PROPOSED DEVELOPMENT
(No.57-61) BOURKE STREET, NORTH PARRAMATTA
STORMWATER MANAGEMENT PLANS

LEGEND

- DENOTES ON-SITE DETENTION TANK
- DENOTES ON-SITE RETENTION TANK
- DENOTES DWELLING FOOTPRINT
- SW — DENOTES 100mm DIA. STORMWATER/SURFACE WATER SYSTEM PIPE AT 1% MIN. GRADE U.N.O.
- RW — DENOTES 100mm DIA. FULLY SEALED RAINWATER SYSTEM PIPE U.N.O.
- 150 RW — DENOTES RAINWATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
- 150 SW — DENOTES STORMWATER/SURFACE WATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
- W/RM — DENOTES RISING MAIN AND PIPE DIA. U.N.O.
- 100 SS — DENOTES SUBSOIL DRAINAGE LINE AND DIA. WRAPPED IN GEOFABRIC U.N.O.
- DP — DENOTES DOWNPIPE
- IO — DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL
- CO — DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL FOR SYSTEM FLUSHING PURPOSES
- STORMWATER PIT - SOLID COVER
- STORMWATER PIT - GRATED INLET
- DENOTES GRATED DRAIN
- DENOTES ABSORPTION TRENCH
- NON RETURN VALVE
- PUMP
- STOP VALVE (ISOLATION VALVE)
- 240v REQUIRED
- IL23.31 — DENOTES LEVEL OF INLET /OUTLET OF STORMWATER PIPE. NOTE: UNLESS NOTED OTHERWISE, THE BASE OF THE PIT IS THE SAME AS THE PIPE INLET/OUTLET.

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG www.1100.com.au

IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

GENERAL NOTES

1. THESE PLANS SHALL BE READ IN CONJUNCTION WITH OTHER RELEVANT CONSULTANTS' PLANS, SPECIFICATIONS, CONDITIONS OF DEVELOPMENT CONSENT AND CONSTRUCTION CERTIFICATE REQUIREMENTS. WHERE DISCREPANCIES ARE FOUND ACOR CONSULTANTS (CC) MUST BE CONTACTED IMMEDIATELY FOR VERIFICATION
2. WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE NOR USED FOR CONSTRUCTION PURPOSES
3. SUBSOIL DRAINAGE SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL ENGINEER. SUBSOIL DRAINAGE SHALL NOT BE CONNECTED INTO THE STORMWATER SYSTEM IDENTIFIED ON THESE PLANS UNLESS APPROVED BY ACOR CONSULTANTS (CC)

STORMWATER CONSTRUCTION NOTES

1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500 (CURRENT EDITION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL'S POLICIES AND CODES
2. THE MINIMUM SIZES OF THE STORMWATER DRAINS SHALL NOT BE LESS THAN DN90 FOR CLASS 1 BUILDINGS AND DN100 FOR OTHER CLASSES OF BUILDING OR AS REQUIRED BY THE REGULATORY AUTHORITY
3. THE MINIMUM GRADIENT OF STORMWATER DRAINS SHALL BE 1%, UNLESS NOTED OTHERWISE
4. COUNCIL'S TREE PRESERVATION ORDER IS TO BE STRICTLY ADHERED TO. NO TREES SHALL BE REMOVED UNTIL PERMIT IS OBTAINED
5. PUBLIC UTILITY SERVICES ARE TO BE ADJUSTED AS NECESSARY AT THE CLIENT'S EXPENSE
6. ALL PITS TO BE BENCHED AND STREAMLINED. PROVIDE STEP IRONS FOR ALL PITS OVER 1.2m DEEP
7. MAKE SMOOTH JUNCTION WITH ALL EXISTING WORK
8. VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION
9. SERVICES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE NOR CORRECT. IT IS THE CLIENT & CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL PRIOR TO CONSTRUCTION
10. ANY VARIATION TO THE WORKS AS SHOWN ON THE APPROVED DRAWINGS ARE TO BE CONFIRMED BY ACOR CONSULTANTS (CC) PRIOR TO THEIR COMMENCEMENT

RAINWATER RE-USE SYSTEM NOTES

1. RAINWATER SUPPLY PLUMBING TO BE CONNECTED TO OUTLETS WHERE REQUIRED BY BASIX CERTIFICATE (BY OTHERS)
2. TOWN WATER CONNECTION TO RAINWATER TANK TO BE TO THE SATISFACTION OF THE REGULATORY AUTHORITY. THIS MAY REQUIRE PROVISION OF:
   2.1. PERMANENT AIR GAP
   2.2. BACKFLOW PREVENTION DEVICE
3. NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE RAIN WATER SUPPLY
4. AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK
5. PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
6. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE
7. PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN
8. ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK . SURFACE WATER INLETS ARE NOT TO BE CONNECTED
9. PIPE MATERIALS FOR RAINWATER SUPPLY PLUMBING ARE TO BE APPROVED MATERIALS TO AS/NZS3500 PART 1 SECTION 2 AND TO BE CLEARLY AND PERMANENTLY IDENTIFIED AS 'RAINWATER'. THIS MAY BE ACHIEVED FOR BELOW GROUND PIPES USING IDENTIFICATION TAPE (MADE IN ACCORDANCE WITH AS2648) OR FOR ABOVE GROUND PIPES BY USING ADHESIVE PIPE MARKERS (MADE IN ACCORDANCE WITH AS1345)
10. EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELED 'RAINWATER' ON A METALLIC SIGN IN ACCORDANCE WITH AS1319
11. ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY

PARRAMATTA COUNCIL REQUIREMENTS

1. SITE AREA (m²) 1937.5
2. ON-SITE DETENTION
   REFER TO SHEET C4 FOR THE UPPER PARRAMATTA RIVER CATCHMENT TRUST ON-SITE DETENTION DRAINAGE CALCULATIONS
3. RAINWATER REUSE
   PROVIDE RAINWATER REUSE TANK AS REQUIRED BY BASIX. RAINWATER REUSE VOLUME PROVIDED = 27m³ .
4. WATER QUALITY
   4 x SPEL FILTERS PROVIDED TO SATISFY WATER QUALITY MEASURES. REFER TO SHEETS C10 & C11 STORMWATER QUALITY REPORT.
5. SITE DISCHARGE TO PROPOSED EASEMENT AT REAR OF SITE. REFER TO SHEET C2.
6. DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH PARRAMATTA COUNCIL DESIGN & DEVELOPMENT GUIDELINES, UPPER PARRAMATTA RIVER CATCHMENT TRUST, AR&R AND AS/ANZS 3500

SHEET INDEX

DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION

DRAWINGS MUST BE PRINTED IN COLOUR

Issue	Description	Date	Drawn	Approved
D	RE-ISSUED FOR DEVELOPMENT APPROVAL	25.11.22	RH	BK
C	RE-ISSUED FOR DEVELOPMENT APPROVAL & UPDATED TO SUIT CLIENTS COMMENTS	21.02.22	RH	BK
B	ISSUED FOR DEVELOPMENT APPROVAL	14.01.22	RH	BK
A	ISSUED FOR CLIENT REVIEW & COMMENT	23.11.21	RH	BK

1 0 1cm at full size 10cm

North

Client: BARRY RUSH & & ASSOCIATES PTY LTD

Architect:

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

Project: SENIORS DEVELOPMENT
57-61 Bourke Street & 10 Brown St (drainage easement only)
NORTH PARRAMATTA
LOTS 23, 24, 25 & 38 in DP 35290

Drawing Title: COVER SHEET & NOTES

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C1	D

BOURKE STREET

CROSSOVER AND DRIVEWAY TO BE IN ACCORDANCE WITH COUNCIL REQUIREMENTS. THE LEVELS AND DESIGN OF THE CROSSOVER AND DRIVEWAY SHALL BE BY OTHERS. TYP UNO

CONSTRUCT 150 WIDE GRATED BOX DRAIN MIN 100 DEEP WITH HEAVY DUTY GRATE ALONG DRIVEWAYS. TYP UNO. GRADE FROM INVERT TO OUTLET AT A MINIMUM GRADE OF 2% GRATE LEVEL TO BE CONFIRMED FROM CROSS OVER LEVELS PROVIDED BY COUNCIL AS REQUIRED.

