



PROPOSED DEVELOPMENT
(No.26) ROSE CRESCENT & (No. 69-73) BOURKE STREET, NORTH PARRAMATTA
STORMWATER MANAGEMENT PLANS


LEGEND




DENOTES ON-SITE DETENTION TANK




DENOTES ON-SITE RETENTION TANK




DENOTES DWELLING FOOTPRINT



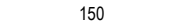
DENOTES 100mm DIA. STORMWATER/SURFACE WATER SYSTEM PIPE AT 1% MIN. GRADE U.N.O.




DENOTES 100mm DIA. FULLY SEALED RAINWATER SYSTEM PIPE U.N.O.




DENOTES RAINWATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.




DENOTES STORMWATER/SURFACE WATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.




DENOTES RISING MAIN AND PIPE DIA. U.N.O.




DENOTES SUBSOIL DRAINAGE LINE AND DIA. WRAPPED IN GEOFABRIC U.N.O.




DENOTES DOWNPIPE




DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL




DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL FOR SYSTEM FLUSHING PURPOSES



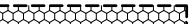
STORMWATER PIT - SOLID COVER




STORMWATER PIT - GRATED INLET




DENOTES GRATED DRAIN




DENOTES ABSORPTION TRENCH




NON RETURN VALVE




PUMP



STOP VALVE (ISOLATION VALVE)



240v REQUIRED



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



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) 2229

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 = 30m³ .

4. SITE DISCHARGE TO EXISTING STORMWATER PIT IN BOURKE STREET, REFER TO SHEET C2.

5. 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 | |
|---|-----------|
| COVER SHEET & NOTES | SHEET C1 |
| STORMWATER MANAGEMENT PLAN | SHEET C2 |
| STORMWATER MANAGEMENT DETAILS SHEET No.1 | SHEET C3 |
| OSD CALCULATION SHEET & MAINTENANCE SCHEDULE | SHEET C4 |
| OSD CHECKLIST SHEET 1 OF 2 | SHEET C5 |
| OSD CHECKLIST SHEET 2 OF 2 | SHEET C6 |
| EROSION & SEDIMENT CONTROL PLAN | SHEET C7 |
| EROSION & SEDIMENT CONTROL NOTES & DETAIL SHEET | SHEET C8 |
| STORMWATER QUALITY REPORT SHEET 1 OF 2 | SHEET C9 |
| STORMWATER QUALITY REPORT SHEET 2 OF 2 | SHEET C10 |

DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION

DRAWINGS MUST BE PRINTED IN COLOUR

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| | | | | |
|-------|---|----------|-------|----------|
| D | UPDATED TO SUIT COUNCILS COMMENTS | 08.03.23 | RH | BK |
| C | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN & COUNCILS COMMENTS | 08.12.22 | RH | BK |
| B | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN | 27.04.22 | RH | BK |
| A | ISSUED FOR DEVELOPMENT APPROVAL | 07.02.22 | RH | BK |
| Issue | Description | Date | Drawn | Approved |



Client

Architect

BARRY RUSH & ASSOCIATES
PTY LTD

 **AcOR**
CONSULTANTS ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

ACOR Consultants (CC) Pty Ltd
Platinum Building, Suite 2.01, 4 Ilya Avenue
ERINA NSW 2250, Australia
T +61 2 4324 3499



