

Stormwater Management Plan to Support Development Application

39 Metford Rd, Tenambit

Prepared for Morpeth Gardens Pty Ltd

Our Ref: 18011_SMP_1-0

18 April 2024

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ENGINEERING BUILDABLE SOLUTIONS

Document Information

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1 Executive Summary

Cubo Consulting Pty Ltd has been engaged by Morpeth Gardens Pty Ltd to undertake a preliminary Stormwater Management Plan (WCMP) to support to DA for the proposed Country Club development at 39 Metford Rd, Tenambit.

The report concludes that:

1. There will be no increase in peak flowrates from the development site in storm events.
2. The existing OSD and Stormwater quality devices constructed downstream as part of an earlier stage of the development were designed to be adequate for the increase in runoff, with modifications required to the existing arrangement to suit the original Cubo design configuration, with the control pit to include twin 450mm diameter orifices, a 300mm diameter connection to the bioretention basin, and installation of an appropriate grated cover.
3. Two 5,000L rainwater tanks will collect runoff for reuse on site.

Yours Faithfully,

A handwritten signature in black ink, appearing to read "Doug Black".

Prepared by
Doug Black
Design Engineer

A handwritten signature in black ink, appearing to read "V. Cubis".

Reviewed by
Vince Cubis
Director

2 Background Information

This document presents the Stormwater Management Plan for submission to the Maitland City Council (MCC) to support the DA for the proposed development at 39 Metford Rd, Tenambit.

A previous design using MOES was undertaken by this office in 2018. The design has been modelled with rainfall data stipulated in Appendix C of Maitland City Council Manual of Engineering Standards (MOES) 2014.

3 Site Context

The proposed development site is part of the Morpeth Gardens residential development. It currently contains a house with extensive lawns, and slopes away from Metford Road at approximately 5%. The total area of the site is approximately 4225m².

Roofwater from the house is discharged by 2x 100mm PVC pipes to a swale from the southern corner of the block to the upstream bypass pit.

Aerial photography of the existing site is presented in Figure 1-1 below.

The new development contributes to catchment A only and this part of the site discharge has been considered in this report. Refer to catchment map in 6.4.2.



Figure 1-1 Existing Site (Source - Sixmaps)

4 Proposed Development

The proposed development consists of a new clubhouse with swimming pool and additional carparking. The stormwater drainage will be connected to the existing system constructed in an earlier stage of the project and discharge to the downstream OSD basin.

Details of the development are contained within the construction drawings.

5 Stormwater Management Objectives

The objectives of this water cycle management plan include to provide:

- 1) An underground “minor system” of pipes that eliminates inconvenience to traffic and pedestrians.
- 2) An overland “major system” that conveys stormwater flows within suitable velocity/depth limits generally located within public land, or where approved or unavoidable, within private land covered by an easement.
- 3) Detention of stormwater flows that mimics natural, pre-developed flows for all storm events up to and including the 100-year ARI event.
- 4) Retention of stormwater flows to achieve water target quality standards.
- 5) Consideration of upstream and downstream catchments in their ultimate developed state to achieve a total system which does not adversely affect existing systems or properties within the flow path and catchment.
- 6) Employment of principles of Water Sensitive Urban Design and Stormwater Reuse.

6 Stormwater Management

6.1 Stormwater Quality Target

Chapter 6, Section 8.2 of MCC Engineering standards requires, as a minimum, the following reductions in total pollutant load, compared to untreated runoff from the developed site.

Table 1-1 Minimum pollutant reduction targets

Pollutant	Minimum Reduction
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	45%
Total Nitrogen (TN)	45%
Gross Pollutants	70%

6.2 Stormwater Quality

The proposed development will include 2x 5,000L below ground rainwater tanks, collecting roof runoff for reuse on site. Rainwater tanks are generally considered to contribute to improvements in rainwater runoff quality.

The entirety of the site will discharge to the adjacent stormwater drainage network in the previous stage of the development, with all runoff captured and treated by the downstream treatment and detention arrangement.

6.3 MUSIC Water Quality Model

Both previous reports for this development (see references) demonstrated with a MUSIC model that the existing treatment train is adequate for the entirety of the development.

6.4 DRAINS On-Site Detention Model

Section 6.8.1 of MCC Engineering Standards requires on-site detention to ensure that post developed flows from a development site do not exceed pre-development flows for 1YR ARI, 10YR ARI, and 100YR ARI storm events.

A DRAINS computer model (Version 2023.11.8718.30178) using an ILSAX hydrological model was developed for the specific site area to demonstrate compliance with section 6.8.1 of MCC engineering standards.

6.4.1 Base Information

The DRAINS computer model was prepared in accordance with the requirements of Maitland City Council's current Manual of Engineering Standards (MoES) with rainfall data as stipulated in MoES.

6.4.2 Catchments

The current site was modelled as a single catchment with a total area of 4224m², 20% impervious, and an assumed critical duration of 5 minutes.

The proposed development was modelled as four separate catchments, the clubhouse roof, pool area, the carpark, and landscaping, totalling 4224m², averaging 64% impervious. The catchments have been modelled as discharging into the existing drainage network constructed in the previous stage.

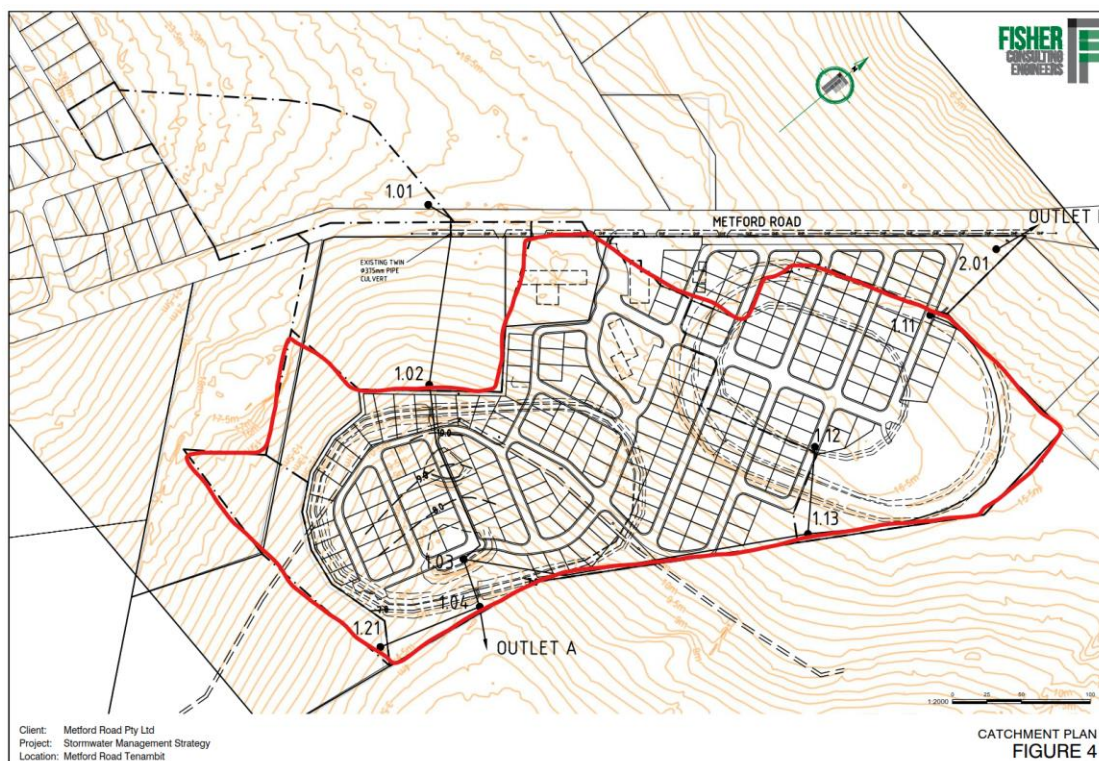


Figure 6-1 "Catchment A" (red) (Fisher 2016)

6.4.3 Results

The table below shows the total peak flows rates from the site as measured at the connection to the existing drainage.

Table 1-2 Summary of DRAINS peak outflows

Storm Event	Predeveloped Flows (L/s)	Developed Flows (L/s)	Comments
1YR ARI	67	53	Developed flows less than predeveloped flows
10YR ARI	142	73	Developed flows less than predeveloped flows
100YR ARI	217	145	Developed flows less than predeveloped flows

Post development flows are less than current flows for all required events.

There are negligible overland flows from the site in 10Yr ARI event.

6.4.4 Private Rainwater Tanks

The proposed development will include 2x 5,000L below ground rainwater tanks, collecting runoff from the roof for reuse on site. These was assumed to be full and so excluded from the model.

6.4.5 OSD Outflow

The downstream OSD was modelled based on our 2019 design and was not noticeably impacted by the additional flows from the proposed development.

6.5 Local Overland Drainage

The site currently sits below Metford Rd but will be separated by an extension of the existing kerb and footway, ensuring on road flows are directed downstream.

6.6 Flood Levels

Based on the MCC Flood Mapping, the subject site was found to be outside the flood extent for all events up to PMF.

7 Conclusion

Based on the available information and modelling, the proposed development:

- Will not require additional OSD.
- 4. Will not result in an increase in stormwater flow rates downstream, with modifications required to the existing arrangement to suit the original Cubo design configuration, with the control pit to include twin 450mm diameter orifices, a 300mm diameter connection to the bioretention basin, and installation of an appropriate grated cover.
- The existing treatment train has sufficient capacity to keep stormwater quality within the required parameters.

