TAYLOR

NORTHERN SYDNEY
Seascape
Suite 7 22-27 Fisher Rd
Dee Why NSW 2099

BLUE MOUNTAINS
Shop 1
274 Macquarie Rd
Springwood NSW 2777

TAYLORCONSULTING.NET.AU

CONSULTING ENGINEERS
Civil
Structural
Stormwater & Flood

22 May 2025

Chief Executive Officer
Northern Beaches Council
725 Pittwater Road
Dee Why NSW 2099

Address of the Project: **90 Harbord Road, Freshwater**

Description of Project: **Drainage Letter - Subdivision & Dwellings**

With reference to the Development Application for the above property, please find enclosed a copy of the site Stormwater Management Plan, **STORM-1/A**, and Stormwater Management Details, **STORM-2/A**, for your perusal.

STORM-1/A shows the collected proposed and existing roof areas, hard stand and landscaped areas discharging Lot 1 to the kerb and gutter in Harbord Road and with Lot 2 discharging to the kerb and gutter in Wyndora Avenue.

Each of the proposed lots required on-site detention, which was calculated using the full computational method because more than 30 m^2 of each site bypasses the proposed on-site detention system. DRAINS modelling software was utilised to design the proposed on-site detention system.

Note that a 2,000-litre BASIX rainwater storage tank is proposed for Lot 2 in accordance with the Council's and Sydney Water's requirements for non-potable reuse.

STORM-2/A shows the required stormwater management details for the proposed subdivision.

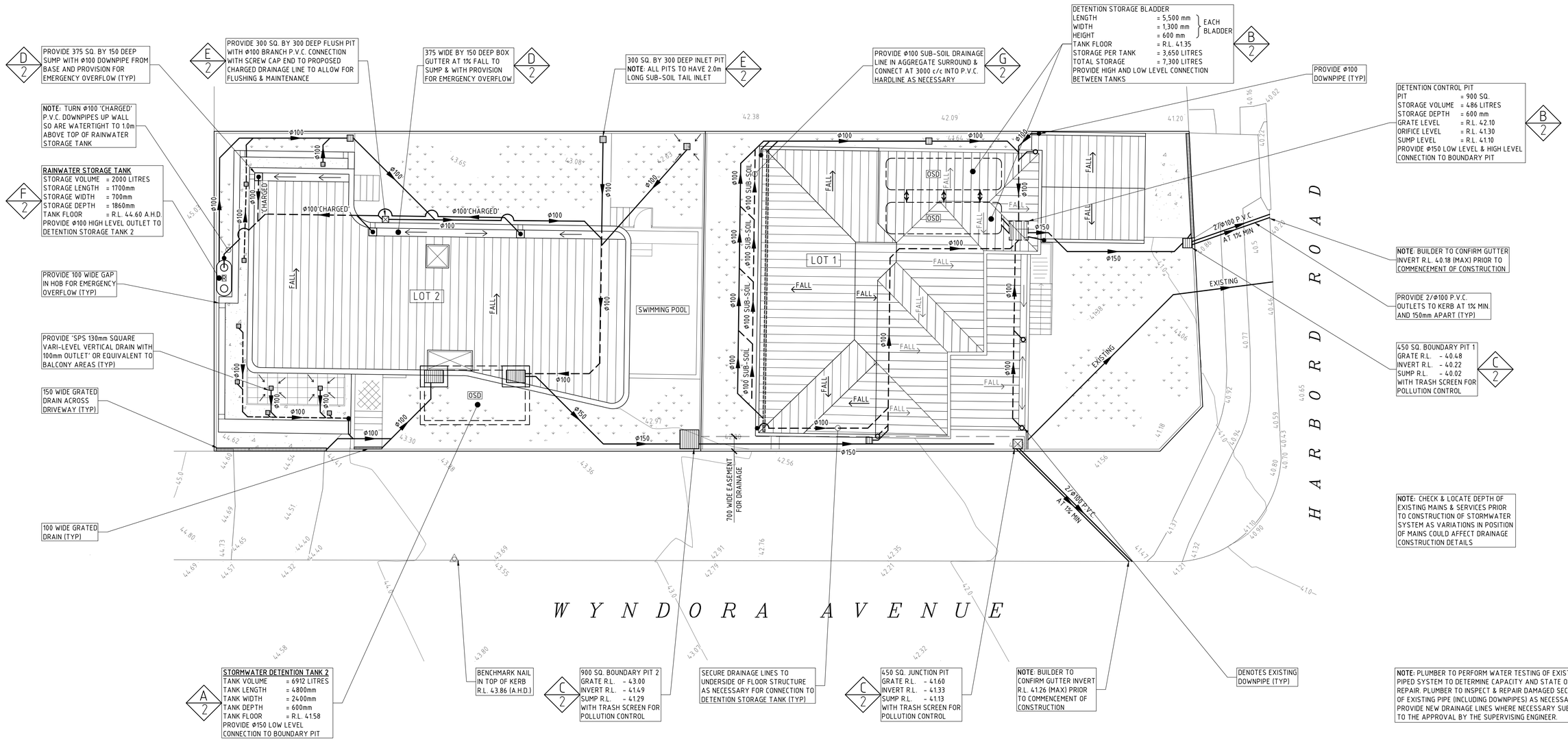
This is to certify that the Stormwater Management Plan layout as shown on **STORM-1/A** and **STORM-2/A** by Taylor Consulting Civil & Structural Engineers has been designed in accordance with section 3.1.2, 'Drainage', of the Building Code of Australia Housing Provision, AS/NZS 3500.3.2 – Stormwater Drainage and Northern Beaches Council's Warringah D.C.P. and Water Management for Development Policy.

