



Education

# North Sydney Public School

Engineering Services  
State Significant DA Report

**NSW Department of Education**

Reference: 520128

Revision: 1

2021-08-18



**aurecon**

*Bringing ideas  
to life*



# Document control record

Document prepared by:

**Aurecon Australasia Pty Ltd**

ABN 54 005 139 873

Level 5, 116 Military Road

Neutral Bay NSW 2089

PO Box 538

Neutral Bay NSW 2089

Australia

**T** +61 2 9465 5599

**F** +61 2 9465 5598

**E** sydney@aurecongroup.com

**W** aurecongroup.com

A person using Aurecon documents or data accepts the risk of:

- a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version.
- b) Using the documents or data for any purpose not agreed to in writing by Aurecon.

Document control			aurecon			
Report title		Engineering Services		State Significant DA Report		
Document code		510798-0002-REP-JJ-0005	Project number		520128	
File path		https://aurecongroup.sharepoint.com/sites/P520128/5 Deliver Design/501 Engineering/Reports/520128-0001-REP-JJ-0001 NSPS SSDA Report[0].docx				
Client		NSW Department of Education				
Client contact		Alfred Jury	Client reference		SINSW-01098/20	
Rev	Date	Revision details/status	Author	Reviewer	Verifier (if required)	Approver
0	2021-08-17	Draft Issued for Review	Project Team	Siobhan Tapia-Smith		
1	2021-08-18	SSDA Issue	Project Team	Siobhan Tapia-Smith		Siobhan Tapia-Smith
Current revision		1				

Approval			
Author signature	TD	Approver signature	STS
Name	Thomas Daunt	Name	Siobhan Tapia-Smith
Title	Senior Structural Engineer	Title	Technical Director



# ■ Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Project Description .....	1
1.2	Design Brief .....	1
1.3	Reference Information .....	2
1.4	Information Qualification .....	3
<b>2</b>	<b>Civil4</b>	
2.1	School Site Constraints .....	4
2.2	Earthworks.....	4
2.3	Stormwater Management .....	4
2.4	Pavements.....	6
2.5	Recommendations.....	7
<b>3</b>	<b>Structural.....</b>	<b>8</b>
3.1	Introduction .....	8
3.2	Building J – New Hall Building.....	8
3.3	Building I – New Classroom Building .....	8
3.4	Structural Design .....	8
	<b>Appendix A.....</b>	<b>15</b>
	Civil Services Drawings .....	15

## Figures

Figure 1 - Stormwater treatment train analysis

## Tables

Table 2-1 Pollutant Reduction Table

Table 2-2 - Stormwater quality improvement devices

Table 2-3 - Pollutant export removal rates



# 1 Introduction

## 1.1 Project Description

This State Significant Development Application (SSDA) seeks consent for alterations and additions to the existing North Sydney Public School. The proposal includes:

- Demolition of the existing hall (building B), haven building (building C) and 6 temporary buildings;
- Construction of a three storey building, Building I comprising:
  - staff administration rooms;
  - 16 homebases
  - a new library;
- Construction of a new building J comprising of:
  - hall;
  - out of school hours care facilities;
  - covered outdoor learning area;
  - bicycle parking and end of trip facilities for staff; and
  - services, amenities and access.
- New entry gate and forecourt from Bay Road;
- Internal refurbishment of building G ground floor from the existing library to 3 homebases;
- Capacity for an increase in student numbers from 869 to 1,012; and
- Associated tree removal, landscaping and excavation.

The proposal maintains:

- The gates and fence of former Crows Nest House including the entrance from Pacific Highway and Bay Road;
- Existing gate along McHatton Street;
- The outdoor play area to the east of Building A;
- Existing covered outdoor learning area adjacent to Building A;
- The basketball courts and staff carpark in the western portion of the site;
- The significant tree planting on all school boundaries;
- Buildings A, D and F noting minor internal refurbishments are being undertaken outside of the SSDA scope of work (exempt development) to improve student amenities and canteen; and
- Building G noting ground floor internal refurbishment is proposed in the SSDA.

## 1.2 Design Brief

Aurecon has been engaged by Department of Education (DoE) to provide structural and civil engineering for the North Sydney Public School redevelopment project. In working with the broader project team, Aurecon has delivered their design services with the intent to satisfy the project objectives for the redevelopment as outlined above and to address 'Plans and Documents – Structural Report' in the Secretary's Environmental Assessment Requirements (SEARS).



This report details the engineering services SSDA design for the following disciplines:

- Structural and
- Civil

The SSDA scope is limited to a high-level design and is guided by the progress of the Architectural drawings. Detailed civil and structural engineering design will be progressed during the detailed design phase with drawings and design issued for construction during the contract documentation phase.

## 1.3 Reference Information

Design is based on the following architectural drawings prepared by Fulton Trotter Architects on behalf of DoE:

- Drawing SD-0000, Title Page, Revision A
- Drawing SD-1001, Existing and Demolition Site Plan, Revision E
- Drawing SD-1002, Proposed Site Plan, Revision E
- Drawing SD-1003, Site Analysis Plan, Revision A
- Drawing SD-1101, Tree Retention Plan, Revision A
- Drawing SD-1102, Construction Environmental Plan, Revision A
- Drawing SD-1103, Streetscape Elevations and School Signage, Revision A
- Drawing SD-1104, Site Sections, Revision C
- Drawing SD-1105, Site Sections, Revision C
- Drawing SD-1106, External Materials and Finishes, Revision A
- Drawing SD-1107, Perspectives, Revision A
- Drawing SD-1108, Shadow Diagrams, Revision A
- Drawing SD-1301, Staging Plans, Revision A
- Drawing SD-2001, Building J – Level 1 Floor Plan, Revision F
- Drawing SD-2002, Building I – Level 1 Floor Plan, Revision F
- Drawing SD-2003, Building J – Level 2 Floor Plan, Revision F
- Drawing SD-2004, Building I – Level 2 Floor Plan, Revision F
- Drawing SD-2005, Building I – Level 3 Floor Plan, Revision F
- Drawing SD-2006, Building J – Roof Plan, Revision F
- Drawing SD-2007, Building I – Roof Plan, Revision F
- Drawing SD-2012, Building G – Level 1 Floor Plan, Revision D
- Drawing SD-3001, Building I&J – Elevation 01, Revision F
- Drawing SD-3002, Building I&J – Elevation 02, Revision F
- Drawing SD-3003, Building J – Elevation 03, Revision F
- Drawing SD-3004, Building I – Elevation 04, Revision F
- Drawing SD-3101, Building I&J – Section 01, Revision A
- Drawing SD-3102, Building I&J – Section 02, Revision A
- Drawing SD-3102, Building J – Section 03, Revision A
- Drawing SD-3102, Building I – Section 04, Revision A



In addition to the above, the following reports were also referred to in order to inform the design:

- North Sydney Public School Site Investigation, Geotechnical Investigation Report, prepared by Coffey Services Australia Pty Ltd, Report No. SYDGE232786-AD, Revision 01, dated 20/11/2019
- North Sydney Public school Geotechnical Desktop Study, prepared by Tetra Tech Coffey, Report No. SYDGE290593AB, Revision V1, dated 30/07/2021
- Limited Stage 2 Environmental Assessment, North Sydney Public School, prepared by Coffey Services Australia Pty Ltd, Report No. 754-SYDGE232786, Revision R02b, dated 20/11/2019

## 1.4 Information Qualification

The information in this report is based on site inspections, supplied documentation (limited services and architectural as-built drawings) and publicly available information. As inspections were made during Covid restricted conditions, all site inspections were non-destructive and non-disruptive in nature. No visual inspections were made of above ceiling or under floor areas including rooftop plantrooms and other concealed site-wide building services for existing buildings.



## 2 Civil

### 2.1 School Site Constraints

North Sydney Public School is in the North Sydney Council LGA and is subject to development controls as set out in the North Sydney Council Development Control Plan (2013), North Sydney Council Performance Guide, and North Sydney Council Infrastructure Specification Guide 2021.

North Sydney Public School is not located in a major flood prone area and apart from localised overland flow problems is considered mostly flood free.

### 2.2 Earthworks

The topography varies with a level difference of up to 9m across the site. The high point in the northeast corner is at approximately RL 86.95 m grading down to the southwest to the existing netball/basketball courts at approximately RL 78.00 m.

For earthworks modelling, an FFL 82.8 was established for the lower ground pad for Building I and Building J with an FFL of 86.4 for the upper pad to allow level access between the hall and the COLA.

Further earthworks modelling in detailed design phase will determine a more balanced earthworks volume to minimise the amount of construction labour cost.

Co-ordination of levels for the new walkways is to be coordinated with the Landscape Architect and will be required to finalise the bulk earthworks.

Erosion and sediment control measures are to be designed in accordance with the International Erosion Control Association (IECA) Guidelines as part of the detailed design phase, and subsequent implementation of these measures for construction.

### 2.3 Stormwater Management

#### 2.3.1 Drainage Methodology

The majority of site runoff generated currently drains via the existing infrastructure through the site and discharges to the concrete channel located to the south of the site. To prevent increased discharge rates and maintain the existing drainage conditions in the surrounding properties/roads and infrastructure, an onsite detention system with controlled discharge is to be installed and the discharge locations will be maintained post-development.

Refer to the SSDA Stormwater Management Report for full documentation on the North Sydney Public School stormwater drainage strategy.

Stormwater from the proposed school facilities expansion will be captured as roof water and within localised field inlets then piped via gravity to the relevant treatment and mitigation measures prior to offsite discharge.

The roof water from new building I and building J is collected and discharged into the on-site detention (OSD) and on-site retention (OSR) system. Refer to Section 2.3.2 for more information.

It is recommended that an allowance be made for surface and subsoil drainage either through or around the structure. This is subject to on-going co-ordination during detailed design.

#### 2.3.2 On-site Detention

No existing OSD system is present on site. In accordance with North Sydney Council requirements, the new OSD system(s) will be required to compensate for the increased fraction of imperviousness of the school grounds.



The external catchment draining through the site has been omitted from drainage design at this stage, as North Sydney Council (NSC) planning policy requires on-site detention tanks and water treatment are to be sized only for the development area. Existing upstream catchment areas are catered for through dedicated overland flows diverted around the proposed works to reduce the risk of inundation to the new buildings on the site.

The proposed OSD is a concrete tank with a volume of 99m<sup>3</sup>. It was sized using general best practice principles as North Sydney Council does not have specific design guidelines for OSD sizing.

The areas above are based on the proposed scope of works outlined in the architectural schematic drawings. Initial runoff calculations have been undertaken using the rational method and are provided in the SSDA Stormwater Management Plan report.

## Detention Outlet Arrangement

The outlet arrangement modelled included an orifice plate in order to control the outlet flowrate during minor and major storm events. The outlet arrangement is a 190mm diameter orifice plate in a 225mm diameter pipe from the detention basin at invert level of 84.08m.

### 2.3.3 Stormwater Quality

No other stormwater treatment system is currently present on site. In accordance with Council requirements, it is likely that stormwater treatment will need to be provided for the proposed new buildings and walkways as they increase the imperviousness of the site.

