

Stormwater Management Report

Iglu II - Mascot

Prepared for Iglu Pty Limited / 4 June 2024

231865

Contents

1.0 Introduction 3

1.1 Existing Site..... 3

1.2 Reference Documents 3

2.0 Proposed Development 4

3.0 Stormwater Management..... 5

3.1 Stormwater Quantity 5

3.1.1 On-Site Absorption System..... 5

3.2 Stormwater Quality 5

3.2.1 Proposed Rainwater Tank 6

3.2.2 MUSIC Modelling 7

3.2.3 Proposed Treatment Train..... 7

3.2.4 Stormwater Treatment Devices..... 8

3.2.5 MUSIC Stormwater Quality Results 8

3.3 Legal Point of Discharge..... 9

4.0 Erosion and Sediment Control 9

5.0 Conclusion 10

Appendix A 11

Appendix B 12

Appendix C 13

1.0 Introduction

Taylor Thomson Whitting (TTW) Pty. Ltd. has been engaged by **Iglu Pty Limited** to provide the associated Civil Stormwater Report and documentation in accordance with the requirements of Bayside Council for the proposed development of Iglu II, Mascot at 13A Church Avenue, Mascot.

1.1 Existing Site

The address of the site is Lot 1, DP 547700 No.13A Church Avenue, Mascot NSW 2020 and falls within the Bayside Council Local Government Area (LGA). The site currently consists of a multistorey brick warehouse with a metal roof. The building stands wholly within the boundaries of the subject property.

The site has a total area of 1,750 sqm and is bounded by Church Avenue to the north. It site and adjoining properties along Church Avenue slopes towards the west.

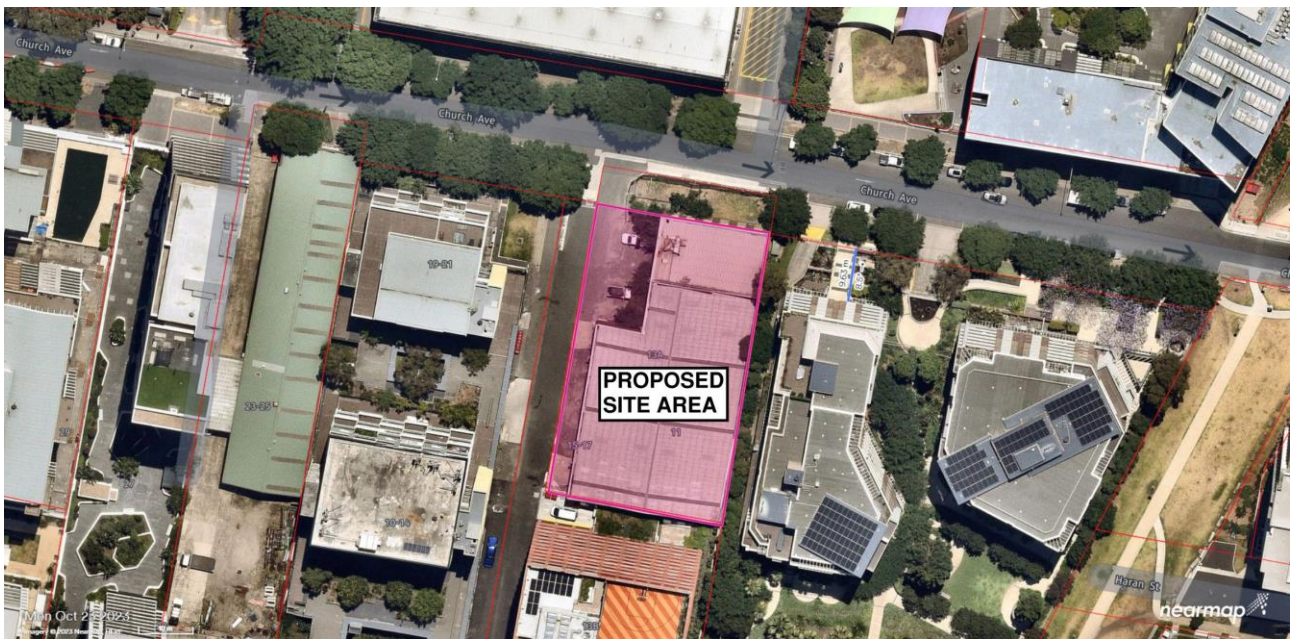


Figure 1 – Site Location (Nearmap) – 13A Church Avenue, Mascot

1.2 Reference Documents

The following documents have informed the Civil Engineering design:

- Australian Standard AS3500.3 Plumbing and Drainage: Stormwater Drainage;
- NSW MUSIC Modelling Guidelines (2015);
- Australian Rainfall and Runoff (2019);
- Managing Urban Stormwater – Soils and Construction 'Blue Book', Vol. 1, 4th Edition, Landcom;
- Bayside Council Local Environmental Plan 2021
- Bayside Council Development Control Plan 2022 Section 3.9;
- Site Survey 52156 001DT by LTS dated 15/11/2023;
- Architectural Drawings by Bates Smart Rev 5 dated 06/12/23;
- Landscape Drawings by RPS, Rev A, dated 17/11/2023.

2.0 Proposed Development

The proposed development at this site includes:

- Demolition of existing structure.
- Construction of new landscaped area and pedestrian access to the site.
- Construction of a new student housing building.



Figure 2 – Architectural GA Ground Floor Plan (Source: Bates Smart)

3.0 Stormwater Management

3.1 Stormwater Quantity

The stormwater design of the site is designed to comply with the requirements of the Bayside Council's Stormwater Disposal policy. All new developments are required by Council to demonstrate that an appropriate stormwater management system is provided, which incorporates controls for the rate of flow of discharge from the site to not increase downstream drainage peak flow rates or adversely impact adjoining or downstream properties.

3.1.1 On-Site Absorption System

As per Bayside Council Stormwater Management Technical Specifications, absorption should be used as the first stormwater disposal method where possible for all developments. The mass curve technique has been adopted to determine an suitably sized infiltration system. The following design parameters have been used to determine the infiltration volume.

Table 1: Infiltration Mass curve parameters

Design Details	Pre-Development Flow (L/s)	Comments
Site Area	1750m ²	
Impervious Area	1400m ²	80% of the site area
Design Impervious Area	1680m ²	20% increase factor
Nominal Absorption Rate (ARN)	0.1L/m ² /sec	Preliminary design adopted as per council recommendations
Reduction Factor (RF)	0.75	
Design Absorption Rate (Ard)	0.075L/m ² /sec	ARN x RF
Depth of Gravel Base	0.2m	Void ratio of 0.2
Rainwater tank offset	2.5m ³	1m ³ offset per 4m ³ of RWT
Total absorption tank storage	109.81 m ³	OSD + treatment chamber + RWT + outflow pipe + Gravel base voids

Using a 2% AEP rainfall intensity and the above parameters, the Maximum Required Absorption System Volume (MRASV) is 107.36m³. The Total Proposed Absorption System Volume (TPASV) is 109.81m³ which consists of 107.31m³ from the absorption tank system and 2.5m³ of rainwater tank offset. A copy of the absorption tank calculations spreadsheet has been provided in Appendix C.

Stormwater runoff will be treated prior to discharging into the absorption system.

All minor storm events (2% AEP) will be conveyed via a pit and pipe drainage network towards the absorption tank while all major flows (1% AEP) will be conveyed via pit and pipes towards Church Avenue through the absorption pit.

