Robert Bird Group Pty Ltd ABN 67 010 580 248 - ACN 010 580 248
Level 6, 100 Pacific Highway, North Sydney NSW 2060
PO Box A2309, Sydney South NSW 1235 Australia
P: +61 (0) 2 8246 3200 F: +61 (0) 2 8246 3201 www.robertbird.com

Reference: 25304-RBG-ZZ-CV-LT-ZZ-00003-260211

WATERLOO COLLECTIVE
78-82 Wyndham St
Alexandria NSW 2015

Attention: Sam Hui, Assistant Development Manager

DATE: 11th February, 2026

RE: Letter 00003 - Waterloo Metro Quarter and TfNSW Coordination – Drainage Connection to Botany Rd

---

Dear Sam,

I am writing to summarise the coordination undertaken between Robert Bird Group (RBG) and Transport for NSW (TfNSW) regarding the proposed drainage connection points at Botany Road.

The existing drainage assets along Botany Road as shown in Figure 1 are owned by TfNSW as advised by the City of Sydney Council (CoS), the development must obtain approval from TfNSW to connect to these assets.

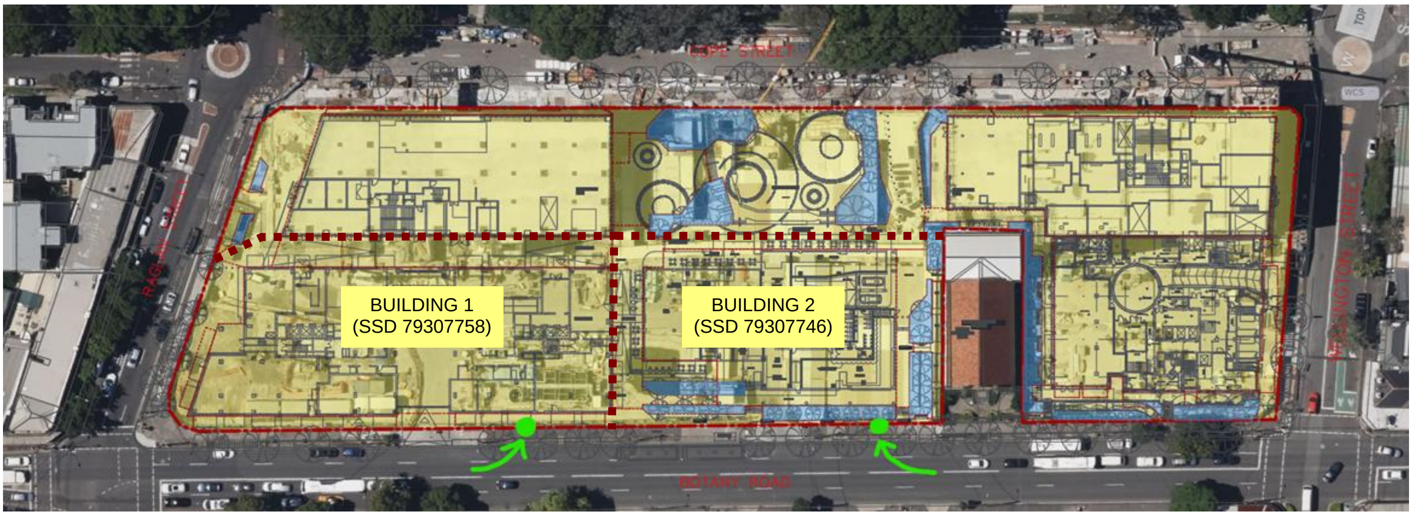


Figure 1 – Proposed drainage connection points along Botany Rd (green dots)

RBG have been in contact with TfNSW since December 2025, and has provided the information and supporting documentation, including engineering drawings and hydraulic calculations of pre- and post-development stormwater discharge rates to Botany Road. These discharge rates are expressed in litres per second for the 1-in-5 year, 1-in-10 year, 1-in-20 year, and 1-in-100 year rainfall events. We understand that the submitted information aligns with TfNSW's drainage requirements as outlined in their agency submission comments.

TfNSW have advised RBG that at this stage, only pre-lodgement advice can be provided, as development consent approval has not yet been granted. RBG is currently awaiting formal feedback or acceptance of the submitted information.

A record of correspondence and submitted documents are attached in the following page for your reference.

Yours faithfully,

ROBERT BIRD GROUP PTY LTD

ALLEN ANG
Senior Associate
CPEng NER - 5728850
Professional Engineer Registration - PRE0000347
Design Practitioner Registration - DEP0000358

APPENDIX A – Record of Conversation (TfNSW Coordination)

Mark LABID

From: Mark LABID
Sent: Thursday, 29 January 2026 1:59 PM
To: 'Andrew.Lissenden@transport.nsw.gov.au'
Cc: Allen ANG; Viet LAM; 'Development Sydney'; Anita Qian
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Andrew,

I hope you are having a great week. Just wondering if you were able to receive the files I sent last week. Please let us know if you need further documents from us to assist with the assessment.

Thank you.

Best regards.

Mark LABID
Engineer
Robert Bird Group Pty Ltd
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6 100 Pacific Highway, North Sydney, New South Wales, Australia 2060

From: Mark LABID
Sent: Friday, 23 January 2026 9:29 AM
To: 'Andrew.Lissenden@transport.nsw.gov.au' <Andrew.Lissenden@transport.nsw.gov.au>
Cc: Allen ANG <Allen.Ang@robertbird.com.au>; Viet LAM <Viet.Lam@robertbird.com.au>; Development Sydney <development.sydney@transport.nsw.gov.au>
Subject: FW: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Andrew,

Thank you for taking the time to speak with me this morning and noting that we will proceed with the pre-lodgement advice given that no consent approval has been provided for this development yet.

Please see attached documents showing our proposed drainage connection to Botany Rd:

1) Building 1 (SSD 79307758) – Northern precinct stormwater drawings
2) Building 2 (SSD 79307746) – Central precinct stormwater drawings
3) Consolidated DRAINS Model of Waterloo Metro Quarter
4) Extracts of the DRAINS Results
5) Pre and post development flows at Botany Rd connection points (existing TfNSW drainage asset)

Best regards,

Mark LABID
Engineer
Robert Bird Group Pty Ltd
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6 100 Pacific Highway, North Sydney, New South Wales, Australia 2060

From: Mark LABID
Sent: Thursday, 15 January 2026 12:47 PM
To: 'Jim Tsirimiagos (MACROPLAN)' <Jim.Tsirimiagos2@transport.nsw.gov.au>; Development Sydney <development.sydney@transport.nsw.gov.au>
Cc: Allen ANG <Allen.Ang@robertbird.com.au>; Viet LAM <Viet.Lam@robertbird.com.au>; Rachel Davis <Rachel.Davis@transport.nsw.gov.au>
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Jim,

Attached are the following files for Transport's review and approval:

1) Building 1 (SSD 79307758) – Northern precinct stormwater drawings
2) Building 2 (SSD 79307746) – Central precinct stormwater drawings
3) Consolidated DRAINS Model of Waterloo Metro Quarter
4) Extracts of the DRAINS Results
5) Pre and post development flows at Botany Rd connection points (existing TfNSW drainage asset)

Can you please let us know who will be the contact person once you go on leave so we can coordinate additional documents if needed?

Many thanks.

Best regards,

Mark LABID
Engineer
Robert Bird Group Pty Ltd
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6 100 Pacific Highway, North Sydney, New South Wales, Australia 2060

From: Jim Tsirimiagos (MACROPLAN) <Jim.Tsirimiagos2@transport.nsw.gov.au>
Sent: Tuesday, 13 January 2026 7:35 PM
To: Mark LABID <Mark.Labid@robertbird.com.au>
Cc: Allen ANG <Allen.Ang@robertbird.com.au>; Viet LAM <Viet.Lam@robertbird.com.au>; Rachel Davis <Rachel.Davis@transport.nsw.gov.au>
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Mark,

TfNSW requires engineering drawings and the hydraulic calculations of pre and post-development stormwater discharge rates to Botany Road, in litres/second for the 1 in 5 year, 1 in 10 year, 1 in 20 year, and 1 in 100 year rainfall event.

Once these are available can you email them to Development.Sydney@transport.nsw.gov.au

I will be on medical leave from Monday 19th January and this matter will be allocated to another staff member once you've emailed the requested documentation.

Kind Regards,

Jim Tsirimiagos
Land Use Planner, Land Use Assessment - Eastern
Transport Planning
Planning, Integration and Passenger
Transport for NSW

M 0412 376 198 **E** jim.tsirimiagos2@transport.nsw.gov.au

transport.nsw.gov.au

Level 8, 4 Parramatta Square
12 Darcy Street,
Parramatta NSW 2150

Transport for NSW

From: Mark LABID <Mark.Labid@robertbird.com.au>
Sent: Monday, 12 January 2026 10:29 AM
To: Jim Tsirimiagos (MACROPLAN) <Jim.Tsirimiagos2@transport.nsw.gov.au>
Cc: Allen ANG <Allen.Ang@robertbird.com.au>; Viet LAM <Viet.Lam@robertbird.com.au>
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Jim,

Happy new year. I hope you had a great break.

I just want to touch base on the stormwater connection to existing TfNSW pits along Botany Rd. Can you please advise on the approval process?

Thank you.

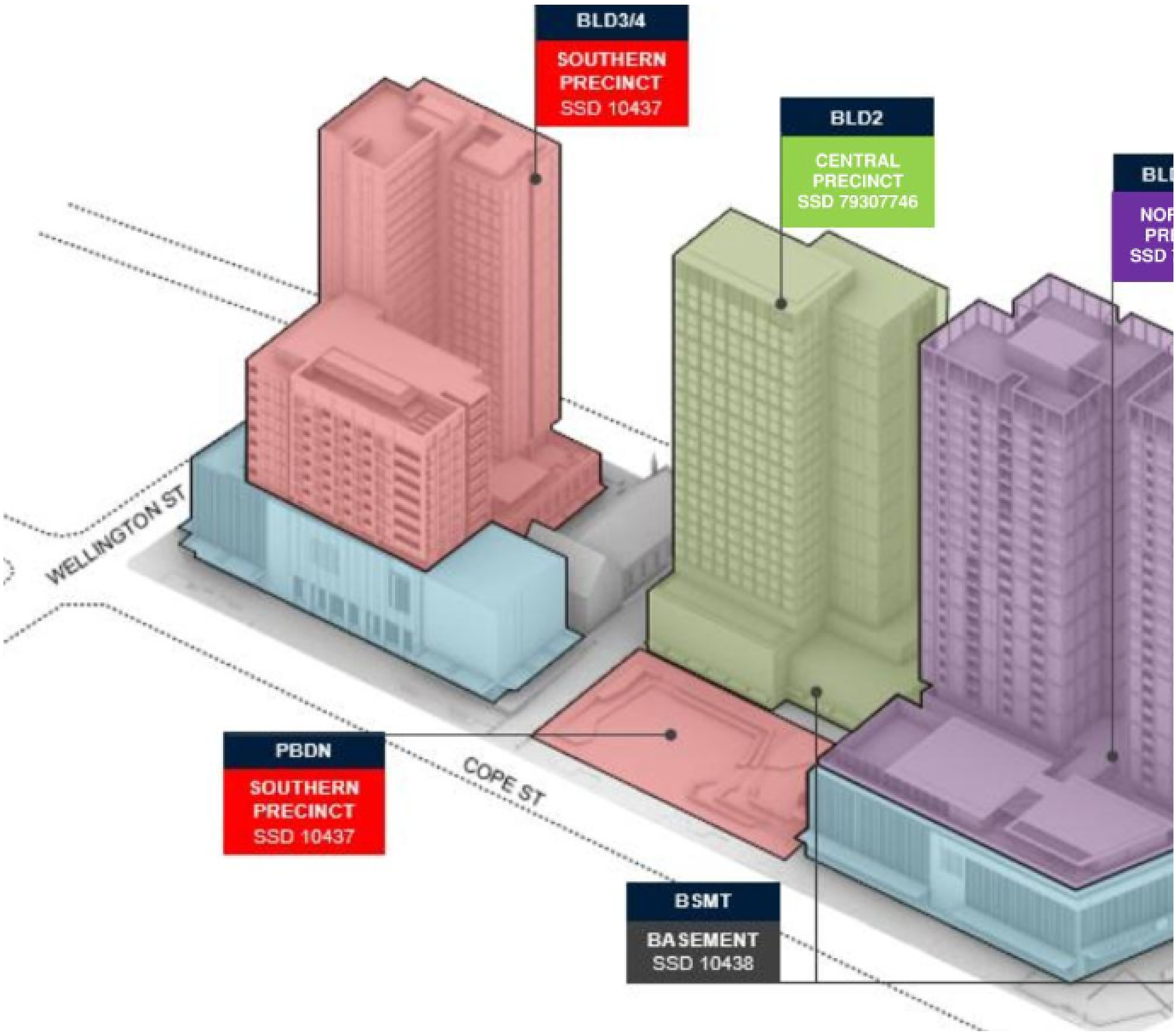
Best regards,

Mark LABID
Engineer
Robert Bird Group Pty Ltd
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6 100 Pacific Highway, North Sydney, New South Wales, Australia 2060

From: Mark LABID <Mark.Labid@robertbird.com.au>
Sent: Monday, 15 December 2025 10:33 AM
To: Jim Tsirimiagos (MACROPLAN) <Jim.Tsirimiagos2@transport.nsw.gov.au>
Cc: Allen ANG <Allen.Ang@robertbird.com.au>; Viet LAM <Viet.Lam@robertbird.com.au>
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Morning Jim,

This relates to SSD 79307758 (Building 1A and B) and SSD 779307746 (Building 2).



Best regards,

Mark LABID
Engineer
Robert Bird Group Pty Ltd
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6, 100 Pacific Highway,, North Sydney,, New South Wales, Australia 2060

From: Jim Tsirimiagos (MACROPLAN) <Jim.Tsirimiagos2@transport.nsw.gov.au>
Sent: Wednesday, 10 December 2025 7:24 PM
To: Mark LABID <Mark.Labid@robertbird.com.au>
Subject: RE: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi Mark,

We've received several SSDs for this precinct, can you advice which precinct SSD this applies to.

Kind Regards,

Jim Tsirimiagos
Land Use Planner, Land Use Assessment - Eastern
Transport Planning
Planning, Integration and Passenger
Transport for NSW

M 0412 376 198 **E** jim.tsirimiagos2@transport.nsw.gov.au

transport.nsw.gov.au

Level 8, 4 Parramatta Square
12 Darcy Street,
Parramatta NSW 2150

OFFICIAL

OFFICIAL

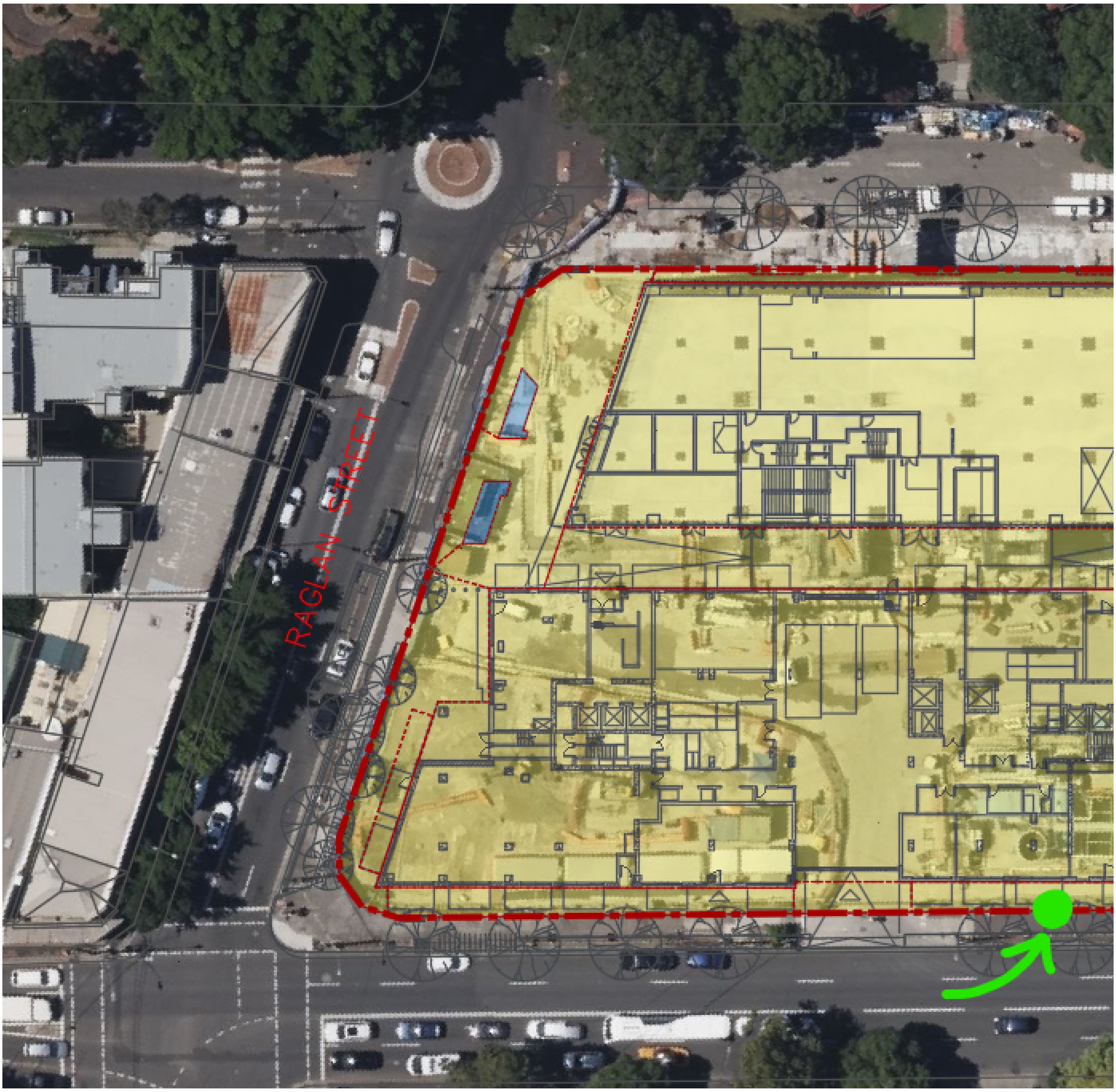
From: Mark LABID <Mark.Labid@robertbird.com.au>
Sent: Tuesday, 9 December 2025 6:22 PM
To: Development Sydney <Development.Sydney@transport.nsw.gov.au>
Subject: Waterloo Metro Quarter Development - Drainage Connection to Existing TfNSW Pits

Hi TfNSW,

I am Mark, a civil engineer from Robert Bird Group. We are working with Mirvac on Waterloo Metro Quarter Development as shown in the image below. In line with this, we are proposing to connect our stormwater system to the existing drainage pits at Botany Rd (green dots).

As per our conversation with City of Sydney (CoS) Council, we will be needing an approval from TfNSW to connect to these assets owned by your authority. Please refer to the attached email correspondence with CoS.

May we please know any contact person in TfNSW to discuss our proposed connection points and the steps needed to obtain the approval?



Best regards,

Mark LABID
Engineer
Robert Bird Group Pty Ltd

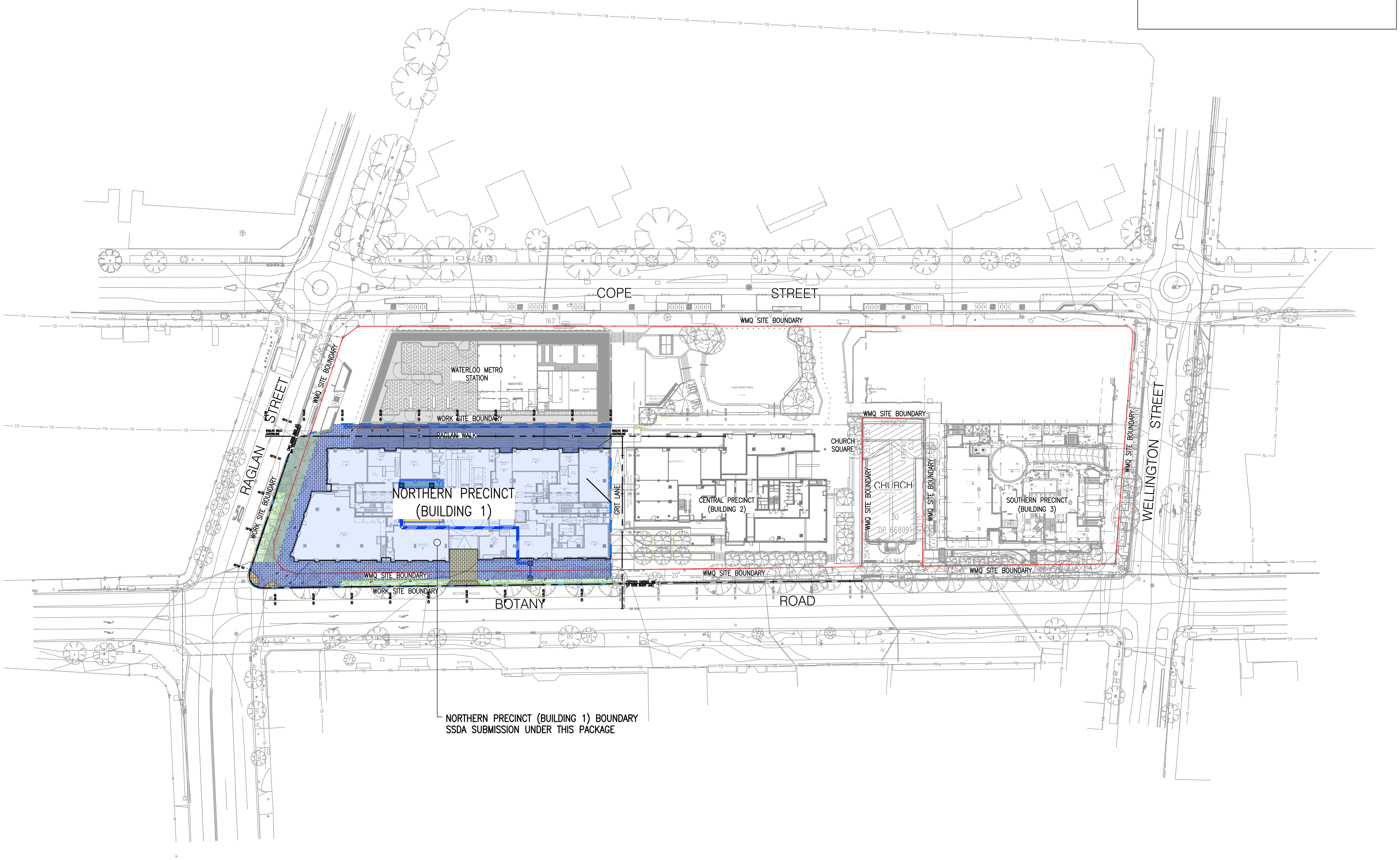
t: 02 82463200
w: www.robertbird.com
a: Cammeraygal Country, Level 6, 100 Pacific Highway,, North Sydney,, New South Wales, Australia 2060

APPENDIX B – Building 1 (SSD 79307758) Northern Precinct Stormwater Drawings

LEGEND

WMQ SITE BOUNDARY

BUILDING 1 EXTENT OF WORK



Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	19.12.25
C		DRAFT IFT FOR REVIEW	06.02.26