ON-SITE RETENTION (OSR)

REFER TO DETAIL ON SHEET C3
BELOW GROUND STORAGE TANK
INTERNAL FOOTPRINT - 21m²
TOP STORED WSL = RL 47.90
AVERAGE STORED WATER DEPTH - 1.27m
VOLUME OF TANK REQUIRED = 27m³ MIN.
ACCESS COVERS TO TANK MUST BE CHILDPROOF WITH NON CORROSIVE LOCKING DEVICES

ON-SITE DETENTION(OSD)

REFER OSD CALCULATIONS TABLE ON SHEET C4 AND DETAIL ON SHEET C3
BELOW GROUND STORAGE TANK
INTERNAL FOOTPRINT - 76.5m²
TOP STORED WSL = RL 47.80
INVERT OF OUTLET IL 46.45
AVG STORED WATER DEPTH - 1.205m
VOLUME OF TANK PROVIDED = 92m³
ACCESS COVERS TO TANK MUST BE CHILDPROOF WITH NON CORROSIVE LOCKING DEVICES

WATER QUALITY CHAMBER

PROVIDE 4 x FULL HEIGHT SPEL FILTERS FOR WATER QUALITY MEASURES.
INTERNAL FOOTPRINT - 4m²
TOP STORED WSL = RL 47.80
AVG STORED WATER DEPTH - 1.25m
VOLUME OF TANK PROVIDED = 5m³

PIT P1 - BOUNDARY PIT
900 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - RL 47.35 nom
INVERT OF OUTLET - IL46.30 nom

INSTALL PIPE USING HORIZONTAL DIRECTION DRILLING TECHNIQUE. DETAILS TO BE PROVIDED AT CC STAGE

DISCHARGE STORMWATER TO PROPOSED EASEMENT. REFER TO SHEET C9 FOR PROPOSED DRAINAGE EASEMENT PLAN. FINAL ALIGNMENT SUBJECT TO APPROVAL

REFER TO SHEET C9 FOR DETAIL

SHADED AREA DENOTES CATCHMENT 155m² (8%)

BENCHMARK NAIL IN KERB RL 48.59 AHD

NOTE: ALL DOWNPIPE LOCATIONS TO BE CONFIRMED AT CC STAGE

NOTE: ALL DOWNPIPE LOCATIONS TO BE CONFIRMED AT CC STAGE

DWELLING FFL RL. 48.50

DWELLING FFL RL. 49.00

FFL RL.48.50

FFL RL.49.00

CARPORT RL.48.42

CARPORT RL.48.95

PORCH

SEALED OVERFLOW PIPE FROM RWT. CONSTRUCT STRAPPED TO INTERNAL TANK WALL & DISCHARGE DIRECTLY TO SPEL CHAMBER

ALLOW TO REGRADE AREA LOCALLY TO FALL SURFACE TO PIT P1

PROVIDE 150mm HIGH BARRIER KERB ALONG REAR BOUNDARY TO DIRECT SURFACE WATER FLOWS VIA SWALE TO PIT P1

STORMWATER MANAGEMENT PLAN

SCALE - 1:100/A1, 1:200/A3

0 1 2 4 6 8 10m

WARNING
LOCATION AND DEPTH OF ALL UNDERGROUND SERVICES TO BE INVESTIGATED WITH THE RELEVANT AUTHORITIES PRIOR TO COMMENCING WORK

GRATED DRAINS ALONG PATHS SHOWN INDICATIVELY FOR APPROVAL PURPOSES ONLY. EXACT LOCATION OF GRATED DRAINS TO BE DETERMINED AT CC STAGE. TYP UNO
CONSTRUCT MIN. 100mm WIDE x 100mm DEEP COMPLETE WITH HEELPROOF GRATE & FRAME.

RW DENOTES UNDERGROUND ROOF WATER LINE @ 1% GRADE MIN. CONNECT ALL DOWNPIPES CONVEYING ROOF WATER TO THIS PIPE. TYP UNO

SURFACE WATER DRAINAGE SYSTEM.
PIPE & PIT NETWORK SHOWN INDICATIVELY FOR THE APPROVAL PURPOSES ONLY. LANDSCAPE DRAINAGE TO BE DETERMINED AT CC STAGE DOCUMENTATION TYP UNO

SW DENOTES UNDERGROUND SURFACE STORMWATER LINE @ 1% GRADE MIN. CONNECT ALL SURFACE WATER OUTLETS & DOWNPIPES CONVEYING SURFACE WATER TO THIS PIPE. TYP UNO

SURFACE WATER DRAINAGE SYSTEM.
PIPE & PIT NETWORK SHOWN INDICATIVELY FOR THE APPROVAL PURPOSES ONLY. LANDSCAPE DRAINAGE TO BE DETERMINED AT CC STAGE DOCUMENTATION TYP UNO

CONSTRUCT 150mm HIGH KERB SHOWN THUS:- ALLOW TO DIRECT SURFACE WATER FLOWS TO DRAINAGE EASEMENT

WE NOTE AN ASSESSMENT OF THE UPSTREAM CATCHMENT HAS BEEN CARRIED OUT. OUR ASSESSMENT ANTICIPATES AN EXPECTED FLOW RATE OF 20l/sec. CONSTRUCT BARRIER KERB AS SHOWN 150mm HIGH AND 500mm WIDE SWALE TO CONVEY SURFACE FLOWS TO PIT P1

NOTES:

1. TOP OF GRATE LEVELS HAVE BEEN DETERMINED FROM THE SURVEY DETAIL PROVIDED. FOLLOWING EARTHWORKS AND BENCHING, VALIDITY OF GRATE LEVELS SHOULD BE ASSESSED AND ADJUSTED AS REQUIRED TO MEET THE INTENT OF THE DESIGN. WHERE IN DOUBT CONTACT THE DESIGN ENGINEER.

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0 1cm at full size 10cm

North

Client
BARRY RUSH & & ASSOCIATES PTY LTD

Architect

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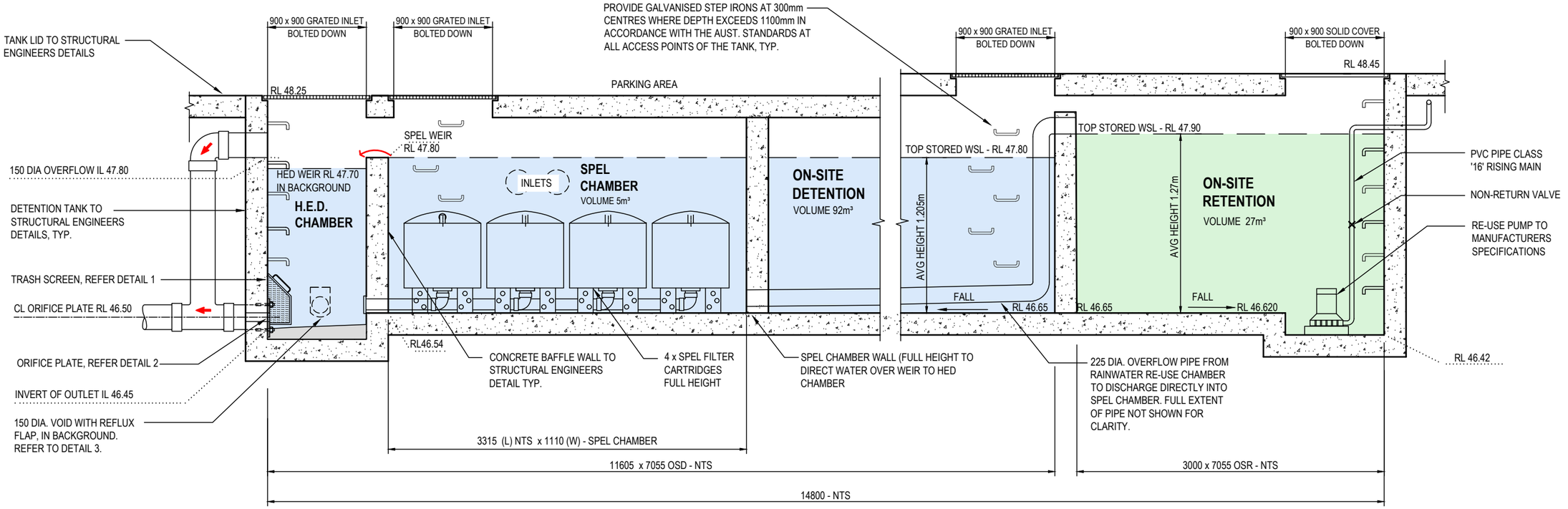
Project
SENIORS DEVELOPMENT
57-61 Bourke Street & 10 Brown St (drainage easement only)
LOTS 23, 24, 25 & 38 in DP 35290
NORTH PARRAMATTA