3.2 Stormwater Quality

The water sensitive urban design (WSUD) on site must be treated to comply with the requirements of the Water Quality section of Bayside Council's DCP. New developments must ensure the implementation of appropriate water quality treatment for stormwater runoff to minimise the discharge of pollutants from paved and other impermeable surfaces into waterways and Council drainage systems. Stormwater quality analysis was undertaken, and the catchment area has been modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) to demonstrate that the proposed stormwater treatment devices achieve the required stormwater treatment targets. Refer to the below table which shows the pollutant load

reduction targets set by the Bayside Council DCP. The site does not fall within ‘Subdivisions greater than 6 lots or 2,500m²’ therefore it is classed as ‘All developments except new single residential dwellings’ and the requirements are as follows:

Table 2: Pollutant Reduction Targets (Bayside DCP 2022 Section 7.1.1 page 33)

Stormwater Pollutant	Reduction Target
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	55%
Total Nitrogen (TN)	40%
Gross Pollutants (GP)	90%

3.2.1 Proposed Rainwater Tank

Bayside Council DCP 2022 (Section 7.2.1.b, page 34) states that all boarding/co-living developments that exceed 20 rooms will require a minimum 10kL rainwater tank to be provided. The rainwater tank must be designed to be connected for non-potable stormwater reuse. At least 75% of the roof area is to connect to the rainwater tank.

The rainwater must be connected for non-potable stormwater re-use as per the following:

- All toilet flushing in the development (for high density development this only needs to be all toilet flushing on the ground floor),
- The cold-water supply to all clothes washing machine in the development (for high density development this only needs to all clothes washing machines on the ground floor),
- The landscape irrigation system, including connection to most external taps.

The location of the 10kL rainwater tank will be document during detail design and final sizing to be confirmed by the Hydraulic consultant. The rainwater will contribute to the absorption system size with the offset scheme described in Bayside Council DCP.

3.2.2 MUSIC Modelling

MUSIC simulates the performance of a group of stormwater management measures, configured in series or in parallel to form a “treatment train” against historic rainfall event data sets. It is the industry standard water quality modelling software developed by the MUSIC development team of the Cooperative Research Centre for Catchment Hydrology (CRCCH). The effectiveness of the combination of treatment train measures has been assessed using the numerical modelling within MUSIC.

The MUSIC user manual suggests that the time-step should not exceed the time of concentration of the smallest sub-catchment however, due consideration must also be made regarding the shortest detention time of nodes within the treatment train.

MUSIC uses different event mean concentrations (EMC) to determine the pollutant loads generated by different land uses. The standard EMCs adopted withing MUSIC were based on research undertaken by Duncan (1999) through the CRCCH and the results are reproduced in Australian Runoff Quality – A Guide to Water Sensitive Urban Design (ARQ).

3.2.3 Proposed Treatment Train

A MUSIC model was used to conceptualise stormwater treatment measures. The proposed treatment train utilises rainwater tank reuse, an Ocean Protect’s Ocean Guard, 17m² bioretention basin area and a treatment chamber with a 460mm stormfilter cartridge (PSORB) to treat most of the stormwater runoff. The MUSIC model included the proposed rainwater reuse tanks as part of the treatment train to assist in analysis of the benefit of the proposed stormwater management system. The rainwater tank treatment node has assumed an irrigation rate of 1.5mm/m²/day. Internal reuse for uses described above have not been modelled and will be confirmed by the Hydraulic consultant.

The MUSIC model layout for the whole site is shown in figure 4 below, while section 3.2.5 shows the MUSIC results.

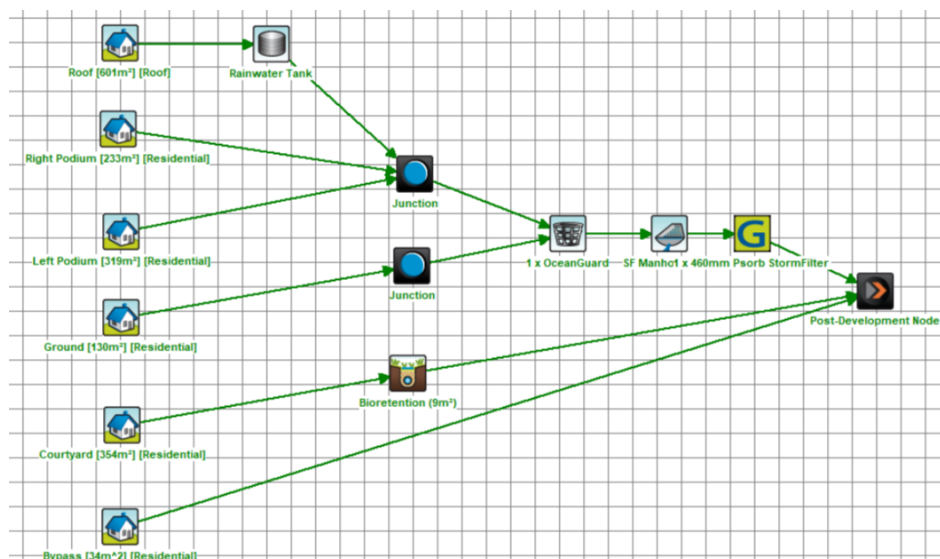


Figure 3: MUSIC Model

3.2.4 Stormwater Treatment Devices

To achieve the stormwater treatment reduction targets set by the Bayside Council DCP, a treatment train based on the following is proposed:

- A 10kL rainwater tank including irrigation reuse for proposed landscape zones (rainwater reticulation and internal reuse rates to be designed by the hydraulic consultant).
- 1 x Treatment chamber (2m²).
- 1 x 460mm Stormfilter cartridges ‘PSORB’ are proposed inside the WSUD treatment chamber.
- 1 x Ocean Protect ‘OceanGuard’ filter basket at the entry of the treatment chamber.
- 3 x Bioretention Basins (Total Area = 17m²) (also referred to as raingarden area)

3.2.5 MUSIC Stormwater Quality Results

The results of the MUSIC modelling effectiveness are shown in table 3 below. The table indicates that the proposed stormwater treatment devices are sufficient in order to meet the council pollutant reduction targets.

Table 3: MUSIC Model Results

Stormwater Pollutant	Min. Required Reduction (%)	Modelled Reduction (%)
Total Suspended Solids (TSS)	80	83.7
Total Phosphorus (TP)	55	56.8
Total Nitrogen (TN)	40	48.4
Gross Pollutants (GP)	90	98

3.3 Legal Point of Discharge

The proposed development will infiltrate into the ground within the subject site. An emergency overflow has been provided if the absorption tank blocks which will direct water immediately to the Church Avenue discharge point.

4.0 Erosion and Sediment Control

The disturbance of the site during construction must be controlled through erosion prevention and sediment control measures. Silt fence will be installed to prevent silt and waste being washed into the proximity of the site and neighbouring properties. A catch drain with hay bales will be utilised to carry and treat site runoff which will then be transferred to the lowest point of site excavation. The existing pits on site will require sandbags or geotextile pit insert until the surface has been demolished. At the point of entry to site, cattle grids will be provided to ensure that vehicles and machinery leave the site with clean wheels. Additionally, the builder will be required to implement dust and noise control measures in order to minimise disruption to the neighbouring properties. The contractor will be required to demonstrate the proposed works equipment to be within acceptable limits for noise and vibration as determined by a registered acoustic consultant.

An erosion and sediment control plan (ESCP) is to be implemented during the construction stage to mitigate soil erosion and control the discharge of stormwater laden with sediment, nutrients and other pollutants to adjoining properties, bushland, roadways or receiving water bodies. Stormwater controls on site are detailed in ESCPs which will be in accordance with regulatory authority guidelines including Landcom NSW's Managing Urban Stormwater, Soils and Construction ("Blue Book").