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

SCALE 1:500

10 0 10 20m

Key Plan

North Point

Client

WATERLOO COLLECTIVE

JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup
an company

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
18445	25mm

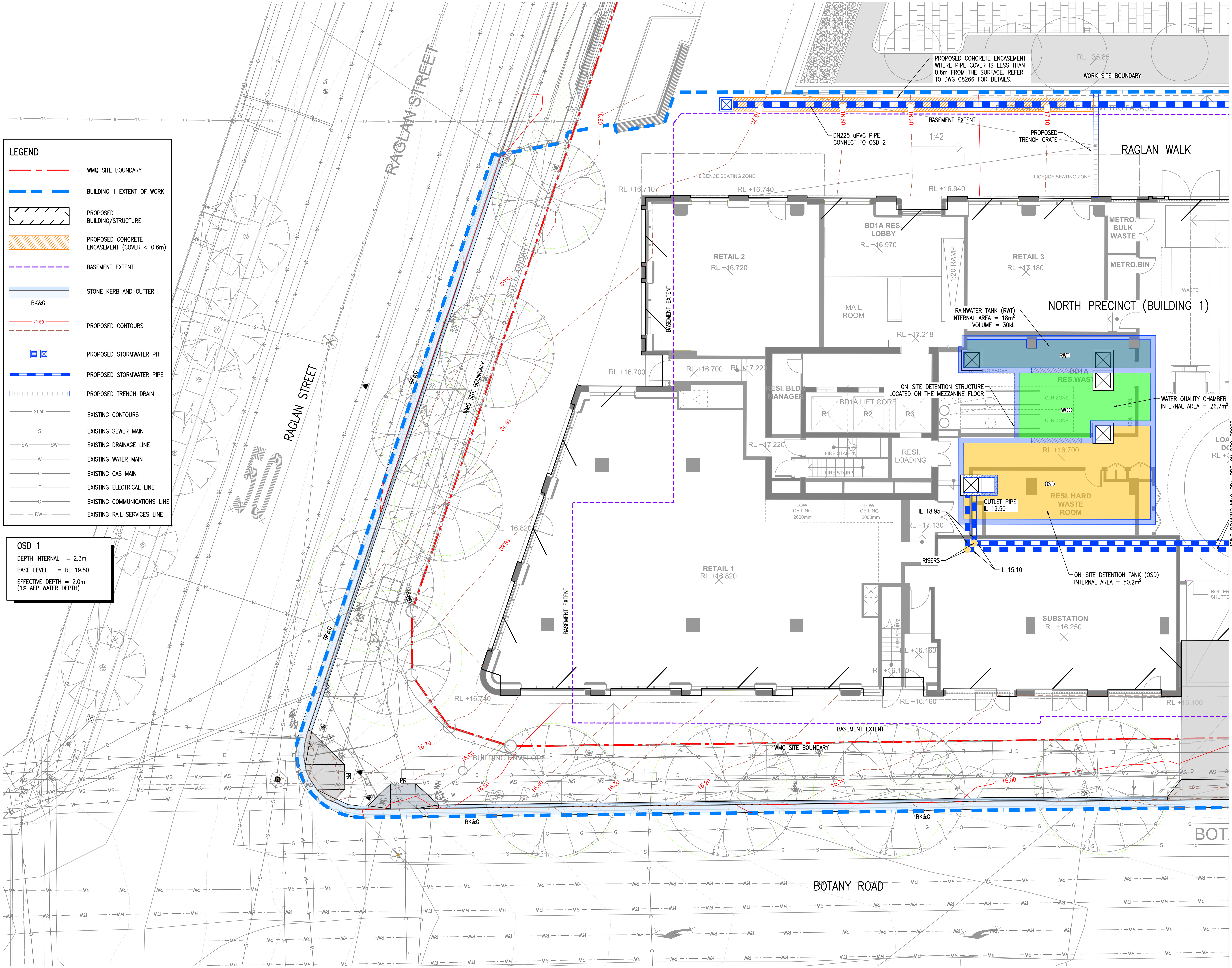
Checked	Approved	Sheet size	Scale
ML	AA	A1	1:500

Sheet title
OVERALL SITE PLAN

Status
FOR REVIEW

Sheet number: WMQ-BD1-RBG-CV-DRG-C8210

Revision: C



#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	19.12.25
C		DRAFT IFT FOR REVIEW	06.02.26

Recent revision history

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

SCALE 1:100
1 0 1 2 3 4m

Key Plan

North Point

Client
WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant
RobertBirdGroup

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
25304	25mm

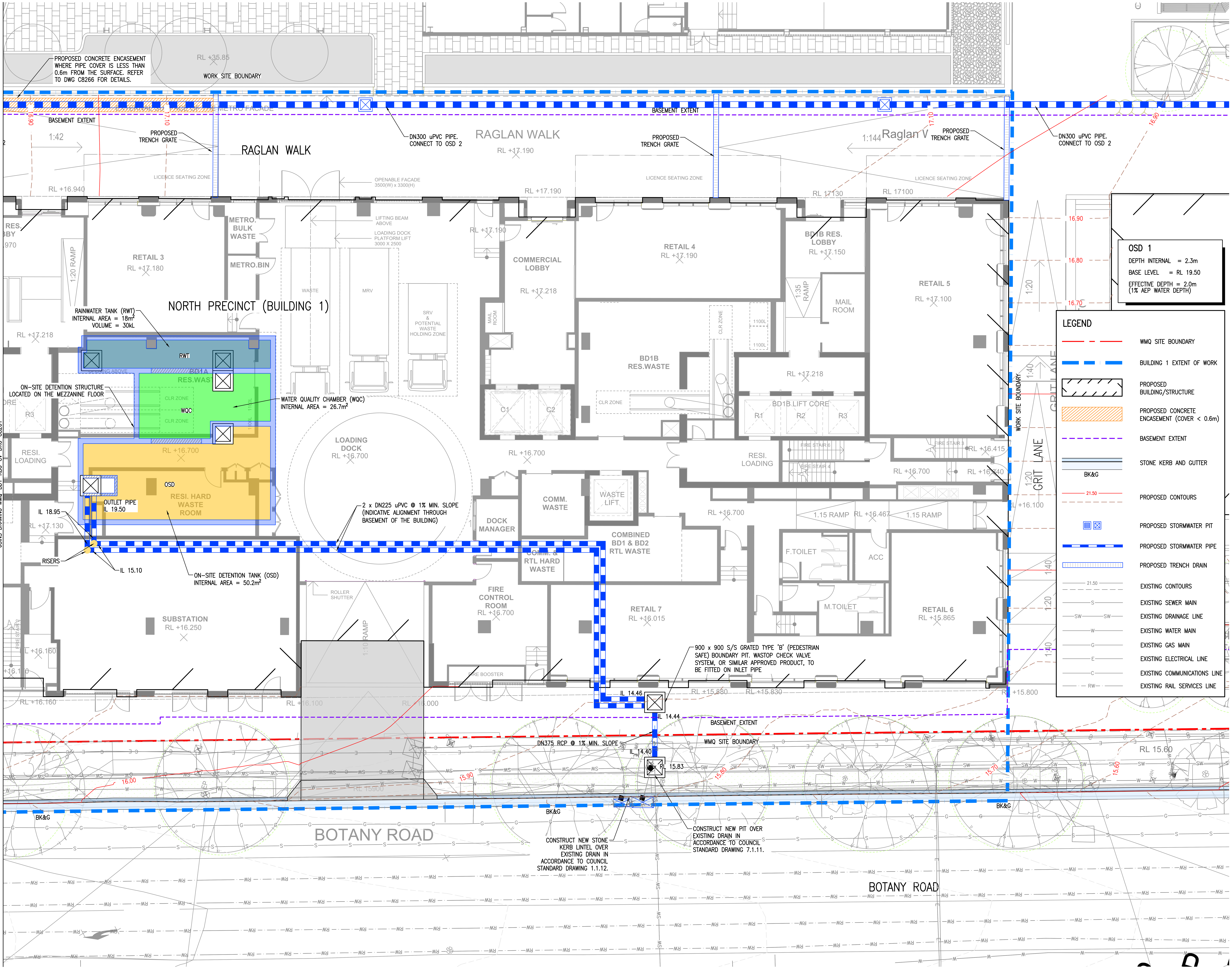
Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

Sheet title
STORMWATER MANAGEMENT PLAN BUILDING 1 - SHEET 1

Status
FOR REVIEW

Sheet number: WMQ-BD1-RBG-CV-DRG-C8261
Revision: C

Date generated 2/10/2026 3:29:42 PM P:\2025 JOBS\25304E WMQ ALTERNATIVE DESIGN CENTRAL\5_WORKING\DRGS & BIM MODELS\CV\AUTOCAD\DRAWINGS\BUILDING 1\WMQ-BD1-RBG-CV-DRG-C8261.DWG



Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	19.12.25
C		DRAFT IFT FOR REVIEW	06.02.26

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

SCALE 1:100

Key Plan

North Point

Client
WATERLOO COLLECTIVE
JOHN HOLLAND mirvac

NSW GOVERNMENT
sydney METRO

Consultant
RobertBirdGroup

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
25304	25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

Sheet title
STORMWATER MANAGEMENT PLAN BUILDING 1 - SHEET 2

Status
FOR REVIEW

Sheet number: WMQ-BD1-RBG-CV-DRG-C8262
Revision: C

Date generated 2/10/2026 6:41:25 PM
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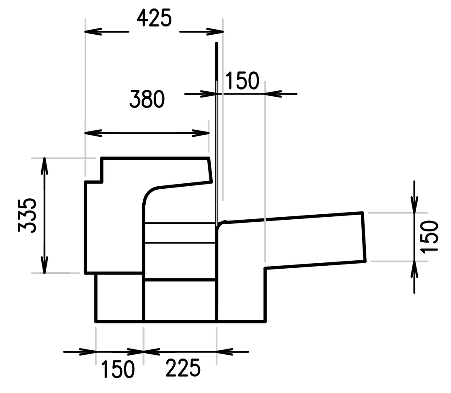
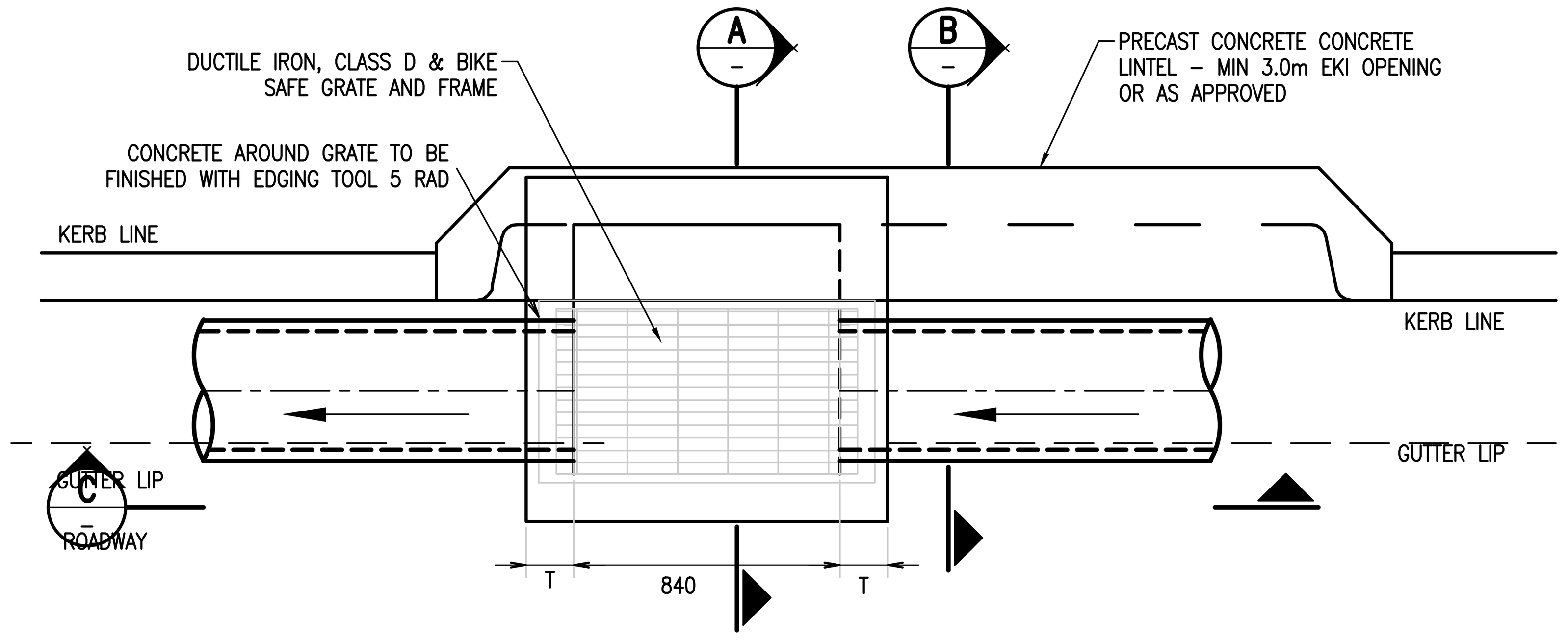
NOTES:
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS TO BE 32MPa.
2. 100mmØ SUBSOIL DRAINAGE PIPE 3.0m LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPES.
3. PROVIDE STEP IRONS FOR PITS DEEPER THAN 1.0 m IN ACCORDANCE WITH STANDARD STEP IRONS DRAWING.
4. PITS OVER 2.1m IN DEPTH TO BE DESIGNED BY STRUCTURAL ENGINEER.
5. GRATES SHALL BE BICYCLE SAFE AND HAVE MAXIMUM INLET CAPACITY. ALL GRATES MUST BE APPROVED BY THE CITY'S REPRESENTATIVE.
6. CONCRETE STRUCTURES & REINFORCEMENT TO COMPLY WITH AS3600, AS 4671 & CoS TECHNICAL SPECIFICATIONS.
7. DRAINAGE PIPE TO BE MINIMUM 375Ø CLASS 4 REINFORCED CONCRETE PIPE.
8. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.

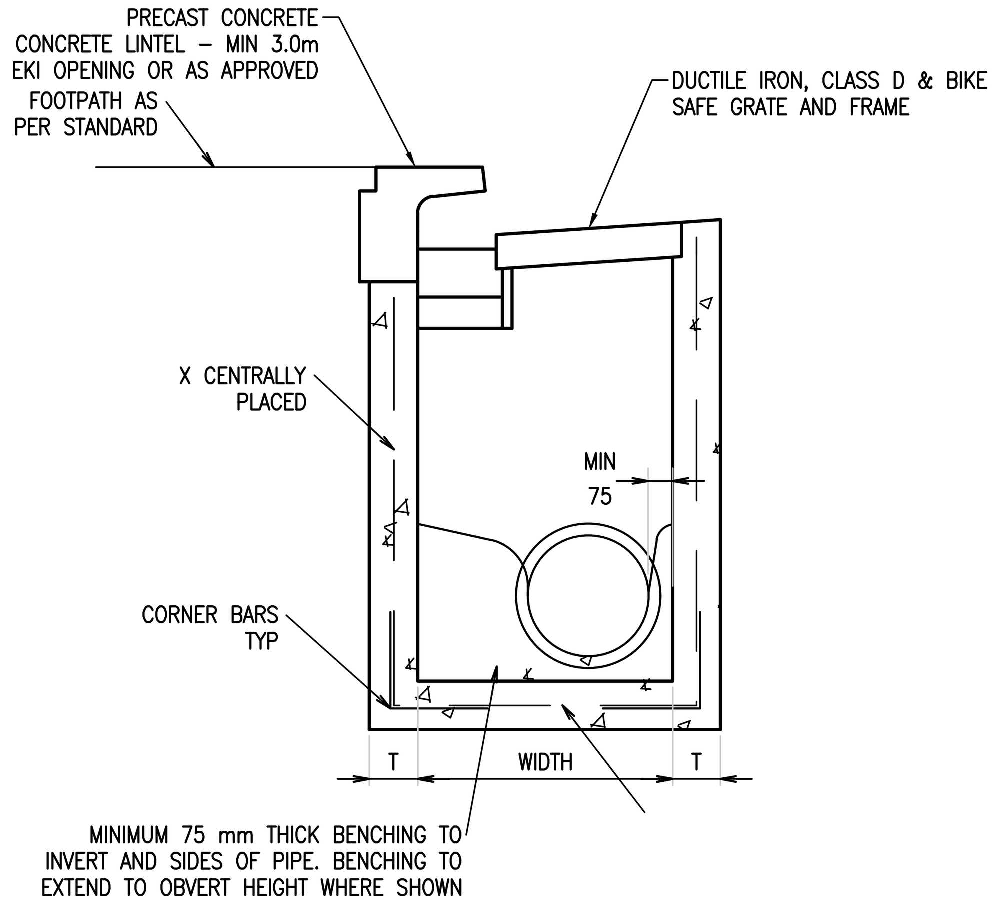
PIT SPECIFICATIONS					
D	B	T	X	Y	CORNER BARS
750 – 1200	150	150	SL82	SL81	N12–300 L 500
1200 – 2100	200	180	SL81	SL81	N12–200 L 600
> 2100	TO STRUCTURAL ENGINEERS SPECIFICATION				



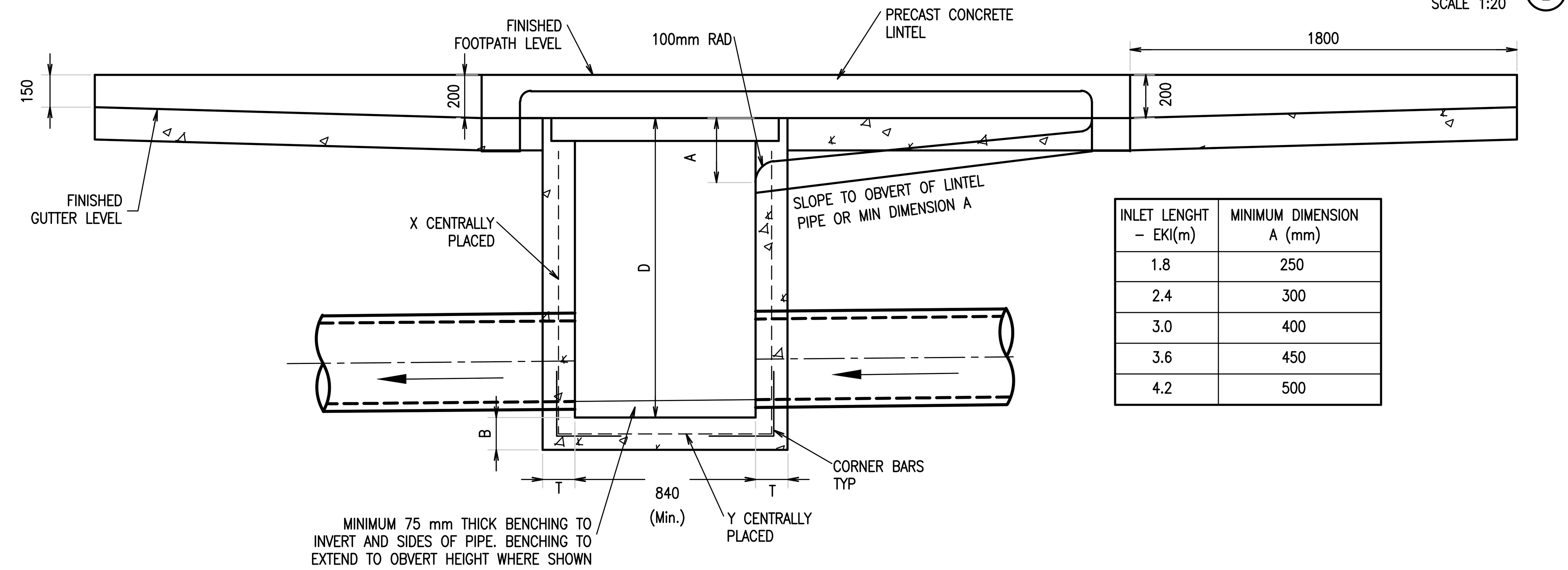
SECTION B
SCALE 1:20



PLAN
SCALE 1:20



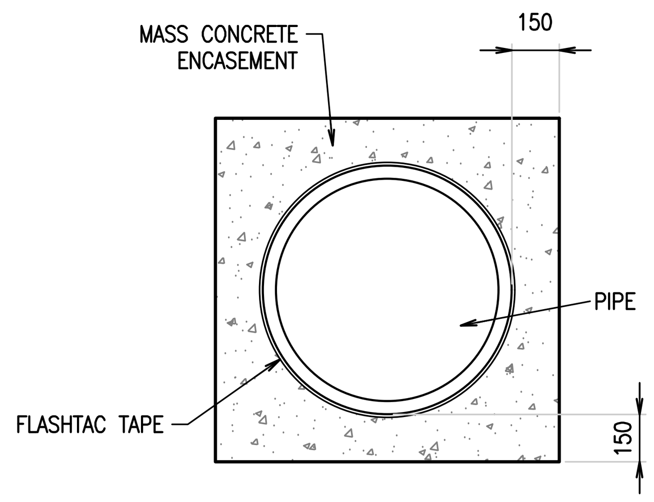
SECTION A
SCALE 1:20



INLET LENGHT – EKI(m)	MINIMUM DIMENSION A (mm)
1.8	250
2.4	300
3.0	400
3.6	450
4.2	500

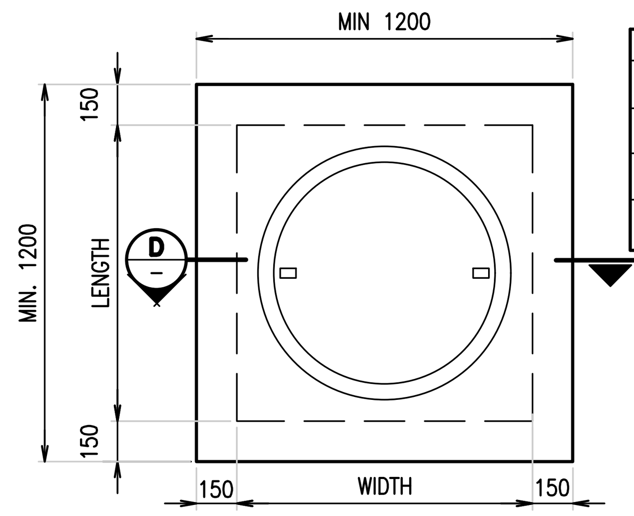
SECTION C
SCALE 1:20

STANDARD KERB INLET GULLY PIT
(AS PER CITY OF SYDNEY STANDARD)