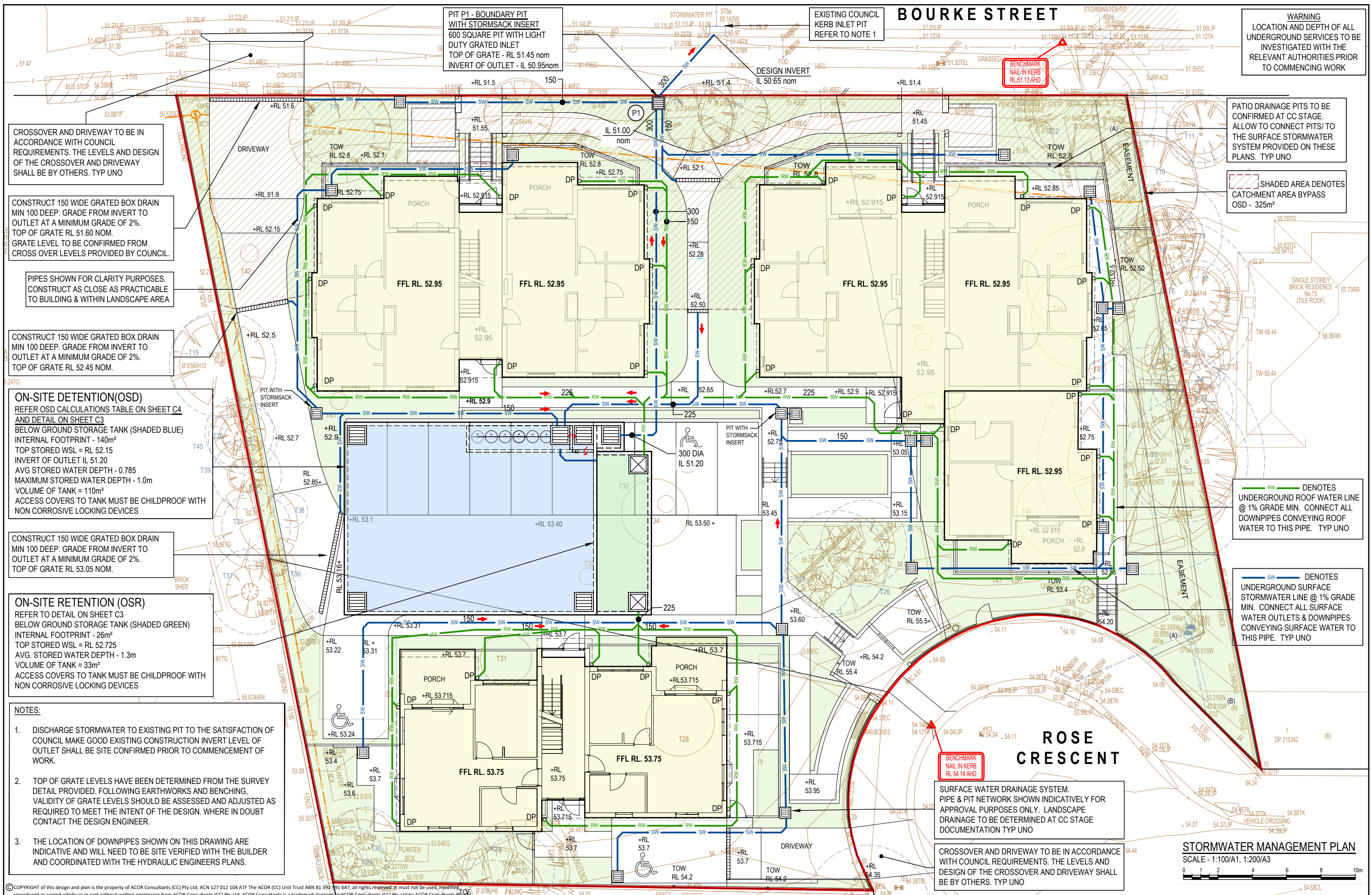
Project

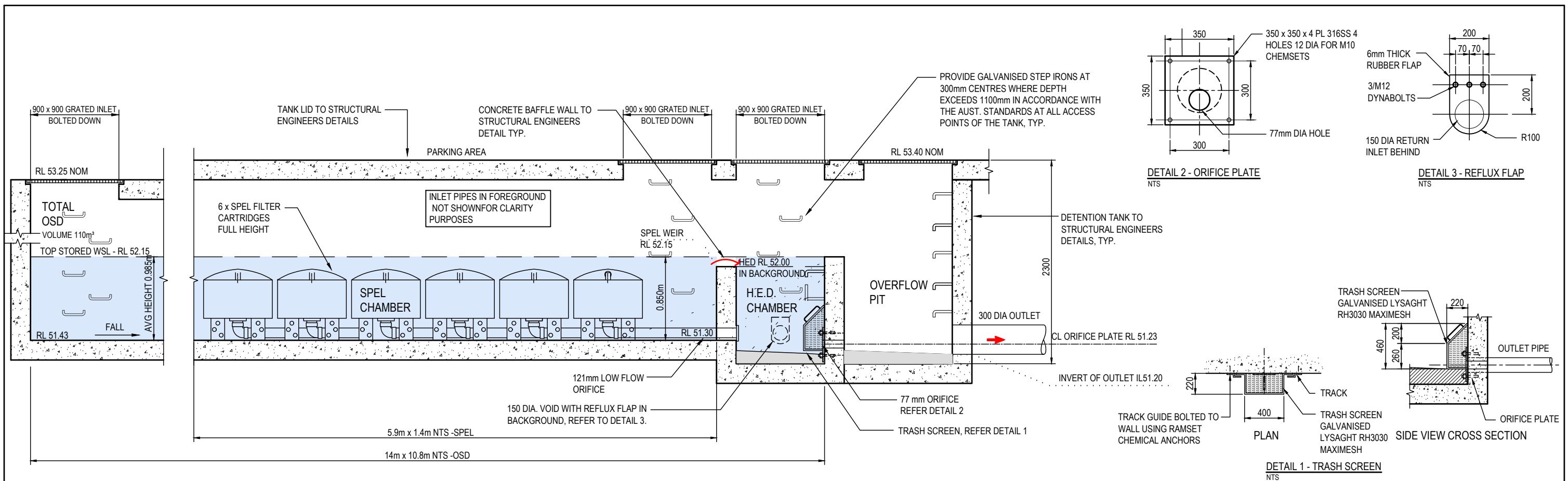
PROPOSED RESIDENTIAL DEVELOPMENT
(No. 26) ROSE CRESCENT &
(No. 69-73) BOURKE STREET
NORTH PARRAMATTA

Drawing Title

COVER SHEET & NOTES

| | | | | | |
|----------|-------------|----------|-------|------------|----------|
| Drawn | Date | Scale | A1 | Q.A. Check | Date |
| RH | NOV 21 | AS NOTED | BAK | | 07.02.22 |
| Designed | Project No. | Dwg. No. | Issue | | |
| BK | CC210393 | C1 | D | | |

