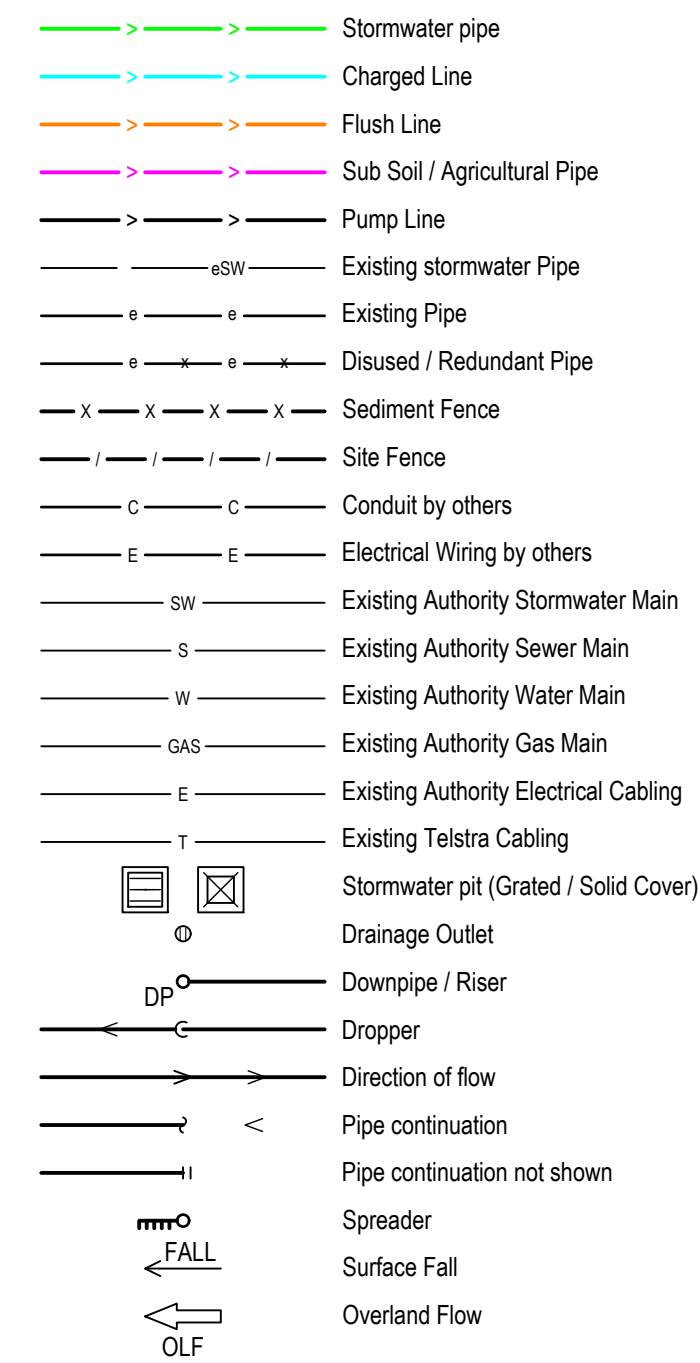


5 Roosevelt Avenue, Allambie Heights

Concept Stormwater Drainage

LEGEND:



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

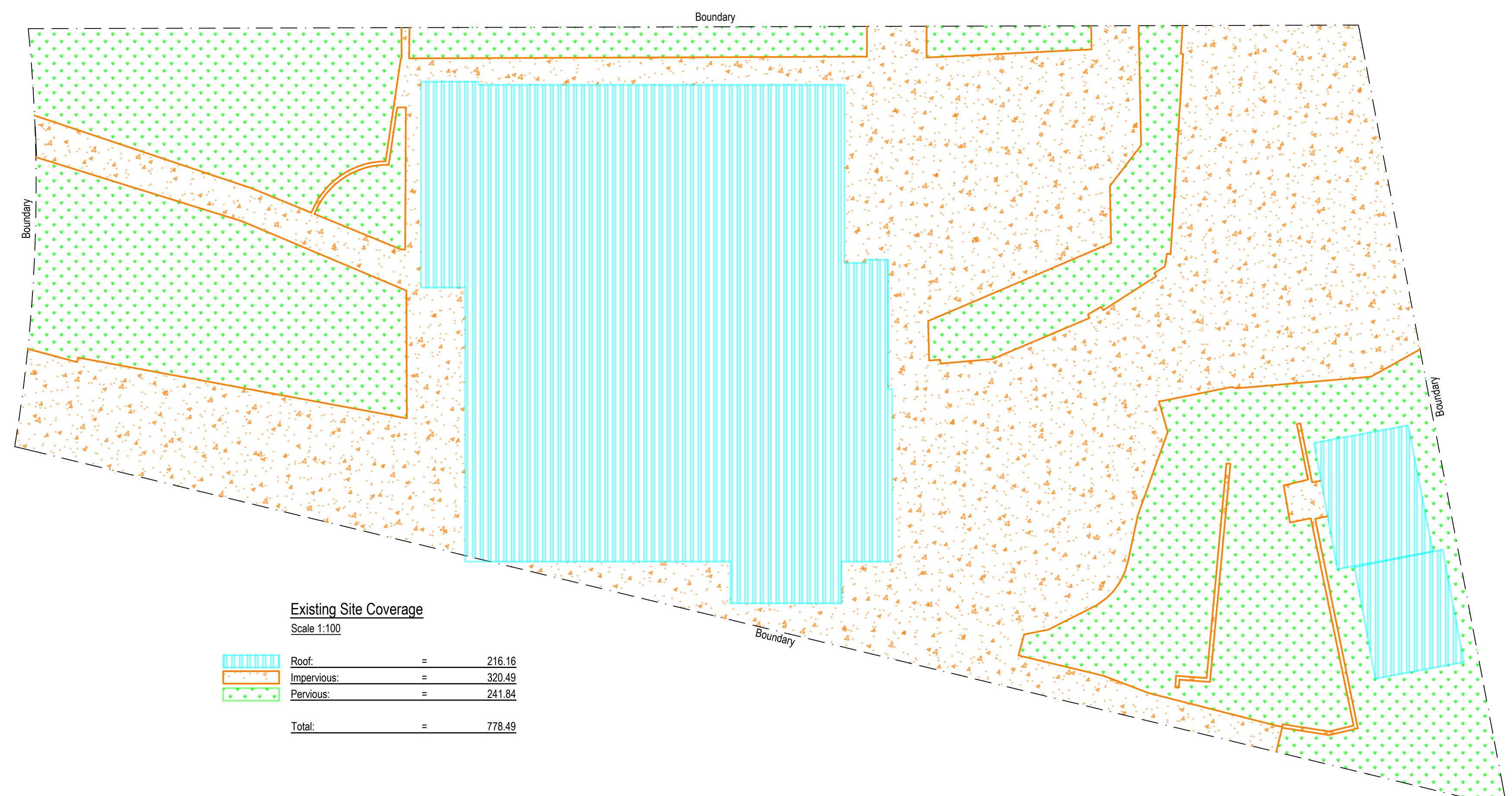
GENERAL NOTES:

- All work is to be performed in accordance with AS3500.3 and council codes where applicable.
- 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.
- All underground pipes shall be P.V.C-U laid at min. 1:100, unless noted otherwise.
- All connections to P.V.C. pipes are to be solvent welded to manufacturers specification
- All prefabricated pits, drains etc. are to be of heavy duty concrete construction unless noted other.
- Precise location of down pipes shall be nominated by others. Locations shown are for hydraulic design purposes only.
- Precise location of pits shall be nominated by others. Locations shown are for hydraulic design purposes only.
- All eaves gutters shall be of minimum cross sectional area of 7800mm² unless noted otherwise.
- 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.
- This design does not cover sub surface hydraulic flows.
- 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.
- IF IN DOUBT ASK. Consult the design engineer for any changes, omissions and discrepancies.
- System design has been produced to reflect reduced levels shown on architect supplied drawings.
- Pipe cover for uPVC pipes:
 - Single dwellings, no vehicular loading - 100mm
 - Single dwellings, vehicular loading without pavement - 450mm
 - Single dwellings, heavy vehicular loading on concrete - 100mm below underside of concrete
 - Single dwellings, no vehicular loading on un-reinforced concrete/pavers - 50mm below underside of concrete/pavers
 - Single dwellings, light vehicular loading on un-reinforced concrete/pavers - 75mm below underside of concrete/pavers
- Silt arrestor pit and rain guards must be regularly inspected and cleaned.
- 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.
- 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.
- Levels are approximate only. The plumber/drainer shall confirm the levels prior to proceeding. If any discrepancies found, contact the engineer for further instructions.
- Inspection and certification, if required, shall be done prior to backfilling, allow 48 hour notice for the engineer to carry out the inspection.
- Any damage to services during construction shall be repaired immediately at the plumber/drainers own expense.
- Areas & Geometry calculated are approximate and dependent on Surveyors & Architects drawings.
- It is essential that areas calculated are within plus/minus 5% range.
- Provide adequate access and overland flow routes out of property and not into adjoining properties
- Provide minimum 75mm clearance under all gates and operable external doors as to not impede overland flow
- Water entry and backflow into buildings should be prevented at all times
- All finished ground surfaces should fall away from structures
- Charged lines are to be flushed regularly and flush/arrestor pits are to be regularly inspected and cleaned
- All pipes entering a water tank shall have a first flush device installed. First flush device is to be sized as per document "BASIX Interim Rainwater Harvesting Systems Guidelines".
- All water tanks will be insect proofed by others
- If tanked water is being reused for drinking or sanitary purposes, appropriate disinfecting by others should be considered.
- Schedule of calculations is based on plan areas
- Plumber to provide 'leaf guard' or similar over all gutter, rainheads & sumps
- Atlantis Blockade or similar recommended to be installed in all underground pipes to prevent blockages forming in the pipes during the construction phases