5.0 Conclusion

This report provides a summary of the proposed stormwater management for the Iglu II - Mascot development at 13A Church Avenue, Mascot, NSW 2020. An absorption system has been proposed to discharge generated stormwater into the ground as required in council's DCP Stormwater Management Technical Specifications. Erosion and sediment control measures have been proposed for the site during construction. Proposed stormwater quality treatment for the development meets the pollutant reduction targets using various water quality measures as listed in section 3.2.4.

Prepared by
TTW (NSW) PTY LTD



AMIR TARA
Civil Engineer

Authorised By
TTW (NSW) PTY LTD



Adrian Hall
Associate Director

Appendix A

Civil Drawings

IGLU MASCOT II

13A CHURCH AVENUE

DRAWING INDEX

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221515-TTW-00-DR-CI-00002
221515-TTW-00-DR-CI-00011

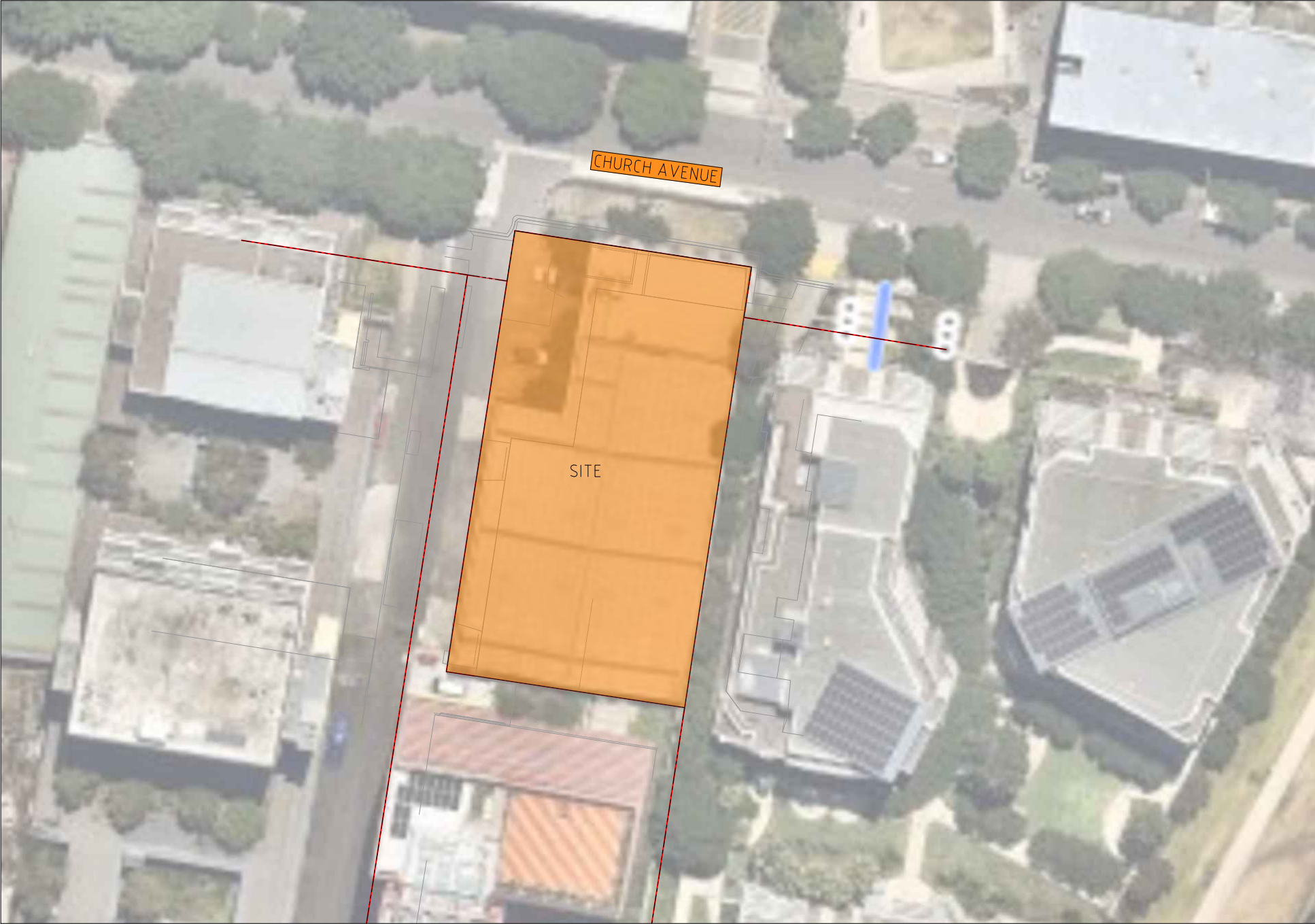
COVER SHEET
GENERAL NOTES AND LEGEND
GENERAL ARRANGEMENT PLAN

STORMWATER
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221515-TTW-00-DR-CI-04011
221515-TTW-00-DR-CI-04041

STORMWATER NOTES AND LEGEND
STORMWATER DRAINAGE PLAN
STORMWATER DETAILS

ENVIRONMENTAL
221515-TTW-00-DR-CI-09201
221515-TTW-00-DR-CI-09202

SEDIMENT EROSION CONTROL DETAILS
SEDIMENT EROSION CONTROL PLAN



LOCALITY PLAN
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PAVEMENT LEGEND

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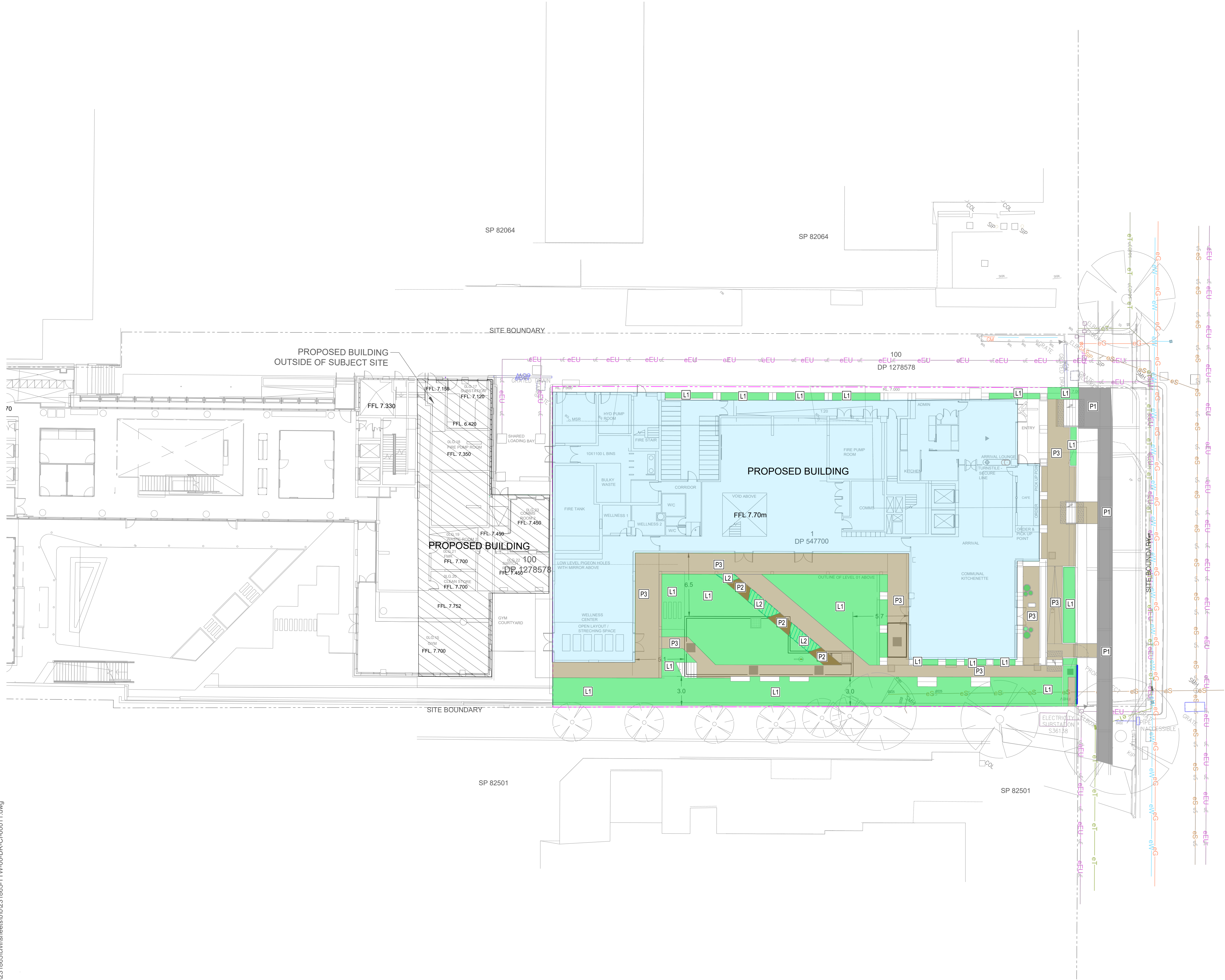
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PAVEMENT 2
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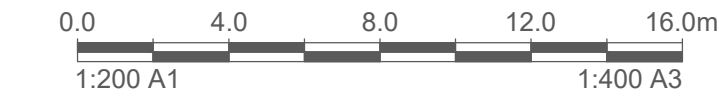
PAVEMENT 3
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LANDSCAPE
- L2

