3 Elizabeth Place, Brookvale

Concept Stormwater Drainage

LEGEND:

- Stormwater pipe
- Charged Line
- Flush Line
- Sub Soil / Agricultural Pipe
- Pump Line
- Existing stormwater Pipe
- Existing Pipe
- Disused / Redundant Pipe
- Sediment Fence
- Site Fence
- Conduit by others
- Electrical Wiring by others
- Existing Authority Stormwater Main
- Existing Authority Sewer Main
- Existing Authority Water Main
- Existing Authority Gas Main
- Existing Authority Electrical Cabling
- Existing Telstra Cabling
- Stormwater pit (Grated / Solid Cover)
- Drainage Outlet
- Downpipe / Riser
- Dropper
- Direction of flow
- Pipe continuation
- Pipe continuation not shown
- Spreader
- Surface Fall
- Overland Flow

ABBREVIATIONS:

AG	Agricultural Line
AP	Aerial Pipe
BG	Box Gutter
BO	Balcony Outlet
CO	Clearout
CL	Charged Line
DP	Downpipe
EG	Eave Gutter
FW	Floor Waste
Galv.	Galvanised
GD	Grated Drain
HD	Heavy Duty
HP	High Point
IL	Invert Level
IO	Inspection Opening
L	Litres
LS	Level Spreader
L/s	Litres Per Second
L/s/m	Litres Per Second Per Metre
LD	Light Duty
m	Meters
m^2	Square Meters
m^3	Cubic Meters
mm/h	Millimetres per Hour
O/F	Overflow
OLF	Overland Flow
OSD	On Site Detention
PDO	Planter Drain Outlet
PL	Pump Line
PVC	Poly Vinyl Chloride
PVC-U	Poly Vinyl Chloride - Unplasticised
RH	Rainwater Head
RHS	Rectangular Hollow Section
RL	Reduced Level
RWT	Rainwater Tank
RWO	Rainwater Outlet
S	Sump
SW	Stormwater Pipe
TB	Thrust Block

GENERAL NOTES:

1. All work is to be performed in accordance with AS3500.3 and council codes where applicable.

2. The Plumber/ Drainer shall inspect the site and confirm the existing site structures, services and conditions prior to proceeding. If any discrepancies found, contact the engineer for further instructions.

3. All underground pipes shall be P.V.C-U. laid at min. 1:100, unless noted otherwise.

4. All connections to P.V.C. pipes are to be solvent welded to manufacturers specification

5. All prefabricated pits, drains etc. are to be of heavy duty concrete construction unless noted other.

6. Precise location of down pipes shall be nominated by others. Locations shown are for hydraulic design purposes only.

7. Precise location of pits shall be nominated by others. Locations shown are for hydraulic design purposes only.

8. All eaves gutters shall be of minimum cross sectional area of 7800mm^2 unless noted otherwise.

9. This design covers the collection and disposal of rainwater from ROOF AREAS ONLY. Any paved areas not noted on the supplied architectural drawings are not included, unless shown.

10. This design does not cover sub surface hydraulic flows.

11. The installer is encouraged to use the 'Dial Before You Dig' service prior to excavation. No underground services have been noted or surveyed in this design. Dig at your own risk.

12. IF IN DOUBT ASK. Consult the design engineer for any changes, omissions and discrepancies.

13. System design has been produced to reflect reduced levels shown on architect supplied drawings.

14. Pipe cover for uPVC pipes:
a. Single dwellings, no vehicular loading - 100mm
b. Single dwellings, vehicular loading without pavement - 450mm
c. Single dwellings, heavy vehicular loading on concrete - 100mm below underside of concrete
d. Single dwellings, no vehicular loading on un-reinforced concrete/pavers - 50mm below underside of concrete/pavers
e. Single dwellings, light vehicular loading on un-reinforced concrete/pavers - 75mm below underside of concrete/pavers

15. Silt arrestor pit and rain guards must be regularly inspected and cleaned.

16. Location of Stormwater Systems, including downpipes, pipes, pits and rainwater tank are indicative only. Exact locations shall be determined on site to suit site conditions.