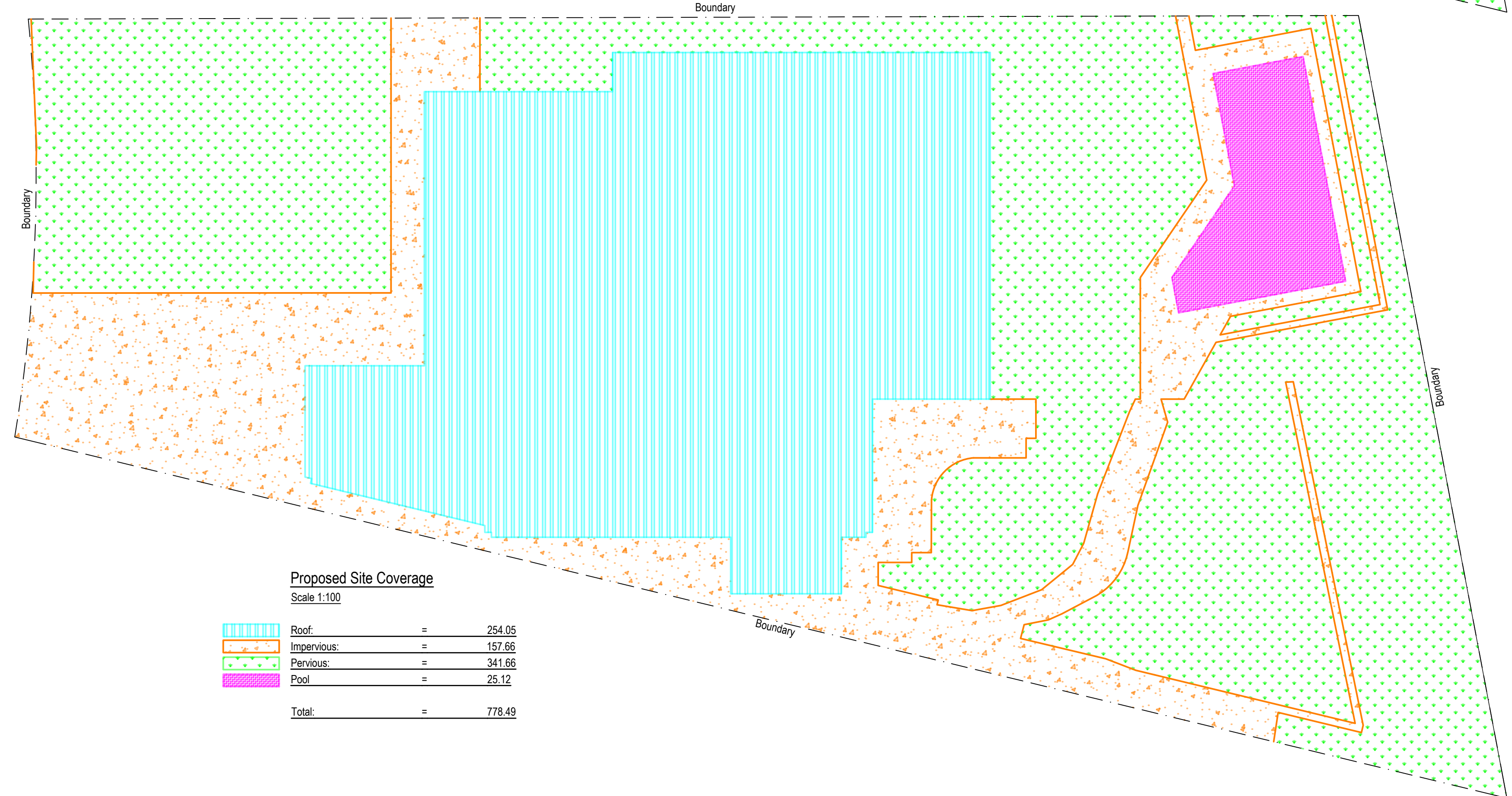
LOCALITY PLAN
Not to scale

Issued for DA approval	Rev.	Date	Amendment Description	By	App.			COPYRIGHT © This plan and design is the property of HARRISON & MORRIS CONSULTANCY PTY LTD, and must not be used, reproduced or copied wholly or in part without written permission from the company. WHEN IN DOUBT, ASK. It is your responsibility. If HARRISON & MORRIS CONSULTANCY has not been engaged or notified to carry out stormwater inspections, no certificate will be issued.	 HARRISON & MORRIS CONSULTANCY PTY LTD. (A/CN 123 191 499 A/B/N 94 152 191 499) CONSULTING STRUCTURAL & CIVIL ENGINEERS Suite 10, 10/11 Macquarie St, Sydney Hills NSW 1500 Email: admin@harrisonmorris.com.au	ARCHITECT:	Baikie Corr	Address:	5 Roosevelt Avenue Allambie Heights NSW 2100	Job Description:	Proposed Additions & Alterations To Residence	Stormwater Engineering File:	Concept Stormwater Drainage Project Information Sheet									
										<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%;">Original Sheet Size:</td> <td style="width:25%;">Scale:</td> <td style="width:25%;">Drawn:</td> <td style="width:25%;">Design:</td> </tr> <tr> <td>A1</td> <td>1:100, 1:20, 1:5</td> <td>NL</td> <td>CO</td> </tr> <tr> <td>Date:</td> <td>Job No.:</td> <td>Sheet No.:</td> <td>Rev.:</td> </tr> <tr> <td>November 2024</td> <td>2425-038</td> <td>01 of 06</td> <td>03</td> </tr> </table>	Original Sheet Size:	Scale:	Drawn:	Design:	A1	1:100, 1:20, 1:5	NL	CO	Date:	Job No.:	Sheet No.:	Rev.:	November 2024	2425-038	01 of 06	03
Original Sheet Size:	Scale:	Drawn:	Design:																							
A1	1:100, 1:20, 1:5	NL	CO																							
Date:	Job No.:	Sheet No.:	Rev.:																							
November 2024	2425-038	01 of 06	03																							



Existing Site Coverage
Scale 1:100

Roof:	=	216.16
Impervious:	=	320.49
Pervious:	=	241.84
Total:	=	778.49



Proposed Site Coverage
Scale 1:100

Roof:	=	254.05
Impervious:	=	157.66
Pervious:	=	341.66
Pool:	=	25.12
Total:	=	778.49

**Issued for
DA approval**

Rev.	Date	Amendment Description	By	App.
01	20.11.2024	Amended as requested	CO	BM
02	27.11.2024	Amended as requested	CO	BM
03	06.12.2024	Amended as per revised architectural	CO	BM



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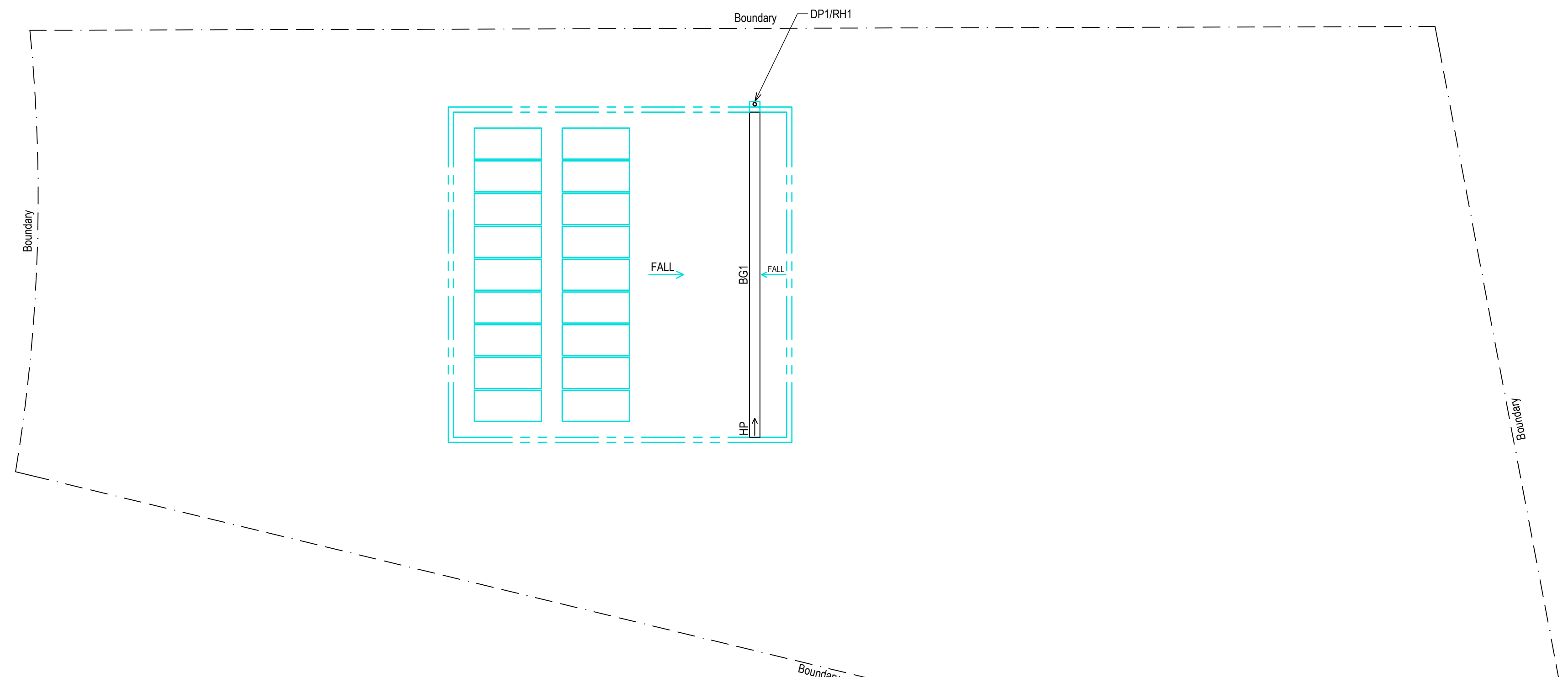
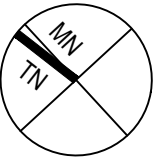