The construction of the existing OSD should be completed with the designed orifices provided on the control pit, formalised and concreted overflow weir, and appropriately sized rock mattress scour protection.

The existing pipe network between the proposed development and OSD basin should be verified as part of the approval process, and a WAE survey of the constructed stormwater drainage network and infrastructure prepared at the completion of works.

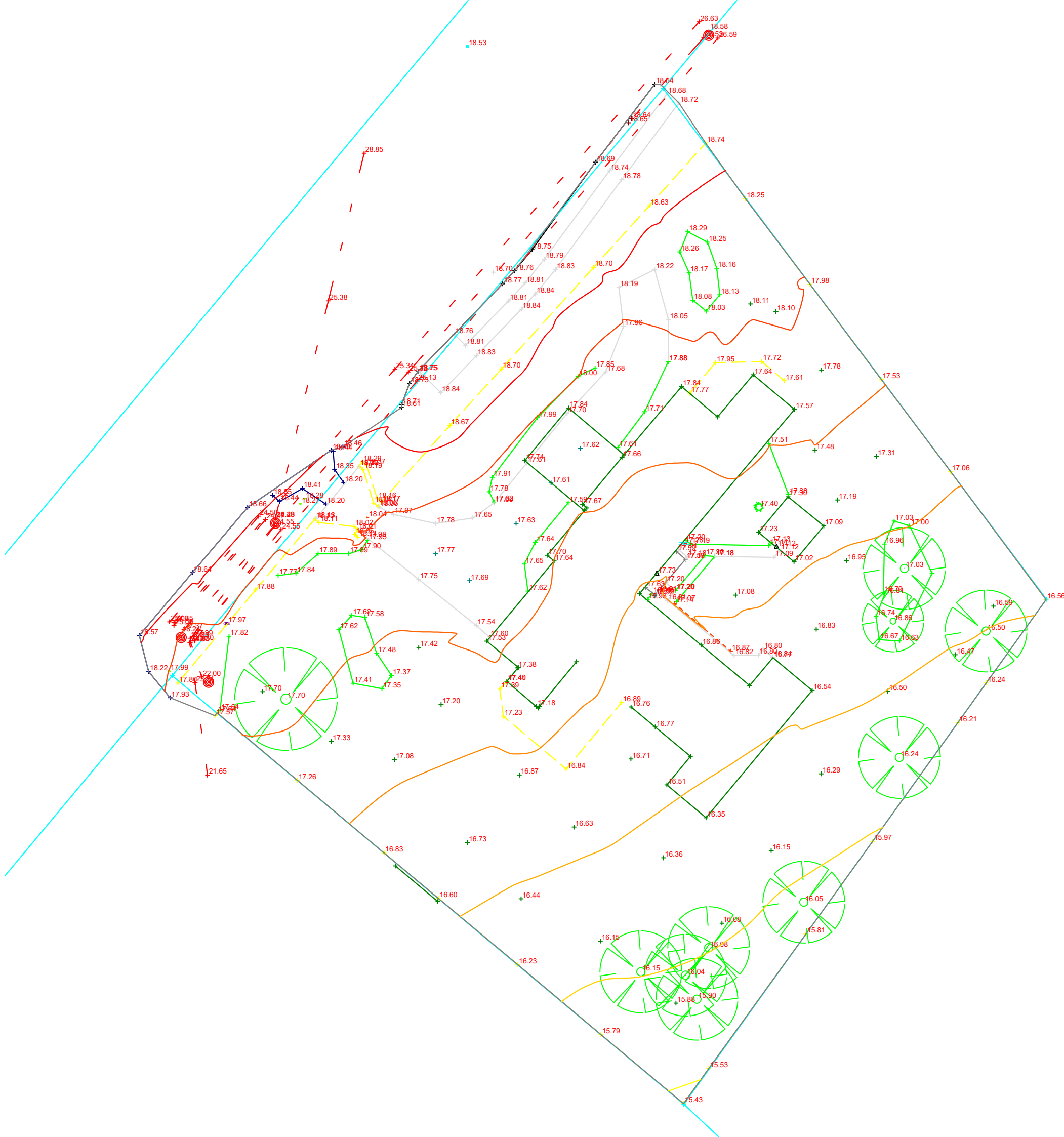
8 References

BMT WBM Pty Ltd. (August 2010). *Draft New South Wales MUSIC Modelling Guidelines*

Maitland City Council. (2014). *Chapter 6 – Stormwater Drainage, Manual of Engineering Standards*









9 Appendices

- A. Site Survey**
- B. Architectural Drawings**
- C. Cubo Drawing**
- D. Drains Output**



20.02

LEGEND

-  outline of existing dwelling to be demolished
-  existing trees to be retained
-  existing trees to be removed
-  new small ornamental trees
-  new palm trees
-  lawn
-  new concrete paths
-  outdoor tiles
-  garden beds
-  1200 high pool fence
-  retaining walls



SITE PLAN

No.	REVISION/ISSUE	DATE
1	PRELIM CONCEPT	02/03/21
2	REVISED PRELIM CONCEPT	09/03/21
3	REVISED CONCEPT	16/03/21
4	FINAL CONCEPT	22/03/21
5	NEW CONCEPT	30/10/23
6	FINAL CONCEPT	03/11/23
7	FINAL REVISED CONCEPT	10/11/23

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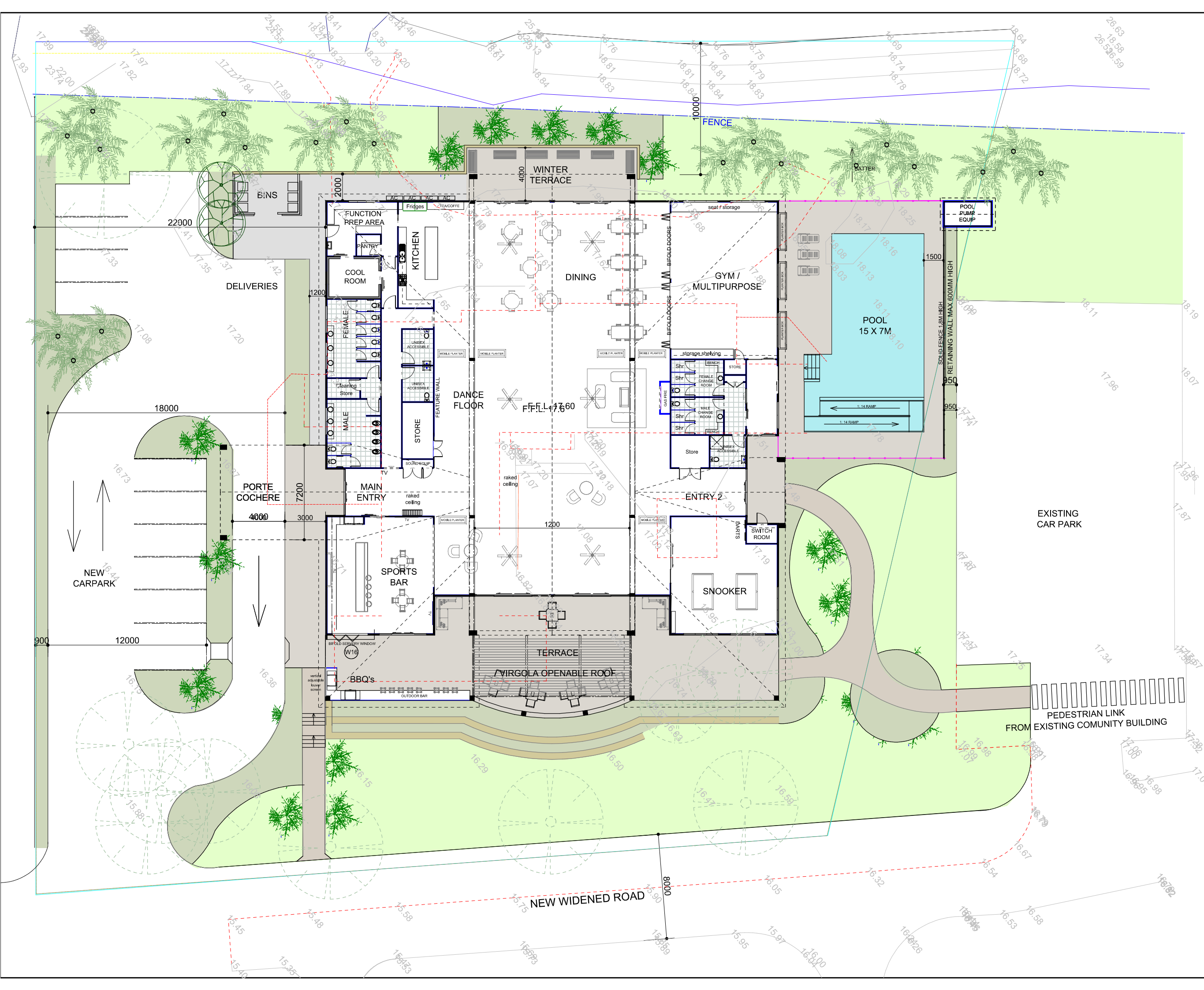
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PROPOSED COUNTRY CLUB

