Construction Environmental Management Plan
Carlingford West Public School & Cumberland High School

Date: 4 April 2024

Document Details

Title	Construction Environmental Management Plan
Client	School Infrastructure NSW (SI NSW)
Document Reference Number	RCo-CON-PLN-001
Principal Contractor	Roberts Co (NSW) Pty Ltd.
Roberts Co Project No.	200018
ABN	61 620 108 483
Project Address	59-73 Felton Road and 183 Pennant Road, Carlingford

Document Authorisation

Stewart Agus

Snr PROJECT MANAGER

4 April 2024

Date

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1 DOCUMENT CONTROL

All changes made to the Construction Management Plan are recorded in the amendment table below. The version number and date of revision for the current document revision are shown in the footer of the document.

1.1 Revision History

Revision	Date	Description of changes	Prepared by	Approved by
001	22/8/23	Original	SA	DV
002	18/9/23	Comments incorporated	SA	DV
004	10/10/23	Services section updated	SA	DV
005	4/12/23	SSDA Conditions Update	SA	DV
006	4/4/24	SSDA post audit 1	SA	DV

1.2 Management reviews

Review date	Details	Reviewed by

1.3 Controlled copies

Name	Position	Date	Revision

2 TERMS AND DEFINITIONS

The following terms, abbreviations and definitions are used in this plan.

TERM	DEFINITION
HSE	Health, Safety and Environment
HSEQ	Health, Safety, Environment and Quality
IMS	Integrated Management System
ITT	Invitation to tender
PCG	Project Control Group
PMP	Project Management Plan
PRA	Project risk assessment
RCo	Roberts Co
SWMS	Safe Work Method Statement
The project	Carlingford West Public School & Cumberland High School
WHS	Work health and safety
WHSP	Work Health and Safety Plan

Table 01 – Terms of references, definitions and abbreviations used in this plan.

ABBREVIATION	ROLE
HoO	Head of Operations
CD	Construction Director
HoCP	Head of Cost Planning
CEO	Chief Executive Officer
PM	Project Manager
SM	Site Manager
SPE	Senior Project Engineer
SPC	Senior Project Coordinator
DM	Design Manager
CM	Contracts Manager

Table 02 – Role abbreviations

3 PROJECT UNDERSTANDING

3.1 Purpose of this Plan

This Construction Management Plan (CMP) has been developed to outline the Roberts Co approach to the construction planning and methodology proposed for delivery of desired project outcomes for the Carlingford West Pubic School & Cumberland High School project.

The CMP addresses various anticipated issues, based on Roberts Co previous experience on similar projects and current understanding of the existing environment and contractual requirements. The proposed construction methodologies will be further developed throughout the planning and construction phases. It is a working document and may be subject to change throughout the life of the project. Such revision shall be notated in the footer.

This report is written taking into consideration SSD-43065987 Conditions and meets the obligations of B14, B15, B16, B17 and B18.

Consent Condition	Location	Ref
B14. Prior to the commencement of any construction, the Applicant must submit a Construction Environmental Management Plan (CEMP) to the Certifier and provide a copy to the Planning Secretary for information. The CEMP must include, but not be limited to, the following:		
(a) Details of:		
(i) hours of work;	Section	6.9
(ii) 24-hour contact details of site manager;	Section	3.3
(iii) management of dust and odour to protect the amenity of the neighbourhood;	Section	6.7
(iv) external lighting in compliance with AS 4282-2019 Control of the obtrusive effects of outdoor lighting;	Section	8.2
(v) community consultation and complaints handling as set out in the Community Communication Strategy required by condition B9;	Section	8.3
(b) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure;	Section	8.5.2
(c) Construction Noise and Vibration Management Sub-Plan (see condition B15);	Refer to specific plan	
(d) Construction Waste Management Sub-Plan (see condition B16);	Refer to specific plan	
(e) Construction Soil and Water Management Sub-Plan (see condition B17); and	Refer to specific plan	
(f) Aboriginal Cultural Heritage Management Sub-Plan (see condition B18).	Refer to specific plan	

3.2 Proposed Project

3.2.1 Description of the Works

Carlingford West Public School

The works are for the construction of new buildings and facilities within the existing primary school site to core 35 + 60% GLS & core facilities, which will cater to a total of 1610 students.

Facilities for Core 35 + 60% GLS & core facilities include:

- 56 General learning Spaces which includes special education learning units
- Library, communal hall, administration facilities, staff unit, canteen, student amenities, storage and out of school hours care.
- Covered outdoor learning area (COLA), connecting walkways, outdoor play area
- On-site parking lot with kiss-and-ride area
- Integrated landscaping, and signage

The upgrade of Carlingford West Public School consists of:

- Block W, a 2-storey building containing amenities and 4 home base units.
- Block X, a 3-storey building containing amenities, main library, special education learning units, and 4 home base units
- Block Y, a 3-storey building containing amenities and 6 home base units
- Hall block Z is a 1 storey building containing the hall, canteen, COLA, OSHC and amenities
- On-site parking lot with kiss-and-ride area

<u>Cumberland High School</u>

The upgrade works consist of:

- Block Y is a 5-storey building containing Library, Staff studies/offices, 3 Home base units, Visual Art, performing Art, Multimedia, fitness, and woodwork workshops.
- Block Z is a 2-storey building containing the hall/stage, indoor Gym, Canteen, Amenities, Lecture theatre and movement studio.
- Integrated landscaping and signage.
- Bus link connecting from Dunmore Avenue to Pennant Hills Road
- Services infrastructure for stage 1 and 2
- Future proofing provisions to enable stage 2 construction at a later date, as documented.

Refurbishment of following buildings:

- Block A: refurbishment of food and textiles
- Block C: conversion existing Wood and Metal workshop into GLS and amenities block
- Block D: reconfiguration of ground floor administration and staff spaces and reconfiguration of learning spaces on level 1
- Block E: refurbishment of science class to add two science general learning spaces
- Block G: refurbishment of existing science labs and conversion of library to science general learning spaces.

Scope rationalisation of the following:

- Tiled ceiling provided in lieu of Hera ceilings.
- Electrical provisions will be fit for purpose at the completion of the works.
- Surface Mounted whiteboards/pinboards to refurbished areas.

- No works to address noise levels.
- Existing distribution boards are to be modified where required, but not replaced.
- Electrical scope restricted to refurbished areas only.
- The upgrade of Cumberland High School excludes building X, which is to be delivered in a future Stage 2.

3.2.2 Project Objectives

The aim of the project is to improve the school for both Children in the public and high schools.

Carlingford West PS is already significantly over subscribed. The school currently operates with 1,469 student enrolments – far in excess of the 1,200 student EFSG Core 35 limit. This has been made possible by excessive use of demountables, which have now reached 43 in number (accounting for 64% of the school's total capacity). Prolonged use of demountables is likely to limit education outcomes for students relative to modern EFSG compliant spaces. The proposed development involves upgrades to CWPS and CHS, collectively referred to as the Cumberland Cluster. The upgrades to CWPS will cater for a total student population of 1,610 students and include the construction of four new buildings in the north-west portion of the site known as Buildings W, X, Y and Z. These buildings range from one to three storeys and contain a variety of uses including general learning spaces, library, amenities, staff rooms and combined canteen, OSHC, gym and hall. The construction of a new kiss and ride off Felton Road West and a waste loading area, On-Site Detention (OSD) tank and staff carpark. The master plan at CHS will cater for a total student population of 2,040 and include the construction of three new buildings in the south-east portion of the site, buildings Y and Z are constructed in stage 1 (this Contract). The student population of Stage 1 is 1,500 students.

3.3 Key Participants / Stakeholders

Participant	Stakeholder
Client	School Infrastructure NSW [SINSW]
Client Project Manager	Savills Project Management
Principal Contractor	Roberts Co NSW

Primary Project Contacts

Roberts Co

Address	Phone	Fax
Level 9, 60 Castlereagh Street, Sydney, NSW 2000	1300 019 692	

Name	Position	Phone
Matt Bourne	CEO	**0428 649 888**
Damian Vella	State Director	**0404 472 294**
Stewart Agus	Senior Project Manager	**0488 764 503**
Stephen Lai	Project Manager	**0419 012 596**
Roger Thompson [24hr contact]	Senior Site Manager	**0408 232 523**

Role	Company	Point of Contact
Architect	Woods Bagot	Chris
Structural	TTW	Richard
Services Engineer	Steensen Varming	Alan Sharkey
Building Surveyor / PCA	MetroBC	Sean Moore

3.4 Organisational Chart

The Roberts Co project team structure responsible for the delivery of the project is outlined within Appendix 1. This team has the responsibility and authority to ensure that the works are completed and meet the project requirements.

4 PROGRAM

Roberts Co have developed a construction program that outlines the work required to be undertaken and the sequence in which it is to be undertaken. Roberts Co will be refining design and construction methods to suit the delivery requirements of this project. Along the way, we will be consulting with reputable,

established and capable contractors that can deliver the project in a timely manner without compromising safety or quality.

5 PROJECT COMMUNICATION

5.1 Communication Protocols

Roberts Co is committed to ensuring relevant information regarding the construction process and staging of works is disseminated between relevant stakeholders and external parties involved in the development.

To ensure that positive and proactive communication and consultation occurs on the project, Roberts Co is committed to engaging with relevant stakeholders to address any issues raised throughout the course of the project.

The need to provide prompt response to any complaints or disputes from adjoining owners is critical. All complaints must be logged onto a Complaints register and communications between Roberts Co and external parties should be reviewed by the HoO's or the Construction Director.

Roberts Co utilises the web-based Aconex platform as the primary means of producing, transferring, tracking and filing of all contractual project correspondence. All parties involved in this project must use Aconex.

For further information regarding any of the processes dealing with communications, refer directly to the project specific Quality Management Plan.

All communication with external parties is to be managed and approved by SINSW's community engagement manager.

5.2 Meetings

We propose a start-up meeting be arranged to run through with SINSW our proposed delivery methodology, as well as understanding the objectives of the Project and promote a culture of cooperation and teamwork for the management of works. This meeting will help to build a positive relationship between SINSW and Roberts Co (RCo).

A regular Monthly Project Control Group Meeting will be held to discuss matters, including:

- Onsite work, health and safety matters
- Works completed to date
- Construction status against the contract programme
- Programme milestone dates
- Anticipated completion date
- Month lookahead
- Matters affecting the Project deliverables
- Potential delays
- Site instructions required from the Principal
- Current or pending variations to the Contract
- Progress claims
- WHS reporting as per agreed templates

Other meeting will be held on site such as stakeholder interface meetings, and weekly construction team meetings. All of which minutes will be issued by various parties.

6 DESIGN MANAGEMENT AND PRE-CONSTRUCTION

Design Management procedures have been developed to provide a framework for the project team to carry out their responsibilities and obligations and provide assurance that design compliance requirements will be met. These aspects include, but are not limited to:

– novation and/or engagement of consultants
– tracking of the status of Consultant Agreements
– Safety in Design
– Quality Risk Assessment (QRA)
– environmental considerations
– design review and consent (incl school, TSG and TUG etc…..)
– design changes & departures
– sample approval, and
– value management

For further information regarding any of the processes dealing with design aspects, refer directly to the project specific Design Management Plan.

6.1 Design Finalisation, Documentation and Submissions

The project certifier will issue once the SSDA is approved, a Checklist that the team needs to meet all of its obligations for the CC to be approved.

During design finalisation various design activities will run concurrently with the Authority Approval and User group process in order to prepare and issue for construction (IFC) documentation. Some of the key design activities will include:

– Design finalisation and stakeholder management
– Architectural, structural and services coordination
– BCA Compliance review and assessment
– DDA / Accessibility) review and assessment
– Fire Engineering review and solutions including the finalisation of FEBQ for issue, review and response by Fire and Rescue
– Fire Engineering report development and finalisation for issue to Fire and Rescue
– Traffic review and compliance assessment
– CPTED review and assessment
– Landscaping and Civil review and coordination
– SSDA Approval
– EFSG Approval
– TSG Approval
– Safety in Design Review
– Council
– Sydney Water
– Other Authority Approvals

The above design activities will be undertaken concurrently with other activity streams with the outputs fed into other design disciplines work streams for them to coordinate and finalise their IFC documentation.

6.2 IFC Documentation and Submissions to the Principal

Post Contract award Roberts Co will develop an IFC documentation submissions register in collaboration with the Principal's Representatives for the Principal's acceptance of Roberts Co proposed submissions.

SD [schematic design] validation set of documents will be issued by the end of August 2023.

AFT [approved for tender] set of documents will commence once the client has approved the documents, these documents will commence being issued from mid September 2023.

AFC set of documents will commence being issued 6 weeks after the SD has been concluded.

6.3 FF&E and MME User Group Collaboration and Consultation

TUG [Technical User Groups] user groups will be presented to by the Deign Team and will commence in early October 2023. With the aim on completing this 100% detailed design sign off by mid December 2023.

The TUG user group sessions will be the point in time that the end users will have their opportunity to comment on the design keeping in the for front that the design is based on the EFSG framework.

6.4 Prototypes and Other User Requirements

The project does not have any requirements for prototyping.

The team will make sure we set up a first of type. This most likely will be in the public school for the GLS hub. We note that the HS first of typical floor is on the upper most floor thus the PS will be available earlier.

Once this accelerated area is completed we strongly advise that the defecting process commences followed by awareness sessions with the new teaching staff.

A detailed samples list will be created for the project, the majority of finished items will be collated in a samples sheet for SINSW approval and incorporation into the project. Any plant and equipment specifications will be contained in the OM manuals.

6.5 Authority Approval Process

In order to achieve the required completion date, we propose the Authority Approval process associated with the scope of works will be broken into staged CC's. Following award, we will agree the final number and break up associated with each CDC/ REF / SSDA / Exempt Development with the Principal Certifying Authority (PCA) including the approval strategy to establish an endorsed process with all project stakeholders in order to manage multiple CC's that will be run concurrently.

We propose the following Crown Certificates (CC's):

- Exempt Development - PPOC
- CC1 – Bulk ex and piling
- CC2 – Superstructure and façade
- CC3 – Fitout
- CC4 – Landscaping and remaining Works
- Public Domain Works

The Conditions are yet to be received by the team, the SSDA is expected in November 2023. The responsibility matrix has been agreed with SINSW, Savills and RCo.

The RCo team will close out all other statutory requirements throughout the construction phases.

6.6 Procurement

We have held multiple meetings with critical trades to gain a better understanding of the scope of works to ensure that pricing received is complete and therefore giving us the confidence for letting and executing contracts expeditiously. We have resourced our team in such a way that ensures that we have sufficient personnel to package and let critical contracts early to facilitate works on site.

Key construction elements of the project will require critical early procurement of packages to be undertaken to ensure that the construction programme is maintained, and these include:

- Relocation of the sewer in the HS
- PPOC – Landscaping works for the PS
- Piling and Excavation

The balance of the procurement will be sequenced in line with the construction programme. We believe that the main trades are key to driving the construction programme whilst maintaining high quality and safety standards, and as such subcontractor selection will be consider capacity, experience and capability of undertaking the works.

Attention will be focused on the following key packages including:

- Services
- Structure Trades

Procurement of client supplied FFE and ICT items, within the responsibility matrix will be procured by the RCo team and subsequent subcontractors. Adequate time for this needs to be addressed.

6.7 Project Management Plans

We have developed several plans to manage the delivery of this project, once implemented on site, these plans will outline the way in which the site will operate.

Project Management Plan: This plan provides the framework for all management plans. It outlines how Roberts Co will deliver the project and the documentation, plans and process that will be utilised to achieve this.

Construction Management Plan: This plan outlines the specific detail in which Roberts Co will establish site, provide an access strategy, working hours, contact information and construction sequencing and Stakeholder Management of the project. Site plans have been developed to ensure a clear and succinct representation of the site establishment plans which will then be communicated to subcontractors, SINSW and Stakeholders.

