

GENERAL NOTES: Dated - 16.01.2024

1. THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE LATEST ARCHITECTURAL DRAWINGS, OR ANY RELEVANT CIVIL & STRUCTURAL ENGINEERING PLANS UNLESS THE PLANS HAVE BEEN FULLY COORDINATED BY THE PROJECT MANAGER.
2. DO NOT SCALE FROM THESE DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.

STORMWATER NOTES:

GENERAL:

- A1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT NATIONAL CONSTRUCTION CODE (NCC), AUSTRALIAN STANDARDS (LATEST VERSION), THE REQUIREMENTS OF THE LOCAL COUNCIL AND ANY APPLICABLE AUTHORITIES.
- A2. ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM (AHD) UNLESS NOTED OTHERWISE.
- A3. THE LOCATION OF ALL DRAINAGE ELEMENTS ARE SHOWN INDICATIVELY BASED ON AVAILABLE SURVEY OR OTHER INFORMATION. ALL DRAINAGE ELEMENTS ARE TO BE INSTALLED WITH CONSIDERATION TO SITE CONSTRAINTS AND THE INTENT OF THE DRAINAGE CONCEPT.
- A4. ANY MATERIAL VARIATIONS TO THE DRAINAGE CONCEPT OR DETAILED STORMWATER ELEMENTS MUST BE APPROVED BY NORTHERN BEACHES CONSULTING ENGINEERS PTY LTD PRIOR TO COMMENCEMENT.
- A5. ANY EXCAVATION OR TRENCHING FOR SERVICES ADJACENT TO A STRUCTURE OR PROPERTY BOUNDARY MUST NOT ENCROACH ON THE 'ZONE OF INFLUENCE', REFER TO THE NCC FOR FURTHER DETAILS.
- A6. ALL LEVELS SHOWN ON THIS PLAN MUST BE COORDINATED WITH ALL RELEVANT INFORMATION, INCLUDING THE ARCHITECTURAL, CIVIL & STRUCTURAL ENGINEERING PLANS. WHERE A LEVEL IS SHOWN WITHIN A RAMPED AREA (EG A PIT GRATE), THE LEVEL IS APPROXIMATE AND MAY NEED TO BE ADJUSTED TO ACCOMMODATE THE SLOPE.
- A7. ANY DESIGN CLASHES, INCLUDING WITH SERVICES, STRUCTURE CONFIGURATION OR FINISHED LEVELS MUST BE COMMUNICATED WITH THE PROJECT STORMWATER ENGINEER NOMINATED ON THIS PLAN PRIOR TO CONSTRUCTION.

GENERAL CONSTRUCTION NOTES:

- B1. CONTRACTORS TO LOCATE ALL EXISTING SERVICES PRIOR TO EXCAVATION AND NOTIFY ENGINEER OF ANY POTENTIAL CLASHES WITH THE PROPOSED STORMWATER DRAINAGE SYSTEM.
- B2. ANY ELEMENTS OF THE EXISTING STORMWATER SYSTEM WHICH ARE PROPOSED TO BE RETAINED MUST BE INSPECTED AND APPROVED BY AN ENGINEER PRIOR TO CONSTRUCTION AS BOTH HAVING ADEQUATE CAPACITY TO CATER FOR THE RUNOFF DIRECTED TO IT AND BEING IN ADEQUATE CONDITION FOR USE.
- B3. EXISTING STORMWATER SYSTEM ALSO TO BE INSPECTED BY A SUITABLY QUALIFIED PLUMBER PRIOR TO CONSTRUCTION AND UPGRADED AS REQUIRED IN ACCORDANCE WITH AS3500.3.
- B4. CARE SHOULD BE TAKEN WHEN UNDERTAKING WORKS IN THE VICINITY OF TREES NOT TO DISTURB THE TREE ROOT SYSTEM. HAND DIGGING OF TRENCHES MAY BE REQUIRED SUBJECT TO THE PROJECT ARBORISTS REQUIREMENTS. REFER TO THE ARBORIST REPORT FOR EXCAVATION REQUIREMENTS SURROUNDING PROTECTED TREE ROOT ZONES.
- B5. SWIMMING POOL SURCHARGE OVERFLOW TO BE CONNECTED VIA GRAVITY TO THE SEWER IN ACCORDANCE WITH AS3500. DETAILS AND CERTIFICATION BY OTHERS.
- B6. EXTENT, ALIGNMENT, DEPTH AND CONDITION OF ANY COUNCIL STORMWATER PIPELINE WITHIN A DEVELOPMENT SITE MUST BE VERIFIED PRIOR TO CONSTRUCTION AND THE ENGINEER MUST BE NOTIFIED UPON VERIFICATION. ANY NEW CONNECTION TO A COUNCIL STORMWATER PIPELINE WILL BE SUBJECT TO COUNCIL APPROVAL AND MUST BE INSTALLED IN ACCORDANCE WITH THE LOCAL COUNCIL SPECIFICATIONS.
- B7. ALL UNDERGROUND CONFINED SPACES MUST PROVIDE SAFE AND SUFFICIENT MAINTENANCE ACCESS POINTS IN ACCORDANCE WITH WORK HEALTH AND SAFETY BILL 2011, WORK HEALTH AND SAFETY REGULATIONS 2011 AND AUSTRALIAN STANDARDS AS 2865-2009 CONFINED SPACES. ADEQUATE VENTILATION POINTS MUST BE PROVIDED WHERE GAS BUILD UP IS LIKELY.
- B8. THE PROJECT ENGINEER MUST BE NOTIFIED IF ANY CHANGES ARE PROPOSED DURING CONSTRUCTION TO WHAT IS SHOWN ON THE LATEST STORMWATER MANAGEMENT PLAN PREPARED BY NBCE. THIS MUST BE CO-ORDINATED AND APPROVED BY NBCE. IF NBCE ARE NOT NOTIFIED OF ANY CHANGES DURING CONSTRUCTION, THIS MAY HINDER FINAL CERTIFICATION.
- B9. NBCE MUST CONDUCT A FINAL INSPECTION OF ANY INSTALLED STORMWATER WORKS PRIOR TO ISSUE OF THE FINAL HYDRAULIC CERTIFICATION.



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STRUCTURAL • CIVIL • STORMWATER • REMEDIAL

B10. THE PROJECT BUILDER MUST CONTACT THE PROJECT STORMWATER ENGINEER FOR SITE INSPECTIONS IN ACCORDANCE WITH THE SITE INSPECTION SCHEDULE SHOWN ON THIS DRAWING, U.N.O. IF NBCE DO NOT INSPECT THE ITEMS DETAILED ON THE SITE INSPECTION SCHEDULE, THIS MAY AFFECT THE FINAL HYDRAULIC CERTIFICATION.

PIPEWORK INSTALLATION:

- C1. ALL PIPES TO BE MINIMUM 100mm ϕ UNLESS NOTED OTHERWISE.
- C2. ALL PIPES TO BE uPVC SENER GRADE TO AS 1254 UNLESS NOTED OTHERWISE.
- C3. ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
- C4. ALL CONNECTIONS INTO EXISTING PIPES MUST BE MADE IN THE DIRECTION OF FLOW
- C5. ANY NEW uPVC CONNECTIONS INTO EXISTING R.C. PIPES MUST BE MADE INTO THE TOP HALF OF THE PIPE USING A FLOWCON CONNECTION FITTING U.N.O.
- C6. ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS. (NO COMPACTION REQUIRED BELOW LANDSCAPING) COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM. BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH NO-FINES GRANULAR MATERIAL AS SPECIFIED.
- C7. ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
- C8. MINIMUM PIPE COVER TO ALL IN-GROUND PIPEWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH TABLE 6.2.5 - AS3500.3 (2021).
- C9. ALL SUSPENDED PIPE FIXINGS ARE TO BE CARRIED OUT IN ACCORDANCE WITH AS2032.
- C10. ENSURE THAT ALL STORMWATER PITS AND PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- C11. ALL PIPEWORK MUST BE INSTALLED WITHIN THE SITE BOUNDARY OF THE DEVELOPMENT SITE. ANY NEW OR EXISTING PIPEWORK EXTENDING THROUGH PRIVATE PROPERTY BEYOND THE BOUNDARY OF THE DEVELOPMENT SITE MUST BE CONTAINED SOLELY WITHIN A DRAINAGE EASEMENT. IF NO DRAINAGE EASEMENT EXISTS, A NEW DRAINAGE EASEMENT MUST BE SOUGHT AND REGISTERED PRIOR TO UTILISING OR INSTALLING PIPEWORK THROUGH NEIGHBOURING PROPERTIES. CONTACT THE ENGINEER IF A DRAINAGE EASEMENT CANNOT BE OBTAINED.
- C12. THE PROJECT STORMWATER ENGINEER MUST BE NOTIFIED AND INSPECT ALL IN-GROUND PIPEWORK AND CONNECTIONS PRIOR TO BACKFILLING. IF ENGINEER DOES NOT INSPECT THE IN-GROUND PIPEWORK, THIS MAY AFFECT THE FINAL HYDRAULIC CERTIFICATION. NBCE WILL NOT APPROVE PIPE GRADES. ALL PIPE GRADES MUST BE VERIFIED BY A SUITABLY QUALIFIED PERSON.
- C13. PIPE ANCHOR BLOCKS TO BE INSTALLED FOR ALL PVC PIPEWORK WHEN THE GRADIENT EXCEEDS 1:5 IN ACCORDANCE WITH AS 3500.3.

ROOF DRAINAGE:

- D1. ALL DOWN PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
- D2. DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
- D3. PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- D4. GUTTER GUARDS MUST BE INSTALLED ON ALL GUTTERS UNLESS NOTED OTHERWISE.
- D5. ALL EAVES GUTTER AND VALLEY GUTTER SYSTEMS MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3 REQUIREMENTS.
- D6. ALL BOX GUTTER SYSTEMS MUST BE INSTALLED STRICTLY IN ACCORDANCE WITH THE DETAILS SHOWN ON THE APPROVED STORMWATER MANAGEMENT PLAN. IF NO DETAILS ARE SHOWN, THE BOX GUTTER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3. IF ANY CHANGE TO THE BOX GUTTER SYSTEM CONFIGURATION IS PROPOSED, THE ENGINEER MUST BE NOTIFIED FOR A RE-DESIGN. IF THE INSTALLED BOX GUTTER DOES NOT STRICTLY COMPLY WITH THE DESIGN DETAILED ON THE STORMWATER MANAGEMENT PLAN, CERTIFICATION OF THE HYDRAULIC SYSTEM MAY BE REFUSED.
- D7. ALL GREEN ROOFS, PEBBLED ROOFS AND PLANTERS WITH A CONCRETE BASE MUST BE WATERPROOFED AND HAVE DRAINAGE CELL INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.