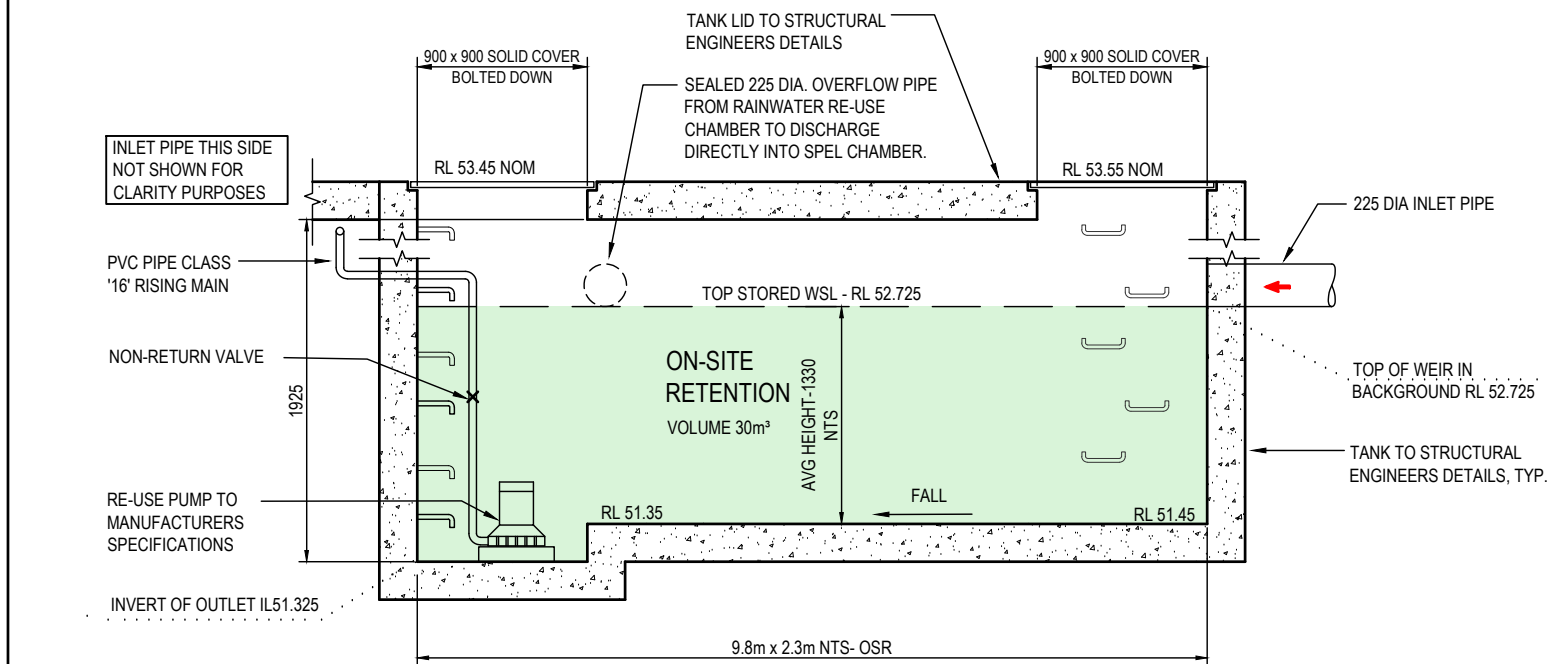




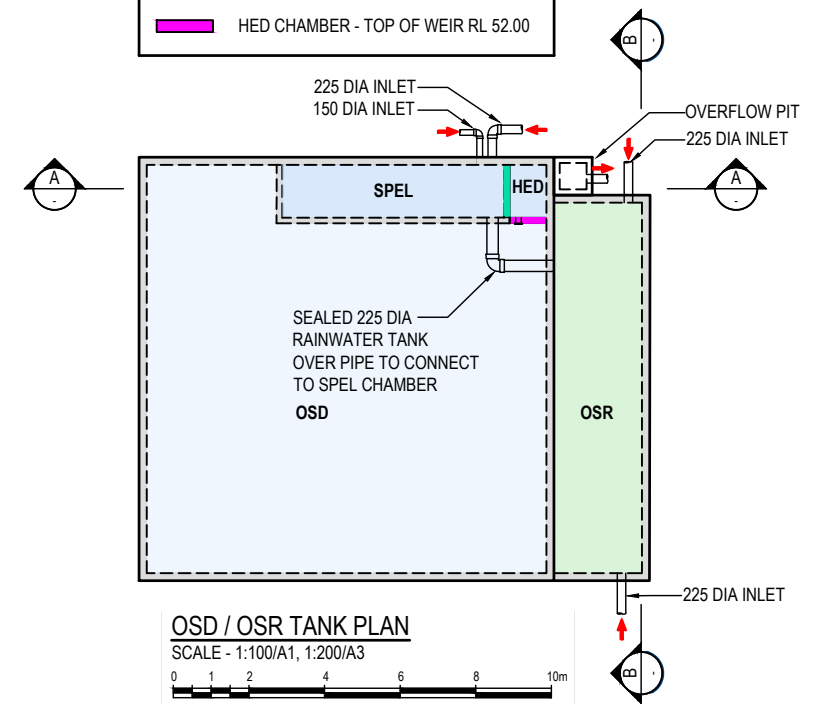
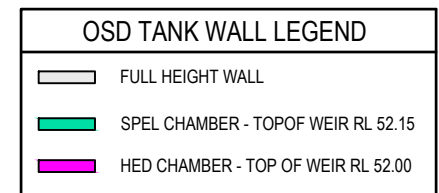
OSD TANK SECTION
SCALE 1 : 20 @ A1 & 1:50@ A3



PROVIDE CONFINED SPACE SIGNAGE AT ENTRY POINTS INTO TANK.