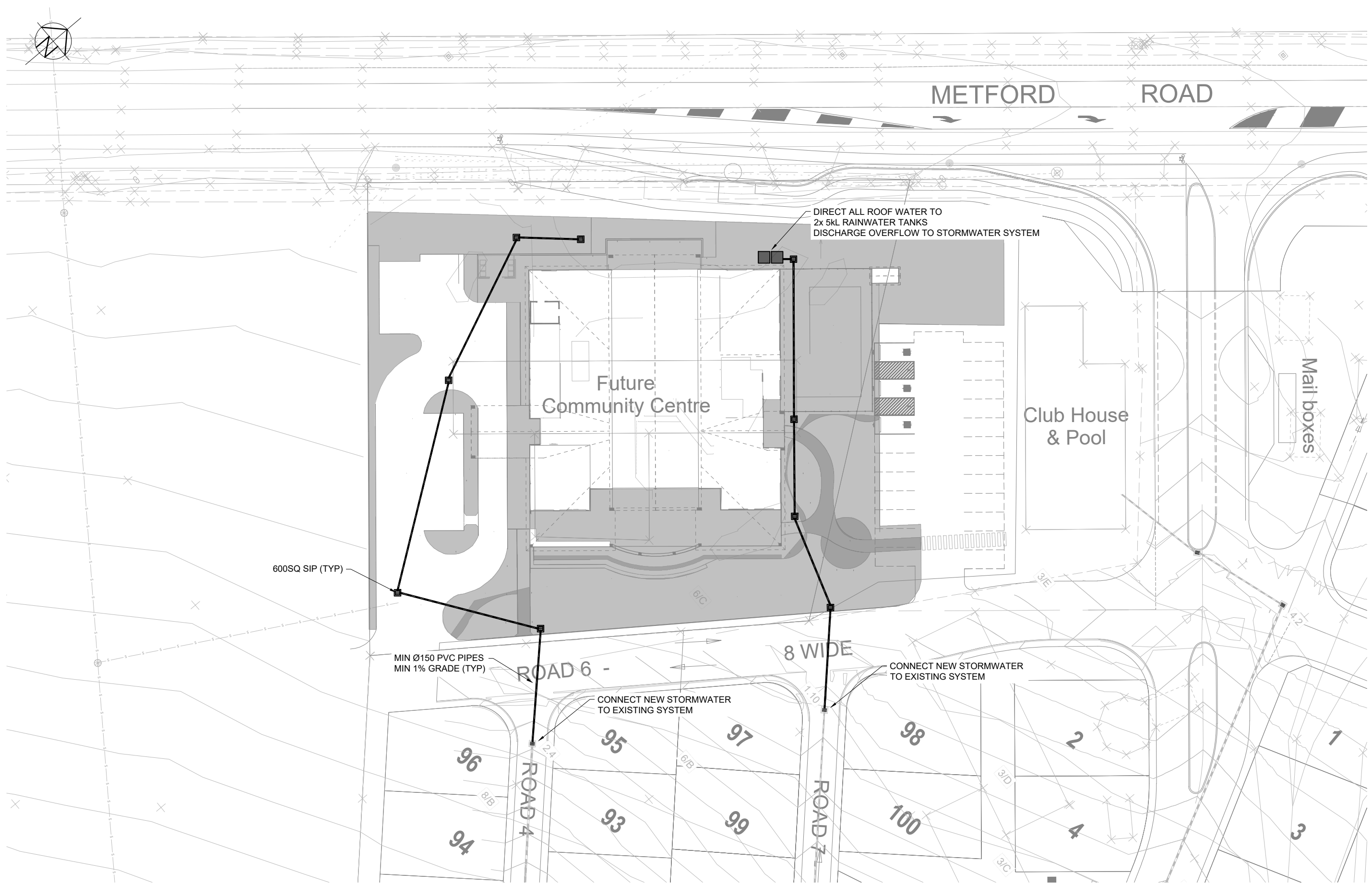
 39 Metford Road Tenambit

CLIENT: Rod Motbey

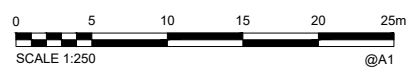
DRAWING:
CONCEPT SITE PLAN
 SCALE: 1:250 (A3) DATE: March 2021

DRAWN BY: A.B. JOB NO: 202114
 CHECKED BY: A.B. SHEET: 2 of 2
 APPROVED BY: A.B.





1	18/04/2024	PRELIMINARY	DB	VC
REV	DATE	REVISIONS	DRN	CHK



DESIGNED: DB	DATUM: AHD A1
DRAWN: DB	COORDINATE SYSTEM:
CHECKED:	APPROVED:
RECOMMENDED:	PROJECT DIRECTOR DATE
PROJECT MANAGER DATE	

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MORPETH GARDENS PTY LTD
PROPOSED CLUBHOUSE
39 METFORD RD
TENAMBIT
SITE PLAN

DRAWING STATUS: PRELIMINARY NOT TO BE USED FOR CONSTRUCTION PURPOSES	
DRAWING NUMBER: 18011-CI-110	REV: 1

PIT / NODE DETAILS

PIT / NODE DETAILS		Version 15																		
Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff.	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond (m)	Major Safe Pond Depth (m)	
Pit 10-1	OnGrade	SIP	600 mm Sqre	SIP	1.5	10.709		0	0.2	104.803	-180.517	No	24952725	1 x Ku	No	Existing				
Pit 10-2	OnGrade	SIP	600 mm Sqre	SIP	1.5	10.523		0	0.2	56.096	-224.402	No	24953725	1 x Ku	No	Existing				
Pit 10-3	OnGrade	SIP	600 mm Sqre	SIP	1.5	7.77		0	0.2	71.046	-314.101	No	24954725	1 x Ku	No	Existing				
Pit 10-4	OnGrade	SIP	900 mm Sqre	SIP	1.5	7.401		0	0.2	203.665	-308.796	No	24955725	1 x Ku	No	Existing				
Pit 5.3	Sag	SIP	1200 mm s	10	1.5	7.052	0.15	0	0.5	347.859	-305.903	No	24956725	1 x Ku	No	Existing	No	0.14	0.15	
Pit 9-1	OnGrade	SIP	600 mm Sqre	SIP	1.5	10.592		0	0.2	179.552	-101.427	No	24957725	1 x Ku	No	Existing				
Pit 9-2	OnGrade	SIP	600 mm Sqre	SIP	1.5	8.561		0	0.2	194.653	-208.996	No	24958725	1 x Ku	No	Existing				
Pit 8-1	OnGrade	SIP	600 mm Sqre	SIP	1.5	9.434		0	0.2	336.767	-79.726	No	24959725	1 x Ku	No	Existing				
Pit 8-2	OnGrade	SIP	600 mm Sqre	SIP	1.5	8.033		0	0.2	343.264	-199.273	No	24960725	1 x Ku	No	Existing				
Pit 5.9	OnGrade	SIP	600 mm Sqre	SIP	1.5	17.551		0	0.2	846.991	34.086	No	24961725	1 x Ku	No	Existing				
Pit 5.8	OnGrade	SIP	900 x 600 mm	SIP	1.5	16.024		0	0.2	822.987	-48.44	No	24962725	1 x Ku	No	Existing				
Pit 5.7	OnGrade	SIP	900 x 600 mm	SIP	1.5	14.089		0	0.2	786.227	-139.525	No	24963725	1 x Ku	No	Existing				
Pit 5.6	OnGrade	SIP	900 x 600 mm	SIP	1.5	11.959		0	0.2	732.215	-258.16	No	24964725	1 x Ku	No	Existing				
Pit 5.5A	OnGrade	SIP	900 mm Sqre	SIP	1.5	11.287		0	0.2	705.764	-278.44	No	24965725	1 x Ku	No	Existing				
Pit 5.5	OnGrade	SIP	900 mm Sqre	SIP	1.5	9.741		0	0.2	621.296	-315.066	No	24966725	1 x Ku	No	Existing				
Pit 5.4	OnGrade	SIP	900 mm Sqre	SIP	1.5	7.633		0	0.2	485.301	-326.64	No	24967725	1 x Ku	No	Existing				
Pit 9.1	OnGrade	SIP	600 mm Sqre	SIP	1.5	12.067		0	0.2	634.799	-190.644	No	24968725	1 x Ku	No	Existing				
Cat Node								0		197.153	54.06				No					
Pit25991	Sag	SIP	1200 mm s	6	1.5	9.5	0.3	0	0.5	405.764	-11.773	No	24969725	1 x Ku	No	Existing		0.2	0.25	
HW Outlet	Node					3.5		0		410.203	-436.563		115123		No					
N31428	Node					10.5		0		408.079	37.416		8288398		No					
N Dum	Node					3.4		0		415.198	-468.885		11912877		No					
N Clubhou	Node					15.9		0		472.315	116.699		23776896		No					
Pit71286	Sag	SIP	600 mm Sq	10	1.5	17	0.3	0	0	709.962	175.539	No	29273964	1 x Ku	No	New		0.05	0.3	
P Club Roo	Sag	SIP	600 mm Sq	20	1.5	16.6	0.2	0	0	703.218	116.699	No	24975725	1 x Ku	No	New		0.05	0.2	
Pit 8.1	OnGrade	SIP	600 mm Sqre	SIP	1.5	16.527		0	0.2	697.492	42.284	No	24976725	1 x Ku	No	Existing				
Pit 7.1	OnGrade	SIP	900 x 600 mm	SIP	1.5	14.815		0	0.2	699.421	-91.3	No	24977725	1 x Ku	No	Existing				
N90158	Node					7		0		607.104	-375.811		30256461		No					
Pit74671	Sag	SIP	600 mm Sq	10	1.5	15.9	0.31	0	0	619.158	176.77	No	30786277	1 x Ku	No	New		0.05	0.3	
Pit Club Ca	Sag	SIP	1200 mm s	20	1.5	15.9	0.1	0	0	611.204	118.435	No	24970725	1 x Ku	No	New		0.05	0.2	
Pit 11.3	OnGrade	SIP	600 mm Sqre	SIP	1.5	15.687		0	0.2	600.077	41.802	No	24971725	1 x Ku	No	Existing				
Pit 11.2	OnGrade	SIP	600 mm Sqre	SIP	1.5	13.759		0	0.2	602.006	-44.039	No	24972725	1 x Ku	No	Existing				
Pit 11.1A	OnGrade	SIP	600 mm Sqre	SIP	1.5	11.961		0	0.2	554.491	-84.111	No	24973725	1 x Ku	No	Existing				
Pit 11.1	OnGrade	SIP	900 mm Sqre	SIP	1.5	10.91		0	0.2	474.691	-136.632	No	24974725	1 x Ku	No	Existing				
N OSD Out	Node					6.35		0		308.7	-403.245		11912758		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id
Basin		4	1	None						347.153	-371.773	No			495
	4.699	1													
	4.7	350													
	4.99	400													
	5	680													
	6	1000													
	6.7	1600													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%)	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
------	-------------	-----------------	--------------	--------------	-------------	------------------	------------------	-----------------	------------------	------------------	-----------------	----------------	---------------	--------------	-------------	-------------	------------	--------------------	-------------------	----------------	-------------------	---------------------

