Civil Engineering Design Report

Upgrade to Greenway Park Public School and New Pre-school

Revision E

SINSW Group 2
Project Reference: 132565

April 2025

Prepared For:

Department of Education (DoE)

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REV	ISSUE/AMENDMENT	WRITTEN BY	REVIEWED BY	DATE
A	REF Issue	AM	YC	16.01.2025
B	REF Issue – Pre-amble Updates	AM	YC	07.03.2025
C	REF Issue – Coordination with Pre-school	YC	YC	13.03.2025
D	REF Issue – Updates as requested	YC	YC	03.04.2025
E	REF Issue – Added Pre-school as requested.	HM	BL	15.04. 2025

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1 Introduction

1.1 Proponent

The Department of Education (DoE) is the proponent and determining authority pursuant to Section 5.1 of the *Environmental Planning and Assessment Act 1979* (the Act).

1.2 Landowner

The Minister for Education and Training is the landowner.

This Stormwater Management Plan has been prepared to accompany a Review of Environmental Factors (REF) prepared for the Department of Education (DoE) relating to upgrades to Greenway Park Public School (the activity) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments – Consideration of environmental factors for health services facilities and schools, October 2024 (the Guidelines) by the Department of Planning, Housing and Infrastructure.

This report examines and considers the relevant environmental factors in the Guidelines and Section 170, Section 171 and Section 171A of the Environmental Planning and Assessment Regulations 2021 (EP&A Regulation) as outlined in Table A below. Refer to Appendix A for the relevant drawings for the Stormwater OSD and the Erosion Sediment Control Plan.

Regulation / Guideline Section	Requirement	Response	Report Section
Number	**Insert Dot Point**		
3a) Any environmental impact on a community	(a1) Impact during construction – such as noise, vibration, traffic, construction vehicle routes, access and parking, pollution/dust, water and stormwater flow, sediment and run-off, waste removal, servicing arrangements, bushfire, flooding, contamination, other construction occurring in the area.	The Contractor is to prepare a Construction management plan which include: • construction traffic management plan, and • construction and demolition waste management plan This plan should also highlight how overland stormwater flow will be managed to prevent any damage to the existing buildings as well as protect the constructed works during construction.	**To be provided by the Contractor.**
	(a2) impact post-construction (including from any activity, public-address systems and sirens, signage, events, hours of operation, or out of hours use of facilities, helicopter facilities, emergency facilities) which may include: (i) water flow/water quality, downstream impacts	**The new activity provides an underground Onsite Detention (OSD) Tank as well as an underground treatment chamber.** **The OSD provides storage for the generated stormwater run-off to mitigate the run-off to pre-developed flows.** **The treatment chamber house cartridges that filter out pollutants prior to discharging the collected stormwater run-off into the existing stormwater piped system to prevent pollution of the existing stormwater system and ultimately the council stormwater assets.**	**Section 3.4 and Section 3.5 of this report.**
	Erosion & Sediment Control	**Please refer to section 4 and Appendix A.**	**Section 4**

Table A – Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation

The activity site is located on Wyattville Drive, West Hoxton and is legally described as:

- Lot 11 DP 858025; and

- Lot 20 DP 867282

Greenway Park Public School is located on the south-eastern side of Chapman Street and the north-eastern side of Wyattville Drive. The surrounding context of the site is predominantly low density residential as well as a childcare Centre to the north.

Figure 1: Aerial image of the site, marked in blue (Source: NearMap, taken 28/01/2025)

2 Site Description

2.1 Proposed Activity Description

The proposed activity for the Greenway Park Public School upgrade includes:

<u>Demolition/ earthworks</u>

- Demolish part of boundary fence on Chapman Street for new vehicular crossover;
- Demolish parts of boundary fence on Chapman Street for new gates;
- Demolish shade structure and associate concrete slab and footpath;
- Demolish footpaths;
- Trenching for underground services; and
- Earthworks associate with new buildings and landscaping.

Construction and operation of single storey classroom building with associated covered walkways.

- Construction and operation of a new preschool building, including covered walkways, new carpark (12 spaces and one (1) accessible space) and vehicular crossover to Chapman Street.
- Installation of artwork on Block H and Block J façades, as well as a preschool retaining wall;
- Laying of services within trenches.
- New pedestrian entry points.
- Fencing and gates.
- Underground OSD tanks.
- Rainwater tanks.
- Shed for preschool.
- Outdoor play equipment for the preschool.
- New fire hydrant booster & associated building services connections.
- Retaining walls associated with the preschool.
- Signage.
- Landscaping and,
- Associated earthworks.

Figure 2 below show the scope of works for the proposed activity.

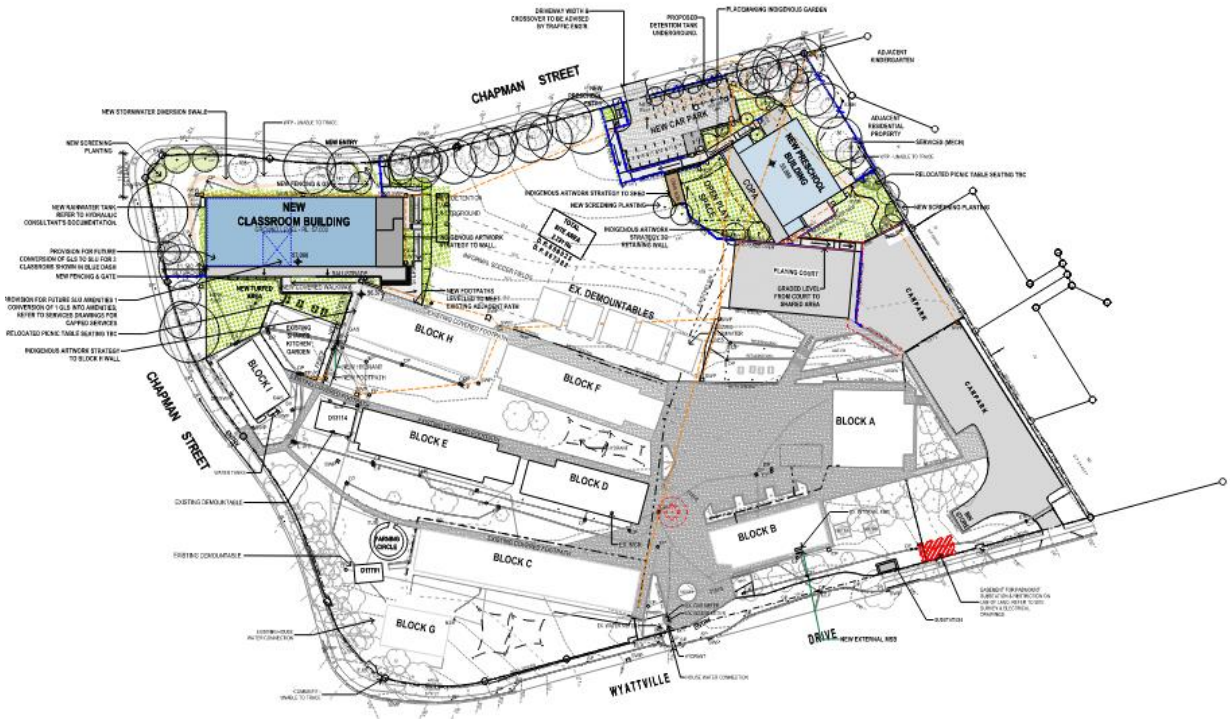


Figure 2: Proposed Scope of Works – (Source: Fulton Trotter Architects, Proposed Site Plan (Rev 14))

2.2 Works Under Separate Planning Pathway (not part of this REF)

To enable the proposed activity to proceed, the existing seven (7) portable classrooms, associated walkways, a shade structure and associated concrete slab have been removed from site and five (5) new portable classrooms and associated walkways have been installed adjacent to Block F under a separate planning pathway. Three trees have been removed to accommodate. These works do not form part of this REF application and have not been assessed in this report.

2.3 Existing Flooding Conditions

The site is bounded by Beard creek to the north and Bayhorse Creek to the south, both tributaries of Cabramatta Creek 1.5km to the east. According to Liverpool City Council Flood Planning Map, the site is located outside the flood zone of each of these creeks.

Based on the due diligence Flood Report, the proposed works lie outside the PMF, and outside the Flood Planning Area, and therefore no flood controls apply to the proposed site. Furthermore, the overland flow affecting the site is small.

Based on Liverpool City Council Planning Controls, due to the increase in impervious area of the proposed building, an OSD Tanks with filter devices will be required for the upgrade activity of GPPS.

3 Proposed Activity

Civil works related to the proposed activity will be discussed below:

3.1 Earthworks

The earthwork quantities associated with the proposed activity for each school are provided in the figures below respectively:

Public School:

- Cut – 246 m^3
- Fill – 87 m^3

The majority of the earthworks involve cut and will require export of approximately 159 m^3 of cut material.