Drawing Title
STORMWATER MANAGEMENT PLAN

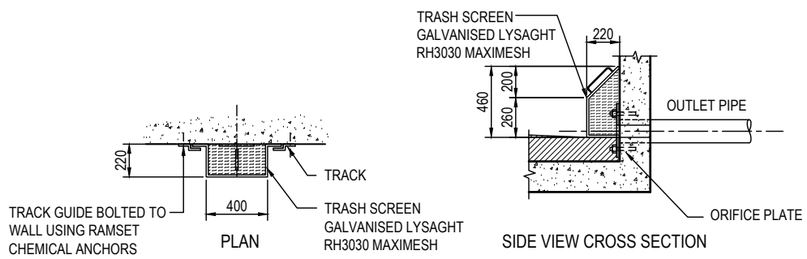
Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C2	D

RAINWATER REUSE TO BE
USED FOR IRRIGATION PURPOSES

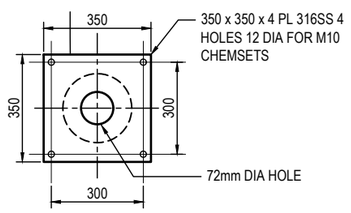


OSD / OSR TANK SECTION — A

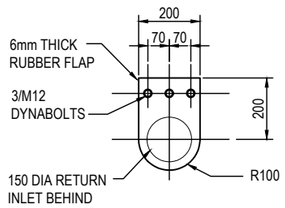
1:20 @ A1 ; 1: 40 @ A3



DETAIL 1 - TRASH SCREEN
NTS



DETAIL 2 - ORIFICE PLATE
NTS



DETAIL 3 - REFLUX FLAP
NTS

PROVIDE CONFINED SPACE SIGNAGE AT ENTRY POINTS INTO TANK.

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1cm at full size

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Project: SENIORS DEVELOPMENT
57-61 Bourke Street & 10 Brown St (drainage easement only)
NORTH PARRAMATTA
LOTS 23, 24, 25 & 38 in DP 35290

Drawing Title: STORMWATER MANAGEMENT DETAILS SHEET No.1

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22

Designed	Project No.	Dwg. No.	Issue
BK	CC210392	C3	D

Form B1[1] DRAINAGE DESIGN SUMMARY SUB/DA No. ____

Project: CC210392 **Location:** 57-61 BOURKE STREET, NTH PARRAMATTA

Designed By: RH **Company:** ACOR CONSULTANTS (CC) Pty. Ltd **Phone:** (02) 4324 3499

SITE AREA 0.1937 ha *See Section 3.4.3 for dual occupancy			[A]
Upstream catchment draining through site	= 0	ha	[AA]
See Section 4.1.3 for assessment of external flows.			
Basic storage volume 470 x [A] 0.1937	= 91.04	m^3	[B]
Basic Discharge =0.08 x [A] 0.1937	= 0.0155	m^3/s	[C]
Area of site drained to storage (Must be as much as possible and not be less than 85% of the total site without written Council approval).	= 0.1782	ha	[D]
[D]/[A] + [0.1782]/[0.1937] x 100	= 92	%	[E]
Storage per ha. Of contributing area = [B]/[D]	= 510.88		[F]
Enter *volume/PSD adjustment chart* (Fig 5.1) using [F], and Read new PSD in litres/second/ha (l/s/ha).	= 72.01	l/s/ha	[G]
Determine PSD = [G] x [D] 72.01 x 0.1782	= 12.83	l/s	[H]
Maximum head to orifice center	= 1.3	m	[K]
Weir flow to storage $Q^{Weir}=CL(H^{Weir})^{1.5}$ $\therefore H^{Weir}$	= 0.15	m	[I]
Select orifice diameter: $d=(0.464\times Q/\sqrt{h})^{0.5}=(0.464\times[H]/\sqrt{[K]})^{0.5}$	= 0.072	m	[J]
Maximum discharge	= 12.83	l/s	[L]
Head for high early discharge	= 1.2	m	[M]
High early discharge $\{[L]\times\sqrt{[M]/[K]}\}$ (min 75% of [L])	= 12.33	l/s	[N]
Approximate mean discharge = ([L] + [N])/2	= 12.58	l/s	[P]
Average discharge/ha = [P]/[D] = 12.58 / 0.1782	= 70.60	l/s/ha	[Q]
Enter volume/PSD adjustment chart (Fig 5.1) using [Q] And read off final storage volume per hectare	= 518.33	m^3/ha	[R]
Determine final SSR = [R] x [D] = 518.33 x 0.1782	= 92	m^3	[S]
Primary storage proportion = [S] x ____ %	____	m^3	[T]
Secondary storage proportion = [S] x ____ %	____	m^3	[U]
Tertiary storage proportion = [S] x ____ %	____	m^3	[V]
Check [T] + [U] + [V] = [S]	____	m^3	

[1] Revised for third edition to include flow from upstream and revised by pass flows

Upper Parramatta River Catchment Trust

OSD STORMWATER MAINTENANCE SCHEDULE

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Drainage Control Pit (DCP)			
Inspect and remove any blockage of orifice	Six monthly	Owner	Remove grate and screen to inspect orifice. See plan for location of DCP
Check attachment of orifice plate to wall of pit (gaps less than 5mm)	Annually	Maintenance Contractor	Remove grate and screen. Ensure plate mounted securely, tighten fixings if required. Seal gaps as required.
Check orifice diameter correct and retains sharp edge	Five yearly	Maintenance Contractor	Compare diameter to design (see Work-As-Executed) and ensure edge is not pitted or damaged
Inspect screen and clean	Six monthly	Owner	Remove grate and screen if required to clean it.
Check attachment of screen to wall of pit	Annually	Maintenance Contractor	Remove grate and screen. Ensure screen fixings secure. Repair as required
Check screen for corrosion	Annually	Maintenance Contractor	Remove grate and examine screen for rust or corrosion, especially at corners or welds.
Inspect flap valve and remove any blockage	Six monthly	Owner	Remove grate. Ensure flap valve moves freely and remove any blockages or debris.
Check attachment of flap valve to wall of pit	Annually	Maintenance Contractor	Remove grate. Ensure fixings of valve are secure
Check flap valve seals against wall of pit	Annually	Maintenance Contractor	Remove grate. Fill pit with water and check that flap seals against side of pit with minimal leakage.
Inspect overflow weir and remove any blockage	Six monthly	Maintenance Contractor	Remove grate and open cover to ventilate underground storage if present. Ensure weir clear of blockages.
Inspect DCP walls (internal and external, if appropriate) for cracks or spalling	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect DCP sump and remove any sediment / sludge	Six monthly	Owner	Remove grate and screen. Remove sediment / sludge build-up and check orifice and flap valve clear.
Inspect grate for damage or blockage	Six monthly	Owner	Check both sides of grate for corrosion (especially corners and welds) damage or blockage.
Inspect return pipe from storage and remove any blockage	Six monthly	Maintenance Contractor	Remove grate and screen. Ventilate underground storage if present. Check orifice and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge / debris on upstream side of return line.
Storage			
Inspect pit and remove any sediment / sludge in pit	Six monthly	Maintenance Contractor	Remove grate and screen. Remove sediment / sludge build-up.
Inspect internal tank walls (and external, if appropriate) for cracks or spalling	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect and remove any debris / litter / mulch etc. blocking grates	Six monthly	After storm event	Remove blockages from grate and check if pit blocked.
Inspect tank storage are and remove debris / mulch / litter etc. likely to block screens / grates.	Six monthly	Maintenance Contractor	Remove debris and floatable material likely to be carried to grates.
Compare storage volume to volume approved (Rectify if loss > 5%)	Annually	Maintenance Contractor	Compare actual storage available with Work-as-Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost. Council to be notified of the proposal.
Inspect storages for subsidence near pits.	Annually	Maintenance Contractor	Check along drainage lines and at pits for subsidence likely to indicate leakages.