Should you require any further information, please contact the undersigned.

Yours faithfully
TAYLORCONSULTING.NET.AU

D.M.Schaefer - Director
B.E Civil (Hons) M.I.E. Aust. N.E.R.

REGISTERED NER Engineers Australia



DRAINAGE NOTES

1. + DENOTES EXISTING GROUND LEVEL
2. FALL STORMWATER PIPES AT 1% MIN. UNLESS OTHERWISE NOTED.
3. SUB-SOIL DRAINAGE TO BE CONNECTED TO THE SITE DRAINAGE SYSTEM AS NECESSARY.
4. SURFACE GRATES 300 SQ. UNLESS OTHERWISE NOTED.
5. ALL STORMWATER PIPES TO HAVE SOLVENT CEMENT WATERTIGHT JOINTS.
6. CHECK & LOCATE DEPTH OF EXISTING MAINS & SERVICES PRIOR TO CONSTRUCTION OF STORMWATER SYSTEM AS VARIATIONS IN POSITION OF MAINS COULD AFFECT DRAINAGE CONSTRUCTION DETAILS.
7. INSPECTIONS MUST BE UNDERTAKEN BY THIS OFFICE (BY PRIOR ARRANGEMENT WITH ENGINEER) DURING CONSTRUCTION TO ENABLE FULL CERTIFICATION UPON COMPLETION OF WORKS.
8. ALL CONSTRUCTION OF COUNCIL DRAINAGE WORKS TO COMPLY WITH COUNCIL STANDARD.
9. REMOVE REDUNDANT DRAINAGE PITS AND SEAL PIPES.
10. PIT BENCHING TO BE HALF THE OUTGOING PIPE DIAMETER. CONCRETE FOR BENCHING TO BE 20 MPa MASS CONCRETE.
11. APPROVED PRE-CAST PITS MAY BE USED.
12. ALL PIPES TO BE LAID ON COMPACTED FINE CRUSHED ROCK OR SAND BEDDING 75mm THICK & PIPES BACKFILLED WITH COMPACTED SAND TO 300mm ABOVE TOP OF PIPE, ELSE ATTACHED TO UNDERSIDE OF STRUCTURE AT 600mm c/c AS NECESSARY
13. PIPE ROUTES SHOWN ARE INDICATIVE ONLY AND SHOULD BE AS NECESSARY ACCORDING TO SITE CONDITIONS, TREE POSITIONS ETC. CONFIRM SIGNIFICANT CHANGES IN PIPES SYSTEM DETAILS WITH SUPERVISING ENGINEER PRIOR TO COMMENCEMENT OF DRAINAGE CONSTRUCTION WORKS.
14. CONTRACTOR SHALL ENSURE THAT SERVICES TO BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS WHERE REQUIRED. ONCE WORKS ARE COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SERVICES AND MAKE GOOD ALL DISTURBED AREAS.
15. STORMWATER SYSTEM REQUIRES SIGNIFICANT MAINTENANCE DUE TO POTENTIAL HIGH POLLUTANT LOAD. FILTERS AND POLLUTANT TRAPS SHOULD BE CHECKED AFTER LARGE STORM EVENTS AND CLEANED EVERY 6 MONTHS.
16. PLUMBING AND DRAINAGE WORKS TO COMPLY WITH AS-3500, THE NATIONAL DRAINAGE & PLUMBING CODE.
17. WHERE POSSIBLE DRAINAGE LINES SHALL BE LAID IN AREAS PREVIOUSLY DISTURBED BY OTHER SITE WORKS AND FOLLOW TOPOGRAPHICAL FEATURES TO REDUCE IMPACT AND AVOID TREE ROOTS
18. THIS STORMWATER MANAGEMENT PLAN HAS BEEN PREPARED FOR SUBMISSION TO COUNCIL/CERTIFEIR AND DOES NOT NECESSARILY CONTAIN ALL APPROPRIATE INFORMATION TO ENABLE FOR ISSUE TO PLUMBER/BUILDER FOR CONSTRUCTION. CONTACT TAYLOR CONSULTING FOR MORE INFORMATION.