ARCHITECT: **Baikie Corr**
CLIENT: **Aaron Hawkins & Rebecca Sleeman**

Address: **5 Roosevelt Avenue Allambie Heights NSW 2100**

Job Description: **Proposed Additions & Alterations To Residence**

Stormwater Engineering Title			
Existing & Proposed Site Coverage			
Original Sheet Size: A1	Scale: 1:100, 1:20, 1:5	Drawn: NL	Design: CO
Date: November 2024	Job No: 2425-038	Sheet No: 02 of 06	Rev: 03

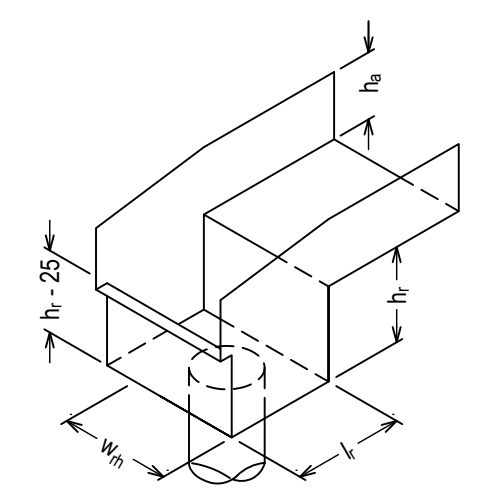


Upper Roof Drainage Plan

Scale 1:100

- Downpipes: DP1 = Ø100 P.V.C-U
- Box Gutter: BG1 = 300(W) x 130(D) min. @ 1:200 fall
- Rainhead: RH1 = Refer to Rainhead Schedule

Note:
HP denotes high point of gutters.
Max. fall of roofs to be determined from architectural.

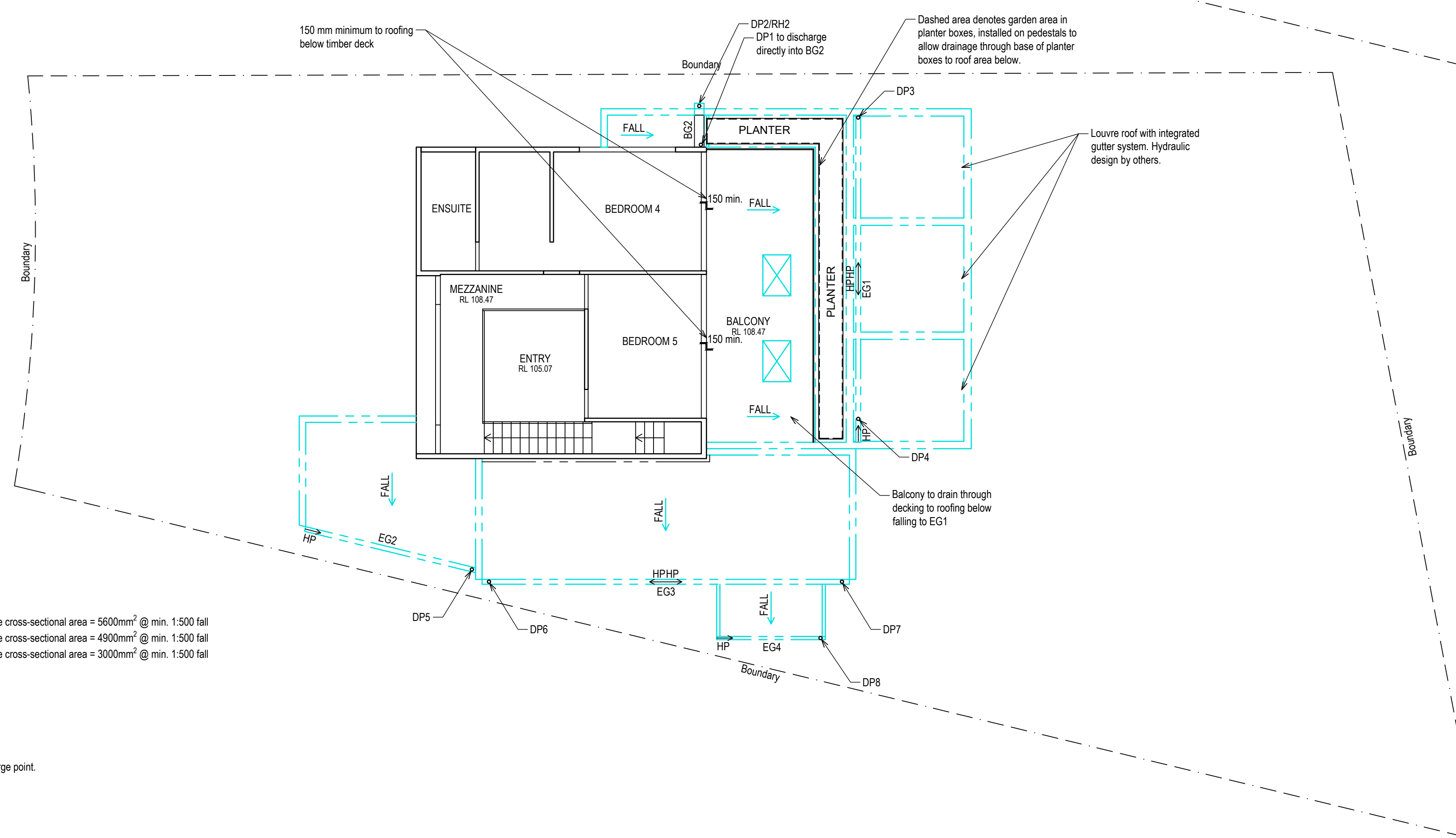


RAINHEAD SCHEDULE

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

Rainhead	Down Pipe	h _a	l	h _b	w _m
RH1	DP1	130	160	210	300
RH2	DP2	130	170	230	300

- Note:
- All units are in millimetres
 - All values are the minimum required
 - The width of the rainhead is equal to the width of the box gutter
 - Rainhead shall be fully sealed to the box gutter and the front of the Rainhead left open above the overflow weir
 - Min value of h_b ≥ 1.25 D_a or 1.25 D_i



Lower Roof Drainage Plan

Scale 1:100

- Downpipes: DP1 & DP2 = Ø100 P.V.C-U
- DP3 - DP8 = Ø90 P.V.C-U
- Eave Gutter: EG1 & EG3 = 150 Half - Round or equivalent, min. effective cross-sectional area = 5600mm² @ min. 1:500 fall
- EG2 = 150 Half - Round or equivalent, min. effective cross-sectional area = 4900mm² @ min. 1:500 fall
- EG4 = 100 Half - Round or equivalent, min. effective cross-sectional area = 3000mm² @ min. 1:500 fall
- Box Gutter: BG2 = 300(W) x 130(D) min. @ 1:200 fall
- Rainhead: RH2 = Refer to Rainhead Schedule

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

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01	20.11.2024	Amended as requested	CO	BM
02	27.11.2024	Amended as requested	CO	BM
03	06.12.2024	Amended as per revised architectural	CO	BM