OSR TANK SECTION
SCALE 1 : 20 @ A1 & 1:50@ A3



OSD / OSR TANK PLAN
SCALE - 1:100/A1, 1:200/A3

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| | | | | | |
|-------|---|----------|-------|----------|-------|
| D | UPDATED TO SUIT COUNCILS COMMENTS | 08.03.23 | RH | BK | North |
| C | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN & COUNCILS COMMENTS | 08.12.22 | RH | BK | |
| B | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN | 27.04.22 | RH | BK | |
| A | ISSUED FOR DEVELOPMENT APPROVAL | 07.02.22 | RH | BK | |
| Issue | Description | Date | Drawn | Approved | |

Client
BARRY RUSH & ASSOCIATES
PTY LTD

Architect

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
(No. 26) ROSE CRESCENT &
(No. 69-73) BOURKE STREET
NORTH PARRAMATTA

| | | | | | |
|----------|-------------|----------|-------|------------|----------|
| Drawn | Date | Scale | A1 | Q.A. Check | Date |
| RH | NOV 21 | AS NOTED | BAK | | 07.02.22 |
| Designed | Project No. | Dwg. No. | Issue | | |
| BK | CC210393 | C3 | D | | |

Form B1¹ DRAINAGE DESIGN SUMMARY SUB/DA No.

Project: CC210393 Location: 26 ROSE CRESCENT & 69-73 BOURKE STREET
Designec 334 RH Company: ACOR CONSULTANTS (CC) Pty. Ltd Phone: (02) 4324 3499

SITE AREA 0.2229 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] 0.2229 = 104.76 m³ [B]
Basic Discharge =0.08 x [A] 0.2229 = 0.0178 m³/s [C]
Area of site drained to storage = 0.1899 ha [D]
(Must be as much as possible and not be less than 85% of the total site without written Council approval).
[D]/[A] + [0.1899]/[0.2229] x 100 = 85 % [E]
Storage per ha. Of contributing area = [B]/[D] = 551.67 [F]
Enter volume/PSD adjustment chart (Fig 5.1) using [F], and Read new PSD in litres/second/ha (l/s/ha). = 64.83 l/s/ha [G]
Determine PSD = [G] x [D] 64.83 x 0.1899 = 12.31 l/s [H]
Maximum head to orifice center = 0.92 m [K]
Weir flow to storage $Q^{Weir}=CL(H^{Weir})^{1.5}$ ∴ H^{Weir} = 0.16 m [I]
Select orifice diameter: $d=(0.464 \times Q/\sqrt{h})^{0.5}=(0.464 \times [H]/\sqrt{[K]})^{0.5}$ = 0.077 m [J]
Maximum discharge = 12.31 l/s [L]
Head for high early discharge = 0.77 m [M]
High early discharge $\{[L] \times \sqrt{[M]/[K]}\}$ (min 75% of [L]) = 11.26 l/s [N]
Approximate mean discharge = ([L] + [N])/2 = 11.79 l/s [P]
Average discharge/ha = [P]/[D] = 11.79 / 0.1899 = 62.07 l/s/ha [Q]
Enter volume/PSD adjustment chart (Fig 5.1) using [Q] And read off final storage volume per hectare = 569.50 m³/ha [R]
Determine final SSR = [R] x [D] = 569.50 x 0.1899 = 108 m³ [S]
Primary storage proportion = [S] x % m³ [T]
Secondary storage proportion = [S] x % m³ [U]
Tertiary storage proportion = [S] x % m³ [V]
Check [T] + [U] + [V] = [S] m³

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. |

ON-SITE DETENTION CHECKLIST - SHEET 1 OF 2

This page last updated December 1999 B.9-1 On-site Stormwater Detention Handbook

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: 26 ROSE CRESCENT & 69-73 BOURKE STREET, PARRAMATTA

PROJECT APPLICANT: BARRY RUSH & ASSOCIATES PTY LTD

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: 07.02.22

Items submitted: **

- OSD Design Plan/s Yes / No
- OSD Detailed Design Checklist Yes / No
 - Attachment A: Flood Affection Information Yes / No
 - Attachment B: External Catchment Assessment Yes / No
 - Attachment C: On-line System Calculations Yes / No
 - Attachment D: Overflow and Surge 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.

