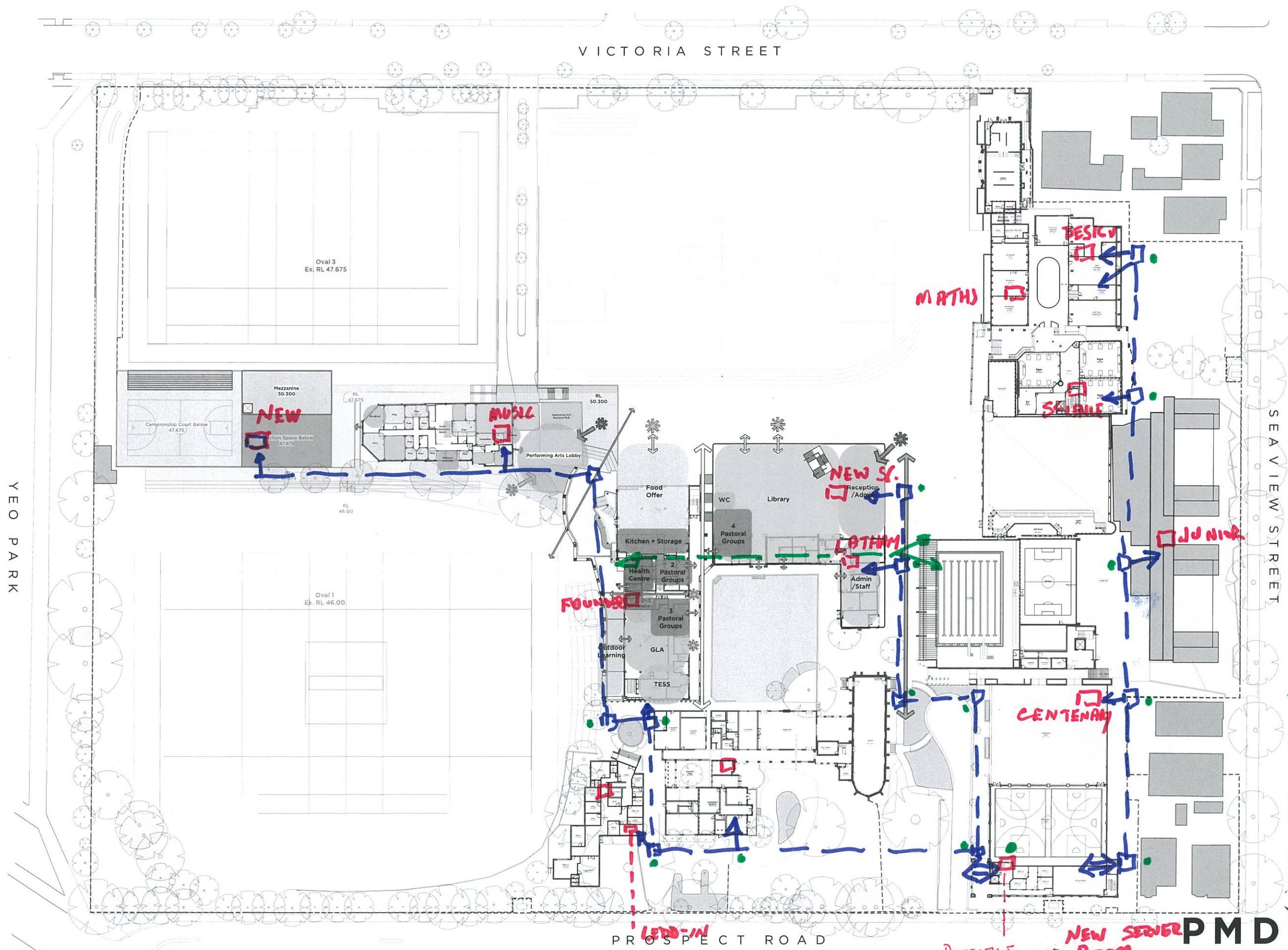
PROSPECT ROAD



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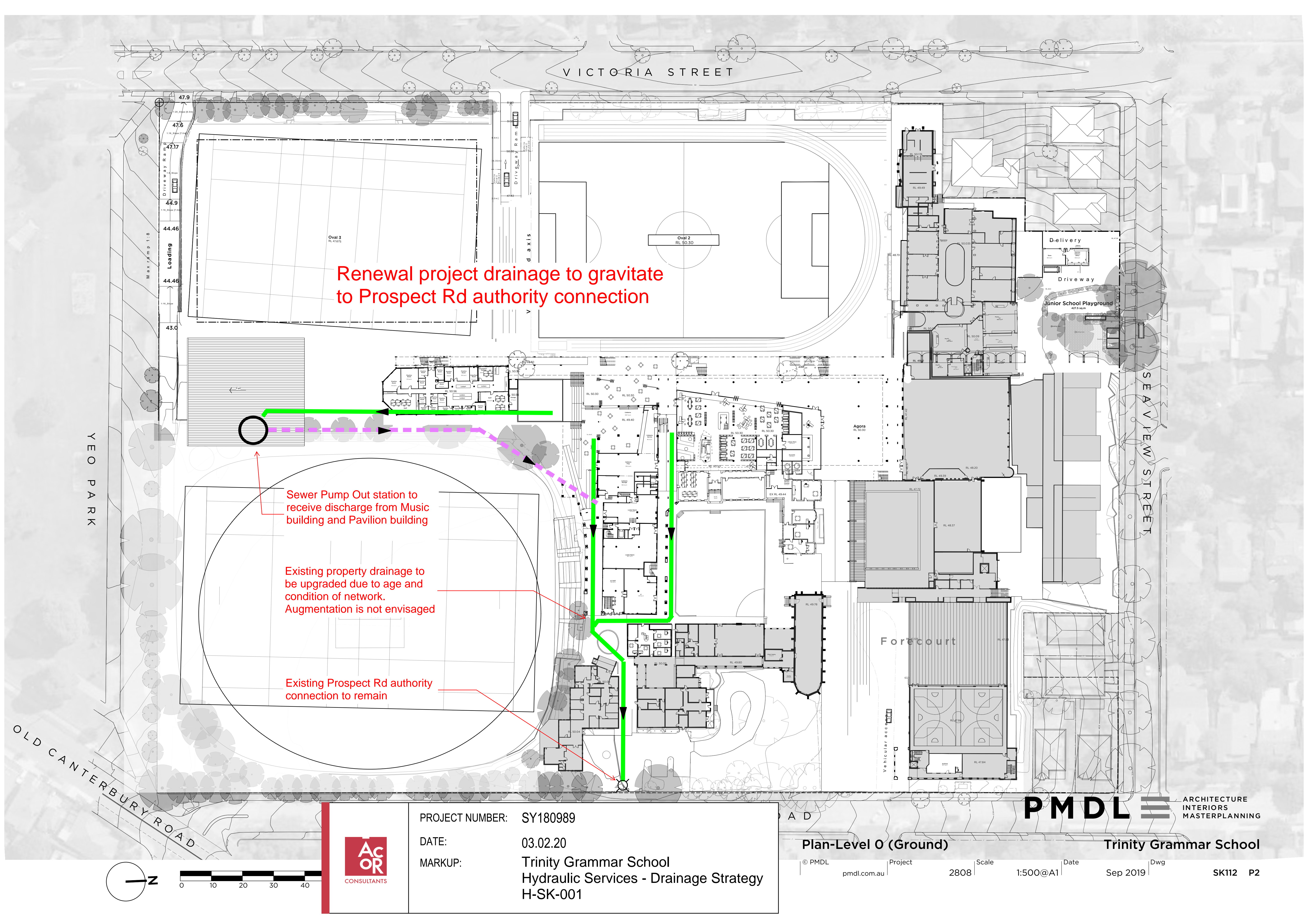
ACOR Consultants Pty Ltd

- ENABLING WORKS
- CABLE ROUTE IN GROUND (NEW)
- CABLE ROUTE PIT
- EXISTING DATA RACK (MAIN BUILDING RACK)
- EXISTING CABLE ROUTE TO BE REMOVED PRIOR TO DEMO (ENABLING WORKS)



## Appendix B - Drainage Supply Strategy





Renewal project drainage to gravitate to Prospect Rd authority connection

Sewer Pump Out station to receive discharge from Music building and Pavilion building

Existing property drainage to be upgraded due to age and condition of network. Augmentation is not envisaged

Existing Prospect Rd authority connection to remain

PROJECT NUMBER: SY180989

DATE: 03.02.20

MARKUP: Trinity Grammar School  
Hydraulic Services - Drainage Strategy  
H-SK-001