Pre-school

- Cut – 803 m^3
- Fill – 11 m^3

Most of the earthworks involve cutting and will require export of approximately 792 m^3 of cut material.

3.2 Legal Point of Discharge (LPoD)

The stormwater layout identified one existing stormwater discharge location along Chapman Street via an existing pit.

Refer to Appendix A for the Stormwater Layout plan for the proposed activity.

3.3 Stormwater Drainage Strategy

In support of the proposed activity, additional stormwater drainage will be required to convey generated stormwater from the new impervious and adjoining pervious areas into the existing stormwater drainage network.

Meinhardt's preliminary recommendation is that detention storage of approx. 30m^3 be provided for the Public School and approx. 40m^3 for the Pre-School respectively. This is to ensure peak discharge flows draining from the proposed activity can be managed by the downstream drainage systems from the developed site. A permissible site discharge will be determined using DRAINS modelling.

A summary of the schematic stormwater drainage design is presented in the image below.

Public School:

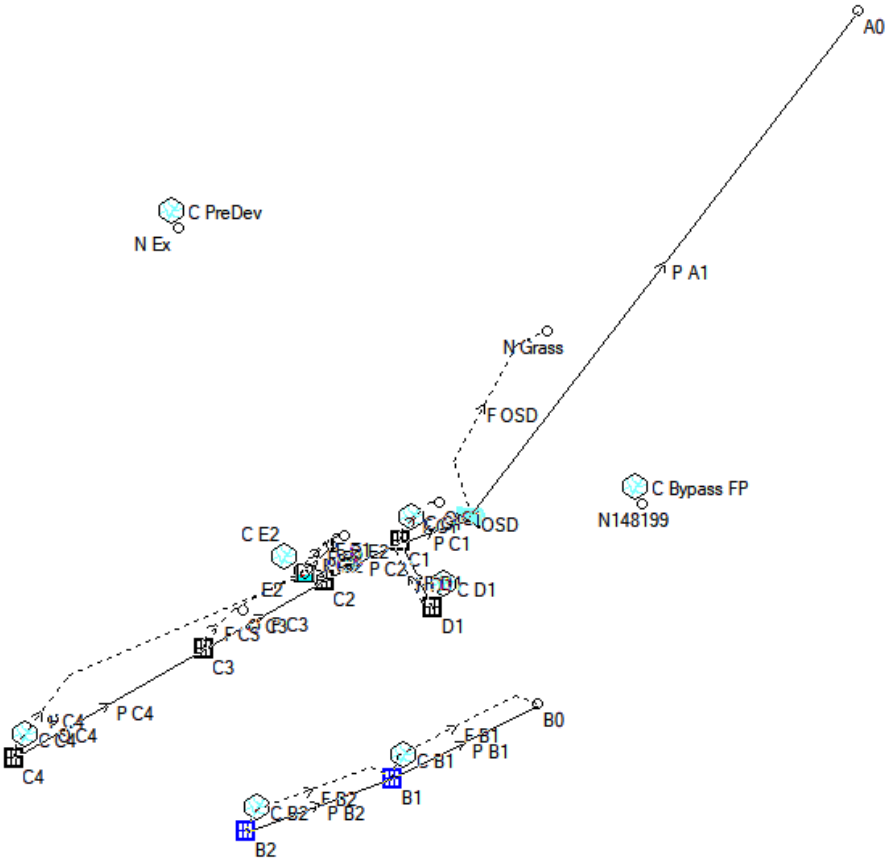


Figure 3: Public School Site Preliminary DRAINS Layout

Pre-School:

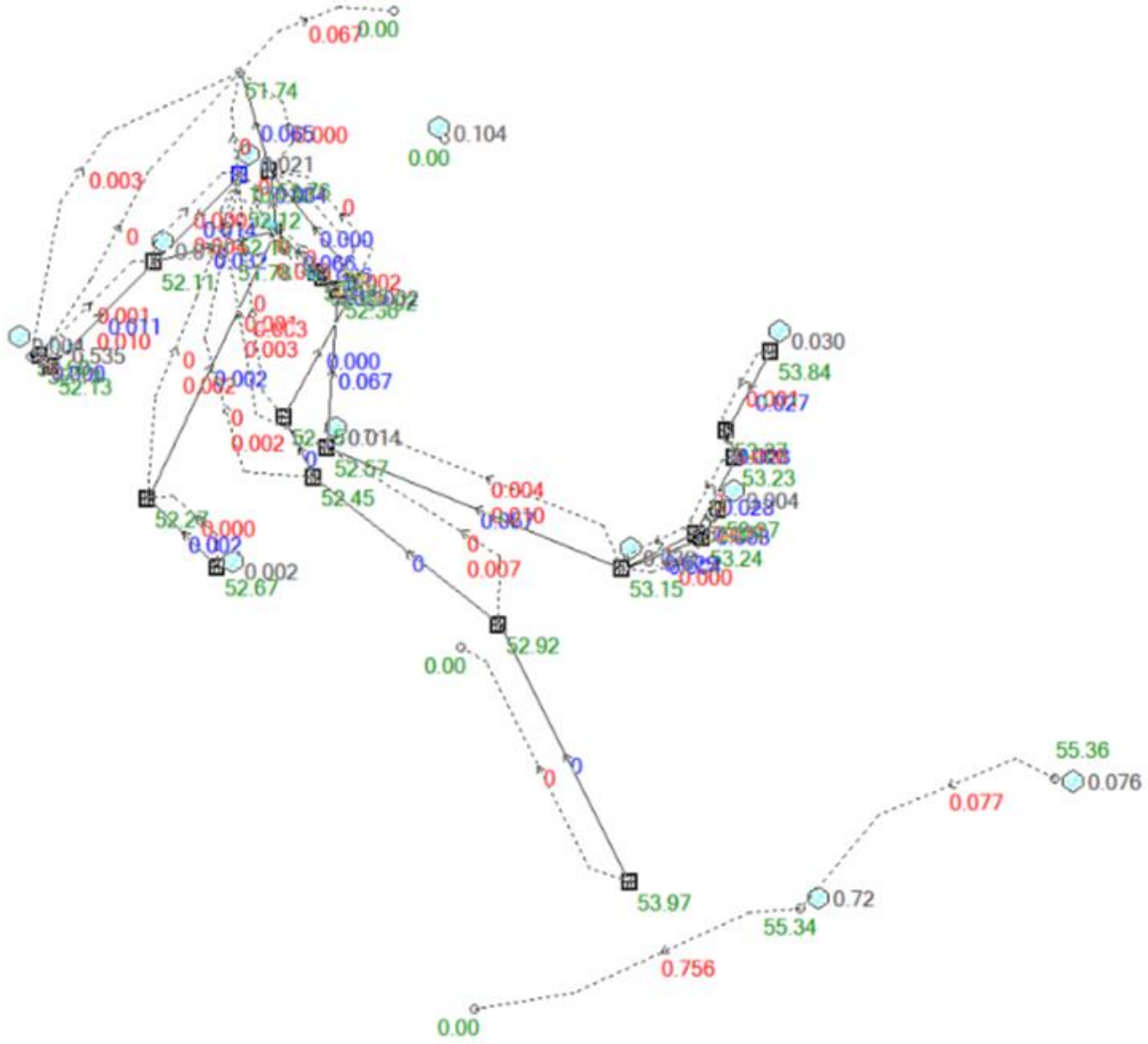


Figure 3a: Pre-School Site Preliminary DRAINS Layout

3.4 Stormwater Quantity Management

The stormwater quantity analysis of the existing and developed site conditions has been undertaken with reference to the requirements and procedure outlined by:

- On-Site Stormwater Detention Standard, Liverpool City Council
- Australian Rainfall and Run-off Volumes 1 & 2 (Aust R&R)

The following section of the report discusses the proposed activity's impact on peak stormwater run-off from the site and compares the existing site condition to ensure a no worsening effect to downstream properties.

The hydrological model adopted was the Extended Rational Method with hyetograph input as specified in Australian Rainfall and Run-off (AR&R) Volumes 1 and 2.

The following design parameters were used in the stormwater drainage calculations:

- Design storm is 1 in 10-year ARI as per Stormwater Drainage Design, Chapter D5.04.
- The Major storm considered is 1 in 100 ARI.
- Rainfall data is from BOM.
- Site area ± 0.1642ha approximately 10% impervious

3.4.1 Existing Catchment

Catchment Area

The existing area where the proposed building will be constructed is an open space with 90% pervious percentage. Existing site has demountable rooms and concrete footpaths.