Cat 10-1	Pit 10-1	0.09	70	30	0	5	6	0											0	1
Cat 10-2	Pit 10-2	0.16	70	30	0	5	6	0											0	1
Cat 10-3	Pit 10-3	0.26	70	30	0	5	6	0											0	1
Cat 10-4	Pit 10-4	0.17	70	30	0	5	6	0											0	1
Cat 5.3	Pit 5.3	0.18	70	30	0	5	6	0											0	1
Cat Basin	Basin	0.25	70	30	0	5	6	0											0	1
Cat 9-1	Pit 9-1	0.23	70	30	0	5	6	0											0	1
Cat 9-2	Pit 9-2	0.16	70	30	0	5	6	0											0	1
Cat 8-1	Pit 8-1	0.1	70	30	0	5	6	0											0	1
Cat 8-2	Pit 8-2	0.17	70	30	0	5	6	0											0	1
Cat 4-1	Pit 5.9	0.22	50	50	0	5	6	0											0	1
Cat 4-2	Pit 5.8	0.2	70	30	0	5	6	0											0	1
Cat 5-3	Pit 5.7	0.25	70	30	0	5	6	0											0	1
Cat 1-6	Pit 5.6	0.37	70	30	0	5	6	0											0	1
Cat 1-7	Pit 5.5	0.16	70	30	0	5	6	0											0	1
Cat 5.4	Pit 5.4	0.46	70	30	0	5	6	0											0	1
Cat 7-1	Pit 9.1	0.06	70	30	0	5	6	0											0	1
Undevelop Cat		7.28	0	95	5	0	0	0	0	300	300	0	4.7	4.7	0	0.1	0.02		0	1
Cat U/S	N31428	3.5	0	100	0	7	15	0											0	1
C Clubhous	N Clubhou:	0.4224	20	80	0	5	5	2											0	1
C Club Roo	Pit71286	0.12	100	0	0	5	5	2											0	1
C Club Pavi	P Club Roo	0.08	50	50	0	5	5	2											0	1
Cat 5-1	Pit 8.1	0.09	70	30	0	5	6	0											0	1
Cat 5-2	Pit 7.1	0.26	70	30	0	5	6	0											0	1
C Eastern	N90158	2.777	40	60	0	5	5	2											0	1
C Club LS	Pit74671	0.1134	0	100	0	5	5	2											0	1
C Club Carç	Pit Club Ca	0.109	100	0	0	5	5	2											0	1
Cat 6-1	Pit 11.3	0.1	70	30	0	5	6	0											0	1
Cat 6-2	Pit 11.2	0.15	70	30	0	5	6	0											0	1
Cat 6-3	Pit 11.1	0.27	70	30	0	5	6	0											0	1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	RI (m)	Chg (m)	RL (m)	etc (m)
Pipe 10-1	1 Pit 10-1	Pit 10-2	35	10.003	9.817	0.53	Concrete, t	225	225	0.013	New	1	Pit 10-1		0				
Pipe 10-2	1 Pit 10-2	Pit 10-3	55	9.529	6.989	4.62	Concrete, t	300	300	0.013	New	1	Pit 10-2		0				
Pipe 10-3	1 Pit 10-3	Pit 10-4	41	6.75	6.381	0.9	Concrete, t	525	525	0.013	New	1	Pit 10-3		0				
Pipe 10-4	1 Pit 10-4	Pit 5.3	44	6.22	5.871	0.79	Concrete, t	675	675	0.013	New	1	Pit 10-4		0				
Pipe 5.3	Ba Pit 5.3	Basin	17	5.201	5	1.18	Concrete, t	525	525	0.013	NewFixed	1	Pit 5.3		0				
Pipe 9-1	Pit 9-1	Pit 9-2	45	9.811	7.78	4.51	Concrete, t	300	300	0.013	New	1	Pit 9-1		0				
Pipe 9-2	1C Pit 9-2	Pit 10-4	40	7.701	6.541	2.9	Concrete, t	375	375	0.013	New	1	Pit 9-2		0				
Pipe 8-1	8- Pit 8-1	Pit 8-2	42	8.728	7.327	3.34	Concrete, t	225	225	0.013	New	1	Pit 8-1		0				
Pipe 8-2	1- Pit 8-2	Pit 5.3	40	7.173	6.192	2.45	Concrete, t	375	375	0.013	New	1	Pit 8-2		0				
Pipe 5.9	- 5 Pit 5.9	Pit 5.8	50	16.77	15.243	3.05	Concrete, t	300	300	0.013	New	1	Pit 5.9		0				
Pipe 5.8	- 5 Pit 5.8	Pit 5.7	45	15.164	13.229	4.3	Concrete, t	375	375	0.013	New	1	Pit 5.8		0				
Pipe 5.7	- 5, Pit 5.7	Pit 5.6	49	13.066	10.939	4.34	Concrete, t	525	525	0.013	New	1	Pit 5.7		0				
Pipe 5.6	5. Pit 5.6	Pit 5.5A	12	10.35	10.152	1.65	Concrete, t	450	450	0.013	Existing	2	Pit 5.6		0				
Pipe 5.5A	- Pit 5.5A	Pit 5.5	19	9.913	8.721	6.27	Concrete, t	525	525	0.013	New	1	Pit 5.5A		0				
Pipe 5.5	- 5 Pit 5.5	Pit 5.4	26	8.417	6.538	7.23	Concrete, t	600	600	0.013	New	1	Pit 5.5		0				
Pipe 5.4	- 5 Pit 5.4	Pit 5.3	45	6.508	5.957	1.22	Concrete, t	600	600	0.013	New	2	Pit 5.4		0				
Pipe 7-1	1- Pit 9.1	Pit 5.6	48	11.361	11.121	0.5	Concrete, t	225	225	0.013	New	1	Pit 9.1		0				
Pipe U/S	O Pit25991	HW Outlet	130	7.5	3.8	2.85	Concrete, t	600	600	0.013	NewFixed	1	Pit25991		0				
Pipe76669	Pit71286	P Club Roo	15	16.171	16.021	1	uPVC, unde	150	154	0.01	New	1	Pit71286		0				
Pipe65181	P Club Roo	Pit 8.1	20	16.021	15.821	1	uPVC, unde	150	154	0.01	New	1	P Club Roo		0				

Pipe 5-1 5-	Pit 8.1	Pit 7.1	60	15.821	14.109	2.85	Concrete, t	150	150	0.013	New	1	Pit 8.1	0
Pipe 5-2 5-	Pit 7.1	Pit 5.7	38	13.955	13.229	1.91	Concrete, t	375	375	0.013	New	1	Pit 7.1	0
Pipe78949	N90158	Basin	50	5.5	5	1	Concrete, t	450	450	0.013	New	2	N90158	0
Pipe76668	Pit74671	Pit Club Ca	15	15.331	15.181	1	uPVC, unde	150	154	0.01	New	1	Pit74671	0
Pipe65180	Pit Club Ca	Pit 11.3	20	15.181	14.981	1	uPVC, unde	150	154	0.01	New	1	Pit Club Ca	0
Pipe 6-1 6-	Pit 11.3	Pit 11.2	42	14.981	13.053	4.59	Concrete, t	150	150	0.013	New	1	Pit 11.3	0
Pipe32828	Pit 11.2	Pit 11.1A	30	12.978	11.18	5.99	Concrete, t	300	300	0.013	New	1	Pit 11.2	0
Pipe 6-2 6-	Pit 11.1A	Pit 11.1	23	11.1	9.208	8.23	Concrete, t	300	300	0.013	Existing	1	Pit 11.1A	0
Pipe 6-3 1-	Pit 11.1	Pit 5.4	71	9.178	6.773	3.39	Concrete, t	375	375	0.013	New	1	Pit 11.1	0
Pipe40141	N OSD Out	HW Outlet	15	3.9	3.5	2.67	Concrete, t	900	900	0.013	New	1	N OSD Out	0