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

Project: SENIORS DEVELOPMENT

57-61 Bourke Street & 10 Brown St (drainage easement only)
NORTH PARRAMATTA
LOTS 23, 24, 25 & 38 in DP 35290

Drawing Title: OSD CALCULATION SHEET & MAINTENANCE SCHEDULE

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C4	D

ON-SITE DETENTION CHECKLIST - SHEET 1 OF 2

B9. OSD DETAILED DESIGN SUBMISSION

This form is to be completed by the stormwater designer and submitted to Council together with the design plan/s and any necessary attachments.

PROJECT ADDRESS: _____

PROJECT APPLICANT: _____

OSD DESIGNER DETAILS:

Company Name: ACOR CONSULTANTS (CC) PTY LTD

Address: SUITE 2.01, 4 ILYA AVENUE, ERINA NSW 2250

Telephone No.: (02) 43243499 **Fax No:** _____

Accreditation organisation: _____

Accreditation Reference: _____

Name and signature of designer: BRUCE KENNY
(Print Name)
_____ **Date:** 23.11.21
(Signature)

Items submitted: **

- OSD Design Plan/s — Yes / No
- OSD Detailed Design Checklist — Yes / No
  - Attachment A: Flood Affectation Information — Yes / No
  - Attachment B: External Catchment Assessment — Yes / No
  - Attachment C: On-line System Calculations — Yes / No
  - Attachment D: Overflow and Surcharge Pathway Calculations — Yes / No
  - Attachment E: Site Drainage Calculations — Yes / No
  - Attachment F: Outlet Hydraulic Assessment — Yes / No
  - Attachment G: Site Storage Details — Yes / No
  - Attachment H: Drainage Design Summary Sheet — Yes / No

COUNCIL REVIEW DETAILS:

Council Review Officer's Name: _____

Review officer's comments: _____

Signature of Review Officer: _____ **Date:** _____

** The above items are to be submitted in a single bound form — a 'loose leaf' format is unacceptable.

OSD DETAILED DESIGN CHECKLIST

ITEM	DESIGNER YES	DESIGNER NO	COUNCIL REVIEW YES	COUNCIL REVIEW NO
1. A Stormwater Concept Plan (SCP) has been approved previously (refer Section 4.1)		✓		
2. The site (whole or partly) is defined as floodprone in a 100 year event		✓		
If YES, see Plan No ..... in Attachment A				
2(a) Has any floodplain storage been lost?	N/A			
If YES, see Plan No ..... in Attachment A				
2(b) Has the floodprone area been excluded from the OSD calculations?	N/A			
2(c) Is the OSD system performance adversely affected by the 100 year flood level?	N/A			
3. Is there an external catchment draining into the site?		✓		
If YES, see Plan No ..... and calculations of 100 year ARI flow in Attachment B				
4. The location and extent of any floodway/flowpath has been determined, (refer Sections 4.1.3 & 4.2.2)	N/A			
If YES, see Plan No .....and accompanying 100 year event hydraulic calculations in Attachment B. Buildings are not inundated (and have the required freeboard) nor are flows concentrated on an adjoining property (refer Sections 4.1.3, 4.2.7 & 4.2.9)				
5. The detailed design submission is consistent with the approved SCP	✓			
6. Are there any conditions on the development approval that may affect the drainage design (for example, trees to be retained)?				
7. The detailed design submission addresses the drainage-related conditions of the development approval				
8. A site layout plan with accompanying ground levels/contours which extend into adjoining properties is submitted	✓			
If YES, see Plan No. ....C2.....				
9. Have other constraints, e.g. easements, services, been defined?				
If YES, see Plan No.				
10. How many OSD storage systems are there?...ONE.....				
11. Are the storage system/s off-line (refer Section 4.2.6)?	✓			
If NO, see alternative calculations included in Attachment C				
12. State the type of discharge control device (i.e. orifice or.....? Where the device is not an orifice, has specific Trust approval been obtained?				
13. The area of the site to be drained by each OSD storage has been determined, (refer Section 4.2.2)	✓			
If YES, see Plan No. ....C2.....				
If YES, the uncommanded site percentage is ....8....% (to be less than 25%, refer Section 4.1.4 unless specific approval has been granted).				
14. The plan/s identify the maximum water levels, and the levels and locations of each storage's discharge point (refer Section 4.2.2)	✓			
If YES, see Plan No C2 & C3.....				
15. The location of overflow structures and surcharge pathways have been determined, (refer Sections 4.2.2 & 4.2.9)	✓			
If YES, see Plan No C2..... and calculations in Attachment D				
Buildings are not inundated nor are flows concentrated on an adjoining property (refer Sections 4.2.7 & 4.2.9)	✓			
16. The drainage plans have been checked for consistency against the Architectural and landscaping plans	✓			
17. A maintenance schedule has been prepared (ref Section 4.2.10)	✓			

Issue	Description	Date	Drawn	Approved
D	RE-ISSUED FOR DEVELOPMENT APPROVAL	25.11.22	RH	BK
C	RE-ISSUED FOR DEVELOPMENT APPROVAL & UPDATED TO SUIT CLIENTS COMMENTS	21.02.22	RH	BK
B	ISSUED FOR DEVELOPMENT APPROVAL	14.01.22	RH	BK
A	NIL ISSUE	-	-	-

1cm at full size

North

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Project: SENIORS DEVELOPMENT
57-61 Bourke Street & 10 Brown St (drainage easement only)
NORTH PARRAMATTA
LOTS 23, 24, 25 & 38 in DP 35290

Drawing Title: OSD CHECKLIST SHEET 1 OF 2

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22

Designed	Project No.	Dwg. No.	Issue
BK	CC210392	C5	D

ON-SITE DETENTION CHECKLIST - SHEET 2 OF 2

Where there is more than one OSD system, Questions 18 to 26 are to be answered separately for each OSD storage system.

OSD Storage system identifier.....

ITEM	DESIGNER YES	DESIGNER NO	COUNCIL REVIEW YES	COUNCIL REVIEW NO
18. The design explicitly shows how all the drained area grades to the storage, including roof gutter overflows (refer Section 6.2)	✓			
If YES, see Plan No C2.....				
If NO, see calculations in Attachment E showing how all drainage system components (including all roof gutters, downpipes, collecting pits and pipe systems, etc) have 100 year ARI capacities with 50% blockage factor				
19. The invert level of storage is not less than ground level (or top of kerb) at point of connection to external stormwater system	✓			
If YES, see Plan No. C2 & C3.....				
If NO, see explanatory notes in Attachment F				
20. The discharge control pit design is consistent with the principles shown in Figures 4.3, 7.10 and/or 7.11	✓			
20(a) The DCP has an open grating type lid (for ease of inspection)	✓			
20(b) The DCP minimum dimensions are consistent with Section 4.2.3				
20(c) The floor of the DCP has a localised sump adjacent to the orifice with level at least 150 mm below the return pipe, (refer Section 4.2.8)	✓			
20(d) The return pipe from the storage is at least 150 mm in diameter (refer Section 4.2.8)	✓			
20(e) The return pipe flap valve is consistent with Figure 4.3	✓			
20(f) If an orifice control is specified, is it consistent with the requirements set out in Section 4.2.3?	✓			
If YES, see: Plan No. C2 & C3 .. for stainless steel plate specification, thickness and fixing to pit wall				
20(g) The overflow weir is fitted with a basket (refer Section 6.3).There is a surface grate above the basket to facilitate inspection and maintenance				
20(h) The high early discharge (HED) characteristics are consistent with the requirements set out in Section 4.2.3	✓			
If YES, see: Plan No. C2 & C3 for height of discharge to storage relative to permissible site discharge (PSD)				
Accompanying weir calculations in Attachment E				
Plan No ..... showing majority of site drainage system connecting to the DCP & the volume of the DCP is small compared to the volume of the storage				
20(i) The screen design is consistent with Section 4.2.5	✓			
If YES, see: Plan No.C2 & C3 for screen type, area and orientation				
Plan No.C2 & C3 for fabrication note re aperture orientation				
Plan NoC2 & C3. for fixing and handle details				
Plan NoC2 & C3. showing how all inflows to the DCP are on the upstream side of the screen protecting the orifice				
20(j) The outlet pipe from the DCP has a capacity at least twice the PSD (refer Section 4.2.4)	✓			
If YES, see calculations in Attachment E				