WHS Plan: This plan details the Project Impacts and Hazards Register, Roberts Co procedures and controls governing operational site safety and wellbeing, as well as noise, dust, vibration, air quality, water and waste management plans which will address the requirements of the DA Conditions by identifying critical receivers and outlining strategies to ensure works are completed within acceptable limits.

Traffic Management Plan: This plan outlines the specific traffic strategy tailored to the changing points of site ingress, construction traffic paths, staff / patient / access, off-site site parking and any potential alternate traffic routes. The Management Plan will be detailed to show an uninterrupted access for emergency vehicles, staff, visitors and students.

Other Plans: In addition to management plans that relate directly to the construction management processes of the project we have implemented several other plans to guide workplace strategies, namely:

- Design Management Plan
- Aboriginal Participation Plan
- Workplace Relations Management Plan
- Project Training Management Plan (including apprentices)
- Environmental Management
- Waste Management
- Quality Management
- Communication and Engagement Plan
- Student Engagement Plan
- BIM Management
- Asbestos Management
- Construction Soil and Water Management Sub-Plan
- Construction Noise and Vibration Sub-Plan

6.8 Dilapidation Survey

A dilapidation report has been undertaken covering the site and its surrounding streets and areas. This plan contains photographic evidence of the current condition of the respective surrounding streets and assets in order to ensure construction of Carlingford Cumberland Schools does not cause damage to these respective areas.

A post construction dilapidation report will also be undertaken once works are complete and compared with the pre-construction dilapidation report.

6.9 Hours of Work

The permissible operating hours for the project are detailed:

Working Hours	
Monday to Friday	7am to 6pm
Saturday	No Work [unless safer to do so] 8am to 1pm
Sunday & Public Holidays	No Work

Roberts Co must work within the EPA Noise Control Guidelines for construction and demolition site noise, as well as the DA conditions. External noisy works must not be conducted outside of these hours unless prior notification has been given and agreed to by the relevant authorities. After-hours works and night works must be managed between these parties and other relevant stakeholders on an as-needs basis.

Notwithstanding condition C4, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

(a) between 6pm and 7pm, Mondays to Fridays inclusive; and

(b) between 1pm and 4pm, Saturdays.

Construction activities may be undertaken outside of the hours in condition C4 and C5 if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) for the delivery, set-up and removal of construction cranes, where notice of the crane-related works is provided to the Planning Secretary and affected residents at least seven days prior to the works; or by the relevant roads authority or utilities service provider in order to minimise disruption to the roadway or essential services, where the related works have been provided to the Planning Secretary and affected residents at least seven days prior to the works: or

(f) where a variation is approved in advance in writing by the Planning Secretary or their her nominee if appropriate justification is provided for the works.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9am to 12pm, Monday to Friday;
(b) 2pm to 5pm Monday to Friday; and
(c) 9am to 12pm, Saturday.

6.10 Heritage and Archaeological Significance

Any discovery of an item of potential heritage significance, the relevant authorities and stakeholders must be contacted.

The RCo team will address the requirements of the SSDA in relation to pre-commencement surveys.

6.11 Traffic Management

We understand the importance of providing a seamless traffic & pedestrian management strategy to ensure construction works do not impeded general vehicles and pedestrians in the surrounding streets. A preliminary Traffic Management Report for the project has been developed for the required vehicular and pedestrian movements during the delivery of the project.

The following restrictions must be considered in the development of the Traffic Management Plan:

- speed limit to be restricted on-site to 10km/hr]
- flashing hazard lights must be operated at all times for mobile plant
- reversing beepers
- personnel to wear high visibility clothing / vests at all times
- spotters / escorts to accompany vehicles where required by JSA/SWMS. They are also required at any time where the vehicle is traversing School property and there is the potential of Children being present.
- relevant signage will be erected as required for traffic management to suit the varying access requirements
- The team must ensure that the schools protocols are fully understood and are implemented when undertaking works / traversing in their areas. These ay be updated throughout the Works.

6.11.1 Deliveries and construction vehicles

Roberts Co understands the impact construction works can have on an area and it’s surrounding streets.

The HS deliveries will arrive from Dunmore Ave through the roundabout and will enter the site. During school pick up times the deliveries will be stopped. This will be done by stopping any construction traffic from entering Dunmore Ave and or by closing the gates within the site to ensure they cannot exit during the peak school pick up times.

For the Public School [PS] the construction traffic will enter the site from Felton Road West. The same time restriction will be in place as per the high school.

During various stages of work, vehicle access to and from site must be managed by the following actions:

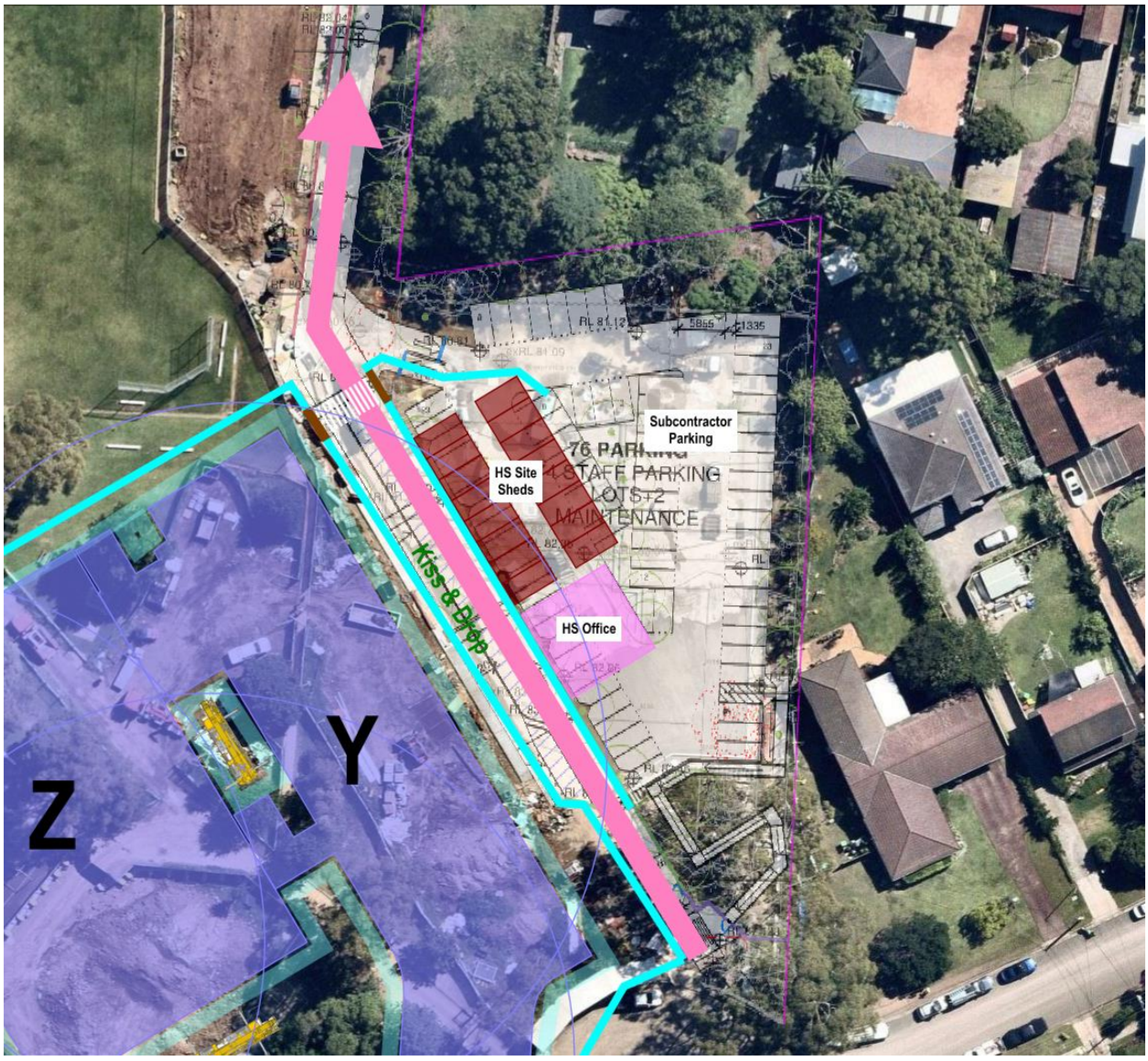
- minimising impact of high frequency of trucks upon local traffic movements by controlling movements and marshalling of trucks off-site. Drivers must continue to report to the Traffic Controller on-site to ensure street access space exists before proceeding to site
- liaison with the adjoining neighbours, businesses and local authorities
- all relevant site personnel must be inducted into the appropriate Traffic Management Plan focussing on the interface between construction activities and the public, and
- ongoing training must be provided for all supervision and staff during the various phases of delivery.

6.11.2 Contractor Parking

Limitations to parking in the area are detailed in all site inductions. Alternative means of transport, including the train, bus, and carpooling are highlighted and encouraged to all workers.

All contractors will be requested to use public transport and carpooling when working on this site.

Site supervisor parking will be provided inside the site, there is a newly completed carpark which will contain the main works site office, worker accommodation and the remaining car spaces will have supervisor parking and staff parking spaces.



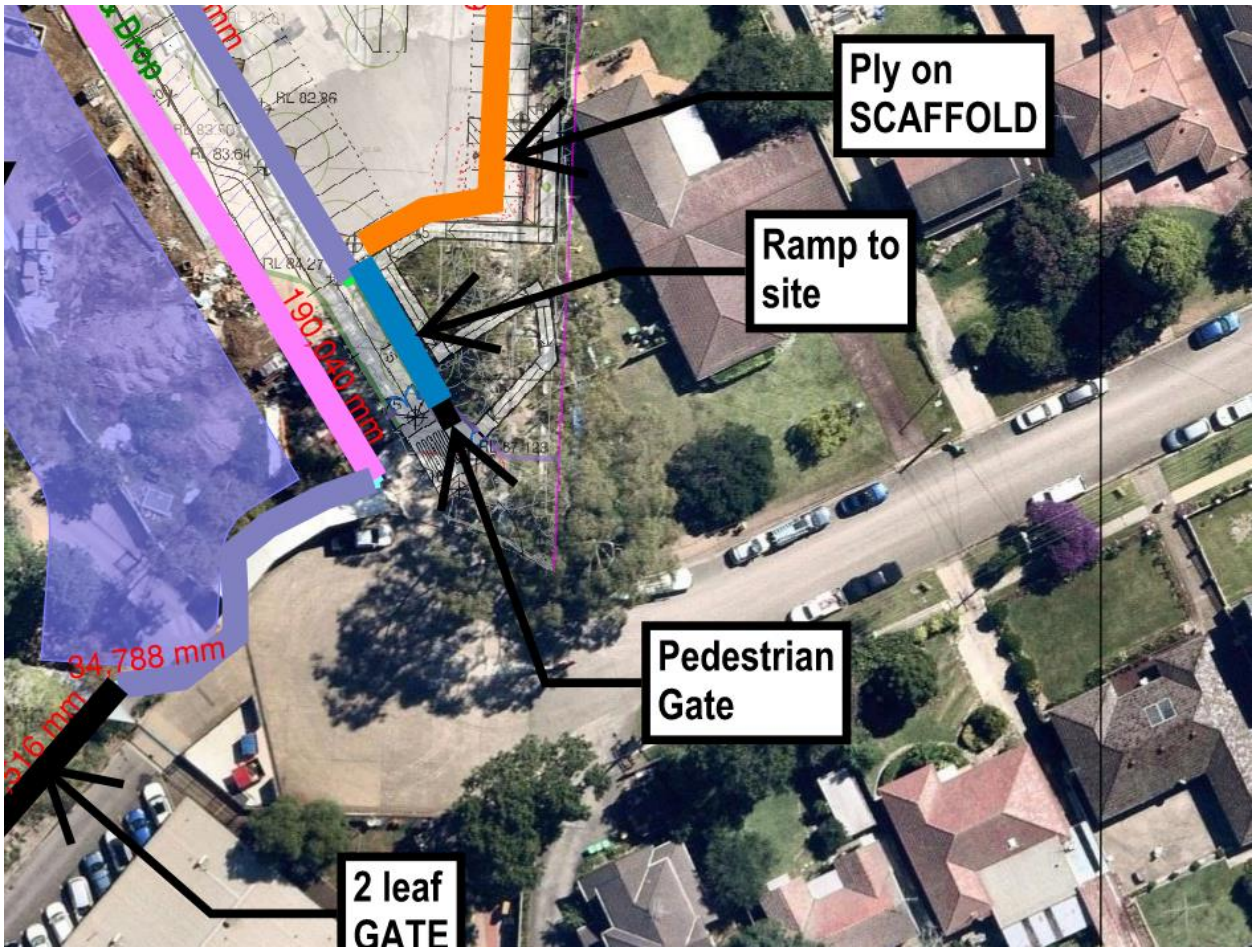
For the PS there will be limited parking on site, the majority of the workers will be encouraged to take public transport and or carpool where needed. Otherwise, there is options of an adjacent oval where contractors can park without impacting the neighbourhood and thus reducing the amount of spaces taken from the front of people houses, otherwise local streets will be utilised.

6.12 Site Egress / Access

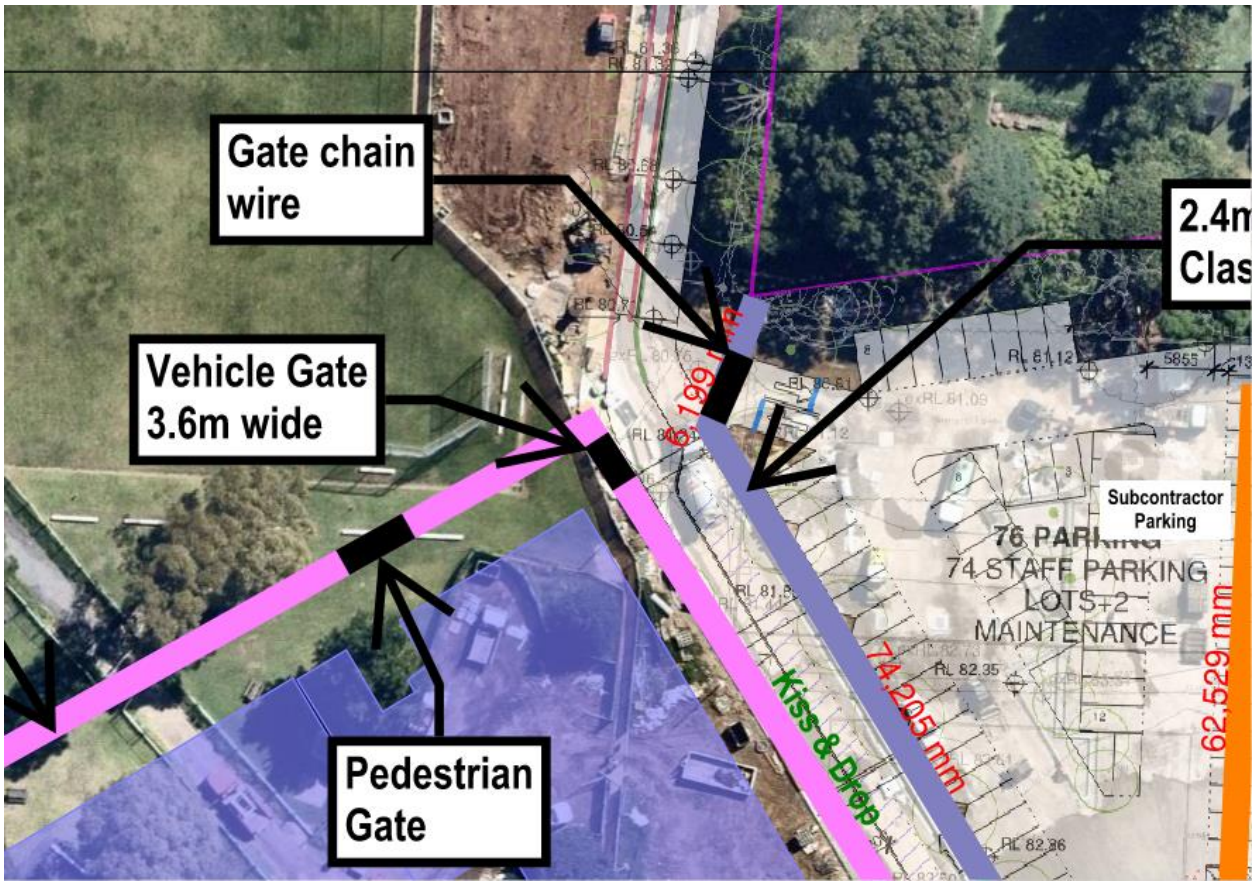
6.12.1 Worker Pedestrian Access

Workers will enter the site though a series of pedestrian gates within the hoardings, located at various positions around the site, in areas that avoid uncontrolled/limited visibility egress paths that are considered unsafe, or have potential to cause nuisance to the public. These pedestrian gates can be adjusted throughout the works to facilitate the sequenced construction activities.