CONCRETE ENCASEMENT DETAIL
SCALE 1:20

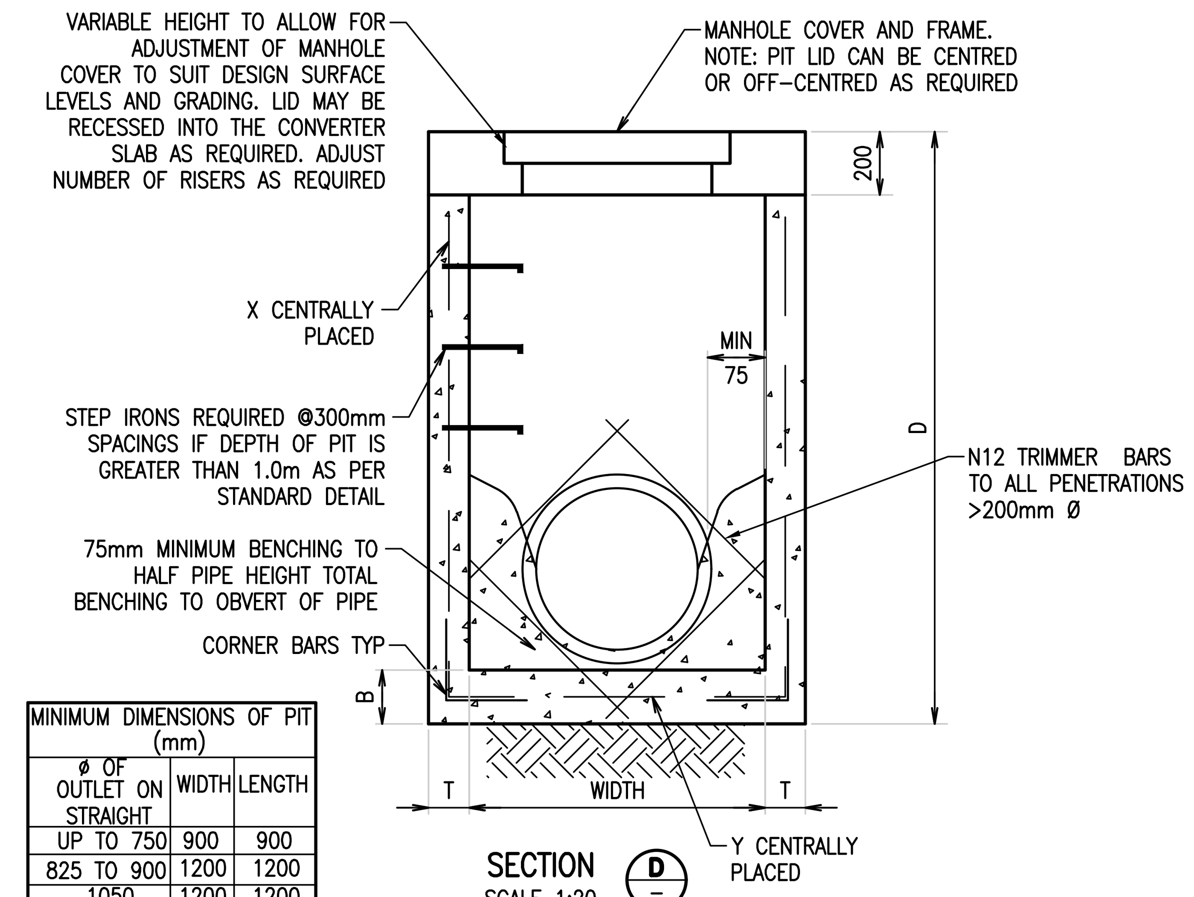
SCALE 1:20
200 0 200 400 600 800 1000mm



COVER AND FRAME – PLAN
SCALE 1:20

PIT SPECIFICATIONS					
D	B	T	X	Y	CORNER BARS
750 – 1200	150	150	SL82	SL81	N12–300 L 500
1200 – 2100	200	180	SL81	SL81	N12–200 L 600
> 2100	TO STRUCTURAL ENGINEERS SPECIFICATION				

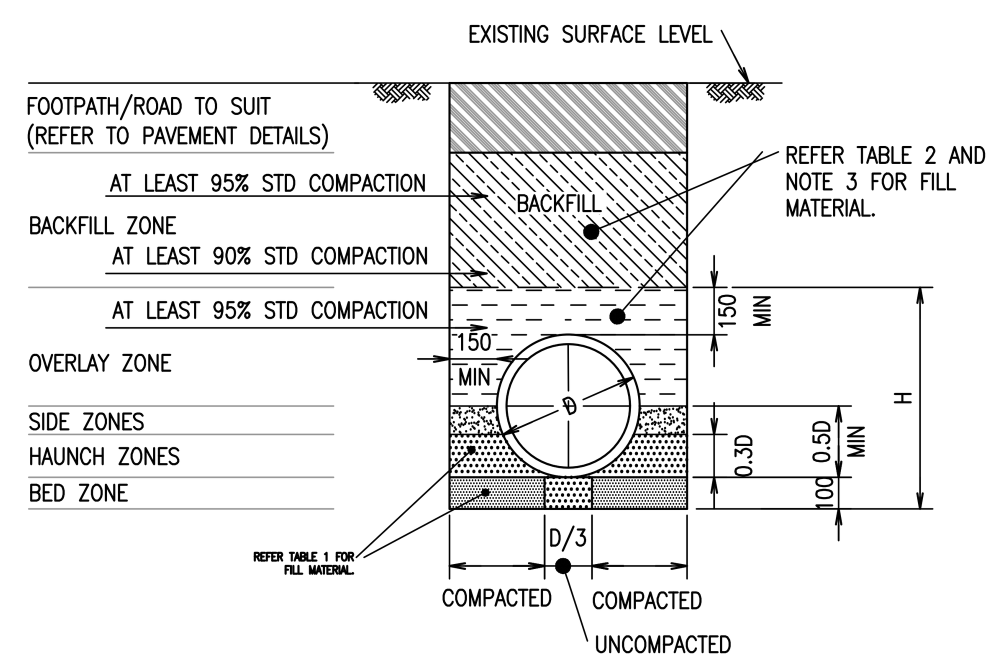
NOTES:
1. ALL CONCRETE IS TO HAVE MINIMUM STRENGTH OF 32MPa.
2. DRAINAGE PIPE TO MINIMUM 375Ø CLASS 4 REINFORCED CONCRETE PIPE.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED



MINIMUM DIMENSIONS OF PIT (mm)		
Ø OF OUTLET ON STRAIGHT	WIDTH	LENGTH
UP TO 750	900	900
825 TO 900	1200	1200
1050	1200	1200
1200	1350	1200
1350	1500	1200
1500	1650	1200
1650	1800	1200
1800	1950	1200

SECTION D
SCALE 1:20

STANDARD JUNCTION PIT / SURFACE INLET PIT
(AS PER CITY OF SYDNEY STANDARD)
SCALE 1:20



TYPICAL PIPE TRENCH DETAILS
SCALE 1:20

PIPE TRENCH NOTE:
1. MATERIAL FOR FILL AND PIPE SUPPORT INCLUDING BEDDING, HAUNCH AND SIDE ZONES, PIPE OVERLAY AND BACKFILL SHALL BE SELECT FILL CONSISTING OF FREE DRAINING GRANULAR MATERIAL HAVING A PARTICLE SIZE DISTRIBUTION, DETERMINED IN ACCORDANCE WITH AS1289.3.6.1. GRADING LIMITS FOR SELECT FILL SHALL BE IN ACCORDANCE WITH AS3725 AS TABULATED IN TABLE 1 & TABLE 2.
2. REFER TO Cos COUNCIL B10 STORMWATER DRAINAGE SPECIFICATION FOR FILL MATERIAL FOR STORMWATER TRENCHES DETAILS.
3. FILL MATERIAL FOR PIPE OVERLAY AND PIPE BACKFILL ZONE SHALL BE OBTAINED WHICH IS FREE FROM STONES GREATER THAN 100mm AND WITH NOT MORE THAN 20% OF STONES BETWEEN 75mm AND 100mm IN SIZE.

TABLE 1:
GRADING LIMITS FOR SELECT FILL IN BED AND HAUNCH ZONES

SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100–50
0.60	90–20
0.30	60–10
0.15	25–0
0.075	10–0

TABLE 2:
GRADING LIMITS FOR SELECT FILL IN SIDE ZONES

SIEVE SIZE (mm)	WEIGHT PASSING (%)
75.0	100
9.5	100–50
2.36	100–30
0.60	50–15
0.075	25–0

GRATE/COVER NOTES:
ALL CONCRETE IS TO HAVE MINIMUM STRENGTH OF 32MPa.

ALL SURFACE INLET PITS TO HAVE CLASS C GALVANISED STEEL BIKESAFE GRATE – CIVILCAST DI44M (450mm) OR DI99M (900mm) – OR APPROVED EQUIVALENT

ALL JUNCTION PITS TO HAVE CLASS C CAST IRON COVER – CIVILCAST DI44B ST (450mm) OR CI99B ST (900mm) OR APPROVED EQUIVALENT

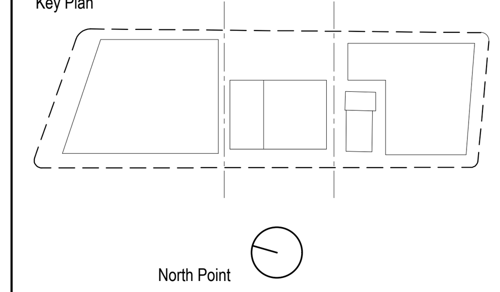
BURIED JUNCTION PIT TO HAVE CLASS D CAST IRON COVER – CIVILCAST CI990 ST (900mm) OR APPROVED EQUIVALENT

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	19.12.25
C		DRAFT IFT FOR REVIEW	06.02.26

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Key Plan



Client
WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant
RobertBirdGroup
an company

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
18445	25mm

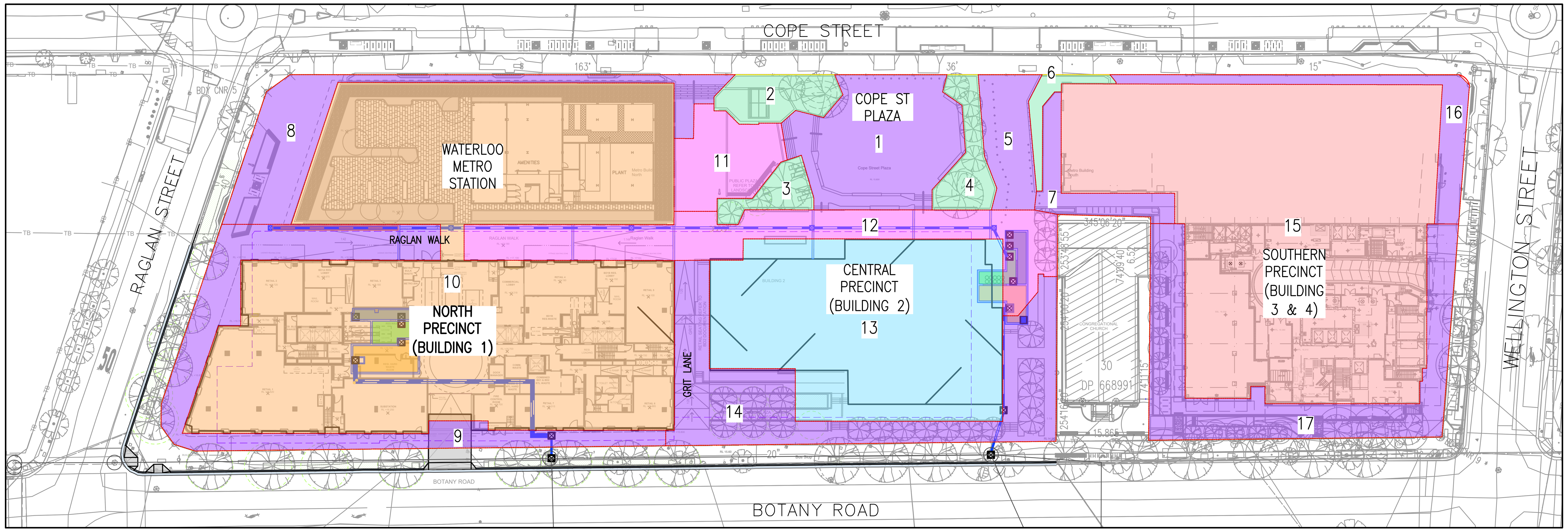
Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

Sheet title
STORMWATER DETAILS

Status
FOR REVIEW

Sheet number: WMQ-BD1-RBG-CV-DRG-C8266
Revision: C

Date generated 2/5/2026 3:38:36 PM P:\2025 JOBS\25304E WMQ ALTERNATIVE DESIGN CENTRAL\5_WORKING\DRGS & BIM MODELS\CV\AUTOCAD\DRAWINGS\BUILDING 1\WMQ-BD1-RBG-CV-DRG-C8266.DWG



WMQ OVERALL OSD CATCHMENT PLAN
SCALE 1:500

OSD CATCHMENT

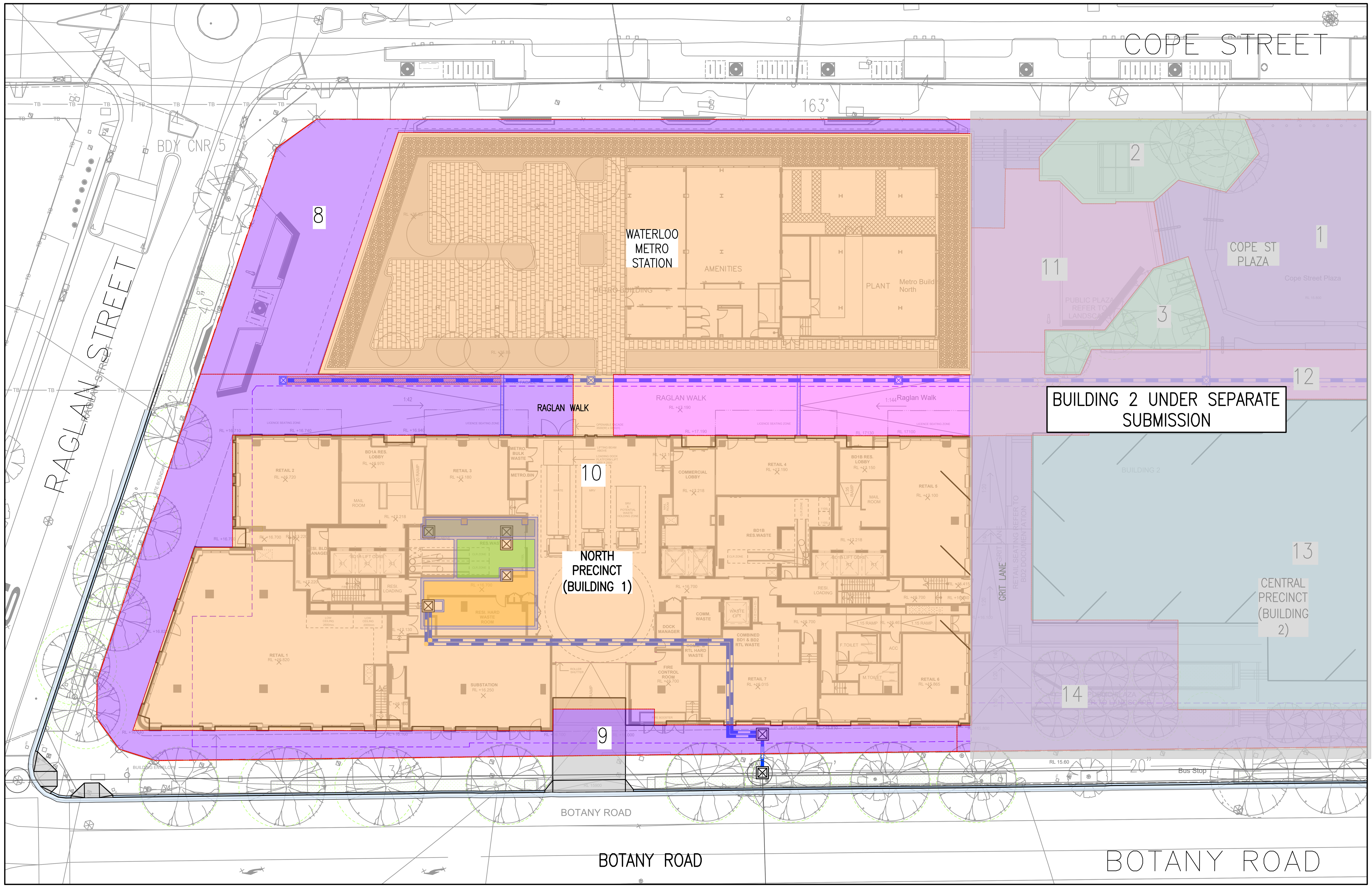
	Catch No.	Bypass Area (sq.m)	Captured Area (sq.m)	Total Site Area (sq.m.)
Cope St	1.000	563.310		
	2.000		148.400	
	3.000		89.740	
	4.000		135.860	
	5.000	190.210		
	6.000		57.930	
Total		753.520	431.930	1185.450
Station	7.000	148.410		
	8.000	437.840		
Total		586.250	0	586.250
Building 1	9.000	664.890		
	10.000		3812.020	
Total		664.890	3812.020	4476.910
Building 2	11.000		249.020	
	12.000		670.010	
	13.000		1415.850	
	14.000	746.000		
Total		746.000	2334.880	3080.880
Building 3 & 4	15.000		2695.670	
	16.000	203.880		
	17.000	641.640		
Total		845.520	2695.670	3541.190
TOTAL SITE AREA		7192.360	18549.000	12870.680

LEGEND

- WMQ SITE BOUNDARY
- BUILDING TO OSD TANK 1
- BUILDING TO OSD TANK 2
- BUILDING TO OSD TANK 3
- PUBLIC DOMAIN TO OSD TANK 2
- PUBLIC DOMAIN CATCHMENT TO COUNCIL SYSTEM (BYPASS)
- RAIN GARDEN CATCHMENT TO COUNCIL SYSTEM

SCALE 1:250
5 0 5 10m

SCALE 1:500
10 0 10 20m



BUILDING 1 OSD CATCHMENT PLAN
SCALE 1:250

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	19.12.25
C		DRAFT IFT FOR REVIEW	06.02.26

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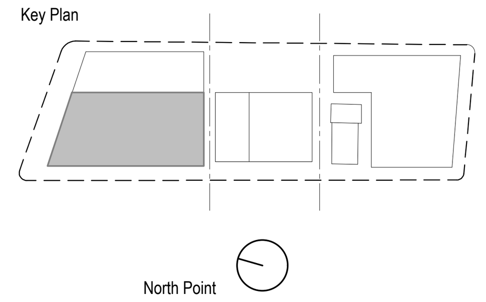
Key Plan



North Point

Client
WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac
NSW GOVERNMENT | sydney METRO

Consultant
RobertBirdGroup

Project
WATERLOO METRO QUARTER DEVELOPMENT

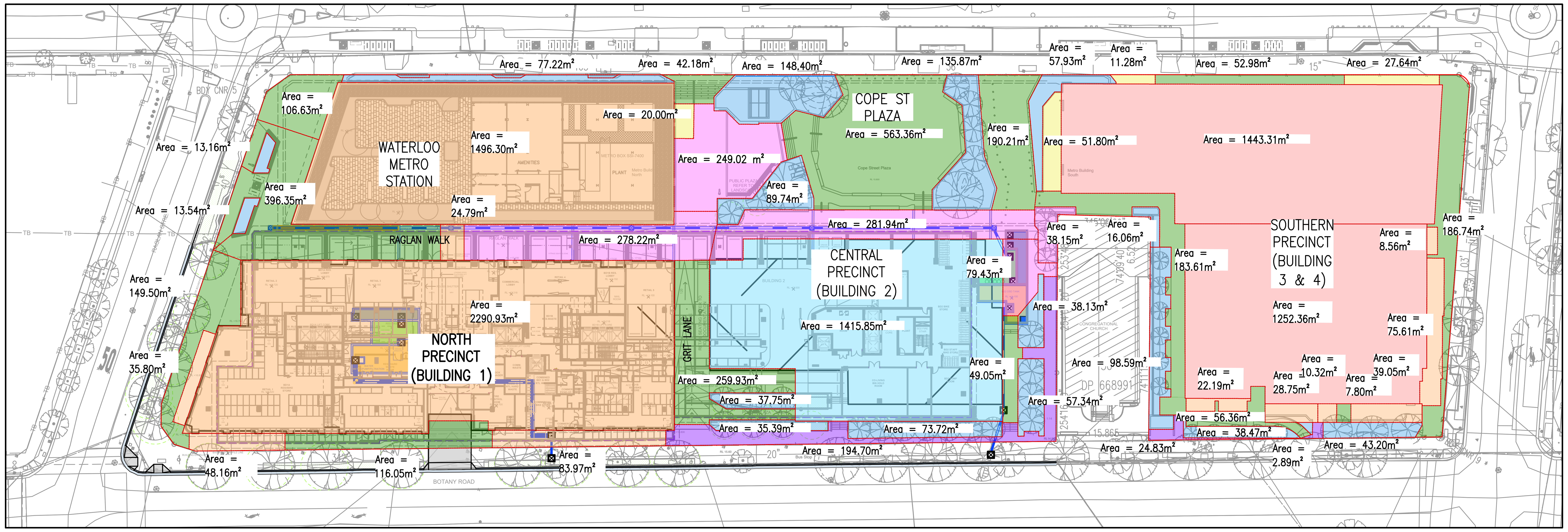
Project number	Size check
18445	25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	AS SHOWN

Sheet title
STORMWATER CATCHMENT PLAN - OSD

Status
FOR REVIEW

Sheet number: WMQ-BD1-RBG-CV-DRG-C8271
Revision: C

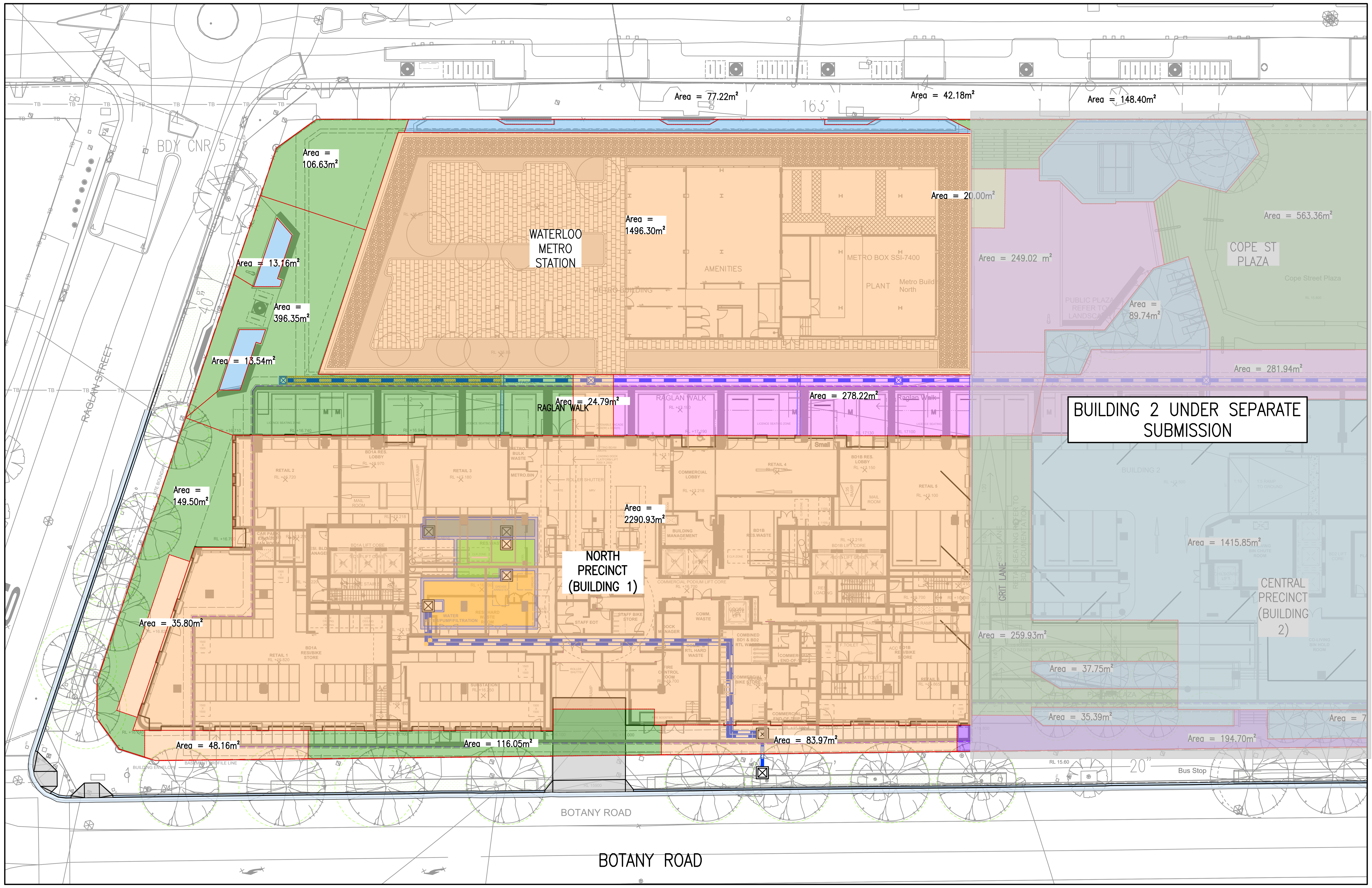


WMQ OVERALL WSUD CATCHMENT PLAN

SCALE 1:500

LEGEND

— · —	WMQ SITE BOUNDARY
(orange)	BUILDING TO OSD TANK 1
(light blue)	BUILDING TO OSD TANK 2
(pink)	BUILDING TO OSD TANK 3
(orange)	BUILDING TO RAIN GARDEN
(yellow)	BUILDING TO COUNCIL SYSTEM
(blue)	RAIN GARDEN TO COUNCIL SYSTEM
(purple)	PUBLIC DOMAIN TO COUNCIL SYSTEM
(green)	PUBLIC DOMAIN TO RAIN GARDEN
(magenta)	PUBLIC DOMAIN TO OSD TANK 2