17. Sub-soil drains for retaining walls shall be installed by the builder and connected to Stormwater lines. All AG Lines shall be 100mm DIA, unless noted otherwise.

18. Levels are approximate only. The plumber/drainer shall confirm the levels prior to proceeding. If any discrepancies found, contact the engineer for further instructions.

19. Inspection and certification, if required, shall be done prior to backfilling, allow 48 hour notice for the engineer to carry out the inspection.

20. Any damage to services during construction shall be repaired immediately at the plumber/drainers own expense.

21. Areas & Geometry calculated are approximate and dependent on Surveyors & Architects drawings.

22. It is essential that areas calculated are within plus/minus 5% range.

23. Provide adequate access and overland flow routes out of property and not into adjoining properties

24. Provide minimum 75mm clearance under all gates and operable external doors as to not impede overland flow

25. Water entry and backflow into buildings should be prevented at all times

26. All finished ground surfaces should fall away from structures

27. Charged lines are to be flushed regularly and flush/arrestor pits are to be regularly inspected and cleaned

28. All pipes entering a water tank shall have a first flush device installed

29. All water tanks will be insect proofed by others

30. If tanked water is being reused for drinking or sanitary purposes, appropriate disinfecting by others should be considered.

31. Schedule of calculations is based on plan areas

32. Plumber to provide 'leaf guard' or similar over all gutter, rainheads & sumps

LOCALITY PLAN

Not to scale

Rev	Date	Amendment Description	By	App.
01	08.12.22	Amended to suit arborist comments	SM	BM

ENGINEERS AUSTRALIA

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ARCHITECT: Adriano Pupilli

CLIENT: Kathie Pisto

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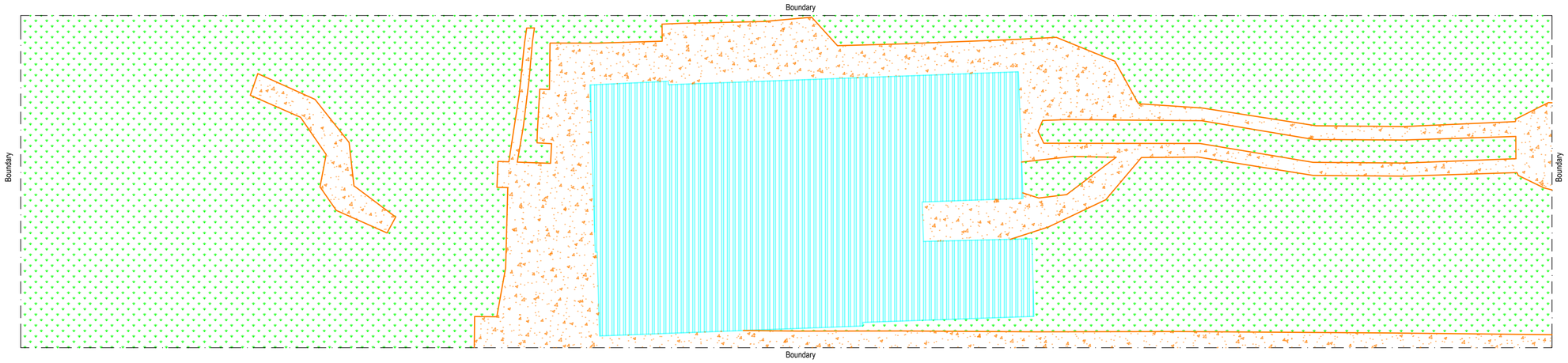
PROJECT: 3 Elizabeth Place Brookvale NSW 2100

Concept Stormwater Drainage Project Information Sheet

DATE:	SCALE:	DES / DRN:	APPROVED:
November, 2022	Not to scale	SM/NL	BM
JOB No. 2223-103		SHEET No. 1 of 4	REV 01