Upper Parramatta River Catchment Trust

This page last updated December 1999 B.9-2 On-site Stormwater Detention Handbook

OSD DETAILED DESIGN CHECKLIST

| ITEM | DESIGNER | | COUNCIL REVIEW | |
|--|----------|----|----------------|----|
| | YES | NO | YES | 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 15% (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) | ✓ | | | |

Upper Parramatta River Catchment Trust

| | | | | | | | | | | | | | | | | | | | |
|-------------|--|--|--|--|----------|--|-------|--|----------|----------|-------|--------|-----------|--|---|---------|---------------|-------------------------------|--|
| D | | | | | 08.03.23 | | RH | | BK | | North | Client | Architect | <div><div>AcOR</div><div>CONSULTANTS</div></div> <div>ENGINEERS MANAGERS INFRASTRUCTURE PLANNERS DEVELOPMENT CONSULTANTS</div> | ACOR Consultants (CC) Pty Ltd Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499 | Project | Drawing Title | OSD CHECKLIST SHEET 1 OF 2 | |
| C | | | | | 08.12.22 | | RH | | BK | | | | | | | | | | |
| B | | | | | 27.04.22 | | RH | | BK | | | | | | | | | | |
| A | | | | | 07.02.22 | | RH | | BK | | | | | | | | | | |
| Issue | | | | | Date | | Drawn | | Approved | | | | | | | | | | |
| Description | | | | | | | | | | | | | | | | | | | |
| 1" = 10m | | | | | 1" = 10m | | | | | 1" = 10m | | | | | 1" = 10m | | | | |
| 1" = 10m | | | | | 1" = 10m | | | | | 1" = 10m | | | | | 1" = 10m | | | | |
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ON-SITE DETENTION CHECKLIST - SHEET 2 OF 2

This page last updated December 1999 B.9-3 On-site Stormwater Detention Handbook

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 | | COUNCIL REVIEW | |
|--|----------|----|----------------|----|
| | YES | NO | YES | 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. 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. 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 No. C2 & C3 for fixing and handle details Plan No. C2 & 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 | ✓ | | | |

Upper Parramatta River Catchment Trust

This page last updated December 1999 B.9-4 On-site Stormwater Detention Handbook

| ITEM | DESIGNER | | COUNCIL REVIEW | |
|---|----------|----|----------------|----|
| | YES | NO | YES | 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 | ✓ | | | |

Upper Parramatta River Catchment Trust

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| D | | | | | UPDATED TO SUIT COUNCILS COMMENTS | | 08.03.23 | | RH | | BK | | North |
| C | | | | | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN & COUNCILS COMMENTS | | 08.12.22 | | RH | | BK | | |
| B | | | | | UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN | | 27.04.22 | | RH | | BK | | |
| A | | | | | ISSUED FOR DEVELOPMENT APPROVAL | | 07.02.22 | | RH | | BK | | |
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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

NEW CROSSOVER & LAYBACK TO BE UTILISED 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

6

PROPOSED DISTURBED AREA

7

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

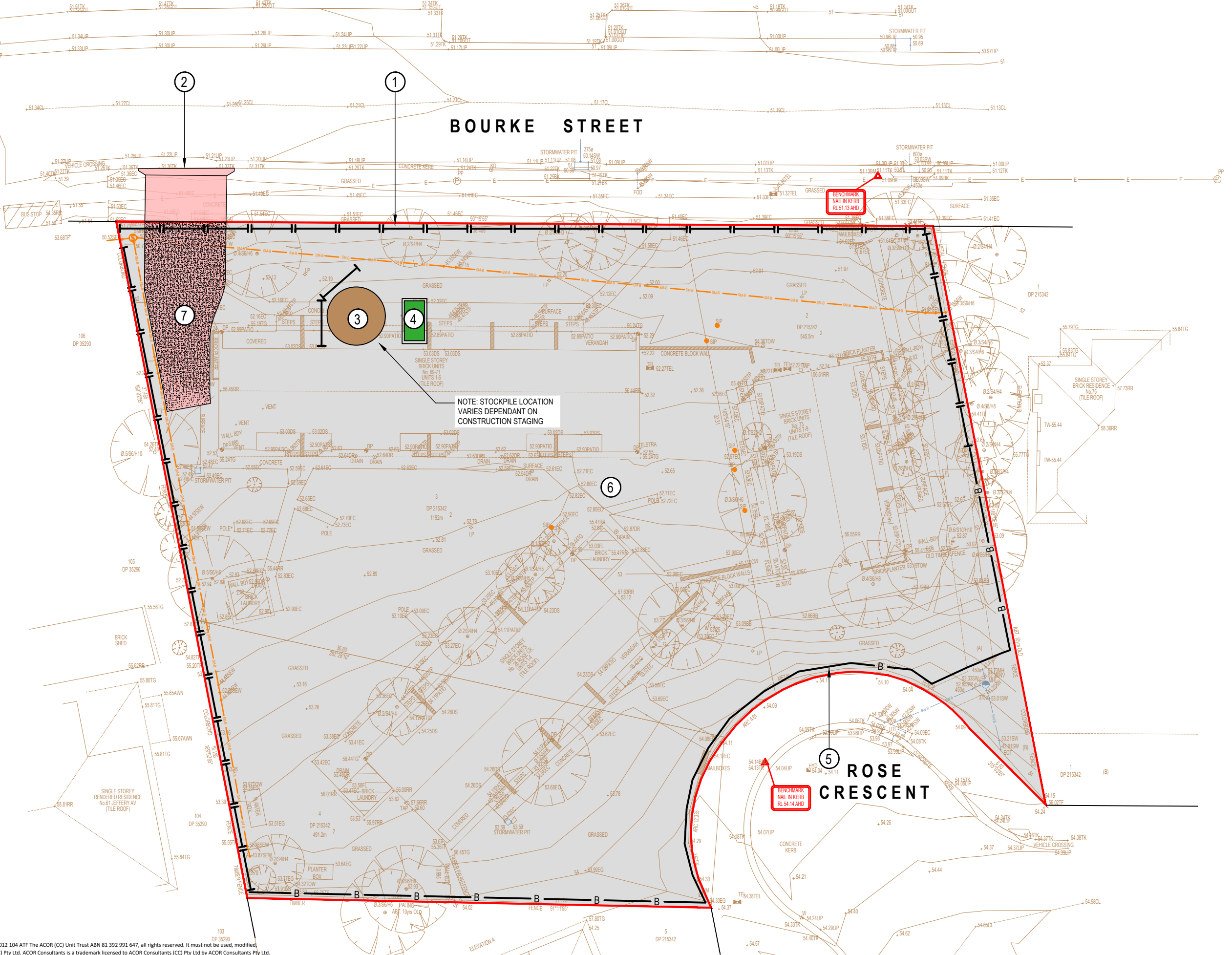
NOTES:

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



EROSION & SEDIMENT CONTROL PLAN

SCALE - 1:125/A1, 1:250/A3

0

1

2

4

6

8

10m

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Client

BARRY RUSH & ASSOCIATES

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

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Drawing Title

PROPOSED RESIDENTIAL DEVELOPMENT

(No. 26) ROSE CRESCENT & (No. 69-73) BOURKE STREET

NORTH PARRAMATTA

Drawn

RH

Date

NOV 21

Scale

AS NOTED

Q.A. Check

BAK

Date

07.02.22

Designed

BK

Project No.

CC210393

Dwg. No.

C7

Issue

D

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT.
- 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).
- ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

LAND DISTURBANCE INSTRUCTIONS

- 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.
- 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.
- ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.
- WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:
 - INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
 - CONSTRUCT THE STABILISED SITE ACCESS.
 - CONSTRUCT DIVERSION DRAINS AS REQUIRED.
 - INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
 - INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS.
 - CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
 - UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
 - GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
 - REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
- ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.
- 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

- THE SITE SUPERINTENDENT WILL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:
 - ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT ANY NECESSARY REPAIRS.
 - 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.
 - REMOVE TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURE HAS BEEN EXCEEDED.
 - ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
 - 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.
 - MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
- THE SITE SUPERINTENDENT WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL. ENTRIES WILL INCLUDE:
 - THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS.
 - THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS.
 - THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE.
 - THE NEED FOR DUST PREVENTION STRATEGIES.
 - 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

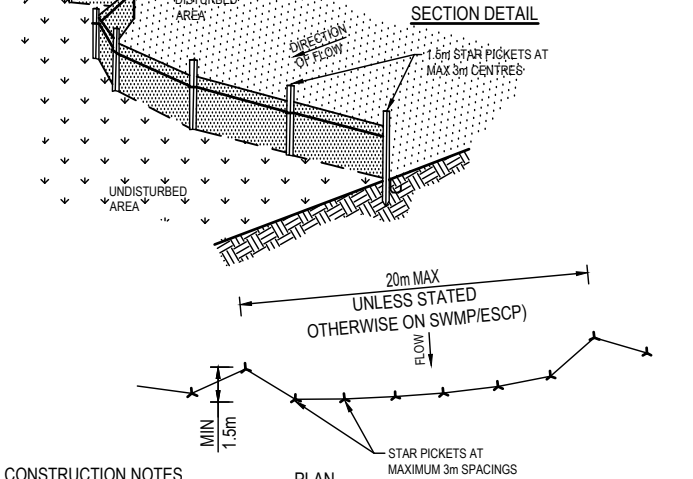
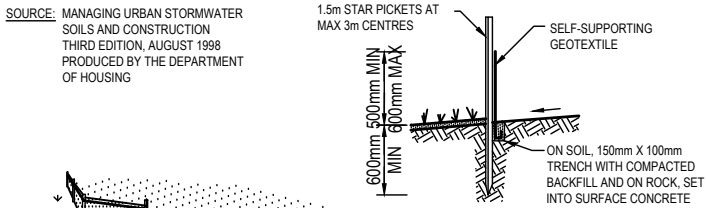
- SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
- SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
- SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
- 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.
- 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.
- TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
- 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

- 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.
- 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.
- WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER 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.
- 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.
- 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.
- 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.
- 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.
- REVEGETATION SHOULD BE AIMED AT RE-ESTABLISHING NATURAL SPECIES. NATURAL SURFACE SOILS SHOULD BE REPLACED AND NON-PERSISTANT ANNUAL COVER CROPS SHOULD BE USED.