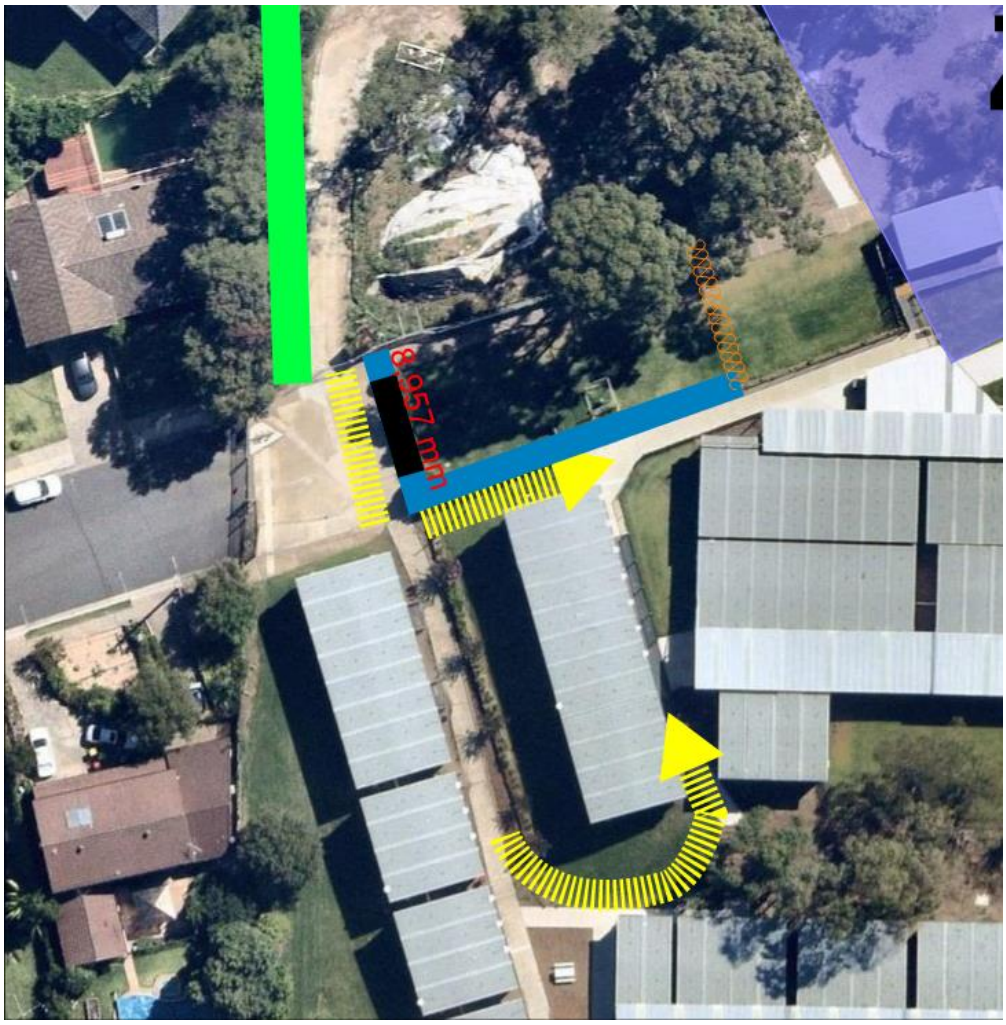
Worker access for the High School and the main client and RCO office will be off the end of Dunmore Ave. We have engineered a hoarding to be installed around the perimeter of the site so that noise impact to the surrounding neighbours is minimised.



Once the workers are within the site compound there will be a scaffold bridge installed over the top of the kiss and drop so that the works and students paths do not cross.



Access for the public school will be from the end of Felton Road West. They will enter site through the school gate to the north and then into the main site.



6.12.2 Worker and Public Pedestrian Access

Public pedestrian access must be facilitated, as far as practicable, at all times during construction. Due to the nature and inherent risks involved in construction activities, it is unavoidable that some disruption to the public can be incurred, whereby public pedestrian access is to be temporarily restricted or adjusted. This must be clearly communicated to all key stakeholders and members of the public through project specific signboards, pedestrian restriction gates, and traffic controllers.

Public access to the site will be managed with site hoardings. These hoardings will block all access for the public to reasonably enter the site.

The main entry site gates when in operation will be managed by a full time traffic controller. When they aren't being maintained they will be secured closed.

Peak times will be monitored and managed for entering and exiting the site.

7 CONSTRUCTION STRATEGY

7.1 Site Establishment

As works are undertaken, the site will always be inaccessible to the general public and will only be accessible by authorised personnel. This will be achieved using a combination of hoarding and site fencing with gates that will always remain locked. Covered walkways and B class hoarding will be used where applicable to provide overhead protection and general safety to the public. Site security will always be of high priority.

The site is located in a residential part of the Carlingford Cumberland Suburbs. The site is within an active school and within a residential neighbourhood.

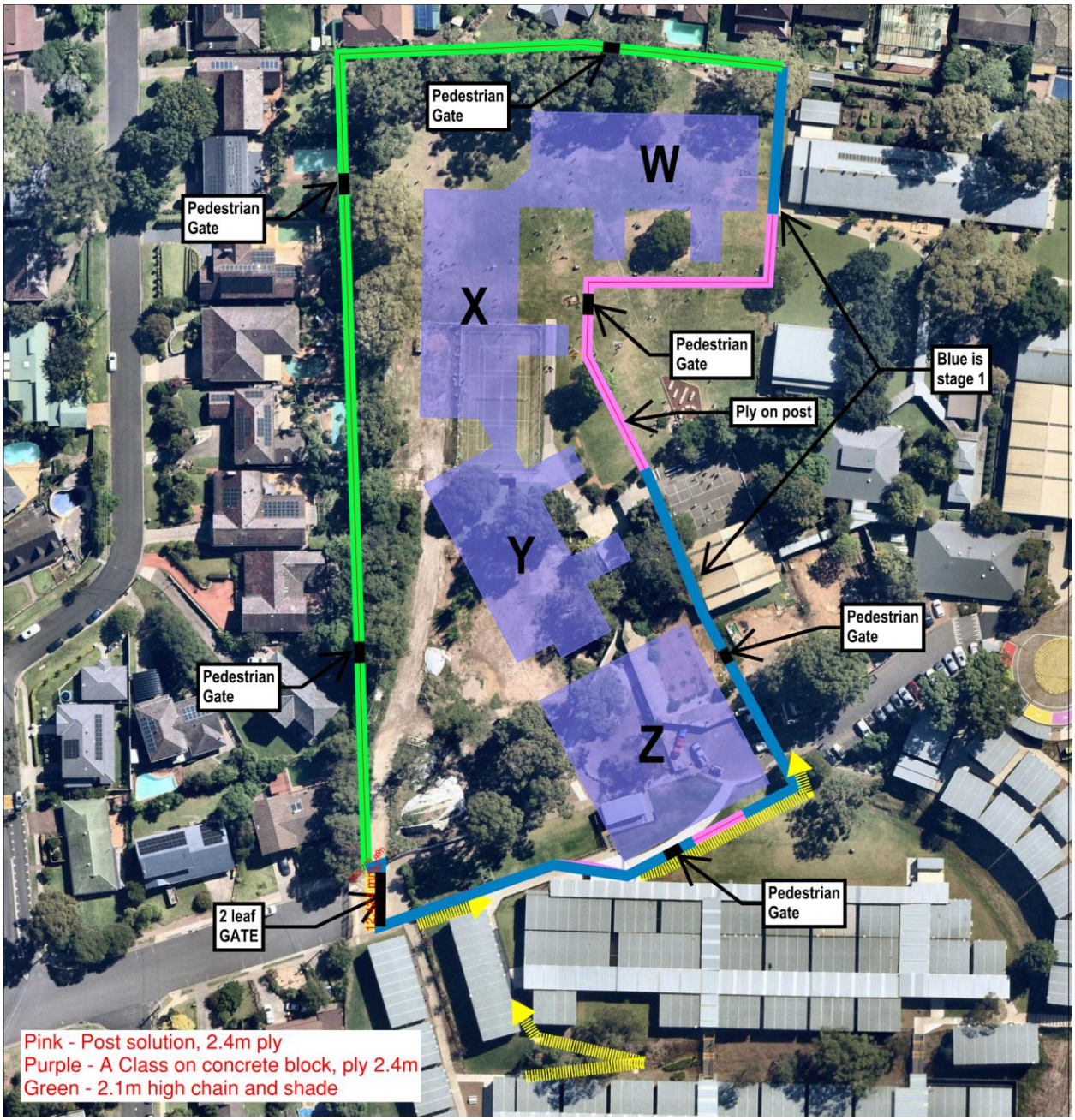
7.1.1 Hoardings

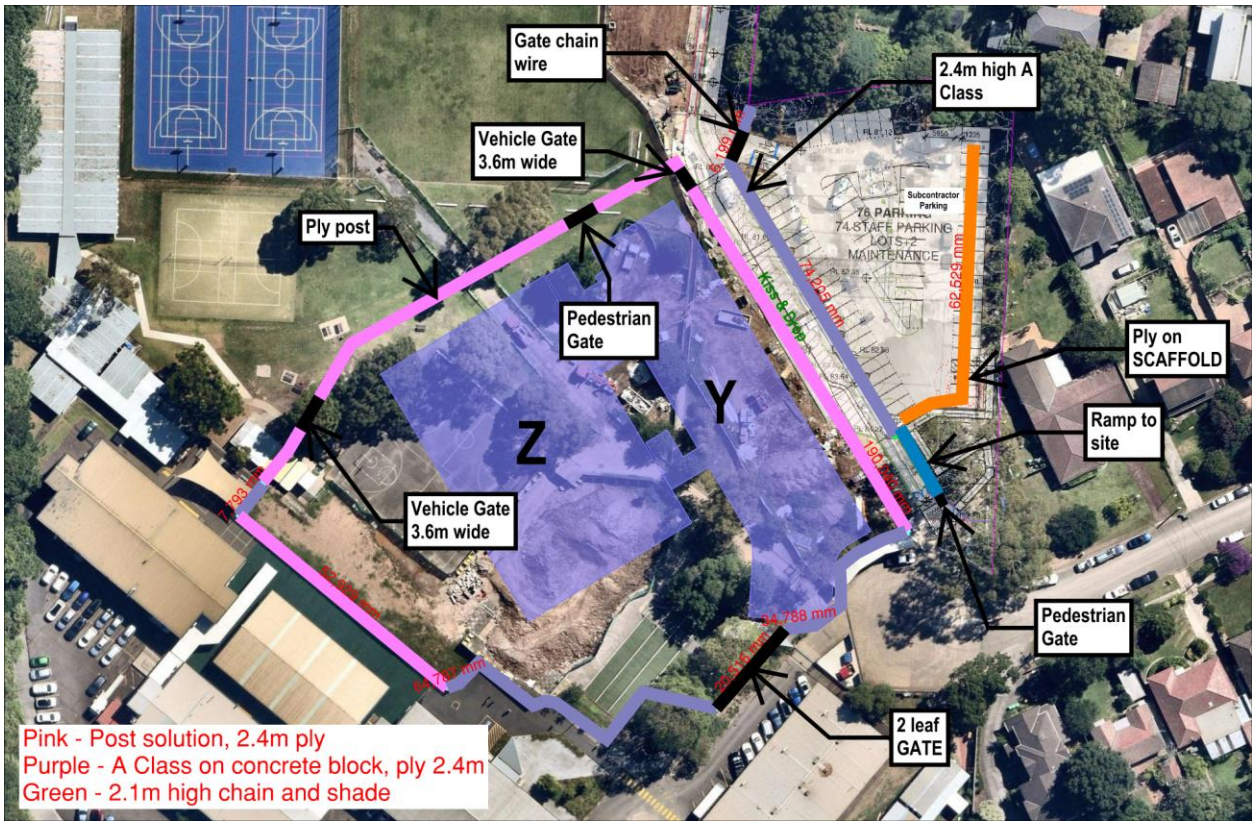
To avoid unauthorised site access, and to minimise the impact of the construction works, appropriate boundary separation measures must be erected around the main construction zones and the various adjacent workspaces throughout the delivery of the works. This hoarding must be maintained and adjusted during the life of the project, in consultation with the relevant stakeholders.

Directional and/or statutory signage, to redirect the public along a designated path, as well as traffic management, must be provided for pedestrian safety.

The following classes of hoardings will be utilised on this project:

TYPE	DESCRIPTION	LOCATION
Type 2 – 2400mm high	Ply wood fencing / ply 2.4m high, with doors for pedestrians and vehicles	Refer to markup for locations
Type 3 – Cyclone Fence 2100mm high	Chain and shade 2.1m high with SINSW appropriate shade cloth	Refer to markup for locations
Type 4 - ATF	Modular and movable temporary fence panels on heavily weighted bases.	Locations to be determined for use as a temporary short term solution.
Type 5 – Water or Concrete Barriers (Traffic)	Water and concrete barriers are designed to meet the general requirements of applications for pedestrian traffic delineation. Water barriers manufactured from high density Polypropylene.	Location to be determined on site to separate plant and people both internally and externally.
Type 6 – Crowd Barriers (General Public)	Crowd Barriers are designed to meet the general requirements of applications for pedestrian delineation. Crowd Barriers manufactured from high density Polypropylene and are connected by way of a special linking pinto forma chain.	Location to be agreed as a temporary measure on site.





7.1.2 Site Amenities / Site Office

The site amenities and the site office will be established in the are shown on the figure below. The site amenities will be provided by way of sheds providing adequate accommodation of all contractors who are on site.

Early staged works will have a small compound on site the PPOC Works will be originally located at the base of the new space, once the main works commence we will then relocate to the larger compound. For the public school the main site sheds are currently located on top of the OSD tank. We will utilise a smaller compound at the northern end of the project until the bulk excavation and piling is complete.

Site sheds for the HS have been planned to have approximate 200 people plus the main RCo office and SINSW offices.

The Public School will have a smaller compound for an expected 100 workers plus a small hot desk site office including for inductions.

7.2 Materials Handling

The drawing below outlines the approach to our materials handling strategy.

HS:

The materials handling strategy has all deliveries to site entering though the main gate off the end of Dunmore Ave. We have allowed to make an adjustment to the side of the basketball court so that semi-trailers can turn around and come back out of the site the same way as they entered.

The site will have a small forklift utilised for unloading of small palletised materials.

Craneage for the high school will be a mobile crane systematically located around the project so that the majority of the lifts can be reached without having to reduce load sizes.

The materials handling strategy has all deliveries to site entering though the main gate off the end of Felton Road East. All vehicle traffic will drive to the north depending on which building they will be work on.