Site for the Public School is approximately 0.1642 ha. it is mostly draining towards north-east at an average grade of approximately 5% and has a pervious factor of 90%. Survey shows pits and pipes at southern boundary of the site, near an existing building.

The Pre-school site covers an area of approximately 0.2359 ha. Surface drainage is predominantly oriented towards the north-west, with an average slope of approximately 6%. Similar to the Public School site, the pervious factor is estimated at 90%. Survey information indicates that pits and pipes traverse the site and are also present along the northern boundary.

3.4.2 Stormwater Compliance

The developed site catchment is summarised below:

- Public School Area – 0.1642 Ha
- Pre – School Area – 0.2359 Ha
- Total time of concentration (t_c) – 5 and 7 minutes
- Percent Impervious – 95%

This site is governed by the following two documents:

- On-Site Stormwater Detention Standard, Liverpool City Council
- D5 Stormwater Drainage Design, January 2003

Tailwater level is set to the level of the downstream pit lid as stated in Stormwater Drainage Design, January 2003

Storm Event	Tailwater Level Assumptions
100yr	52.31
50yr	52.31
20yr	52.31
10yr	52.31
5yr	52.31
2yr	52.31

Table 1 – Assumed Tailwater Levels

3.4.3 DRAINS Configuration

The DRAINS Program was used in modelling the various stages of the project, i.e., pre-development, post-development mitigated flows required not to impact surrounding areas with the proposed activity.

Please refer to the figure below for the DRAINS Configuration.

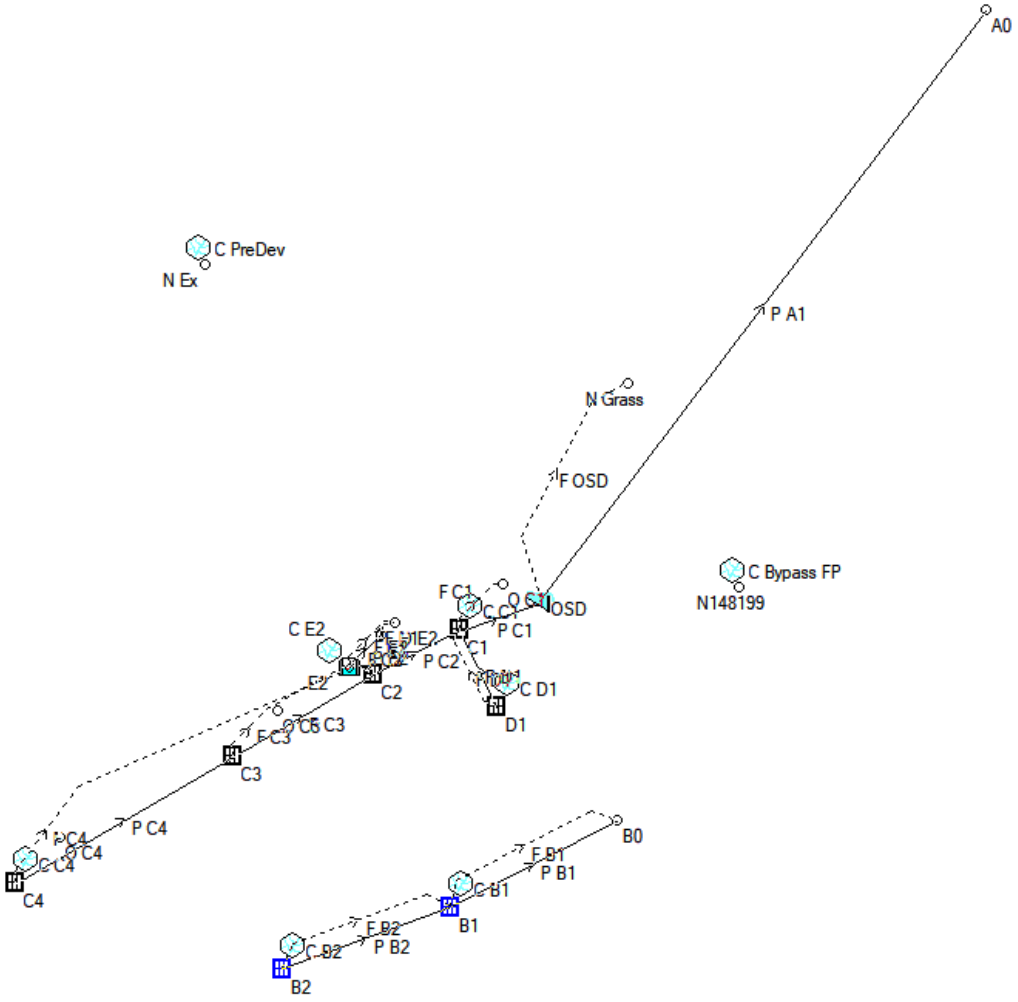


Figure 4: DRAINS Configuration - Developed Public School Site

Figure 4: DRAINS Configuration - Developed Site

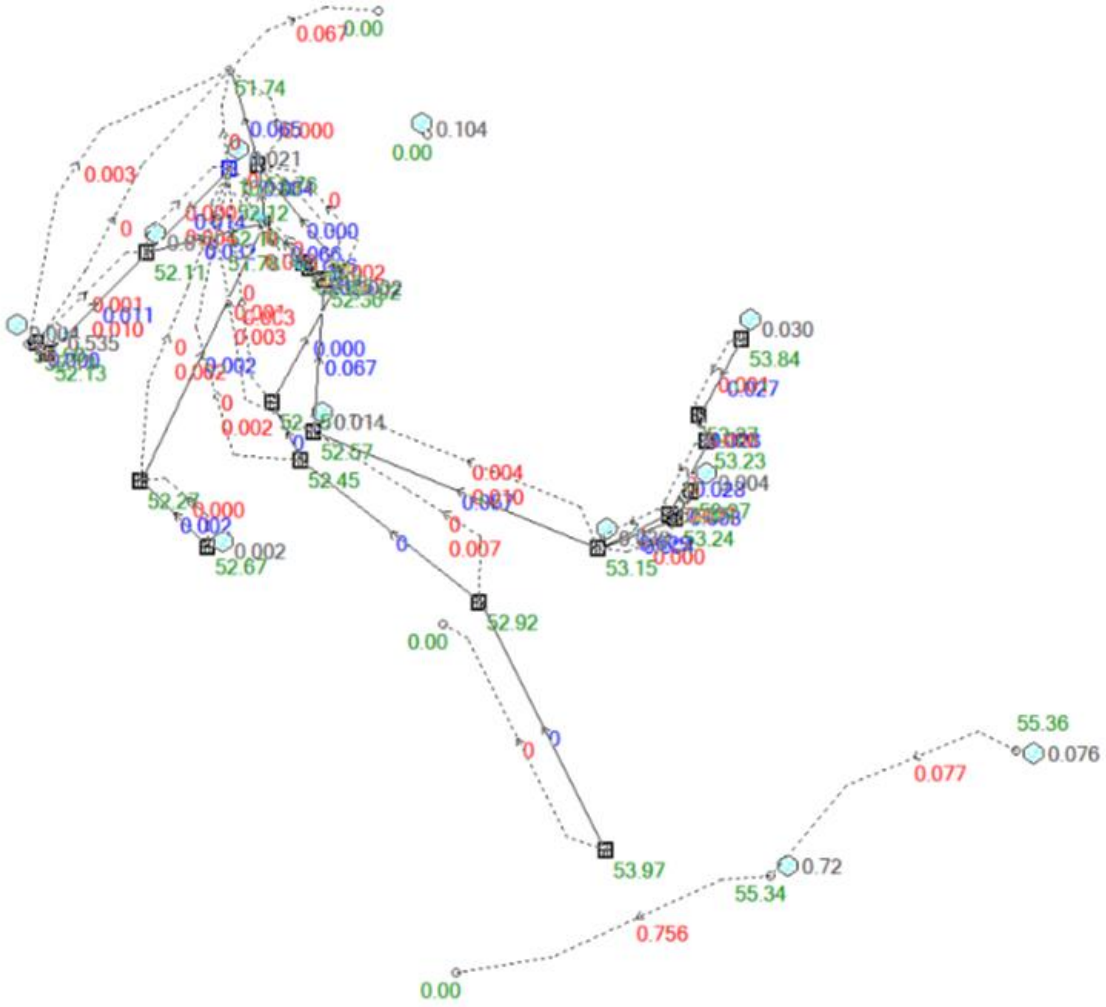


Figure 4a: DRAINS Configuration - Developed Pre-School Site

3.4.4 Stormwater Quantity Comparison

Peak flow rates from the developed site were determined by modelling various storm durations for each ARI storm. The Permissible Site Discharge and Post-Developed flows are also provided are outlined in the table below:

ARI Storm Event	Pre-Developed Site Discharge Rate (L/s)	Mitigated Flow (L/s)
Q_{10}	36	35
Q_{20}	46	40
Q_{50}	56	47
Q_{100}	63	62

Table 2 – Pre-Developed and Mitigated Flows

As shown in Table 2, the peak flow rate of stormwater run-off has decreased through the formalised stormwater system and mitigation measures as discussed below.