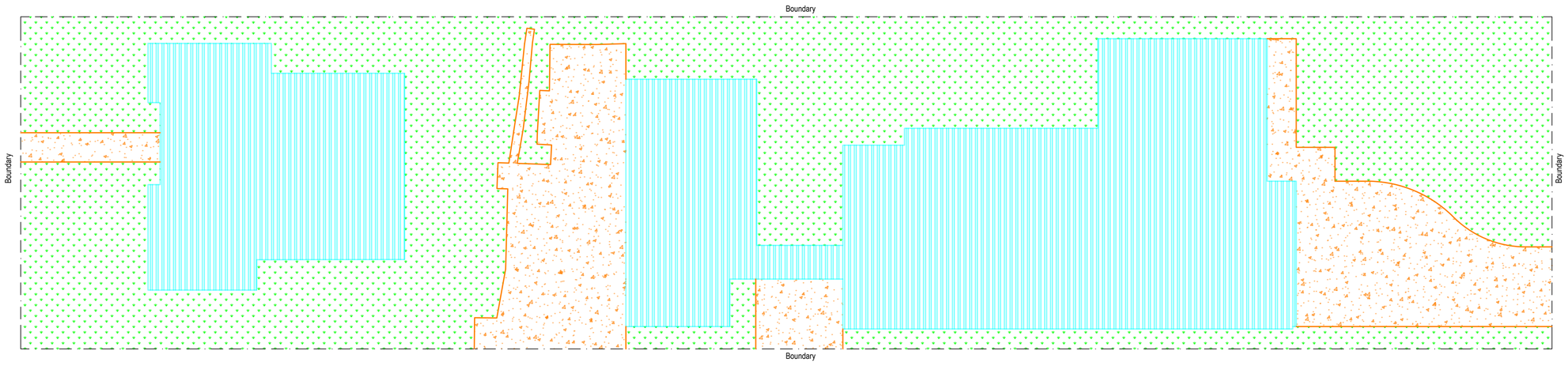
For General Notes, refer to Sheet 1



Existing Site Coverage

Scale 1:100

Roof:	=	174.76
Impervious:	=	160.65
Pervious:	=	531.41
Total:	=	866.82



Proposed Site Coverage

Scale 1:100

Roof:	=	326.06
Impervious:	=	137.05
Pervious:	=	403.71
Total:	=	866.82

0 1 2 4 6 8 10 metres

Scale @ A1 Original Size — Scale: 1:100

Rev	Date	Amendment Description	By	App.
01	08.12.22	Amended to suit arborist comments	SM	BM

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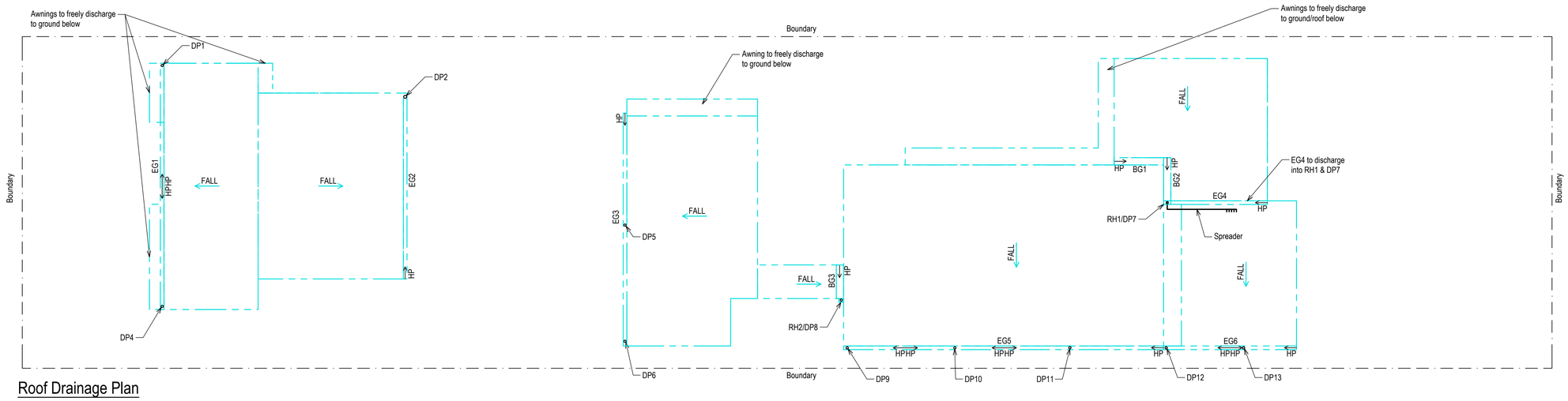
PROJECT: 3 Elizabeth Place
Brookvale NSW 2100