The site will have a small forklift utilised for unloading of small palletised materials.

Craneage for the high school will be a mobile crane systematically located around the project so that the majority of the lifts can be reached without having to reduce load sizes. PT coil sizes will have to either be halved or located to the west only.

7.3 Construction Staging

Detailed staging and logistic plans, developed in consultation with key stakeholders and relevant Authorities, have been produced in preparation for the commencement of the construction works on site. The over-arching outcome of this process is to ensure that adequate separation between the public and the construction zone is maintained at all times.

The following staging diagrams and sections outline the works taking place and identify the key impacts considered for the works.

7.3.1 Structure and Pour Cycles

Concrete pour sizes will be developed further when the design from TTW is finalised so that we can accurately work out slab thicknesses and expected reo quantities.

7.3.2 Edge Protection

Scaffold is to be used as perimeter edge protection to all the buildings.

7.3.3 Façade Installation

The façade for the project will be a unitised shop front system. The team is working on getting the design to a point where we have repetition. Currently the façade panels will be installed off the floor and off the perimeter scaffold.

7.3.4 Internal Finishes

The high school and the public school will be constructed at the same time.

For the public school we will commence fitout to the north and work our way to the south.

For the high school we will concentrate the fitout on the taller building and then fall back to the single story.

7.4 Interface Management

The interface of the 2 schools is critical to the success of the build. The two principals and the circa 3000 school children learning each day will impact on the construction activities on site.

It is critical that a weekly meeting is held between the principals and the SSM and SPM. This will help keep the team informed with site progress and potential issues being delt with on a daily basis. This meeting has been established to discuss and agree interface management.

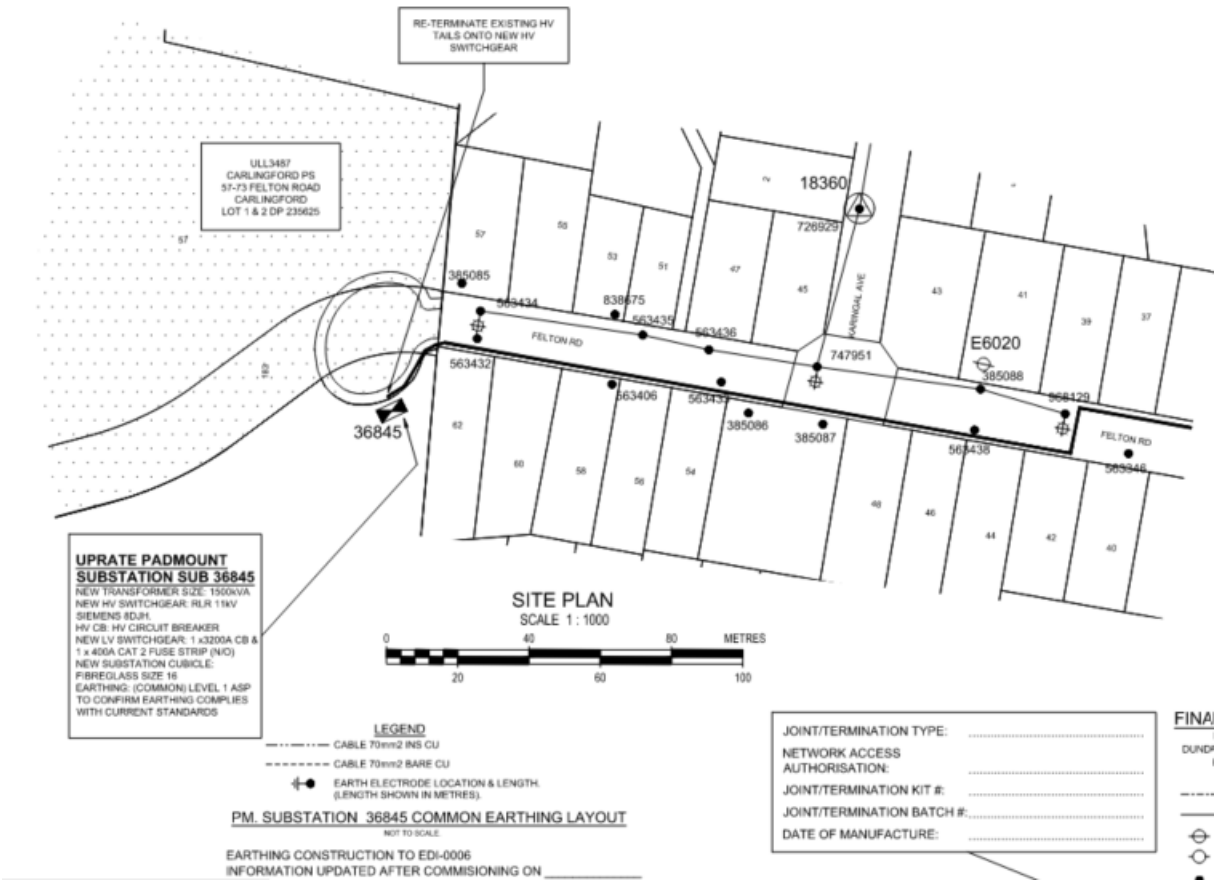
7.5 Incoming Services Authorities

The below section describes the main and critical services interfaces that are to take place in order to commission and service the Carlingford Cumberland Schools project.

7.5.1 Electrical Services Interfaces

CWPS

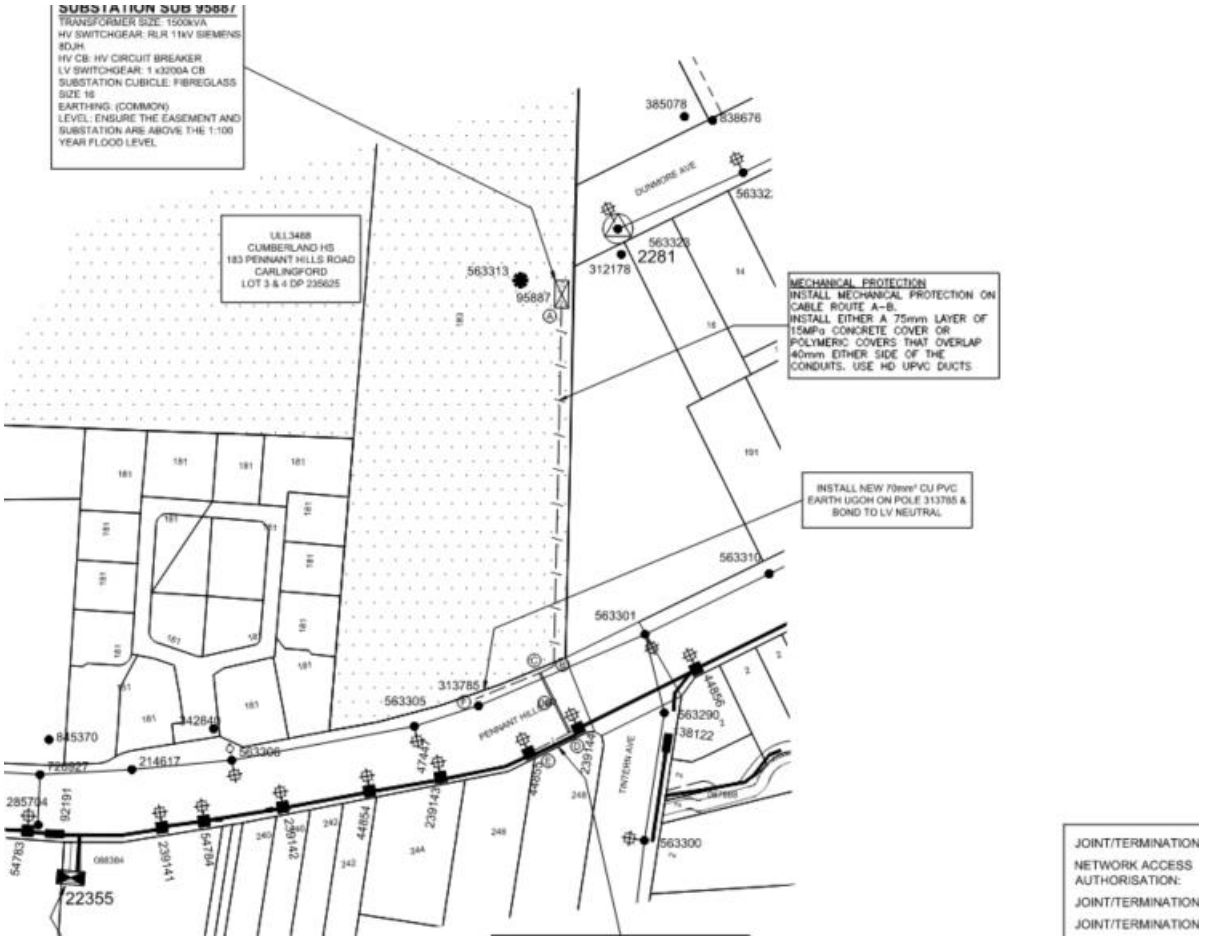
A new 1500kVA kiosk substation will be established at the location of the existing 500kVA kiosk substation at Felton Road East. The existing HV cables feeding the 500kVA kiosk substation will be re-terminated in to the new 1500kVA kiosk substation, therefore no excavation works are required in the public domain for this electrical supply.



Snippet from electrical specification showing location of electrical supply

CHS

A new 1500kVA kiosk substation will be established at Dunmore Ave. New HV conduits and cables will be installed from across Pennant Hills Road to the new kiosk substation. The existing supply is from a pole mounted 400kVA transformer on Dunmore Ave. This will be disconnected once the existing school buildings are decanted and ready for refurbishment works.



Snippet from electrical specification showing location of electrical supply

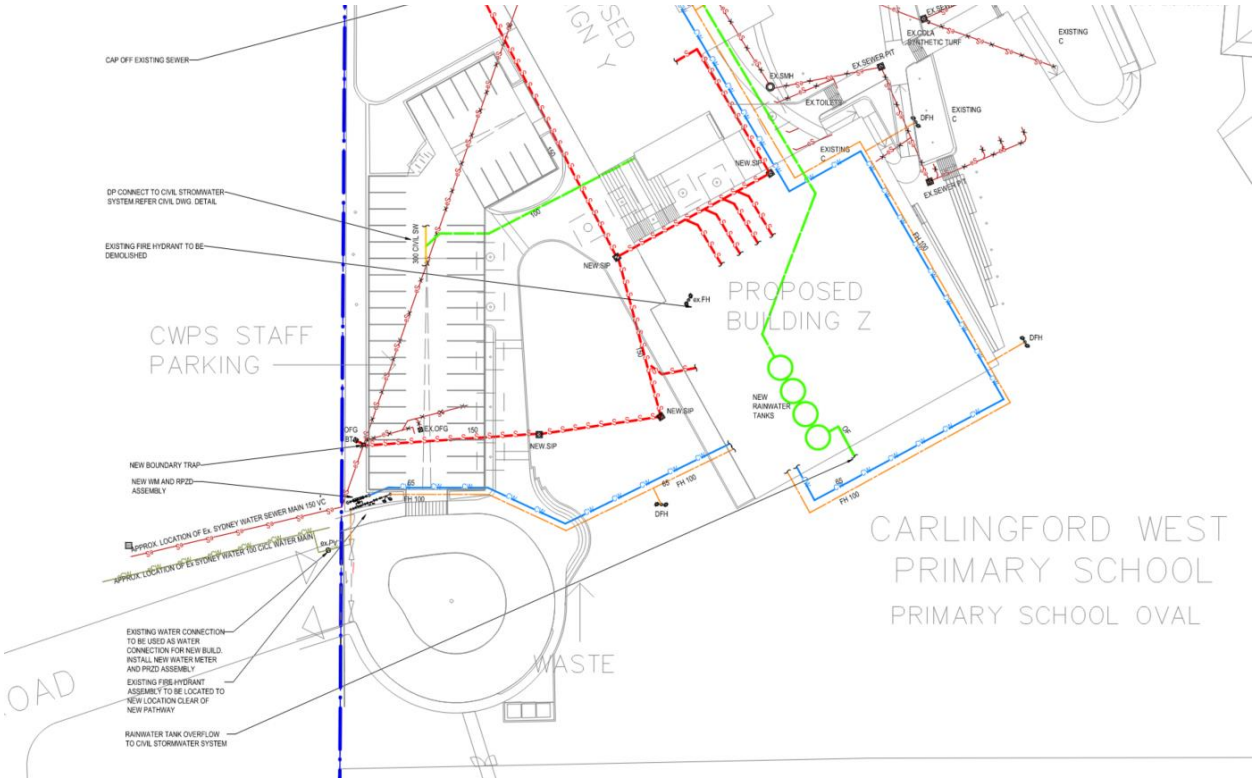
7.5.2 Water Interfaces

Roberts Co will engage a Water Services Coordinator to carry out the Building Plan Approval and Section 73 application for the development.

Roberts Co will develop any required Sydney Water Design, seek design and construction approvals associated with Sydney Water water connection works, facilitate execution of required deeds, easements and as-built documentation, and seek sign off and activation of the connections. Roberts Co will be responsible for payment of application fees and bonds, while payment of Developer fees and contributions will be the responsibility of SINSW.

CWPS

The RFT design allows for the existing water connection for CWPS at Felton Road West to remain, with a new meter and RPZD installed to the existing connection. The RFT design allows for the existing fire hydrant connection at Felton Road West to remain, with the existing fire hydrant assembly to be relocated to suit new path works.

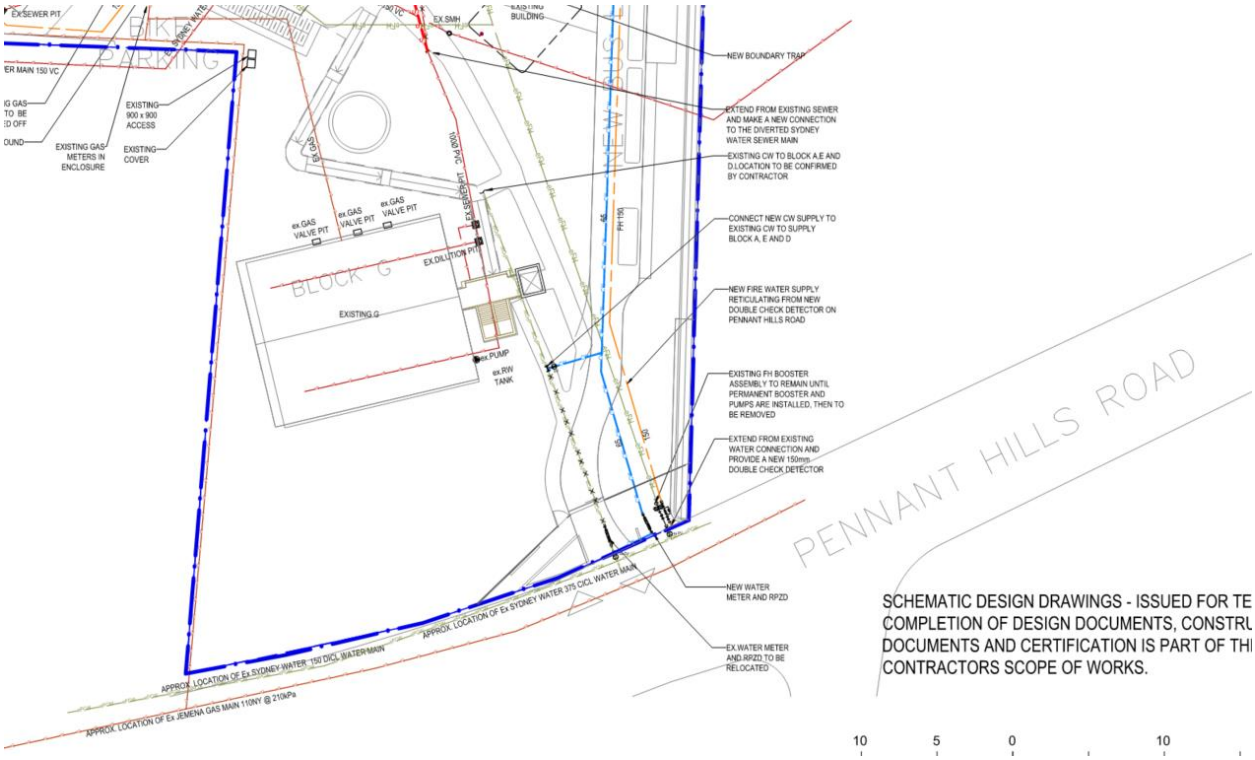


Snippet from hydraulic design drawing showing location of water and fire hydrant connections