ITEM	DESIGNER YES	DESIGNER NO	COUNCIL REVIEW YES	COUNCIL REVIEW NO
21. If an above ground/landscaped storage is specified, answer Q21(a) to Q21(g), otherwise move to Q22				
21(a) The first 10%-20% of storage is provided in an area able to tolerate frequent inundation(refer Section 4.2.7)				
21(b) Where the depth of ponding exceeds 600 mm, consideration has been given to whether there are steep drops, and/or a need for steps or 'walk-in' 'walk-out' batters, etc. when deciding if fencing and/or warning signs are required (Refer Sections 4.2.7 & 6.2)				
21(c) The landscaping treatment within the storage area is such that it does not limit storage volumes or provide a significant source of debris loading				
21(d) The minimum surface slope is consistent with Section 4.2.7				
21(e) Subsoil drainage is provided in areas subject to frequent ponding and around the outlet (refer Section 4.2.7)				
21(f) If the design includes a retaining wall, has it been structurally checked?				
21(g) Does the system have the correct storage?				
If YES, see stage-storage calculations in Attachment G				
22. If a driveway/car-park storage is specified, answer Q22(a) to Q22(c), otherwise move to Q23				
22(a) The maximum depth is less than or equal to 200mm (refer Section 4.2.7)				
22(b) The minimum transverse slope is 0.7% (refer Section 4.2.7)				
22(c) The system has the correct storage				
If YES, see stage-storage calculations in Attachment G				
23. If a structural/underground storage is specified, answer Q 23(a) to Q 23(f), otherwise move to Q24	✓			
23(a) The dimensions of openings are consistent with Section 4.2.8	✓			
23(b) The storage floor has a minimum slope of 0.7% (refer Section 4.2.8)	✓			
23(c) There are sufficient access points for flushing purposes (refer Section 4.2.8)	✓			
23(d) There are sufficient grated openings for ventilation purposes (refer Section 4.2.8)	✓			
23(e) All access points have light weight covers	✓			
23(f) The system has the correct storage	✓			
If YES, see stage-storage calculations in Attachment G				
24. The distribution of storage minimises inconvenience (refer Section 5.1.4)	✓			
25. The Drainage Design Summary sheet has been completed (refer Appendix B1)	✓			
If YES, see completed sheet in Attachment H				
26. The Drainage Design Summary sheet details are consistent with the design plans	✓			

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North

1cm at full size

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Drawing Title: OSD CHECKLIST SHEET 2 OF 2

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C6	D

EROSION & SEDIMENT LEGEND

1. INSTALL SEDIMENT FENCING REFER DETAIL SD 6-8, SHEET C8. WHERE UNDER CANOPY AREAS OF TREES TO BE RETAINED, FENCING NOT TO BE DUG INTO THE GROUND BUT INSTEAD ATTACHED TO GROUND BY TIGHTLY PACKED SANDBAGS.

2. THE EXISTING CROSSOVER & LAYBACK ARE TO BE RETAINED FOR SITE ACCESS UNTIL REASONABLE COMPLETION OF CONSTRUCTION WORKS

3. STOCKPILE IN ACCORDANCE WITH DETAIL SD 4-1, REFER TO SHEET C8

4. WASTE STORAGE AREA PROVIDE SOLID AND LIQUID WASTE RECEPTACLE BINS

5. BARRIER FENCING OR UTILISE EXISTING BOUNDARY FENCE — B — B —

6. PROPOSED DISTURBED AREA

7. SITE ACCESS PROVIDE LARGE COARSE DIA AGGREGATE OR RECYCLED CONCRETE. IN ACCORDANCE WITH DETAIL SD 6-14, SHEET C8

NOTES:

1. PROVIDE PROTECTION TO DRAINAGE PITS FOLLOWING PIT INSTALLATION. REFER TO DETAIL 6-12 ON SHEET C8.
2. TREE BARRIERS REQUIRED IN ACCORDANCE WITH THE ARBORISTS REPORT

BOURKE STREET

NOTE: STOCKPILE LOCATION VARIES DEPENDANT ON CONSTRUCTION STAGING

BENCHMARK NAIL IN KERB RL 48.59 AHD

VEHICLE CROSSING

22 DP 35290

23 DP 35290 602.2m²

24 DP 35290 616.5m²

25 DP 35290 718.8m²

26 DP 35290

39 DP 35290

38 DP 35290

37 DP 35290

36 DP 35290

1 STOREY BRICK RESIDENCE (TILE ROOF) No.55

1 STOREY BRICK RESIDENCE (TILE ROOF) No.57

1 STOREY BRICK RESIDENCE (TILE ROOF) No.59

1 STOREY BRICK RESIDENCE (TILE ROOF) No.61

1 STOREY RENDERED RESIDENCE (TILE ROOF) No.63

TIMBER SHED

TIMBER GARAGE

CARPORT CONCRETE SURFACE (METAL AWNING ABOVE)

METAL AWNING

METAL SHED

CONCRETE SURFACE (TIMBER AWNING ABOVE)

SEE SHEET 2 FOR ELEVATION A

SEE SHEET 2 FOR ELEVATION B

EROSION & SEDIMENT CONTROL PLAN

SCALE - 1:100/A1, 1:200/A3

0 1 2 4 6 8 10m

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Drawing Title: EROSION & SEDIMENT CONTROL PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.08.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C7	D

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT.
2. CONTRACTORS WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE GUIDELINES OF "MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION", DEPT OF HOUSING, 1998 (BLUE BOOK).
3. ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

LAND DISTURBANCE INSTRUCTIONS

4. DISTURBANCE TO BE NO FURTHER THAN 5 (PREFERABLY 2) METRES FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON APPROVED PLANS. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
5. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METRES THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
6. ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.
7. WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:
   - A) INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
   - B) CONSTRUCT THE STABILISED SITE ACCESS.
   - C) CONSTRUCT DIVERSION DRAINS AS REQUIRED.
   - D) INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
   - E) INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS.
   - F) CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
   - G) UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
   - H) GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
   - I) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
5. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.
6. ON COMPLETION OF MAJOR WORKS LEAVE DISTURBED LANDS WITH A SCARIFIED SURFACE TO ENCOURAGE WATER INFILTRATION AND ASSIST WITH KEYING TOPSOIL LATER.

SITE MAINTENANCE INSTRUCTIONS

7. THE SITE SUPERINTENDENT WILL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:
   - A) ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT ANY NECESSARY REPAIRS.
   - B) REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5 METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS AND PAVED AREAS.
   - C) REMOVE TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURE HAS BEEN EXCEEDED.
   - D) ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
   - E) CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS. MAKE ONGOING CHANGES TO THE PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECTED TO CHANGES IN CONDITIONS ON THE WORK-SITE OR ELSEWHERE IN THE CATCHMENT.
   - F) MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
8. THE SITE SUPERINTENDENT WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL. ENTRIES WILL INCLUDE:
   - A) THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS.
   - B) THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS.
   - C) THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE.
   - D) THE NEED FOR DUST PREVENTION STRATEGIES.
   - E) ANY REMEDIAL WORKS TO BE UNDERTAKEN.