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg	Bottom	Height of S Chg	Bottom	Height of S Chg	Bottom	Height of S etc
	(m)	Elev (m)	(m) (m)	Elev (m)	(m) (m)	Elev (m)	(m) etc

CHANNEL DETAILS

Name	From	To	Type	Length	U/S IL	D/S IL	Slope	Base Width	L.B. Slope	R.B. Slope	Manning	Depth	Roofed
				(m)	(m)	(m)	(%)	(m)	(1:?)	(1:?)	n	(m)	

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time	Spill Level	Crest Length	Weir Coeff. C	Cross Section	Safe Depth	SafeDepth	Safe	Bed Slope	D/S Area	id	U/S IL	D/S IL	Length (m)
			(min)	(m)	(m)			Major Stor	Minor Stor	DxV	(%)	Contributing %				
								(m)	(m)	(sq.m/sec)						
OF 10-1 10	Pit 10-1	Pit 10-2		0.9			6m wide rc	0.075	0.05	0.6	0.53	0	1494	10.709	10.523	35
OF 10-2 10	Pit 10-2	Pit 10-3		0.4			6m wide rc	0.075	0.05	0.6	5.01	0	1495	10.523	7.77	55
OF 10-3 10	Pit 10-3	Pit 10-4		0.8			6m wide rc	0.075	0.05	0.6	0.9	0	1496	7.77	7.401	41
OF 10-4 1-	Pit 10-4	Pit 5.3		0.9			6m wide rc	0.075	0.05	0.6	0.79	0	1497	7.401	7.052	44
OF 1-9 Basi	Pit 5.3	Basin		0.1			6m wide rc	0.075	0.05	0.6	2.93	0	1499	7.052	6.7	12
OF14828	Basin	HW Outlet		0.1	6.35	9	2 Spillway	0.5	0.3	0.6	5	0	3134821	6.35	3.5	30
OF 9-1 9-2	Pit 9-1	Pit 9-2		0.4			6m wide rc	0.075	0.05	0.6	4.51	0	1492	10.592	8.561	45
OF 9-2 10-	Pit 9-2	Pit 10-4		0.4			6m wide rc	0.075	0.05	0.6	2.9	0	1493	8.561	7.401	40
OF 8-1 8-2	Pit 8-1	Pit 8-2		0.4			6m wide rc	0.075	0.05	0.6	3.34	0	1490	9.434	8.033	42
OF 8-2 1-9	Pit 8-2	Pit 5.3		0.5			6m wide rc	0.075	0.05	0.6	2.45	0	1491	8.033	7.052	40
OF 5.9 - 5.8	Pit 5.9	Pit 5.8		0.5			6m wide rc	0.075	0.05	0.6	3.02	0	1477	17.551	16.024	50
OF 5.8 - 5.7	Pit 5.8	Pit 5.7		0.4			6m wide rc	0.075	0.05	0.6	4.85	0	1478	16.024	14.089	45
OF 5.7 5.6	Pit 5.7	Pit 5.6		0.4			6m wide rc	0.075	0.05	0.6	5.62	0	1487	14.089	11.959	49
OF 5.6 - 5.5	Pit 5.6	Pit 5.5		0.3			6m wide rc	0.075	0.05	0.6	5.49	0	1488	11.959	9.741	33
OF 5.5 - 5.4	Pit 5.5	Pit 5.4		0.2			6m wide rc	0.075	0.05	0.6	6.6	0	1489	9.741	7.633	26
OF 5.4 - 5.3	Pit 5.4	Pit 5.3		0.7			6m wide rc	0.075	0.05	0.6	1.3	0	1498	7.633	7.052	45
OF 7-1 1-6	Pit 9.1	Pit 5.6		1.8			6m wide rc	0.075	0.05	0.6	0.23	0	1486	12.067	11.959	48
OF U/S Out	Pit25991	Pit 8-1		0.1			6m wide rc	0.075	0.05	0.6	4.32	0	2347	9.8	9.434	5
OF38566	HW Outlet	N Dum		0.1			6m wide rc	0.075	0.05	0.6	2	0	11912886	3.5	3.4	5
OF28109	N31428	Pit25991		0.2			6m wide rc	0.075	0.05	0.6	5	0	8288399	10.5	9.5	20
OF79156	Pit71286	P Club Roo		0.2			Pathway 4r	0.3	0.3	0.6	0.33	0	29274165	17.3	16.85	15
OF69151	P Club Roo	Pit 8.1		0.5			6m wide rc	0.075	0.05	0.6	0.88	0	24951725	16.8	16.527	24.2
OF 5-1 5-2	Pit 8.1	Pit 7.1		0.5			6m wide rc	0.075	0.05	0.6	4.25	0	1475	16.527	14.815	60
OF 5-2 6-2	Pit 7.1	Pit 5.7		0.8			6m wide rc	0.075	0.05	0.6	1.07	0	1476	14.815	14.089	44
OF82621	Pit74671	Pit Club Ca		0.4			Pathway 4r	0.3	0.3	0.6	0.07	0	30635311	16.21	16.2	15
OF69148	Pit Club Ca	Pit 11.3		0.5			6m wide rc	0.075	0.05	0.6	0.88	0	24951704	16	15.687	24.2
OF 6-1 6-2	Pit 11.3	Pit 11.2		0.3			6m wide rc	0.075	0.05	0.6	4.95	0	1483	15.687	13.759	42
OF 6-2 6-3	Pit 11.2	Pit 11.1		0.4			6m wide rc	0.075	0.05	0.6	6.88	0	1484	13.759	10.91	53
OF 6-3 1-8	Pit 11.1	Pit 5.4		0.7			6m wide rc	0.075	0.05	0.6	3.29	0	1485	10.91	7.633	71

PIPE COVER DETAILS

Name	Type	Dia (mm)	Safe Cover	Cover (m)
Pipe 10-1 1	Concrete, l	225	0.45	0.45
Pipe 10-2 1	Concrete, l	300	0.45	0.45
Pipe 10-3 1	Concrete, l	525	0.45	0.45
Pipe 10-4 1	Concrete, l	675	0.45	0.45
Pipe 5.3 Ba	Concrete, l	525	0.45	-1.57 Unsafe
Pipe 9-1	Concrete, l	300	0.45	0.45
Pipe 9-2 1C	Concrete, l	375	0.45	0.45
Pipe 8-1 8-	Concrete, l	225	0.45	0.45
Pipe 8-2 1-	Concrete, l	375	0.45	0.45
Pipe 5.9 - 5	Concrete, l	300	0.45	0.45
Pipe 5.8 - 5	Concrete, l	375	0.45	0.45
Pipe 5.7-5.1	Concrete, l	525	0.45	0.45
Pipe 5.6 5.!	Concrete, l	450	0.45	0.64
Pipe 5.5A -	Concrete, l	525	0.45	0.45
Pipe 5.5 - 5	Concrete, l	600	0.45	0.45
Pipe 5.4 - 5	Concrete, l	600	0.45	0.45
Pipe 7-1 1-	Concrete, l	225	0.45	0.45
Pipe U/S O	Concrete, l	600	0.45	-0.95 Unsafe
Pipe76669	uPVC, unde	154	0.3	0.42
Pipe65181	uPVC, unde	154	0.3	0.42
Pipe 5-1 5-	Concrete, l	150	0.45	0.53
Pipe 5-2 5-	Concrete, l	375	0.45	0.45
Pipe78949	Concrete, l	450	0.45	-1.49 Unsafe
Pipe76668	uPVC, unde	154	0.3	0.41
Pipe65180	uPVC, unde	154	0.3	0.55
Pipe 6-1 6-	Concrete, l	150	0.45	0.53
Pipe32828	Concrete, l	300	0.45	0.45
Pipe 6-2 6-	Concrete, l	300	0.45	0.53
Pipe 6-3 1-	Concrete, l	375	0.45	0.45
Pipe40141	Concrete, l	900	0.45	-0.97 Unsafe

This model has no pipes with non-return valves

Pipe40141	Concrete, l	900	0.45	-0.97 Unsafe
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This model has no pipes with non-return valves