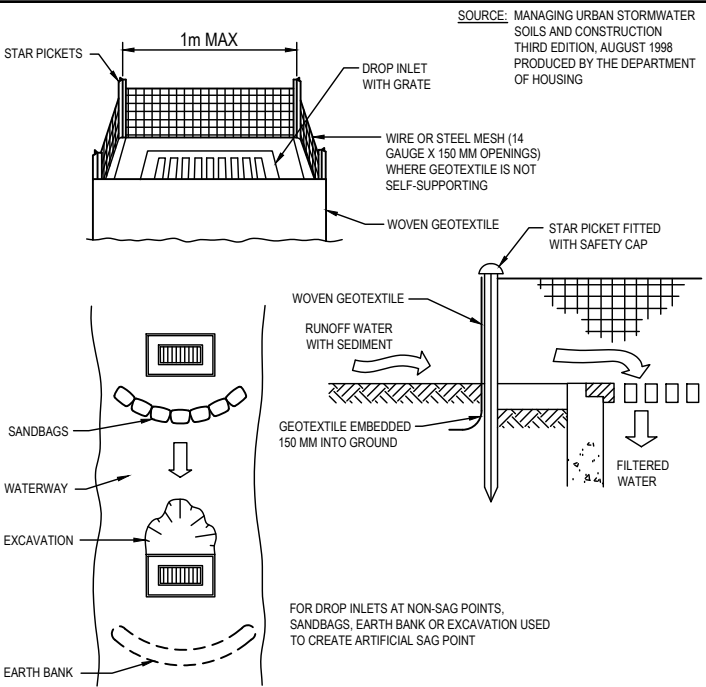
WASTE CONTROL INSTRUCTIONS

- 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.
- 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.
- ALL SITE STAFF AND SUB-CONTACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.
- ANY DE-WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.
- PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.



SEDIMENT FENCE

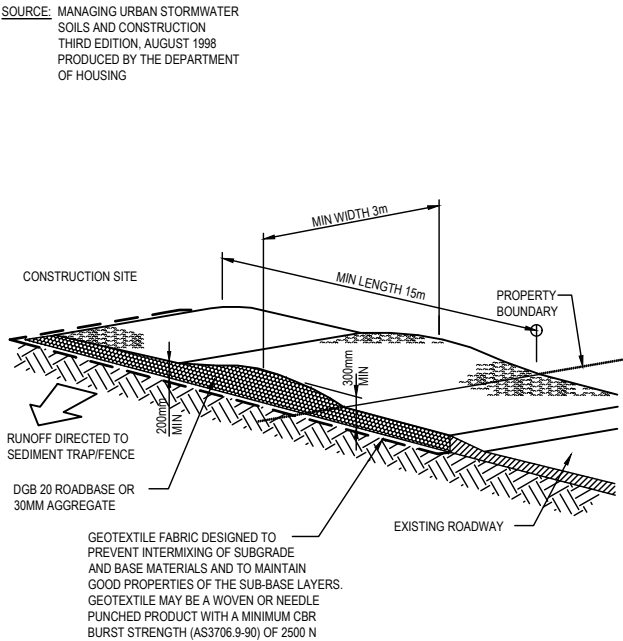
SD 6-8



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

GEOTEXTILE INLET FILTER

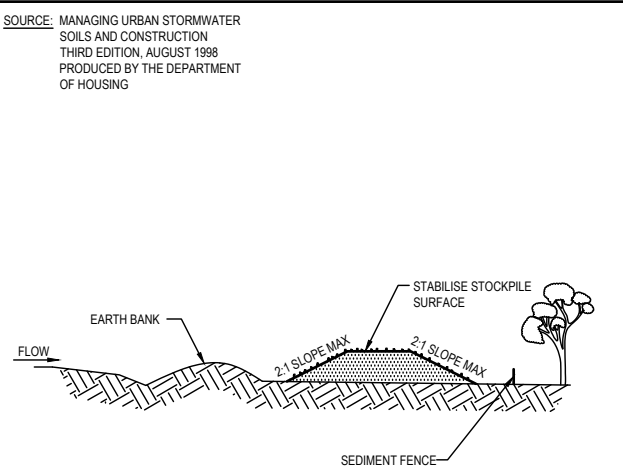
SD 6-12



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

STABILISED SITE ACCESS

SD 6-14



- CONSTRUCTION NOTES:
- LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
 - CONSTRUCT ON THE CONTOUR AS A LOW, FLAT, ELONGATED MOUND.
 - WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
 - REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
 - 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

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|-------------------------|--|--|--|
| Client | | Architect | |
| BARRY RUSH & ASSOCIATES | | ACOR CONSULTANTS | |
| PTY LTD | | ENGINEERS MANAGERS INFRASTRUCTURE PLANNERS DEVELOPMENT CONSULTANTS | |

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| Drawing Title | | Scale | | Q.A. Check | | Date |
| EROSION & SEDIMENT CONTROL NOTES & DETAILS | | AS NOTED | | BAK | | 07.02.22 |
| Drawn | Date | Project No. | Dwg. No. | Issue | | |
| RH | NOV 21 | CC210393 | C8 | 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 | 0.074 | 100 | 0 |
| DRIVEWAY AND PARKING TO OSD | 0.035 | 100 | 0 |
| DRIVEWAY BYPASSING OSD | 0.005 | 100 | 0 |
| AREA TO OSD | 0.059 | 70 | 30 |
| AREA BYPASSING OSD | 0.035 | 70 | 30 |

WE NOTE THAT THE AREA WITHIN THE DRAINAGE EASEMENT ALONG THE SITE'S EASTERN BOUNDARY HAS BEEN EXCLUDED FROM THE WATER QUALITY ASSESSMENT.