RAINWATER RE-USE NOTES AND SPECIFICATIONS

1. ROOF WATER ONLY TO BE DRAINED TO THE RAINWATER STORAGE TANK.
2. THE RAINWATER STORAGE TANK NEEDS TO BE CONNECTED FOR RE-USE AS REQUIRED BY THE OWNER.
3. RAINWATER STORAGE TANK TO BE CONFIGURED IN ACCORDANCE WITH SYDNEY WATER SPECIFICATIONS 'GUIDELINES FOR RAINWATER TANK ON RESIDENTIAL PROPERTIES'.
4. PROVIDE MAINS 'TOP-UP' SUPPLY TO RAINWATER TANK. MAINS TOP-UP ZONE TO BE BASED ON THE DAILY NON-POTABLE USAGE THAT MAY BE EXPECTED FROM THE TANK.
5. PROVIDE A MECHANICAL PUMPING ARRANGEMENT (IN SOUND-PROOF HOUSING) TO PUMP SUPPLIERS SPECIFICATION TO SUIT INTENDED USAGE OF RAINWATER STORAGE. PUMPING ARRANGEMENTS MUST COMPLY WITH EPA GUIDELINES.
6. INLETS TO RAINWATER TANK MUST BE SCREENED TO PREVENT THE ENTRY OF FOREIGN MATTER, ANIMALS OR INSECTS.
7. A SIGN MUST BE AFFIXED TO THE RAINWATER TANK CLEARLY STATING THAT THE WATER IN THE TANK IS RAINWATER AND IS NOT TO BE USED FOR HUMAN CONSUMPTION.
8. RAINWATER TANK TO BE PLACED ON A STRUCTURALLY ADEQUATE BASE IN ACCORDANCE WITH THE MANUFACTURER'S OR STRUCTURAL ENGINEER'S DETAILS.
9. THE TANK MUST NOT BE INSTALLED OVER ANY MAINTENANCE STRUCTURE OR FITTINGS USED BY A PUBLIC AUTHORITY.
10. RAINWATER TANK AND ASSOCIATED PLUMBING WORKS TO BE INSTALLED AND CONFIGURED BY A LICENSED PLUMBER. PUMP TO BE INSTALLED BY A LICENSED ELECTRICIAN

STORMWATER SYSTEM DESIGN DATA

SITE DATA

SITE AREA = 711.4 m² (100%)
PROPOSED IMPERVIOUS AREA = 442.0 m² (62%)
PROPOSED LANDSCAPED AREA = 269.4 m² (38%)