DRAINS results prepared from Version 2023.11.8718.30178

PIT / NODE DETAILS		Version 8					Overflow	Constraint
Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)			
Pit 10-1	10.19		0.031			0.52	0.001 Inlet Capacity	
Pit 10-2	9.79		0.056			0.73	0.001 Inlet Capacity	
Pit 10-3	7.78		0.091			0	0.008 Outlet System	
Pit 10-4	7.56		0.067			0	0.138 Outlet System	
Pit 5.3	7.49	7.38	0.4		8.6	0	0.447 Outlet System	
Pit 9-1	10.05		0.08			0.55	0.002 Inlet Capacity	
Pit 9-2	8.01		0.057			0.55	0.001 Inlet Capacity	
Pit 8-1	8.91		0.035			0.53	0.001 Inlet Capacity	
Pit 8-2	7.7		0.06			0.33	0.001 Inlet Capacity	
Pit 5.9	17		0.074			0.55	0.002 Inlet Capacity	
Pit 5.8	15.44		0.071			0.59	0.014 Inlet Capacity	
Pit 5.7	13.5		0.129			0.59	0.036 Inlet Capacity	
Pit 5.6	10.73		0.164			1.23	0.051 Inlet Capacity	
Pit 5.5A	10.44		0			0.85	None	
Pit 5.5	8.96		0.106			0.79	0.027 Inlet Capacity	
Pit 5.4	7.76		0.208			0	0.2 Outlet System	
Pit 9.1	11.5		0.021			0.57	0 None	
Pit25991	8.74	9.82	0.745	5.1		0.76	0.009 Inlet Capacity	
HW Outlet	6.37		0.284					
N31428	12.35		0.745					
Pit71286	17.23	17.27	0.047	6.8		0	0 Outlet System	
P Club Roo	16.84	16.83	0.028	17.1		0	0.012 Outlet System	
Pit 8.1	16.55		0.031			0	0.022 Outlet System	
Pit 7.1	14.23		0.112			0.59	0.028 Inlet Capacity	
N90158	7.28		0.961					
Pit74671	16.19	16.22	0.037	8.6		0	0 Outlet System	
Pit Club Ca	16.01	16.01	0.042	17.1		0	0.002 Outlet System	
Pit 11.3	15.71		0.035			0	0.02 Outlet System	
Pit 11.2	13.28		0.072			0.48	0.002 Inlet Capacity	
Pit 11.1A	11.4		0			0.57	None	
Pit 11.1	9.55		0.095			1.36	0.023 Inlet Capacity	
N OSD Out	6.39		0					

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Cat 10-1	0.031	0.025	0.008	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 10-2	0.056	0.044	0.015	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 10-3	0.09	0.071	0.024	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 10-4	0.059	0.046	0.016	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 5.3	0.062	0.049	0.017	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat Basin	0.087	0.068	0.023	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 9-1	0.08	0.063	0.021	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 9-2	0.056	0.044	0.015	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 8-1	0.035	0.027	0.009	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 8-2	0.059	0.046	0.016	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 4-1	0.074	0.04	0.034	5	6	6	0 AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Cat 4-2	0.069	0.055	0.019	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 5-3	0.087	0.068	0.023	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 1-6	0.128	0.101	0.035	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 1-7	0.056	0.044	0.015	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 5.4	0.16	0.126	0.043	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 7-1	0.021	0.016	0.006	5	6	6	0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Undevelop	1.101	0	1.101	0	29.18	11.11	AR&R 10 year, 1 hour storm, average 44.9 mm/h, Zone 1
Cat U/S	0.745	0	0.745	7	15	0	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
C Clubhous	0.142	0.033	0.111	5	5	2	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
C Club Roo	0.047	0.047	0	5	5	2	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
C Club Pavi	0.028	0.016	0.013	5	5	2	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 5-1	0.031	0.025	0.008	5	6	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 5-2	0.09	0.071	0.024	5	6	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
C Eastern	0.961	0.433	0.546	5	5	2	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
C Club LS	0.037	0	0.037	5	5	2	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
C Club Carç	0.042	0.042	0	5	5	2	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 6-1	0.035	0.027	0.009	5	6	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Cat 6-2	0.052	0.041	0.014	5	6	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1

Cat 6-3 0.094 0.074 0.025 5 6 0 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1

Outflow Volumes for Total Catchment (4.84 impervious + 13.9 pervious = 18.8 total ha)

Storm	Total Rainf. cu.m	Total Runoff cu.m	Impervious Runoff cu.m	Pervious Runoff cu.m	Runoff %
AR&R 10 yr	2298.32	1095.16	4503.13	84592.03	34.7%
AR&R 10 yr	3533.47	2157.75	6797.56	871360.20	51.9%
AR&R 10 yr	5103.21	3478.79	61171.74	82307.05	60.9%
AR&R 10 yr	6200.93	4329.51	61433.40	82896.10	62.9%
AR&R 10 yr	8424.05	6042.75	71963.33	94079.41	65.2%
AR&R 10 yr	11181.88	8060.73	72620.72	95440.00	65.5%

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 10-1-1	0.03	1.38	10.124	9.962	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 10-2-1	0.084	2.79	9.662	7.781	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 10-3-1	0.194	0.89	7.764	7.556	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 10-4-1	0.291	0.81	7.524	7.495	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 5.3 Ba	0.874	4.04	6.74	6.417	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 9-1	0.083	2.75	9.944	8.015	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 9-2 1C	0.137	2.65	7.879	7.556	AR&R 10 year, 5 minutes storm, average 147 mm/h, Zone 1
Pipe 8-1 8-	0.037	2.01	8.834	7.703	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 8-2 1-	0.095	0.86	7.656	7.495	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 5.9 - 5	0.075	2.32	16.91	15.435	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 5.8 - 5	0.136	3.05	15.323	13.5	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 5.7-5.	0.322	3.78	13.284	11.157	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 5.6 5.!	0.457	2.47	10.604	10.438	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 5.5A -	0.473	4.82	10.156	8.97	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 5.5 - 5	0.534	5.16	8.653	7.764	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 5.4 - 5	0.772	1.37	7.644	7.495	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 7-1 1-	0.02	1.3	11.455	11.239	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe U/S O	0.737	2.61	8.224	6.372	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
Pipe76669	0.028	1.48	17.066	16.837	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe65181	0.027	1.45	16.74	16.551	AR&R 10 year, 10 minutes storm, average 113 mm/h, Zone 1
Pipe 5-1 5-	0.029	1.65	16.351	14.252	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 5-2 5-	0.115	2.17	14.137	13.5	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe78949	0.962	3.02	7.285	6.417	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe76668	0.019	1	16.113	16.007	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
Pipe65180	0.032	1.72	15.898	15.709	AR&R 10 year, 10 minutes storm, average 113 mm/h, Zone 1
Pipe 6-1 6-	0.035	1.98	15.417	13.278	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
Pipe32828	0.106	3.26	13.119	11.395	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
Pipe 6-2 6-	0.104	3.64	11.228	9.554	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe 6-3 1-	0.176	3.02	9.374	7.764	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
Pipe40141	1.06	1.67	6.387	6.372	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q	U/S	Max Q	D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF 10-1 10	0.001	0.001	0.052	0	0	0	0	0	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
OF 10-2 10	0.001	0.001	0.159	0.007	0	0.59	0	0	0	AR&R 10 year, 5 minutes storm, average 147 mm/h, Zone 1
OF 10-3 10	0.008	0.008	0.068	0.023	0.01	1.8	0.4	0	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
OF 10-4 1-	0.138	0.138	0.063	0.067	0.05	5.36	0.77	0	0	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF 1-9 Bas	0.447	0.447	0.122	0.075	0.15	6	1.99	0	0	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OSD CP W	0.642	0.642								AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OSD Ori M	0.362	0.362								AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OSD Low C	0.481	0.481								AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF14828	0.284	0.284	5.759	0.024	0.03	9.52	1.25	0	0	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF 9-1 9-2	0.002	0.002	0.151	0.009	0	0.73	0.5	0	0	AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF 9-2 10-	0.001	0.001	0.121	0	0	0	0	0	0	AR&R 10 year, 1 hour storm, average 44.9 mm/h, Zone 1
OF 8-1 8-2	0.001	0.001	0.13	0	0	0	0	0	0	AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1
OF 8-2 1-9	0.001	0.001	0.111	0	0	0	0	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5.9 - 5!	0.002	0.002	0.124	0.01	0	0.79	0.45	0	0	AR&R 10 year, 1 hour storm, average 44.9 mm/h, Zone 1
OF 5.8 - 5.!	0.014	0.014	0.157	0.021	0.02	1.66	0.84	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5.7 5.6	0.036	0.036	0.169	0.03	0.03	2.36	1.02	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5.6 - 5.!	0.051	0.051	0.167	0.031	0.04	2.46	1.34	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5.5 - 5.!	0.027	0.027	0.183	0.024	0.03	1.9	1.19	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5.4 - 5.!	0.2	0.2	0.081	0.071	0.07	5.64	1.01	0	0	AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1

OF 7-1 1-6	0	0	0.034	0	0	0	0
OF U/S Out	0.009	0.009	0.148	0.016	0.01	1.29	0.9 AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF38566	1.594	1.594	0.101	0.075	0.53	6	7.1 AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF28109	0.745	0.745	0.159	0.075	0.25	6	3.32 AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF79156	0	0	1.425	0	0	0	0
OF69151	0.012	0.012	0.067	0.025	0.01	1.99	0.49 AR&R 10 year, 1 hour storm, average 44.9 mm/h, Zone 1
OF 5-1 5-2	0.022	0.022	0.147	0.027	0.02	2.13	0.79 AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 5-2 6-2	0.028	0.028	0.074	0.032	0.02	2.55	0.69 AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF82621	0	0	0.656	0	0	0	0
OF69148	0.002	0.002	0.067	0.013	0	1.01	0.32 AR&R 10 year, 1 hour storm, average 44.9 mm/h, Zone 1
OF 6-1 6-2	0.02	0.02	0.158	0.024	0.02	1.9	0.9 AR&R 10 year, 30 minutes storm, average 66.1 mm/h, Zone 1
OF 6-2 6-3	0.002	0.002	0.187	0.009	0	0.73	0.52 AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1
OF 6-3 1-8	0.023	0.022	0.129	0.024	0.02	1.96	0.96 AR&R 10 year, 20 minutes storm, average 81.6 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q	Max Q	
				Total	High Level
Basin	6.42	1435.8	1.768	0	1.768

