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STORMWATER MANAGEMENT REPORT

PROJECT: 240888

DATE: January 2025

CLIENT: Samaris

SITE: 290 Unley Road, Hyde Park, SA

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Contents

DOCUMENT REVISION(S):

Revision	Description	Date Issued:	Report by:
A	Issued for approval	19th December 2024	Tyrone Franchitto
B	Issued for approval	16th January 2025	Tyrone Franchitto

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1.Overview

1.1 Background

Gama Consulting have been engaged by Samaris Construction to prepare a conceptual Stormwater Management Plan (SMP) for the proposed new structure in Hyde Park.

This report is intended to conceptually outline the stormwater management design and detail methodology.

The report is based on the current Australian stormwater management procedures and in accordance with the requirements of the Institution of Engineers, Australia publication, Australia Rainfall and Runoff, 2019, Queensland Urban Drainage manual and Australian Standard 3500.3-2018.

1.2 Scope of assessment

The preparation of the plan comprises of the scope of services listed below:

- Prepare a Stormwater Management Plan detailing the proposed method of collection and disposal of site generated stormwater runoff.

2. Stormwater management strategy

2.1 Site description

The subject site situated at corner of Unley Road with Esmond Street is currently occupied by existing retailing shops and a paved carpark at the rear. Refer Figure 1 – Site Aerial View

The site will be upgraded with a new structure to cover the whole site. Carpark and commercial use on the ground floor with residential space to occupy the upper floors.

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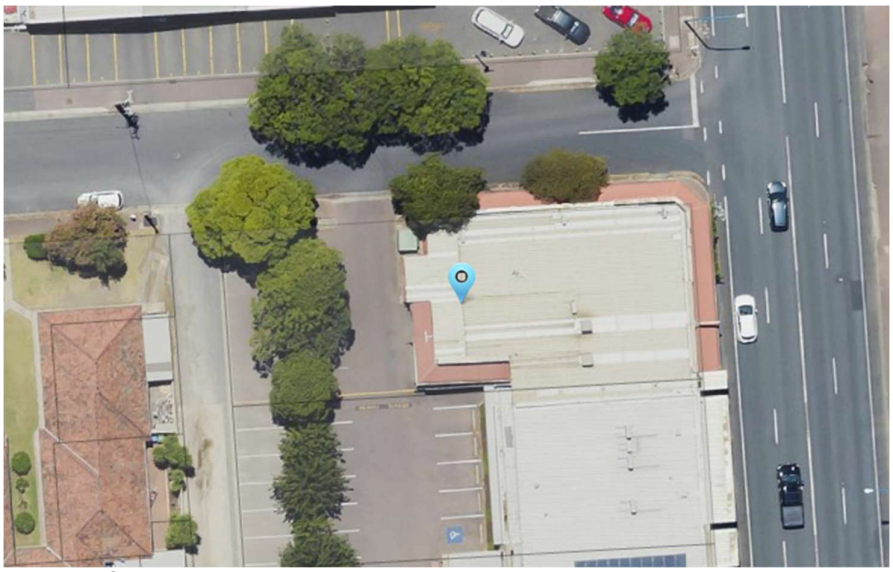

Figure 1 – Site Aerial View

In accordance with council Flood mapping the site is not affected by major stormwater events. Refer Figure 2 – Flood mapping

