

Stormwater Management Report

Iglu II - Mascot

Prepared for Iglu Pty Limited / 4 June 2024

231865

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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.

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

Table 1: Infiltration Mass curve parameters

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
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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 descripted 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

GENERAL 221515-TTW-00-DR-CI-00001 221515-TTW-00-DR-CI-00002 221515-TTW-00-DR-CI-00011 STORMWATER

221515-TTW-00-DR-CI-04001 221515-TTW-00-DR-CI-04011 221515-TTW-00-DR-CI-04041



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DRAWING INDEX

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

COVER SHEET GENERAL NOTES AND LEGEND GENERAL ARRANGEMENT PLAN

STORMWATER NOTES AND LEGEND STORMWATER DRAINAGE PLAN STORMWATER DETAILS

SEDIMENT EROSION CONTROL DETAILS SEDIMENT EROSION CONTROL PLAN

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- STRIPALL TOPSOL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOL SHALL BE DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS. COMPACT SUBGRADE UNDER BUILDINGS AND PAVEMENTS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.1.1. COMPACTION UNDER BUILDINGS TO EXTEND 2M MINIMUM BEYOND BUILDING FOOTRINT. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY; THE CONTRACTOR IS TO ENSURE THAT THE DRAWINGS USED FOR CONSTRUCTION HAVE BEEN APPROVED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT SITE. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY; THE CONTRACTOR IS TO ENSURE THAT THE DRAWINGS USED FOR CONSTRUCTION HAVE BEEN APPROVED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT SITE. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY IS TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT AUTHORITY. THE CONTRACTOR SHALL OBTAIN THESE REQUIREMENTS FOR THE AUTHORITY. WHERE THE REQUIREMENTS OF THE AUTHORITY ARE DIFFERENT TO THE DRAWINGS AND SPECIFICATIONS, THE REQUIREMENTS OF THE AUTHORITY SHALL BE APPLICABLE. FOR ALL TEMPORARY BATTERS REFER TO GEOTECHNICAL RECOMMENDATIONS. 6
- 7. FOR ALL TEMPORARY BATTERS REFER TO GEOTECHNICAL RECOMMENDATIONS

BOUNDARIES AND EASEMENTS

- THE PROPERTY BOUNDARY AND EASEMENT LOCATIONS SHOWN ON TAYLOR THOMSON WHITTING DRAWING'S HAVE BEEN BASED ON INFORMATION RECEIVED FROM : MONTEATH AND POWYS
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SURVEY

SURVEY PREPARED BY: LTS SURVEY CONSULTANTS

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- INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE. THE POSITION OF SERVICES AS RECORDED BY THE AUTHORITY AT THE TIME OF INSTALLATION MAY NOT REFLECT CHANGES IN THE PHYSICAL ENVIRONMENT SUBSEQUENT TO INSTALLATION. THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND EXTENT OF SERVICES PRIOR TO CONSTRUCTION AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY TO THE DODINE FOR UPDATION 3.
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- THE CONTRACTOR IS TO GET APPROVAL FROM THE RELEVANT STATE SURVEY DEPARTMENT, TO REMOVE/ADJUST ANY SURVEY MARK. THIS INCLUDES BUT IS NOT LIMITED TO; STATE SURVEY MARKS (SSM), PERMANENT MARKS (PM), CADASTRAL REFERENCE MARKS OR ANY OTHER SURVEY MARK WHICH IS TO BE REMOVED OR ADJUSTED IN ANY WAY. TAYLOR THOMSON WHITTING PLANS DO NOT INDICATE THE PRESENCE OF ANY SURVEY MARK. THE CONTRACTOR IS TO UNDERTAKE THEIR OWN SEARCH.