- D8. IF ANY VALLEY GUTTER SHOWN ON THIS PLAN IS BELOW A 12.5-DEGREE ROOF PITCH WITH A CATCHMENT AREA ABOVE 20m² A CUSTOM VALLEY GUTTER, OR BOX GUTTER WILL BE REQUIRED. IF THE ROOF PITCH REQUIREMENT CANNOT BE ACHIEVED, THE PROJECT ENGINEER MUST BE NOTIFIED FOR DESIGN DETAILS AND THE GUTTER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3 PRIOR TO CONSTRUCTION
- D9. ADEQUATE FLASHING WILL BE REQUIRED TO DIVERT FLOWS AROUND SKYLIGHTS. FLASHING WORKS TO BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON AND BE INSTALLED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND NCC REQUIREMENTS.
- D10. ALL EAVES GUTTERS MUST BE MINIMUM 150 HALF ROUND GUTTERS (WITH A CROSS-SECTIONAL AREA OF 9200mm²) OR AN APPROVED EQUIVALENT, UNO. ALL EAVES GUTTER FALLS MUST BE DIRECTED TO THE NOMINATED DOWNPIPES AS SHOWN ON THE STORMWATER MANAGEMENT PLAN. THE PROJECT STORMWATER ENGINEER MUST BE NOTIFIED IF ANY CHANGES ARE PROPOSED OR THE ABOVE CANNOT BE ACHIEVED PRIOR TO CONSTRUCTION.
- D11. ALL EAVES GUTTERS AND ASSOCIATED DOWNPIPES MUST BE INSTALLED IN ACCORDANCE WITH TABLE 3.5.2, AS3500.3 (2021), UNLESS NOTED OTHERWISE.
- D12. NOTIFY THE PROJECT ENGINEER IF THE MINIMUM HEAD PRESSURE HEIGHT (AS SHOWN ON THIS PLAN) BETWEEN THE INVERT OF THE GUTTER AND INVERT OF THE CHARGED SYSTEM OUTLET CANNOT BE ACHIEVED.

PITS:

- E1. ALL STORMWATER PITS MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3.
- E2. ALL CONCRETE PITS TO BE DESIGNED BY STRUCTURAL ENGINEER.
- E3. MINIMUM INTERNAL DIMENSIONS FOR STORMWATER AND INLET PITS TO BE IN ACCORDANCE WITH TABLE 7.5.2.1, AS3500.3 (2021)
- E4. ALL PITS GREATER THAN 1200mm DEEP SHALL HAVE STEP IRONS INSTALLED. STEP IRON INSTALLATION MUST BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
- E5. THE BOUNDARY OR SILT ARRESTOR PIT MUST INCORPORATE A SUMP OF MINIMUM 200mm DEPTH BELOW THE INVERT OF THE OUTLET PIPE AND A MAXI-MESH SCREEN AS PER LOCAL COUNCIL AND THE AUSTRALIAN STANDARD REQUIREMENTS. HOWEVER, UNLESS SPECIFICALLY REQUIRED BY COUNCILS POLICY OR IF THE SITE CONSISTS OF A CLAY OR ROCK SUBGRADE, ALL OTHER DRAINAGE PITS WILL NOT REQUIRE A SUMP.
- E6. ALL STORMWATER PITS TO BE LOCATED AT LOW POINTS TO PREVENT PONDED WATER.
- E7. FOR STORMWATER PITS LOCATED BELOW THE WATER TABLE, CUT INTO ROCK OR IN POORLY DRAINED SOILS, THE PIT SUMP MAY BE FILLED WITH MORTAR AND SCREEDED TOWARDS THE OUTLET AT MINIMUM 1% FALL, SUBJECT TO THE ENGINEERS APPROVAL.
- E8. A STAINLESS STEEL OR GALVANISED MESH SCREEN (MAXI-MESH RH3030 OR APPROVED EQUIVALENT) MUST BE INSTALLED OVER OUTLETS WITHIN ALL SURFACE PITS AND ORIFICE PLATES, UNO. THE TRASH SCREEN AREA MUST BE A MINIMUM OF 50 TIMES THE ORIFICE AREA FOR ALL ORIFICES BELOW 150mm DIAMETER. IF ABOVE 150mm, TRASH SCREEN AREA MAY BE REDUCED TO 20 TIMES THE ORIFICE AREA. ALL TRASH SCREENS MUST REMAIN A DISTANCE OF 1.5 TIMES THE ORIFICE AREA AWAY FROM THE OUTLET STRUCTURE, OR 200mm, WHICHEVER IS GREATER.
- E9. 20mm WEEP HOLES TO BE INSTALLED AT 200mm CENTRES AT THE BASE OF ALL SURFACE PITS UNLESS FOUNDED ON A ROCK FOUNDATION.