For all new developments, the North Sydney Council Water Sensitive Urban Design (WSUD) principles stipulate the following water quality requirements for urban developed lands:

Pollutant	Performance Requirements
Total Suspended Solids (TSS)	85% reduction
Total Phosphorus (TP)	65% reduction
Total Nitrogen (TN)	45% reduction
Gross Pollutants (GP)	90% reduction (for pollutants greater than 5mm in diameter)
Hydrology	Post development peak discharge must not exceed the pre-development peak discharge for flows up to the 5-year ARI.

**Table 2-1 Pollutant Reduction Table**

It is noted that the above targets do not require any analysis of the existing pollutant load generated at the site prior to development. The percentage reduction is assessed against the proposed development if no stormwater treatment measures are implemented.

The following treatments are proposed to be implemented as part of the internal drainage network to provide stormwater quality treatment for the proposed development. Details of the Stormwater Quality Best Management Practices (SQBMP) proposed to be adopted and implemented for the preferred redevelopment option as part of the internal drainage network to provide stormwater quality treatment are outlined below:

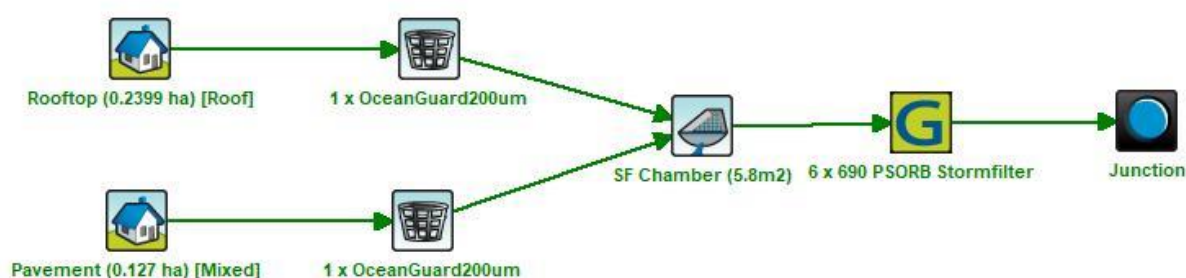
SQBMP Description	Discussion
<b>Litter Baskets (GPT) - OceanGuards with 200micron mesh bags (OG-200).</b>	A gross pollutant trap (GPT) is a treatment device designed to capture coarse sediment, trash and vegetation matter in stormwater runoff. These devices can be at source or end of line separation systems.



<b>Tertiary Treatment System</b> <b>PSorb Cartridge StormFilter system</b>	Proprietary tertiary treatment system specifically designed to remove nutrients and sediments amongst other pollutants from stormwater runoff.  The removal rates and overall effectiveness of this device has been tested extensively by the manufacturer and the treatment effectiveness have been accepted by BCC in other development applications.
---	---

**Table 2-2 - Stormwater quality improvement devices**

The stormwater quality improvement devices (SQUIDs) were selected to target each of the pollutants of concern and was subsequently incorporated into the development site layout. Prior to piped drainage entering the detention chamber(s) runoff is to pass through an end of line gross pollutant trap (GPT) to minimise frequency of OSD cleanout. As an alternative, litter baskets can be installed in all ground level inlets. At source collection, such as this, requires more frequent maintenance however it is a relatively simple task and doesn't require specialist equipment which is often required for end of line solutions. The proposed treatment train is shown below:



**Figure 1 - Stormwater treatment train analysis**

The pollutant export removal rates for the developed phase obtained from the treatment train analysis are tabulated below:

	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	4.84	4.84	0
<b>Total Suspended Solids (kg/yr)</b>	422	40.1	90.5
<b>Total Phosphorus (kg/yr)</b>	1.17	0.353	69.8
<b>Total Nitrogen (kg/yr)</b>	11.5	5.69	50.6
<b>Gross Pollutants (kg/yr)</b>	118	0	100

**Table 2-3 - Pollutant export removal rates**

Notes:

- The proposed measures will provide adequate treatment for the proposed new building.
- These system sizes are indicative only and require verification as the detailed design progresses.

## 2.4 Pavements

Existing surfaces differ through the school site and include artificial turf, grass and turf and pavements such as concrete, asphalt, concrete block pavers.

All new pavement surrounding the new development will be coordinated with the landscape during the detailed design phase.



## 2.5 Recommendations

During detailed design, the proposed buildings footprint and additional landscaping will be assessed to determine any localised earthwork levels and to confirm the disturbance of ground extent.

With the installation of new OSD tanks, additional runoff from the increased roof and hardstand areas will be mitigated in line with local council requirements. Discharge will be treated using water quality treatment devices.

New stormwater infrastructure to directly support the new buildings have been included in the schematic design. Aurecon recommends a detailed survey and further drainage system modelling to understand more detail of the existing system capacity and for it to be utilised to maximise the reuse of the existing drainage network to minimise the extent of new infrastructure required.



## 3 Structural

### 3.1 Introduction

The intent structurally is to design buildings that allow for the fastest build time and cost efficiency, using materials and processes that satisfy the Education Facilities Standards and Guidelines (EFSG). Options considered for structural design include the use of modular construction or prefabricated elements such as precast. Generally, the scale of massing indicated by Fulton Trotter Architects suggest that conventional steel and concrete designs are likely to be used for this school as the most economically suitable structures. Based on costing advice, SINSW advised that Timber was not to be considered.

### 3.2 Building J – New Hall Building

Building J incorporates the new hall building and has been designed as a braced steel frame structure over a suspended concrete framed basement housing plant room, bulk store and end of trip facilities underneath the hall. Given the natural grade of the site, the rear portion of the hall building is a piled raft slab on grade ie no basement space.

The steel frame for the hall roof structure incorporates wall bracing as well as utilising the adjacent concrete structure (and lift core) for bracing against lateral loads.

The suspended slab over the level 1 rooms incorporates a conventional post-tensioned (PT) slab with conventionally reinforced band beams to achieve the grid spacings. The level 1 slab is a common podium slab shared with the adjacent building I.

In-situ reinforced concrete retaining walls have been designed around the perimeter of the hall building and will allow for site won material to be placed behind the walls.

### 3.3 Building I – New Classroom Building

Building I incorporates new home base rooms as well as a new library on level 2 with access to the forecourt/playground area. This building has been designed as a conventional RC/PT structure with discrete shear walls for lateral stability. The slabs are post-tensioned and the band beams are conventionally reinforced to achieve grid spacings.

The roof and level 2 wall framing is proposed to be proprietary lightweight steel trusses with wall bracing incorporated in the wall framing.

At the time of writing this report, the final intent for the façade is yet to be determined, however it is likely that additional secondary steel framing will be required on level 2 to provide head restraint to either precast concrete panels or glass reinforced concrete panels. Details will be provided as the design progresses for this.

### 3.4 Structural Design

#### 3.4.1 Codes and Standards

For the design of all new buildings and renovation of existing buildings the following standards and codes should be used, at a minimum, as a basis for design:

- NCC 2020
- EFSG
- AS1170.0 – General Principles
- AS1170.1 – Permanent, imposed and other actions



- AS1170.2 – Wind Actions
- AS1170.4 – Earthquake actions in Australia
- AS2159 – Piling
- AS3600 – Concrete Structures
- AS3700 – Masonry Structures
- AS4100 – Steel Structures
- AS2312 – Guide to the Protection of Structural Steelwork

The structure will generally be designed to provide a design life of 50 years in accordance with recognised Australian Standards and the EFSG. The design life of a building can be defined as the period of use intended by the designer as agreed with the client. It should be noted that the design life of a building's components may not be the same as the design life of the building. As such, some elements may require periodic maintenance to last the life of the building.

The contractor must use structural systems approved by the EFSG. For the buildings in this report this will include as a minimum, reinforced concrete, post tensioned concrete, masonry and steel.

### 3.4.2 Static loading

#### Dead Loads

Self-weight of the structure to be based on actual weights calculated using the following densities:

- Concrete 2400 kg/m<sup>3</sup>
- Steel 7850 kg/m<sup>3</sup>
- Blockwork 1400 kg/m<sup>3</sup> (Hollow)

#### Live Loads and Superimposed Dead Loads

Typical Building Loads to be as follows (Based on AS1170):

Description	Live Load	Super Imposed Dead Load
Hall	5 kPa	1 kPa
Library	7.5 kPa	1.5 kPa
Learning Hubs	3 kPa	1.5 kPa
Plant	5 kPa	1 kPa
Landscaping on suspended slabs	4 kPa	2.5 kPa
Roof	0.25 kPa min	NA

Loading plans will be developed as the design progresses which will outline the actual adopted floor design loads and cover areas not identified above.

### 3.4.3 Lateral Loads

#### Wind Loads

Wind loads have been calculated in accordance with AS1170.2



Description	
Importance level	3
Terrain Category	3
Ultimate Wind Speed (V1000)	46 m/s
Serviceability Wind Speed (V20)	37 m/s
Wind Return Period	1:1000

## Earthquake Loads

Seismic load parameters for the project are:

Description	
Importance level	III
Earthquake Design Category	II
Soil Class	Be
KpZ	0.12
Earthquake Return Period	1:1000
Structural Ductility Factor	2 (limited ductility concrete shear walls & braced frames)
Structural Performance Factor	0.77 (limited ductility concrete shear walls & braced frames)

### 3.4.4 Load Combinations

Load combinations shall be in accordance with the requirements of AS 1170.1 and/or AS 1170.4 as appropriate for the situation.

### 3.4.5 Structural Serviceability Criteria

The structural design is proposed to be based on the following static deflection criteria as per the EFSG:

Element	Span to depth Ratio	Maximum Deflection
Floor Slabs	Span/500 (long term)	25mm
	Span/500 (incremental general)	20mm
	Span/1000 (incremental or face masonry elements)	20mm
	Span/1800 (incremental supporting rendered masonry)	10mm



Floor beams/bands	Span/500 (long term)	30mm
	Span/500 (incremental)	20mm
	Span/1000 (incremental or face masonry elements)	20mm
	Span/1800 (incremental supporting rendered masonry)	10mm
Steel Beams	Span/250 (long term)	35mm
	Span/500 (incremental)	25mm

### Notes:

- The above deflection criteria are based on EFSG requirements. Departures from this will require an exemption. The current design does satisfy these criteria.
- The above deflection criteria do allow for the support of masonry partitions on ground floor (UNO).
- Architectural floor finishes shall be designed and detailed to accommodate these deflection criteria.
- If required, incremental deflection values can be supplied at specific locations for the purposes of determining service movements for the design and detailing of non-structural components such as facades and partition walls at the junction with structural components.
- Primary steel members supporting face loading from façade elements are designed to achieve less than Span/500 (on in 20yr return period wind) horizontal deflection. Facades to be designed to accommodate such deflections.
- Total incremental deflection to include allowances for cumulative deflections from supporting beams as appropriate.
- Total cumulative deflection beam/band plus slab to be less than 40mm (LT). Total cumulative deflection for a two-way slab to be less than 40mm (LT).
- Alternative deflection criteria based on the following table may be considered by the contractor and designer provided approval for non-compliance with the EFSG has been given.