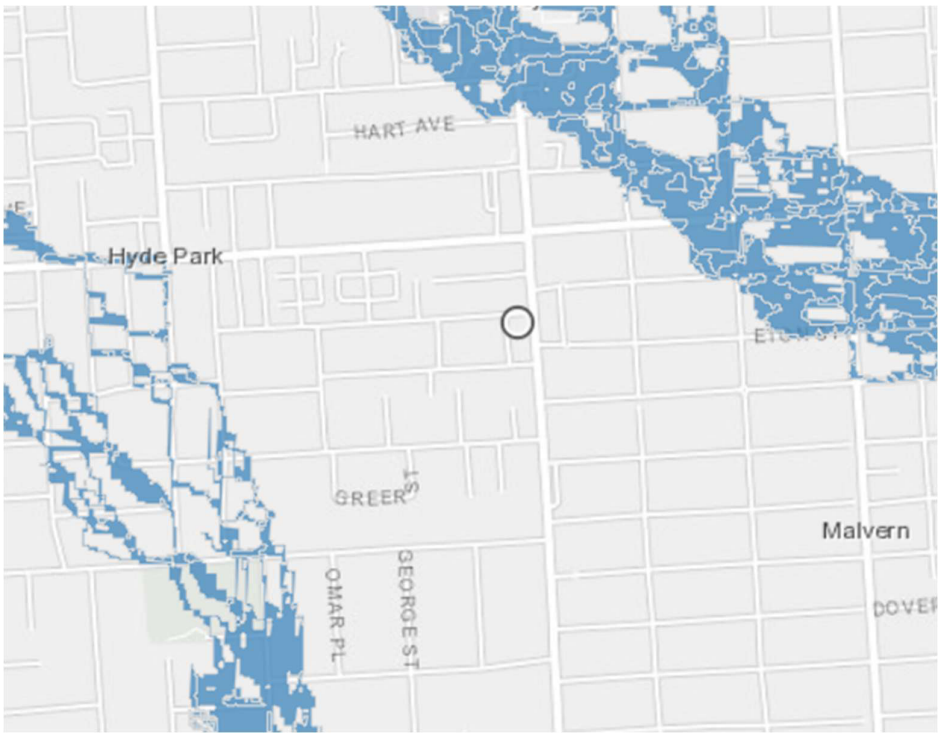

Figure 2 – Flood mapping

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2.2 Design Criteria

The stormwater management strategy has been prepared as follows with consideration of the requirements:

- Post Development 1:100 Year stormwater runoff limited to Pre-Development 1:5 Year stormwater runoff.
- Ensure that the proposed will not impact adversely on the surrounding environment and existing residences during and after construction.

2.3 Stormwater management strategy

Based on stormwater requirements, the following stormwater management plan is proposed:

- 70% of the proposed roof area will be detained by new rainwater detention tanks with a controlled discharge orifice. This will be collected with a series of scattered downpipes with flying downpipes used along the carpark ceiling.
- 2 Outlets have been shown to the street
    - Outlet 1: Stormwater runoff from carpark and controlled rainwater tank overflow
    - Outlet 2: Un-detained stormwater runoff from front third of proposed roof structure.

Refer Site drainage plan for details.

2.4 Hydrology/hydraulics

A modeling assessment was undertaken to determine the rainfall-runoff relationship at the present site. The model had been designed using the rational method.

The following parameters and assumptions were made in the development of the drainage model for the site:

- run-off coefficients for roof=1, paving=0.9, landscaping =0.3
- Pipe losses not considered
- Rainfall Storm event – data obtained from Bureau of Meteorology

Pre-development

Catchment ID	Area(m^2)	Run-off coefficient (C)
Roof	375	1.0
Paving	268	0.9
Landscaping	30	0.3
Total	673	

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Post-development

Catchment ID	Area(m^2)	Run-off coefficient (C)
Roof	673	1.0
Paving	-	0.9
Landscaping	-	0.3
Total	673	

A detailed pre (1:5) and post-development (1:100) analysis is attached refer **Appendix. A.**

2.5 Hydraulic assessment

The model analyses were undertaken for several different scenarios (minor and major events) and respective pre- and post-development scenarios:

The stormwater calculations model output for different scenarios are summarised on Table 1

Table 1 - Flow rates for various scenarios

Scenarios	Pre-development (20% AEP) Flow Rate (L/s)	Post-development (1% AEP) Flow Rate (L/s)
	14.15	14.14

2.6 Water surface treatment

Water quality targets required by EPA are:

- 90% retention of Gross Pollutants
- 80% retention of Total Suspended Solids
- 60% retention of Total Phosphorus
- 45% retention of Total Nitrogen
- MUSIC modelling is required to support the water quality improvement performance.