   THE LOGBOOK WILL BE KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF THE WORKS.

SEDIMENT CONTROL INSTRUCTIONS

9. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
10. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
11. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
12. STOCKPILES ARE NOT TO BE LOCATED WITHIN 5 METRES OF HAZARD AREAS INCLUDING AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS.
13. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR WATER HAS BEEN TREATED BY AN APPROVED DEVICE.
14. TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
15. ACCESS TO SITES SHOULD BE STABILISED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

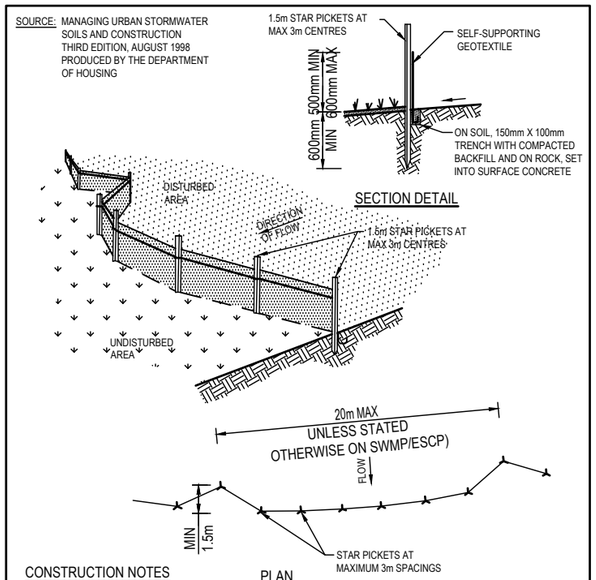
SOIL EROSION CONTROL INSTRUCTIONS

16. EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER, UNLESS OTHERWISE NOTED, THAN:
    - 2(H):1(V) WHERE SLOPE LENGTH LESS THAN 12 METRES
    - 2.5(H):1(V) WHERE SLOPE LENGTH BETWEEN 12 AND 16 METRES.
    - 3(H):1(V) WHERE SLOPE LENGTH BETWEEN 16 AND 20 METRES.
    - 4(H):1(V) WHERE SLOPE LENGTH GREATER THAN 20 METRES.
17. ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 1:20 YEAR ARI, TIME OF CONCENTRATION STORM EVENT.
18. WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUNDCOVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FLOW VELOCITIES ARE TO BE LIMITED TO THOSE SHOWN IN TABLE 5-1 OF "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", DEPT OF HOUSING 1998 (BLUE BOOK). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.
19. STOCKPILES AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.1 (60% GROUND-COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.
20. ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.
21. FOR AREAS OF SHEET FLOW USE THE FOLLOWING GROUND COVER PLANT SPECIES FOR TEMPORARY COVER: JAPANESE MILLET 20 KG/HA AND OATS 20 KG/HA.
22. PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND-COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.
23. REVEGETATION SHOULD BE AIMED AT RE-ESTABLISHING NATURAL SPECIES. NATURAL SURFACE SOILS SHOULD BE REPLACED AND NON-PERSISTANT ANNUAL COVER CROPS SHOULD BE USED.

WASTE CONTROL INSTRUCTIONS

24. ACCEPTABLE BINS WILL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES WILL BE PROVIDED AT LEAST WEEKLY. DISPOSAL OF WASTE WILL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.
25. ALL POSSIBLE POLLUTANT MATERIALS ARE TO BE STORED WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOOD PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS. STORE SUCH MATERIALS IN A DESIGNATED AREA UNDER COVER WHERE POSSIBLE AND WITHIN CONTAINMENT BUNDS.
26. ALL SITE STAFF AND SUB-CONTACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.
27. ANY DE-WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.
28. PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.

SOURCE: MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION THIRD EDITION, AUGUST 1998 PRODUCED BY THE DEPARTMENT OF HOUSING

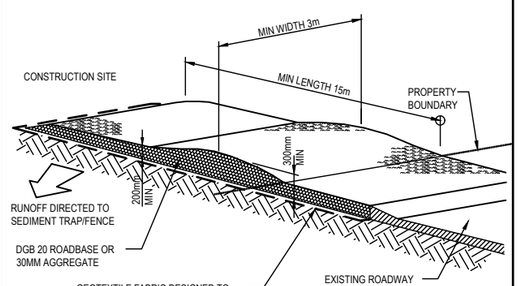


CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150 MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150 MM OVERLAP.

SEDIMENT FENCE SD 6-8

SOURCE: MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION THIRD EDITION, AUGUST 1998 PRODUCED BY THE DEPARTMENT OF HOUSING

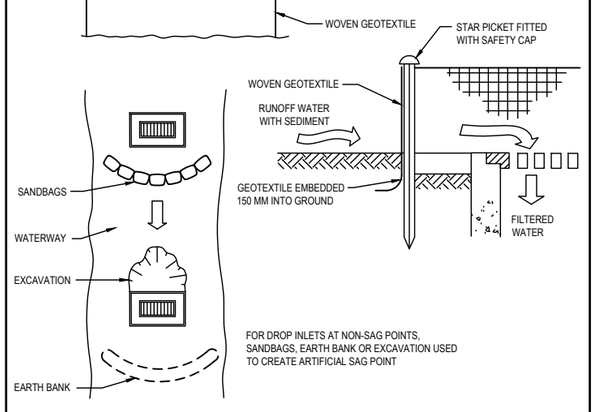


CONSTRUCTION NOTES:

1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE.
3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
4. CONSTRUCT 200MM THICK PAD OVER GEOTEXTILE USING ROADBASE OR 30MM AGREGATE. MINIMUM LENGTH 15M OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3 METRES.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP.

STABILISED SITE ACCESS SD 6-14

SOURCE: MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION THIRD EDITION, AUGUST 1998 PRODUCED BY THE DEPARTMENT OF HOUSING

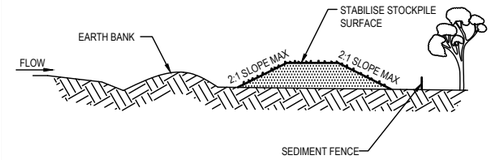


CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER FROM GEOTEXTILE OR STRAW BALES.
2. SUPPORT GEOTEXTILE WITH MESH TIED TO POSTS AT 1 METRE CENTRES.
3. DO NOT COVER INLET WITH GEOTEXTILE.
4. CONSTRUCTION DETAILS ARE SIMILAR TO TYPICAL SEDIMENT FENCING DETAIL.

GEOTEXTILE INLET FILTER SD 6-12

SOURCE: MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION THIRD EDITION, AUGUST 1998 PRODUCED BY THE DEPARTMENT OF HOUSING



CONSTRUCTION NOTES:

1. LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT, ELONGATED MOUND.
3. WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
5. CONSTRUCT EARTH BANK (STANDARD DRAWING 5-2) ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE (STANDARD DRAWING 6-7) 1 TO 2 METRES DOWNSLOPE OF STOCKPILE.