Element	Span to depth Ratio	Maximum Deflection
Floor Slabs	Span/250 (long term)	25mm
	Span/400 (incremental)	20mm
Floor beams/bands	Span/250 (long term)	30mm
	Span/400 (incremental)	20mm
Steel Beams	Span/250 (long term)	35mm
	Span/400 (incremental)	25mm

## 3.4.6 Materials

### Structural Concrete

Concrete cover shall be:

Element	Formed and not exposed to weather	Formed and exposed to ground water and weather	Not formed and cast against ground etc
Columns	40	-	-



Beams/Slab Bands	30 (25 top)	40	70
Footings	-	50	70
Slabs	20	40	70
Walls	20	40	70

Notes: Concrete to be continuously cured for not less than 7 days and not stripped until it has gained a minimum strength of 20 MPa, UNO.

Minimum concrete strength shall be:

Element	F'c (MPa) @ 28 days
Walls	50
Columns	40
Slabs/Bands	40
Footings	40
Precast Beam	50

Notes: Concrete Shrinkage Strain shall be a maximum of 650 microns at 56 days.

## Structural Steelwork

Structural steelwork will generally be specified as Grade 300 plus for open sections and Grade 350 for closed (tubular) sections.

Fire protection requirements are as noted in the BCA Report and Fire Engineer Advice.

All precast fixings and cast in items shall be hot dipped galvanised.

All architecturally exposed steelwork to receive a later applied topcoat shall be primed with inorganic zinc silicate to a minimum dry coating thickness of 75 microns, unless noted otherwise. The topcoat is to be specified by the Architect.

All architecturally exposed steelwork not receiving a later applied topcoat shall be hot dipped galvanised unless noted otherwise.

All steelwork protected from the weather (that within a sealed, air-conditioned zone) with no later applied coating shall be coated with ROZP to a minimum dry coating thickness of 75 microns, unless noted otherwise.

All bolts shall be hot dipped galvanised.

### 3.4.7 Durability

The structure and its component members shall be designed for durability in accordance with the relevant Design Standard.

In accordance with Table 4.3 of AS3600, the exposure classification for concrete surfaces shall be as detailed in the Concrete Exposure Classification table below:

Surface and exposure environment	Classification
Surfaces of members in contact with ground	A2
Surfaces of members in interior environments	A2



Surfaces of members in above ground exterior environments, including those protected by membranes	B1
---	----

Concrete grades shall be determined as a function of strength, serviceability and durability requirements.

The surface treatments to exposed steelwork shall be determined by:

- The finish required by the Architect
- The passive fire protection requirements
- The corrosivity categories summarised in the table below

In accordance with AS2312.1 where applicable.

Surface and exposure environment	Category
Steelwork in well-conditioned spaces internal to the building and visible	C1
Steelwork exposed to external environments	C3

The steel protection system shall satisfy the requirement of long-term durability (20) years to first major maintenance in accordance with ISO 12944-1. The steel protection system shall be warranted for a minimum of 10 years.







# Appendix A

## Civil Services Drawings



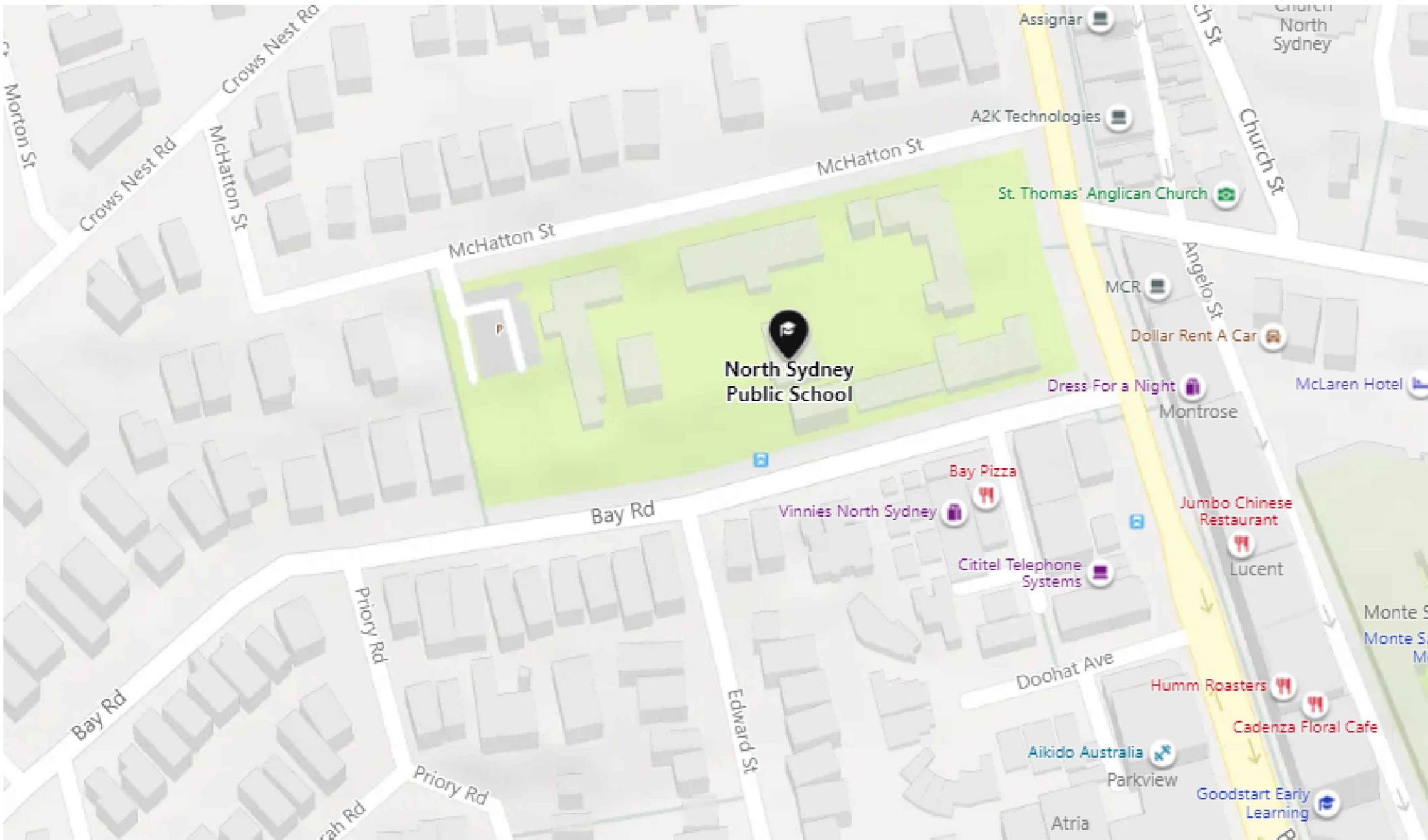
# AURECON GROUP

## NORTH SYDNEY PUBLIC SCHOOL

182 PACIFIC HIGHWAY, NORTH SYDNEY, NSW 2060, AUSTRALIA

### CIVIL SERVICES

LOCALITY PLAN



CIVIL SERVICES DRAWING INDEX	
NUMBER	TITLE
NSPS-AUR-00-00-DR-CC-0001	DRAWING INDEX AND LOCALITY PLAN
NSPS-AUR-00-00-DR-CC-0002	GENERAL SITE NOTES
NSPS-AUR-00-00-DR-CC-0004	EROSION AND SEDIMENT CONTROL NOTES
NSPS-AUR-00-00-DR-CC-0009	EROSION AND SEDIMENT CONTROL LAYOUT PLAN
NSPS-AUR-00-00-DR-CC-0010	DEMOLITION AND SITE CLEARING LAYOUT PLAN
NSPS-AUR-00-00-DR-CC-0015	BULK EARTHWORKS LAYOUT PLAN
NSPS-AUR-00-00-DR-CC-0030	STORMWATER LAYOUT PLAN



www.aurecongroup.com

ABN: 54 005 139 873

A person using the Aurecon drawings and other data accepts the risk of:  
1. Using the drawings and other data in electronic form without requesting and checking them for accuracy against the original hard copy versions;  
2. Using the drawing or other data for any purpose not agreed to in writing by Aurecon.  
Wherever a discrepancy in the contract documents is found and unless directed otherwise by the Principal/Engineer, the contractor shall adopt, at their own cost the greater quantum, class of finish, grade, or specification where applicable.



PRELIMINARY  
WORK IN PROGRESS



1. GENERAL NOTES

1. THIS SET OF DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' PROJECT DRAWINGS.
2. MATERIALS AND WORKMANSHIP IN THE' WHOLE OF THE WORKS' SHALL COMPLY WITH THIS SPECIFICATIONS AND DEFENCE REQUIREMENTS.
3. ALL LEVELS ARE EXPRESSED IN METRES ON AHD. ALL X, Y, Z COORDINATES ARE IN METRES TO MGA.
4. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
5. THE DRAWINGS SHALL NOT BE SCALED.
6. ALL DIMENSIONS RELEVANT TO SETTING OUT SHALL BE CONFIRMED AND VERIFIED BY THE CONSTRUCTOR BEFORE COMMENCEMENT OF CONSTRUCTION. THE CONSTRUCTOR SHALL REPORT ANY DISCREPANCIES TO THE MANAGING CONTRACTOR.
7. PRIOR TO DEMOLITION OR CONSTRUCTION ON SITE, THE CONSTRUCTOR SHALL OBTAIN PERMITS FROM THE RELEVANT AUTHORITIES.
8. EXACT LOCATION AND DEPTH TO SERVICES ARE TO BE CONFIRMED WITH THE RELEVANT AUTHORITIES AND ON SITE BY THE CONSTRUCTOR PRIOR TO COMMENCING THE WORKS. THE CONSTRUCTOR SHALL OBTAIN THE RELEVANT PERMITS PRIOR TO ANY POTHOLING OF SERVICES.
9. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH RELEVANT CURRENT AUSTRALIAN STANDARDS PLUS LOCAL STATUTORY AUTHORITIES' REQUIREMENTS EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
10. THE CIVIL SCOPE OF WORKS IS AS INDICATED ON THE DRAWINGS AND INCLUDES:

10.1. TRENCHING AND EXISTING CONCRETE CUTTING.

10.2. BACKFILL MATERIAL AND BACKFILLING.

10.3. COMPACTION.

10.4. SURVEY OF IN GROUND SERVICES.

10.5. COMMON SERVICES TRENCH AS BUILD DRAWINGS.

10.6. PAVEMENT REINSTATEMENT.

10.7. REMOVAL OF SPOIL.
11. THE INTERFACE BETWEEN EXISTING SURFACES AND DESIGN SURFACES AS SHOWN ON THE DRAWINGS AND THE ANNOTATED CROSS SECTIONS ARE INDICATIVE ONLY. THE CONSTRUCTOR SHALL UNDERTAKE LOCALISED FILLING AND EXCAVATION WORKS AS REQUIRED TO PREVENT PONDING CONCENTRATION OR CHANNELING OF STORMWATER RUNOFF AT OR ALONG THE INTERFACE BETWEEN THE 'AS CONSTRUCTED' NEW SURFACES AND THE EXISTING SURFACES.
12. ALL DISCREPANCIES SHALL BE REFERRED TO THE MANAGING CONTRACTOR FOR DECISIONS BEFORE PROCEEDING WITH THE WORK.
13. NO SUBSTITUTIONS SHALL BE MADE WITHOUT OBTAINING THE APPROVALS OF THE MANAGING CONTRACTOR.
14. ALL MATERIALS AND ELEMENTS SHALL BE FIXED IN STRICT ACCORDANCE WITH THE MANUFACTURERS' SPECIFICATIONS FOR THE NOMINATED LOADING CONDITIONS AND THE SUPPORTING STRUCTURE SHOWN ON THESE DRAWINGS.
15. ALL EXISTING LEVELS AT CONNECTIONS TO EXISTING PIPES AND PITS TO BE VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
16. ANY DAMAGE CAUSED TO EXISTING SERVICES WILL BE MADE GOOD AT THE SUB CONTRACTORS' EXPENSE.
17. ALL WORKS SHALL BE CARRIED OUT IN COMPLIANCE WITH THE WHS ACT 2011 AND ASSOCIATED STATE, TERRITORY OR LOCAL AUTHORITY REQUIREMENTS.
18. TESTING SHALL BE CARRIED OUT BY A COMPANY WITH NATA ACCREDITATION.
19. ALL CONCRETE WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE SPECIFICATION AND AS 3600.
20. CONCRETE COVER 40MM UNLESS NOTED OTHERWISE.
21. WHERE NEW CONCRETE IS TO BE POURED AGAINST EXISTING CONCRETE, THE EXISTING FACE SHALL BE SCABBLED, AND CLEANED WITH A WATER BLAST TO REMOVE ALL DUST AND LOOSE PARTICLES PRIOR TO NEW CONCRETE BEING POURED.
22. ALL REINFORCING STEEL TO BE GRADE 500N AS/NZS 4671 UNO.
23. ALL REINFORCEMENT TO BE ACRS CERTIFIED.