BOTANY ROAD

BUILDING 1 WSUD CATCHMENT PLAN

SCALE 1:250

SCALE 1:250

5 0 5 10m

SCALE 1:500

10 0 10 20m

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
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C		DRAFT IFT FOR REVIEW	06.02.26

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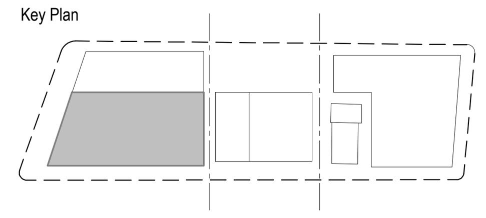
Key Plan



North Point

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an company

Project

WATERLOO METRO QUARTER DEVELOPMENT

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18445	25mm		
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Sheet title

STORMWATER CATCHMENT PLAN - WSUD

Status

FOR REVIEW

Sheet number	Revision
WMQ-BD1-RBG-CV-DRG-C8272	C

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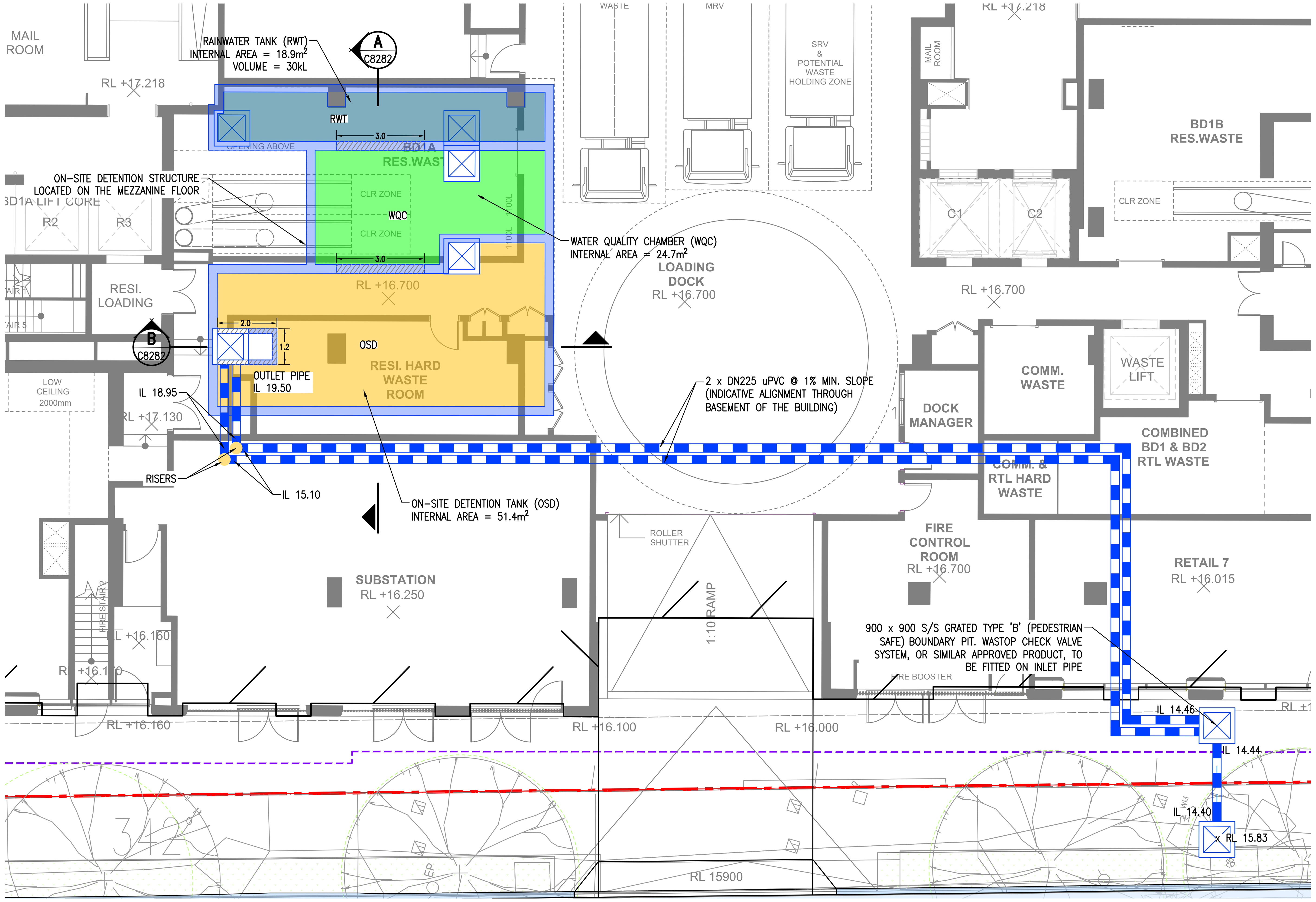


BUILDING 1 OSD PLAN

SCALE 1:100

ORIFICE SIZE

$$PSD = Q_{OSD}$$

$$Q_{OSD} = C_d * A\sqrt{2gH}$$

$$= C_d * \frac{\pi d^2}{4} * \sqrt{2gH}$$

$$d^2 = \frac{4Q_{OSD}}{\pi * C_d * \sqrt{2gH}}$$

$$d = \sqrt{\frac{4Q_{OSD}}{\pi * C_d * \sqrt{2gH}}}$$

$$where\ Q = PSD = 61\frac{L}{s}$$

$$C_d = 0.61$$

$$H = 2.0m$$

$$g = 9.81\frac{m^2}{s}$$

$$d = \sqrt{\frac{4(61)}{\pi * 0.61 * \sqrt{2 * 9.81 * 2.0} * 1000}}$$

$$= 0.143m$$

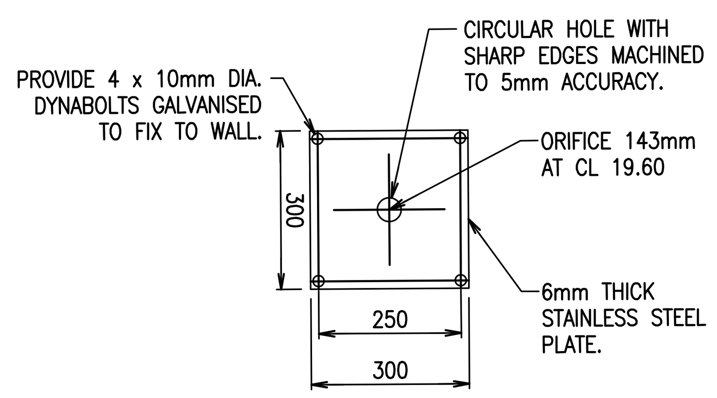
$$d = 143mm$$

OSD 1

DEPTH INTERNAL = 2.3m

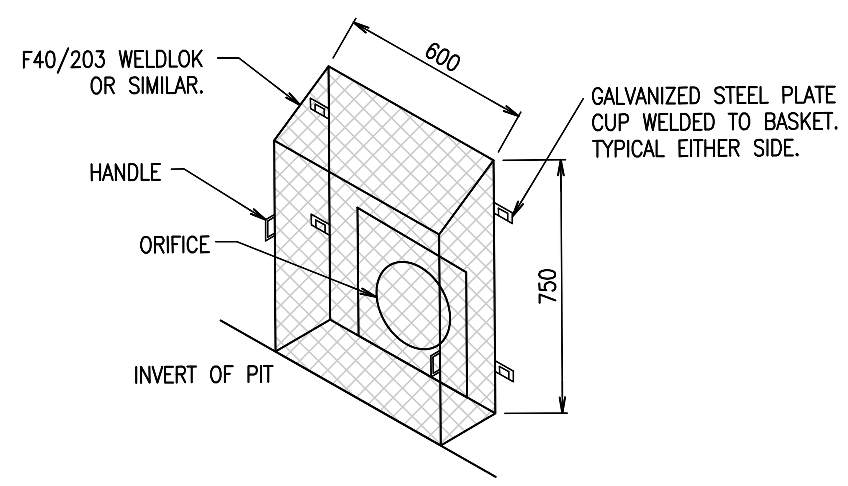
BASE LEVEL = RL 19.50

EFFECTIVE DEPTH = 2.0m (1% AEP WATER DEPTH)



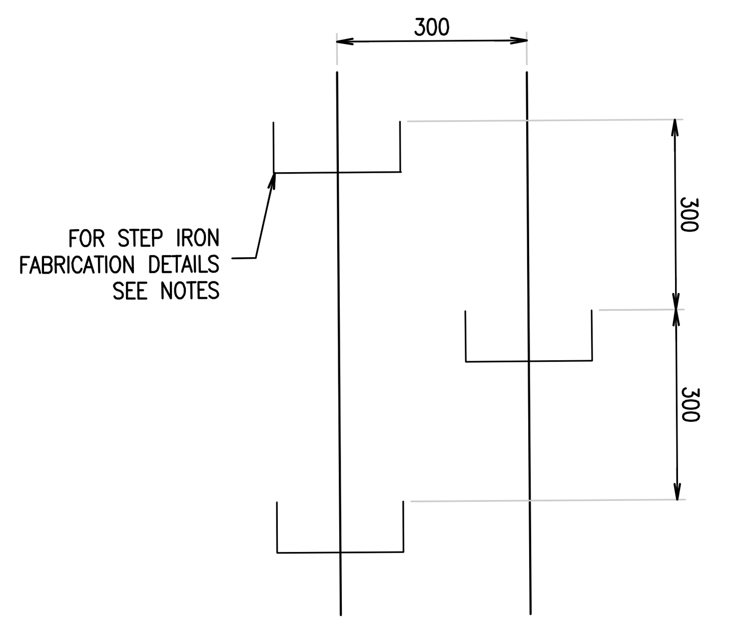
ORIFICE PLATE DETAIL

SCALE 1:20



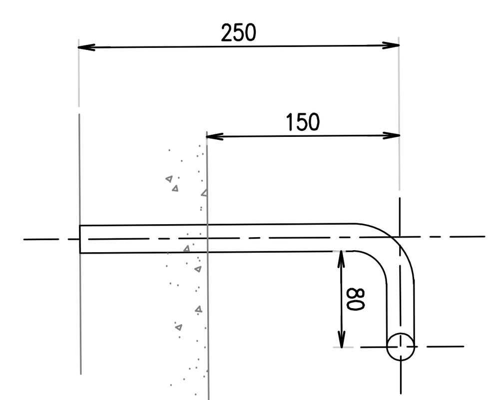
TRASH SCREEN DETAIL

SCALE 1:20



STEP IRON ARRANGEMENT – ELEVATION

SCALE 1:10



SECTION

SCALE 1:5

STANDARD STEP IRONS

NOTES:

1. STEP IRONS TO BE FABRICATED FROM 20mm ø M.S.
2. ALL BENDS TO BE FORMED AROUND 12mm DIAMETER PIN
3. STEP IRONS TO BE PROVIDED IN PITS DEEPER THAN 1.0m
4. STEP IRONS TO BE HOT DIPPED GALVANISED
5. STEP IRONS TO BE LOCATED DIRECTLY ABOVE PIT OUTLET PIPE

SCALE 1:50

1 0 1 2m

SCALE 1:100

1 0 1 2 3 4m

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
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C		DRAFT IFT FOR REVIEW	06.02.26

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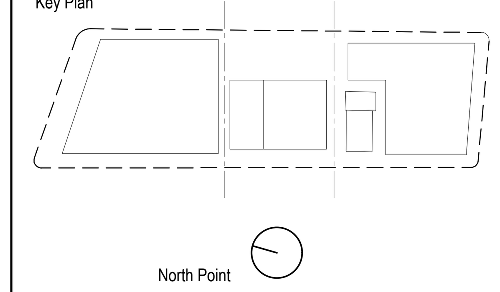
Key Plan



North Point

Client

WATERLOO COLLECTIVE

JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup an company

Project

WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
25304	25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

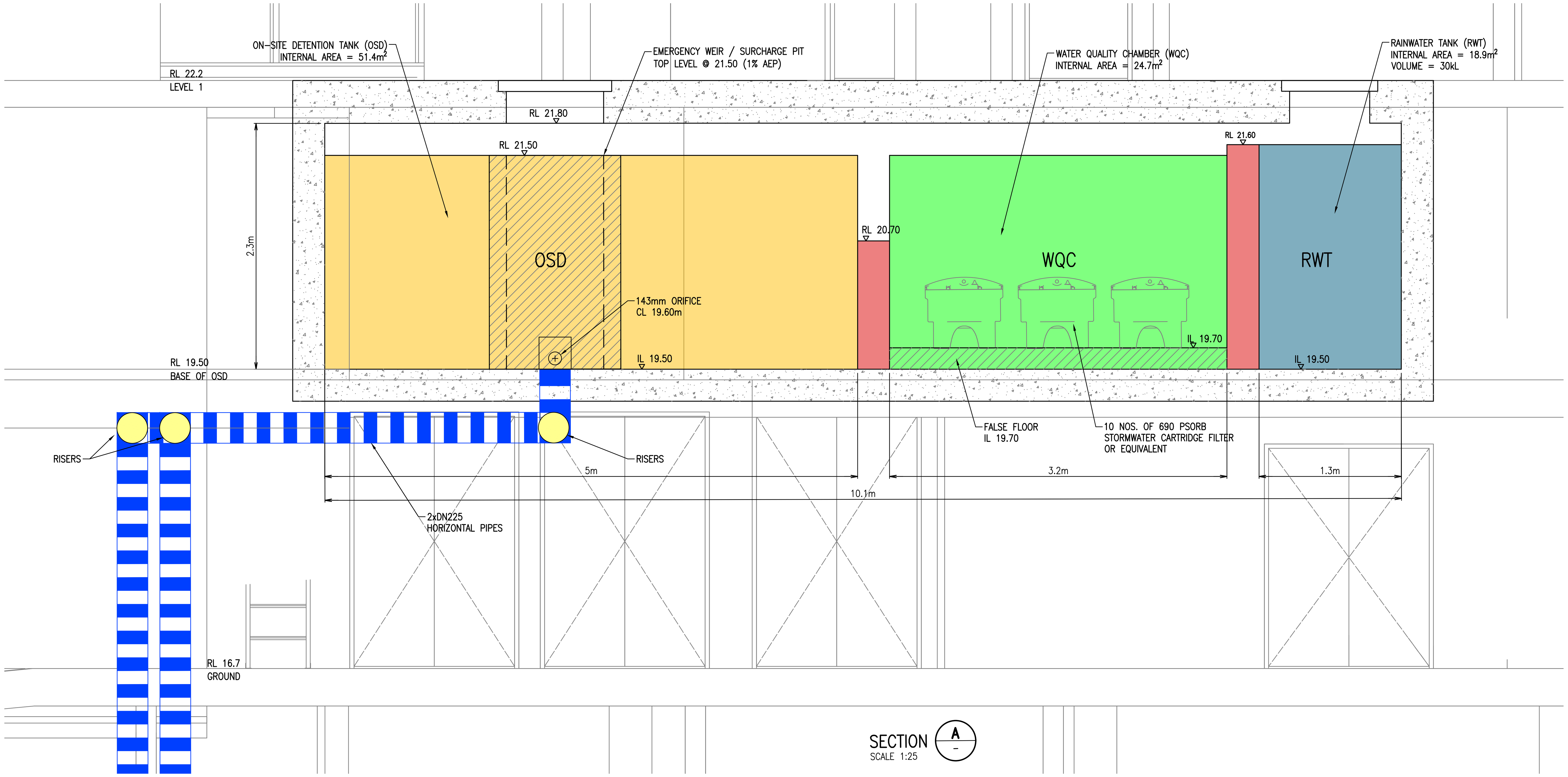
Sheet title

OSD TANK DETAILS BUILDING 1 - SHEET 1

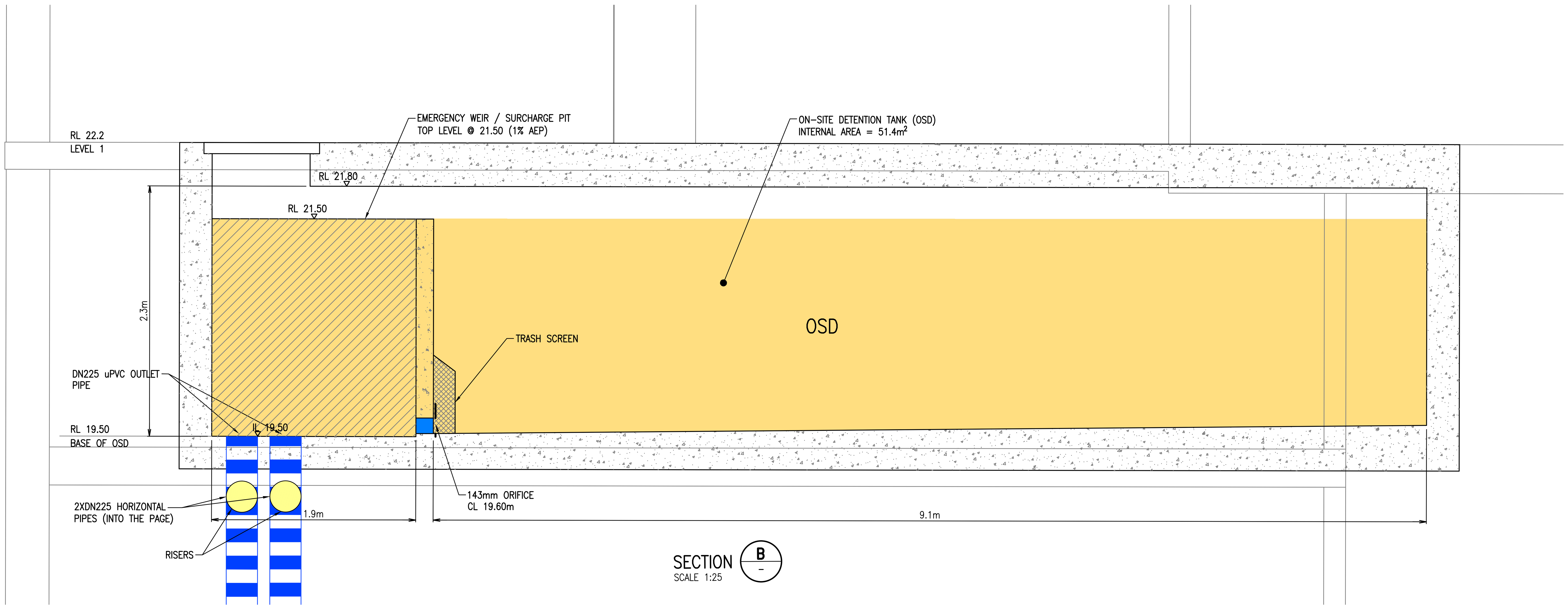
Status

FOR REVIEW

Sheet number	Revision
WMQ-BD1-RBG-CV-DRG-C8281	C



SECTION A
SCALE 1:25



SECTION B
SCALE 1:25

SCALE 1:25
0.5 0 0.5 1.0m

Recent revision history

#	Status	Description	Date
A		DRAFT IFT FOR REVIEW	06.02.26

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Key Plan

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Consultant

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number
18445

Size check
25mm

Checked
ML

Approved
AA

Sheet size
A1

Scale
1:100

Sheet title
OSD TANK DETAILS BUILDING 1 - SHEET 2

Status
FOR REVIEW

Sheet number
WMQ-BD1-RBG-CV-DRG-C8282

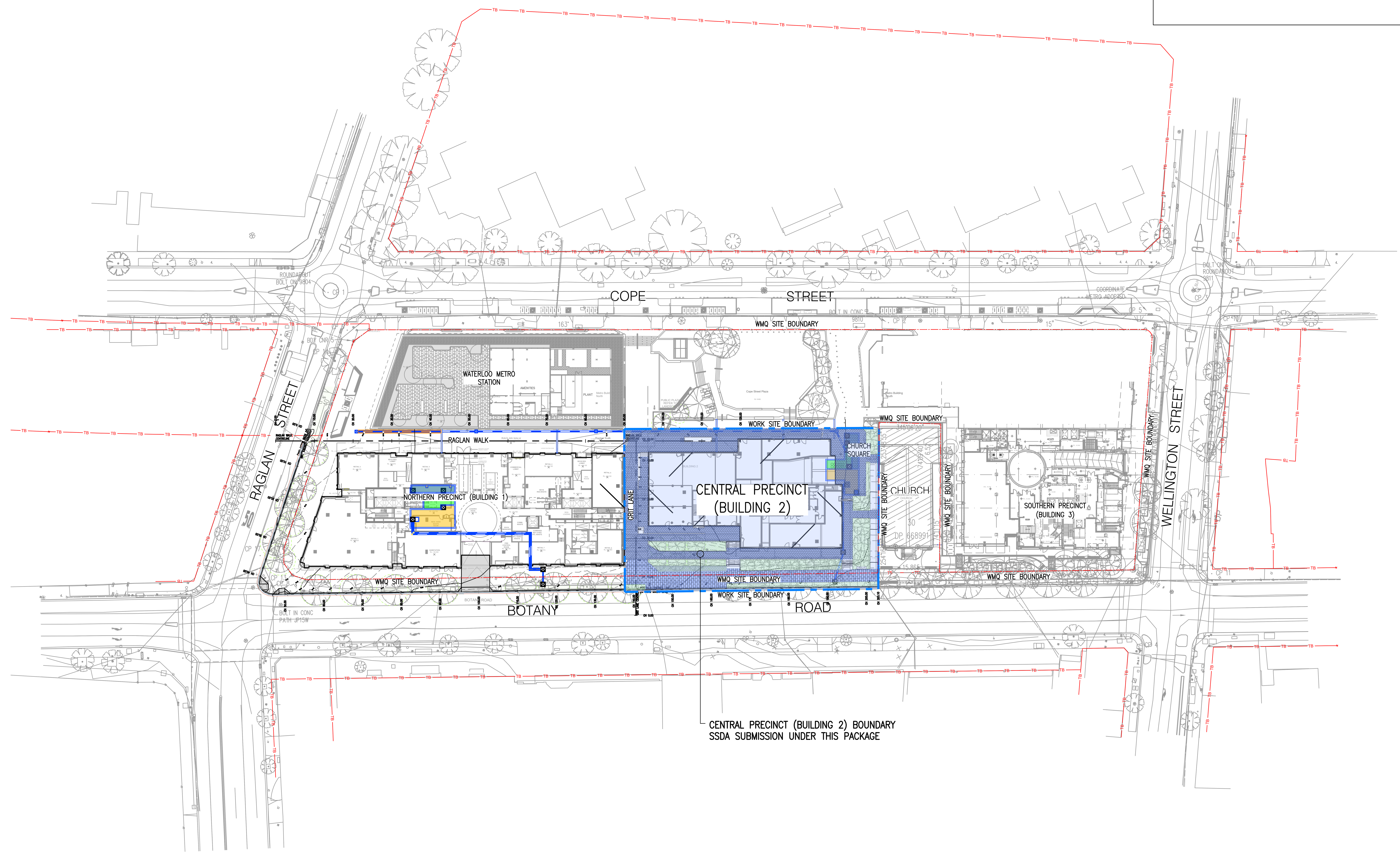
Revision
A

APPENDIX C – Building 2 (SSD 79307746) Central Precinct Stormwater Drawings

LEGEND

WMQ SITE BOUNDARY

BUILDING 2 EXTENT OF WORK



Recent revision history

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A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	06.02.26