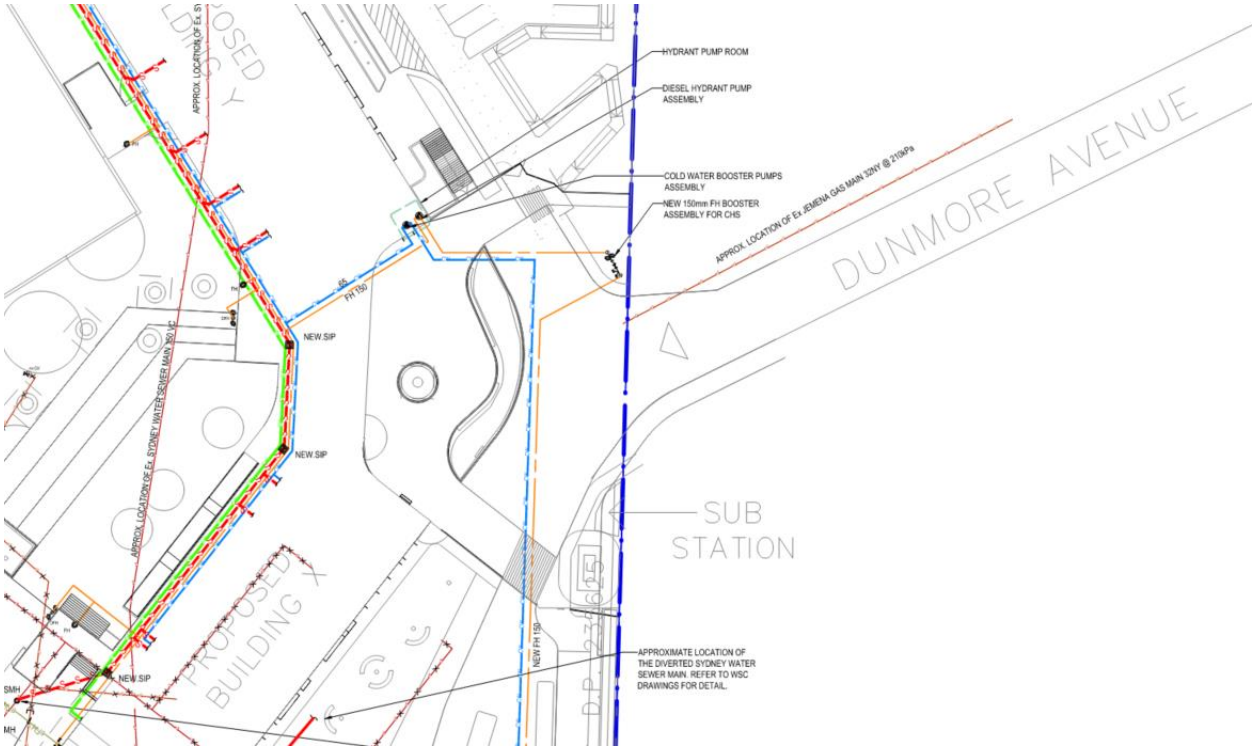
The section 73 application notice of requirements will confirm Sydney Water acceptance of the RFT design proposal.

CHS

The RFT design allows for the existing water connection for CHS at Pennant Hills Road to remain, with the existing meter and RPZD relocated to suit the bus link works. The RFT design allows for the existing fire hydrant connection at Pennant Hills Road to remain. A new fire hydrant assembly will be installed at Dunmore Road, and once commissioned, the existing fire hydrant assembly will be dismantled.



Snippet from hydraulic design drawing showing location of water and fire hydrant connections



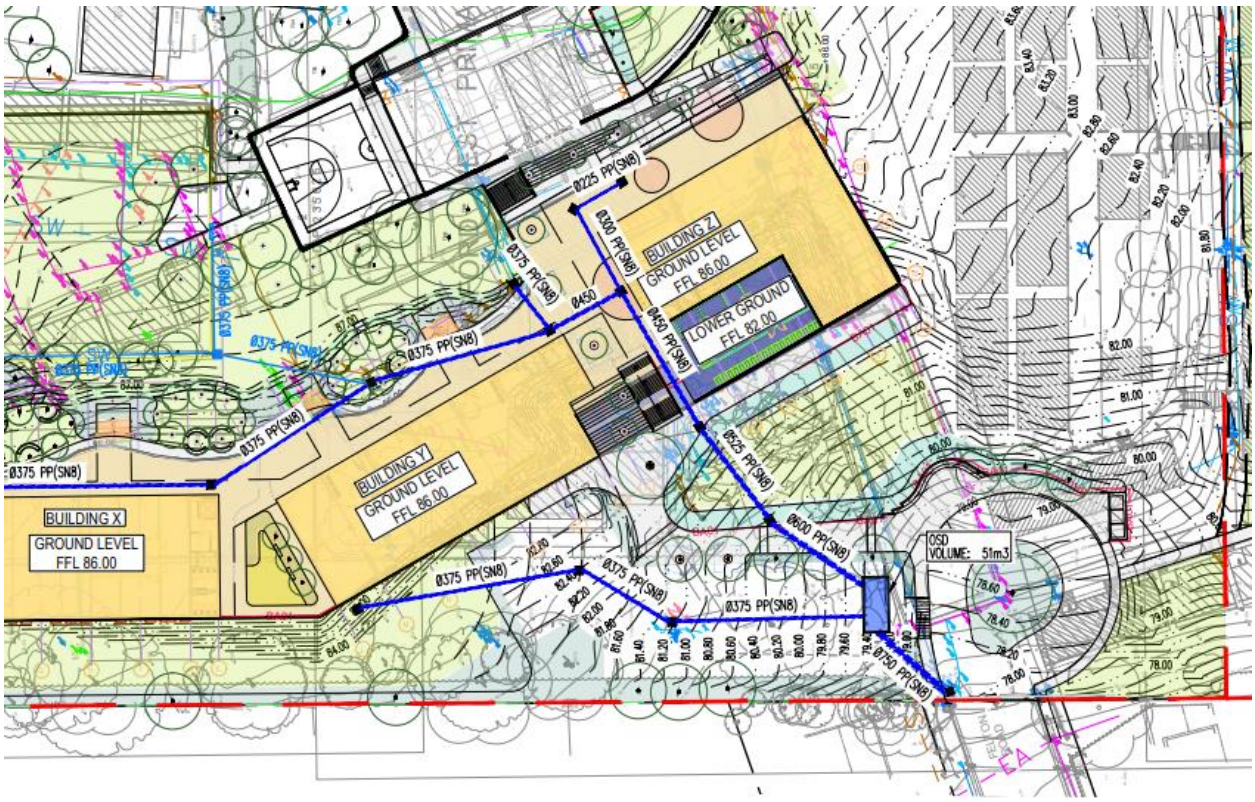
Snippet from hydraulic design drawing showing location new fire hydrant assembly

The section 73 application notice of requirements will confirm Sydney Water acceptance of the RFT design proposal.

7.5.3 Stormwater Interfaces

CWPS

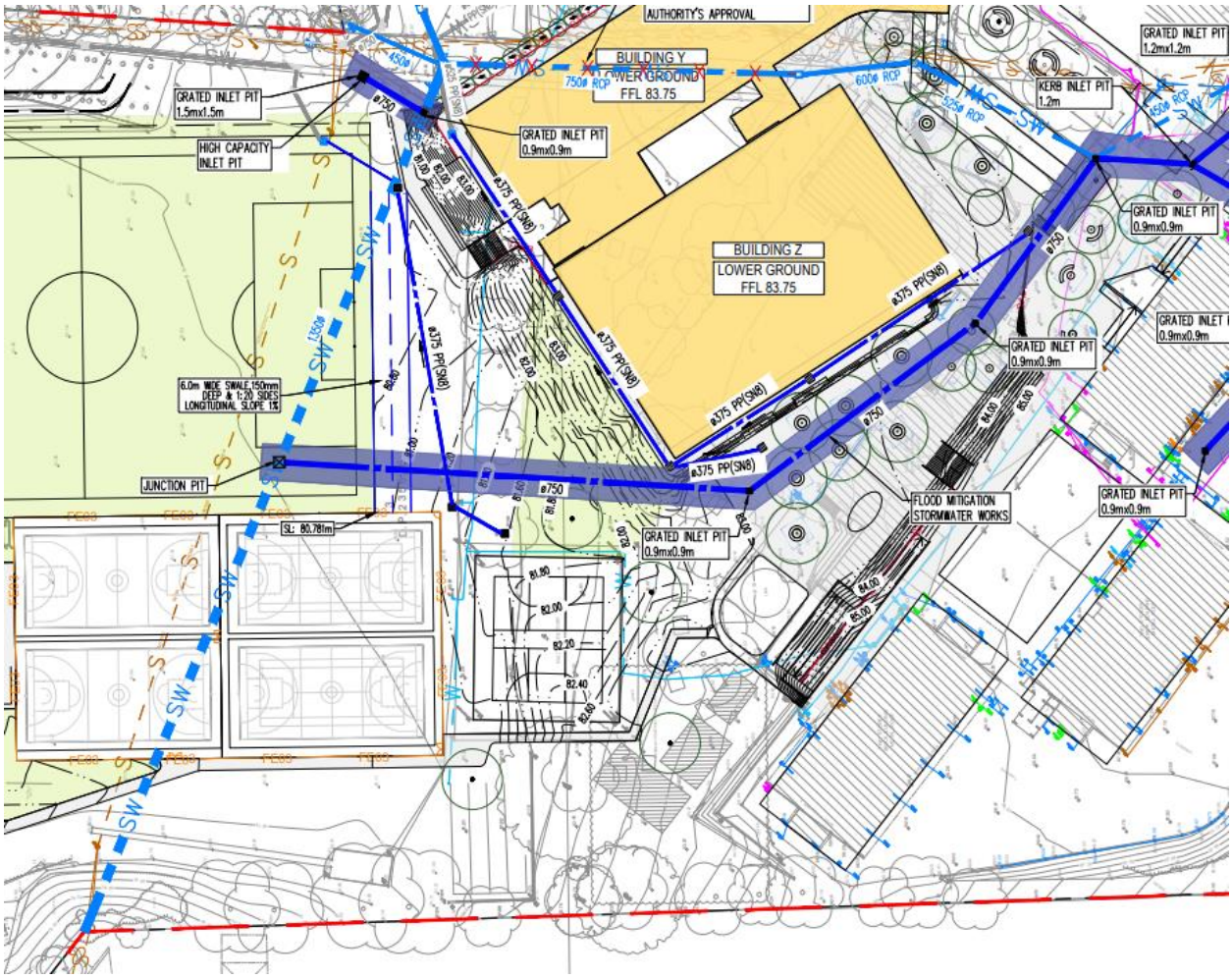
All campus stormwater drainage from CWPS will be diverted to a new on-site detention tank will be established near Felton Road West. The outlet pipe from the OSD will be connected to the existing council stormwater infrastructure at Felton Road West.



Snippet from civil design drawing showing location of new OSD and connection to existing council stormwater infrastructure

CHS

There is a quantum of council stormwater infrastructure crossing the CHS site, one of which will clash with new Building Y. As a result, new council stormwater pipes will be installed and the pipe that clashes with new Building Y will be decommissioned to council requirements. The on-site detention tank constructed as part of the early works requires additional storm filters to be installed. All campus stormwater drainage will be connected to the existing council 1350mm stormwater pipe running east to west across the campus, which exits site to the west.



Snippet from civil design drawing showing location of connection to existing council stormwater infrastructure, and location council stormwater pipe to be decommissoned

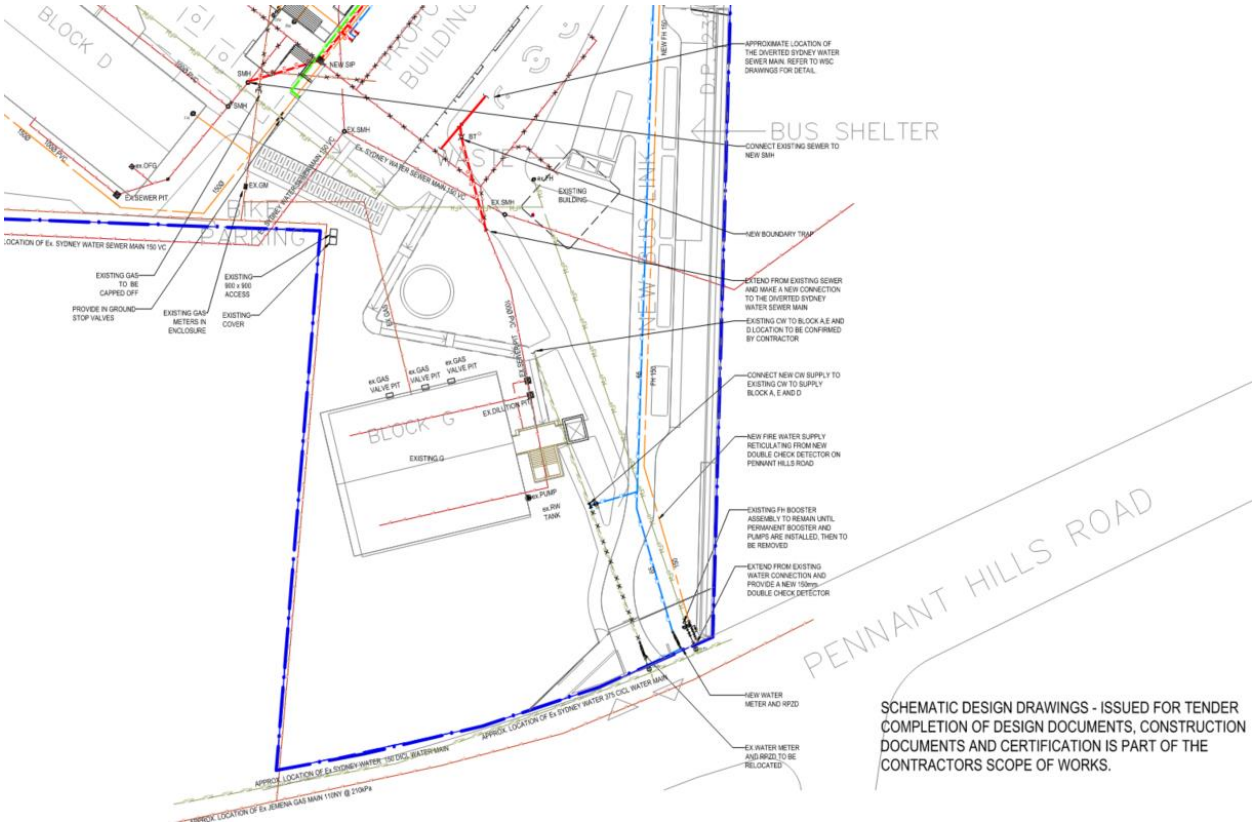
7.5.4 Gas Interfaces

CWPS

There is no gas service to CWPS required.

CWPS

The existing gas connection and gas meter from Pennant Hills Road will remain, there are no new works or adjustments required as per the contract documents.