BULK EARTHWORKS NOTES

1. THE EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENT"
2. BEFORE FILLING OF THE SITE COMMENCES, TOPSOIL AND VEGETATION SHALL BE STRIPPED AND SILT FENCE MUST BE PLACED IN A SUITABLE LOCATION. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT EROSION.
3. ALL EXCESS SPOIL IS TO BE REMOVED FROM SITE AND WILL NOT BE ALLOWED TO BE PERMANENTLY STOCKPILED ON SITE.
4. FILL IS TO BE COMPACTED IN LAYERS NOT EXCEEDING 250MM LOOSE MEASUREMENT.

- EACH LAYER OF FILL SHALL BE PLACED WITH CONTROLLED MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 98% DRY DENSITY RATIO USING STANDARD COMPACTION AND IN ACCORDANCE WITH AS1289.5.1.1
5. REUSE OF WEATHERED SANDSTONE, WHEN BROKEN DOWN ON EXTRACTION, MAY BE USED IN AREAS OF STRUCTURAL FILL PROVIDED NO ROCK OVER 75MM GREATEST DIMENSION IS INCLUDED IN THE 30MM BELOW THE FINAL SUBGRADE/PLANE. BELOW THIS LEVEL, ROCK UP TO 150MM GREATEST DIMENSION MAY BE USED. THESE ROCK SHOULD NOT REPRESENT MORE THAN 20% OF THE FILL MAKE-UP. ROCKS OVER 150MM GREATEST DIMENSION SHOULD BE REMOVED.
6. IMPORTED FILL SHALL HAVE THE FOLLOWING PROPERTIES:

MAXIMUM STONE SIZE (MM) - 75

PASSING 19.0MM SIEVE (%) - 80-100

MINIMUM SOAKED CBR (%) - 10

MAXIMUM SHRINK-SWELL INDEX - 1.5"

\* SAMPLES REMOULDED AT 95% STANDARD COMPACTION AT OPTIMUM MOISTURE CONTENT.

IMPORTED FILL SHALL HAVE MAXIMUM PARTICLE SIZE OF 75MM, A MAXIMUM LIQUID LIMIT OF 45 AND MAXIMUM PLASTICITY INDEX OF 15 AND A MINIMUM 4 DAY SOAKED CBR VALUE OF 10 AND FREE OF CONTAMINANTS AS PER AS3798 SECTION 4.3. ALL MATERIAL SIZE PASSING 50MM SIZE MUST BE NOT MORE THAN 30% IN VOLUME.
7. LEVEL 1 TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007 AND CERTIFIED BY A RPEQ GEO-TECHNICAL ENGINEER
8. COMMERCIAL FILL (TO SUPPORT MINOR LOADINGS) SHALL BE COMPACTED TO 98% STANDARD COMPACTION IN ACCORDANCE WITH AS1289.5.1.1.
9. ALL PERMANENT FILL BATTERS ARE TO BE A MAXIMUM OF 1 IN 4 U.N.O.
10. ALL TEMPORARY CUT BATTERS ARE TO BE A MAXIMUM OF 1 IN 1 U.N.O.
11. RETAINING WALLS GREATER THAN 1.0M HIGH SHALL BE TO AN APPROVED ENGINEER'S DESIGN.
12. BACKFILLING TO BE PLACED IN A MANNER SUCH THAT NO LATERAL LOADING IS IMPOSED ON THE WALL.
13. ANY EXISTING GROUND RETAINING FILL MUST BE ASSESSED BY A GEO-TECHNICAL ENGINEER IN ACCORDANCE TO AS3798-2007
11. RETAINING WALLS GREATER THAN 1.0M HIGH SHALL BE TO AN APPROVED ENGINEER'S DESIGN.

LINE MARKING

1. ALL LINE MARKING TO BE IN ACCORDANCE WITH AS1742-2014

PAVEMENT

1. ALL ROAD REINSTATEMENT TO COMPLY WITH EXISTING CONDITIONS

TRENCHING

1. TRENCHING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS2870-2011.
2. BACKFILL MATERIAL SHALL BE CLAY COMPACTED TO 95% OF MAXIMUM DRY DENSITY IN THE FIRST 300MM WITHIN 1.5M FROM BUILDING. PIPES BELOW FOOTING SHALL BE COMPACTED TO FULL DEPTH WITH CLAY COMPACTED TO 95% MAXIMUM DRY DENSITY.
3. THE MATERIAL SHALL:

• BE CAPABLE OF BEING SHAPED TO FORM A UNIFORM SUPPORT FOR THE SERVICE

• BASE OF TRENCHES SHALL BE SLOPED AWAY FROM THE BUILDING

• MATERIAL USED TO ENSURE NO INGRESS OF WATER OCCURES WITHIN THE TRENCH
4. SUPPLY AND INSTALLATION OF PITS, PIPES, VALVES AND CONDUITS IS BY INDIVIDUAL TRADES AS FOLLOWS:

4.1. WATER MAIN PIPE AND VALVES BY HYDRAULICS TRADE. REFER TO HYDRAULICS DRAWING SET FOR DETAILS.

4.2. SEWER AND GAS PIPE AND VALVES BY HYDRAULICS TRADE. REFER TO HYDRAULICS DRAWING SET FOR DETAILS.

4.3. ELECTRICAL CONDUITS BY ELECTRICAL TRADE. REFER TO ELECTRICAL ET DRAWING SET FOR DETAILS.

4.4. COMMUNICATIONS CONDUITS AND PITS BY ELECTRICAL TRADE. REFER TO ELECTRICAL DRAWING SET FOR DETAILS.

4.5. CIVIL TRADE TO UNDERTAKE LEAD CO-ORDINATION ROUTE.

STORMWATER DRAINAGE

1. GENERAL

1.1. ALL CIVIL STORMWATER DRAINAGE LINES ARE TO BE CONSTRUCTED OF CLASS 3 PIPE UNLESS OTHERWISE NOTED.

1.2. ALL STORMWATER PIPEWORK IS TO BE LAID WITH THE SOCKET FACING UPSTREAM. ALL WORKS ARE TO BEGIN AT THE OUTLET END OF EACH LINE, WORKING IN UPSTREAM DIRECTION.

1.3. THE SUBCONTRACTOR SHALL ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE EXISTING DRAINS ARE ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.

1.4. THE CONTRACTOR SHALL PROVIDE DIVERSION WORKS ETC. TO PROTECT WORKS IN PROGRESS UNTIL SUCH A TIME WHEN THE WORKS ARE IN A FINISHED AND STABLE CONDITION.

1.5. ANY DAMAGE TO THE WORKS, DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD, SHALL BE AT THE CONTRACTORS' RISK.

1.6. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED TAKING INTO ACCOUNT THE FINAL DESIGN USE LOADING. IF THE SUBCONTRACTOR SHOULD ASSESS ACTUAL PROPOSED CONSTRUCTION LOADS AND PIPE CLASSES ARE TO BE UPGRADED, IN ACCORDANCE WITH AS3725, IT IS AT THE CONTRACTOR'S COST.

1.7. ALL STORMWATER DRAINAGE WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH AS2032, AS2033 AND AS3725 AND DRAWINGS.

1.8. PLEASE NOTE THAT THE STORMWATER QUALITY MANAGEMENT PLAN NOMINATED IS A COMPLETE SYSTEM. SHOULD THE CONTRACTOR PROPOSE AN ALTERNATIVE THEN SUPPORTING DESIGN FOR THE ENTIRE SYSTEM WILL NEED TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. PE (POLYETHYLENE PIPES)

2.1. ALL PIPES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AS/NZS 5065 - 'POLYETHYLENE (PE) AND POLYPROPYLENE (PP) PIPES AND FITTINGS FOR DRAINAGE AND SEWER APPLICATIONS'.

2.1.1. PIPES SHALL BE INSTALLED AS PER REQUIREMENTS OF AS/NZS2033 - 'INSTALLATION OF POLYETHYLENE PIPE SYSTEMS'.

2.1.2. MINIMUM COVER TO PIPES SHALL BE AS FOLLOWS; AS SHOWN ON THE INDIVIDUAL UNIT DRAWINGS

LOCATION	MINIMUM COVER (m)
NOT SUBJECT TO VEHICULAR LOADING	0.30
SUBJECT TO VEHICULAR LOADING	
- NOT IN ROADWAYS	0.45
- IN SEALED ROADWAYS	0.60
- IN UNSEALED ROADWAYS	0.75
PIPES IN EMBANKMENT CONDITIONS OR SUBJECT TO CONSTRUCTION EQUIPMENT LOADING	0.75

2.1.3. ALL PIPE BEDDING MATERIALS SHALL BE IN ACCORDANCE WITH AS/NZS2566.2 - 'BURIED FLEXIBLE PIPELINES - PART 2 INSTALLATION'

2.1.4. PIPES SHALL BE INSTALLED ON BEDDING MATERIAL NOT LESS THAN 75MM THICK, WITH COMPACTED SIDE PIPE SUPPORT NO LESS THAN 100MM THICK BETWEEN THE EDGE OF PIPE AND EDGE OF TRENCH WALL. PIPE OVERLAY SHALL BE NO LESS THAN 150MM THICK.
3. DRAINAGE STRUCTURES

3.1. THE SUBCONTRACTOR MAY ELECT TO SUBSTITUTE PRECAST PITS FOR CAST INSITU PITS SHOWN ON THE DRAWINGS. DETAILS OF ANY PROPOSED PRECAST ELEMENTS MUST BE SUBMITTED TO THE ENGINEER PRIOR TO PROCUREMENT.