RAINWATER GARDEN



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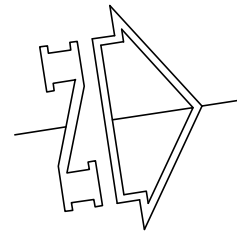
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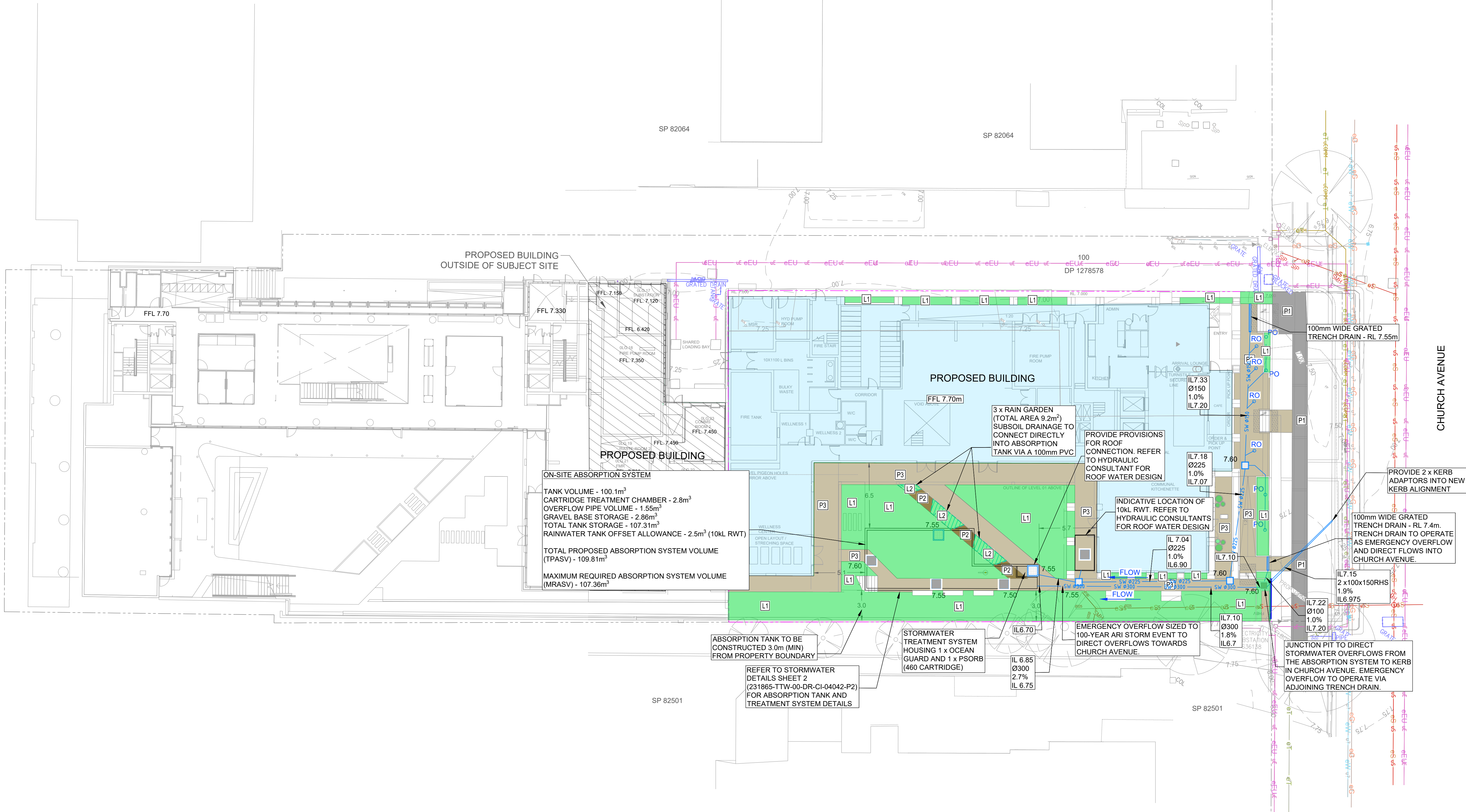
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JOHN STREET

CHURCH AVENUE

NOTES:

- SUBSOIL DRAINAGE IS NOT PREFERRED AS PER BAYSIDE COUNCIL DCP.