Snippet from hydraulic design drawing showing location of existing gas connection and meter enclosure

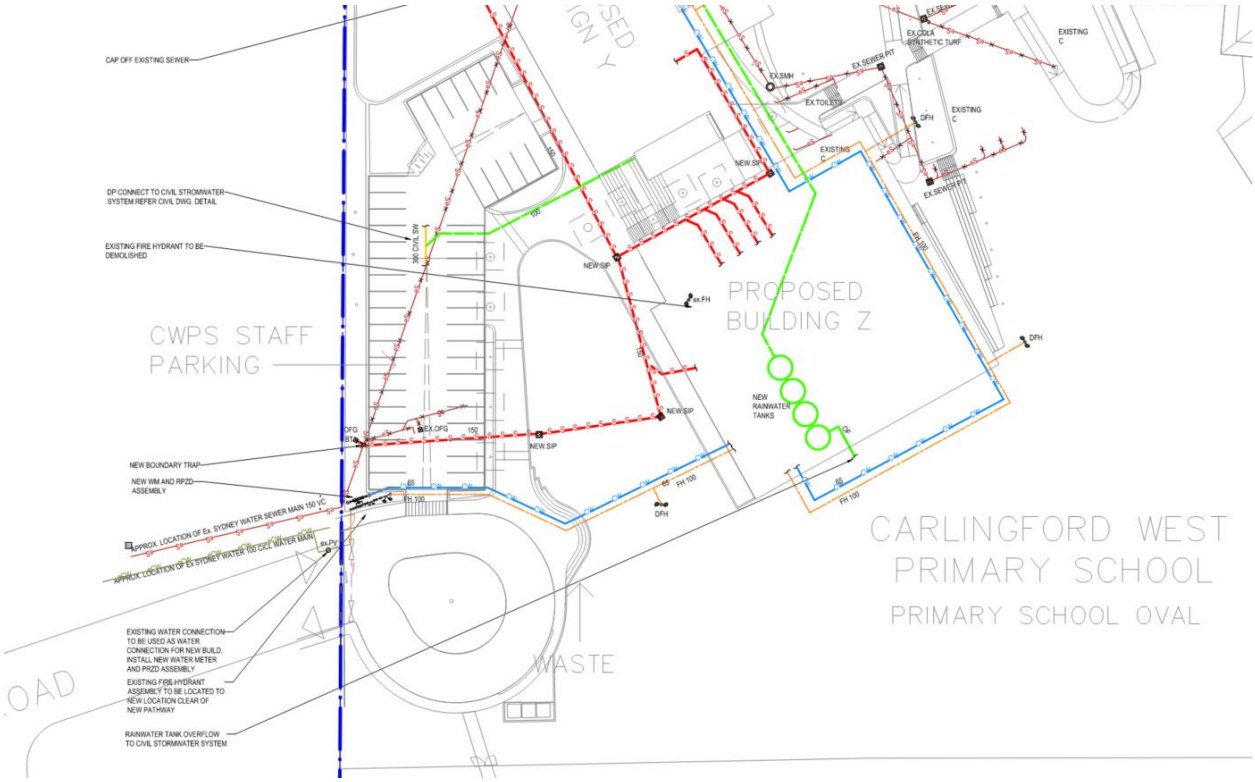
7.5.5 Sewer Interfaces

Roberts Co will engage a Water Services Coordinator to carry out the Building Plan Approval and Section 73 application for the development.

Roberts Co will develop any required Sydney Water Design, seek design and construction approvals associated with Sydney Water water connection works, facilitate execution of required deeds, easements and as-built documentation, and seek sign off and activation of the connections. Roberts Co will be responsible for payment of application fees and bonds, while payment of Developer fees and contributions will be the responsibility of SINSW.

CWPS

The RFT design allows for the existing sewer connection to remain, with the installation of a new boundary trap.

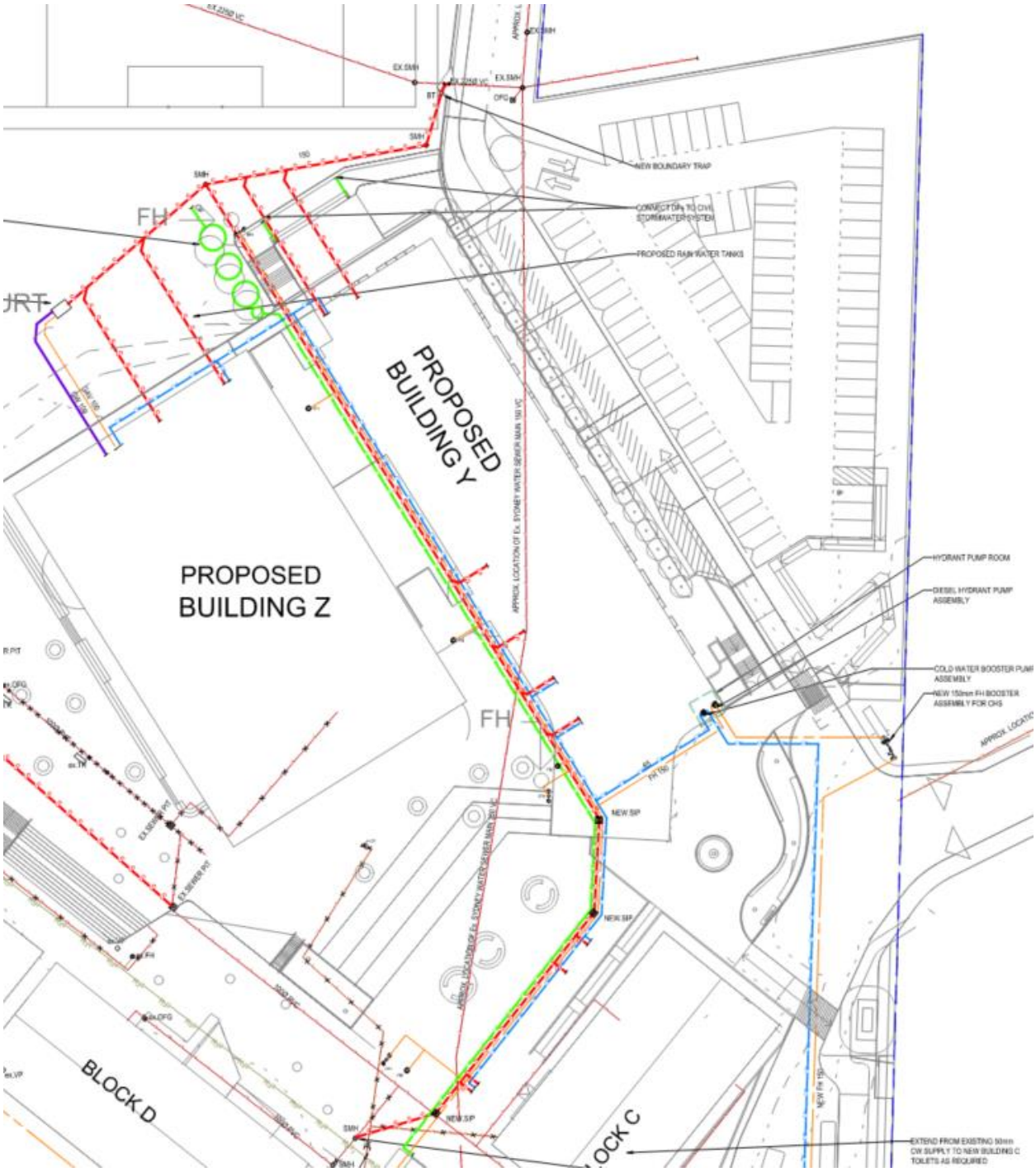


Snippet from hydraulic design drawing showing location new boundary trap and existing connection

The section 73 application notice of requirements will confirm Sydney Water acceptance of the RFT design proposal.

CHS

The RFT design allows for the existing Sydney Water sewer through the campus to be diverted to avoid new building Y. All CHS buildings will connect to this sewer as it runs through the campus. As part of the diversion works, there will be a new boundary trap installed to the existing sewer main near the kiss and drop.



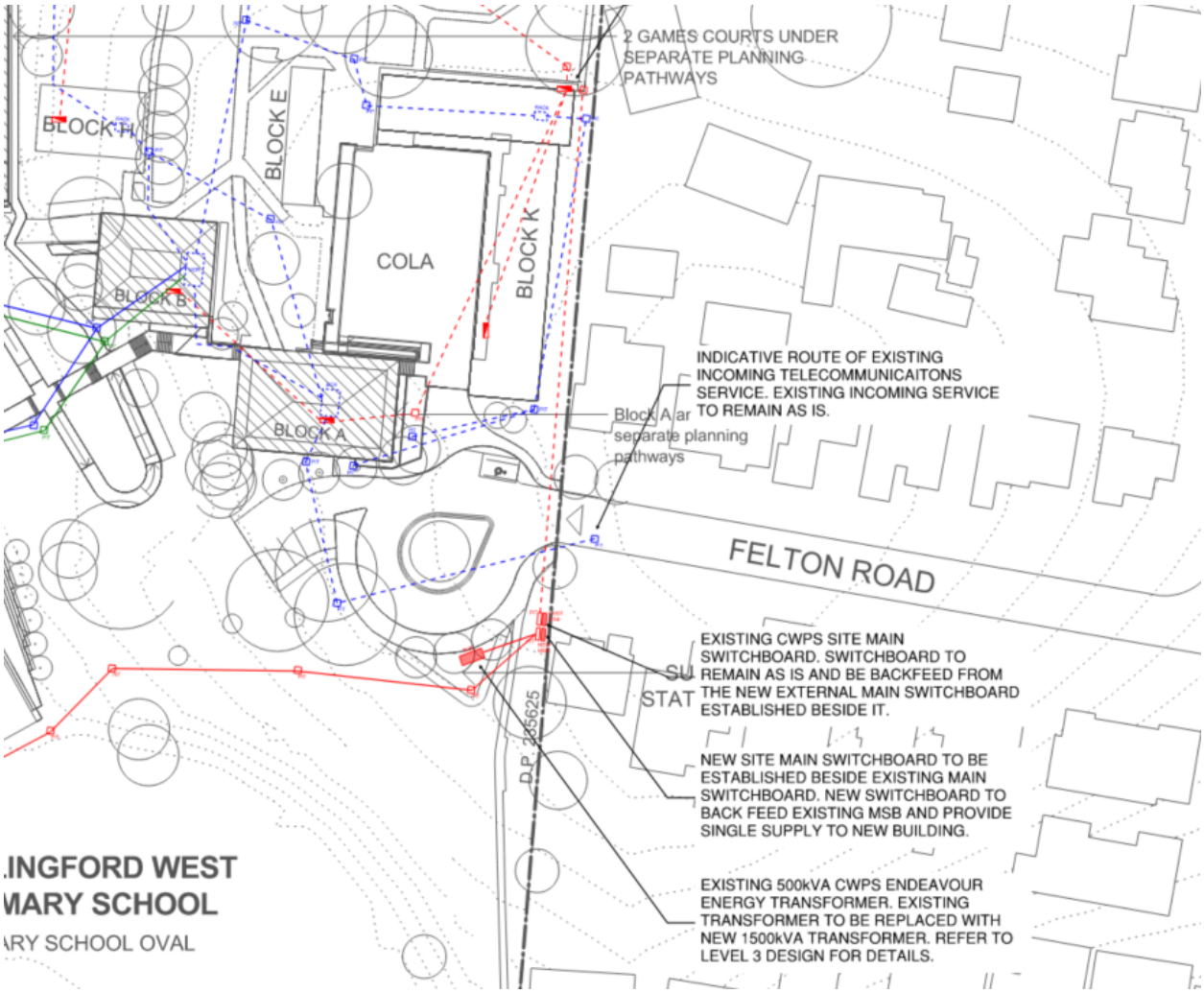
Snippet from hydraulic design drawing showing the sewer diversion works and new boundary trap location on existing sewer main

The section 73 application notice of requirements will confirm Sydney Water acceptance of the RFT design proposal.

7.5.6 Telco and NBN Interfaces

CWPS

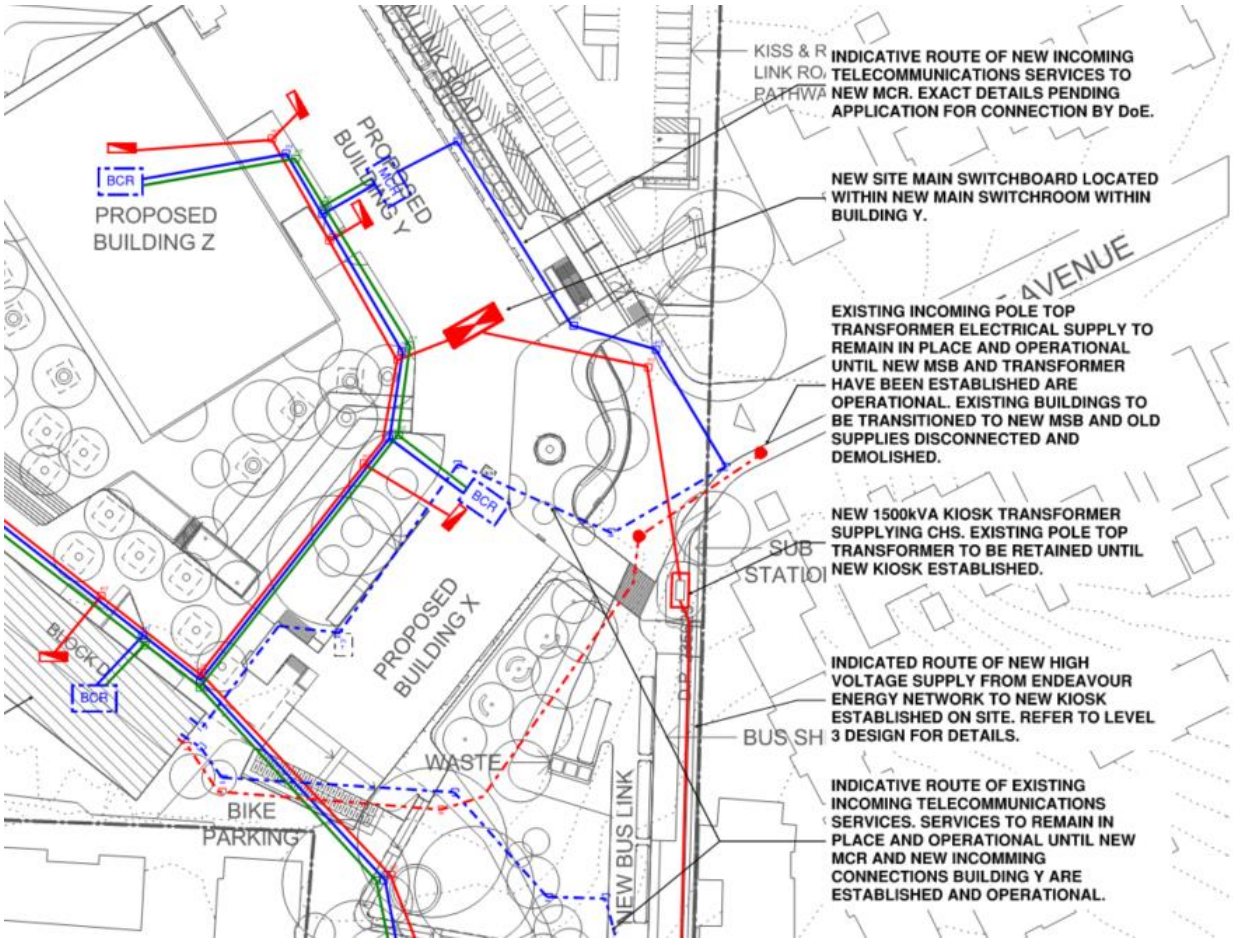
The RFT design allows for the existing telecommunications connection to Building B to remain. The new buildings will be connected to the main communications room via fibre housed in a pit and pipe network.