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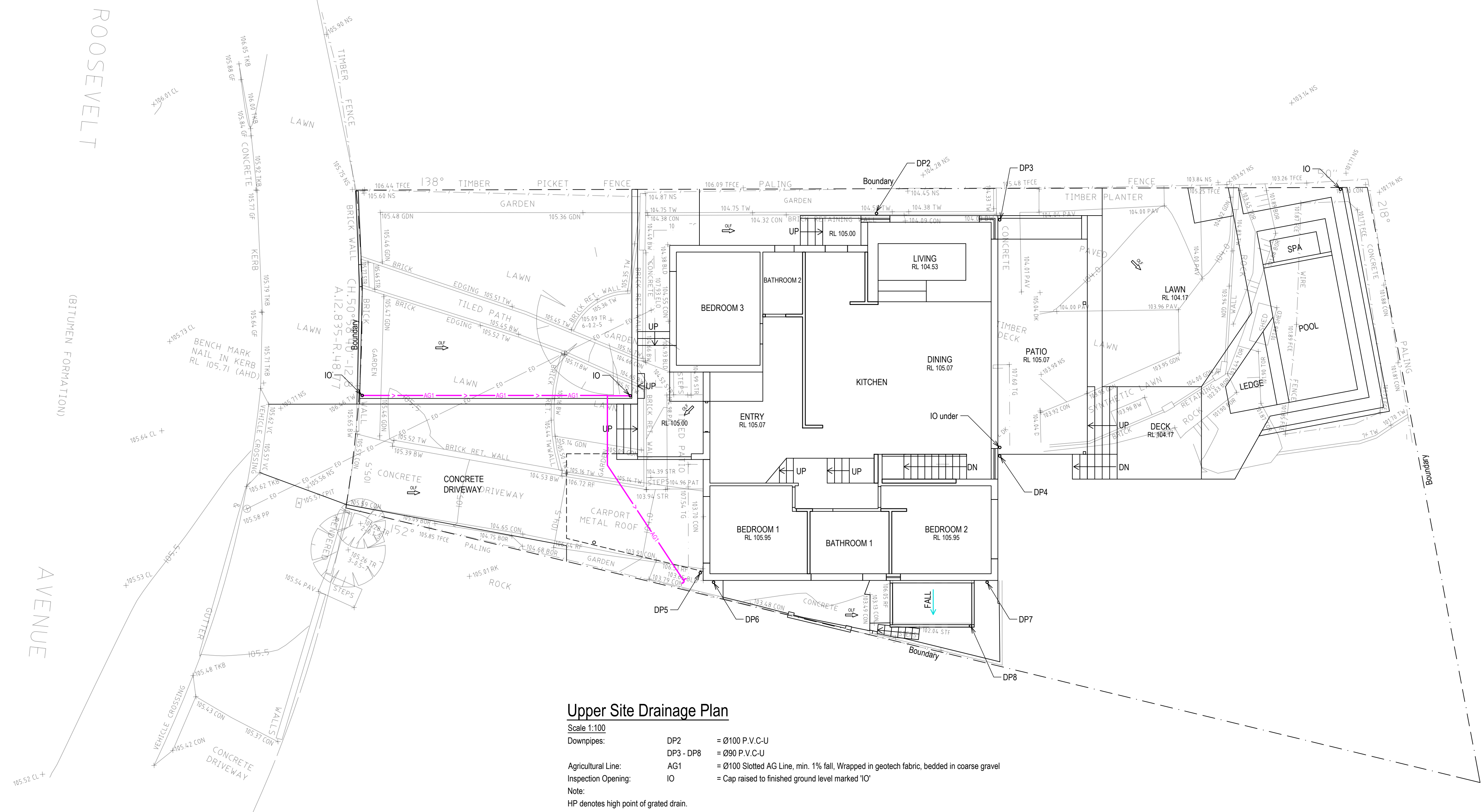
ARCHITECT: **Baikie Corr**
CLIENT: **Aaron Hawkins & Rebecca Sleeman**

Address: **5 Roosevelt Avenue Allambie Heights NSW 2100**

Job Description: **Proposed Additions & Alterations To Residence**

Stormwater Engineering Title			
Upper & Lower Roof Drainage Plan			
Original Sheet Size: A1	Scale: 1:100, 1:20, 1:5	Drawn: NL	Design: CO
Date: November 2024	Job No: 2425-038	Sheet No: 03 of 06	Rev: 03

B:\Projects\2425-038\Drawings\DWG\2425-038-03.dwg



Upper Site Drainage Plan

Scale 1:100

- Downpipes: DP2 = Ø100 P.V.C-U
 DP3 - DP8 = Ø90 P.V.C-U
- Agricultural Line: AG1 = Ø100 Slotted AG Line, min. 1% fall, Wrapped in geotext fabric, bedded in coarse gravel
- Inspection Opening: IO = Cap raised to finished ground level marked 'IO'

Note:
 HP denotes high point of grated drain.