SUBSOIL DRAINAGE:

- F1. ALL SUBSOIL DRAINAGE TO BE INSTALLED AS REQUIRED IN ACCORDANCE WITH AS3500.3 (SPECIFICALLY SECTION 6, 7 AND APPENDIX L) AND THE NCC.
- F2. INSTALLATION OF SUBSOIL DRAINAGE LINES IS GENERALLY REQUIRED WHERE SUBSURFACE WATER MOVEMENT COULD DAMAGE BUILDINGS OR CAUSE LOSS OF AMENITY THROUGH THE BUILD-UP OF EXCESSIVE MOISTURE OR LATERAL WATER PRESSURE. THIS INCLUDES ALONG WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER, ON THE UPHILL SIDE OF CUT AND FILL SITES, ADJACENT TO DEEP FOOTINGS, BEHIND RETAINING WALLS AND ADJACENT TO BASEMENT WALLS. SUBSOIL DRAINAGE IS GENERALLY ALSO REQUIRED IN SHALLOW LANDSCAPED AREAS OVER ROCK OR POORLY DRAINED SOILS TO PREVENT OVERLY SATURATED LANDSCAPED AREAS.
- F3. THE INSTALLATION OF SUBSOIL DRAINAGE MAY REQUIRE TRENCHING THROUGH ROCK.

- F4. ALL SUBSOIL LINES ARE TO BE 100mm uPVC SLOTTED PIPE (UNSOCKETED), LAID AT (MIN.) 0.5% FALL UNO.
- F5. THE SUBSOIL LINE IS TO BE SURROUNDED BY SELECT FILTER MATERIAL, GENERALLY 10-20mm DIAMETER AGGREGATE.
- F6. THE TRENCH SHALL BE SIZED TO PROVIDE A MINIMUM 50mm BEDDING AND 100mm COVER ALL AROUND THE SUBSOIL LINE, GENERALLY MINIMUM 300mm WIDE X 300mm DEEP. THE TRENCH IS TO BE WRAPPED ALL-ROUND IN NON-WOVEN, GEOTEXTILE FABRIC OF STRENGTH CLASS A, WITH SUFFICIENT OVERLAP (LESSER OF TRENCH WIDTH OR 500mm).
- F7. WHERE THE IN-SITU SOILS HAVE A GRAIN SIZE SMALLER THAN THE GEOTEXTILE FABRIC, COARSE WASHED-SAND SHOULD BE USED AS A FILTER TO PREVENT BLOCKAGE OF THE GEOFABRIC.
- F8. THE BACKFILL LAYER OVER THE TRENCH SHALL BE NO-FINES COURSE WASHED-SAND. WHERE LANDSCAPED AREAS ARE PROPOSED OVER THE TRENCH, THE TOP 300mm OF BACKFILL MAY BE MIXED WITH UP TO 20% ORGANIC MATTER.
- F9. ALL SUBSOIL LINES ARE TO DISCHARGE INTO A GRATED PIT, AT A LEVEL MINIMUM 50mm ABOVE THE PIT OUTLET UNO. THE PROJECT BUILDER IS TO IMPLEMENT APPROPRIATE MEASURES TO PREVENT SUBSOIL LINE BLOCKAGE OR INFESTATION OF VERMIN.
- F10. THE HIGH-END OF THE SUBSOIL LINE IS TO BE TURNED UP AT 45° AND TERMINATE AT GROUND LEVEL WITH AN INSPECTION CAP TO ENABLE FUTURE FLUSH OUT AND MAINTENANCE.
- F11. 100mm ϕ x 3000mm LONG TAIL OUT SUBSOIL LINE TO BE PROVIDED ON THE UPSTREAM SIDE OF ALL LARGE PITS OR IN AREAS WITH HIGH SEEPAGE FLOWS. SUBSOIL LINE TO BE COVERED WITH GEOTEXTILE FILTER SOCK FOR THE FULL LENGTH AND END COVERED. BACKFILL MUST BE IN NO-FINES COARSE WASHED-SAND.