The proposed surface water treatment includes 2 Atlan smack filter baskets connected to grated pit and 1.0m long Atlan hydro channel to grated drain.
The Music model adopted simulates the proposed stormwater quality train above, please refer to the screenshot below.

Figure 6– Music model output

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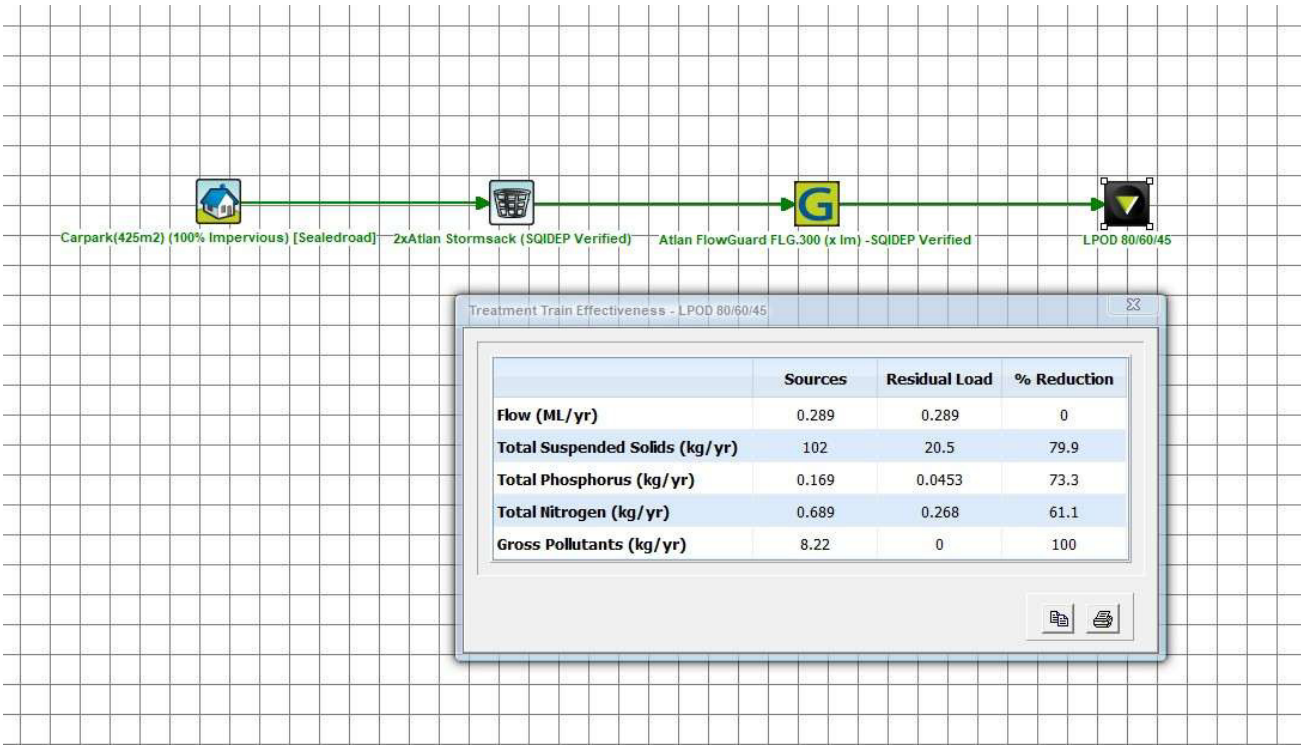

	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.289	0.289	0
Total Suspended Solids (kg/yr)	102	20.5	79.9
Total Phosphorus (kg/yr)	0.169	0.0453	73.3
Total Nitrogen (kg/yr)	0.689	0.268	61.1
Gross Pollutants (kg/yr)	8.22	0	100

Figure 3. Music outcome

3.0 Conclusion

The proposed stormwater drainage plan intends to demonstrate that the run-off from the proposed development will have no detrimental impact on the existing drainage system.