Rev.	Date	Amendment Description	By	App.
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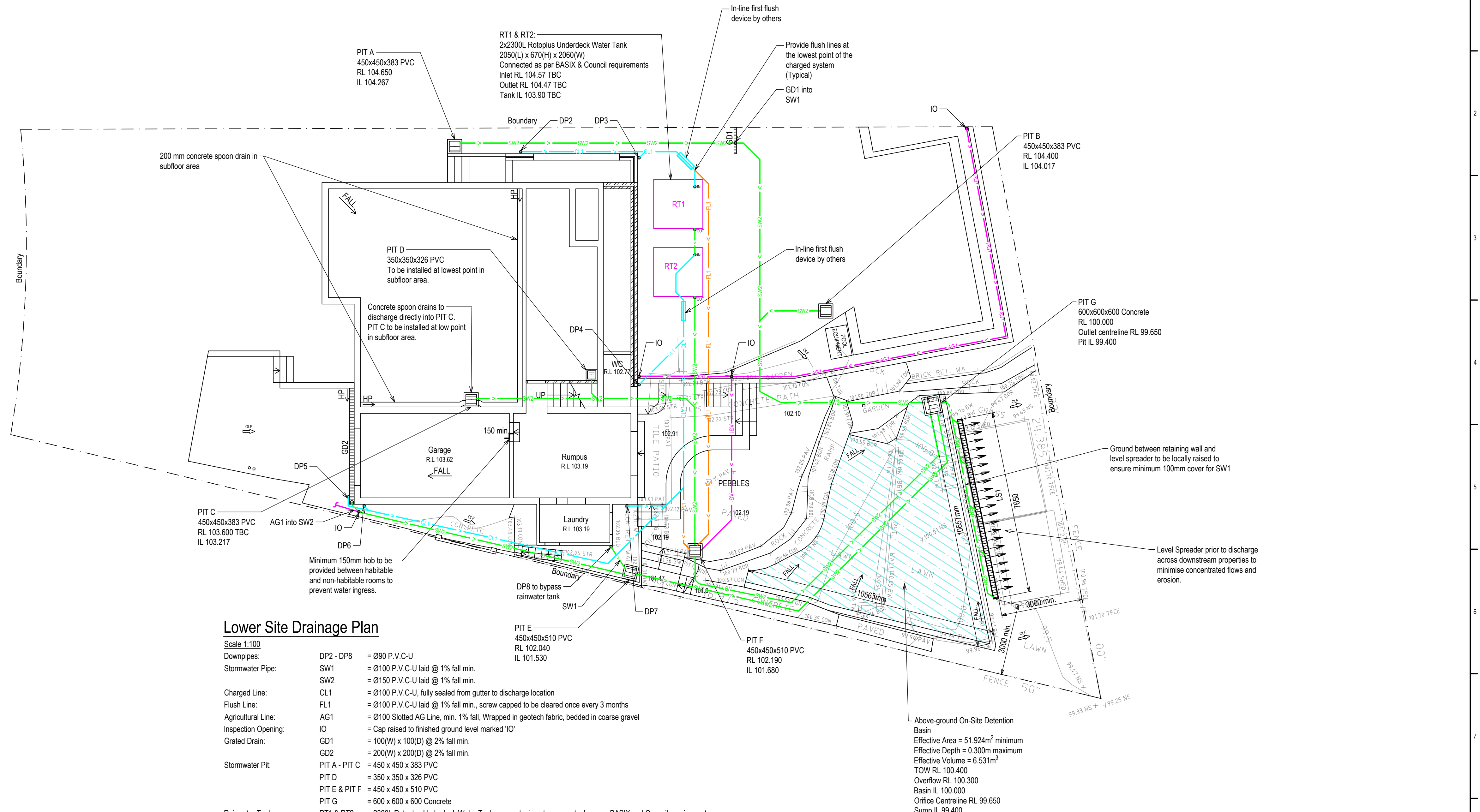
ARCHITECT: Baikie Corr
 DESIGN: Aaron Hawkins & Rebecca Sleeman

Address: 5 Roosevelt Avenue Allambie Heights NSW 2100

Job Description: Proposed Additions & Alterations To Residence

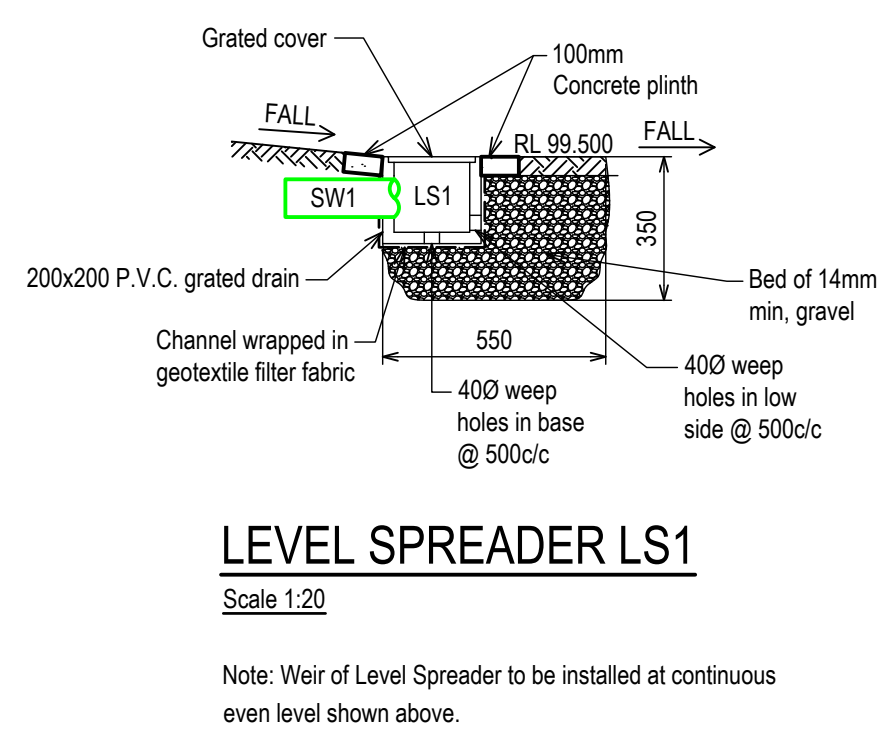
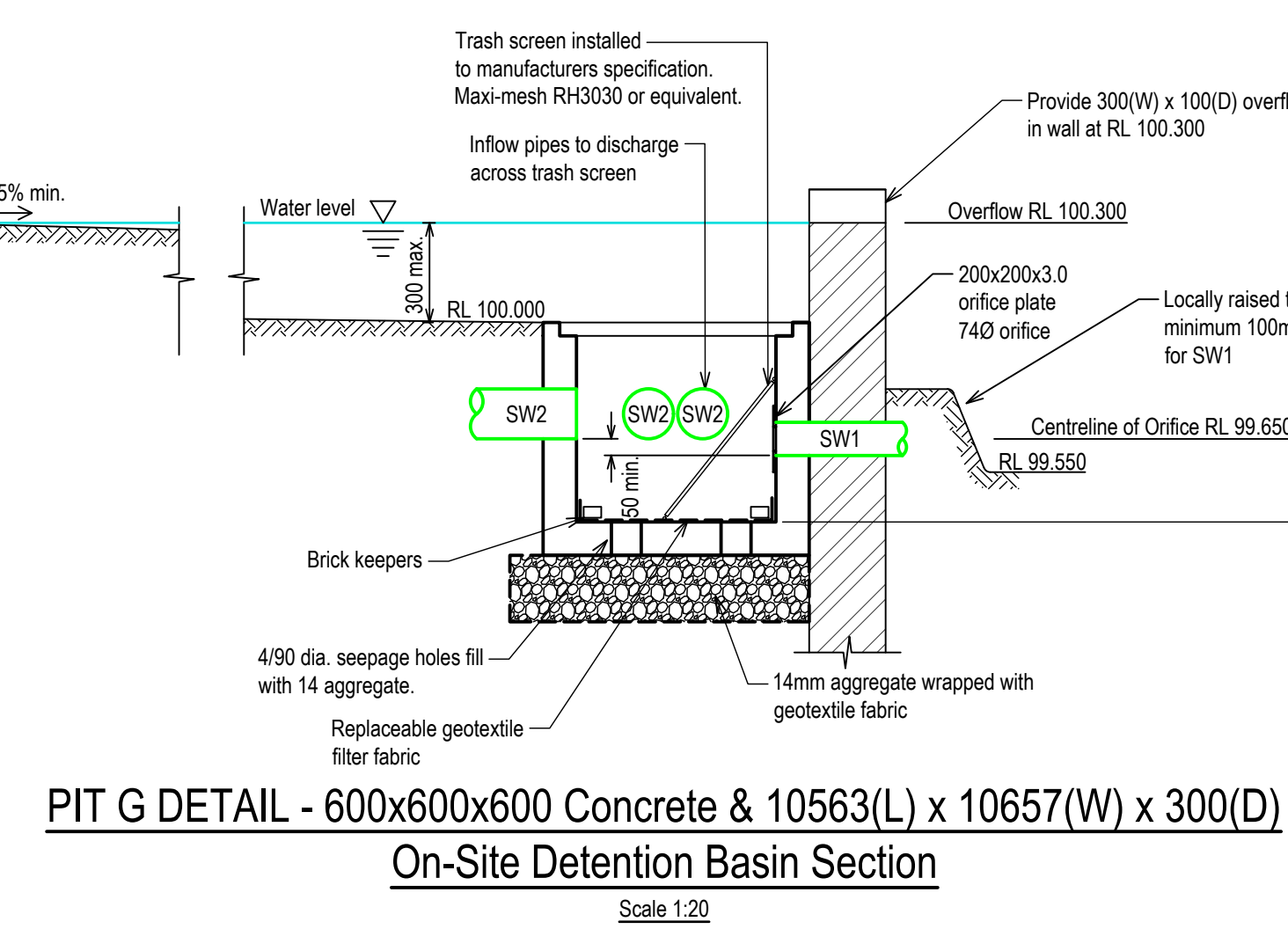
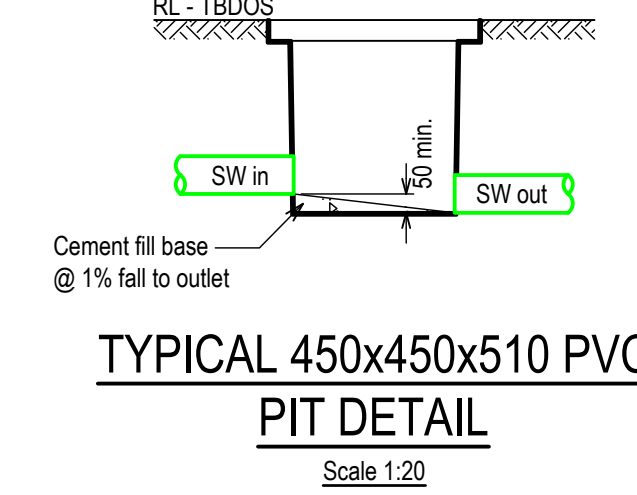
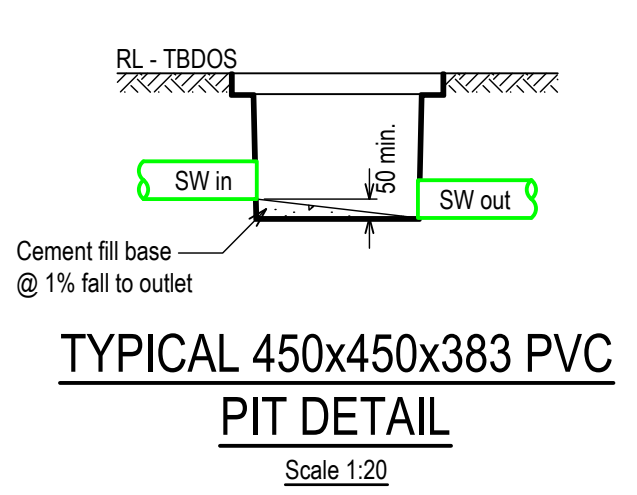
Upper Site Drainage Plan			
Original Sheet Size	Scale	Drawn	Design
A1	1:100, 1:20, 1:5	NL	CO
Date	Job No.	Sheet No.	Rev.
November 2024	2425-038	04 of 06	03