3.4.5 Stormwater Detention

It is proposed that each of the individual development sites incorporate a dedicated On-Site Stormwater Detention (OSD) tank to mitigate post-development stormwater flows and ensure that site runoff does not exceed pre-development conditions during storm events.

For the Public School site, the OSD tank is required to provide a detention storage volume of approximately 30 cubic metres, while the Pre-School site will require a detention volume of approximately 40 cubic metres. These storage requirements have been confirmed through DRAINS modelling conducted during the schematic design phase and are considered adequate to manage stormwater in accordance with local drainage and flood mitigation requirements.

3.5 Stormwater Quality Management Strategy

3.5.1 Operational Phase

The stormwater quality management proposed for this portion of the activity are required to achieve the following pollutant load reduction objectives:

The following Greenstar targets

- 80 % reduction in total suspended solids load (TSS)
- 60 % reduction in total phosphorus load (TP)
- 45 % reduction in total nitrogen load (TN)
- 90 % reduction in gross pollutant load

Liverpool City Council (Liverpool Development Control Plan Part 1) reduction targets

- 85 % reduction in total suspended solids load (TSS)
- 65 % reduction in total phosphorus load (TP)
- 45 % reduction in total nitrogen load (TN)
- 90 % reduction in gross pollutant load

Pollutants typically generated during the operational phase of the activity include:

- Litter/gross pollutants
- Sediment
- Nutrients (N & P)
- Hydrocarbons (oils and grease); and
- Heavy metals.

In order to meet these pollutant reduction targets; stormwater treatment measures are required. These treatment measures (located on site as indicated in Figure 4 below) are detailed in the attached stormwater layout plan in Appendix A and are summarised as follows:

a. For a Public School: Ten (10) units of 690mm cartridge type PSorb Stormfilters or approved equivalent.

b. For a Pre-School: twelve (12) units of 690mm cartridge type PSorb Stormfilters or approved equivalent.

Stormwater modelling has been carried out using MUSIC modelling software to determine the required infrastructure needed to meet the Water Quality Objectives (WQOs) above.

3.5.2 MUSIC Model

Public School

MUSIC modelling for this activity was carried out using the MUSIC program and data collected from Bureau of Meteorology. The developed site catchment details from the MUSIC model are outlined in Table below.

Catchment	Area (ha)	% Effective Impervious
Roof Area	0.1390	100 % Impervious
Footpath	0.0120	70% Impervious
Overall Area [ha]	0.1510	

Table 3 - Developed Site MUSIC Catchment Details

The layout for the music model, including the treatment train effectiveness is detailed in Figure 5 and table 4.

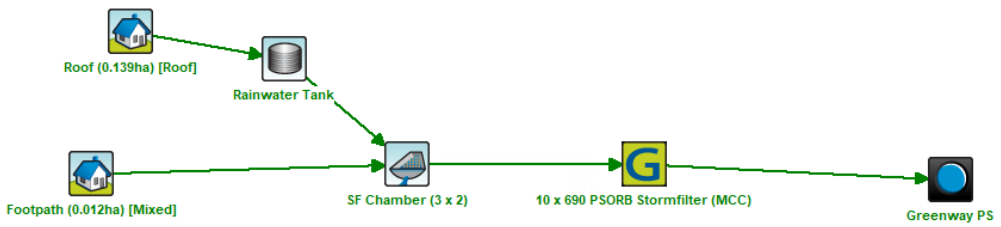


Figure 5: MUSIC Layout and Treatment Effectiveness for Developed Site

The results are presented below:

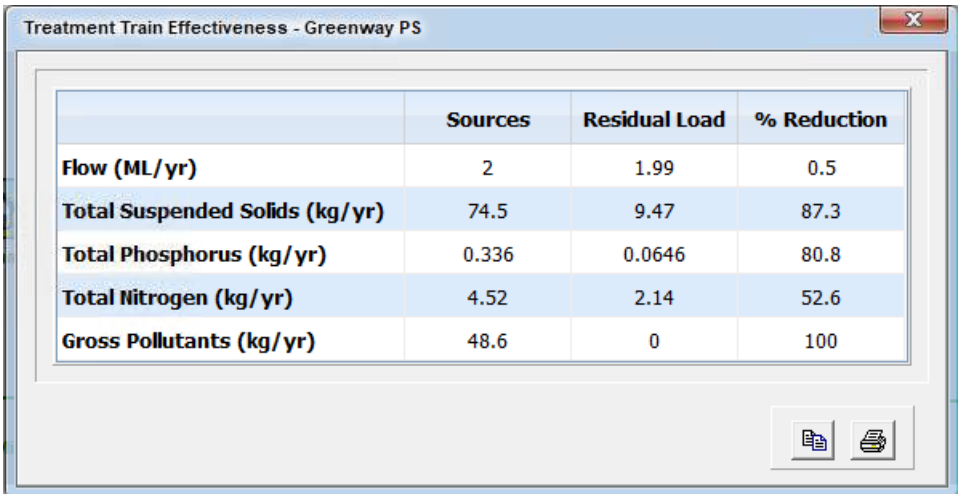


Figure 6: MUSIC Results for Developed Activity

The developed site treatment train effectiveness is also outlined in the table below.

Pollutants	Reduction Targets (%)		Results (%)
	Green Star (B)	Liverpool City Council	Overall
Total Suspended Solids (kg/yr) **TSS**	80	85	87.3
Total Phosphorus (kg/yr) **TP**	60	65	80.8
Total Nitrogen (kg/yr) **TN**	45	45	52.6
Gross Pollutants (kg/yr)	90	90	100

Table 4 - Treatment train effectiveness

Based on the MUSIC modelling results in the table above, the proposed treatment train achieves the required pollutant load reduction objectives for all pollutants. The treatment train is considered adequate for the activity including compliance with Greenstar (B).

Pre- School

MUSIC modelling for this activity was carried out using the MUSIC program and data collected from Bureau of Meteorology. The developed site catchment details from the MUSIC model are outlined in Table below.

Catchment	Area (ha)	% Effective Impervious
Roof Area	0.1190	100 % Impervious
Footpath	0.0806	70% Impervious
Overall Area [ha]	0.1996	

Table 3a - Developed Site MUSIC Catchment Details

The layout for the music model, including the treatment train effectiveness is detailed in Figure 5a and Table 4a.

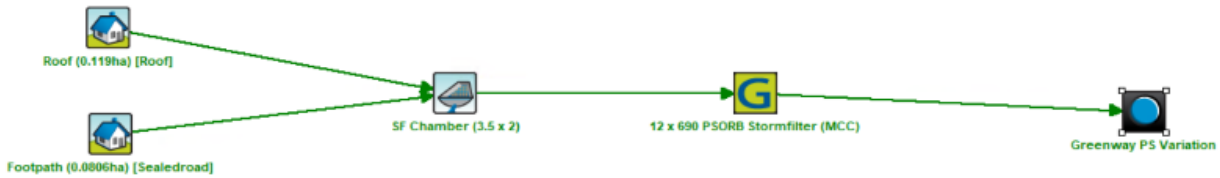
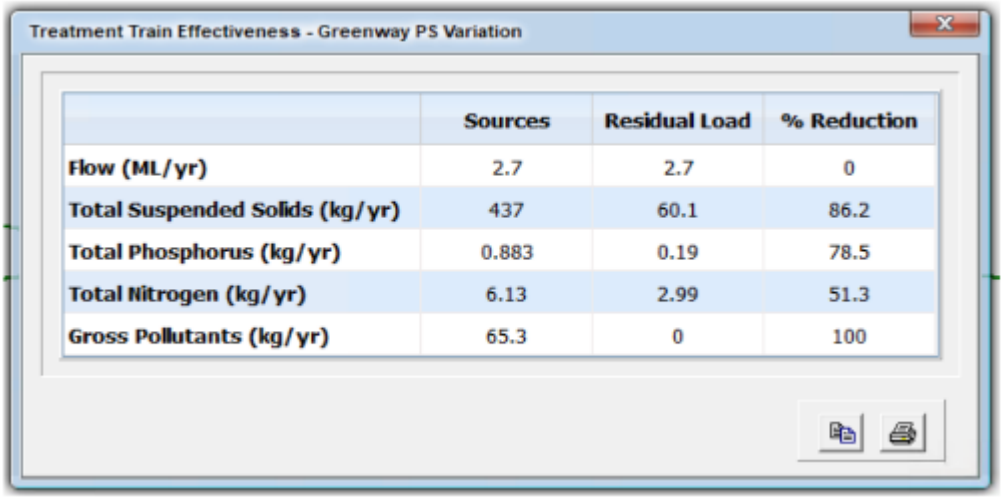


Figure 5a: MUSIC Layout and Treatment Effectiveness for Developed Site

The results are presented below:



	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.7	2.7	0
Total Suspended Solids (kg/yr)	437	60.1	86.2
Total Phosphorus (kg/yr)	0.883	0.19	78.5
Total Nitrogen (kg/yr)	6.13	2.99	51.3
Gross Pollutants (kg/yr)	65.3	0	100

Figure 6a: MUSIC Results for Developed Activity

The developed site treatment train effectiveness is also outlined in the table below.