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 |

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| D UPDATED TO SUIT COUNCILS COMMENTS | | | | | 08.03.23 | RH | BK | North | Client BARRY RUSH & ASSOCIATES PTY LTD | Architect  AcOR CONSULTANTS ENGINEERS MANAGERS INFRASTRUCTURE PLANNERS DEVELOPMENT CONSULTANTS | Project ACOR Consultants (CC) Pty Ltd Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499  PROPOSED RESIDENTIAL DEVELOPMENT (No. 26) ROSE CRESCENT & (No. 69-73) BOURKE STREET NORTH PARRAMATTA | Drawing Title STORMWATER QUALITY REPORT SHEET 1 OF 2 | | | | | | | | |
| C UPDATED TO SUIT THE LATEST ARCHITECTURAL PLAN & COUNCILS COMMENTS | | | | | 08.12.22 | RH | BK | | | | | Drawn RH | | | | Date NOV 21 | Scale AS NOTED | A1 | Q.A. Check BAK | Date 07.02.22 |
| B NIL ISSUE | | | | | - | - | - | | | | | Designed BK | | | | Project No. CC210393 | | Dwg. No. C9 | | Issue D |
| A NIL ISSUE | | | | | - | - | - | | | | | | | | | | | | | |
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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:

- 30,000 LITRE RAINWATER TANK (REUSE FOR IRRIGATION)
- 6 x SPELFILTERS (FULL HEIGHT)
- 3 x STORMSACKS

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

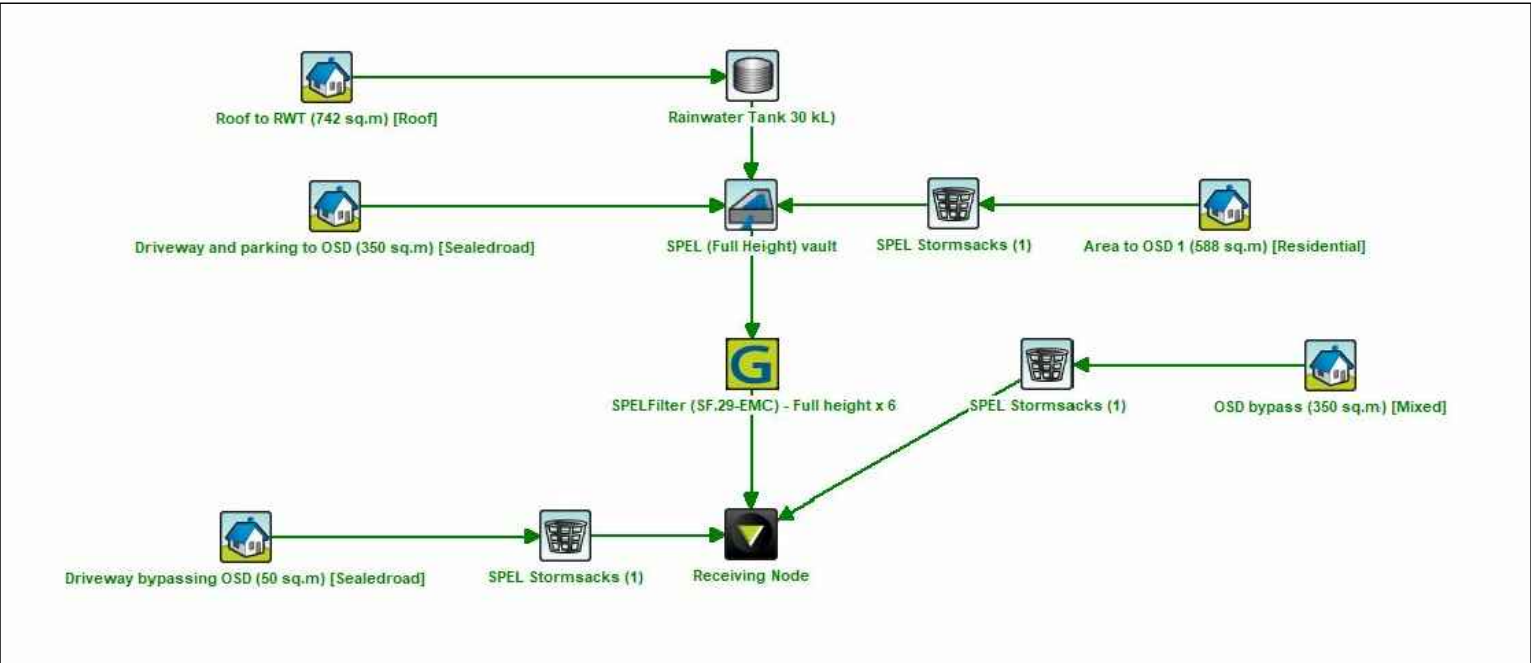


FIGURE 1 - MUSIC MODEL SCHEMATIC

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 CC210393_20221025.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) | 1.47 | 1.08 | 26.6 |
| Total Suspended Solids (kg/yr) | 227 | 32.3 | 85.8 |
| Total Phosphorus (kg/yr) | 0.458 | 0.148 | 67.8 |
| Total Nitrogen (kg/yr) | 3.42 | 1.31 | 61.7 |
| Gross Pollutants (kg/yr) | 39.7 | 0.000266 | 100 |