Existing & Proposed Site Coverage

DATE:	SCALE:	DES / DRN:	APPROVED:
November, 2022	1:100 @ A1	SM/NL	BM

JOB No. 2223-103 — SHEET No. 2 of 4 — REV 01

For General Notes, refer to Sheet 1

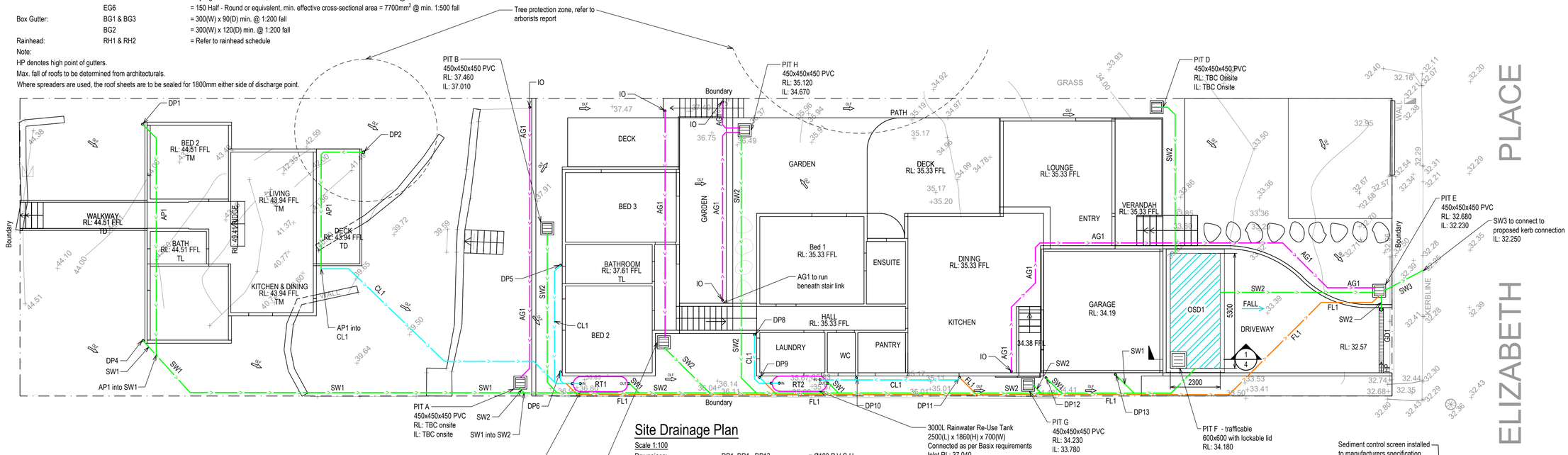


Roof Drainage Plan

Scale 1:100

Downpipes:	DP1, DP4 - DP6 & DP8 - DP13	= Ø100 P.V.C-U
	DP2	= Ø125 P.V.C-U
	DP3	= Not Used
Eave Gutter:	EG1 - EG4	= 150 Half - Round or equivalent, min. effective cross-sectional area = 6000mm^2 @ min. 1:500 fall
	EG2 & EG5	= Lysaght 150 Half - Round, min. effective cross-sectional area = 9200mm^2 @ min. 1:500 fall
	EG6	= 150 Half - Round or equivalent, min. effective cross-sectional area = 7700mm^2 @ min. 1:500 fall
Box Gutter:	BG1 & BG3	= 300(W) x 90(D) min. @ 1:200 fall
	BG2	= 300(W) x 120(D) min. @ 1:200 fall
Rainhead:	RH1 & RH2	= Refer to rainhead schedule

Note:
HP denotes high point of gutters.
Max. fall of roofs to be determined from architecturals.
Where spreaders are used, the roof sheets are to be sealed for 1800mm either side of discharge point.

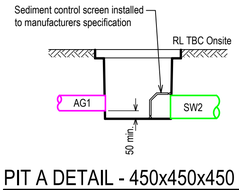


Site Drainage Plan

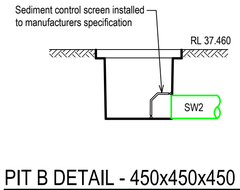
Scale 1:100

Downpipes:	DP1, DP4 - DP13	= Ø100 P.V.C-U
	DP2	= Ø125 P.V.C-U
	DP3	= Not Used
Stormwater Pipe:	SW1	= Ø100 P.V.C-U laid @ 1% fall min.