Pollutants	Reduction Targets (%)		Results (%)
	Green Star (B)	Liverpool City Council	Overall
Total Suspended Solids (kg/yr) **TSS**	80	85	86.2
Total Phosphorus (kg/yr) **TP**	60	65	78.5
Total Nitrogen (kg/yr) **TN**	45	45	51.3
Gross Pollutants (kg/yr)	90	90	100

Table 4a - Treatment train effectiveness

Based on the MUSIC modelling results in the table above, the proposed treatment train for the pre-school site achieves the required pollutant load reduction objectives for all pollutants. The treatment train is considered adequate for the activity including compliance with Greenstar (B).

3.6 Construction Phase

Pollutants typically generated during construction phase are described in Table 5 below.

Pollutant	Sources
Litter (Gross Pollutants)	Paper, construction packaging, food packaging, cement bags.
Sediment	Unprotected exposed soils and stockpiles during earthworks and building.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment.
Toxic materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash waters.
pH altering substances	Acid sulphate soils, cement slurry and wash waters.

Table 5 - Pollutants typically generated during the construction phase

4 Erosion and Sediment Control

Management of stormwater run-off during construction is necessary to avoid pollution of downstream waterways from sediment and gross pollutant loading.

Please refer to Appendix B for the initial Erosion and Sediment Control Plan. This plan will be used as a live document as construction progress on site by the contractor.

Impacts of inadequate erosion and sediment control downstream from the site include:

- traffic safety problems.
- blocked drains.
- local flooding problems.
- aesthetic pollution of drainage paths; and
- damage to local ecosystems.

Best practice erosion and sediment controls must be installed to minimise the discharge of sediment laden run-off during construction. Erosion and sediment control plans shall be developed during detailed design phase and must be continually maintained and amended as required to minimise environmental harm.

Erosion and sediment control plans are based on three sets of control measures:

- drainage control.
- erosion control; and
- sediment control.

These control measures must be maintained in an effective operational condition. Sediment disposal from site is to occur to the satisfaction of council. Defects in erosion and sediment control devices, such as sediment fences, are to be inspected and documented. Upon Inspection, the Contractor is to determine whether the device should be replaced or repaired. Documentation is to include how the damage was caused and what measures can be implemented to reduce the possibility of repeat occurrences. Any damage to either permanent or temporary water quality control structures or devices is to be immediately rectified at the contractor's expense.

Other measures include, but is not limited to the following:

- Temporary access to site with shaker pad
- An indicative stockpile area with sediment fence around it during construction.
- Geotextile inlet pit filters or sandbags to be placed around existing stormwater pits.

The design of these measures is to be in accordance with the Landcom "Blue Book".

The effectiveness of the erosion and sediment control devices can be monitored by visual audits. All ESC measures are to be inspected:

- at least daily (when work is occurring on site) or weekly (when work is not occurring on site);
- within 24 hours of expected rain; and
- within 18 hours of a rainfall event (i.e. an event of sufficient intensity and duration to mobilise sediment on site).

Drainage paths are to be inspected to ensure the sediment fences are not being bypassed as a result of soil erosion.

Sediment laden run-off shall be prevented from entering neighbouring properties. This shall be achieved by landscaping disturbed areas immediately after and prior to a rainfall event.

5 Maintenance and Monitoring Requirements

Periodic maintenance and monitoring of stormwater devices proposed in this report is crucial to ensure effective operation and design life.

Inspect field inlet grates, pits and underground pipes for blockage or damage at least 6 monthly or after significant rainfall event. The gross pollutant filter baskets within inlet pits and bioretention basin shall be inspected and maintained preferably by the manufacturer to avoid damage to units and to ensure adequate cleaning and record keeping. For the first 12 months routine inspections of treatment devices shall be carried out monthly with routine clean out at alternate months. Results of the initial 12 months maintenance program shall be used to determine future maintenance intervals. Refer to manufactures maintenance and monitoring methodology for specific details.

Maintenance of ESC measures must occur in accordance with Table 6 where applicable.

ESC Measure	Maintenance Trigger	Timeframe for Completion of Maintenance
Sediment basins (where applicable)	When settled sediment exceeds the volume of the sediment storage zone	Within 7 days of the inspection.
Other ESC measures	The capacity of ESC measures falls below 75%.	By the end of the day.

Table 6 - ESC Maintenance Requirements

Sediment accumulation on ESC devices is to be removed and disposed of to the satisfaction of Council.

6 Mitigation Measures

Mitigation measures are required for a Review of Environmental Factors (REF) and are actions or measures to avoid, minimise, rectify (by repairing, rehabilitating or restoring) and/or reduce or eliminate over time (by preservation and maintenance) the adverse environmental impacts of a Division 5.1 Activity under the EP&A Act.

The following mitigation measures discussed throughout this report are summarised as follows:

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
Stormwater Quality Management	Section 3.5	Stormwater runoffs generated by the proposed activity will be collected through the proposed drainage system and will then be treated in a chamber with 10 units of 690 PSorb Stormfilters or equivalent.	The proposed activity generated an increase in pollutants, so it is required to reduce them to meet Greenstar B Pollutant Load reduction targets before the stormwater runoff leaves the property.
Stormwater Quantity Management	Section 3.4	The proposed activity flow rate is mitigated through implementing the use of On-site Detention Tank.	The Parramatta Council requires a Permissible Site Discharge for new/additional activities, and it is specified in On-Site Stormwater Detention Handbook, Appendix Q. Therefore, the use of OSD is required to temporarily detain stormwater runoff and limit the discharge flow rate leaving the site.
Erosion and Sediment Control	Section 4	Construction pollutants will be mitigated by installing erosion and sediment control devices such as hay bales, sediment fences and geotextile pit filters in the site.	It is necessary to manage stormwater runoff during construction to avoid pollution of downstream waterways from sediment and gross pollutant loading.
Overland Flow Management	Appendix A (Civil Siteworks) Stormwater Surface Flows	The whole site is assessed to identify the runoff flow directions during minor and major storm events. Stormwater runoff will be collected through a pit and pipe drainage system and will be mitigated by using OSD Tank. External catchment flows will be diverted by a diversion channel and will not be catered for by the proposed activity's piped system.	The proposed activity requires design and diversion of surface flows to keep water away from the building.

Appendix A:

Public School:

Civil Siteworks Plan

Erosion and Sediment Control Plan

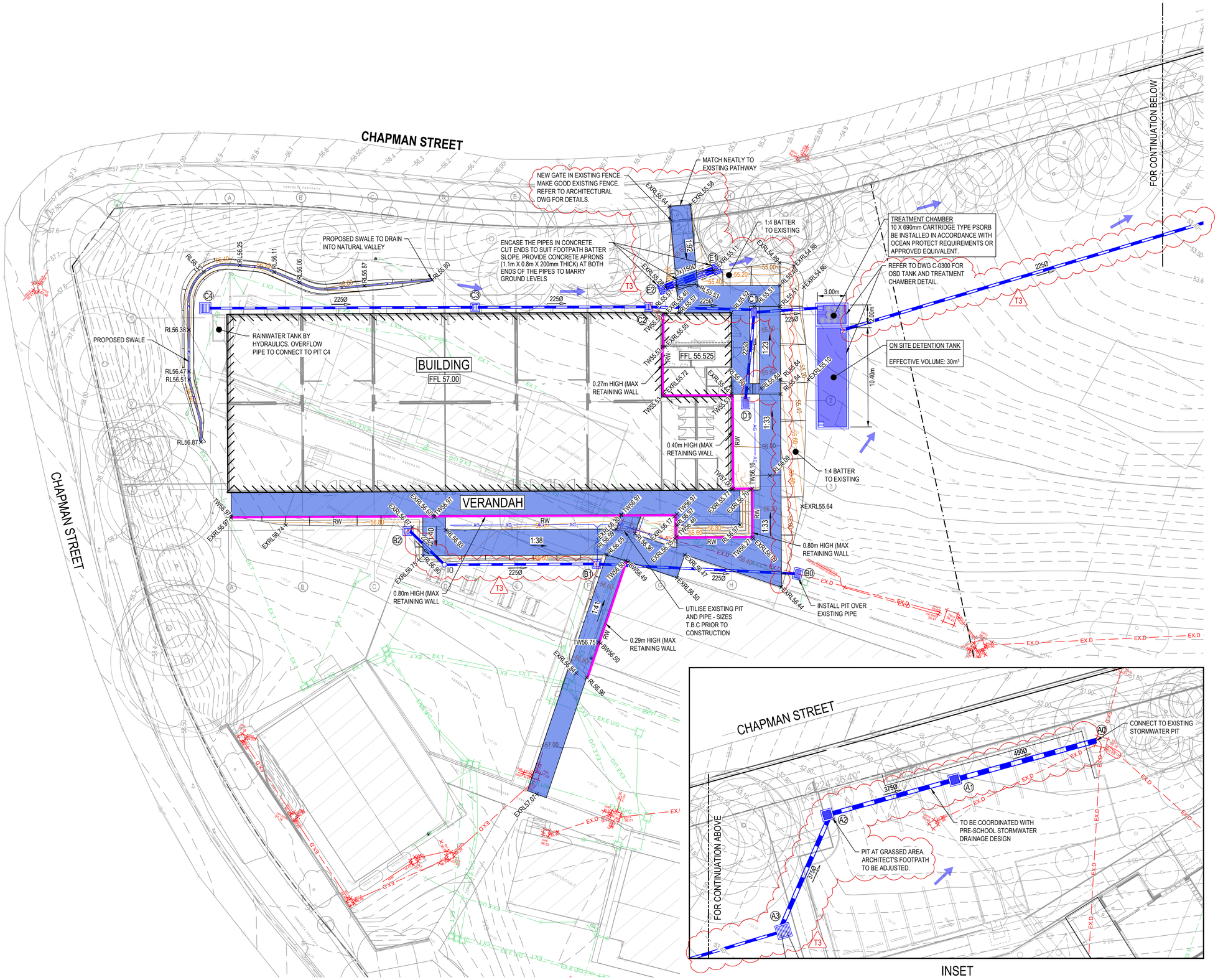
Bulk Earthworks Plan

Pre-School:

Civil Siteworks Plan

Erosion and Sediment Control Plan

Bulk Earthworks Plan



LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
156.6	PROPOSED SURFACE CONTOURS
+156.60	EXISTING SURFACE SPOT LEVELS
+156.600	PROPOSED SURFACE SPOT LEVELS
	TITLE BOUNDARY
RW	PROPOSED RETAINING WALL
EX.D	EXISTING STORMWATER DRAIN
225Ø	PROPOSED STORMWATER DRAIN AND FLOW DIRECTION
	SYPHONIC CONNECTION (REFER HYDRAULIC ENGINEERS DRG'S)
AG	PROPOSED 100Ø UPVC AGRICULTURAL DRAIN CLASS 400
EX1	EXISTING STORMWATER PIT
EX2	EXISTING STORMWATER PIT TO BE MODIFIED
1	PROPOSED STORMWATER PIT
GI	100Ø GRATED INLET (UNLESS NOTED OTHERWISE)
DP	DOWNPIPE
IO	INSPECTION OPENING
TG	TRENCH GRATE
	OVERLAND FLOW ARROW
	LIGHT DUTY CONCRETE PAVEMENT-PEDESTRIAN
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E U/G	EXISTING ELECTRICAL UNDERGROUND
EX.E LV	EXISTING LOW VOLTAGE ELECTRICITY
EX.E HV	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED

THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY ASTREA, REFERENCE No A4046 REV B DATED 18 OCTOBER 2023.

THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No. PS206292-SYD-GEO-REP-001-REV01 DATED 17 NOVEMBER 2023 PREPARED BY WSP. THE PROVISIONS AND RECOMMENDATIONS CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH. ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.

BEFORE YOU DIG www.byda.com.au

WARNING

PROPOSED SERVICES

THE LOCATION AND EXTENT OF PROPOSED SERVICES IS INDICATIVE ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. REFER TO AUTHORISED DOCUMENTATION BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	80% SCHEMATIC DESIGN	D.H	G.P	Y.C	12.12.24
P2	100% SCHEMATIC DESIGN	D.H	G.P	Y.C	16.01.25
T1	TENDER ISSUE	D.H	G.P	Y.C	21.02.25
T2	TENDER ISSUE	D.H	G.P	Y.C	26.02.25
T3	TENDER ISSUE	D.H	G.P	Y.C	13.03.25

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE (A1)

Meinhardt Infrastructure and Environment PTY. LTD.
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info@meinhardtgroup.com
http://www.meinhardtgroup.com

CLIENT: School Infrastructure NSW

TITLE: CIVIL SITEWORKS PLAN

PROJECT: GREENWAY PARK PUBLIC SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

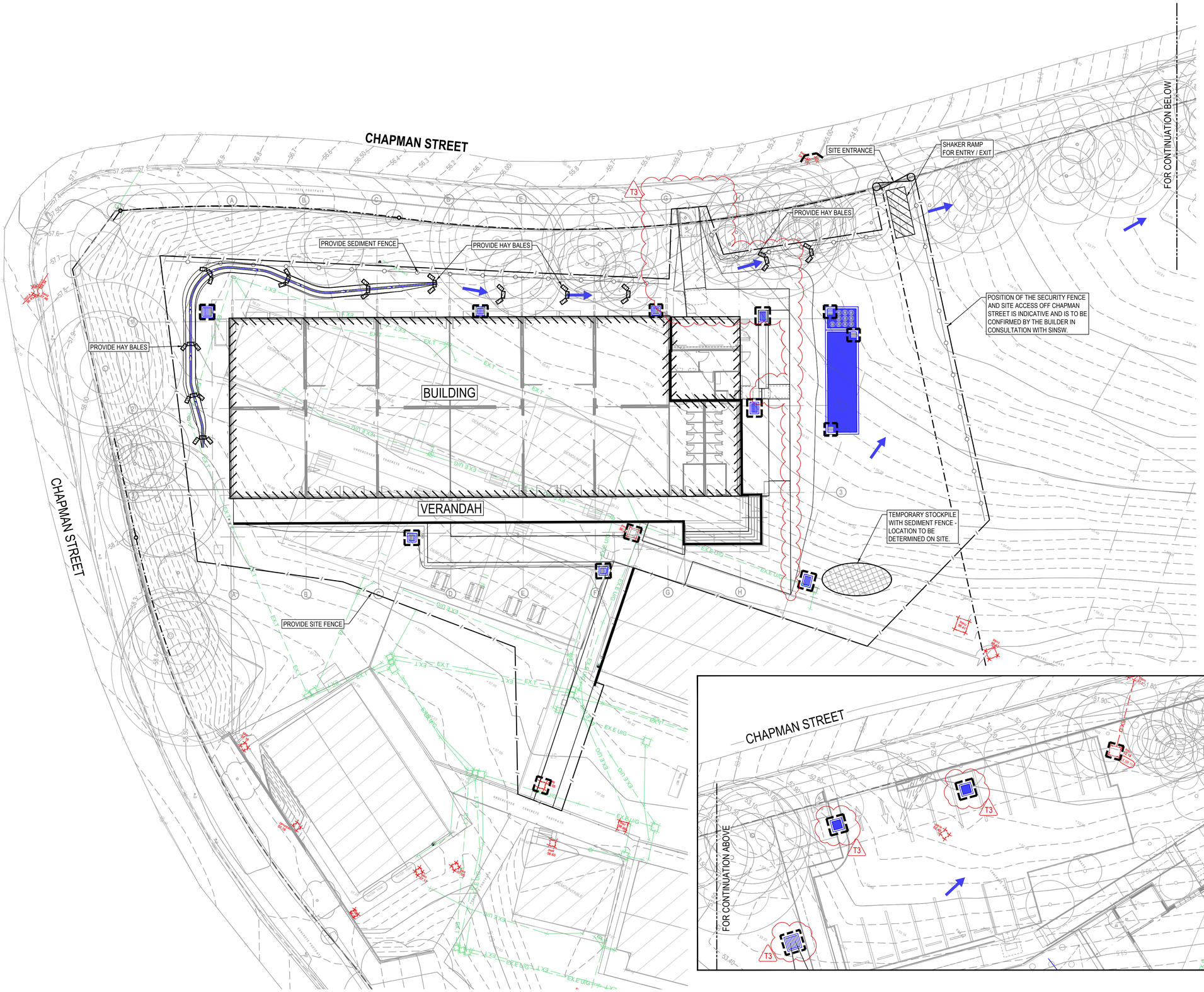
STATUS: **TENDER ISSUE**
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:200