The run-off which will leave the site due to the proposed stormwater arrangements will be limited to the pre-development flow rates required.

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APPENDIX A:

RATIONAL METHOD CALCULATIONS

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ABN: 83 607 495796

JOB NO: 240888 **SHEET:** 1

DATE: 19-Dec-24 **ENG:** TF

STORMWATER CALCULATION

Site address : 290 Unley Road, Hyde Park **Council :** Unley

Site area : 673 m²

Soil type : Clayey

1. Pre-development

Design ARI : 5 years
Duration : 5 min
Intensity : 81.5 mm/hr

			coefficient	Q
Roof area :	375 m²	→	1.0	8.49 L/s
Paving area :	268 m²	→	0.9	5.46 L/s
Landscaping area :	30 m²	→	0.3	0.20 L/s
Existing Flow, Q :	14.15 L/s			

2. Post-development

No. dwellings : 1
Design ARI : 100 years
Duration : 5 min
Intensity : 181.0 mm/hr

	Total		To Street	Detained		coefficient
Roof area :	673 m²	→	202 m²	471 m²	→	1.0
Per. Paving area :	0 m²	→	0 m²	0 m²	→	0.5
Imper. Paving area :	0 m²	→	0 m²	0 m²	→	0.9
Landscaping area :	0 m²		0 m²	0 m²	→	0.3
Flow to Street, Q1 :	1 0.14 L/s					
Flow from tank, Q2 :	4.00 L/s					
Flow from detention, Q3 :	0.00 L/s					

3. Detention

Detention system : RWT + Surface Detention

Critical storm duration, tc : 10 min

		RWT			Surface Detention			Total Volume (L)
Duration (min)	Intensity (mm/hr)	Volume In (L)	Volume out (L)	Req. Volume (L)	Volume In (L)	Volume out (L)	Req. Volume (L)	
1	278.0	2181	2642.31	-461	0	0	0	-461
3	220.0	5178	3122.73	2056	0	0	0	2056
5	181.0	7100	3603.15	3497	0	0	0	3497
10	131.0	10278	4804.2	5474	0	0	0	5474
15	105.0	12357	6005.25	6352	0	0	0	6352
20	89.3	14013	7206.3	6806	0	0	0	6806
25	78.4	15378	8407.35	6970	0	0	0	6970
30	70.3	16547	9608.4	6938	0	0	0	6938
45	54.7	19313	13211.55	6101	0	0	0	6101
60	45.6	21466	16814.7	4651	0	0	0	4651
90	34.9	24644	24021	623	0	0	0	623
120	28.8	27115	31227.3	-4112	0	0	0	-4112
180	21.7	30646	45639.9	-14994	0	0	0	-14994
270	16.3	34530	67258.8	-32729	0	0	0	-32729
360	13.2	37283	88877.7	-51594	0	0	0	-51594
Minimum Detention Volume				**6,970 Ltr (per dwelling)**			**Ltr**	

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JOB NO: 240888 **SHEET:** 2

DATE: 19-Dec-24 **ENG:** TF

4. Orifice size

RWT

Height, H :	1 m
Velocity, V :	4.4 m/s
Flow out, Q :	4.00 L/s
A :	0.00148 m²
Max. Orifice Diameter :	**43 mm**