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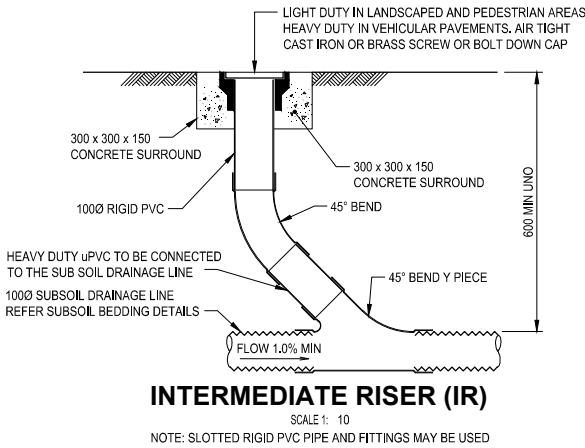
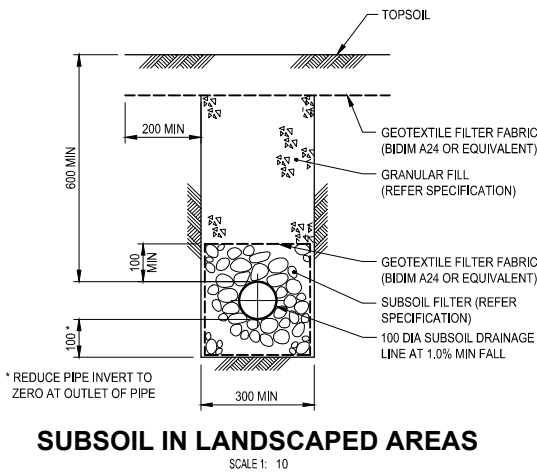
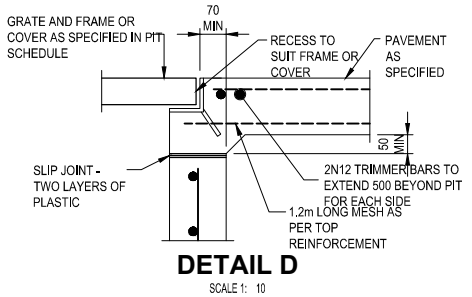
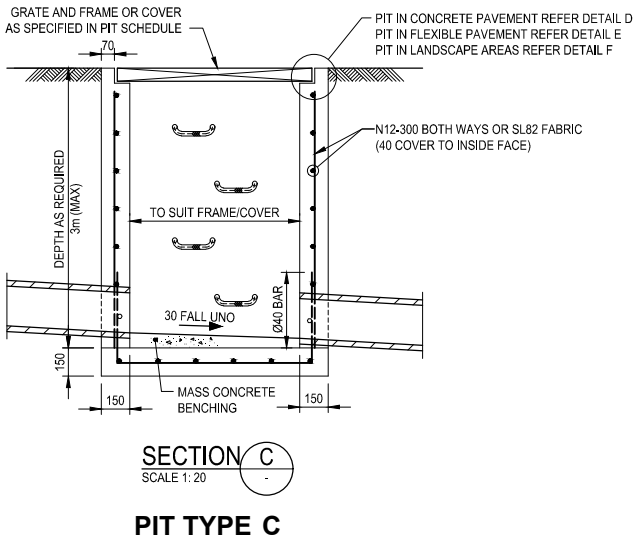
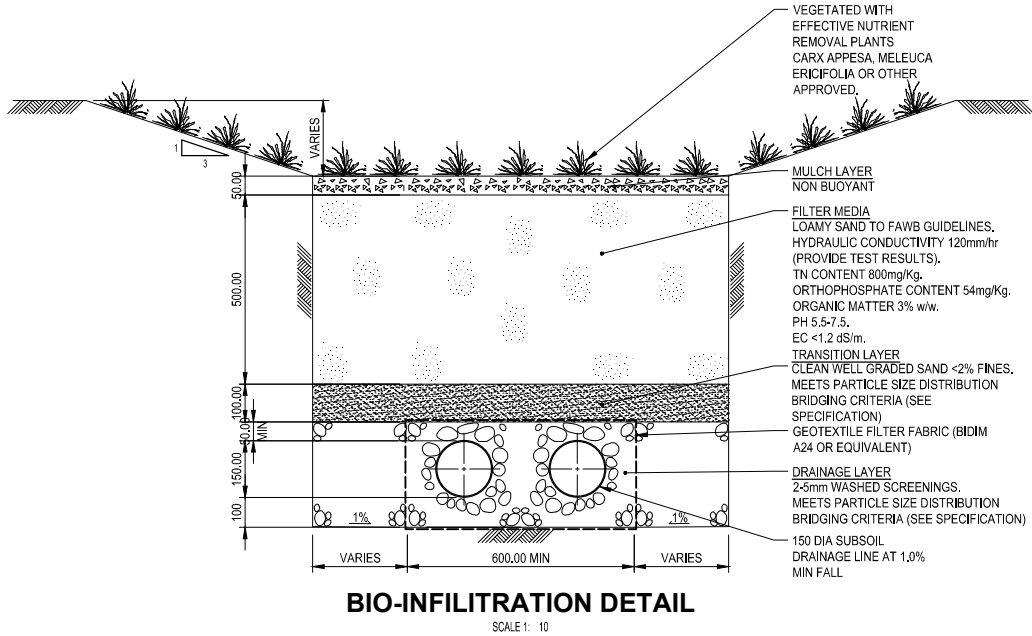
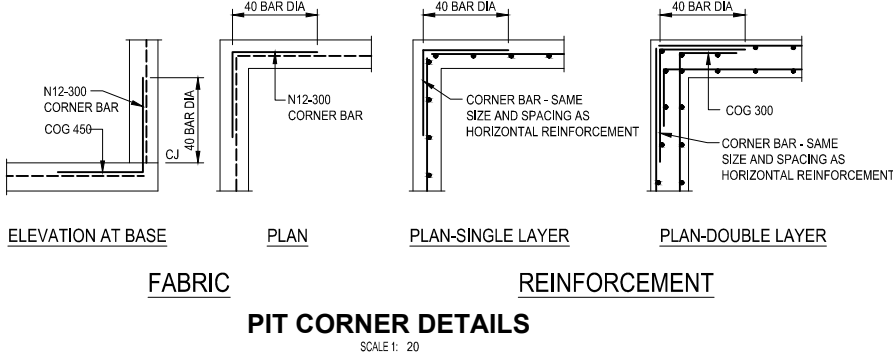
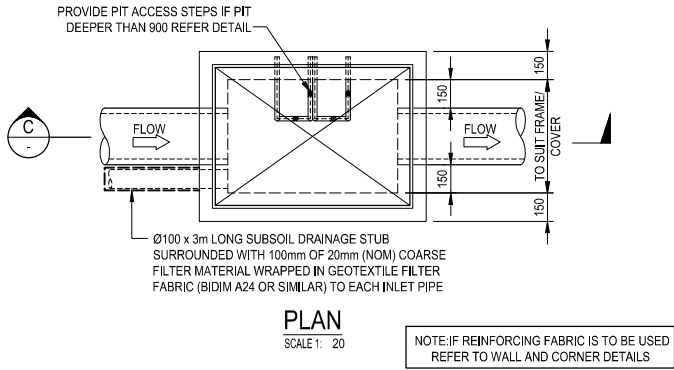
TTW Structural Civil Traffic Façade

612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

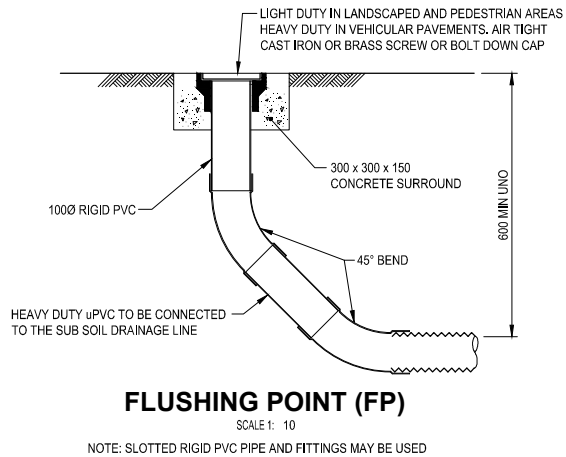
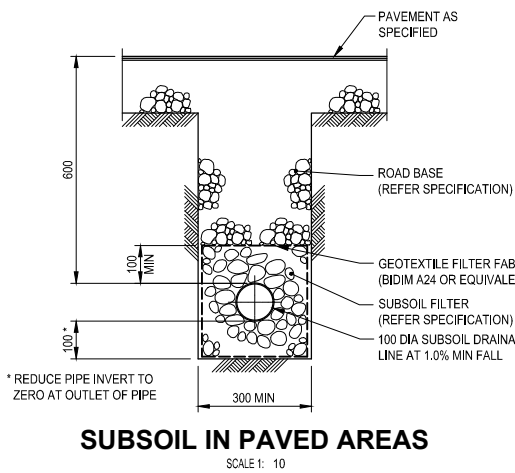
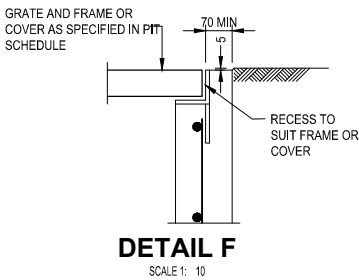
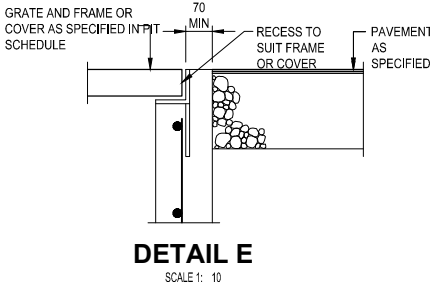
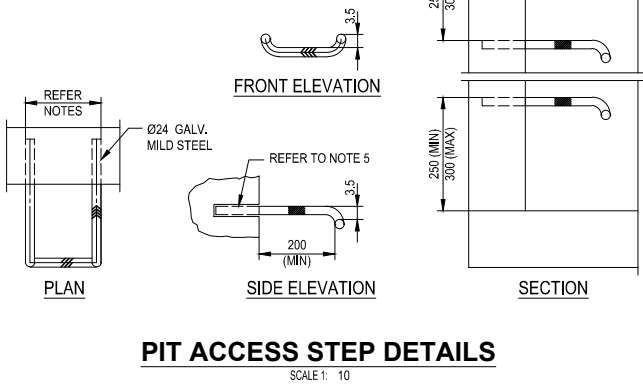
Project:

IGLU MASCOT II

Project: IGLU MASCOT II	Drawing Title:	Scale at A1	Drawn	Designed	Approved			
	STORMWATER DRAINAGE PLAN	1:200	SS	AT	TD			
		Project No	Originator	Zone	Type	Role	Sheet No.	Rev
		231865-TTW-00-DR-CI-04011-P2						
		04.06.2024 12:14 PM						



- PIT ACCESS STEP NOTES:**
1. WHEN POSITIONED IN STRAIGHT ALIGNMENT, STEP TO BE 400mm WIDE;
 2. STAGGERED STEPS TO BE 200mm WIDE, STEPS TO BE STAGGERED 200mm CENTRE TO CENTRE FOR ALTERNATE STEPS;
 3. SPACING OF STEPS TO BE UNIFORM TO WITHIN ±5mm IN EACH PIT;
 4. DRILL Ø30 HOLE x 120mm DEEP AND EPOXY INTO WALL WITH EPOXY MORTAR EQUAL TO EPIREZ 633 (NON SAG) - IN PRECAST PITS, DEPTH OF EMBEDMENT IS TO BE IN ACCORDANCE WITH PIT MANUFACTURER'S DETAILS.



NOT FOR CONSTRUCTION

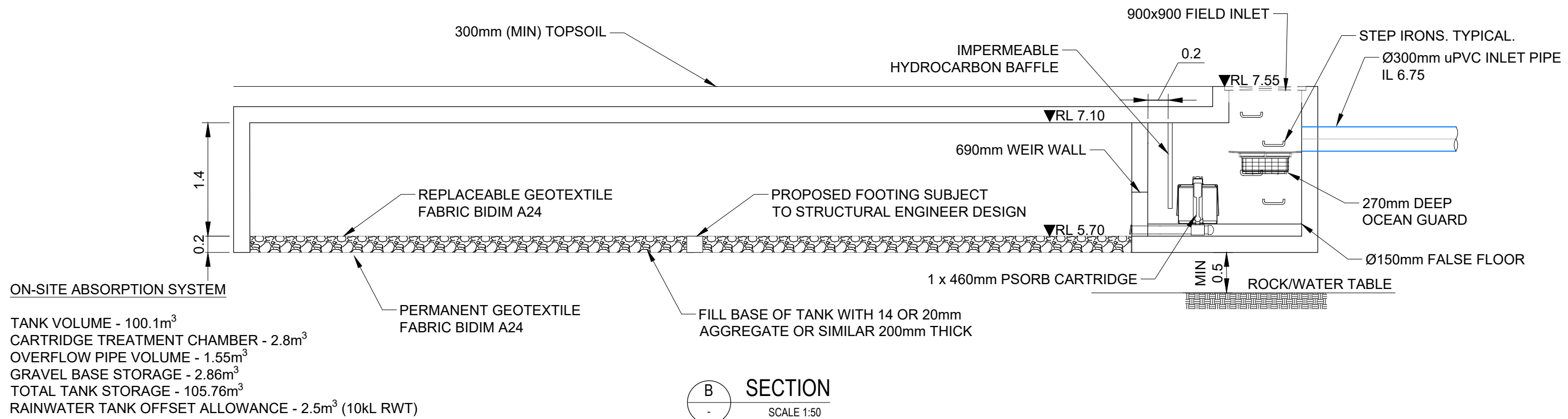
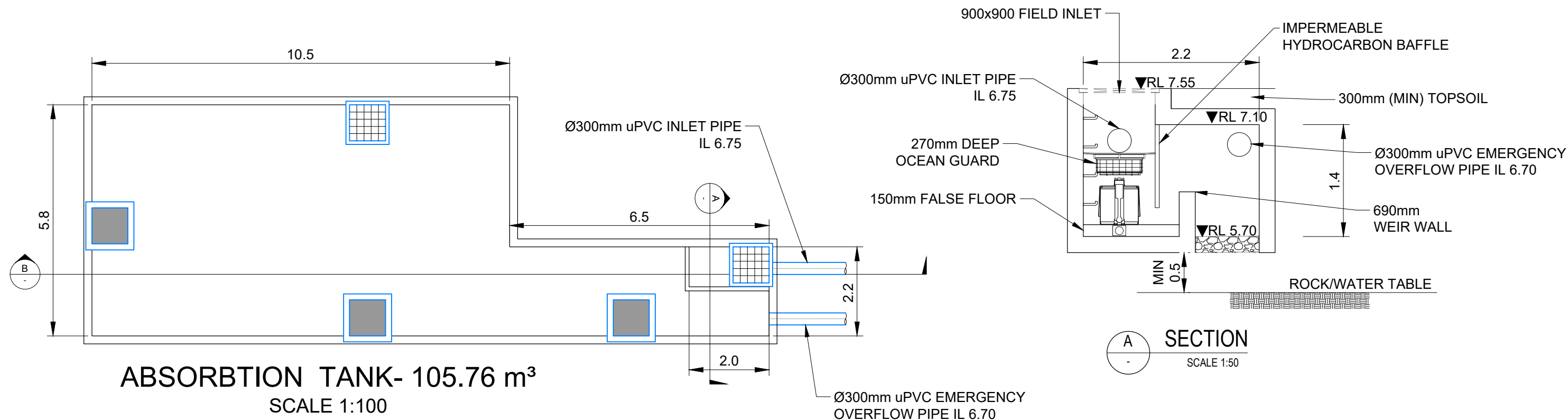
										Client:	Engineer:	Project: IGLU MASCOT II	Drawing Title: STORMWATER DETAILS	Scale at A1	Drawn SS	Designed AT	Approved TD
P2 ISSUED FOR DA																	
P1 DRAFT ISSUE																	
Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date						

231865-TTW-00-DR-CI-04041

P2

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04.06.2024 10:47 AM



TANK VOLUME - 100.1m³
CARTRIDGE TREATMENT CHAMBER - 2.8m³
OVERFLOW PIPE VOLUME - 1.55m³
GRAVEL BASE STORAGE - 2.86m³
TOTAL TANK STORAGE - 105.76m³
RAINWATER TANK OFFSET ALLOWANCE - 2.5m³ (10kL RWT)