PROJECT No: 132565

DRAWING No: GPPS-MHT-00-00-DR-C-0101

REV: T3



LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
	TITLE BOUNDARY
EX.D	EXISTING STORMWATER DRAIN
	EXISTING STORMWATER PIT
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E O/H	EXISTING OVERHEAD ELECTRICITY
EX.E L/V	EXISTING LOW VOLTAGE ELECTRICITY
EX.E H/V	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED
	EXISTING TREE
	HOARDING/SECURITY FENCE
	SEDIMENT FENCE
	BUILDING OUTLINE
	SITE ACCESS GATE
	SHAKER RAMP FOR ENTRY/EXIT
	TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
	GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT
	SANDBAGS INSTALLED ON EXISTING PIT
	OVERLAND FLOW ARROW

BEFORE YOU DIG www.byda.com.au

WARNING
PROPOSED SERVICES

THE LOCATION AND EXTENT OF PROPOSED SERVICES IS INDICATIVE ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. REFER TO AUTHORISED DOCUMENTATION BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS

WARNING
BEWARE OF UNDERGROUND SERVICES

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REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	80% SCHEMATIC DESIGN	D.H	G.P	Y.C	12.12.24
P2	100% SCHEMATIC DESIGN	D.H	G.P	Y.C	16.01.25
T1	TENDER ISSUE	D.H	G.P	Y.C	21.02.25
T2	TENDER ISSUE	D.H	G.P	Y.C	26.02.25
T3	TENDER ISSUE	D.H	G.P	Y.C	13.03.25

0 2 4 6 8 10m
SCALE 1:200 AT ORIGINAL SIZE (A1)

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CLIENT: NSW GOVERNMENT School Infrastructure NSW

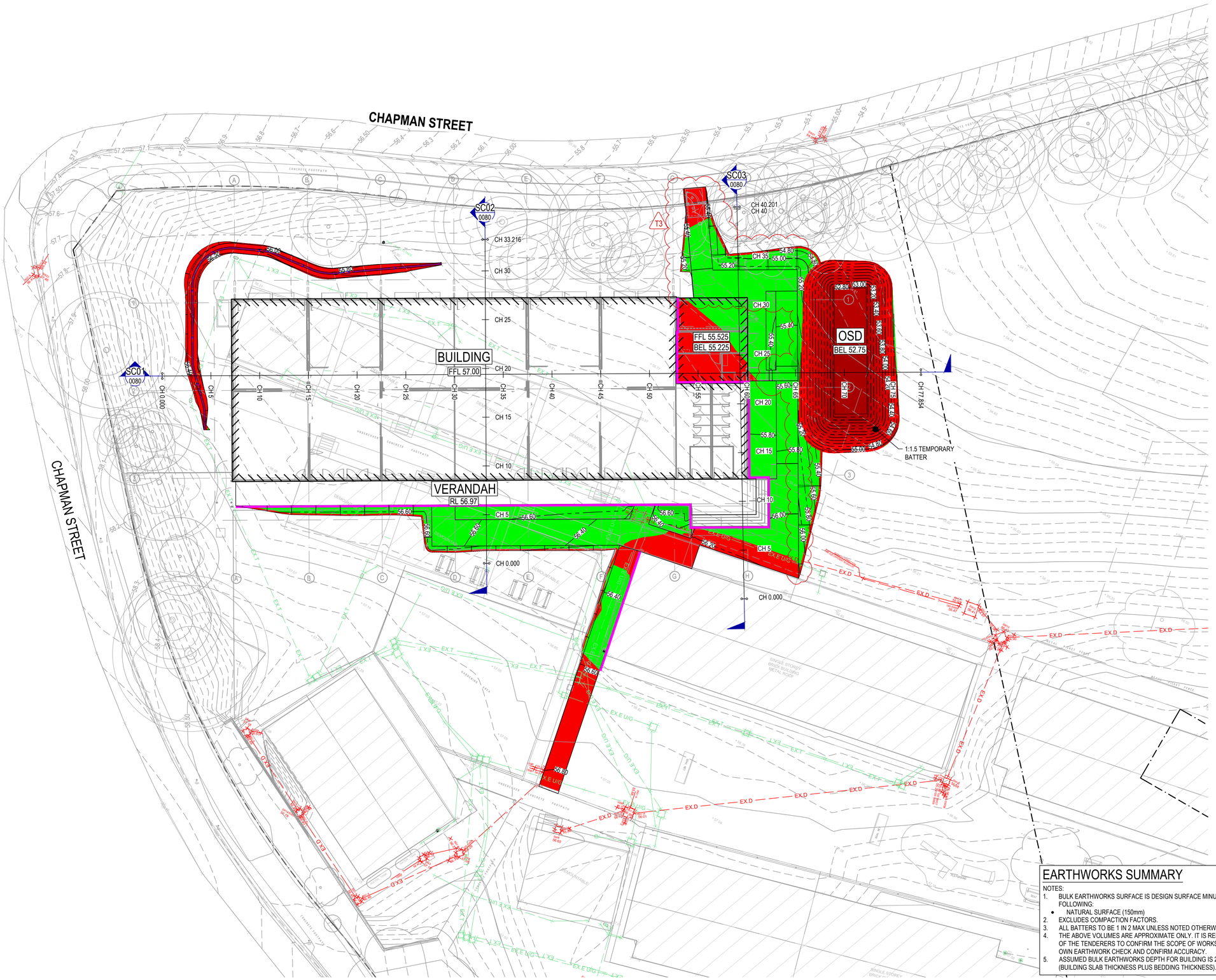
PROJECT: GREENWAY PARK PUBLIC SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

TITLE: EROSION AND SEDIMENT CONTROL PLAN

STATUS: **TENDER ISSUE**
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:200

PROJECT No	DRAWING No	REV
132565	GPPS-MHT-00-00-DR-C-0060	T3



LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
156.6	PROPOSED SURFACE CONTOURS
+156.60	EXISTING SURFACE SPOT LEVELS
	TITLE BOUNDARY
	PROPOSED RETAINING WALL
	PROPOSED SWALE
EX.D	EXISTING STORMWATER DRAIN
	EXISTING STORMWATER PIT
	EXISTING STORMWATER PIT TO BE MODIFIED
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E U/G	EXISTING ELECTRICAL UNDERGROUND
EX.E L/V	EXISTING LOW VOLTAGE ELECTRICITY
EX.E H/V	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED

EARTHWORKS QUANTITIES

150mm STRIPPED VOLUME = 328m³

TOTAL CUT VOLUME = 246m³
TOTAL FILL VOLUME = 87m³
NET EXPORT VOLUME = 159m³
(NET VOLUME EXCLUDES STRIPPED SOIL, AS THIS IS ASSUMED TO BE REMOVED FROM SITE)

THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY ASTREA, REFERENCE No A4046 REV B DATED 18 OCTOBER 2023.

THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No. PS206292-SYD-GEO-REP-001-REV01 DATED 17 NOVEMBER 2023 PREPARED BY WSP. THE PROVISIONS AND RECOMMENDATIONS CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH. ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.

BULK EARTHWORKS

I.D	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	-30.000	-1.600	
2	-1.600	-1.400	
3	-1.400	-1.200	
4	-1.200	-1.000	
5	-1.000	-0.800	
6	-0.800	-0.600	
7	-0.600	-0.400	
8	-0.400	-0.200	
9	-0.200	0.000	
10	0.000	0.200	
11	0.200	0.400	
12	0.400	0.600	
13	0.600	0.800	
14	0.800	1.000	

EARTHWORKS SUMMARY

NOTES:
1. BULK EARTHWORKS SURFACE IS DESIGN SURFACE MINUS THE FOLLOWING:
   - NATURAL SURFACE (150mm)
2. EXCLUDES COMPACTION FACTORS.
3. ALL BATTERS TO BE 1 IN 2 MAX UNLESS NOTED OTHERWISE.
4. THE ABOVE VOLUMES ARE APPROXIMATE ONLY. IT IS RESPONSIBILITY OF THE TENDERERS TO CONFIRM THE SCOPE OF WORKS, CONDUCT OWN EARTHWORK CHECK AND CONFIRM ACCURACY.
5. ASSUMED BULK EARTHWORKS DEPTH FOR BUILDING IS 250mm (BUILDING SLAB THICKNESS PLUS BEDDING THICKNESS).