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Trinity Grammar School

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Date

Sep 2019

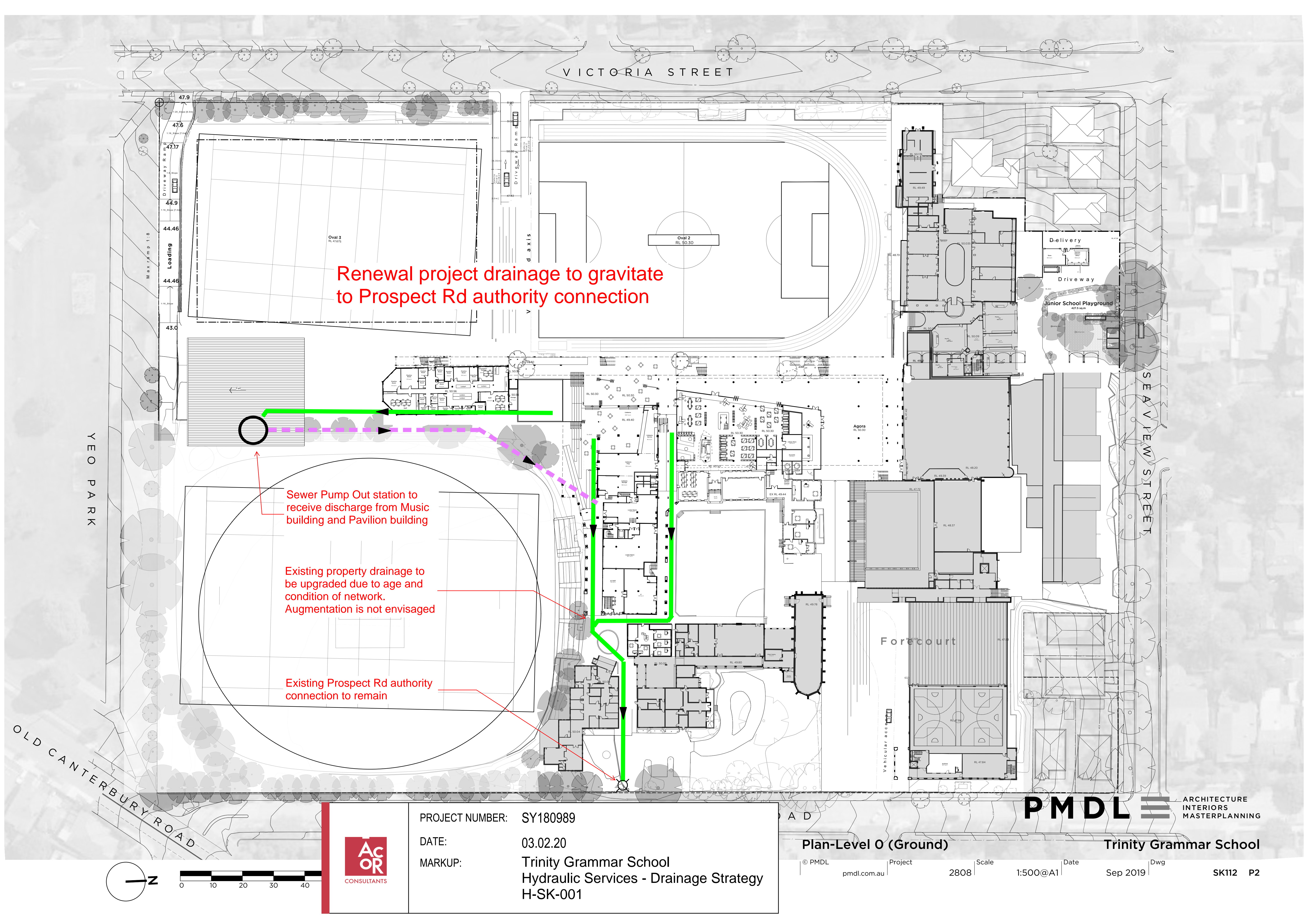
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SK112 P2



## Appendix C - Water Supply Strategy





Renewal project drainage to gravitate to Prospect Rd authority connection

Sewer Pump Out station to receive discharge from Music building and Pavilion building

Existing property drainage to be upgraded due to age and condition of network. Augmentation is not envisaged

Existing Prospect Rd authority connection to remain

PROJECT NUMBER: SY180989

DATE: 03.02.20

MARKUP: Trinity Grammar School  
Hydraulic Services - Drainage Strategy  
H-SK-001