3.2. ACCESS CHAMBERS SHALL BE IN ACCORDANCE WITH IPWEA STD DRG D-0010.

3.3. ALL INLET PITS, GRATES AND MANHOLE LIDS TO BE IN ACCORDANCE WITH AS3996, CLASS AS SPECIFIED ON THE DRAWINGS.

3.4. THE SETOUT OF ALL MANHOLES IS TO THE CENTRE OF MANHOLE AND FOR GULLY PITS TO THE CENTRE OF CHAMBER. DESIGN SURFACE LEVEL FOR MANHOLES IS TO THE TOP OF LID AND FOR GULLY PITS THROUGH LIP LEVEL AT CENTRE OF THE GRATE.

3.5. MANHOLE ACCESS LIDS TO BE LOCATED AT THE CENTRE OF ROADS, AWAY FROM VEHICLE TRACKS UNLESS NOTED OTHERWISE SHOWN ON THE DRAINAGE DETAILS PLANS.

3.6. ALL LIDS AND GRATES TO BE CLASS D IN ROADWAYS AND CLASS B IN PEDESTRIAN ONLY ZONES UNLESS OTHERWISE NOTED ON DRAWINGS.

3.7. STEEL GRATES AND FRAMES ARE TO BE FABRICATED FROM MILD STEEL AND HOT DIP GALVANISED. ALL GRATES ARE TO BE BICYCLE SAFE IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3996 UNLESS NOTED OTHERWISE.

3.8. GRATE SUPPORT TO BE CONSTRUCTED LEVEL TO ENSURE THAT THE GRATE DOES NOT ROCK AFTER INSTALLATION.

3.9. PROVIDE STEP IRONS TO AS1657 WHERE CHAMBER WALL HEIGHTS EXCEED 1200MM.

3.10. PROVIDE MASS CONCRETE BENCHING (N32) IN STORMWATER ACCESS CHAMBERS TO ALLOW MINIMUM 30MM FALL ACROSS PITS.

3.11. WHERE A CONNECTION IS TO BE MADE TO AN EXISTING DRAINAGE PIPE OR STRUCTURE, THE LEVEL OF THAT PIPE OR STRUCTURE MUST BE CONFIRMED PRIOR TO THE CONSTRUCTION OF THE NEW DRAIN LINES.

3.12. EXISTING PITS AND MANHOLES SHOWN ON THE PLANS ARE TO BE REMOVED TO A LEVEL BELOW THE BOTTOM OF THE WORKING PLATFORM AND FILLED WITH CEMENT GROUT.

3.13. A 2.0M LENGTH OF 80MM (MIN) DIAMETER SUBSOIL DRAIN, SLEEVED IN A GEOTEXTILE SOCK, IS TO BE PLACED IN THE BEDDING UPSTREAM OF ALL DRAINAGE STRUCTURES OUT-FALLING INTO THE DRAINAGE STRUCTURE.



www.aurecongroup.com



CLIENT



Education  
School Infrastructure

REV	DATE	REVISION DETAILS	APPROVED
A	28/07/2021	CONCEPT DESIGN	S.T-S
B	13/08/2021	SCHEMATIC DESIGN	S.T-S
C	18/08/2021	UPDATED CIVIL	S.T-S

SCALE NTS	SIZE A1	PRELIMINARY NOT FOR CONSTRUCTION
DRAWN D. NGUYEN	APPROVED <div>DATE 18/08/2021</div>	
DESIGNED H.NGUYEN		
REVIEWED T.PHAM		

PROJECT

NORTH SYDNEY PUBLIC SCHOOL  
182 PACIFIC HIGHWAY, NORTH SYDNEY  
NSW 2060, AUSTRALIA

TITLE

NORTH SYDNEY PUBLIC SCHOOL  
GENERAL SITE NOTES

DRAWING NUMBER		
PROJECT No.	NUMBER	REV
520128	NSPS-AUR-00-00-DR-CC-0002	C





EROSION & SEDIMENTATION CONTROL NOTES

1. GENERAL

- 1.1. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE DESIGNED, CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE IECA (INTERNATIONAL EROSION CONTROL ASSOCIATION) GUIDELINES AND THE FOLLOWING NOTES. PROPOSED CONTROL/MANAGEMENT PLANS ARE TO BE SUBMITTED TO THE MANAGING CONTRACTOR FOR ENDORSEMENT PRIOR TO COMMENCEMENT OF ANY WORKS ONSITE.
- 1.2. WHERE DESIGNED MEASURES DO NOT SUIT SITE CONDITIONS THE CONTRACTOR IS TO SUBMIT PROPOSED CHANGES TO ONSITE MEASURES FOR THE ENGINEERS APPROVAL. ALL MEASURES ARE TO BE INSTALLED/CONSTRUCTED AND MAINTAINED FOR THE DURATION OF THE PROJECT.
- 1.3. REFER TO IECA STANDARD DRAWINGS FOR EROSION AND SEDIMENT CONTROL MEASURES WHERE DETAILS NOT PROVIDED ON DRAWINGS.
- 1.4. THE CONTRACTOR IS RESPONSIBLE FOR THE MANAGEMENT OF DUST ONSITE INCLUDING THE PROVISION OF WATER TRUCKS AS NECESSARY TO MINIMISE DUST.

2. TOPSOIL

- 2.1. STRIP & STOCKPILE AVAILABLE TOPSOIL (ASSUMED AVERAGE DEPTH 150mm) FROM DISTURBED AREAS PRIOR TO BULK EARTHWORKS. GRADE BULK EARTHWORKS SURFACE LEVEL EVENLY TO ENSURE SITE IS FREE DRAINING.
- 2.2. MINIMUM SLOPE ACROSS SITE TO BE 1.0%.
- 2.3. ALL FOOTPATHS, BATTERS & EARTHWORKS AFFECTED AREAS ARE TO BE TOPSOILED TO A MINIMUM DEPTH OF 100mm (LIGHTLY COMPACTED) & GRASS SEEDED (OR TURFED WHERE SPECIFIED).

3. SEDIMENT FENCES

- 3.1. SEDIMENT FENCES TO BE REPAIRED AS REQUIRED & EXCESSIVE SEDIMENT DEPOSITS SHOULD BE REMOVED.
- 3.2. IN THE EVENT OF WET WEATHER, INSTALL KERB INLETS FILTER WITH GRAVEL RANGING FROM 50mm TO 75mm IN SIZE. REFER IPWEA STANDARD DRAWING DS-041. IF THE GRAVEL FILTER BECOMES CLOGGED WITH SEDIMENT DURING ITS USE, THE GRAVEL MUST BE PULLED AWAY FROM THE MESH & CLEANED OR REPLACED.
- 3.3. REGULAR WEEKLY CHECKS OF SILT FENCES IS TO BE MADE ALONG WITH A CHECK AFTER ANY SIGNIFICANT STORM EVENT TO ENSURE INTEGRITY & PERFORMANCE.

4. TURFING

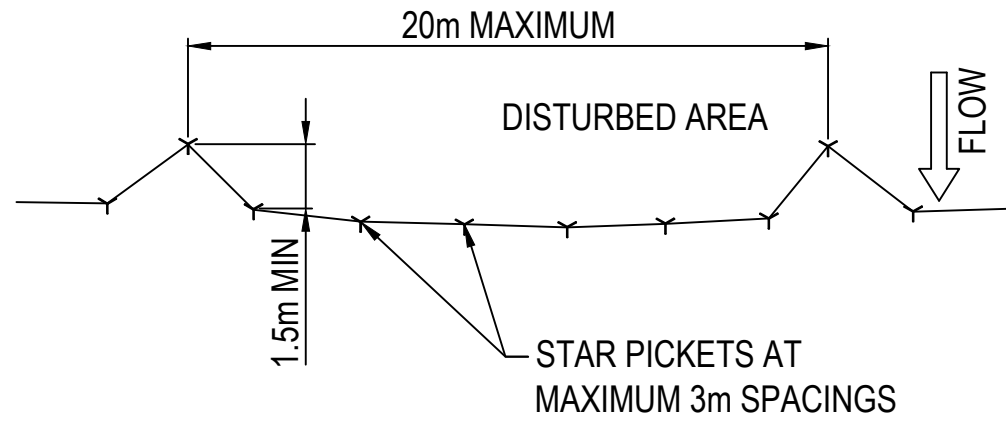
- 4.1. UNLESS OTHER PERMANENT APPROVED SURFACE TREATMENT TO BE INSTALLED, PROVIDE TURFING TO ENTIRE WIDTH OF ALL SWALES, OVERLAND FLOW PATHS, FOOTPATHS AND CUT & FILL BATTERS STEEPER THAN 1 IN 4. .
- 4.2. ALL FLOW PATHS AND BATTERS ARE TO BE STABILISED WITH TOPSOIL & TURFED AS SOON AS PRACTICAL AFTER THE BATTERS HAVE BEEN COMPLETED. ALL REMAINING EXPOSED AREAS ARE TO BE SEEDED, HYDROMULCHED OR MULCHED UNLESS OTHERWISE SPECIFIED BY THE LANDSCAPE ARCHITECT.