NORTHERN BEACHES COUNCIL - REGION 2: CENTRAL CATCHMENTS

SUBDIVISION WITH >30 m² IMPERVIOUS AREA BYPASSING OSD-FULL COMPUTATIONAL METHOD

OSD SYSTEM DESIGN DATA

EXISTING SITE FLOWS

20% AEP = 13 l/s
5% AEP = 21 l/s
1% AEP = 30 l/s

DEVELOPED SITE FLOWS LOT 1

20% AEP = 6 l/s
5% AEP = 10 l/s
1% AEP = 15 l/s

DEVELOPED SITE FLOWS LOT 2

20% AEP = 5 l/s
5% AEP = 9 l/s
1% AEP = 10 l/s

DETENTION SYSTEM DATA

AREA DRAINING TO THE TANK LOT 1 = 259.0 m²
AREA DRAINING TO THE TANK LOT 2 = 295.5 m²
1% AEP TWL LOT 1 = RL 41.88
1% AEP TWL LOT 2 = RL 42.62
ORIFICE DIAM LOT 1 = 77mm
ORIFICE DIAM LOT 2 = 77mm

SSR LOT 1 = 7.53 m³
SSR LOT 2 = 5.41 m³

ISSUE DATE	REVISION
22 MAY 2025	REVISED OSD LOCATION

TITLE
STORMWATER MANAGEMENT PLAN
90 HARBORD ROAD, FRESHWATER

DRAWN	DATE	CHECKED	SCALE @ A1
MDB	22 MAY 2025	BE Civil (Hons) MIE Aust.	1:100
ENGINEER JPL			

DRAWING NO. STORM - 1/A

TAYLOR

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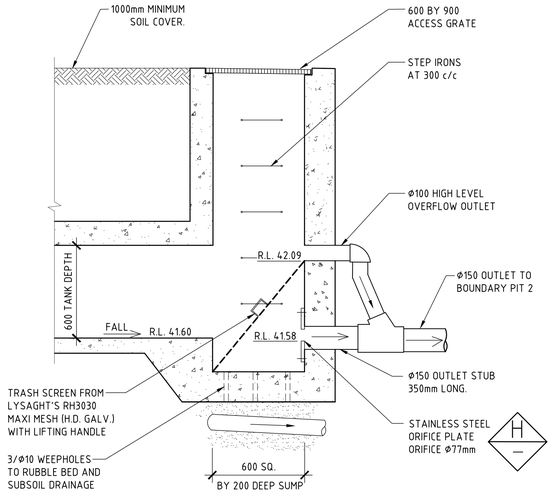
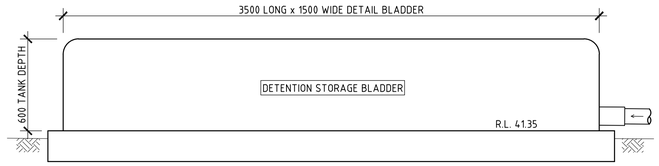
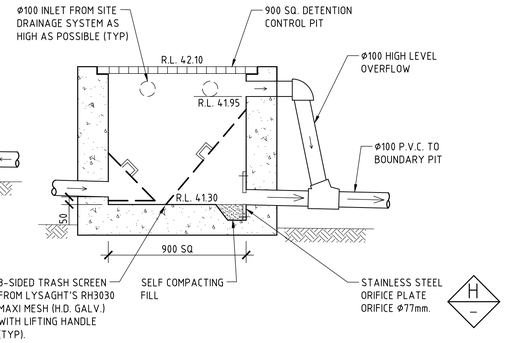