Snippet from electrical design drawing showing location existing telecommunications lead in at Felton Road East

CHS

The RFT design allows for a new telecommunications connection from Dunmore Ave to the newly built main communications room in building Y. New pit and pipe infrastructure will be designed and installed in accordance with the requirements of the Department of Education telecommunications provider.



Snippet from electrical design drawing showing location new telecommunications lead in at Dunmore Ave

Roberts Co will obtain all design approvals including approval of proposed equipment to be installed (passive equipment such as communications racks etc.). The Department of Education is responsible for procurement of the telecommunications provider. Roberts Co will facilitate site access for the contractor working on behalf of the provider for their active equipment and fibre installation. All works undertaken by the provider's contractor outside the boundary of the project or in the public domain is outside of the Roberts Co scope of woks.

8 SITE MANAGEMENT

8.1 Site Inductions

All site personnel will undertake a project specific site induction which includes a project overview, as well as information on site specific safety issues and emergency procedures. All site personnel must have an industry induction card.

All visitors will report to the site office and fill out the visitor register and must be accompanied at all times by an inducted person.

8.2 Site Security

Roberts Co will take necessary steps to assure that the site remains secure during and after working hours. Areas of consideration include but are not limited to:

– Site access and egress
– Site lighting
– Site offices (including CCTV and alarms)

Roberts Co personnel are responsible to check all egress and access points at the end of each working day to confirm that all site personnel have exited the site and that all site entry points are secure and locked. A complete check of all perimeter hoardings/fences at the end of each working day will also be completed to confirm they are secure. Fences and hoardings will be maintained in good presentable condition.

External lighting in compliance with AS 4282-2019 Control of the obtrusive effects of outdoor lighting;

8.3 Stakeholder Management Strategy

We have developed a Stakeholder Management Plan for Carlingford Cumberland Schools with the purpose of providing a framework and approach for stakeholder involvement and consultation for the Project. The following Plan objectives are being successfully achieved, continually monitored, improved (as required) and implemented on Roberts Co projects:

– Open, transparent and two-way communication with the Client, all stakeholders and the community, all community communication must be through SINSW.
– Engagement with stakeholders and the local community from project outset to nurture advocacy and long-term support. Understand their issues, drivers and aspirations and make every effort to ensure they are accurately informed and knowledgeable about the project and not influenced by inaccurate information in the public arena
– Ensure that all stakeholders are well informed about the Project
– Minimised impacts to affected stakeholders and community members with minimal negative feedback

8.3.1 Disruptive Notice (DN) Procedure

We have developed a Disruption Notification (DN) procedure that we will implement on the project. A DN Management Group will be established between SINSW and Roberts Co and they will meet regularly to plan upcoming works and agree outcomes for required service disruptions. Our strategy is to identify all services that need amplification, removal or cut over and establish a detailed program (including milestones for authority approvals and obtaining sign offs) accordingly.

The DN's will be submitted to the Savills Representative with reasonable notice before the planned disruption to allow sufficient time for review and approval.

Detailed pre-planning is the key to any successful planned disruption works. Clear and concise communication with all stakeholders for each area of interface will allow the ongoing operation of the existing school to continue with minimal disruption.

Part of this approach will be outlined in the Stakeholder Management Plan covering a broad spectrum of school and community engagement, as well as live environment works on the school precinct.

Roberts Co will lead the DN Management Group which will be established at the commencement of the project. It will comprise of representatives from SINSW, Savills, the Project team, School Management and where required, engineering staff.

This Management Group will meet on a regular basis to discuss and plan short- and medium-term upcoming interface works and inform the stakeholders of construction activities and progress. It will also provide the forum to review and approve current 'Disruption Notices" (DN) and specifically look at major services shutdowns, out of hours work, potential hazardous material identification / removal and pedestrian or vehicular amendments.

DN's will be submitted for any activity outside of the RCo Work site ie on School grounds, including when works impact the school or other stakeholders.

8.4 Risk Management

We have reviewed and understood the works required to successfully deliver the project. We have identified the following activities that have the potential to significantly impact on the surrounding streets and neighbours, if not managed effectively and communicated proactively with stakeholders:

- Pedestrian access
- Traffic and parking management
- Noise, dust and vibration management
- Emergency response procedures
- Incident Management
- Planning and management of shutdowns and controlling disruptions
- Out of hours work and emergency after hours call out
- Hazardous material identification and removal of known materials
- Procedure for dealing with unknown hazardous material

A formalised risk register will remain a live document updated and reviewed throughout the course of the project. In addition, Roberts Co implement a number of measures to ensure risks are identified, planned for and managed accordingly. Some of these include the following:

- High Risk Workshop
  - Workshop initiated by Roberts Co
  - Attendees include Roberts Co and relevant subcontractors completing the high-risk works
  - Relevant subcontractor discusses their works, focusing on high-risk activities which are addressed in their SWMS
  - Risks are workshopped, with all parties providing input
  - Where risks are considered of a significant nature, we would incorporate SINSW/ Savills
- Weekly Safety Walk
  - Attendees include Roberts Co and the Site Safety Committee

- Site Coordination Meeting
  - Weekly or Fortnightly meeting as determined by the Site Team
  - Attendees include Roberts Co and subcontractors.
  - Review project at a site level, with a focus on program, safety, environment, communications and commissioning
  - Meetings may be split for efficiency (i.e. Structure Coordination Meeting and Finishes Coordination Meeting)
  - Discuss pending actions
- Safety in Design (SID)
- Quality Risk Assessment (QRA)

Integral to the Stakeholder and Management Plan is a collaborate approach to both establishing and managing stakeholder requirements and expectations. We work with the stakeholders early to understand the impacts of our works, to develop strategies to minimise the impacts of our works to acceptable levels and communicate timing of works clearly to all stakeholders to ensure there are “no surprises”.

The project team will handle all enquiries and complaints received arising out of the works and will carry out the following:

- Record all such requests and complaints received in accordance with the Roberts Co “Enquiry / Complaints Handling Procedure” capturing the following information:
  - Date of complaint;
  - Name, Address, telephone number of complaints;
  - Nature of complaint and;
  - Response action required, taken and date closed out and;
  - Notify SINSW and the Project Manager as soon as practicably possible. [SINSW communication department to respond to all complaints].

The Roberts Co Project Manager maintains responsibility for this process. A register of reported complaints and corrective actions will be submitted to SINSW for monthly reporting. If upon investigation of the complaint, a non-conformance report (NCR) is to be raised by Roberts Co, notification as per above will be made. The respective complaint will then be notified of any corrective action taken. Our stakeholder management plan is designed to mitigate such complaints through maintaining positive and regular communications with the relevant project stakeholders.

8.5 WHS and Environmental Management

8.5.1 WHS Management Plan

Roberts Co considers health and safety as a precondition of everything we do. Our policies and procedures provide a framework to manage risk and accident prevention at the company’s workplaces. The Health, Safety and Environment Management System (HSEMS) identifies the positions within the company that are responsible for designing, developing, implementing and enforcing health, safety and welfare in accordance with legislation.

Our team has reviewed the construction activities required for the Carlingford Cumberland Schools works and have identified high risk construction work activities as defined in the NSW WHS Regulations:

- Work that that involves risk of a person falling more than 2 metres
- Work that involves demolition of an element of a structure that is load bearing

- Work that involves demolition of an element of a structure that is related to the physical integrity of the structure
- Work that involves structural alteration or repair that requires temporary support to prevent collapse
- Work in or near a shaft or trench deeper than 1.5 m or a tunnel
- Work on or near pressurised gas mains or piping
- Work on or near chemical, fuel or refrigerant lines
- Work on or near energised electrical installations or services
- Work that involves tilt-up or precast concrete
- Work carried out in an area of a workplace where there is any movement of powered mobile plant
- Work is carried out on, in or adjacent to a road, railway, shipping lane or other traffic corridor in use by traffic other than pedestrians

As an essential step in successfully managing these high-risk constructions activities, our team will create and maintain a Project Risk Register to ensure risks are monitored and catered for at any time. Following the review of our initial risk assessment during tender, our experienced site management team and our HSE Manager will invite the selection of subcontractors to discuss their Safe Work Method Statement (SWMS) and arrangements to be put in place to make sure the high-risk construction work is performed safely in accordance with the SWMS. Our site team will then monitor the implementation of the SWMS 'on the ground'.

8.5.2 Managing Hazardous Materials and Unexpected Finds

If unidentified hazardous materials and or Aboriginal and Non-Aboriginal heritage finds are encountered during our works, the steps in managing the removal and management of will be in accordance with Safework NSW, Roberts Co, Indigico and local legislative requirements and will include:

- Isolate and fully enclose the area
- Communicate the incident and initial safety to all stakeholders (step 1 when identified prior to works commencing)
- Employ hygienist or environmental consultant or heritage consultant to urgently verify material and provide remediation plans
- Notify Safework NSW and or EPA or other relevant groups where required
- Manage any impact on site workforce (mitigate potential IR issues)
- Install environmental monitoring equipment e.g. air monitors to each construction zone
- Remediate affected area in accordance with the remediation plan, all hazardous material to be disposed of to a licensed facility and appropriate tracking of loads and dockets obtained.
- Obtain a clearance certificate from the relevant hygienist or environmental hygienist that all asbestos has been removed and disposed of appropriately

As per the RAP, if ACM material is found to be present in the fill material, then all fill material is to be removed as part of the remediation works for the site. The extent of fill to be removed from site as ACM is not known and will be determined following the additional testing discussed above.

8.5.3 Emergency Management

A project-specific Emergency Management Plan will be developed outlining the procedures to be followed in the event of an emergency. Evacuation Plans, with emergency contact details, will be posted in relevant locations around the site.

For further information regarding any of the processes dealing with emergency related matters, refer directly to the project-specific Emergency Management Plan.

8.5.4 Site Conditions

8.5.4.1 Geotechnical Investigations

The RAP highlights contaminated areas which must be remediated as part of the SSDA conditions. These areas will have to be remediated during the excavation and final landscaping activities. A hygienist will be engaged during these works and once the approvals of a “clean” site is obtained. All works will be as per the RAP.

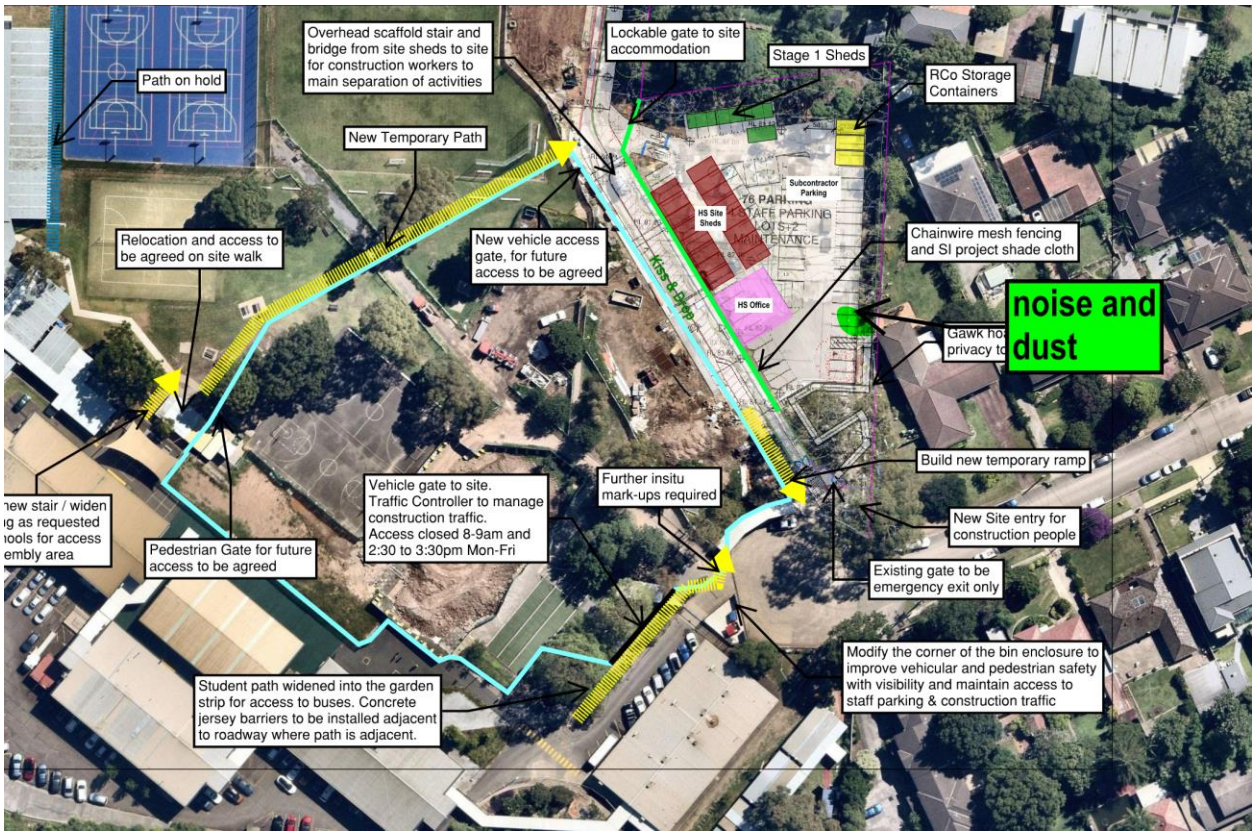
8.5.5 Noise, Vibration, Dust and Air Quality Management

8.5.5.1 Noise and Vibration Management

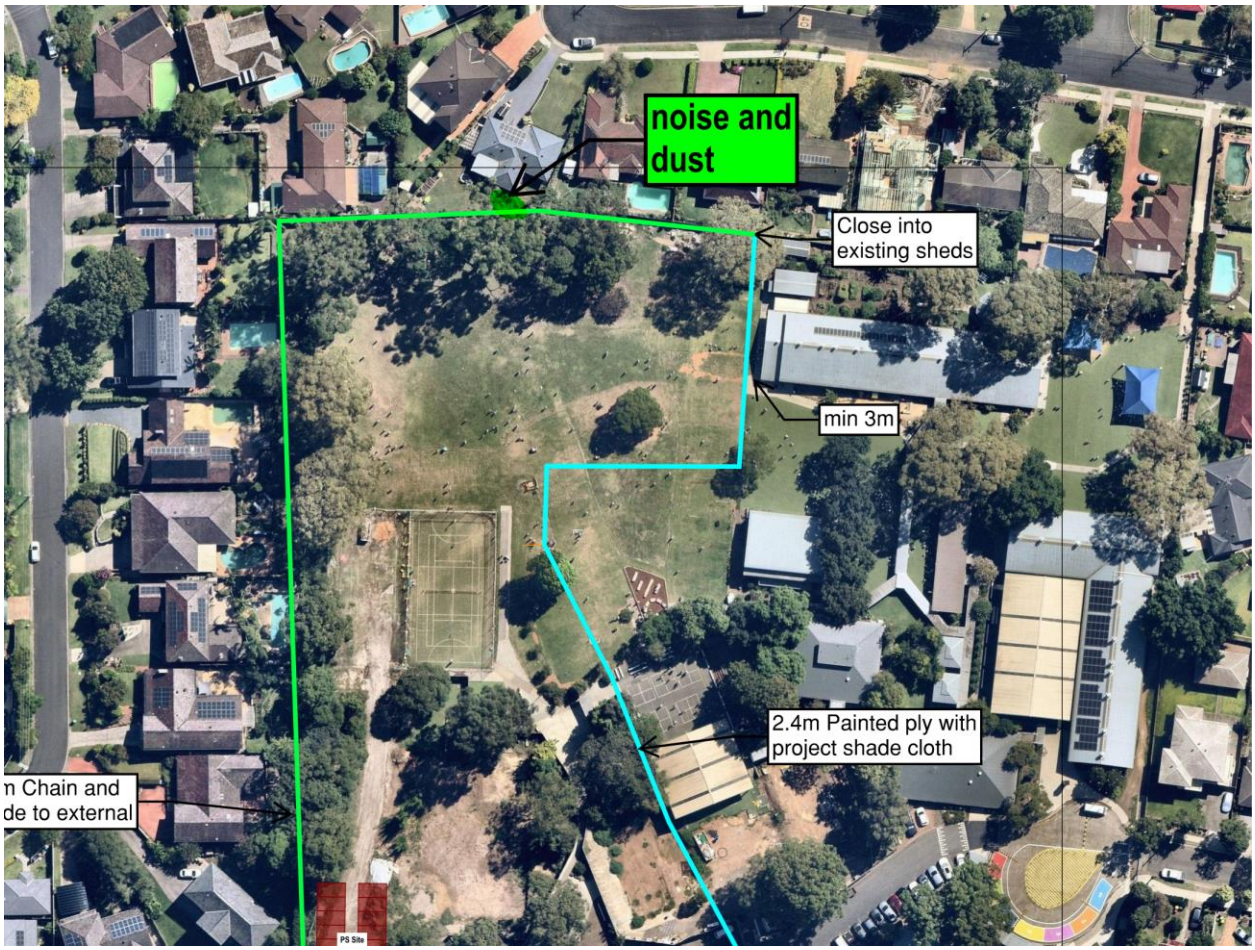
The site objectives are to minimise the noise and vibration generated by construction activities, and its impact on adjoining properties and infrastructure, surrounding residents, businesses and workers. We will develop strategies to work within those limits, or where exceedance of the limitations cannot be avoided, investigate with stakeholders’ ways to manage planned exceedances at appropriate times.