TOTAL PROPOSED ABSORPTION SYSTEM VOLUME (TPASV) - 108.26m³

MAXIMUM REQUIRED ABSORPTION SYSTEM VOLUME (MRASV) - 107.36m³

NOT FOR CONSTRUCTION

					Client:					Engineer:  \$12 9439 7288 Level 6, 73 Miller Street, North Sydney, NSW 2060					Project: IGLU MASCOT II					Drawing Title: STORMWATER DETAILS SHEET 2					Scale at A1 AS SHOWN Drawn DR Designed AT Approved TD				



NOTE: STAKE TO BE EITHER TAR COATED
STAR OR 50 x 50 HARDWOOD

Scale at A1	Drawn	Designed	Approved
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SS AT TD

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	

Project No	Originator	Zone	Type	Role	Sheet No.	R
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Client:	
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Engineer:

TTW **Structural
Civil
Traffic
Facade**

612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

Project:

IGLU MASCOT II

Drawing Title:

ENVIRONMENTAL EROSION CONTROL NOTES AND LEGEND SHEET 1

Scale at A1

Project No.

23186

04 06 20

Scale at A1

Project No.

23186

04 06 20

Scale at A1

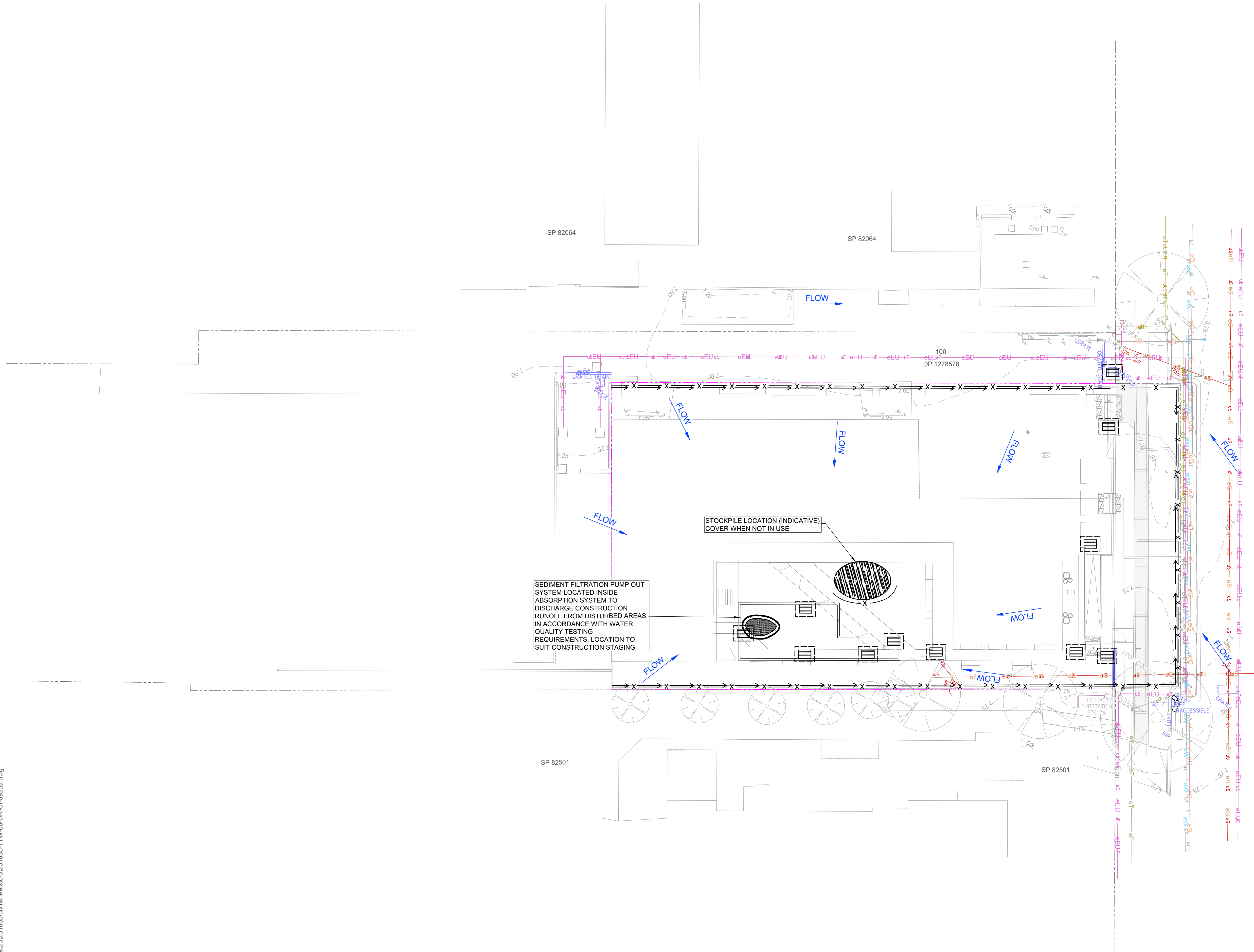
Project No.

23186

04 06 20

SEDIMENT EROSION CONTROL

PLAN LEGEND



NOT FOR CONSTRUCTION

						Client:			Engineer:  Structural Civil Traffic Façade 612 9439 7288 Level 6, 73 Miller Street, North Sydney, NSW 2060			Project: IGLU MASCOT II			Drawing Title: ENVIRONMENTAL EROSION CONTROL PLAN			Scale at A1 <table><tr><td>Drawn</td><td>Designed</td><td>Approved</td></tr><tr><td>SS</td><td>AT</td><td>TD</td></tr></table>			Drawn	Designed	Approved	SS	AT	TD
Drawn	Designed	Approved																								
SS	AT	TD																								
P2 ISSUED FOR DA TD 04.06.2024									Project No			231865-TTW-00-DR-CI-09202P2														
P1 DRAFT ISSUE AT SS 08.12.2023									Originator			Zone			Type			Role			Sheet No.			Rev		
Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date		

Appendix B

Stormwater Concept Plan Certification

Stormwater Concept Plan Certification

Document Number: F18/596 (18/173679)



The information requested on this form is required to be submitted to Council with concept drainage plans when lodging your DA. Please tick and sign the appropriate box and attach the information as requested.

Property and Development Details					
Unit No.		Street No.	13A	Street	CHURCH AVENUE
Suburb	MASCOT			Postcode	2020
Type of Development	RESIDENTIAL STUDENT HOUSING DEVELOPMENT				
Designer Details					
Ms/Mr/Mrs/ Other (please circle)	Given Name(s)	TIM		Surname	MOORE
Street Address	LEVEL 6/73 MILLER ST, NORTH SYDNEY, NSW 2060				
Company Name (if applicable)	TTW				
Mailing Address (if different)					
Daytime Telephone No. (Home/Work)	+61 2 9067 5079		Mobile No.		
Email Address	TRISTAN.DOHERTY@TTW.COM.AU				

I certify that the drainage design is in accordance with the relevant Technical Specification/DCP controls and I am practising in my area of competence and have the accreditation required. I acknowledge that where I am not competent Council has the right to recover from me the reasonable costs of the time spent assessing this design.

Design Certification			
Design Certifiers Name	TRISTAN DOHERTY	Design Certifiers Signature	
Professional Qualifications	BE (Civil) MIEAust	Date	: 04 / 06 / 2024
Accreditation Organisation	Engineers Australia	Accreditation Reference	
Contact Details if Different to Designer Above	+61 2 9067 5079		

Privacy Statement

The personal information provided on this form (including your name and other details) will be handled in accordance with the Privacy and Personal Information Protection Act 1998 and may be available to the public under various legislation. Refer also to the Privacy Statement on Council's website.