STOCKPILES SD 4-1

Issue	Description	Date	Drawn	Approved
D	RE-ISSUED FOR DEVELOPMENT APPROVAL	25.11.22	RH	BK
C	RE-ISSUED FOR DEVELOPMENT APPROVAL & UPDATED TO SUIT CLIENTS COMMENTS	21.02.22	RH	BK
B	ISSUED FOR DEVELOPMENT APPROVAL	14.01.22	RH	BK
A	NIL ISSUE	-	-	-

0 1cm at full size 10cm

North

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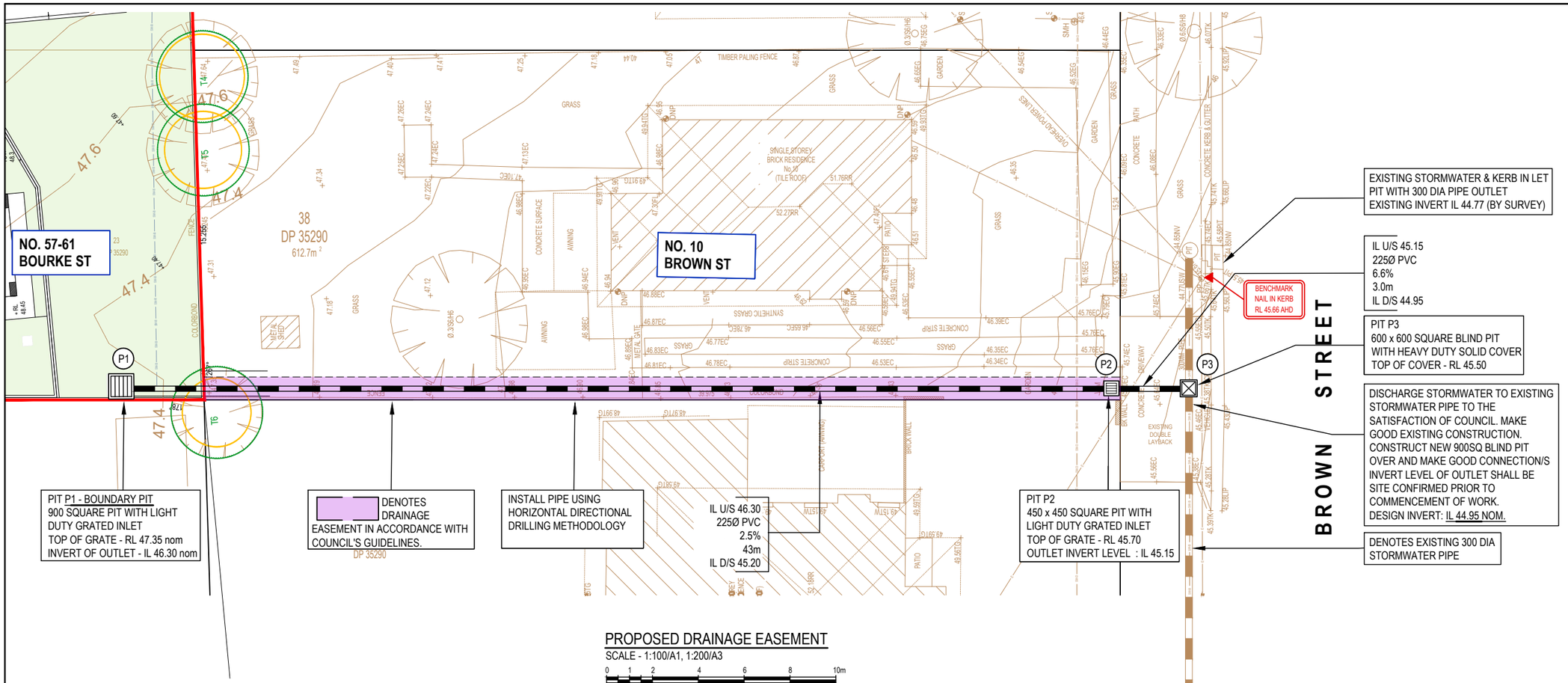
Project: SENIORS DEVELOPMENT

57-61 Bourke Street & 10 Brown St (drainage easement only)
NORTH PARRAMATTA
LOTS 23, 24, 25 & 38 in DP 35290

Drawing Title: EROSION & SEDIMENT CONTROL NOTES & DETAILS

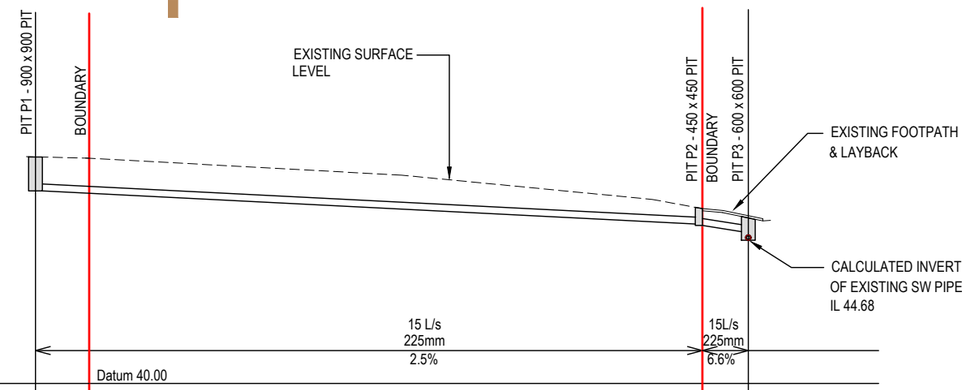
Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C8	D



PROPOSED DRAINAGE EASEMENT

SCALE - 1:100/A1, 1:200/A3

0 1 2 4 6 8 10m



DEPTH TO INVERT	1.05	1.13			0.5	0.55	0.55
NATURAL SURFACE LEVEL	47.35	47.35			45.70		45.50
PIPE INVERT LEVEL	46.30	46.22			45.20	45.15	44.95
CHAINAGE	0.0	3.0			43.00		46.00

LONGITUDINAL SECTION

HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

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1cm at full size

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Drawing Title: PROPOSED DRAINAGE EASEMENT ALIGNMENT PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22
Designed	Project No.		Dwg. No.	Issue
BK	CC210392		C9	D

STORMWATER QUALITY REPORT

1 INTRODUCTION

A CATCHMENT BASED WATER QUALITY MODEL WAS DEVELOPED TO ASSESS THE STORMWATER RUNOFF QUALITY IN ACCORDANCE WITH THE WATER SENSITIVE URBAN DESIGN (WSUD) REQUIREMENTS OF PARRAMATTA DEVELOPMENT CONTROL PLAN PART 3.3.6 AND APPENDIX 7. IN THIS REGARD WE REFER TO THE PRESCRIBED TARGETS TABLED FOLLOWING:

TABLE 1 - STORMWATER POLLUTANT REDUCTION TARGETS

STORMWATER POLLUTANT	REDUCTION TARGETS
GROSS POLLUTANT	90%
TOTAL SUSPENDED SOLIDS (TSS)	85%
TOTAL PHOSPHORUS (TP)	60%
TOTAL NITROGEN (TN)	45%

2 STUDY METHODOLOGY

THE OBJECTIVES OF THIS REPORT ARE TO:

- ASSESS THE RUNOFF QUALITY FOR THE UNTREATED POST DEVELOPED SCENARIO AND IDENTIFY STORMWATER QUALITY CONTROLS LIKELY TO IMPACT ON RUNOFF QUALITY.
- ASSESS THE STORMWATER QUALITY FOR THE POST DEVELOPED SCENARIO INCLUDING THE MEASURES PROPOSED TO MEET THE POLLUTANT REMOVAL TARGETS .

THE REPORT IS BASED ON THE APPLICATION OF MUSIC SOFTWARE (MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION). IN THIS REGARD THE MODEL IS DEFINED AS FOLLOWS:

- A STORMWATER QUALITY MODEL TO CONVERT RAINFALL AND EVAPOTRANSPIRATION INTO RUNOFF.
- ESTIMATION OF STORMWATER FLOW AND POLLUTION GENERATION BY SIMULATING THE PERFORMANCE OF STORMWATER TREATMENT DEVICES INDIVIDUALLY AND AS PART OF A TREATMENT TRAIN.

THE MODEL DEFINES WATER QUALITY PROFILES FOR BOTH TREATED AND UNTREATED POST DEVELOPED SCENARIOS. THE TREATED POST DEVELOPED MODEL INCLUDES PARAMETERS WHICH REPRESENT THE WATER QUALITY MEASURES.

3 STORMWATER QUALITY MODELLING

3.1 GENERAL

THE FOLLOWING PARAMETERS WERE ASSESSED FOR THE HYDROLOGICAL MODELLING ASSOCIATED WITH THE CATCHMENT.

- RAINFALL/RUNOFF AND EVAPOTRANSPIRATION.
- SUB CATCHMENT DIVERSIONS.
- LAND USE (PERVIOUS AND IMPERVIOUS)

3.2 RAINFALL/RUNOFF AND EVAPOTRANSPIRATION

THE MUSIC MODEL WAS FORCED WITH 6 MINUTE RAINFALL DATA FROM THE PARRAMATTA NORTH (MASONS DRIVE) GAUGE (ID 066124) FOR THE PERIOD 25 DECEMBER 1984 TO 30 DECEMBER 2007.