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WARNING
PROPOSED SERVICES

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WARNING
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REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	80% SCHEMATIC DESIGN	D.H	G.P	Y.C	12.12.24
P2	100% SCHEMATIC DESIGN	D.H	G.P	Y.C	16.01.25
T1	TENDER ISSUE	D.H	G.P	Y.C	21.02.25
T2	TENDER ISSUE	D.H	G.P	Y.C	26.02.25
T3	TENDER ISSUE	D.H	G.P	Y.C	13.03.25

0 2 4 6 8 10m
SCALE 1:200 AT ORIGINAL SIZE (A1)

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http://www.meinhardtgroup.com

CLIENT: NSW GOVERNMENT School Infrastructure NSW

PROJECT: GREENWAY PARK PUBLIC SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

TITLE: BULK EARTHWORKS PLAN

STATUS: TENDER ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:200

PROJECT No: 132565
DRAWING No: GPPS-MHT-00-00-DR-C-0070
REV: T3

DWG FILE: X:\132563 - SNSW\Greenway PPS_BIM\3_CIVIL\Drafting - MH PLOT TIME: 13 Mar 2025, 6:02pm

LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
156.6	PROPOSED SURFACE CONTOURS
+156.60	EXISTING SURFACE SPOT LEVELS
+156.600	PROPOSED SURFACE SPOT LEVELS
	TITLE BOUNDARY
BK	PROPOSED BARRIER KERB
KG	PROPOSED KERB AND GUTTER
RW	RETAINING WALL. REFER TO STRUCTURAL / LANDSCAPE
>	PROPOSED SWALE
EX.D	EXISTING STORMWATER DRAIN
225Ø	PROPOSED STORMWATER DRAIN AND FLOW DIRECTION
225Ø	GREENWAY PARK PUBLIC SCHOOL PROPOSED STORMWATER DRAIN AND FLOW DIRECTION
	SYPHONIC CONNECTION (REFER HYDRAULIC ENGINEERS DRG'S)
AG	PROPOSED 100Ø UPVC AGRICULTURAL DRAIN CLASS 400
	EXISTING STORMWATER PIT
	EXISTING STORMWATER PIT TO BE MODIFIED
	PROPOSED STORMWATER PIT
	GREENWAY PARK PUBLIC SCHOOL PROPOSED STORMWATER PIT

LEGEND

ITEM	DESCRIPTION
DP	DOWNPIPE
IO	INSPECTION OPENING
TG	TRENCH GRATE
	OVERLAND FLOW ARROW
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E OH	EXISTING OVERHEAD ELECTRICITY
EX.E LV	EXISTING LOW VOLTAGE ELECTRICITY
EX.E HV	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED

THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY ASTREA, REFERENCE No A4046 REV B DATED 18 OCTOBER 2023.

THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No. PS206292-SYD-GEO-REP-001-REV01 DATED 17 NOVEMBER 2023 PREPARED BY WSP. THE PROVISIONS AND RECOMMENDATIONS CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH. ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.

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WARNING
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REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	100 % SCHEMATIC DESIGN ISSUE - WIP	D.H	M.D	Y.C	28.02.25
P2	100 % SCHEMATIC DESIGN ISSUE	D.H	M.D	Y.C	14.03.25

0 1 2 3 4 5m
SCALE 1:100 AT ORIGINAL SIZE (A1)

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http://www.meinhardtgroup.com

CLIENT
NSW GOVERNMENT School Infrastructure NSW

TITLE
CIVIL SITEWORKS PLAN
SHEET 1

PROJECT
GREENWAY PARK PRE SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

STATUS
SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:100

PROJECT No	DRAWING No	REV
132565	GPPS-MHT-00-00-DR-C-1101	P2

DWG FILE: X:\132565 - SINSW Delivery PS\5_BIM\3_CIV\2_Drafting - MH PLOT TIME: 14 Mar 2025, 9:10pm

WARNING

PROPOSED SERVICES

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LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
	TITLE BOUNDARY
	PROPOSED RETAINING WALL
>	PROPOSED SWALE
EX.D	EXISTING STORMWATER DRAIN
	EXISTING STORMWATER PIT
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E O/H	EXISTING OVERHEAD ELECTRICITY
EX.E L/V	EXISTING LOW VOLTAGE ELECTRICITY
EX.E H/V	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE

LEGEND

ITEM	DESCRIPTION
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED
	EXISTING TREE
/	HOARDING/SECURITY FENCE
	SEDIMENT FENCE
	BUILDING OUTLINE
	SITE ACCESS GATE
	SHAKER RAMP FOR ENTRY/EXIT
	TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
	GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT
	SANDBAGS INSTALLED ON EXISTING PIT
	OVERLAND FLOW ARROW

REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	100 % SCHEMATIC DESIGN ISSUE - WIP	D.H	M.D	Y.C	28.02.25
P2	100 % SCHEMATIC DESIGN ISSUE	D.H	M.D	Y.C	14.03.25

0 1 2 3 4 5m

SCALE 1:100 AT ORIGINAL SIZE (A1)

MEINHARDT

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http://www.meinhardtgroup.com

CLIENT

NSW GOVERNMENT School Infrastructure NSW

PROJECT

GREENWAY PARK PRE SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

TITLE

EROSION AND SEDIMENT CONTROL PLAN
SHEET 1

STATUS

SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:100

PROJECT No	DRAWING No	REV
132565	GPPS-MHT-00-00-DR-C-1060	P2

DWG FILE: X:\132563 - SINSW Dalmeny PS\5_BIM\3_CIV\2_Drafting - MH PLOT TIME: 14 Mar 2025, 8:54pm

EARTHWORKS SUMMARY

NOTES:

1. BULK EARTHWORKS VOLUME IS BULK EARTHWORKS SURFACE MINUS STRIPPED NATURAL SURFACE (150mm)
2. EXCLUDES COMPACTION FACTORS.
3. ALL BATTERS TO BE 1 IN 2 MAX UNLESS NOTED OTHERWISE.
4. THE VOLUMES ARE APPROXIMATE ONLY. IT IS RESPONSIBILITY OF THE TENDERERS TO CONFIRM THE SCOPE OF WORKS, CONDUCT OWN EARTHWORK CHECK AND CONFIRM ACCURACY.
5. ASSUMED BULK EARTHWORKS DEPTH FOR BUILDING IS 420mm (BUILDING SLAB THICKNESS PLUS BEDDING THICKNESS).
6. ASSUMED BULK EARTHWORKS DEPTH FOR LANDSCAPE AREAS IS 200mm.

EARTHWORKS QUANTITIES

150mm STRIPPED VOLUME =	329 m^3
TOTAL CUT VOLUME =	803 m^3
TOTAL FILL VOLUME =	11 m^3
NET EXPORT VOLUME =	792 m^3

(NET VOLUME EXCLUDES STRIPPED SOIL, AS THIS IS ASSUMED TO BE REMOVED FROM SITE)

THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY SDG PTY LTD, REFERENCE No 9010 REV A DATED 11 SEPTEMBER 2024.

THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No. A201023.0722.03_A_v 1f DATED 28 FEBRUARY 2024 PREPARED BY ADE CONSULTING GROUP. THE PROVISIONS AND RECOMMENDATIONS CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH. ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.

LEGEND

ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
156.6	PROPOSED SURFACE CONTOURS
BEL 10.000	BULK EARTHWORKS LEVEL
	TITLE BOUNDARY
RW	RETAINING WALL. REFER TO STRUCTURAL / LANDSCAPE DRAWINGS
>	PROPOSED SWALE
EX.D	EXISTING STORMWATER DRAIN

LEGEND

ITEM	DESCRIPTION
	EXISTING STORMWATER PIT
	EXISTING STORMWATER PIT TO BE MODIFIED
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY

LEGEND

ITEM	DESCRIPTION
EX.E O/H	EXISTING OVERHEAD ELECTRICITY
EX.E L/V	EXISTING LOW VOLTAGE ELECTRICITY
EX.E H/V	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FO	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X X	EXISTING FEATURES TO BE REMOVED

BULK EARTHWORKS

I.D	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	-2.000m	-1.800m	
2	-1.800m	-1.600m	
3	-1.600m	-1.400m	
4	-1.400m	-1.200m	
5	-1.200m	-1.000m	
6	-1.000m	-0.800m	
7	-0.800m	-0.600m	
8	-0.600m	-0.400m	
9	-0.400m	-0.200m	
10	-0.200m	0.000m	
11	0.000m	0.200m	
12	0.200m	0.400m	
13	0.400m	0.600m	

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WARNING

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REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	100 % SCHEMATIC DESIGN ISSUE	D.H	M.D	Y.C	14.03.25

0 1 2 3 4 5m
SCALE 1:100 AT ORIGINAL SIZE (A1)

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http://www.meinhardtgroup.com

CLIENT: NSW GOVERNMENT School Infrastructure NSW

PROJECT: GREENWAY PARK PRE SCHOOL
WYATTVILLE DRIVE, CARNES HILL NSW 2171

TITLE: BULK EARTHWORKS PLAN
SHEET 1

STATUS: SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
M.D	G.P	Y.C			1:100

PROJECT No	DRAWING No	REV
132565	GPPS-MHT-00-00-DR-C-1070	P1