5. DURING CONSTRUCTION SEQUENCE

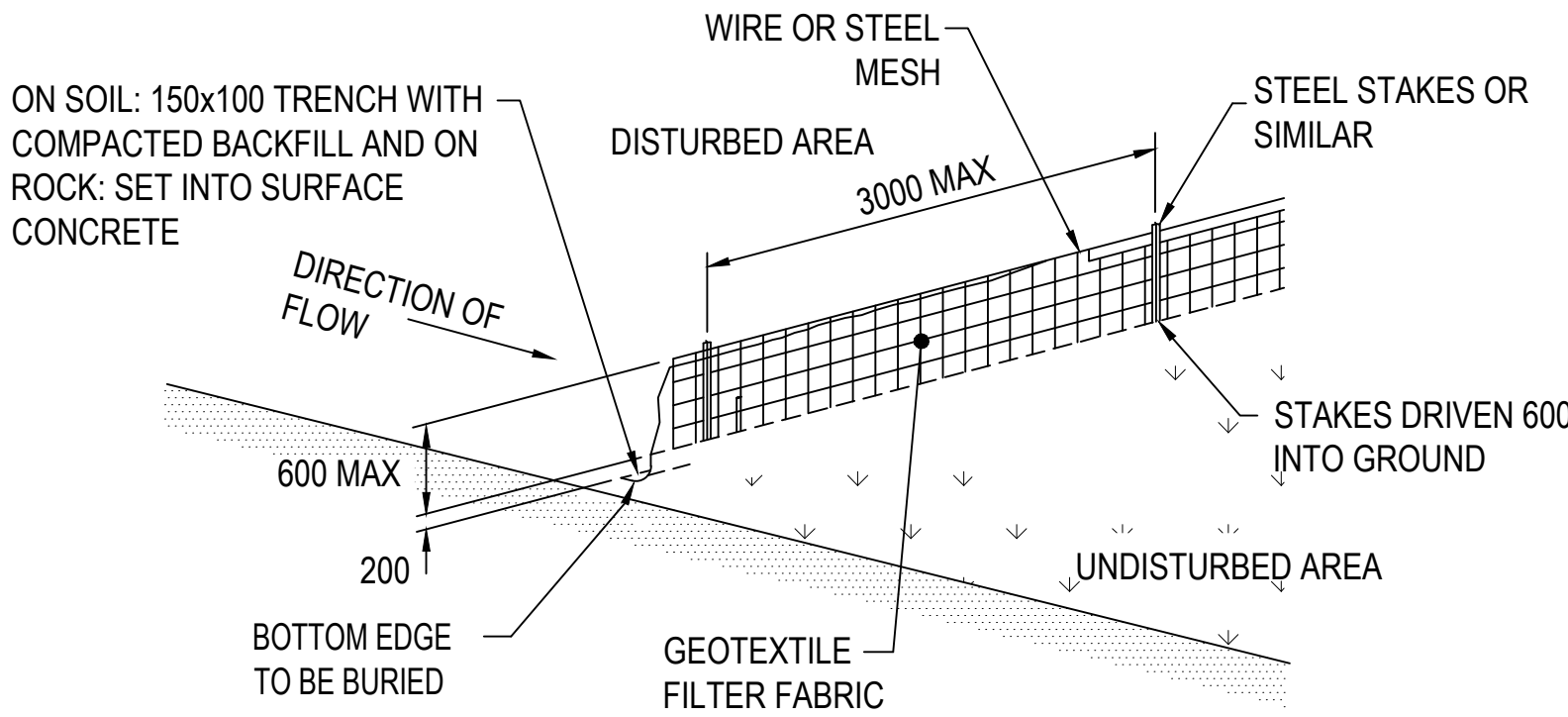
- 5.1. TOPSOIL STOCKPILE SITE TO HAVE A SEDIMENTATION FENCE CONSTRUCTED ON DOWNSTREAM SIDE.
- 5.2. SEDIMENTATION FENCES TO BE PLACED ON DOWNHILL SIDE OF ALL DISTURBED AREAS AND AS SHOWN ON PLANS
- 5.3. REGULARLY INSPECT BANKS & REPAIR ANY SLUMPS, WHEEL TRACK DAMAGE OR LOSS OF FREEBOARD
- 5.4. REMOVE SEDIMENT TO AVOID PONDING FROM CATCH DRAINS
- 5.5. REMOVE EXCESSIVE SEDIMENT FROM UPSTREAM OF CHECK DAM.
- 5.6. A CATCH DRAIN BANK IS TO BE PROVIDED ON THE TOP SIDE OF ALL CUTS & DISCHARGED EITHER TO UNDISTURBED GRASS LANDS OR FORMAL DRAINAGE NETWORK.
- 5.7. SUPPLEMENTARY EROSION & SEDIMENT CONTROL DEVICE MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER OR LOCAL AUTHORITY.
- 5.8. CONSTRUCTION ACCESS SHALL ONLY BE VIA STABILISED SITE ACCESS POINT(S).
- 5.9. FOR DETAILS OF TEMPORARY CONSTRUCTION ENTRY / EXIT SEDIMENT TRAP REFER TO IPWEA STANDARD DRAWING DS-040.
- 5.10. GRASS SEEDING IS TO ACHIEVE 70% COVER WITHIN 30 DAYS OF COMPLETION OF EARTHWORKS.

6. FOLLOWING CONSTRUCTION

- 6.1. SEDIMENTATION FENCES TO BE MAINTAINED UNTIL TURFING IS COMPLETED & GRASS IS 80% ESTABLISHED AND ALL OTHER LANDSCAPE AND HARDSCAPE SURFACE TREATMENTS ARE INSTALLED.

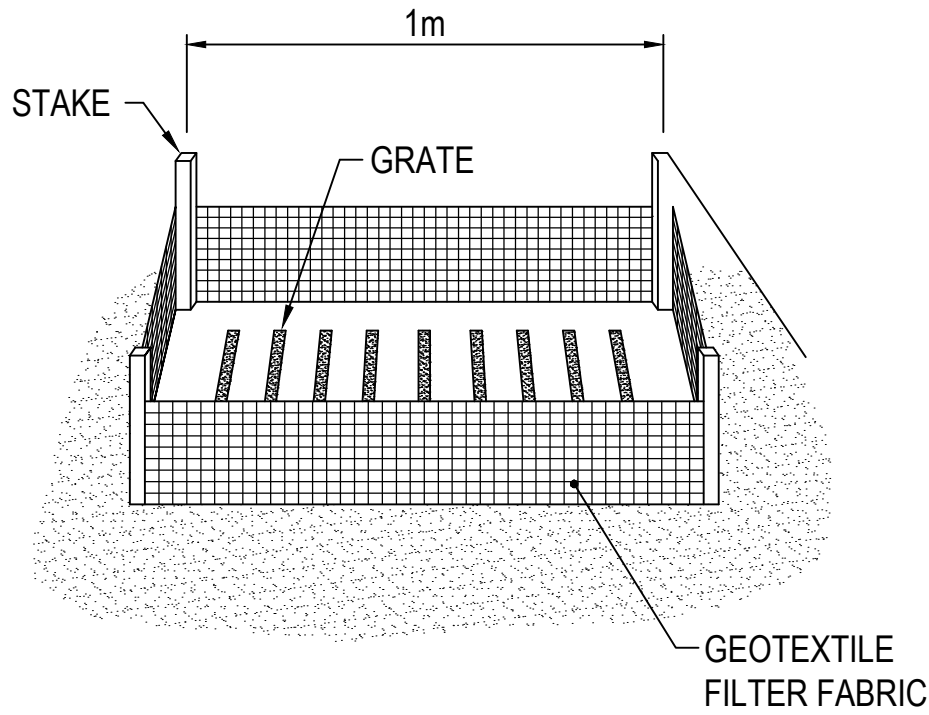


SEDIMENT FENCE PLAN

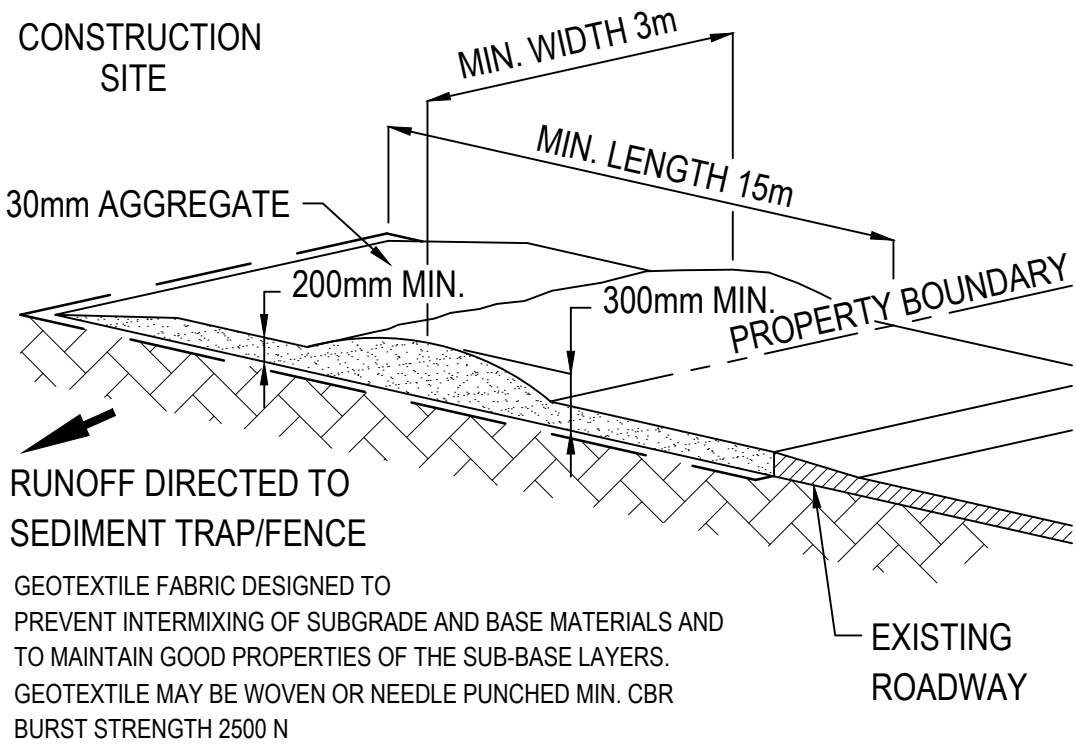


SEDIMENT FENCE

DRAINAGE AREA 0.6ha MAXIMUM.  
SLOPE GRADIENT 1:2 MAXIMUM.  
SLOPE LENGTH 60m MAXIMUM.



GEOTEXTILE STORMWATER INLET FILTER



STABILISED SITE ACCESS



CLIENT



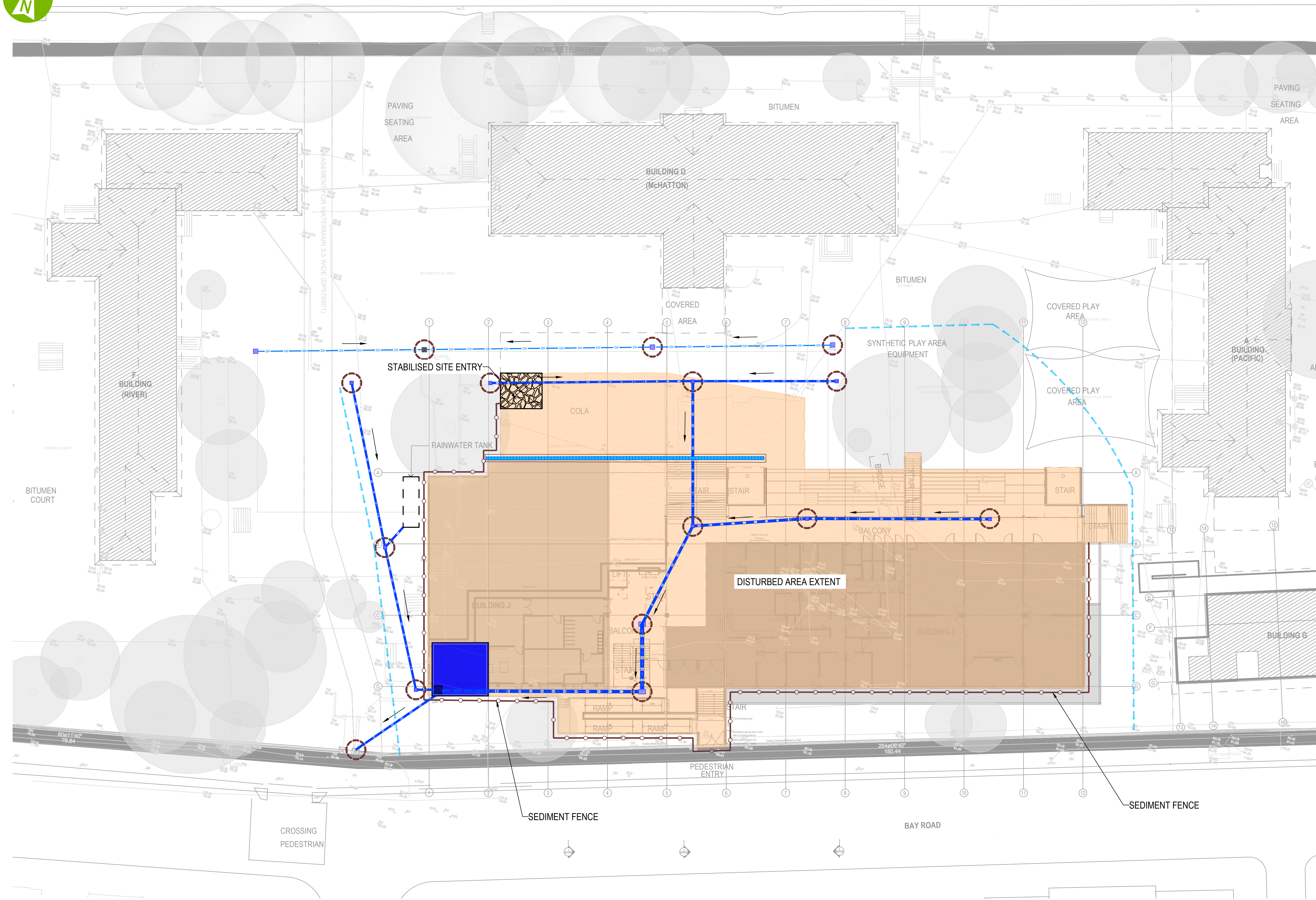
REV	DATE	REVISION DETAILS	APPROVED
A	13/08/2021	SCHEMATIC DESIGN	S.T-S
B	18/08/2021	UPDATED CIVIL	S.T-S

SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION
NTS	A1	
DRAWN	D. NGUYEN	APPROVED
DESIGNED	H. NGUYEN	
REVIEWED	T. PHAM	
		DATE 18/08/2021

PROJECT		
NORTH SYDNEY PUBLIC SCHOOL 182 PACIFIC HIGHWAY, NORTH SYDNEY NSW 2060, AUSTRALIA		
TITLE		
NORTH SYDNEY PUBLIC SCHOOL EROSION AND SEDIMENT CONTROL NOTES		
DRAWING NUMBER		
PROJECT No.	NUMBER	REV
520128	NSPS-AUR-00-00-DR-CC-0004	B







**LEGEND:**

- GEOTEXTILE INLET FILTER
- SEDIMENT FENCE
- STABILISED SITE ENTRY
- DISTURBED AREA
- GRATED INLET SEDIMENT TRAP
- EXISTING STORMWATER PIT
- EXISTING STORMWATER PIPE
- DESIGN ON-SITE DETENTION TANK
- DESIGN STORMWATER PIT
- DESIGN STORMWATER PIPE
- 300mm WIDE ACO HEELGUARD ANTI-SLIP TRENCH GRATE
- STORMWATER DIVERSION PIPE
- PROPOSED OVERLAND FLOW PATH
- DIRECTION OF FLOW

**aurecon**  
www.aurecongroup.com

CLIENT

**NSW** Education  
GOVERNMENT School Infrastructure

REV	DATE	REVISION DETAILS	APPROVED
A	13/08/2021	SCHEMATIC DESIGN	S.T-S
B	18/08/2021	UPDATED CIVIL	S.T-S

<b>SCALE</b> 1:250	<b>SIZE</b> A1	<b>PRELIMINARY</b> NOT FOR CONSTRUCTION
<b>DRAWN</b> D. NGUYEN	<b>APPROVED</b>	
<b>DESIGNED</b> H. NGUYEN	<b>DATE</b> 18/08/2021	
<b>REVIEWED</b> T. PHAM		

**PROJECT**  
NORTH SYDNEY PUBLIC SCHOOL  
182 PACIFIC HIGHWAY, NORTH SYDNEY  
NSW 2060, AUSTRALIA

**TITLE**  
NORTH SYDNEY PUBLIC SCHOOL  
EROSION AND SEDIMENT CONTROL  
LAYOUT PLAN

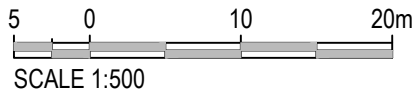
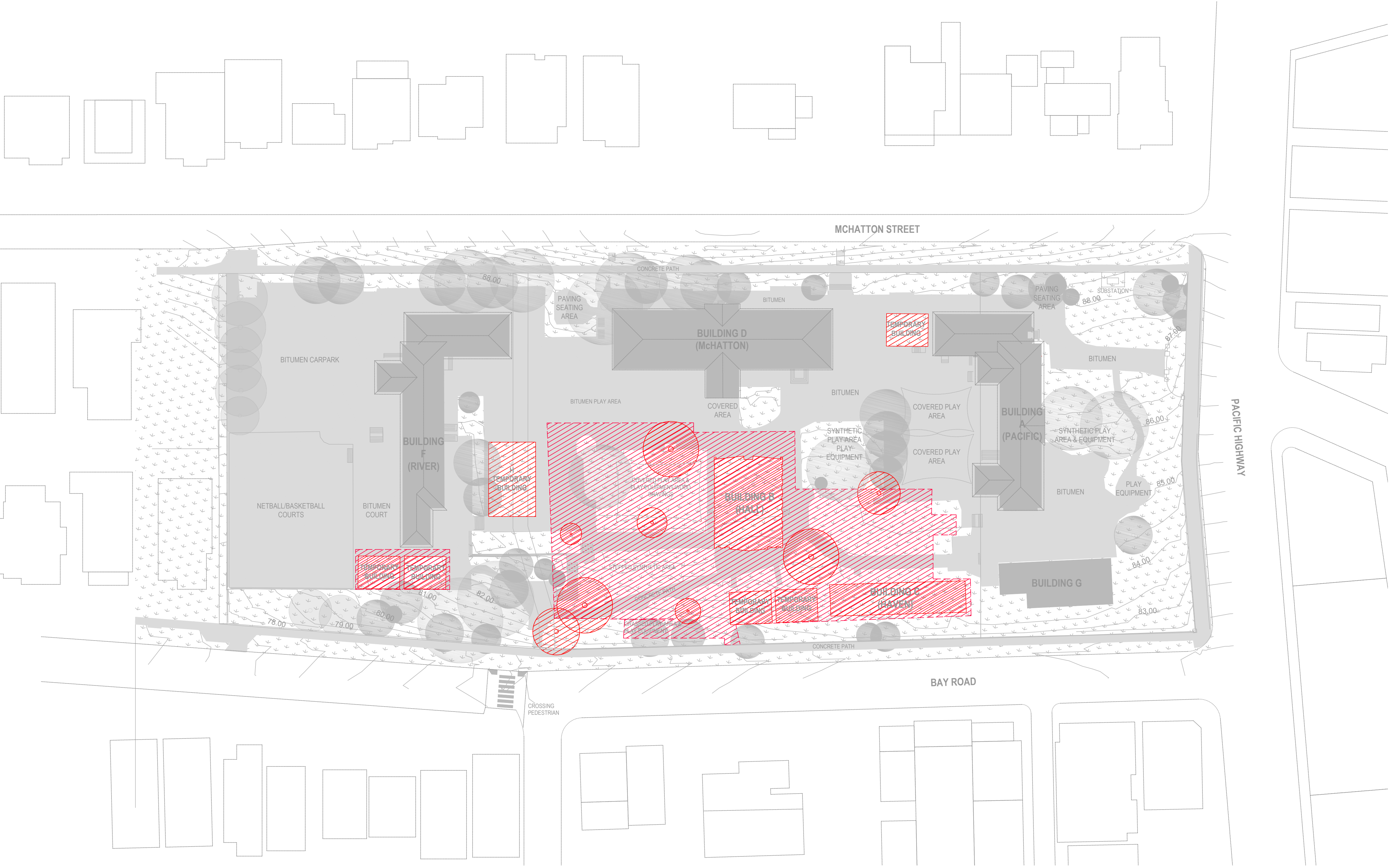
DRAWING NUMBER		
PROJECT No.	NUMBER	REV
520128	NSPS-AUR-00-00-DR-CC-0009	B

- GENERAL NOTES:**
- FOR GENERAL SITE WIDE NOTES, REFER TO CC-0002
  - FOR EROSION AND SEDIMENT CONTROL NOTES, REFER TO CC-0003.
  - ESTABLISH STABILISED SITE ENTRY/EXIT POINT.
  - INLET PROTECTION TO BE PROVIDED ON ALL EXISTING GULLY AND FIELD INLETS.

2.5 0 5 10m  
SCALE 1:250

PRINT IN COLOUR





**LEGEND:**

BUILDING TO BE DEMOLISHED

TREE TO BE MOVED

www.aurecongroup.com

CLIENT

NSW GOVERNMENT

Education  
School Infrastructure

REV	DATE	REVISION DETAILS	APPROVED
A	13/08/2021	SCHEMATIC DESIGN	S.T-S
B	18/08/2021	UPDATED CIVIL	S.T-S

SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	
1:500	A1		
DRAWN	APPROVED		
D. NGUYEN			
DESIGNED			
H. NGUYEN			
REVIEWED	DATE		
T. PHAM	18/08/2021		

PROJECT

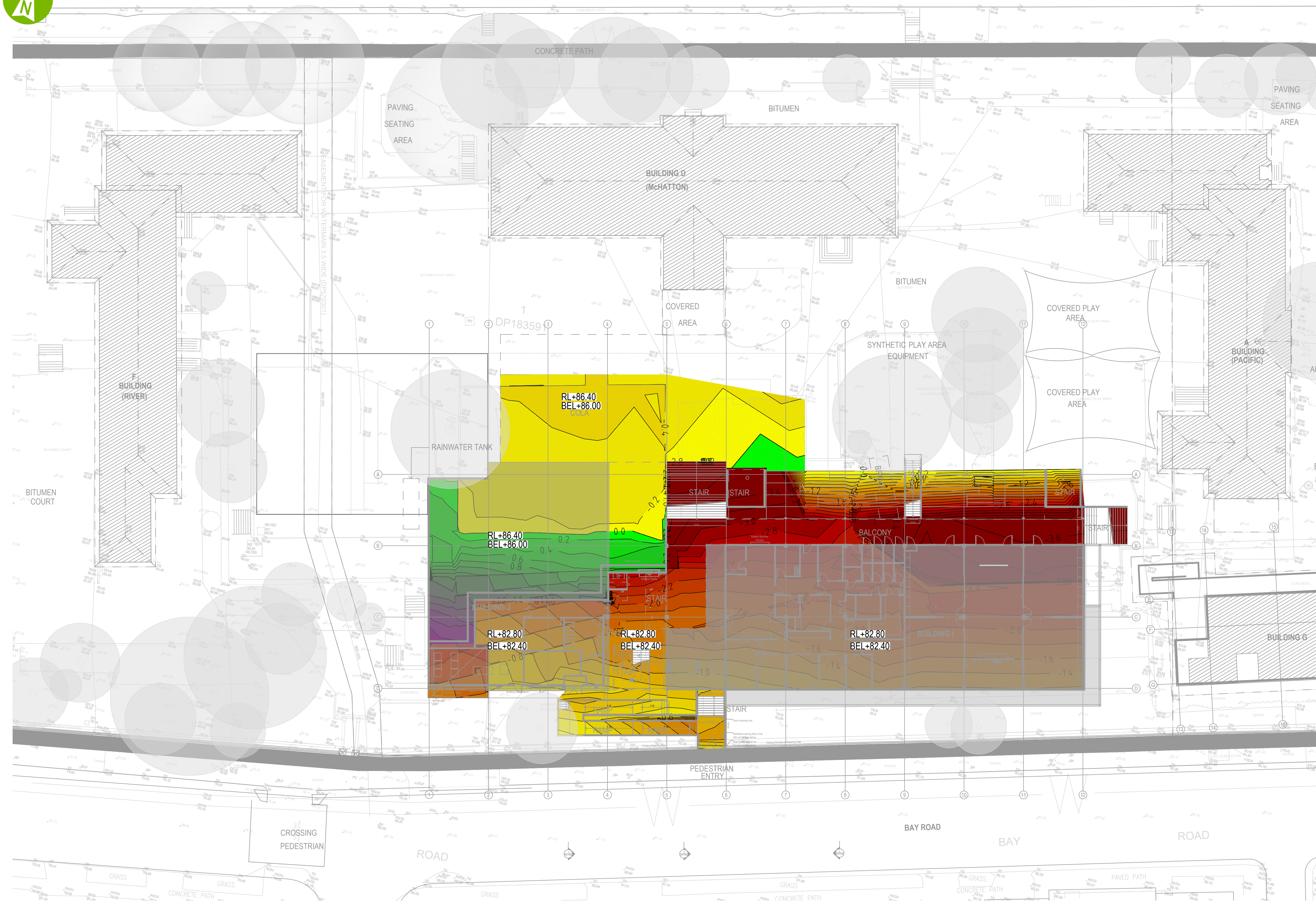
NORTH SYDNEY PUBLIC SCHOOL  
182 PACIFIC HIGHWAY, NORTH SYDNEY  
NSW 2060, AUSTRALIA