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DESIGN AND CONSTRUCT DOCUMENTATION

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 THE CONTRACTOR SHALL RETAIN THE RESPONSIBILITY TO UNDERTAKE DETAILED DESIGN, CONFIRM COMPLIANCE WITH RELEVANT STANDARDS, CONSENT CONDITIONS & THE SPECIFICATION.
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- EXISTING STRUCTURES CONTRACTOR TO BE AWARE EXISTING STRUCTURES MAY EXIST WITHIN THE SITE. TO PREVENT DAMAGE TO EXISTING STRUCTURE(S) AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING STRUCTURE(S).
- 3. EXISTING TREES CONTRACTOR TO BE AWARE EXISTING TREES EXIST WITHIN THE SITE WHICH NEED TO BE PROTECTED. TO PREVENT DAMAGE TO TREES AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING TREES. ADVICE NEEDS TO BE SOUGHT FROM ARBORIST AND/OR LANDSCAPE ARCHITECT ON MEASURES REQUIRED TO PROTECT TREES.
- 4. GROUNDWATER CONTRACTOR TO BE AWARE GROUND WATER LEVELS ARE CLOSE TO EXISTING SURFACE LEVEL. TEMPORARY DE-WATERING MAY BE REQUIRED DURING CONSTRUCTION WORKS
- 5 EXCAVATIONS DEEP EXCAVATIONS DUE TO STORMWATER DRAINAGE WORKS IS REQUIRED. CONTRACTOR TO ENSURE SAFE WORKING PROCEDURES ARE IN PLACE FOR WORKS. ALL EXCAVATIONS TO BE FENCED OFF AND BATTERS ADEQUATELY SUPPORTED TO APPROVAL OF GEOTECHNICAL ENGINEER
- 6. GROUND CONDITIONS CONTRACTOR TO BE AWARE OF THE SITE GEOTECHNICAL CONDITIONS. REFER TO GEOTECHNICAL REPORT BY
- GEOTECHNICAL CONSULTANTS.
- 7. HAZARDOUS MATERIALS HAZARUOUS MALENALS EXISTING ASBESTOS PRODUCTS & CONTAMINATED MATERIAL MAY BE PRESENT ON SITE. CONTRACTOR TO ENSURE ALL HAZARDOUS MATERIALS ARE IDENTIFIED PRIOR TO COMMENCING WORKS. SAFE WORKING PRACTICES AS PER RELEVANT AUTHORITY TO BE ADOPTED AND APPROPRIATE PPE TO BE USED WHEN HANDLING ALL HAZARDOUS MATERIALS. REFER TO GEOTECHNICAL/ENVIRONMENTAL REPORT BY
- GEOTECHNICAL CONSULTANTS.
- 8. CONFINED SPACES CONTRACTOR TO BE AWARE OF POTENTIAL HAZARDS DUE TO WORKING IN CONFINED SPACES SUCH AS STORMWATER PITS, TRENCHES AND/OR TANKS. CONTRACTOR TO PROVIDE SAFE WORKING METHODS AND USE APPROPRIATE PPE WHEN ENTERING CONFINED SPACES.
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- 10. WATER POLLUTION CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO PREVENT POLLUTANTS FROM CONSTRUCTION WORKS CONTAMINATING THE SURROUNDING ENVIRONMENT
- 11 SITE ACCESS/EGRESS CONTRACTOR TO BE AWARE SITE WORKS OCCUR IN CLOSE PROXIMITY TO FOOTPATHS AND ROADWAYS. CONTRACTOR TO ERECT APPROPRIATE BARRIERS AND SIGNAGE TO PROTECT SITE PERSONNEL AND PUBLIC.
- 12. VEHICLE MOVEMENT CONTRACTOR TO SUPPLY AND COMPLY WITH TRAFFIC MANAGEMENT PLAN AND PROVIDE ADEQUATE SITE TRAFFIC CONTROL INCLUDING A CERTIFIED TRAFFIC MARSHALL TO SUPERVISE VEHICLE MOVEMENTS WHERE NECESSARY.

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PROPOSED



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RUNOFF FROM PAD DIRECTED MIN 200mm THICK TO SEDIMENT TRAP **TEMPORARY CONSTRUCTION VEHICLE EXIT**

MIN LENGTH 10m ∕−BERM 300 HIGH MIN — EXISTING ROADWAY └─50−75mm GRAVEL BED

PROVIDE WASH WATER FOR TRUCKS EXITING SITE

- ANGLE FIRST STAKE TOWARDS PREVIOUSLY LAID STRAW BALE

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UNDISTURBED AREA

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TD TD 04.06.2024 P2 ISSUED FOR DA AT SS 08.12.2023 P1 DRAFT ISSUE Eng Draft Date Rev Description Rev Description Eng Draft Date Rev Description Eng Draft Date