CONTINUITY CHECK for AR&R 10 year, 2 hours storm, average 29.8 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
Pit 10-1	47.14	47.08	0	0.1
Pit 10-2	130.89	129.49	0	1.1
Pit 10-3	265.74	265.38	0	0.1
Pit 10-4	557.15	557.14	0	0
Pit 5.3	2355.45	2365.15	0	-0.4
Basin	3775.61	3601.1	174.55	0
Pit 9-1	120.47	120.27	0	0.2
Pit 9-2	204.08	202.73	0	0.7
Pit 8-1	55.79	55.62	0	0.3
Pit 8-2	144.67	143.69	0	0.7
Pit 5.9	106.11	105.64	0	0.4
Pit 5.8	210.51	210.39	0	0.1
Pit 5.7	635.69	635.68	0	0
Pit 5.6	860.85	861.45	0	-0.1
Pit 5.5A	820.65	819.77	0	0.1
Pit 5.5	944.38	943.88	0	0.1
Pit 5.4	1565.2	1560.33	0	0.3
Pit 9.1	31.43	31.37	0	0.2
Cat	2791.48	2791.48	0	0
Pit25991	1319.46	1300.84	0	1.4
HW Outlet	4899.95	4942.66	0	-0.9
N31428	1319.11	1319.46	0	0
N Dum	4942.66	4942.66	0	0
N Clubhou	177.54	177.54	0	0
Pit71286	70.32	70.68	0	-0.5
P Club Roo	109.27	111.78	0	-2.3
Pit 8.1	158.92	158.07	0	0.5
Pit 7.1	294.95	294.35	0	0.2
N90158	1282.22	1279.51	0	0.2
Pit74671	42.97	43.85	0	-2.1
Pit Club Ca	107.72	110.8	0	-2.9
Pit 11.3	163.18	163.09	0	0.1
Pit 11.2	241.66	241.4	0	0.1
Pit 11.1A	240.77	239.94	0	0.3
Pit 11.1	382.06	379.52	0	0.7
N OSD Out	3512.35	3513.76	0	0

Run Log for 18011 v17 clubhouse and stage 2 observed osd

{\colorbl\red0\green0\blue0;\red192\green0\blue0}Run Log for 18011 v17 clubhouse and stage 2 observed osd.drn - DRAINS run at 21:02:23 on 18/4/2024 using Watercom Drains v2023.11.8718.30178

Upwelling occurred at: P Club Roof etc, Pit 5.4, Pit 5.3, Pit 10-4

Freeboard was less than 0.15m at Pit74671, Pit71286, Pit Club Carpark, Pit 8.1, Pit 11.3, Pit 10-3

Peak water levels spilled in these Overflow Routes: OF38566, OF28109, OF14828, OF 1-9 Basin, OF 5.4 - 5.3, OF 10-4 1-9, OF 10-3 10-4, OF 9-2 10-4, OF 8-2 1-9, OF 5.5 - 5.4, OF 6-3 1-8 spilled. You cannot rely on these results. You really MUST specify data for higher levels for these cross sections.

Unless the cross section is not capable of conveying the modelled flow, a downstream node tailwater condition might exceed the incoming overflow route specified cross-sectional depth, such as an overflow route leading into the invert of a detention basin. You can view the water surface profile along an overflow route by right click > Long Section.

Tip: Keep in mind that an overflow route adds storage to any downstream node if the water is backing up into the overflow route (e.g. from a detention basin node). You may need to shorten & lift the downstream invert of the overflow route to a level above the calculated downstream water level to avoid double counting storage volumes.\cf1

These sag pits have unsafe water levels for minor storms: Pit74671, Pit71286, P Club Roof etc, Pit Club Carpark, Pit25991, Pit 5.3

Tip: Keep in mind that an overflow route adds storage to any downstream node if the water is backing up into the overflow route (e.g. from a detention basin node). You may need to shorten & lift the downstream invert of the overflow route to a level above the calculated downstream water level to avoid double counting storage volumes.\cf1

These sag pits have unsafe water levels for minor storms: Pit74671, Pit71286, P Club Roof etc, Pit Club Carpark

DRAINS results prepared from Version 2023.11.8718.30178

PIT / NODE DETAILS		Version 8				Overflow (cu.m/s)	Constraint
Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)		
Pit 10-1	10.55		0.047		0.16	0.001 Inlet Capacity	
Pit 10-2	9.87		0.084		0.66	0.002 Inlet Capacity	
Pit 10-3	8.05		0.138		0	0.106 Outlet System	
Pit 10-4	7.96		0.207		0	0.21 Outlet System	
Pit 5.3	7.89	7.7	0.738	8.6	0	0.574 Outlet System	
Pit 9-1	10.13		0.12		0.46	0.003 Inlet Capacity	
Pit 9-2	8.57		0.087		0	0.014 Outlet System	
Pit 8-1	9.89		0.348		0	0.197 Outlet System	
Pit 8-2	8.11		0.269		0	0.185 Outlet System	
Pit 5.9	17.06		0.111		0.5	0.003 Inlet Capacity	
Pit 5.8	15.53		0.107		0.5	0.027 Inlet Capacity	
Pit 5.7	13.59		0.209		0.5	0.071 Inlet Capacity	
Pit 5.6	11.17		0.262		0.79	0.097 Inlet Capacity	
Pit 5.5A	10.68		0		0.61	None	
Pit 5.5	9.37		0.18		0.37	0.059 Inlet Capacity	
Pit 5.4	8.39		0.339		0	0.298 Outlet System	
Pit 9.1	11.55		0.031		0.52	0 Inlet Capacity	
Pit25991	9.65	10	1.176	5.1	0	0.321 Outlet System	
HW Outlet	7.03		1.2				
N31428	16.28		1.186				
Pit71286	17.3	17.34	0.071	8.6	0	0.024 Outlet System	
P Club Roo	16.87	16.85	0.059	17.1	0	0.049 Outlet System	
Pit 8.1	16.69		0.081		0	0.056 Outlet System	
Pit 7.1	14.3		0.167		0.51	0.052 Inlet Capacity	
N90158	9.19		1.453				
Pit74671	16.25	16.27	0.057	8.6	0	0.02 Outlet System	
Pit Club Ca	16.04	16.04	0.066	17.1	0	0.033 Outlet System	
Pit 11.3	15.85		0.061		0	0.039 Outlet System	
Pit 11.2	13.34		0.116		0.42	0.003 Inlet Capacity	
Pit 11.1A	11.46		0		0.5	None	
Pit 11.1	10.16		0.144		0.75	0.042 Inlet Capacity	
N OSD Out	6.95		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Cat 10-1	0.047	0.035	0.013	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 10-2	0.084	0.062	0.023	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 10-3	0.136	0.1	0.038	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 10-4	0.089	0.066	0.025	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 5.3	0.094	0.069	0.026	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat Basin	0.131	0.096	0.036	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 9-1	0.12	0.089	0.033	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 9-2	0.084	0.062	0.023	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 8-1	0.052	0.039	0.014	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 8-2	0.089	0.066	0.025	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 4-1	0.111	0.061	0.053	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 4-2	0.105	0.077	0.029	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 5-3	0.131	0.096	0.036	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 1-6	0.194	0.143	0.054	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 1-7	0.084	0.062	0.023	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 5.4	0.241	0.177	0.067	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 7-1	0.031	0.023	0.009	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Undevelop	2.046	0	2.046	0	24.64	9.38	AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
Cat U/S	1.186	0	1.186	7	15	0	AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
C Clubhous	0.217	0.047	0.171	5	5	2	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
C Club Roo	0.071	0.071	0	5	5	2	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
C Club Pavi	0.042	0.022	0.02	5	5	2	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 5-1	0.047	0.035	0.013	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 5-2	0.136	0.1	0.038	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
C Eastern	1.453	0.612	0.841	5	5	2	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
C Club LS	0.057	0	0.057	5	5	2	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
C Club Carç	0.065	0.065	0	5	5	2	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Cat 6-1	0.052	0.039	0.014	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Cat 6-2	0.078	0.058	0.022	5	6	0	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1

Cat 6-3 0.141 0.104 0.039 5 6 0 AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1

Outflow Volumes for Total Catchment (4.84 impervious + 13.9 pervious = 18.8 total ha)

Storm	Total Rainf. cu.m	Total Runoff cu.m	Impervious Runoff cu.m	Pervious Runoff cu.m	Runoff %
AR&R 100	3533.47	2342.16	6797.56	871544.60	58.9%
AR&R 100	5409.65	4041.21	712444.79	82796.42	69.6%
AR&R 100	7754.88	6114.04	71803.82	94310.22	74.9%
AR&R 100	9474.71	7586.47	82213.77	95372.69	76.4%
AR&R 100	12851.83	10449.88	13018.79	97431.09	77.9%
AR&R 100	17073.55	13929.27	14025.10	9904.17	78.2%