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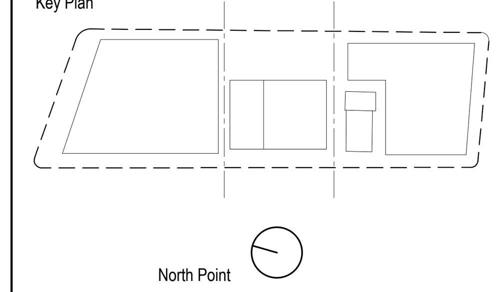
SCALE 1:500

10 0 10 20m

Key Plan



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WATERLOO COLLECTIVE
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Consultant

RobertBirdGroup an company

Project
WATERLOO METRO QUARTER DEVELOPMENT

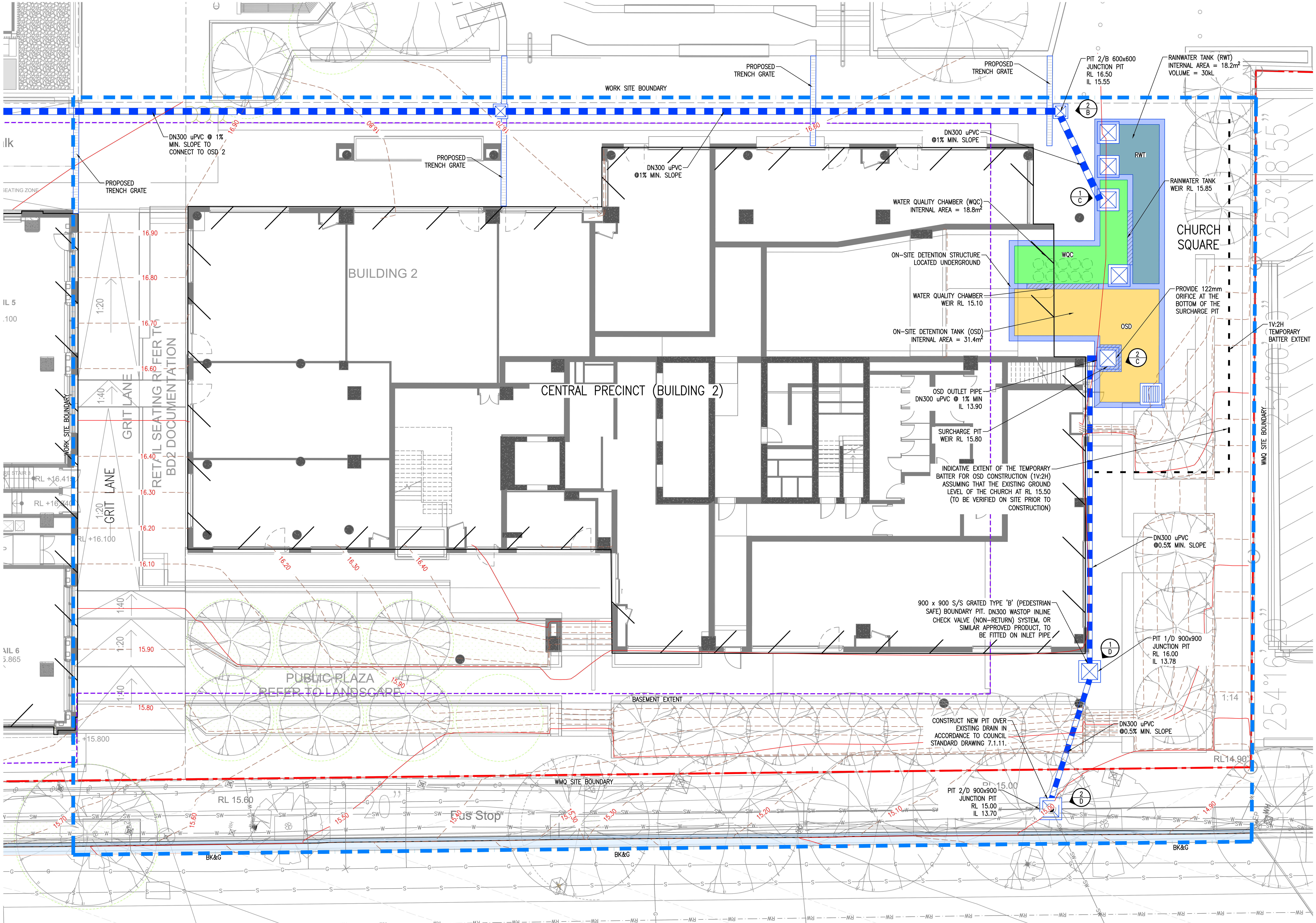
Project number	Size check
18445	25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	1:500

Sheet title
OVERALL SITE PLAN

Status
FOR REVIEW

Sheet number: WMQ-BD2-RBG-CV-DRG-C8210
Revision: B



OSD 2

DEPTH INTERNAL = 1.9m

BASE LEVEL = RL 14.1
SLAB UNDERSIDE = RL 13.7

EFFECTIVE DEPTH = 1.7m
(1% AEP WATER DEPTH)

LEGEND

WMQ SITE BOUNDARY	PROPOSED CONTOURS (21.50)	EXISTING CONTOURS (21.50)	
BUILDING 2 EXTENT OF WORK	STONE KERB AND GUTTER (BK&G)	EXISTING SEWER MAIN (S)	
PROPOSED BUILDING/STRUCTURE	PROPOSED STORMWATER PIT	EXISTING DRAINAGE LINE (SW)	
BASEMENT EXTENT	PROPOSED TRENCH DRAIN	EXISTING WATER MAIN (W)	
		EXISTING GAS MAIN (G)	
		EXISTING ELECTRICAL LINE (E)	
		EXISTING COMMUNICATIONS LINE (C)	
		EXISTING RAIL SERVICES LINE (RW)	

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Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	06.02.26

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SCALE 1:100
1 0 1 2 3 4m

Key Plan

North Point

Client
WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac
NSW GOVERNMENT | sydney METRO

Consultant
RobertBirdGroup

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check		
18445	25mm		
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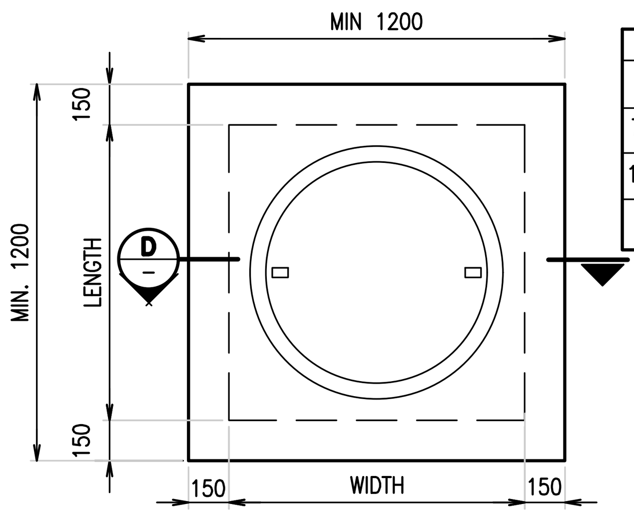
ML	AA	A1	1:100

Sheet title
STORMWATER MANAGEMENT PLAN BUILDING 2

Status
FOR REVIEW

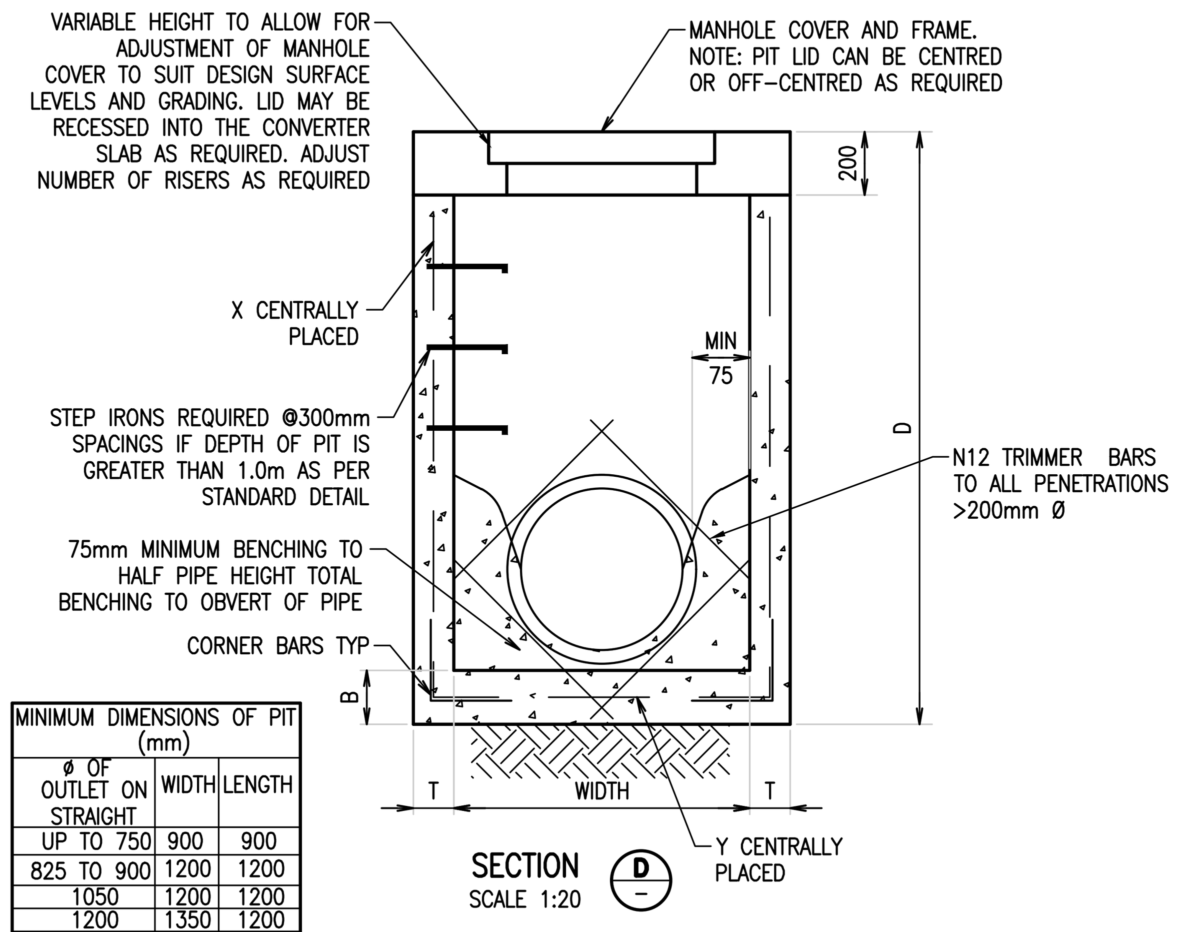
Sheet number: WMQ-BD2-RBG-CV-DRG-C8261
Revision: B



COVER AND FRAME – PLAN
SCALE 1:20

PIT SPECIFICATIONS					
D	B	T	X	Y	CORNER BARS
750 – 1200	150	150	SL82	SL81	N12–300 L 500
1200 – 2100	200	180	SL81	SL81	N12–200 L 600
> 2100	TO STRUCTURAL ENGINEERS SPECIFICATION				

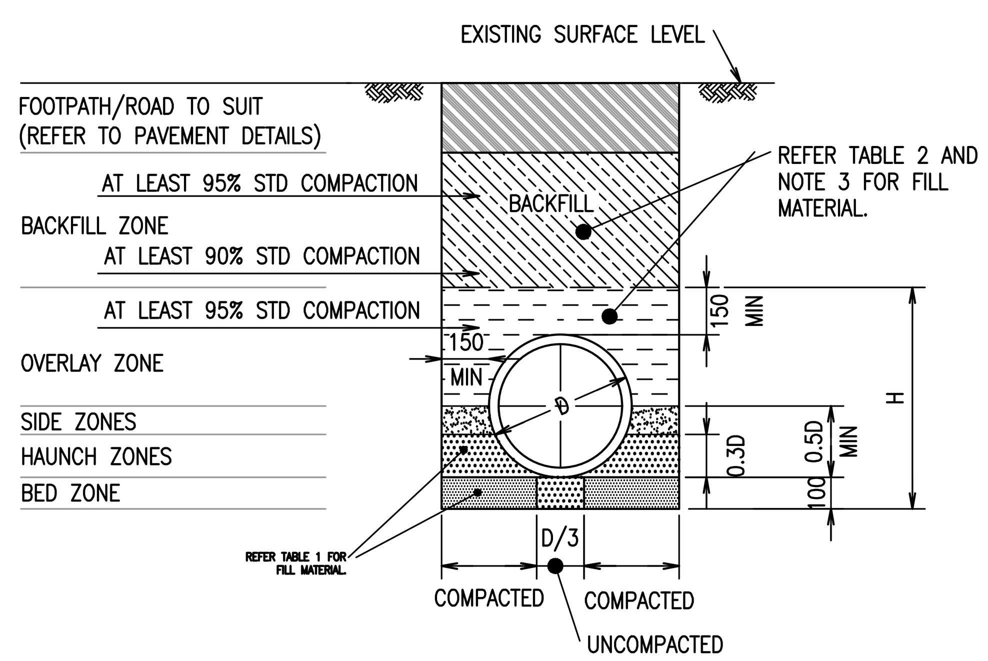
NOTES:
1. ALL CONCRETE IS TO HAVE MINIMUM STRENGTH OF 32MPa.
2. DRAINAGE PIPE TO MINIMUM 375Ø CLASS 4 REINFORCED CONCRETE PIPE.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED



MINIMUM DIMENSIONS OF PIT (mm)		
Ø OF OUTLET ON STRAIGHT	WIDTH	LENGTH
UP TO 750	900	900
825 TO 900	1200	1200
1050	1200	1200
1200	1350	1200
1350	1500	1200
1500	1650	1200
1650	1800	1200
1800	1950	1200

SECTION D
SCALE 1:20

STANDARD JUNCTION PIT / SURFACE INLET PIT (AS PER CITY OF SYDNEY STANDARD)
SCALE 1:20



TYPICAL PIPE TRENCH DETAILS
SCALE 1:20

PIPE TRENCH NOTE:
1. MATERIAL FOR FILL AND PIPE SUPPORT INCLUDING BEDDING, HAUNCH AND SIDE ZONES, PIPE OVERLAY AND BACKFILL SHALL BE SELECT FILL CONSISTING OF FREE DRAINING GRANULAR MATERIAL HAVING A PARTICLE SIZE DISTRIBUTION, DETERMINED IN ACCORDANCE WITH AS1289.3.6.1. GRADING LIMITS FOR SELECT FILL SHALL BE IN ACCORDANCE WITH AS3725 AS TABULATED IN TABLE 1 & TABLE 2.
2. REFER TO Cos COUNCIL B10 STORMWATER DRAINAGE SPECIFICATION FOR FILL MATERIAL FOR STORMWATER TRENCHES DETAILS.
3. FILL MATERIAL FOR PIPE OVERLAY AND PIPE BACKFILL ZONE SHALL BE OBTAINED WHICH IS FREE FROM STONES GREATER THAN 100mm AND WITH NOT MORE THAN 20% OF STONES BETWEEN 75mm AND 100mm IN SIZE.

TABLE 1:
GRADING LIMITS FOR SELECT FILL IN BED AND HAUNCH ZONES

SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100–50
0.60	90–20
0.30	60–10
0.15	25–0
0.075	10–0

TABLE 2:
GRADING LIMITS FOR SELECT FILL IN SIDE ZONES

SIEVE SIZE (mm)	WEIGHT PASSING (%)
75.0	100
9.5	100–50
2.36	100–30
0.60	50–15
0.075	25–0

GRATE/COVER NOTES:
ALL CONCRETE IS TO HAVE MINIMUM STRENGTH OF 32MPa.

ALL SURFACE INLET PITS TO HAVE CLASS C GALVANISED STEEL BIKESAFE GRATE – CIVILCAST DI44M (450mm) OR DI99M (900mm) – OR APPROVED EQUIVALENT

ALL JUNCTION PITS TO HAVE CLASS C CAST IRON COVER – CIVILCAST DI44B ST (450mm) OR CI99B ST (900mm) OR APPROVED EQUIVALENT

BURIED JUNCTION PIT TO HAVE CLASS D CAST IRON COVER – CIVILCAST CI990 ST (900mm) OR APPROVED EQUIVALENT

SCALE 1:20
200 0 200 400 600 800 1000mm

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Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	06.02.26

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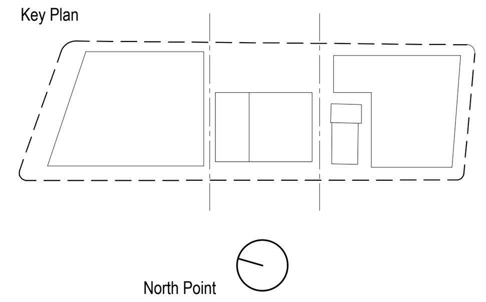
Key Plan



North Point

Client

Consultant

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number: 18445
Size check: 25mm
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Approved: AA
Sheet size: A1
Scale: 1:100

Sheet title
STORMWATER DETAILS

Status
FOR REVIEW

Sheet number: WMQ-BD2-RBG-CV-DRG-C8266
Revision: B

OSD CATCHMENT				
	Catch No.	Bypass Area (sq.m)	Captured Area (sq.m)	Total Site Area (sq.m.)
Cope St	1.000	563.310		
	2.000		148.400	
	3.000		89.740	
	4.000		135.860	
	5.000	190.210		
	6.000		57.930	
Total		753.520	431.930	1185.450
Station	7.000	148.410		
	8.000	437.840		
Total		586.250	0	586.250
Building 1	9.000	664.890		
	10.000		3812.020	
Total		664.890	3812.020	4476.910
Building 2	11.000		249.020	
	12.000		670.010	
	13.000		1415.850	
	14.000	746.000		
Total		746.000	2334.880	3080.880
Building 3 & 4	15.000		2695.670	
	16.000	203.880		
	17.000	641.640		
Total		845.520	2695.670	3541.190
TOTAL SITE AREA		7192.360	18549.000	12870.680

LEGEND

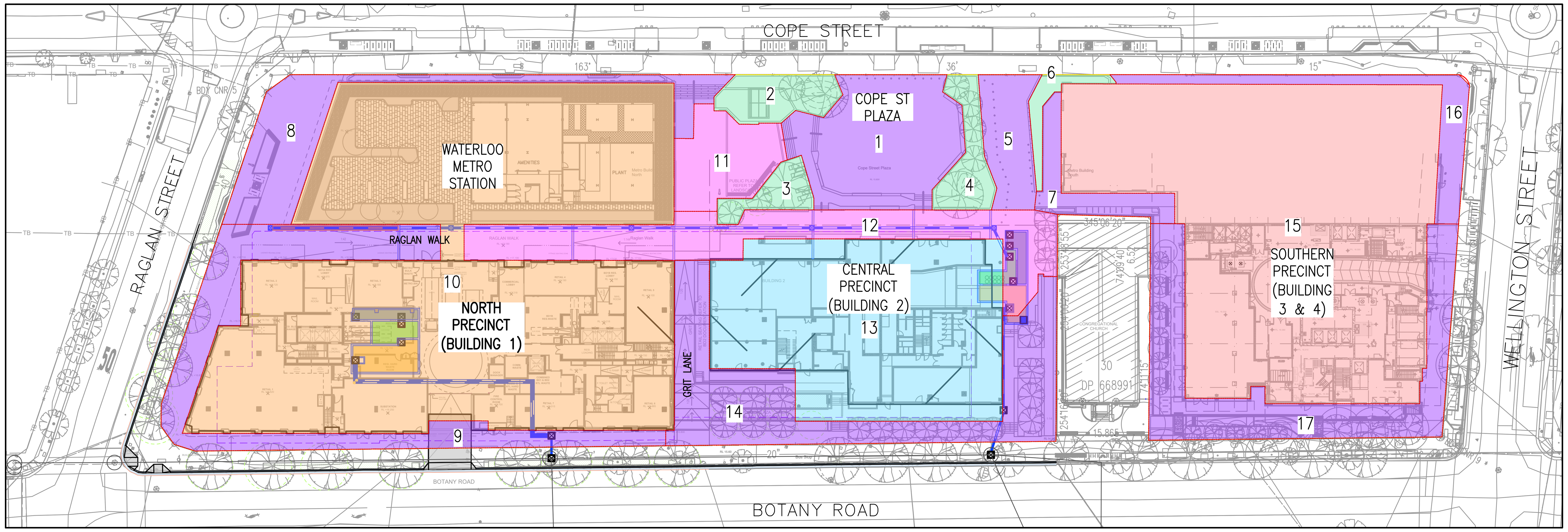
- WMQ SITE BOUNDARY
- BUILDING TO OSD TANK 1
- BUILDING TO OSD TANK 2
- BUILDING TO OSD TANK 3
- PUBLIC DOMAIN TO OSD TANK 2
- PUBLIC DOMAIN CATCHMENT TO COUNCIL SYSTEM (BYPASS)
- RAIN GARDEN CATCHMENT TO COUNCIL SYSTEM