	SW2	= Ø150 P.V.C-U laid @ 1% fall min.
	SW3	= 100 x 200 x 6 R.H.S, hot dip galvanised, laid @ 1% fall min.
Aerial Pipe:	AP1	= Ø100 P.V.C-U laid @ 1% fall min. aerially connected to the underside of the floor structure
Agricultural Line:	AG1	= Ø100 Slotted AG Line, min. 1% fall, Wrapped in geotech fabric, bedded in coarse gravel
Charged Line:	CL1	= Ø100 P.V.C-U
Flush Line:	FL1	= Ø100 P.V.C-U laid @ 1% fall min. to be cleared once every 3 months in dry periods
Inspection Opening:	IO	= Cap raised to finished ground level marked 'IO'
Grated Drain:	GD1	= 200(W) x 200(D) @ 2% fall min.
Stormwater Pit:	PIT A - PIT E, PIT G & PIT H	= 450 x 450 x 450 PVC
	PIT F	= 600 x 600 lockable lid. Refer to detail
Rainwater Tank:	RT1 & RT2	= 3000L Slimline Tank, refer to detail
Onsite Detention Tank:	OSD1	= Refer to detail

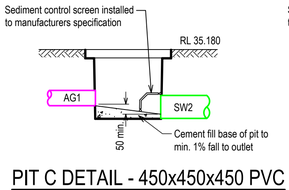
Note:
HP denotes high point of grated drain.



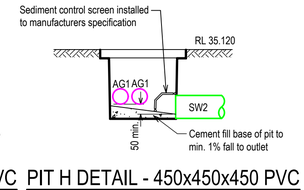
PIT A DETAIL - 450x450x450 PVC
Scale 1:20



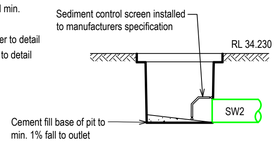
PIT B DETAIL - 450x450x450 PVC
Scale 1:20



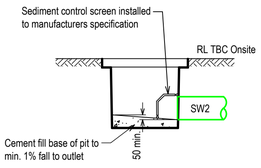
PIT C DETAIL - 450x450x450 PVC
Scale 1:20



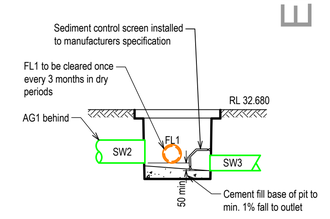
PIT H DETAIL - 450x450x450 PVC
Scale 1:20