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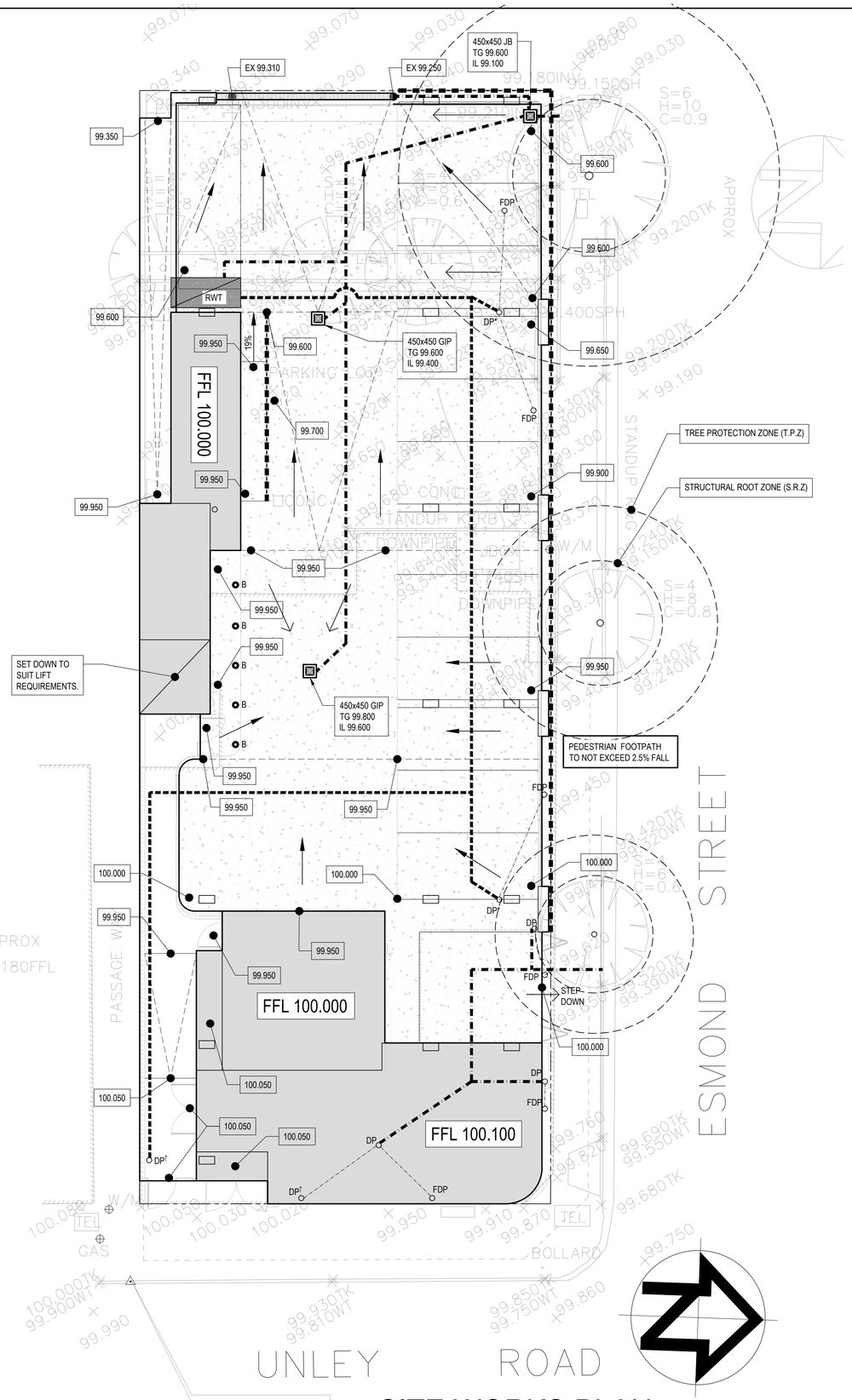
APPENDIX B:

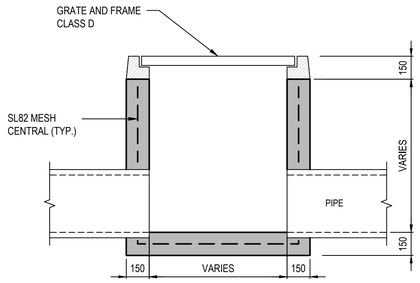
STORMWATER MANAGEMENT PLAN C01



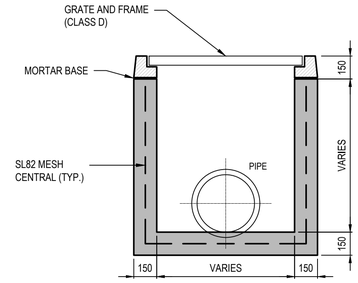
T.B.M.
RAMSET ON KERB
R.L.100.000

SITE WORKS PLAN

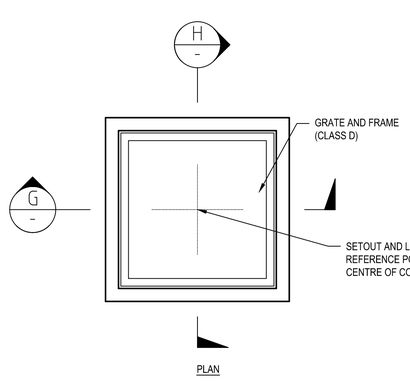
SCALE 1:200



SECTION X
SCALE 1:100



H

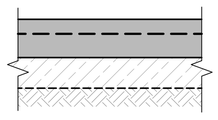


G

PLAN

JUNCTION BOX/ GRATED INLET PIT DETAIL

SCALE 1:20



THICKNESS	TYPE	COMPACTION
125mm	N32 CONCRETE, SL92 CENTRAL	
100mm	PM2/20QG QUARRY RUBBLE	96% RMC
	SUB-GRADE	98% STANDARD

CONCRETE PAVING DETAIL (TRAFFICABLE)

SITE WORKS NOTES

THIS IS AN ENGINEERING SURVEY PLAN, AND SHOULD NOT BE TAKEN AS A CADASTRAL OR IDENTIFICATION SURVEY. BOUNDARY DATA SHOWN IS TO BE TAKEN AS A GUIDE ONLY.

SURVEYED BY RAPID SURVEYS PTY LTD.

ALL SITE LEVELS AND DETAILS MUST BE CHECKED AND APPROVED BY THE OWNER/BUILDER PRIOR TO COMMENCEMENT OF ANY WORK.

COVER TO PIPES SHALL COMPLY WITH AS 3500.5. PIPES LESS THAN 200mm BELOW THE FINISHED SURFACE UNDER THE DRIVEWAYS SHALL BE ENCASED IN 100mm OF CONCRETE.

SITE CLASSIFICATION TO AS2870-2011 : TO BE CONFIRMED

DO NOT SCALE FROM THE DRAWINGS

ANY DISCREPANCIES TO BE REFERRED TO THIS OFFICE FOR CLARIFICATION BEFORE PROCEEDING WITH FURTHER WORK

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS, STRUCTURAL DRAWINGS AND SPECIFICATIONS

LEGEND

- Ø150 — STORMWATER PIPE (GRAVITY)
- Ø100 — STORMWATER PIPE (SEALED)
- STORMWATER PIPE (SEALED-OVERFLOW)
- INDICATIVE CEILING PIPEWORK. LOCATIONS TO BE CONFIRMED
- RETAINING WALL / PLINTH
- DP — DOWNPIPES
- DP* — DOWNPIPES DRAINING INTO THE RAINWATER TANKS (SHOWN DPx) SHALL BE SEALED TO THE UNDERGROUND STORMWATER SYSTEM GRADE ALL SEALED SYSTEM STORMWATER TO FLUSH POINT
- FDP — FLYING DOWNPIPES
- B — BOLLARD
- GIP — GRATED INLET PIT ATLAN SMACK FILTER BASKETS (200uM) OR SIMILAR APPROVED. REFER TO DETAIL.
- JB — JUNCTION BOX. REFER TO DETAIL.
- TG 99.875 IL 99.675 — DESIGN LEVEL FS=FINISHED DESIGN LEVELS, TL=TOP OF COVER, TG=TOP OF GRATE, IL=INVERT, TW=TOP WALL, BW= BOT. WALL
- ramp — RAMP
- SURFACE FALL
- 00.000 — FINISH DESIGN
- RWT — 7000L MIN. CAPACITY RAINWATER DETENTION TANK/S WITH 43Ø RESTRICTED ORIFICE TO OUTLET PIPE
- CONCRETE PAVING
- GRATED STRIP DRAIN WITH ATLAN HYDROCHANNEL 1.0m LONG