SCALE 1:250

5 0 5 10m

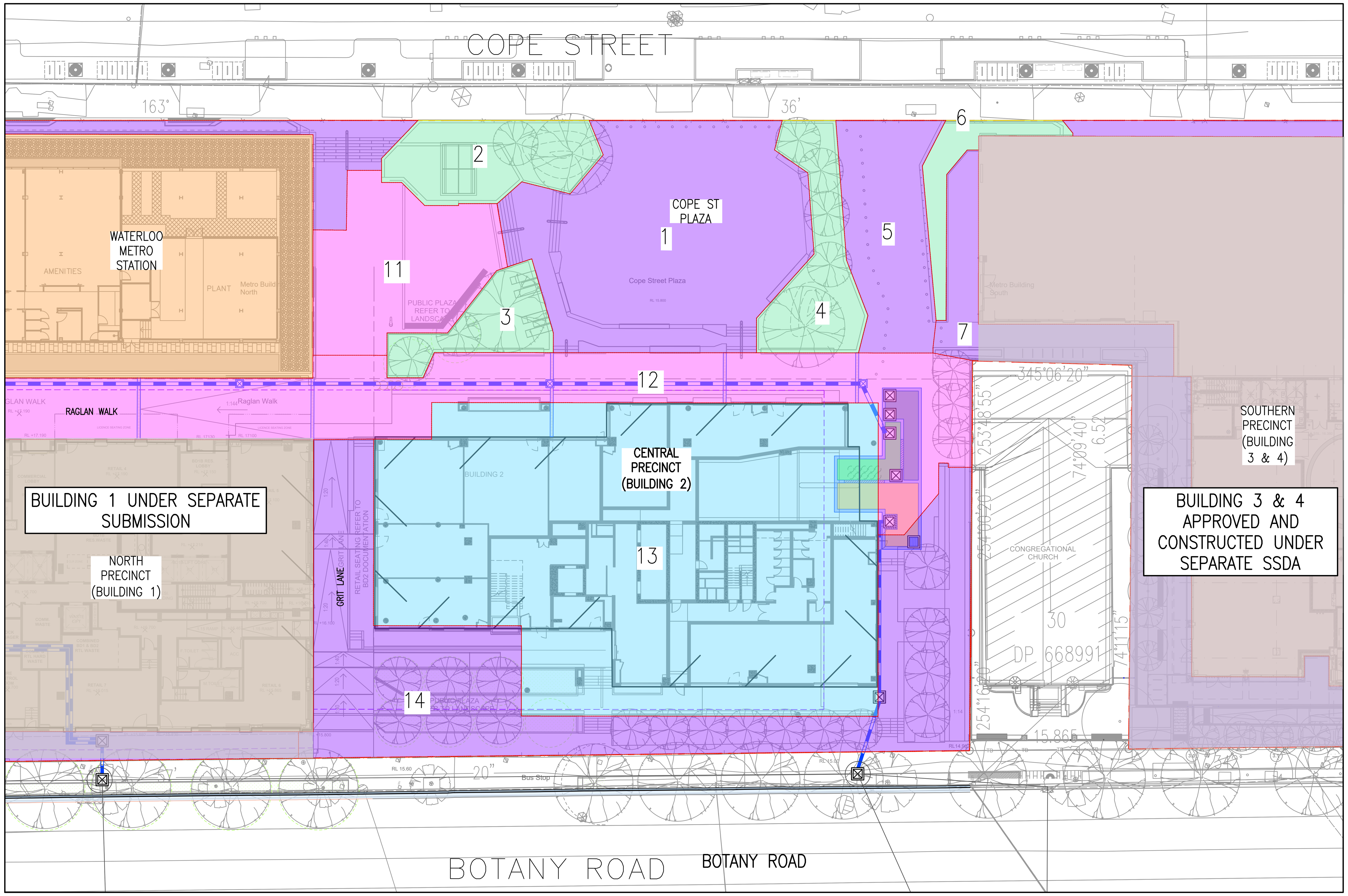
SCALE 1:500

10 0 10 20m



WMQ OVERALL OSD CATCHMENT PLAN

SCALE 1:500



BUILDING 2 OSD CATCHMENT PLAN

SCALE 1:250

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	06.02.26

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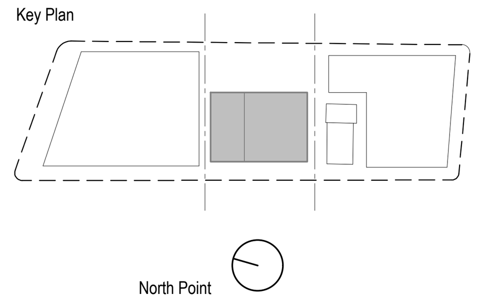
Key Plan



North Point

Client

WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup

Project

WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check		
18445	25mm		
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ML	AA	A1	AS SHOWN

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STORMWATER CATCHMENT PLAN - OSD

Status

FOR REVIEW

Sheet number: WMQ-BD2-RBG-CV-DRG-C8271

Revision: B

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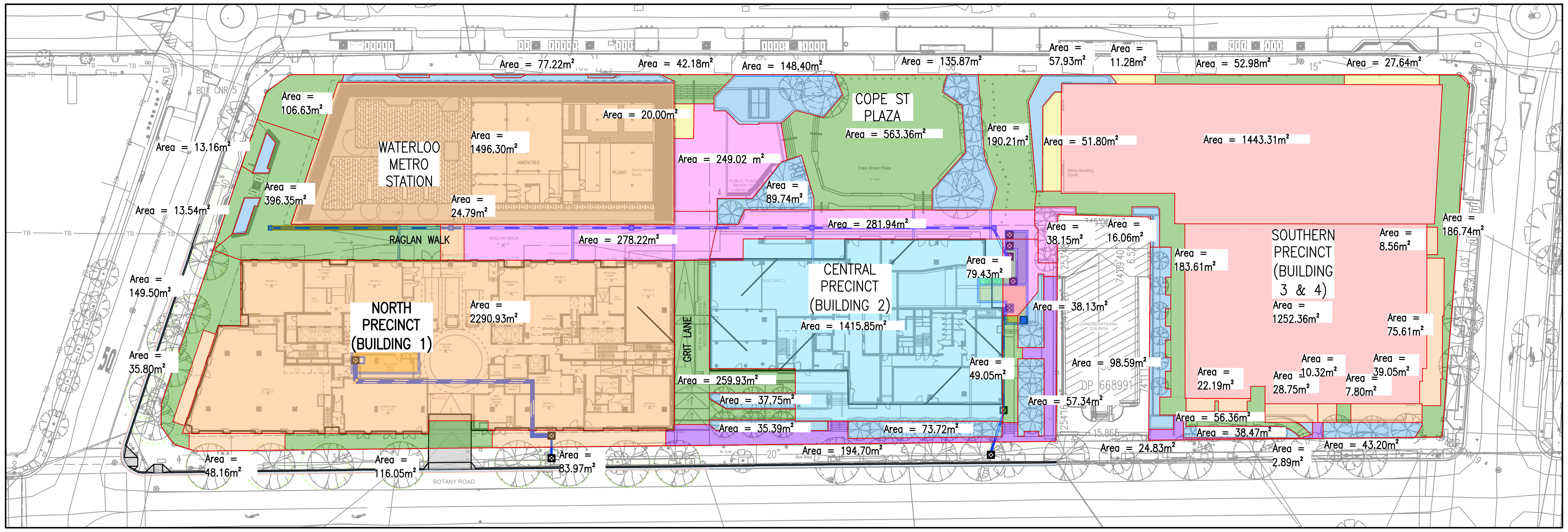
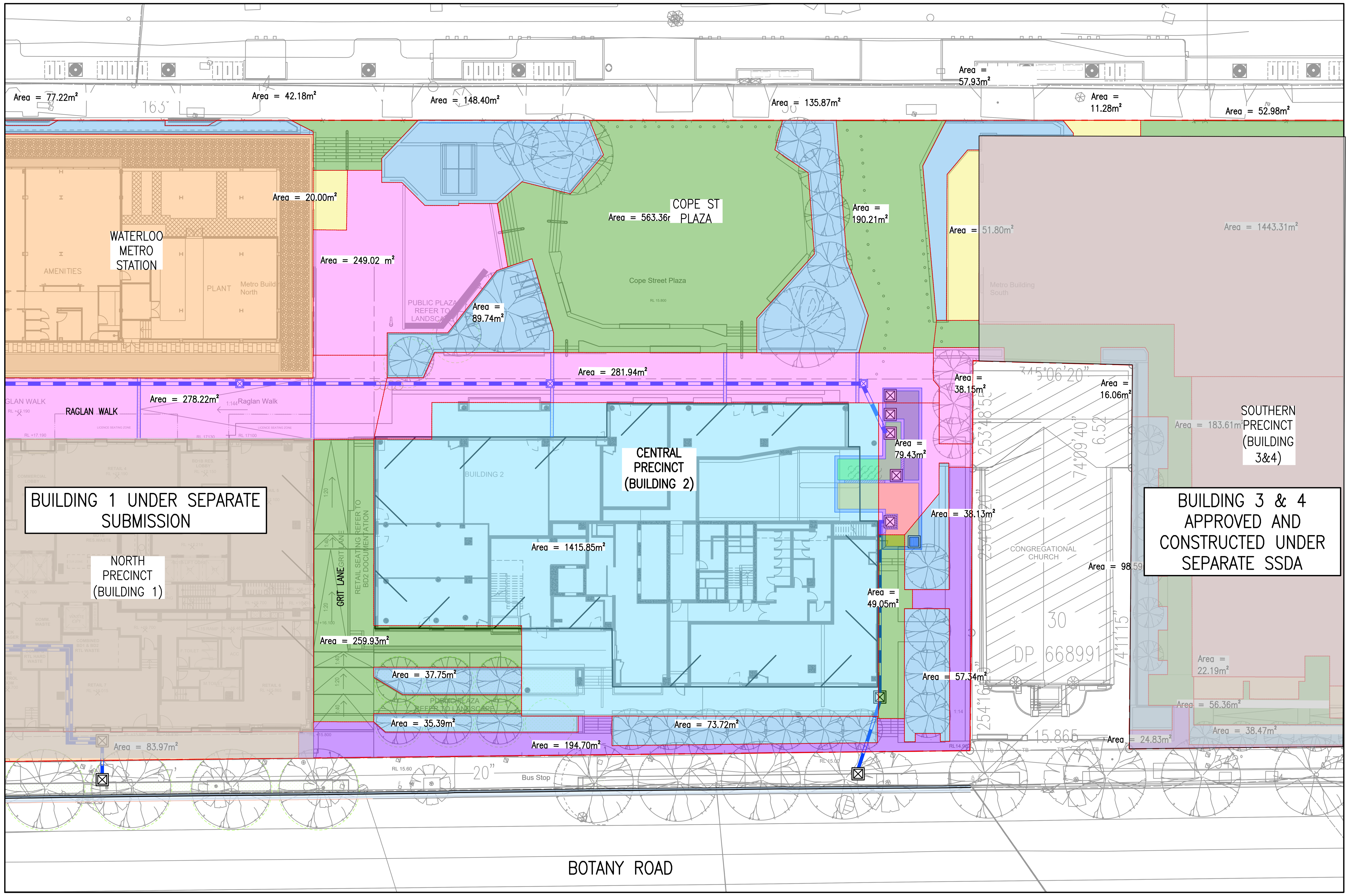


WMQ OVERALL WSUD CATCHMENT PLAN

SCALE 1:500



BUILDING 2 WSUD CATCHMENT PLAN

SCALE 1:250

LEGEND

- WMQ SITE BOUNDARY
- BUILDING TO OSD TANK 1
- BUILDING TO OSD TANK 2
- BUILDING TO OSD TANK 3
- BUILDING TO RAIN GARDEN
- BUILDING TO COUNCIL SYSTEM
- RAIN GARDEN TO COUNCIL SYSTEM
- PUBLIC DOMAIN TO COUNCIL SYSTEM
- PUBLIC DOMAIN TO RAIN GARDEN
- PUBLIC DOMAIN TO OSD TANK 2

SCALE 1:250

5 0 5 10m

SCALE 1:500

10 0 10 20m

Recent revision history

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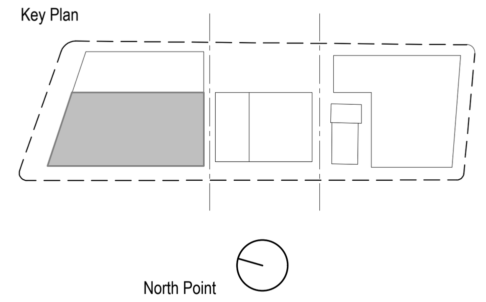


Client

WATERLOO COLLECTIVE

JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup an SJ company

Project

WATERLOO METRO QUARTER DEVELOPMENT

Project number	Size check
18445	25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	AS SHOWN

Sheet title

STORMWATER CATCHMENT PLAN - WSUD

Status

FOR REVIEW

Sheet number: WMQ-BD2-RBG-CV-DRG-C8272 Revision: B

ORIFICE SIZE

$$PSD = Q_{OSD}$$

$$Q_{OSD} = C_d * A\sqrt{2gH}$$

$$= C_d * \frac{\pi d^2}{4} * \sqrt{2gH}$$

$$d^2 = \frac{4Q_{OSD}}{\pi * C_d * \sqrt{2gH}}$$

$$d = \sqrt{\frac{4Q_{OSD}}{\pi * C_d * \sqrt{2gH}}}$$

$where\ Q = PSD = 41\frac{L}{s}$

$C_d = 0.61$

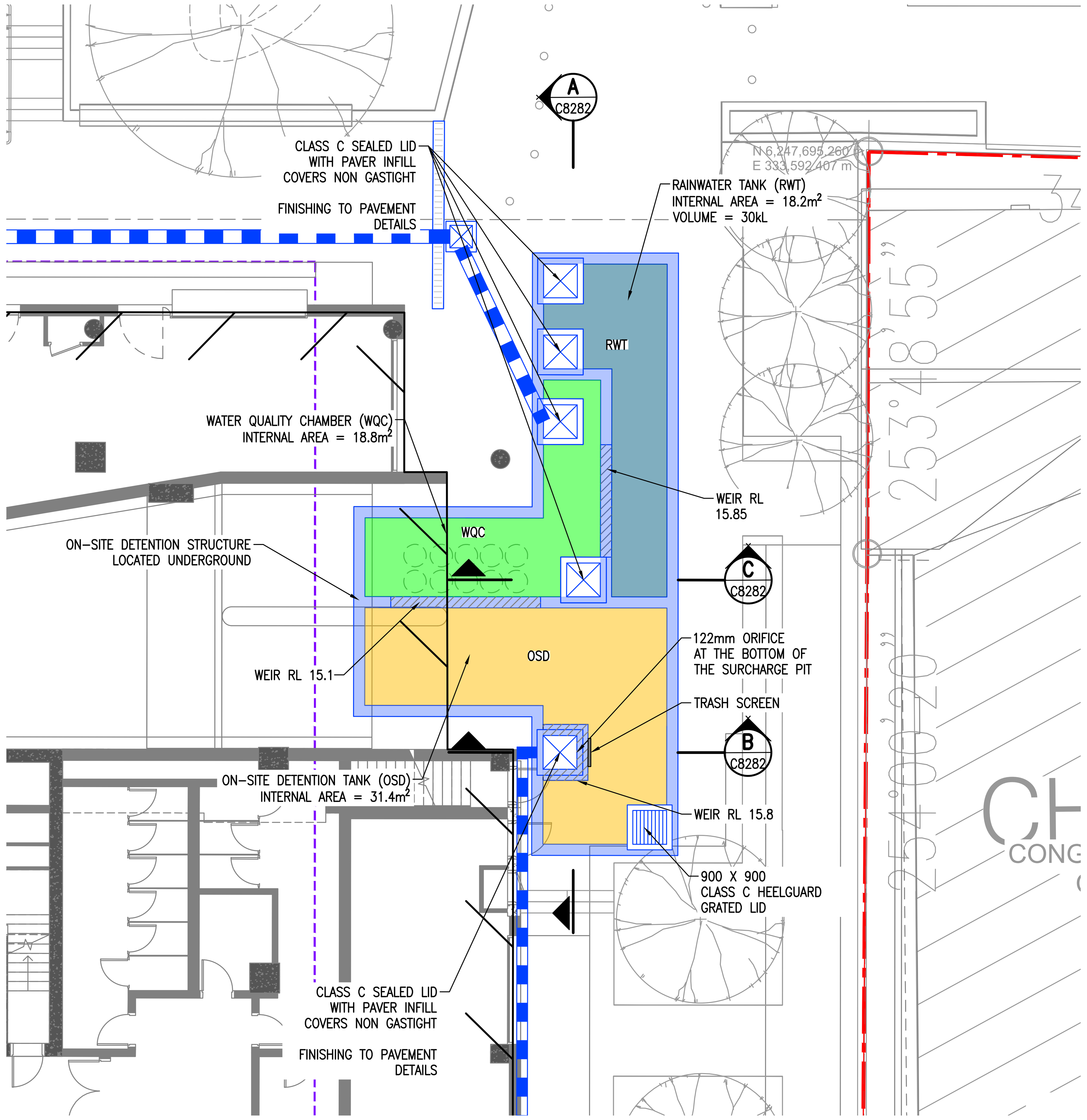
$H = 1.70m$

$g = 9.81\frac{m^2}{s}$

$$d = \sqrt{\frac{4(41)}{\pi * 0.61 * \sqrt{2 * 9.81 * 1.70} * 1000}}$$

$= 0.122m$

$d = 122mm$



BUILDING 2 OSD PLAN

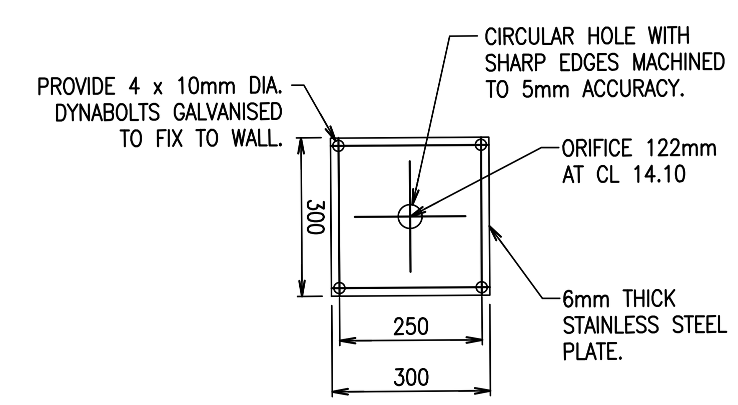
SCALE 1:100

CONFINED SPACE WARNING SIGN

SCALE NTS

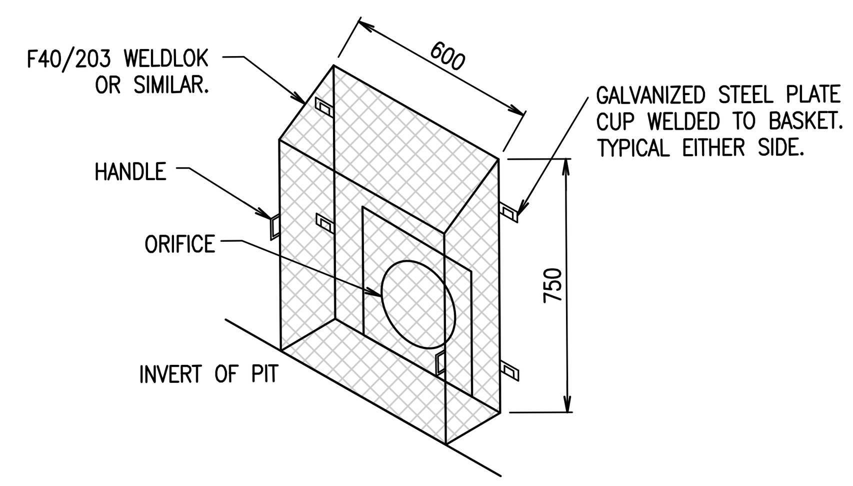
OSD 2

DEPTH INTERNAL	=	1.9m
BASE LEVEL	=	RL 14.1
SLAB UNDERSIDE	=	RL 13.7
EFFECTIVE DEPTH (1% AEP WATER DEPTH)	=	1.7m



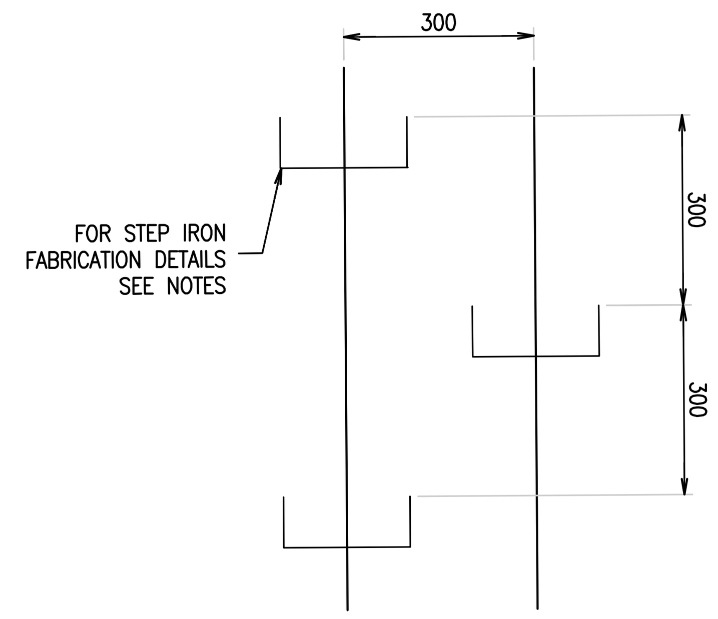
ORIFICE PLATE DETAIL

SCALE 1:20



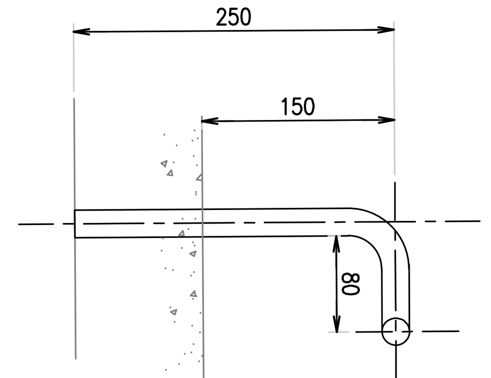
TRASH SCREEN DETAIL

SCALE 1:20



STEP IRON ARRANGEMENT – ELEVATION

SCALE 1:10



SECTION

SCALE 1:5

STANDARD STEP IRONS

NOTES:

1. STEP IRONS TO BE FABRICATED FROM 20mm ø M.S.
2. ALL BENDS TO BE FORMED AROUND 12mm DIAMETER PIN
3. STEP IRONS TO BE PROVIDED IN PITS DEEPER THAN 1.0m
4. STEP IRONS TO BE HOT DIPPED GALVANISED
5. STEP IRONS TO BE LOCATED DIRECTLY ABOVE PIT OUTLET PIPE