PIT G DETAIL - 450x450x450 PVC
Scale 1:20



PIT D DETAIL - 450x450x450 PVC
Scale 1:20



PIT E DETAIL - 450x450x450 PVC
Scale 1:20

0 1 2 4 6 8 10 metres
Scale @ A1 Original Size
Scale: 1:100

Rev	Date	Amendment Description	By	App.
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PROJECT: 3 Elizabeth Place Brookvale NSW 2100

Roof Drainage Plan & Site Drainage Plan

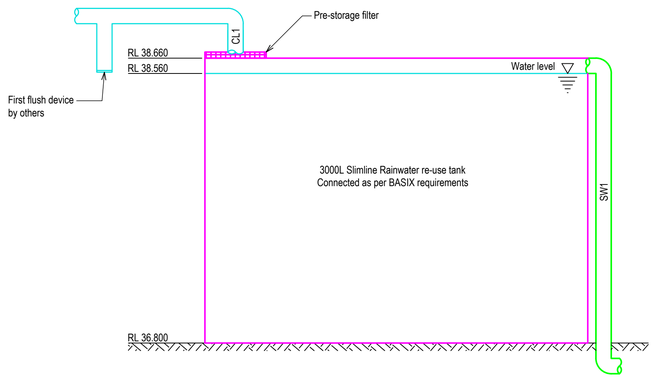
DATE:	SCALE:	DES / DRN:	APPROVED:
November, 2022	1:100 @ A1	SM/NL	BM

JOB No. 2223-103 | SHEET No. 3 of 4 | REV. 01

ELIZABETH PLACE

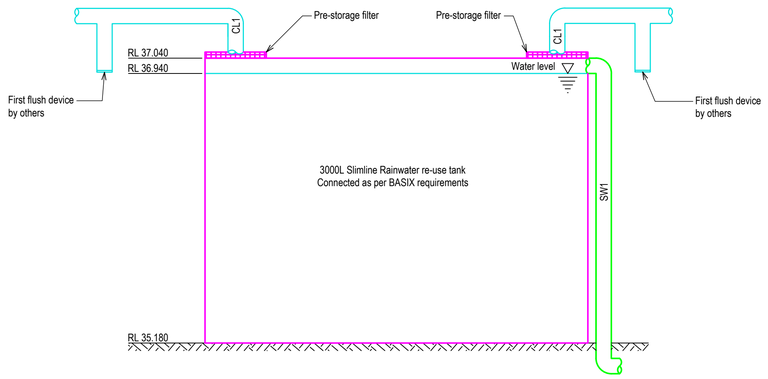
50mm On original size A1

For General Notes, refer to Sheet 1



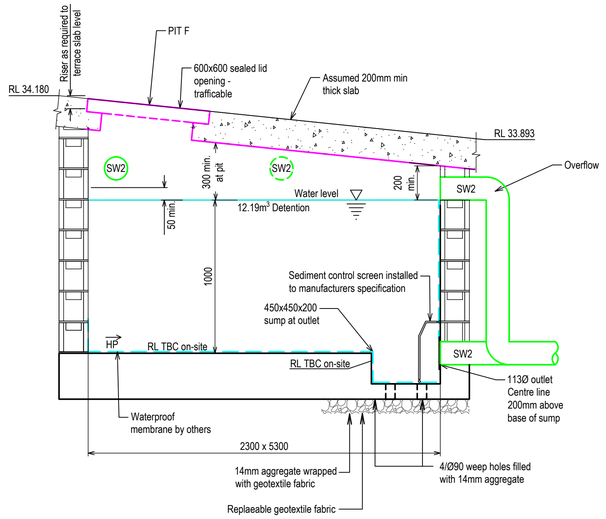
3000L RAINWATER RE-USE TANK RT1 LONG-SECTION