SCHEDULE OF CALCULATIONS			
ITEM	VALUE	UNITS	
CATCHMENT DATA			
10015 Rainfall intensity - BOM 21-10-24	278	mm/h	
2015 Rainfall intensity - BOM 21-10-24	209	mm/h	
515 Rainfall intensity - BOM 21-10-24	155	mm/h	
Site Area	778.49	m ²	
EXISTING			
Total Roof Area	216.16	m ²	
Total Additional Impervious Area	320.49	m ²	
Total Pervious Area	241.84	m ²	
Total Pool Area	0.00	m ²	
Total Runoff for Existing Catchment Q100	48.30	L/s	
Total Runoff for Existing Catchment Q20	36.31	L/s	
Total Runoff for Existing Catchment Q5	26.93	L/s	
PROPOSED			
Total Roof Area	254.05	m ²	
Total Additional Impervious Area	157.66	m ²	
Total Pervious Area	341.66	m ²	
Total Pool Area	25.12	m ²	
Total Runoff for Proposed Catchment Q100	45.71	L/s	
Total Runoff for Proposed Catchment Q20	34.36	L/s	
Total Runoff for Proposed Catchment Q5	25.48	L/s	
OSD Required as per Northern Beaches Council Water Management for Development Policy Appendix 4, as the primary form of site discharge is a Level Spreader.			
Existing stormwater system discharges via overland flow across rear boundary. Easement refusal letters from downstream property owners as per attached letters (Refer to sheet 06 of 06). On-site Absorption system not feasible due to visible rock outcroppings on surface. Level Spreader and OSD design provided in accordance with Northern Beaches Stormwater Policy Section 5.5.1.2.4 & Appendix 4, to reduce concentrated surface flow into downstream property(s).			
BASIX DATA			
Rainwater Tank Size required by BASIX	4025	L	
Rainwater Tank Size provided	4600	L	
Roof Area required to Rainwater Tank	40	m ²	
Roof Area provided to Rainwater Tank	248.19	m ²	
ON-SITE DETENTION DATA			
Total Existing Site Discharge Q5	26.93	L/s	
Total Proposed Site Discharge Q100	45.71	L/s	
Permissible Site Discharge, PSD (20% AEP [Q5] state of nature design storm event)	16.76	L/s	
Total Discharge to OSD Basin Q100	38.24	L/s	
Height above orifice	0.65	m	
Orifice Diameter	74.00	mm	
Orifice Discharge	9.30	L/s	
On-Site Detention Volume Required	8.684	m ³	
Revised On-Site Detention Volume Required with BASIX rainwater reuse credit as per Northern Beaches Council Water Management for Development Policy Section 9.3.2.1.	4.659	m ³	
On-Site Detention Volume Required with additional 20% for landscaped storage areas as per Northern Beaches Council Water Management for Development Policy Section 9.10.5.	5.591	m ³	
On-Site Detention Volume Provided (without accounting for 1.5% surface slope of OSD Basin)	15.703	m ³	
On-Site Detention Volume Provided (Accounted for 1.5% minimum surface slope in OSD Basin)	6.657	m ³	
SITE DISCHARGE DATA			
Total Existing Site Discharge to rear Q100	48.30	L/s	
Total Flow Bypassing Level Spreader Q100	7.46	L/s	
Total Controlled Flow to Level Spreader Q100	9.30	L/s	
Level Spreader Length	7.65	m	
Level Spreader Discharge Per Metre Q100	1.22	L/s/m	
Total Proposed Site Discharge to rear Q100	16.76	L/s	