SCALE 1:50

1 0 1 2m

SCALE 1:100

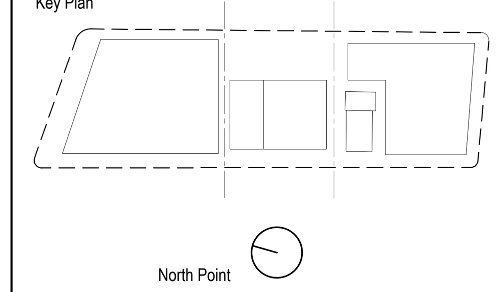
1 0 1 2 3 4m

Recent revision history

#	Status	Description	Date
A		ISSUED FOR COORDINATION	03.09.25
B		DRAFT IFT FOR REVIEW	06.02.26

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Key Plan



Client

WATERLOO COLLECTIVE

JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup

Project

WATERLOO METRO QUARTER DEVELOPMENT

Project number		Size check	
18445		25mm	
Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

Sheet title

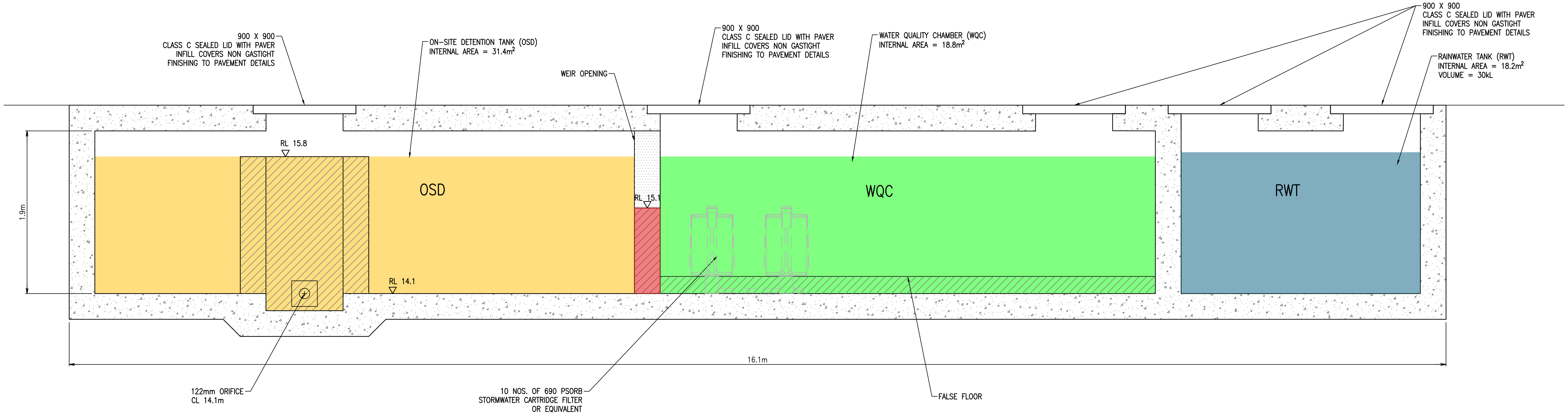
OSD TANK DETAILS BUILDING 2 - SHEET 1

Status

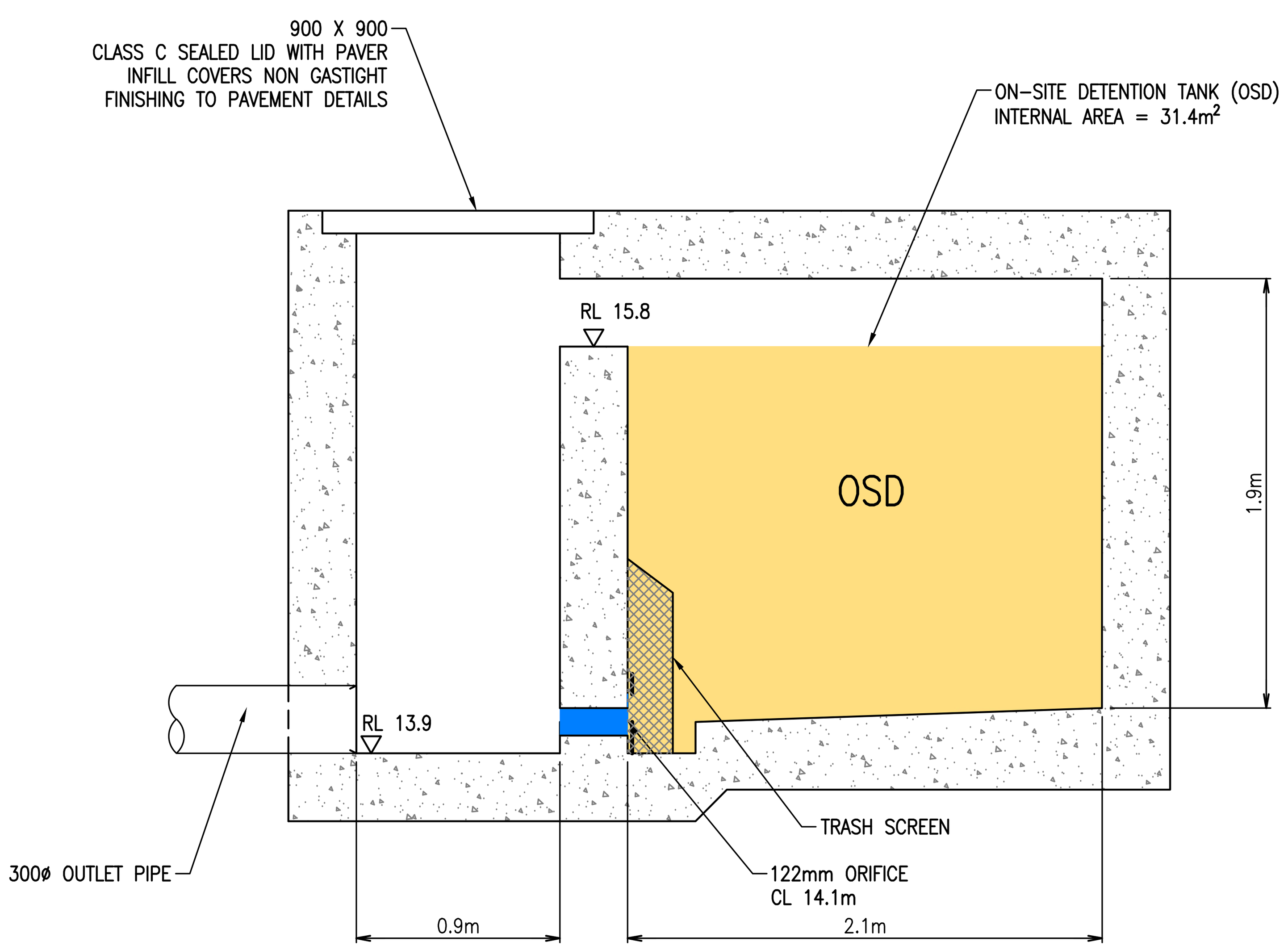
FOR REVIEW

Sheet number: WMQ-BD2-RBG-CV-DRG-C8281

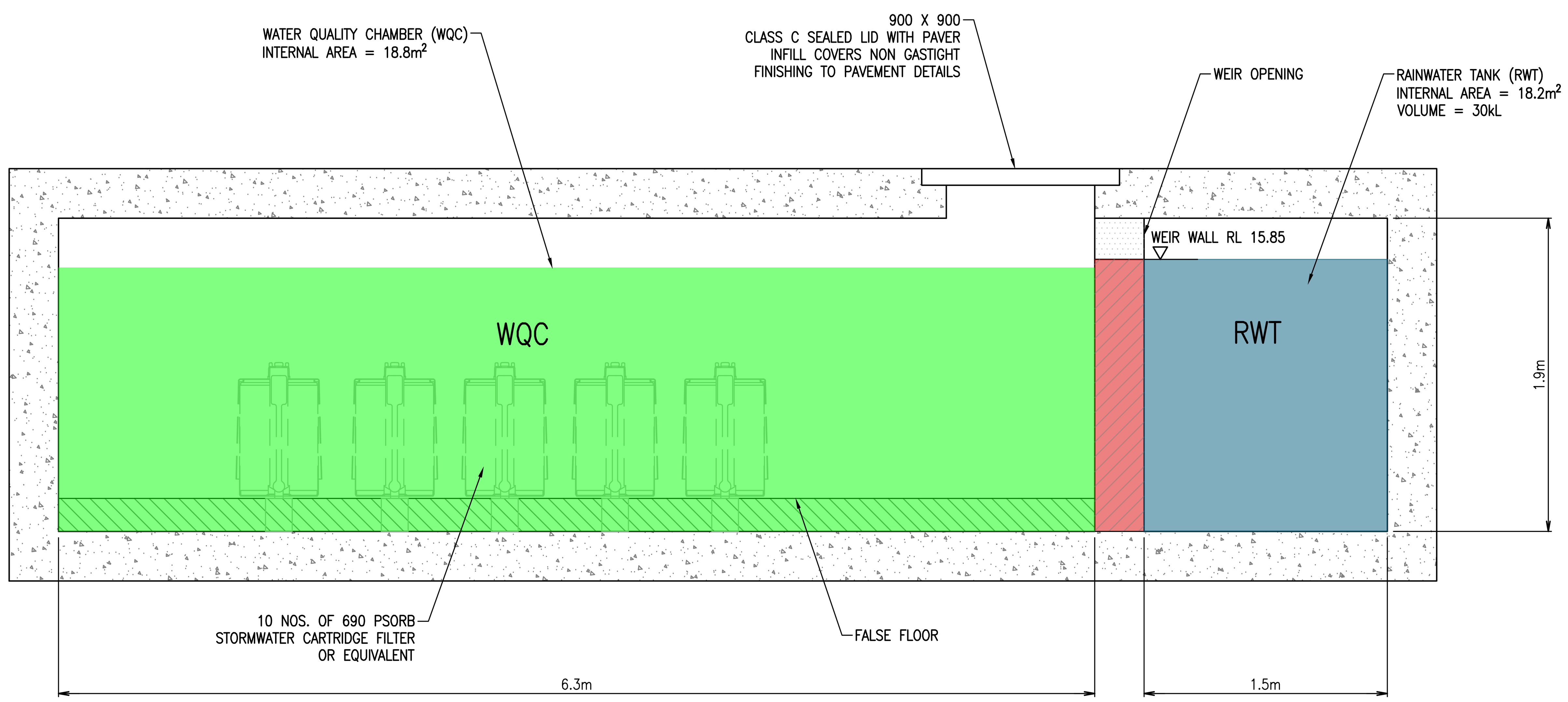
Revision: B



SECTION A
SCALE 1:25



SECTION B
SCALE 1:25



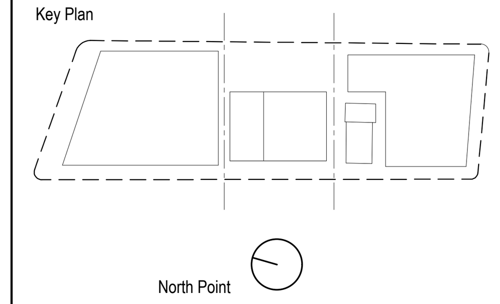
SECTION C
SCALE 1:25

Recent revision history

#	Status	Description	Date
A		DRAFT IFT FOR REVIEW	06.02.26

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Key Plan



Client

WATERLOO COLLECTIVE
JOHN HOLLAND | mirvac

NSW GOVERNMENT | sydney METRO

Consultant

RobertBirdGroup
an company

Project
WATERLOO METRO QUARTER DEVELOPMENT

Project number		Size check
18445		25mm

Checked	Approved	Sheet size	Scale
ML	AA	A1	1:100

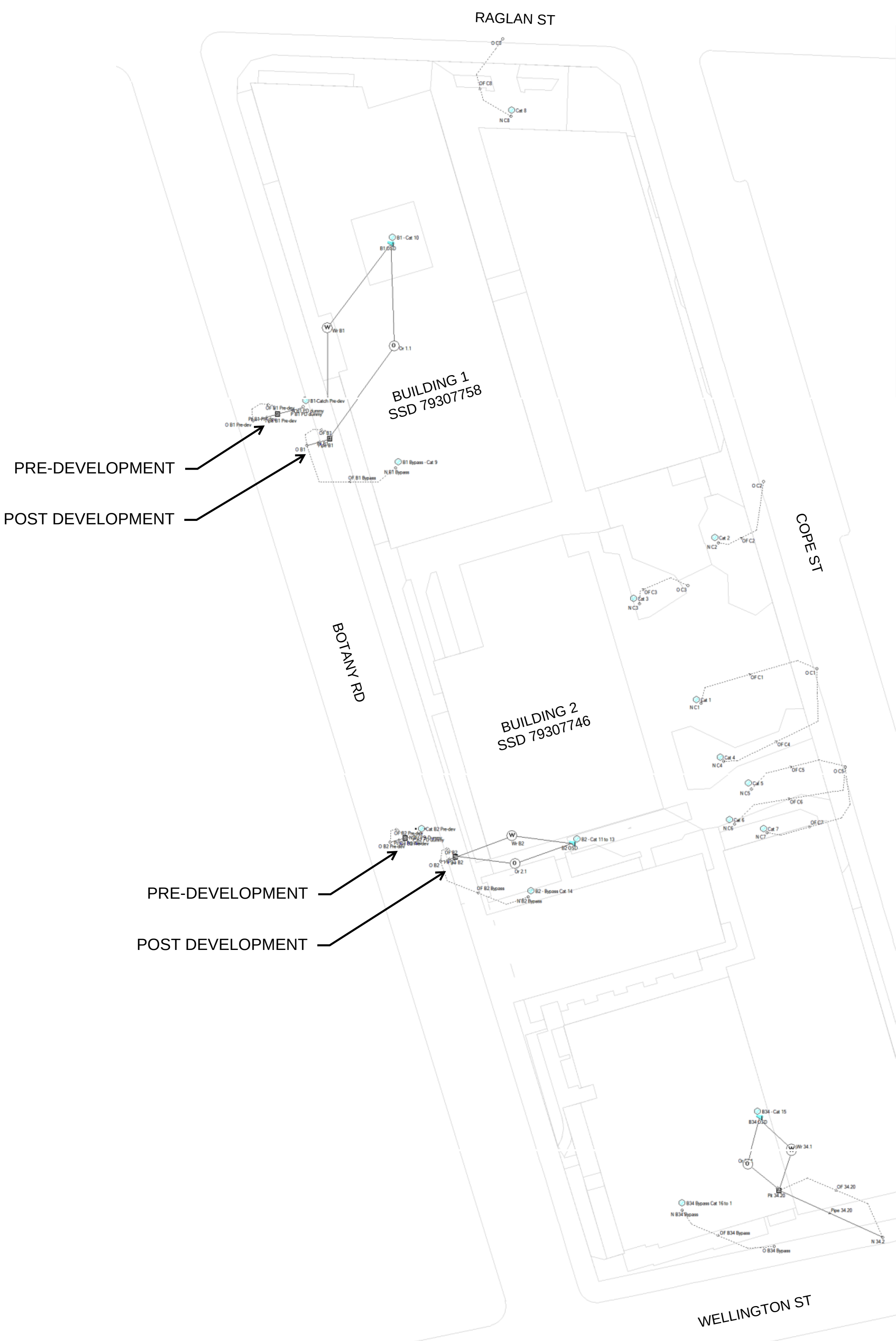
Sheet title
OSD TANK DETAILS BUILDING 2 - SHEET 2

Status
FOR REVIEW

Sheet number
WMQ-BD2-RBG-CV-DRG-C8282

Revision
A

APPENDIX D – Consolidated DRAINS Model of Waterloo Metro Quarter



RAGLAN ST
BUILDING 1
SSD 79307758
PRE-DEVELOPMENT
POST DEVELOPMENT
COPE ST
BOTANY RD
BUILDING 2
SSD 79307746
PRE-DEVELOPMENT
POST DEVELOPMENT
WELLINGTON ST

APPENDIX E – Extracts of the DRAINS Results

1% AEP RESULTS

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N C7	17.12		0.012				
N C2	17.51		0.012				
N C3	17.18		0.007				
N C4	17.06		0.011				
N C1	16.32		0.048				
N C6	17.05		0.005				
N C5	16.51		0.016				
N B34 Bypass	16.49		0.07				
N B1 Bypass	16.41		0.056				
N B2 Bypass	16.41		0.062				
N C8	16.4		0.036				
N B1 PD dummy	13.67		0.253				
Pit B1 Pre-dev	13.52		0		1.97	0	None
O B1 Pre-dev	13.02		0				
N B2 PD Dummy	14.35		0.194				
Pit B2 Pre-dev	14.26		0		0.74	0	None
O B2 Pre-dev	14		0				
Pit 34.20	21.13		0		3.57	0	None
N 34.2	20.25		0				
Pit B2	13.98		0		1.02	0	None
O B2	13.84		0.061				
Pit B1	13.04		0		2.45	0	None
O B1	12.84		0.056				

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
B2 - Cat 11 to 13	0.162	0.162	0	5	5	5	1% AEP, 5 min burst, Storm 1
Cat 7	0.01	0.01	0	5	5	5	1% AEP, 5 min burst, Storm 1
Cat 2	0.008	0.001	0.007	5	5	5	1% AEP, 10 min burst, Storm 1
Cat 3	0.005	0.001	0.004	5	5	5	1% AEP, 10 min burst, Storm 1
Cat 4	0.007	0.001	0.006	5	5	5	1% AEP, 10 min burst, Storm 1
Cat 1	0.039	0.039	0	5	5	5	1% AEP, 5 min burst, Storm 1
Cat 6	0.003	0.001	0.002	5	5	5	1% AEP, 10 min burst, Storm 1
Cat 5	0.013	0.013	0	5	5	5	1% AEP, 5 min burst, Storm 1
B34 Bypass Cat 16 to	0.054	0.046	0.009	5	5	5	1% AEP, 5 min burst, Storm 1
B34 - Cat 15	0.186	0.186	0	5	5	5	1% AEP, 5 min burst, Storm 1
B1 Bypass - Cat 9	0.046	0.046	0	5	5	5	1% AEP, 5 min burst, Storm 1
B2 - Bypass Cat 14	0.046	0.035	0.011	5	5	5	1% AEP, 5 min burst, Storm 1
Cat 8	0.028	0.023	0.005	5	5	5	1% AEP, 5 min burst, Storm 1
B1 - Cat 10	0.263	0.263	0	5	5	5	1% AEP, 5 min burst, Storm 1
B1-Catch Pre-dev	0.207	0.207	0	5	5	5	1% AEP, 5 min burst, Storm 1
Cat B2 Pre-dev	0.159	0.159	0	5	5	5	1% AEP, 5 min burst, Storm 1

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
P B1 PD dummy	0.207	1.87	13.672	13.519	1% AEP, 5 min burst, Storm 1
Pipe B1 Pre-dev	0.208	2.03	13.247	13.021	1% AEP, 5 min burst, Storm 1
P B2 PD dummy	0.16	1.45	14.347	14.26	1% AEP, 5 min burst, Storm 1
Pipe B2 Pre-dev	0.159	1.78	14.128	13.999	1% AEP, 5 min burst, Storm 1
Pipe 34.20	0.121	1.81	20.895	20.249	1% AEP, 20 min burst, Storm 10
Pipe B2	0.041	1.3	13.984	13.84	1% AEP, 45 min burst, Storm 6
Pipe B1	0.061	1.43	13.035	12.845	1% AEP, 45 min burst, Storm 6

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
Wr B2								
Or 2.1	0.041	0.041						1% AEP, 45 min burst, Storm 6
OF C7	0.01	0.01	1.355	0.015	0.01	1.53	0.87	1% AEP, 5 min burst, Storm 1
OF C2	0.008	0.008	1.404	0.016	0.01	1.63	0.61	1% AEP, 10 min burst, Storm 1
OF C3	0.005	0.005	1.447	0.015	0.01	1.53	0.42	1% AEP, 10 min burst, Storm 1
OF C4	0.007	0.007	1.443	0.018	0.01	1.82	0.43	1% AEP, 10 min burst, Storm 1
OF C1	0.038	0.038	1.441	0.029	0.02	4	0.68	1% AEP, 5 min burst, Storm 1
OF C6	0.003	0.003	1.445	0.013	0	1.33	0.36	1% AEP, 10 min burst, Storm 1
OF C5	0.013	0.013	1.418	0.022	0.01	4	0.44	1% AEP, 5 min burst, Storm 1
OF B34 Bypass	0.054	0.054	1.468	0.037	0.02	4	0.62	1% AEP, 5 min burst, Storm 1
Wr 34.1	0.067	0.067						1% AEP, 20 min burst, Storm 3
Or 34.1	0.051	0.051						1% AEP, 20 min burst, Storm 3
OF B1 Bypass	0.046	0.046	1.468	0.034	0.02	4	0.6	1% AEP, 5 min burst, Storm 1
OF B2 Bypass	0.046	0.046	1.468	0.035	0.02	4	0.58	1% AEP, 5 min burst, Storm 1
OF C8	0.028	0.028	1.468	0.029	0.01	4	0.49	1% AEP, 5 min burst, Storm 1
Wr B1								
Or 1.1	0.061	0.061						1% AEP, 45 min burst, Storm 6
OF B1 Pre-dev	0	0	1.445	0	0	0	0	
OF B2 Pre-dev	0	0	1.413	0	0	0	0	
OF 34.20	0	0	1.349	0	0	0	0	
OF B2	0	0	1.413	0	0	0	0	
OF B1	0	0	1.445	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
B2 OSD	15.8	80.1	0.041	0	0.041
B34 OSD	24.81	64.9	0.118	0	0.118
B1 OSD	21.4	142.8	0.061	0	0.061

Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A
Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A.drn run at 11:09:38 on 15/1/2026.