Scale 1:20



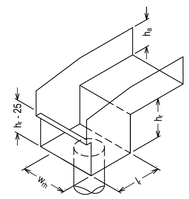
3000L RAINWATER RE-USE TANK RT2 LONG-SECTION

Scale 1:20



12.19m³ UNDERGROUND ON-SITE DETENTION TANK SECTION & PIT F

SCALE 1:20



RAINHEAD SCHEDULE

NOT TO SCALE
AS/NZS 3500.3:2015, page 140

Down Pipe	h_a	l_r	h_r	w_{th}
DP7	120	120	100	300
DP8	120	120	100	300

Note:
1. All units are in millimetres
2. All values are the minimum required
3. The width of rainhead is equal to the width of box gutter
4. Rain Head shall be fully sealed to the box gutter and the front of the Rain Head Left open above the overflow weir

SCHEDULE OF CALCULATIONS		
ITEM	**VALUE**	**UNITS**
CATCHMENT DATA		
100I5 Rainfall intensity - BOM 14-11-22	278	mm/h
20I5 Rainfall intensity - BOM 14-11-22	209	mm/h
5I5 Rainfall intensity - BOM 14-11-22	155	mm/h
Site Area	866.82	m²
EXISTING		
Total Roof Area	174.76	m²
Total Additional Impervious Area	160.65	m²
Total Pervious Area	531.41	m²
Total Pool Area	0.00	m²
Total Runoff for Existing Catchment Q100	45.18	L/s
Total Runoff for Existing Catchment Q20	33.97	L/s
Total Runoff for Existing Catchment Q5	25.19	L/s
PROPOSED		
Total Roof Area	326.06	m²
Total Additional Impervious Area	137.05	m²
Total Pervious Area	403.71	m²
Total Pool Area	0.00	m²
Total Runoff for Proposed Catchment Q100	50.29	L/s
Total Runoff for Proposed Catchment Q20	37.81	L/s
Total Runoff for Proposed Catchment Q5	28.04	L/s
Property is located within Region 2 in accordance with Northern Beaches Council DCP (2021) Map 2.		
OSD Required as per Northern Beaches DCP (2021) Section 9.3.2 as the total proposed impervious areas (463.11m2) > 40% of the total site area (346.73m2). Impervious Area = 53.43%.		
BASIX DATA		
Rainwater Tank Size required by BASIX	6000	L
Rainwater Tank Size provided	6000	L
Roof Area required to Rainwater Tank	60	m²
Roof Area provided to Rainwater Tank	194.25	m²
ON-SITE DETENTION DATA		
Total Existing Site Discharge Q100	45.18	L/s
Total Proposed Site Discharge Q100	50.29	L/s
Allowed Permissible Site Discharge (Q100) (Council DCP)	400.00	L/s/ha
Permissible Site Discharge (Q100)	34.67	L/s
Allowed Storage Volume (Council DCP)	200.00	m³
Required Storage Volume	17.34	m³
Maximum Offsettable Storage (Required Volume / 2)	8.67	m³
Storage Offset by Rainwater Tanks	6.00	m³
Storage Volume Required after offset	11.34	m³
Storage Volume Provided after offset	12.19	m³
Total Discharge to Tank Q100	42.92	L/s
Height above orifice	1.00	m
Orifice Diameter	113	mm
Orifice Discharge	27.30	L/s
SITE DISCHARGE DATA		
Proposed discharge via OSD Tank Q100	27.30	L/s
Proposed discharge via overland flow Q100	7.37	L/s
Total discharge Q100	34.67	L/s

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PROJECT: 3 Elizabeth Place
Brookvale NSW 2100

Rainwater & OSD Tanks Details & Schedule of Calculations

DATE: November, 2022 | SCALE: 1:100 @ A1 | DES / DRN: SM/NL | APPROVED: BM
JOB No. 2223-103 | SHEET No. 4 of 4 | REV 01