The Roberts Co team, has highlighted the sensitive receiver areas and acceptable tolerances for noise and vibration. The report shows acceptable locations to place the noise and vibration monitors which can provide real time data and be set to provide notifications when readings reach 95% of notifiable levels. This way the team are notified early of any vibrations approaching acceptable limits before the limits are reached.

The following measures for implementation to control noise and vibration will include:



The team has identified a sensitive receiver location at the boundary of the nearest residential premises. Further to monitoring we are going to install a noise reducing barrier adjacent to the properties boundary so that this minimises the impact on the resident.



The team will monitor the noise and the dust at the northern most boundary, this will also provide indicators for the noise impact to the school.

- Preparation of a Site Environmental Management Plan outlining the processes for managing environmental aspects and impacts in accordance with ISO 14001:2015, Protection of Environment Operations Act 1997 and the Protection of Environment Operations (Noise Control) Regulation 2008. Supporting the Site Environmental Management Plan is the Noise and Vibration Sub-Plan that will outline the specific operational controls that will be implemented to manage the noise and vibration aspects and impacts of the project.
- We will continue to engage an Acoustic Consultant to assist in developing the Noise and Vibration Management Plan, supply and install noise and vibration monitors and carry out monitoring during construction activities.
- Detailed assessment of background conditions to accurately assess baseline ambient conditions of noise and vibration.
- establish and maintain good relations with the community and neighbouring sites and consult where sensitive receivers exist.

- Provide a direct line of communication between required parties, SINSW, Roberts Co Project Manager and Acoustic Consultant
- Installation of noise and vibration monitors to locations identified in the consultation, as required for the noisy and vibration affecting works
- Monitors to have a SMS notification system which will alert our construction supervisory team if the criteria are exceeded. We will then investigate the source of the vibration and if required change our methodology, as a last resort consult with SINSW and undertake the work with agreed respite periods.
- If complaints are received from stakeholders, our Project Manager can be immediately contacted, and issues resolved. Issues can also be raised at the weekly Construction Consultation Meeting. Any recorded breaches of the predetermined levels would allow changes to be made to construction methodology accordingly.
- where possible, silencing equipment to be considered when conducting works outside of normal operating hours, and/or where works are likely to occur for an extended period of time
- Safe Work Method Statements must be submitted which include the schedule of demolition and construction works, including the plant and equipment to be used
- Review of allowable limits on emitted noise from mechanical plant and equipment n comparison to any municipal requirements
- identification of works areas likely to generate noise and vibration, with warning signage in compliance with AS1319, to alert personnel to use personal protective equipment, and
- scheduling of adjacent works to mitigate potential exposure to noise and vibration.

For details of specific workplace controls for noise and vibration, refer to the Environmental Management Plan.

8.5.5.2 Dust and Air Quality Management

The site objectives are to minimise the dust generated by construction activities, and its impact on adjoining properties and infrastructure, surrounding residents, businesses and workers. The project team will implement controls to suppress dust and other suspended particles in accordance with legislation and risk management requirements minimising the generation of dust on site and potential emission issues relating to plant and equipment.

The Air Quality Management plan is included within the project Environmental Management Plan.

The following measures will be implemented to control dust:

- suppression measures such as water sprays, shade cloths, plastic canvas or similar to ensure there is minimal impact outside of the site
- continuous wetting down of excavated spoil
- ensuring that trucks transporting materials to and from site are covered
- reviewing of dust control measures implemented on a regular basis for effectiveness
- regular periodic clean-up of work and staging areas
- Drilling or cutting shall utilise low vibration wet cutting and drilling to further reduce dust emissions
- Vacuum attachments to cutting, drilling and grinding tools shall be implemented to further control dust emissions
- Controls to be in place at gates to ensure vehicles exiting site do not leave dirt on the roads

For details of specific workplace controls for dust, refer to the Environmental Management Plan.

8.6 Hazardous Materials Storage

Some construction materials are classified as hazardous materials, the type of product will determine the method they are to be handled and the storage requirements of the materials. We propose to store all the hazardous materials in a secure location.

Wherever possible alternate materials will be selected that are less hazardous, for instance water-based products in lieu of solvent based products. This is not always practicable and hazardous materials are required to complete the works.

The hazardous material storage area shall be a secure, locked area. It shall include provision for containment of hazardous material as well as spill or leak control – (e.g. bunding to limit the spread of a liquid; warning devices that detect a gas leak). Fire control and emergency response – these are the steps to be taken if containment fails. The hazardous materials storage area will form part of the Site Emergency Plan, in the case of an incident the storage area shall be easily accessible to emergency services and incorporate fire control and monitoring devices relevant to the hazardous materials.

Ventilation of the storage area will be carefully considered in accordance with the requirements of the hazardous material. The location of the storage area shall be located away from any existing building window or intake vent. The area shall be adequately sign posted with warning signs and protected by barriers to prevent inadvertent collisions with vehicle and equipment. The area will undergo regular maintenance, inspections and cleaning to ensure the controls are current for the materials being stored.

The hazardous material storage area shall be in accordance with the Safe Work Australia Code of Practice 2005.

8.7 Waste Management Plan

The site objectives are to minimise waste generated by construction activities. The following measures will be implemented to control waste:

– waste bins provided on site and recycling off site, to ensure minimal wastage occurs and unnecessary landfill being generated.
– concrete and brick material to be recycled.
– waste generated from food scraps, and general waste from workers, to be stored in separate receptacles and removed from site on a regular basis
– look to utilise pre-fabricated materials as much as possible to minimise waste generation on site.

For details of specific workplace controls of waste, refer to the Waste Management Plan.

9 DEFECT AND COMMISSIONING STRATEGY

9.1 Defects Management Methodology

Eliminating defects that arise during construction, or at the very best, resolving in a timely manner prior to completion, requires the application and proven processes designed to identify and resolve defects in real time.

To reduce the occurrence of defects and to ensure they are dealt with in an appropriate and timely manner, we will implement a defects management plan that forms part of the overall Handover and Finalisation Plan.

The defects management plan will provide the structure for the site team and subcontractors team that will be designed to:

– Ensure defects and quality issues are not allowed to accumulate
– Ensure inspections are carried out by the workface and that links are established with the company's quality assurance systems
– Ensure tradesmen and their direct line of supervisors see quality as their responsibility to enable quality issues to be resolved at the lowest possible level.

Our defects methodology is designed to eliminate defects rapidly without the need for excessive paperwork and administration. This process is supported through cloud-based defect management tool, utilising Aconex, or Zutec software, or a combination of the two. We will undertake the following processes utilising real-time data capture of defects and nonconformances as they occur, mitigating the risk of a substantial number of defects at completion.

This system enables:

– Defects and Quality inspections to be administered via the one application, with all information in one central repository
– Notification of defects to the applicable tradesmen and direct line supervisors; identifying the exact defect site location on the relevant drawing, the description, images and documentation, along with the required timeframe for rectification
– Ability to report and close out defects at the defect location via the application, using a lightweight mobile device on site, such as iPad or mobile phone, ensuring the defect is closed out only when rectified (not in a site office)
– Enables Roberts Co and SINSW to track the closure of all defects and a defects current status
– Maintains real time history of all actions including when the defect was created, when the responsible party took action, and determine programme and cost impacts
– All defects, whether open or closed to be filtered by trade, location and time frame, to ensure holistic overview and review

A focus on getting things right first time - eliminating the need for costly revisit and rework, as a Roberts Co representative can undertake inspections and sign offs simply via the application, resulting in greater vigilance. The option to invite consultants to monitor the quality of workmanship and finishes during the course of construction, provides a third level of inspection and reporting prior and during a defect's resolution.

The defect methodology process via the Roberts Co defects management application will be rigorously applied to the Project and site level quality awareness will be reinforced with quality inspections by the Design Consultants and this process will be an integral part to the installation, commissioning and handover process.

9.2 Commissioning Methodology

Project completion is a key phase of building delivery during which occupation certification, validation, training and handover take place. Roberts Co is acutely aware that planning for a successful, integrated project completion needs to start from day one of the project. Clear and efficient management of this stage of the project will ensure a transparent and collaborative validation process and subsequent smooth handover of an operating and fully commissioned building to informed and trained building management.

A pivotal component of the commissioning process is the Building Commissioning Framework. This shall be submitted for endorsement.

The Building Commissioning Framework shall include but not limited to the following key items:

– Commissioning team structures and resources
– Commissioning principles
– Building and Commissioning elements
– Methodology and collaboration of the as-built and asset management information
– Preliminary overview of the contractor's resources plan that will form part of the commissioning team, to achieve the commissioning compliance and handover requirements for the project.

We will lead, establish and co-ordinate, chair and minute a Building Handover and Commissioning Group and determine the frequency of meetings in conjunction with SINSW and establish the framework upfront as required.

Not less than 12 months and prior to building commissioning commencing, we will prepare a Building Commissioning Management Plan and Building Commissioning Plan Program. The Commissioning Management Plan will be a supporting document to the overall Roberts Co Handover and Finalisation Plan. Detailed building services commissioning plans will be provided by the respective specialist subcontractors to address specialised commissioning activities. This will include but not limited to:

– Process and requirements for Commissioning Management
– Process and requirements for the testing, commissioning and placing into service of the building services and specialist equipment
– Process for the hand-over of the operating systems to the Facility Managers
– Requirements for the provisions of as-built and Operating and Maintenance Documentation
– Summary of Operating Training
– Establish a maintenance regime as necessary for the maintenance and warranty period
– Personnel resources including responsibilities and required skills.

Our plan will also address the following objectives:

– Confirm the commissioning requirements for the project
– Identify and mitigate commissioning related risks
– Document the intended commissioning and handover process intended to fulfil the contract requirements
– Determine the key activities and interdependencies in relation to the commissioning programmes between the various systems to develop the critical path including the key coordination of activities between the subcontract disciplines and associated builders works
– Confirm client and consultant witness test requirements (such as attending representatives)
– Present the scope for training of end-users

The methodology for commissioning relies on the integrated commissioning of key systems through component sub-systems to achieve fully functional Schools. Each system and its comprised sub-systems are commissioned to a set of requirements determined through guidelines, standards and industry benchmarks to achieve a predetermined level of operation.

The services consultant specifications, CIBSE Commissioning Codes, Australian Standards will be used to formulate the commissioning plan.

Once each system is commissioned on an individual basis the systems are then subjected to detailed functional interface testing in order to provide their combined operational performance under varying conditions and scenarios.

A commissioning requirements analysis is then presented through the creation of commissioning specifications which identify the commissioning requirements for each system. The specifications will be used to review and assess the adequacy of the services subcontractors commissioning plans which will also outline the clients' commissioning requirements.

As part of this process each system progresses through a phased completion process and the associated completion of the commissioning records (such as ITP's) is to be conducted in line with the progression of the construction works. Once a system is commissioned and is ready to be functionally tested through cause-and-effect scenarios (integrated with other commissioned systems), we will lead the Functional Testing process enabling an increased level of confidence in achieving correct operation and interface of systems under operational scenarios.

Witness testing compliance will be offered to the end users and consultant parties to witness correct operation of the systems. Witnessing of the commissioning activities will be identified as part of the upfront Building Commissioning Framework.

Generally, the design consultants will be responsible for witnessing key commissioning activities associated with the Certificate of Occupancy and as necessary to confirm the design intent has been achieved in accordance with the Brief.

On the successful witnessing of the system and ensuring all contractual responsibilities are complete the system is ready for handover to the Client. At this point training of the system will commence. Further details of handover of systems to the client will be identified as part of the Building Finalisation Plan.

Due to the importance that the commissioning process has on successfully completing individual systems testing, holistic interface testing and handover to the client, the commissioning programme requires sufficient detail and linking tasks to ensure that the progress can be monitored on a regular basis. The programme will be jointly produced by Roberts Co services manager and the subcontractor commissioning management team.

During this stage of the project, commissioning manuals will be prepared by the respective trade contractors and included within the Operation and Maintenance manuals for final endorsement by SINSW and Savills prior to submission formally to the SINSW.

In conjunction with the testing and commissioning process, preparation of the "as built" documentation will commence in readiness for handover. O&M manuals, incorporating the various operating and maintenance requirements, will be compiled on a progressive basis.

9.3 Commissioning Planning

We will create a detailed commissioning programme for each milestone describing the sequence of activities to occur and the dependencies required to enable the works to be successfully placed into operation. The programme will identify milestones required including activities to be undertaken to ensure the works can be completed.

It will be imperative that the Commissioning Working Group are communicating and driving expectations of all parties involved in the commissioning and finalisation process to follow and achieve the dates identified in the commissioning programme.

10 PROJECT COMPLETION

As completion and handover approaches, all statutory documentation will be obtained from suppliers and subcontractors to satisfy the Certifiers requirements, and to satisfy handover operational and maintenance manual requirements outlined by the Client. Where applicable, authorities will be consulted in order to facilitate site inspections provide assurance with as-built conditions.

In the final lead up to receiving a Certificate of Occupancy, the Certifier will be expected to attend site a number of times prior to the final inspection walk(s). For further information regarding any of the processes dealing with completion and commissioning related matters, refer directly to the project-specific Handover Management Plan.

10.1 O&M Manuals and Training

The Operation and Maintenance (O&M) manuals will be formatted to enable upload to AFM Online. The collation process will be iterative with an early review with the Principal and if appointed, the facility manager to ensure that the content and format of manuals is optimally suited for future use by building users.

The final manuals will include:

- Building certifications documentation.
- Operation and maintenance manuals for works by each trade.
- Consultant and trade ‘works as executed’ drawings.
- Warranties.
- Commissioning data and certificates.
- Maintenance requirements with detailed breakdown of complex building services trades.
- FF&E schedules and asset register.
- Testing and training records.

The final aspect of commissioning is the training and handover to the building operators. This will incorporate final services commissioning and operator training activities. The main focus will be on the various building services operations and the presentation of the electronic O&M information. Other operational and handover issues, such as key systems, façade cleaning, maintenance of finishes and the like, will also be covered. Draft O&M documentation will be issued to the building operators prior to completion of the construction works.

We encourage early involvement of the building operators as this creates a familiarisation and technical understanding of the operating building services, which is invaluable post-handover.

APPENDICES

Environmental Management Plan

Noise and Vibration Management Plan