Lower Site Drainage Plan

- Scale 1:100
- Downpipes: DP2 - DP8 = Ø90 P.V.C-U
 - Stormwater Pipe: SW1 = Ø100 P.V.C-U laid @ 1% fall min.
 - SW2 = Ø150 P.V.C-U laid @ 1% fall min.
 - Charged Line: CL1 = Ø100 P.V.C-U, fully sealed from gutter to discharge location
 - Flush Line: FL1 = Ø100 P.V.C-U laid @ 1% fall min., screw capped to be cleared once every 3 months
 - Agricultural Line: AG1 = Ø100 Slotted AG Line, min. 1% fall, wrapped in geotech fabric, bedded in coarse gravel
 - Inspection Opening: IO = Cap raised to finished ground level marked 'IO'
 - Grated Drain: GD1 = 100(W) x 100(D) @ 2% fall min.
 - GD2 = 200(W) x 200(D) @ 2% fall min.
 - Stormwater Pit: PIT A - PIT C = 450 x 450 x 383 PVC
 - PIT D = 350 x 350 x 326 PVC
 - PIT E & PIT F = 450 x 450 x 510 PVC
 - PIT G = 600 x 600 x 600 Concrete
 - RT1 & RT2 = 2300L Rotoplus Underdeck Water Tank, connect rainwater re-use tank as per BASIX and Council requirements
 - Rainwater Tank: RT1 & RT2
 - Level Spreader: LS1 = Refer to detail, 200(W) x 200(D) P.V.C. grated drain
- Note: HP denotes high point of grated drain.



Issued for DA approval

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01	20.11.2024	Amended as requested	CO	BM
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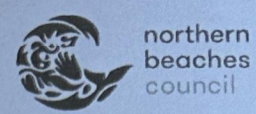
ARCHITECT: Baikie Corr

CLIENT: Aaron Hawkins & Rebecca Sleeman

Address: 5 Roosevelt Avenue Allambie Heights NSW 2100

Job Description: Proposed Additions & Alterations To Residence

Stormwater Engineering Title			
Original Sheet Size	Scale	Drawn	Check
A1	1:100, 1:20, 1:5	NL	CO
Date	Job No.	Sheet No.	Rev.
November 2024	2425-038	05 of 06	03

 northern beaches council

Appendix 2 Sample Easement Letter

Dear

I/we
are proposing to redevelop our property at

Before we can proceed with this proposal Council has advised us that we have two options for the drainage of stormwater. Council's preferred method is to obtain a drainage easement to convey the stormwater runoff from our property to the nearest public stormwater drainage infrastructure or Council approved discharge point,
being PLEASE DO GRANT ME ROOSEVELT AVE

This will require you to grant me/us a drainage easement through your property with all legal and survey costs for the creation of the easement being borne by us, together with any consideration for the use of your property as determined by an independent valuation or agreement. (Attach independent valuation or agreement to this form)

The alternative is to install an underground absorption system or level spreader (if appropriate for this site) to spread and disperse the stormwater flow. As the runoff and seepage from this system may flow towards your property because of the slope of the land, the best solution would be to have a drainage system that will convey our stormwater via an inter-allotment drainage pipe to ROOSEVELT AVE

You are advised that if Council determines that the only way to drain stormwater is via an easement through your property, I/we may have to use Section 88K of the Conveyancing Act 1919 to request the Supreme Court to grant me/us the drainage easement. This will probably result in legal expenses and time spent for both you and I/us.

Could you please indicate your position regarding this matter so that we can advise Council to enable our application to progress.

YES I/we are willing to grant you a drainage easement.


Name Address

NO UNDER NO CIRCUMSTANCES I/we are not willing to grant you a drainage easement.

PAMELA MADORELL 8 MONSERRA RD ALLAMBIE HTS
Name Address

Pamela Madorell

Version 2 | 26 February 2021 | Water Management for Development Policy | 2021/154368 | Page 63 of 100

 northern beaches council

Appendix 2 Sample Easement Letter

Dear Jason

I/we AARON & REBECCA HAWKINS
are proposing to redevelop our property at 5 ROOSEVELT AVE, ALLAMBIE HEIGHTS NSW 2100

Before we can proceed with this proposal Council has advised us that we have two options for the drainage of stormwater. Council's preferred method is to obtain a drainage easement to convey the stormwater runoff from our property to the nearest public stormwater drainage infrastructure or Council approved discharge point,
being MONSERRA RD, ALLAMBIE HEIGHTS

This will require you to grant me/us a drainage easement through your property with all legal and survey costs for the creation of the easement being borne by us, together with any consideration for the use of your property as determined by an independent valuation or agreement. (Attach independent valuation or agreement to this form)

The alternative is to install an underground absorption system or level spreader (if appropriate for this site) to spread and disperse the stormwater flow. As the runoff and seepage from this system may flow towards your property because of the slope of the land, the best solution would be to have a drainage system that will convey our stormwater via an inter-allotment drainage pipe to MONSERRA RD, ALLAMBIE HEIGHTS

You are advised that if Council determines that the only way to drain stormwater is via an easement through your property, I/we may have to use Section 88K of the Conveyancing Act 1919 to request the Supreme Court to grant me/us the drainage easement. This will probably result in legal expenses and time spent for both you and I/us.

Could you please indicate your position regarding this matter so that we can advise Council to enable our application to progress.

YES I/we are willing to grant you a drainage easement.

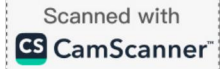
Name Address

NO I/we are not willing to grant you a drainage easement.

Jason Perri 6 Monserra Rd, Allambie Heights
Name Address

Very concerned about an absorption system or spreader. Already high water levels in property and rock only 300mm below surface!

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02	27.11.2024	Amended as requested	CO	BM
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ARCHITECT:	Baikie Corr
CLIENT:	Aaron Hawkins & Rebecca Sleeman

Address:	5 Roosevelt Avenue Allambie Heights NSW 2100
----------	---

Job Description:	Proposed Additions & Alterations To Residence
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Stormwater Engineering Title:	Easement Refusal Letters
Original Sheet Size:	A1
Scale:	1:100, 1:20, 1:5
Drawn:	NL
Check:	CO
Date:	November 2024
Job No.:	2425-038
Sheet No.:	06 of 06
Rev.:	03