REV	REVISION DESCRIPTION	DATE	CHK
B	RE-ISSUED FOR PLANNING APPROVAL	16/01/25	CZ
A	ISSUED FOR PLANNING APPROVAL	19/12/24	TF
-	ISSUED FOR REVIEW	09/12/24	-

1 0 2 4m
SCALE 1:100

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PROJECT: PROPOSED MIXED USE DEVELOPMENT
SITE ADDRESS: 290 UNLEY ROAD, HYDE PARK, SA
CLIENT: SAMARAS CONSTRUCTION & DEVELOPMENTS
COUNCIL: UNLEY
DESCRIPTION: SITE WORKS PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

DRAWN	ENGINEER
TF	TF
DRAFT CHK	DESIGN CHK
TF	CZ

DRAWING No. 240888 C01 REV B

SHEET SIZE: A1

T:\2024\240888\240888-1_CAD_CIV\240888-CIV.DWG

Outlook

FW: 240888: 24037925: Unit 1-3 290 Unley Rd Hyde Park - Updated Stormwater Management Report

From Corey Polyak <cpolyak@urps.com.au>
Date Thu 16/01/2025 4:33 PM
To Khan, Adnan (DHUD) <Adnan.Khan@sa.gov.au>; Amelia DeRuvo <Aderuvo@unley.sa.gov.au>

1 attachment (2 MB)
2025.01.16.240888.StormwaterReport - B.pdf;

OFFICIAL

Hi Adnan and Amelia,

Please see attached updated Stormwater report and comments below.

Kind Regards,

Corey Polyak
Consultant
High Rise & Commercial Development
0423 253 645

27 Halifax Street
Enter via Symonds Pl
Adelaide SA 5000
08 8333 7999

Our office will be closed from 12pm 20 Dec 2024 and reopening 6 Jan 2025.

Kaurna Country

From: Hamish Bills <hamishb@gamaconsulting.com.au>
Sent: Thursday, January 16, 2025 3:00 PM
To: Corey Polyak <cpolyak@urps.com.au>
Cc: Tyrone Franchitto <tyronef@gamaconsulting.com.au>; Russell Biar <rbiar@samarasgroup.com>; Matthew King <mking@urps.com.au>; Matthew Mammone <mattm@gamaconsulting.com.au>; Scott Meek <scott@sm-f.com.au>; Ian.Bishop@salt3.com.au; Sarah Swincer <sarah@sm-f.com.au>
Subject: 240888: 24037925: Unit 1-3 290 Unley Rd Hyde Park - Updated Stormwater Management Report

Afternoon Corey,
Please find our updated Stormwater Management Report (RevB).

We have also responded to council questions in red below.

i.e.
In addition to Council's formal Reg 23 referral response, we provide the following commentary regarding the prescribed matters:
Section 2.4 – existing impervious runoff coefficient should be corrected. Only a small area has been applied at 0.3.

Run-off coefficients noted correctly in the amended report

- No pollutant filter has been nominated for surface water collected via the GIP per the planning report. Oil and sediment removal to be demonstrated. Refer to MUSIC output in report.
- To what degree does this strategy minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system. Will EPA Water quality targets be achieved.
  Refer water quality treatment proposed achieved the EPA targets, refer amended report

- Planning report notes the rainwater tank will be underground, however I understand the SMP was outstanding at the time. Please confirm, the tanks will be above ground and flow via gravity to the kerb outlet (overflow outlet as well as 43mm orifice outlet).
  Rainwater tank is above the ground and overflow gravity drain to kerb

- With respect to FFL's, surrounding footpath levels are to be max 2.5% in order to meet DDA compliance.
  Note added to site plan drawing

Regards
Hamish Bills– Director

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engineers and project management

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