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Sep 2019

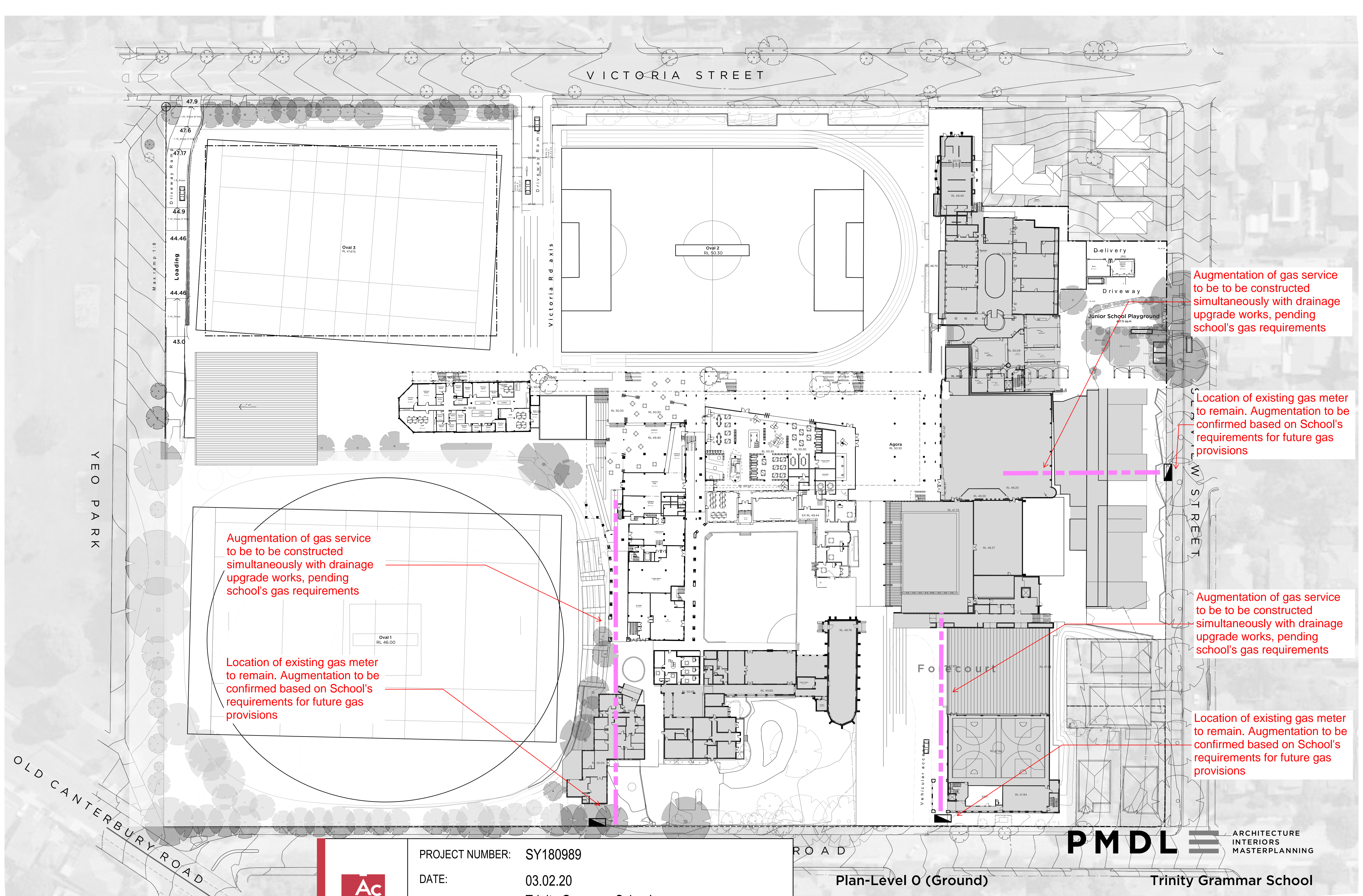
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SK112 P2



## Appendix D - Gas Supply Strategy





Augmentation of gas service to be to be constructed simultaneously with drainage upgrade works, pending school's gas requirements

Location of existing gas meter to remain. Augmentation to be confirmed based on School's requirements for future gas provisions

Augmentation of gas service to be to be constructed simultaneously with drainage upgrade works, pending school's gas requirements

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Location of existing gas meter to remain. Augmentation to be confirmed based on School's requirements for future gas provisions



PROJECT NUMBER: SY180989  
DATE: 03.02.20  
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Hydraulic Services - Gas Strategy  
H-SK-003

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Trinity Grammar School