No water upwelling from any pit.
Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

5% AEP RESULTS

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N C7	17.12		0.009				
N C2	17.51		0.009				
N C3	17.17		0.005				
N C4	17.06		0.008				
N C1	16.32		0.036				
N C6	17.05		0.003				
N C5	16.51		0.012				
N B34 Bypass	16.48		0.053				
N B1 Bypass	16.4		0.042				
N B2 Bypass	16.4		0.046				
N C8	16.4		0.027				
N B1 PD dummy	13.35		0.191				
Pit B1 Pre-dev	13.26		0		2.23	0	None
O B1 Pre-dev	12.97		0				
N B2 PD Dummy	14.2		0.146				
Pit B2 Pre-dev	14.14		0		0.86	0	None
O B2 Pre-dev	13.94		0				
Pit 34.20	20.64		0		4.06	0	None
N 34.2	20.13		0				
Pit B2	13.97		0		1.03	0	None
O B2	13.83		0.046				
Pit B1	13.02		0		2.46	0	None
O B1	12.83		0.042				

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
B2 - Cat 11 to 13	0.123	0.123	0	5	5	5	5% AEP, 5 min burst, Storm 1
Cat 7	0.008	0.008	0	5	5	5	5% AEP, 5 min burst, Storm 1
Cat 2	0.006	0.001	0.005	5	5	5	5% AEP, 15 min burst, Storm 5
Cat 3	0.004	0.001	0.003	5	5	5	5% AEP, 15 min burst, Storm 5
Cat 4	0.006	0.001	0.005	5	5	5	5% AEP, 15 min burst, Storm 5
Cat 1	0.029	0.029	0	5	5	5	5% AEP, 5 min burst, Storm 1
Cat 6	0.003	0.001	0.002	5	5	5	5% AEP, 15 min burst, Storm 5
Cat 5	0.01	0.01	0	5	5	5	5% AEP, 5 min burst, Storm 1
B34 Bypass Cat 16 to	0.04	0.035	0.006	5	5	5	5% AEP, 5 min burst, Storm 1
B34 - Cat 15	0.141	0.141	0	5	5	5	5% AEP, 5 min burst, Storm 1
B1 Bypass - Cat 9	0.035	0.035	0	5	5	5	5% AEP, 5 min burst, Storm 1
B2 - Bypass Cat 14	0.035	0.025	0.01	5	5	5	5% AEP, 15 min burst, Storm 10
Cat 8	0.021	0.016	0.004	5	5	5	5% AEP, 15 min burst, Storm 10
B1 - Cat 10	0.199	0.199	0	5	5	5	5% AEP, 5 min burst, Storm 1
B1-Catch Pre-dev	0.157	0.157	0	5	5	5	5% AEP, 5 min burst, Storm 1
Cat B2 Pre-dev	0.12	0.12	0	5	5	5	5% AEP, 5 min burst, Storm 1

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
P B1 PD dummy	0.157	1.42	13.353	13.261	5% AEP, 5 min burst, Storm 1
Pipe B1 Pre-dev	0.156	1.77	13.142	12.971	5% AEP, 5 min burst, Storm 1
P B2 PD dummy	0.121	1.47	14.197	14.136	5% AEP, 5 min burst, Storm 1
Pipe B2 Pre-dev	0.121	1.71	14.089	13.945	5% AEP, 5 min burst, Storm 1
Pipe 34.20	0.05	1.47	20.633	20.13	5% AEP, 30 min burst, Storm 5
Pipe B2	0.035	1.24	13.971	13.83	5% AEP, 30 min burst, Storm 8
Pipe B1	0.054	1.37	13.024	12.836	5% AEP, 30 min burst, Storm 8

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
Wr B2								
Or 2.1	0.035	0.035						5% AEP, 30 min burst, Storm 8
OF C7	0.008	0.008	1.355	0.013	0.01	1.33	0.87	5% AEP, 5 min burst, Storm 1
OF C2	0.006	0.006	1.404	0.014	0.01	1.43	0.58	5% AEP, 15 min burst, Storm 5
OF C3	0.004	0.004	1.447	0.013	0.01	1.33	0.41	5% AEP, 15 min burst, Storm 3
OF C4	0.005	0.005	1.413	0.016	0.01	1.63	0.4	5% AEP, 15 min burst, Storm 3
OF C1	0.029	0.029	1.441	0.027	0.02	4	0.6	5% AEP, 5 min burst, Storm 1
OF C6	0.002	0.002	1.445	0.011	0	1.13	0.37	5% AEP, 15 min burst, Storm 3
OF C5	0.01	0.01	1.418	0.018	0.01	1.82	0.57	5% AEP, 5 min burst, Storm 1
OF B34 Bypass	0.04	0.04	1.112	0.033	0.02	4	0.56	5% AEP, 5 min burst, Storm 1
Wr 34.1								
Or 34.1	0.048	0.048						5% AEP, 30 min burst, Storm 8
OF B1 Bypass	0.035	0.035	1.112	0.031	0.02	4	0.54	5% AEP, 5 min burst, Storm 1
OF B2 Bypass	0.035	0.035	1.112	0.032	0.02	4	0.52	5% AEP, 15 min burst, Storm 10
OF C8	0.021	0.021	1.112	0.027	0.01	4	0.42	5% AEP, 5 min burst, Storm 1
Wr B1								
Or 1.1	0.052	0.052						5% AEP, 30 min burst, Storm 8
OF B1 Pre-dev	0	0	1.395	0	0	0	0	
OF B2 Pre-dev	0	0	1.413	0	0	0	0	
OF 34.20	0	0	1.349	0	0	0	0	
OF B2	0	0	1.413	0	0	0	0	
OF B1	0	0	1.395	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q	Max Q	Max Q
			Total	Low Level	High Level
B2 OSD	15.35	57.3	0.035	0	0.035
B34 OSD	24.51	55.6	0.048	0	0.048
B1 OSD	20.87	101.1	0.052	0	0.052

Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A
Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A.drn run at 11:11:32 on 15/1/2026.

No water upwelling from any pit.
Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

10% AEP RESULTS

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N C7	17.12		0.008				
N C2	17.51		0.007				
N C3	17.17		0.005				
N C4	17.06		0.007				
N C1	16.31		0.031				
N C6	17.05		0.003				
N C5	16.51		0.011				
N B34 Bypass	16.48		0.046				
N B1 Bypass	16.4		0.037				
N B2 Bypass	16.4		0.04				
N C8	16.4		0.024				
N B1 PD dummy	13.24		0.166				
Pit B1 Pre-dev	13.18		0		2.31	0	None
O B1 Pre-dev	12.94		0				
N B2 PD Dummy	14.17		0.127				
Pit B2 Pre-dev	14.11		0		0.89	0	None
O B2 Pre-dev	13.92		0				
Pit 34.20	20.63		0		4.07	0	None
N 34.2	20.12		0				
Pit B2	13.96		0		1.04	0	None
O B2	13.83		0.04				
Pit B1	13.02		0		2.47	0	None
O B1	12.83		0.037				

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
B2 - Cat 11 to 13	0.106	0.106	0	5	5	5	10% AEP, 5 min burst, Storm 1
Cat 7	0.007	0.007	0	5	5	5	10% AEP, 5 min burst, Storm 1
Cat 2	0.005	0.001	0.004	5	5	5	10% AEP, 15 min burst, Storm 5
Cat 3	0.003	0.001	0.002	5	5	5	10% AEP, 15 min burst, Storm 5
Cat 4	0.005	0.001	0.004	5	5	5	10% AEP, 15 min burst, Storm 5
Cat 1	0.026	0.026	0	5	5	5	10% AEP, 5 min burst, Storm 1
Cat 6	0.002	0.001	0.001	5	5	5	10% AEP, 15 min burst, Storm 5
Cat 5	0.009	0.009	0	5	5	5	10% AEP, 5 min burst, Storm 1
B34 Bypass Cat 16 to	0.035	0.029	0.007	5	5	5	10% AEP, 15 min burst, Storm 10
B34 - Cat 15	0.122	0.122	0	5	5	5	10% AEP, 5 min burst, Storm 1
B1 Bypass - Cat 9	0.03	0.03	0	5	5	5	10% AEP, 5 min burst, Storm 1
B2 - Bypass Cat 14	0.031	0.022	0.008	5	5	5	10% AEP, 15 min burst, Storm 4
Cat 8	0.018	0.014	0.004	5	5	5	10% AEP, 15 min burst, Storm 10
B1 - Cat 10	0.173	0.173	0	5	5	5	10% AEP, 5 min burst, Storm 1
B1-Catch Pre-dev	0.136	0.136	0	5	5	5	10% AEP, 5 min burst, Storm 1
Cat B2 Pre-dev	0.104	0.104	0	5	5	5	10% AEP, 5 min burst, Storm 1

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
P B1 PD dummy	0.137	1.51	13.239	13.177	10% AEP, 5 min burst, Storm 1
Pipe B1 Pre-dev	0.136	1.75	13.122	12.94	10% AEP, 5 min burst, Storm 1
P B2 PD dummy	0.105	1.46	14.168	14.105	10% AEP, 5 min burst, Storm 1
Pipe B2 Pre-dev	0.105	1.66	14.071	13.925	10% AEP, 5 min burst, Storm 1
Pipe 34.20	0.047	1.44	20.626	20.123	10% AEP, 20 min burst, Storm 8
Pipe B2	0.033	1.21	13.965	13.826	10% AEP, 30 min burst, Storm 8
Pipe B1	0.05	1.35	13.017	12.829	10% AEP, 30 min burst, Storm 8

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
Wr B2								
Or 2.1	0.033	0.033						10% AEP, 30 min burst, Storm 8
OF C7	0.007	0.007	1.355	0.012	0.01	1.23	0.88	10% AEP, 5 min burst, Storm 1
OF C2	0.005	0.005	1.404	0.013	0.01	1.33	0.57	10% AEP, 15 min burst, Storm 5
OF C3	0.003	0.003	1.447	0.012	0	1.23	0.4	10% AEP, 15 min burst, Storm 5
OF C4	0.004	0.004	1.443	0.015	0.01	1.53	0.38	10% AEP, 15 min burst, Storm 5
OF C1	0.025	0.025	1.441	0.026	0.01	4	0.56	10% AEP, 5 min burst, Storm 1
OF C6	0.002	0.002	1.445	0.01	0	1.04	0.37	10% AEP, 15 min burst, Storm 5
OF C5	0.008	0.008	1.418	0.017	0.01	1.73	0.55	10% AEP, 5 min burst, Storm 1
OF B34 Bypass	0.035	0.035	1.468	0.032	0.02	4	0.52	10% AEP, 15 min burst, Storm 10
Wr 34.1								
Or 34.1	0.044	0.044						10% AEP, 30 min burst, Storm 4
OF B1 Bypass	0.03	0.03	1.468	0.03	0.02	4	0.5	10% AEP, 5 min burst, Storm 1
OF B2 Bypass	0.031	0.031	1.468	0.03	0.02	4	0.51	10% AEP, 15 min burst, Storm 10
OF C8	0.018	0.018	1.468	0.026	0.01	4	0.41	10% AEP, 15 min burst, Storm 10
Wr B1								
Or 1.1	0.048	0.048						10% AEP, 30 min burst, Storm 8
OF B1 Pre-dev	0	0	1.445	0	0	0	0	
OF B2 Pre-dev	0	0	1.413	0	0	0	0	
OF 34.20	0	0	1.349	0	0	0	0	
OF B2	0	0	1.413	0	0	0	0	
OF B1	0	0	1.445	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
B2 OSD	15.16	47.8	0.033	0	0.033
B34 OSD	24.19	45.7	0.044	0	0.044
B1 OSD	20.67	84.9	0.048	0	0.048

Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A
Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A.drn run at 11:14:53 on 15/1/2026.

No water upwelling from any pit.
Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

20% AEP RESULTS

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N C7	17.12		0.007				
N C2	17.51		0.006				
N C3	17.17		0.004				
N C4	17.05		0.005				
N C1	16.31		0.026				
N C6	17.05		0.002				
N C5	16.51		0.009				
N B34 Bypass	16.48		0.037				
N B1 Bypass	16.4		0.03				
N B2 Bypass	16.4		0.032				
N C8	16.39		0.019				
N B1 PD dummy	13.2		0.137				
Pit B1 Pre-dev	13.13		0		2.35	0	None
O B1 Pre-dev	12.91		0				
N B2 PD Dummy	14.14		0.105				
Pit B2 Pre-dev	14.07		0		0.93	0	None
O B2 Pre-dev	13.9		0				
Pit 34.20	20.63		0		4.07	0	None
N 34.2	20.12		0				
Pit B2	13.96		0		1.04	0	None
O B2	13.82		0.032				
Pit B1	13.01		0		2.48	0	None
O B1	12.82		0.03				

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
B2 - Cat 11 to 13	0.089	0.089	0	5	5	5	20% AEP, 5 min burst, Storm 1
Cat 7	0.006	0.006	0	5	5	5	20% AEP, 5 min burst, Storm 1
Cat 2	0.004	0.001	0.003	5	5	5	20% AEP, 10 min burst, Storm 8
Cat 3	0.002	0.001	0.002	5	5	5	20% AEP, 10 min burst, Storm 8
Cat 4	0.004	0.001	0.003	5	5	5	20% AEP, 10 min burst, Storm 8
Cat 1	0.021	0.021	0	5	5	5	20% AEP, 5 min burst, Storm 1
Cat 6	0.002	0.001	0.001	5	5	5	20% AEP, 10 min burst, Storm 8
Cat 5	0.007	0.007	0	5	5	5	20% AEP, 5 min burst, Storm 1
B34 Bypass Cat 16 to	0.028	0.025	0.003	5	5	5	20% AEP, 5 min burst, Storm 1
B34 - Cat 15	0.102	0.102	0	5	5	5	20% AEP, 5 min burst, Storm 1
B1 Bypass - Cat 9	0.025	0.025	0	5	5	5	20% AEP, 5 min burst, Storm 1
B2 - Bypass Cat 14	0.023	0.02	0.006	5	5	5	20% AEP, 10 min burst, Storm 3
Cat 8	0.014	0.013	0.002	5	5	5	20% AEP, 5 min burst, Storm 1
B1 - Cat 10	0.145	0.145	0	5	5	5	20% AEP, 5 min burst, Storm 1
B1-Catch Pre-dev	0.114	0.114	0	5	5	5	20% AEP, 5 min burst, Storm 1
Cat B2 Pre-dev	0.087	0.087	0	5	5	5	20% AEP, 5 min burst, Storm 1

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
P B1 PD dummy	0.115	1.49	13.198	13.133	20% AEP, 5 min burst, Storm 1
Pipe B1 Pre-dev	0.114	1.69	13.099	12.913	20% AEP, 5 min burst, Storm 1
P B2 PD dummy	0.088	1.43	14.14	14.074	20% AEP, 5 min burst, Storm 1
Pipe B2 Pre-dev	0.088	1.59	14.051	13.904	20% AEP, 5 min burst, Storm 1
Pipe 34.20	0.043	1.41	20.62	20.118	20% AEP, 25 min burst, Storm 6
Pipe B2	0.029	1.18	13.957	13.82	20% AEP, 25 min burst, Storm 6
Pipe B1	0.045	1.33	13.008	12.822	20% AEP, 45 min burst, Storm 10

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
Wr B2								
Or 2.1	0.029	0.029						20% AEP, 25 min burst, Storm 6
OF C7	0.006	0.006	1.355	0.012	0.01	1.23	0.74	20% AEP, 5 min burst, Storm 1
OF C2	0.004	0.004	1.404	0.012	0.01	1.23	0.51	20% AEP, 10 min burst, Storm 8
OF C3	0.002	0.002	1.447	0.011	0	1.13	0.37	20% AEP, 10 min burst, Storm 8
OF C4	0.003	0.003	1.413	0.013	0.01	1.33	0.39	20% AEP, 10 min burst, Storm 8
OF C1	0.021	0.021	1.441	0.025	0.01	4	0.51	20% AEP, 5 min burst, Storm 1
OF C6	0.002	0.002	1.445	0.01	0	1.04	0.29	20% AEP, 10 min burst, Storm 8
OF C5	0.007	0.007	1.418	0.016	0.01	1.63	0.51	20% AEP, 5 min burst, Storm 1
OF B34 Bypass	0.028	0.028	1.112	0.029	0.01	4	0.5	20% AEP, 5 min burst, Storm 1
Wr 34.1								
Or 34.1	0.041	0.041						20% AEP, 25 min burst, Storm 6
OF B1 Bypass	0.025	0.025	1.112	0.029	0.01	4	0.45	20% AEP, 5 min burst, Storm 1
OF B2 Bypass	0.023	0.023	1.112	0.028	0.01	4	0.45	20% AEP, 10 min burst, Storm 3
OF C8	0.014	0.014	1.112	0.024	0.01	4	0.39	20% AEP, 5 min burst, Storm 1
Wr B1								
Or 1.1	0.043	0.043						20% AEP, 45 min burst, Storm 10
OF B1 Pre-dev	0	0	1.395	0	0	0	0	
OF B2 Pre-dev	0	0	1.413	0	0	0	0	
OF 34.20	0	0	1.349	0	0	0	0	
OF B2	0	0	1.413	0	0	0	0	
OF B1	0	0	1.395	0	0	0	0	

DETENTION BASIN DETAILS

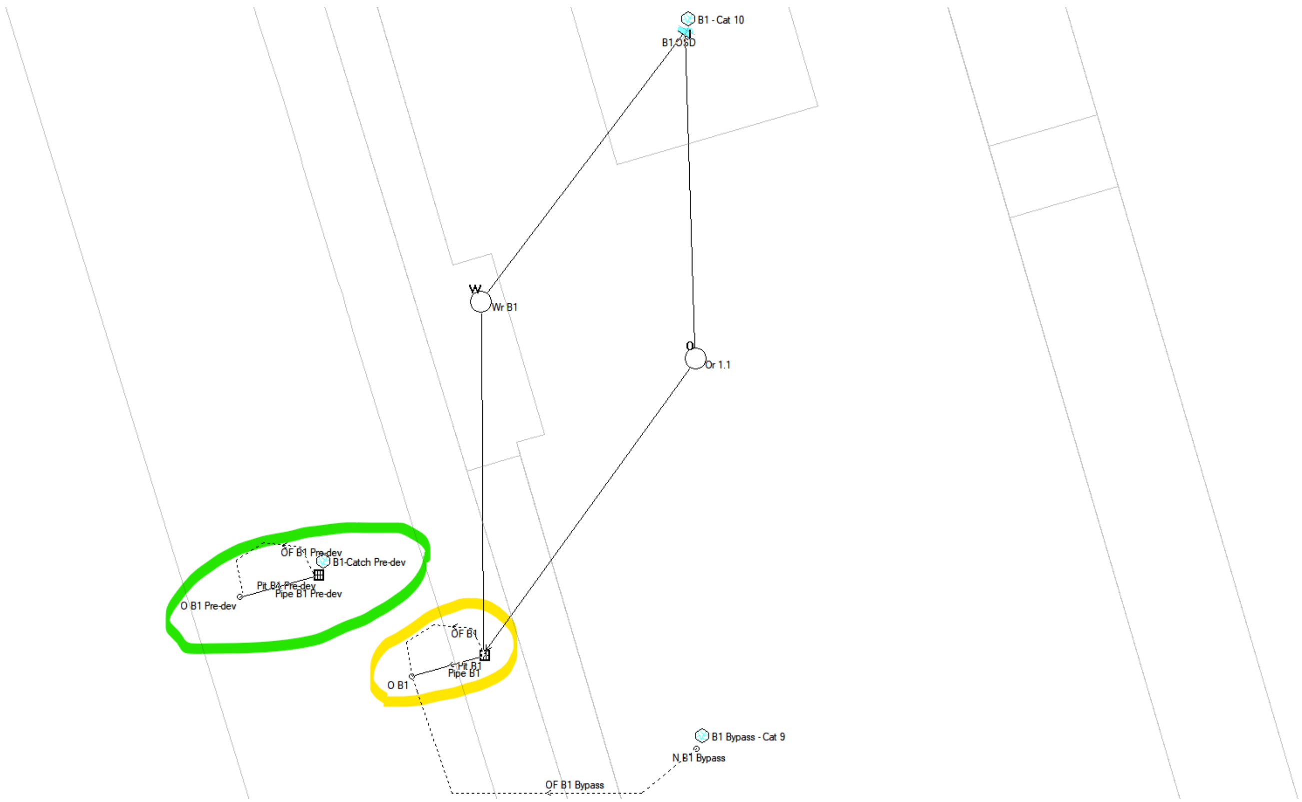
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
B2 OSD	14.96	37.9	0.029	0	0.029
B34 OSD	23.92	37.1	0.041	0	0.041
B1 OSD	20.46	68.8	0.043	0	0.043

Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A
Run Log for DRAINS v2025.01.9147.24925 - 18445O-RBG-XX-XX-M2-CV-00000-High Level v6 - Scenario A.drn run at 11:16:27 on 15/1/2026.

No water upwelling from any pit.
Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

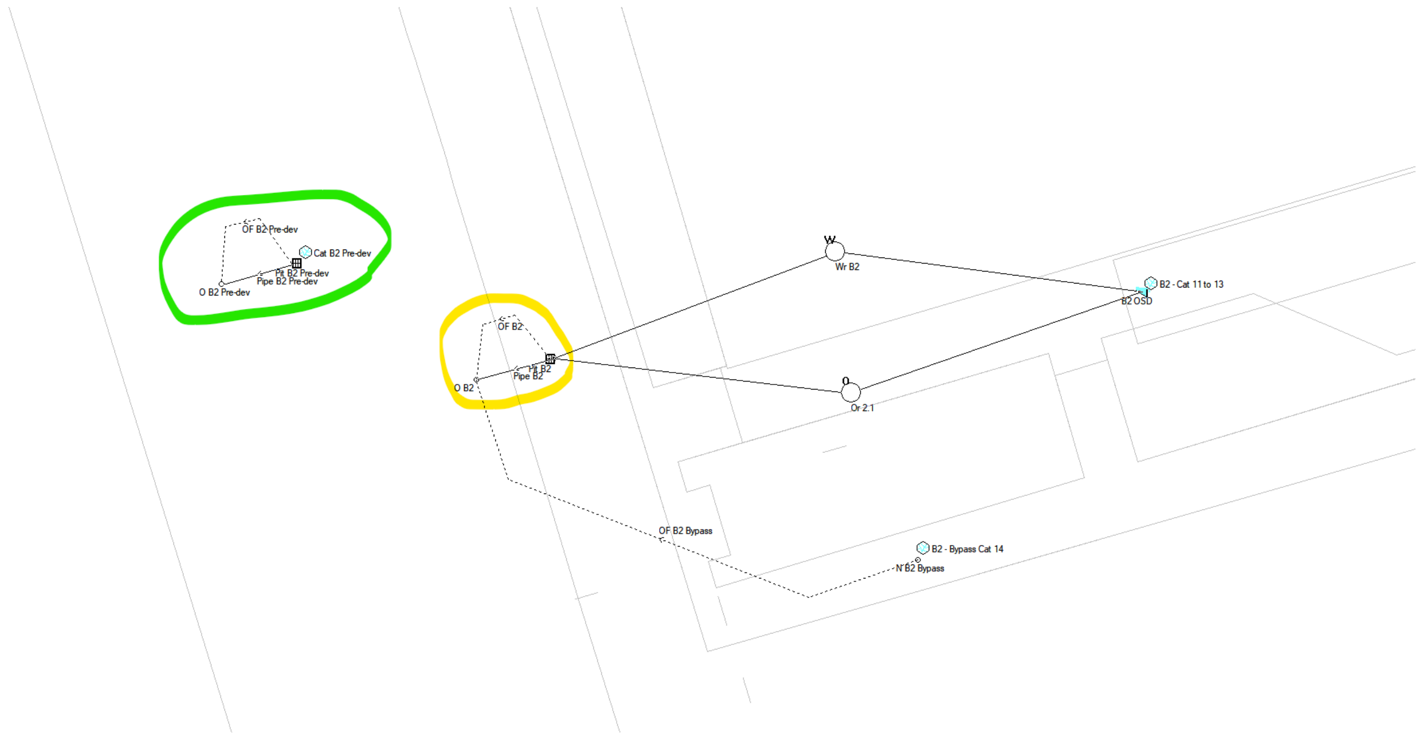
APPENDIX F – Pre and Post-development Flows at Botany Rd Connection Points



Building 1 - Connection to Existing TfNSW Drainage Asset at Botany Road

	20% AEP (1 in 5yr)	10% AEP (1 in 10yr)	5% AEP (1 in 20yr)	1% AEP (1 in 100yr)
Pre-development (L/s)	115	137	157	208
Post-development (L/s)	45	50	54	61

Refer to the DRAINS model.



Building 2 - Connection to Existing TfNSW Drainage Asset at Botany Road

	20% AEP (1 in 5yr)	10% AEP (1 in 10yr)	5% AEP (1 in 20yr)	1% AEP (1 in 100yr)
Pre-development (L/s)	88	105	121	160
Post-development (L/s)	29	33	35	41

Refer to the DRAINS model.