Postal address
PO Box 21, Rockdale NSW 2216
ABN 80 690 785 443

Bayside Customer Service Centres
Rockdale Library, 444-446 Princes Highway, Rockdale
Westfield Eastgardens, 152 Bunnerong Road, Eastgardens

E council@bayside.nsw.gov.au
W www.bayside.nsw.gov.au
T **1300 581 299** | **02 9562 1666**

Telephone Interpreter Services: 131 450 Τηλεφωνικές Υπηρεσίες Διερμηνέων بخدمة الترجمة الهاتفية 電話傳譯服務處 Служба за преведување по телефон

STORMWATER CONCEPT PLAN CHECKLIST

Property Address: 13A CHURCH AVE, MASCOT **Date:** 04/06/24

Mark table section as applicable where the designer is unable to comply with a DCP requirement additional information is to be provided to Council to justify the non compliance.

DCP Requirements	Applicable (Yes/No)	Design Complies (Yes/No)	If No, Reason for Variation
Site			
• Contours and Spot Levels	YES		
• Building envelope	YES		
• Floor Levels (Habitable & Garage/parking)	YES		
• Trees/Landscaping	YES		
• Easements/Major Services	NO		No easement
Roof Drainage Systems			
• Roof catchment	NO		
• Roof runoff	NO		Design at CC by
• Eave, box and valley gutter size	NO		Hydraulic consultant
• Eave, box and valley gutter details	NO		
• Downpipe location & spacing	NO		
• Downpipe size	NO		
Surface Drainage Systems			
• Pipe size	YES		
• Pipe grade	YES		
• Pipe class	YES		
• Pipe cover	YES		
• Pipe flow	YES		
• Kerb adapter required for discharge	NO		Infiltrating into the ground
• Kerbs provided along boundary	NO		Infiltrating into the ground
• Hydraulic grade line	NO		Infiltrating into the ground
• Overland flow path location	YES		
• Overland flow path flow	No		Emergency overflow chute
• Overland flow path depth	No		provide in final discharge pit
• Overland flow path velocity	No		
• Overland flow path detail/section	No		
• Flow through fence detail provided	YES		
• Pit location	YES		
• Pit size	YES		
• Pit invert levels	YES		
• Pit surface levels	YES		
• Pit detail/section	YES		
• Driveway trench grates	NO		No driveway proposed

DCP Requirements	Applicable (Yes/No)	Design Complies (Yes/No)	If No, Reason for Variation
Subsoil drainage			
• Subsoil drain location	YES		Raingarden
• Subsoil drain size	YES		
On-site Detention (OSD)			
• OSD location	NO		Infiltration System
• OSD volume	NO		provided
• OSD discharge rate	NO		
• Detention Design Calculation Checklist	NO		
• OSD detail/section	NO		
• OSD discharge control detail	NO		
On-site Retention (OSR)			
• OSR location	YES		
• Absorption rate from Council	YES		
• OSR absorption test and rate	YES		
• OSR volume	YES		
• Absorption Design Calculation Checklist	YES		
• OSR detail/section	YES		
• Special requirements for Atlantis Cells detailed	YES		
Pumped discharge systems			
• Pump storage location	NO		
• Pump storage volume	NO		
• Pump discharge	NO		
• Pump storage detail/section	NO		
• Pump discharge rating curve	NO		
• Pump specification	NO		
• Pump configuration specification	NO		
• Pump maintenance schedule	NO		
Ancillary (where applicable)			
• Reflux valves	NO		
• Connection to Council pipes	YES		
• BASIX or rainwater tank requirements	YES		Minimum 10kL rainwater tank provided
• Rainwater tank offset from Council claimed	YES		
• Rainwater tank location	NO		Hydraulic consultant TBC
• Rainwater tank overflow detail	NO		Hydraulic consultant TBC
• Freeboard to habitable floor levels	YES		
• Drainage of Low Level Properties Procedure followed.	YES		

DCP Requirements	Applicable (Yes/No)	Design Complies (Yes/No)	If No, Reason for Variation
• Risk assessment report for flows onto adjoining properties attached.	NO		All flows contained in site
• Council advice letter for Drainage of Low Level Properties attached if applicable.	N/A		
• Protection of Low Level Driveways procedure followed	N/A		
• Groundwater Recharge Trench	NO		
• Silt/litter arrestor pit provided	YES		WSUD captures silt
• Stormwater Reuse System	YES		Irrigation
• Car park water treatment provided	N/A		
• Car wash areas provided	N/A		
• Other WSUD Requirements	YES		
• Flood Advice Requirements	NO		
• Structural Design of Drainage Elements incl tanks, retaining walls	NO		To be provided at CC stage
• Warning signs have been detailed for the various areas at risk.	N/A		

Appendix C

Absorption Tank Trench Calculations

ABSORPTION SYSTEM DESIGN - TANK TYPE
BAYSIDE COUNCIL - Bayside Technical Specification Stormwater Management

TANK STYLE ABSORPTION

Fill in only those boxes that appear as:

Width (m) Length (m) = Base Area
 72.83

Base Thickness (m) =

Height

Tank Storage=

Available Storage (m³) = 107.3132

Calculating Inflows, Outflows and Storages

Contributing Impervious Area (m²)= F_R =

Nominal Absorption Rate (l/s/m²) =

Design Absorption Rate (l/s/m²) = 0.075 Outflow (l/s) = 5.46225

Time (min)	Intensity (mm/hr)	Inflow (l/s)	Inflow Vol (m ³)	Outflow Vol (m ³)	Required Vol (m ³)	Avail-Reqd (m ³)
5	238	92.56	27.77	1.64	26.13	81.19
6	223	86.72	31.22	1.97	29.25	78.06
7	211	82.06	34.46	2.29	32.17	75.14
8	202	78.56	37.71	2.62	35.08	72.23
9	194	75.44	40.74	2.95	37.79	69.52
10	186	72.33	43.40	3.28	40.12	67.19
11	180	70.00	46.20	3.61	42.59	64.72
12	174	67.67	48.72	3.93	44.79	62.53
13	169	65.72	51.26	4.26	47.00	60.31
14	164	63.78	53.57	4.59	48.99	58.33
15	160	62.22	56.00	4.92	51.08	56.23
20	142	55.22	66.27	6.55	59.71	47.60
25	129	50.17	75.25	8.19	67.06	40.26
30	118	45.89	82.60	9.83	72.77	34.55
40	102	39.67	95.20	13.11	82.09	25.22
45	96	37.33	100.80	14.75	86.05	21.26
50	90.6	35.23	105.70	16.39	89.31	18.00
55	85.8	33.37	110.11	18.03	92.08	15.23
60	81.7	31.77	114.38	19.66	94.72	12.60
65	77.9	30.29	118.15	21.30	96.85	10.47
70	74.6	29.01	121.85	22.94	98.91	8.41
75	71.5	27.81	125.13	24.58	100.54	6.77
80	68.7	26.72	128.24	26.22	102.02	5.29
85	66.2	25.74	131.30	27.86	103.44	3.87
90	63.9	24.85	134.19	29.50	104.69	2.62
100	59.8	23.26	139.53	32.77	106.76	0.55
120	44.7	17.38	125.16	39.33	85.83	21.48

Rainwater Tank

Vol of Tank (m³) Offset Applies Offset Allowance
 Y **2.5**

NOTE THAT COLUMN 'Avail-Reqd' MUST BE POSITIVE FOR ALL VALUES.
THE DESIGN IS: SATISFACTORY