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FLOW FLOW OVERLAND FLOW



Sandbag sediment trap

Stormwater pit with Geotextile filter surround

Siltation fence

STABILISED ACCESS

Catch drain

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Hay bale barriers

	Scale at A1	Drawn		Designe	ed	Approved			
ONMENTAL		SS		AT		TD			
ON CONTROL PLAN	Project No	Originator	Zone	Туре	Role	Sheet No.	Rev		
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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	CHURC	CH AVENU	E		
Suburb	MASCO	ТС				Postcode	2020		
Type of Development RESIDENTIAL STUDENT HOUSING DEVELOPMENT							MENT		
Designer Details									
Ms/Mr/Mrs/ Given Na Other (please circle)			^{me(s)} TIM			Surname MOORE			
Street Addr	ess	LEVEL 6/	6/73 MILLER ST, NORTH SYDNEY, NSW 2060						
Company N	lame (if ap	oplicable)	TTW						
Mailing Add	lress (if dif	ferent)							
Daytime Telephone No. (Home/Work) +61 2 9			067 5079 Mobile No.						
Email Addre	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		Sharty	7		
Professional Qualifications	BI	BE (Civil) MIEAust			<u>· 04 /</u>			
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

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 Requ	lirements	Applicable (Yes/No)	Design Complies (Yes/No)	If No, Reason for Variation
Subsoil di	rainage			
Subsoi	I drain location	YES		Raingarden
Subsoi	l drain size	YES		
On-site De	etention (OSD)			
OSD lo	ocation	NO		Infiltration System
OSD v	olume	NO		provided
OSD d	ischarge rate	NO		
Detenti Checkl	on Design Calculation ist	NO		
OSD d	etail/section	NO		
OSD d	ischarge control detail	NO		
On-site Re	etention (OSR)			
OSR lo	cation	YES		
Absorp	tion rate from Council	YES		
OSR a	bsorption test and rate	YES		
OSR v	olume	YES		
Absorp Checkl	tion Design Calculation ist	YES		
OSR d	etail/section	YES		
Specia Cells d	l requirements for Atlantis etailed	YES		
Pumped a	lischarge systems			
Pump s	storage location	NO		
Pump s	storage volume	NO		
Pump of	discharge	NO		
Pump s	storage detail/section	NO		
Pump of	discharge rating curve	NO		
Pump s	specification	NO		
Pump of	configuration specification	NO		
Pump r	maintenance schedule	NO		
Ancillary ((where applicable)			
Reflux	valves	NO		
Connee	ction to Council pipes	YES		
 BASIX require 	or rainwater tank ments	YES		Minimum 10kL rainwater tank provided
Rainwa claimea	ater tank offset from Council d	YES		
Rainwa	ater tank location	NO		Hydraulic consultant TBC
Rainwa	ater tank overflow detail	NO		Hydraulic consultant TBC
Freebo	ard to habitable floor levels	YES		
Drainag Proced	ge of Low Level Properties ure followed.	YES		

D	CP Requirements	Applicable (Yes/No)	Design Complies (Yes/No)	If No, Reason for Variation
٠	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		
٠	Groundwater Recharge Trench	NO		
٠	Silt/litter arrestor pit provided	YES		WSUD captures silt
•	Stormwater Reuse System	YES		Irrigation
•	Car park water treatment provided	N/A		
٠	Car wash areas provided	N/A		
٠	Other WSUD Requirements	YES		
٠	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						
6.6 11 72.83				Base Thickness	s (m) =	0.2
Height	1.4			Tank Storage=		104.4
Available	Storage (m^3)	=	107.3132			
Calculating Inflows, Outflows and Storages						
Contributing Impervious Area (m^2)=				1400	F _R =	0.75
Nominal Absorption Rate (I/s/m^2) =				0.1		
Design Absorption Rate (I/s/m^2) =				0.075	Outflow (I/s) =	5.46225
Time	Intensity	Inflow	Inflow Vol	Ouflow Vol	Required Vol	Avail-Requd
(min)	(mm/hr)	(I/s)	(m^3)	(m^3)	(m^3)	(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 (m^3) 10 Offset Applies Y Offset Allowance **2.5**

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