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 10-1-1	0.047	1.38	10.468	9.998	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 10-2-1	0.134	3.17	9.702	8.049	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 10-3-1	0.227	1.05	8.012	7.965	AR&R 100 year, 10 minutes storm, average 173 mm/h, Zone 1
Pipe 10-4-1	0.355	0.99	7.912	7.886	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 5.3 Ba	0.917	4.24	7.195	6.958	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 9-1	0.121	3.07	9.974	8.567	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 9-2 1C	0.206	1.86	8.366	7.965	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 8-1 8-	0.08	2.01	9.606	8.105	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 8-2 1-	0.153	1.39	8.029	7.886	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.9 - 5	0.113	2.6	16.947	15.527	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.8 - 5	0.197	3.38	15.359	13.591	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.7-5.	0.477	4.23	13.337	11.211	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.6 5.!	0.662	2.08	10.842	10.681	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.5A -	0.662	5.32	10.207	9.373	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.5 - 5	0.784	2.78	9.008	8.386	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5.4 - 5	1.073	1.9	8.145	7.886	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 7-1 1-	0.03	1.31	11.486	11.265	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe U/S O	0.916	3.24	9.041	7.029	AR&R 100 year, 30 minutes storm, average 101 mm/h, Zone 1
Pipe76669	0.029	1.57	17.124	16.866	AR&R 100 year, 10 minutes storm, average 173 mm/h, Zone 1
Pipe65181	0.031	1.64	16.773	16.69	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 5-1 5-	0.029	1.63	16.488	14.301	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 5-2 5-	0.143	2.33	14.16	13.591	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe78949	1.455	4.57	9.187	6.958	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe76668	0.02	1.08	16.16	16.038	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe65180	0.032	1.72	15.934	15.853	AR&R 100 year, 5 minutes storm, average 226 mm/h, Zone 1
Pipe 6-1 6-	0.035	1.98	15.557	13.338	AR&R 100 year, 2 hours storm, average 45.5 mm/h, Zone 1
Pipe32828	0.147	3.59	13.147	11.459	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 6-2 6-	0.147	4.01	11.255	10.165	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe 6-3 1-	0.249	2.25	9.779	8.386	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
Pipe40141	1.298	2.04	6.946	7.029	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q	U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF 10-1 10	0.001	0.001	0.153		0	0	0	0	AR&R 100 year, 2 hours storm, average 45.5 mm/h, Zone 1
OF 10-2 10	0.002	0.002	0.47		0.009	0	0.74	0.51	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 10-3 10	0.106	0.106	0.199		0.059	0.04	4.75	0.75	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 10-4 1-!	0.21	0.21	0.187		0.075	0.07	6	0.93	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 1-9 Basi	0.574	0.574	0.359		0.075	0.19	6	2.55	AR&R 100 year, 2 hours storm, average 45.5 mm/h, Zone 1
OSD CP We	0.839	0.839							AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OSD Ori M	0.374	0.374							AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OSD Low C	0.49	0.49							AR&R 100 year, 30 minutes storm, average 101 mm/h, Zone 1
OF14828	1.2	1.2	5.737		0.056	0.13	9.56	2.24	AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF 9-1 9-2	0.003	0.003	0.446		0.011	0.01	0.91	0.6	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 9-2 10-	0.014	0.014	0.358		0.022	0.02	1.76	0.72	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 8-1 8-2	0.197	0.197	0.384		0.058	0.08	4.66	1.46	AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF 8-2 1-9	0.185	0.185	0.329		0.061	0.08	4.85	1.26	AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF 5.9 - 5.!	0.003	0.003	0.365		0.012	0.01	0.97	0.49	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 5.8 - 5.!	0.027	0.027	0.463		0.027	0.03	2.13	0.95	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 5.7 5.6	0.071	0.071	0.498		0.038	0.05	3.02	1.24	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 5.6 - 5.!	0.097	0.097	0.492		0.039	0.06	3.16	1.56	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 5.5 - 5.!	0.059	0.059	0.54		0.031	0.05	2.5	1.5	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 5.4 - 5.!	0.298	0.298	0.239		0.075	0.1	6	1.33	AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1

OF 7-1 1-6	0	0	0.101	0	0	0	0
OF U/S Out	0.321	0.321	0.437	0.061	0.13	4.85	2.19 AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF38566	1.761	1.761	0.297	0.075	0.59	6	7.84 AR&R 100 year, 2 hours storm, average 45.5 mm/h, Zone 1
OF28109	1.176	1.176	0.47	0.075	0.39	6	5.23 AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF79156	0.024	0.024	1.425	0.039	0.03	1.54	0.81 AR&R 100 year, 30 minutes storm, average 101 mm/h, Zone 1
OF69151	0.049	0.049	0.197	0.042	0.03	3.39	0.69 AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF 5-1 5-2	0.056	0.055	0.433	0.037	0.04	2.99	1.01 AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF 5-2 6-2	0.052	0.052	0.217	0.041	0.03	3.25	0.79 AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF82621	0.02	0.02	0.656	0.046	0.02	1.84	0.47 AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1
OF69148	0.033	0.033	0.197	0.035	0.02	2.83	0.66 AR&R 100 year, 2 hours storm, average 45.5 mm/h, Zone 1
OF 6-1 6-2	0.039	0.039	0.467	0.03	0.03	2.41	1.07 AR&R 100 year, 30 minutes storm, average 101 mm/h, Zone 1
OF 6-2 6-3	0.003	0.003	0.551	0.011	0.01	0.91	0.63 AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1
OF 6-3 1-8	0.042	0.042	0.381	0.031	0.03	2.47	1.11 AR&R 100 year, 20 minutes storm, average 124 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin	6.96	2297.3	2.903	0	2.903

CONTINUITY CHECK for AR&R 100 year, 1 hour storm, average 68.5 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
Pit 10-1	56.57	56.4	0	0.3
Pit 10-2	156.97	154.88	0	1.3
Pit 10-3	318.4	317.41	0	0.3
Pit 10-4	666.45	666.43	0	0
Pit 5.3	2924.78	2932.15	0	-0.3
Basin	4694.01	4276.22	418.6	0
Pit 9-1	144.57	143.5	0	0.7
Pit 9-2	244.08	242.18	0	0.8
Pit 8-1	250.28	203.53	0	18.7
Pit 8-2	310.39	294.23	0	5.2
Pit 5.9	131.48	131.35	0	0.1
Pit 5.8	257.17	256.26	0	0.4
Pit 5.7	748.72	747.8	0	0.1
Pit 5.6	1017.91	1017.06	0	0.1
Pit 5.5A	942.21	941.82	0	0
Pit 5.5	1117.24	1115.3	0	0.2
Pit 5.4	1855.33	1850.98	0	0.2
Pit 9.1	37.71	37.53	0	0.5
Cat	3794.55	3794.55	0	0
Pit25991	1810.12	1786.93	0	1.3
HW Outlet	5869.65	5743.41	0	2.2
N31428	1809.96	1810.12	0	0
N Dum	5743.41	5743.41	0	0
N Clubhou	232.95	232.95	0	0
Pit71286	81	80.76	0	0.3
P Club Roo	128.58	130.55	0	-1.5
Pit 8.1	187.12	171.18	0	8.5
Pit 7.1	335.84	335.32	0	0.2
N90158	1617.22	1604.72	0	0.8
Pit74671	59.04	59.58	0	-0.9
Pit Club Ca	133.15	136.06	0	-2.2
Pit 11.3	198.92	191.21	0	3.9
Pit 11.2	285.49	285.22	0	0.1
Pit 11.1A	282.77	282.43	0	0.1
Pit 11.1	454.7	450.06	0	1
N OSD Out	2307.72	2301.63	0	0.3

Run Log for 18011 v17 clubhouse and stage 2 observed osd

{\color{red}\green{blue0;\red192\green{blue0}}Run Log for 18011 v17 clubhouse and stage 2 observed osd.drn - DRAINS run at 21:03:26 on 18/4/2024 using Watercom Drains v2023.11.8718.30178

The maximum water level in these storages exceeds the maximum elevation you specified: Basin.

DRAINS has extrapolated the Elevation vs Storage table to a higher Elevation. Please provide accurate values for higher elevations.

Upwelling occurred at: Pit74671, P Club Roof etc, Pit 5.4, Pit 5.3, Pit 10-4, Pit 10-3

Freeboard was less than 0.15m at Pit71286, Pit Club Carpark, Pit25991, Pit 8-2, Pit 9-2, Pit 8.1, Pit 11.3, Pit 8-1

The maximum pond depth in these sag pits is unsafe: Pit74671, Pit71286, P Club Roof etc, Pit25991, Pit 5.3\line

Peak water levels spilled in these Overflow Routes: OF38566, OF28109, OF14828, OF 1-9 Basin, OF 5.4 - 5.3, OF 10-4 1-9, OF 10-3 10-4, OF 10-2 10-3, OF 9-2 10-4, OF 8-2 1-9, OF 5.5 - 5.4, OF 6-3 1-8 spilled. You cannot rely on these results. You really MUST specify data for higher levels for these cross sections.

Unless the cross section is not capable of conveying the modelled flow, a downstream node tailwater condition might exceed the incoming overflow route specified cross-sectional depth, such as an overflow route leading into the invert of a detention basin. You can view the water surface profile along an overflow route by right click > Long Section.

Tip: Keep in mind that an overflow route adds storage to any downstream node if the water is backing up into the overflow route (e.g. from a detention basin node). You may need to shorten & lift the downstream invert of the overflow route to a level above the calculated downstream water level to avoid double counting storage volumes.\cf1