DAILY AVERAGE PET VALUES WERE NOT AVAILABLE FOR STATION ID 066124 AND WERE SOURCED FROM THE BUREAU OF METEOROLOGY FOR THE NEIGHBOURING PROSPECT RESERVOIR GAUGE (ID 067019).
THE DETAILS ARE SUMMARISED IN TABLE 3.1 AND 3.2

TABLE 3.1 - DETAILS OF DAILY RAINFALL DATA			
STATION	NAME	PERIOD	TIMESTEP
066124	PARRAMATTA NORTH (MASONS DRIVE)	25/12/1984-30/12/2007	6 min

TABLE 3.2 - SUMMARY OF POTENTIAL EVAPOTRANSPIRATION (PET)					
JAN	FEB	MAR	APR	MAY	JUN
170.5	131.6	120.9	87	62	48
JUL	AUG	SEP	OCT	NOV	DEC
51	77.5	108	136.4	155	173.6

3.3 CATCHMENT DEFINITION

THE POST DEVELOPED CATCHMENT CHARACTERISTICS ARE IDENTIFIED IN TABLE 3.3.

TABLE 3.3 - POST DEVELOPMENT SUB CATCHMENT DETAILS			
SUB CATCHMENT ID	SUB CATCHMENT AREA (ha)	% IMPERVIOUS AREA	% PERVIOUS AREA
ROOF TO RWT	0.072	100	0
AREA TO OSD	0.122	47	53

4 MUSIC MODEL

THE MUSIC MODEL IS BASED ON A 6 min RAINFALL-RUNOFF MODEL IN CONJUNCTION WITH REPRESENTATIVE BASEFLOW AND STORMFLOW EVENT MEAN CONCENTRATIONS (EMCs).

4.1 WATER QUALITY PARAMETERS

THE ADOPTED VALUES OF VARIOUS MUSIC RAINFALL AND RUNOFF PARAMETERS IN ACCORDANCE WITH NSW MUSIC MODELLING GUIDELINES 2015 FOR MEDIUM CLAY ARE SUMMARISED IN TABLE 4.1.

TABLE 4.1 - ADOPTED MUSIC RAINFALL/RUNOFF PARAMETERS	
PARAMETER	VALUE
IMPERVIOUS AREA PROPERTIES	
RAINFALL THRESHOLD (mm/DAY)	1.5 (0.3 ROOFS)
PERVIOUS AREA PROPERTIES	
SOIL STORAGE CAPACITY (mm)	94
SOIL INITIAL STORAGE (% OF CAPACITY)	25
FIELD CAPACITY (mm)	70
INFILTRATION CAPACITY COEFFICIENT - a	135
INFILTRATION CAPACITY EXPONENT - b	4
GROUNDWATER PROPERTIES	
INITIAL DEPTH (mm)	10
DAILY RECHARGE RATE (%)	10
DAILY BASEFLOW RATE (%)	10
DAILY DEEP SEEPAGE RATE (%)	0

Issue	Description	Date	Drawn	Approved
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B	NIL ISSUE	-	-	-
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1cm at full size

North

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Drawing Title: STORMWATER QUALITY REPORT SHEET 1 OF 2

Drawn	Date	Scale A1	Q.A. Check	Date
RH	NOV 21	AS NOTED	BAK	18.02.22

Designed	Project No.	Dwg. No.	Issue
BK	CC210392	C10	D

4.1 WATER QUALITY PARAMETERS CONT.

STORMWATER QUALITY IS CHARACTERISED USING EVENT MEAN CONCENTRATION (EMCs) UNDER STORM AND BASE FLOW CONDITIONS. THE VALUE OF WATER QUALITY PARAMETERS ADOPTED IN THIS STUDY IS SUMMARISED IN TABLE 4.2

TABLE 4.2 - ADOPTED MUSIC WATER QUALITY PARAMETERS

LAND-USE CATEGORY		Log_{10} TSS (mg/L)		Log_{10} TP (mg/L)		Log_{10} TN (mg/L)	
		STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW
RESIDENTIAL	MEAN	2.15	1.20	-0.60	-0.85	0.30	0.11
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
GENERAL URBAN	MEAN	2.20	1.10	-0.45	-0.82	0.42	0.32
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
ROOFS	MEAN	1.30	1.10	-0.89	-0.82	0.30	0.32
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12

4.2 STORMWATER TREATMENT MEASURES

THE PROPOSED STORMWATER TREATMENT MEASURES INCLUDED IN THE POST DEVELOPED MODEL ARE AS FOLLOWS:

- 27,000 LITRE RAINWATER TANK (REUSED FOR IRRIGATION)
- 4 x SPELFILTERS (FULL HEIGHT)

THE SCHEMATIC LAYOUT FOR THE POST DEVELOPED MUSIC MODEL IS DEPICTED IN FOLLOWING FIGURE 1

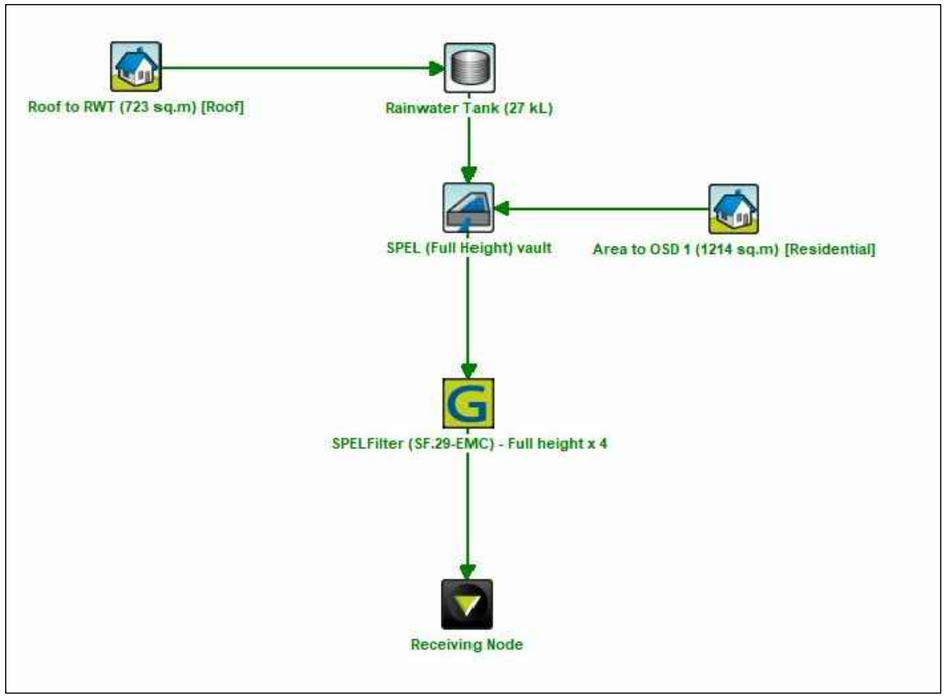

FIGURE 1 - MUSIC MODEL SCHEMATIC

5 RESULTS & CONCLUSION

BASED ON THE FOREGOING AND THE RESULTS DEPICTED IN TABLE 5.1, THE PROPOSED STORMWATER QUALITY TREATMENT MEASURES MEET THE REQUIRED TARGETS OF THE CITY OF PARRAMATTA.
REFER TO CC210392_20221123.SQZ AS PREPARED BY ACOR CONSULTANTS (CC) PTY LTD FOR FURTHER INFORMATION.

TABLE 5.1 - TREATMENT TRAIN EFFECTIVENESS

Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.18	0.803	31.7
Total Suspended Solids (kg/yr)	120	12.9	89.3
Total Phosphorus (kg/yr)	0.261	0.0584	77.6
Total Nitrogen (kg/yr)	2.57	1.04	59.4
Gross Pollutants (kg/yr)	32.2	0	100

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