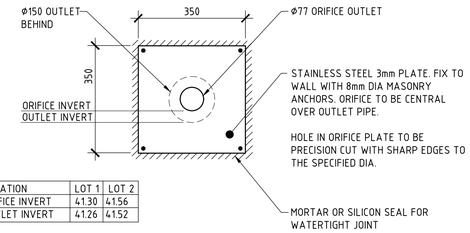
DETAIL A/1
SCALE 1:20

SHOWING SCHEMATIC LAYOUT OF DETENTION SYSTEM



DETAIL B/1
SCALE 1:20

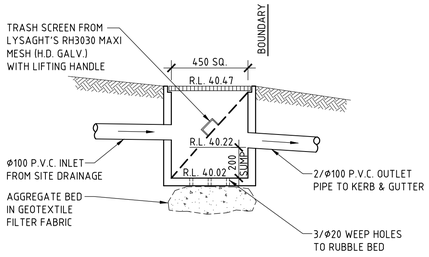




LOCATION	LOT 1	LOT 2
ORIFICE INVERT	41.30	41.56
OUTLET INVERT	41.26	41.52

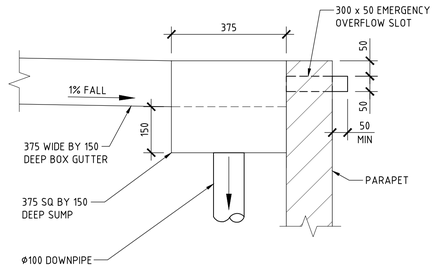
DETAIL H/–
SCALE 1:10

ORIFICE PLATE DETAIL

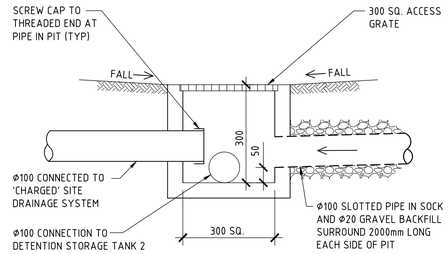


DETAIL C/1
SCALE 1:20

TYPICAL BOUNDARY PIT DETAIL WITH POLLUTION CONTROL MEASURE
NOTE: BOUNDARY PIT 2 AND JUNCTION PIT SIMILAR

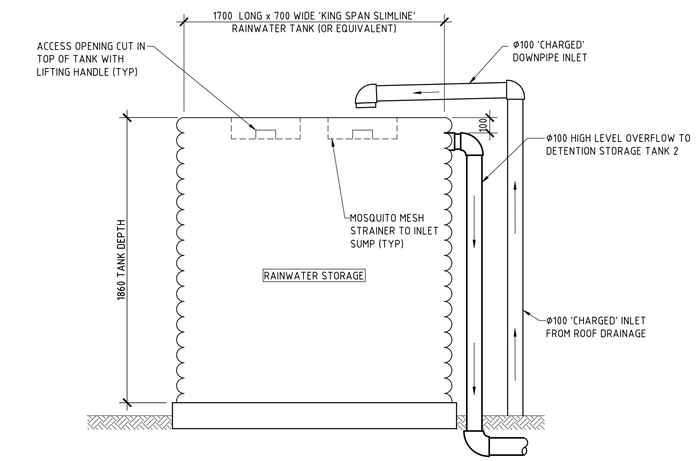


DETAIL D/1
SCALE 1:10



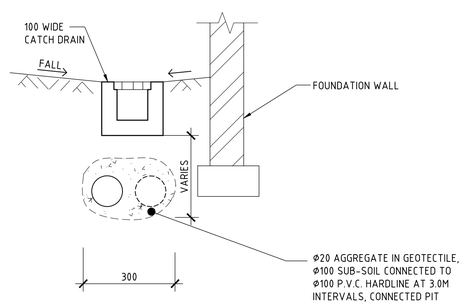
DETAIL E/1
SCALE 1:10

TYPICAL INLET FLUSH PIT DETAIL



NOTE: RAINWATER STORAGE TANK TO BE INSTALLED AND CONFIGURED TO SYDNEY WATER, COUNCIL AND MANUFACTURER'S REQUIREMENTS.

DETAIL F/1
SCALE 1:20



DETAIL G/1
SCALE 1:10

ISSUE DATE	REVISION
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TITLE
STORMWATER MANAGEMENT PLAN
90 HARBORD ROAD, FRESHWATER

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ENGINEER JPL			

DRAWING NO. STORM - 2/A

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