TITLE

NORTH SYDNEY PUBLIC SCHOOL  
DEMOLITION AND SITE CLEARING  
LAYOUT PLAN

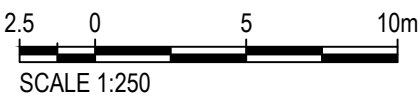
DRAWING NUMBER		
PROJECT No.	NUMBER	REV
520128	NSPS-AUR-00-00-DR-CC-0010	B





- NOTES:
- FOR GENERAL SITE WIDE NOTES, REFER TO CC-0002  
EARTHWORKS CUT AND FILL SHADING BASED ON SUBGRADE  
VERSUS EXISTING SURFACE
  - THE CONTOURS SHOWN ARE BULK EARTHWORKS SURFACE  
LEVELS. ALL QUANTITIES CONTAINED IN THE COST SCHEDULE HAVE  
BEEN CALCULATED O THE SUBGRADE LEVEL/ UNDERSIDE OF PROPOSED LEVELS
  - ALL EXISTING SERVICES ARE TO BE LOCATED PRIOR TO  
CONSTRUCTION TO CONFIRM DEPTHS.

BULK EARTHWORKS CUT/FILL	
VOLUME CUT (m3)	-4091.498
VOLUME FILL (m3)	267.361
BALANCE (m3)	-3824.137



LEGEND

COLOUR	HEIGHT RANGE (m)
CUT	0.00 - 0.20
	0.20 - 0.40
	0.40 - 0.60
	0.60 - 0.80
	0.80 - 1.00
	1.00 - 1.20
	1.20 - 1.40
	1.40 - 1.60
	1.60 - 1.80
	1.80 - 2.00
FILL	2.00 - 2.20
	2.20 - 2.40
	2.40 - 2.60
	2.60 +
	0.00 - 0.20
	0.20 - 0.40
	0.40 - 0.60
	0.60 - 0.80
	0.80 - 1.00
	1.00 - 1.20



CLIENT



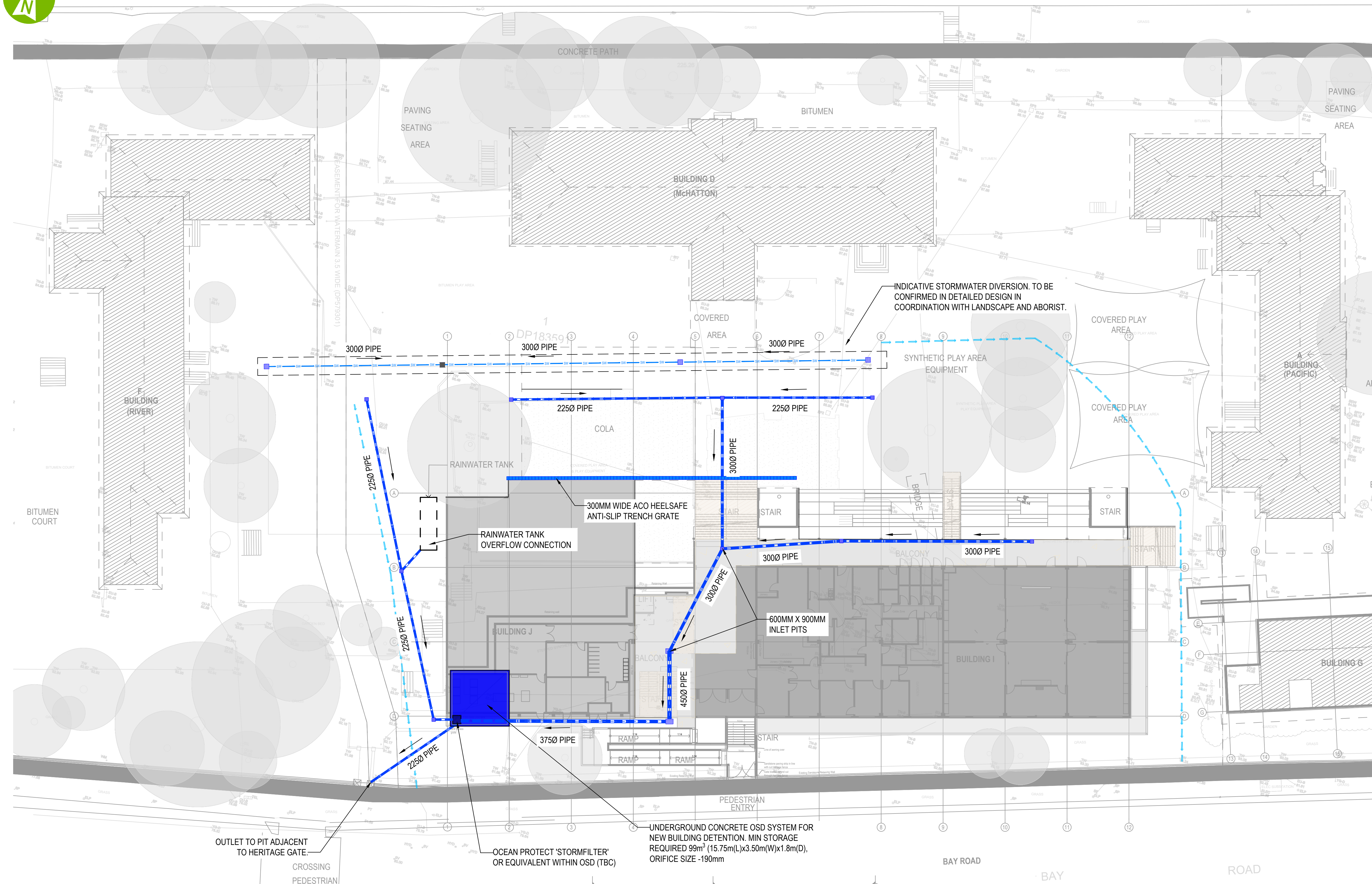
REV	DATE	REVISION DETAILS	APPROVED
A	28/07/2021	CONCEPT DESIGN	S.T-S
B	13/08/2021	SCHEMATIC DESIGN	S.T-S
C	18/08/2021	UPDATED CIVIL	S.T-S

SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	
1:250	A1		
DRAWN	APPROVED		DATE  18/08/2021
D. NGUYEN			
DESIGNED			
H. NGUYEN			
REVIEWED			
T. PHAM			

PROJECT	
NORTH SYDNEY PUBLIC SCHOOL 182 PACIFIC HIGHWAY, NORTH SYDNEY NSW 2060, AUSTRALIA	
TITLE	
NORTH SYDNEY PUBLIC SCHOOL BULK EARTHWORKS LAYOUT PLAN	

DRAWING NUMBER	
PROJECT No.	NUMBER
520128	NSPS-AUR-00-00-DR-CC-0015
REV	C





- LEGEND:**
- EXISTING STORMWATER PIT
  - EXISTING STORMWATER PIPE
  - DESIGN ON-SITE DETENTION TANK
  - DESIGN STORMWATER PIT
  - DESIGN STORMWATER PIPE
  - 300mm WIDE ACO HEELGUARD ANTI-SLIP TRENCH GRATE
  - STORMWATER DIVERSION PIPE
  - PROPOSED OVERLAND FLOW PATH
  - DIRECTION OF FLOW



CLIENT



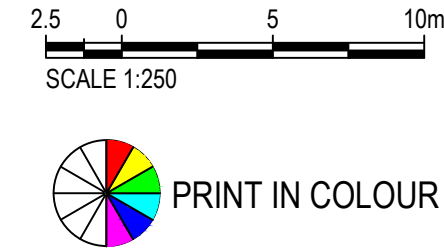
REV	DATE	REVISION DETAILS	APPROVED
A	28/07/2021	CONCEPT DESIGN	S.T-S
B	13/08/2021	SCHEMATIC DESIGN	S.T-S
C	18/08/2021	UPDATED CIVIL	S.T-S

SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION
1:250	A1	
DRAWN	APPROVED	
D. NGUYEN		
DESIGNED		DATE
H. NGUYEN		18/08/2021
REVIEWED		
T. PHAM		

PROJECT
NORTH SYDNEY PUBLIC SCHOOL 182 PACIFIC HIGHWAY, NORTH SYDNEY NSW 2060, AUSTRALIA
TITLE
NORTH SYDNEY PUBLIC SCHOOL STORMWATER LAYOUT PLAN

DRAWING NUMBER
520128
PROJECT No.
NSPS-AUR-00-00-DR-CC-0030
REV
C

- SURVEY NOTES:**
- EXISTING DRAINAGE AND INLET GRATES NOTED ON TOPOGRAPHICAL SURVEY TO BE CONFIRMED VIA DETAILED SURVEY AND SITE INSPECTION. EXISTING DRAINAGE ALIGNMENT TO BE CONFIRMED PRIOR TO DESIGN PROGRESSION.
- GENERAL NOTES:**
- MINIMUM CIVIL PIPE SIZE TO BE 300MM Ø UNLESS NOTED OTHERWISE.
  - TYPICAL CIVIL PIPES TO BE "BLACKMX" OR EQUIVALENT.
  - PROPOSED INLET PITS TO BE 450 X 450 MINIMUM GRATES UNLESS OTHERWISE NOTED.
  - ALL INLET PITS TO BE FITTED WITH LITTER BASKETS
  - EXISTING DRAINAGE NETWORK TO BE CLEARED AND FLUSHED AS PART OF CONSTRUCTION ACTIVITIES
  - OSD TANK TO BE PROVIDED IN ACCORDANCE WITH NORTH SYDNEY ON-SITE STORMWATER DETENTION TECHNICAL SPECIFICATION.





**Document prepared by**

**Aurecon Australasia Pty Ltd**

ABN 54 005 139 873

Level 5, 116 Military Road

Neutral Bay NSW 2089

PO Box 538

Neutral Bay NSW 2089

Australia

**T** +61 2 9465 5599

**F** +61 2 9465 5598

**E** [sydney@aurecongroup.com](mailto:sydney@aurecongroup.com)

**W** [aurecongroup.com](http://aurecongroup.com)

**aurecon**

*Bringing ideas  
to life*