IF IN DOUBT ASK

Scale check - 100mm when printed to scale

A3

DOCUMENT CERTIFICATION					Architect:		Project:		Date:	Design:	Drawn:	
Date : 24/01/2025 Michael Wachjo B.E.(Civil), MIEAust. (Director NB Consulting Engineers) The copyright of this drawing remains with NB Consulting Engineers					ACTION PLANS		15 LAKESIDE CRES, NORTH MANLY		JAN. '25	W.F.	LFC	
13.01.2025					Client:		Drawing Title:		Job No:		Drawing No:	
Date: Issue: Description: By: Review:					L. & S. O'BRIEN		STORMWATER GENERAL NOTES & DRAWING SCHEDULE-SHEET 1		2412001		D01	
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SURFACE DRAINAGE:

J1. WHEN LAND FALLS TOWARDS A BUILDING, INCLUDING LAND UPSLOPE OF THE PROPERTY BOUNDARY, GROUND SURFACE LEVELS ADJACENT TO THE BUILDING ARE TO BE REGRADED SUCH THAT THE FIRST METRE HAS MINIMUM 50mm FALL AWAY FROM THE BUILDING, GENERALLY IN ACCORDANCE WITH THE NCC.

J2. ANY NEW DEVELOPMENT WORKS MUST NOT CREATE ANY TRAPPED SURFACE AREAS. IN SUCH CASES WHERE TRAPPED AREAS EXIST, SWALE DRAINS OR GRATED PITS WITH PIPED OUTLETS OF ADEQUATE CAPACITY MAY BE REQUIRED TO ROUTE RUNOFF AROUND THE BUILDING TO AN APPROVED DISCHARGE POINT. IF THE TRAPPED AREA IS BELOW THE NATURAL SURFACE LEVEL, A PUMP OUT SYSTEM MAY BE REQUIRED. IN EITHER CASE, THE PROJECT ENGINEER MUST BE CONTACTED FOR DESIGN DETAILS (AS REQUIRED) PRIOR TO CONSTRUCTION.

J3. BUILDER TO PROVIDE A MINIMUM 100mm WIDE x 30mm HIGH OR 50mm DIA OVERFLOW FOR EVERY 6m OF EXPOSED AREA THAT IS TRAPPED OR SURROUNDED BY HOBS/BALUSTRADES/WALLS/ETC. THE FULL OVERFLOW DEPTH MUST BE LOCATED BELOW ANY ADJACENT INTERNAL FLOOR LEVELS OR OPENINGS TO PROTECT AGAINST WATER INGRESS DUE TO BLOCKAGE OF THE PRIMARY OUTLET(S). THE OVERFLOW MUST BE FREE DRAINING TO THE LEGAL POINT OF DISCHARGE.

J4. ALL INTERNAL FINISHED FLOOR LEVELS MUST BE A MINIMUM 50mm ABOVE ALL ADJACENT PAVED EXTERNAL LEVELS AND 150mm ABOVE ALL ADJACENT PERVIOUS EXTERNAL LEVELS, U.N.O. IMMEDIATELY ADJACENT EXTERNAL AREAS (WITHIN 1m OF INTERNAL AREAS) MUST SLOPE AWAY FROM THE DWELLING AT A MINIMUM 2.5% FALL. IF ANY ASPECT IS UNACHIEVABLE, NBCE MUST BE NOTIFIED FOR ALTERNATIVE DRAINAGE DETAILING, IF APPLICABLE.

J5. ALL TRAPPED AREAS REQUIRE BOTH PRIMARY DISCHARGE & EMERGENCY (SECONDARY) DISCHARGE PROVISIONS IN CASE THE PRIMARY DISCHARGE BLOCKS. THIS MUST BE COORDINATED WITH THE PROJECT HYDRAULIC ENGINEER PRIOR TO CONSTRUCTION.

DISPERSION SYSTEMS:

M1. EXCAVATE THE TRENCH ALONG A LEVEL CONTOUR ON THE SITE, WITH AT LEAST 150mm COVER BETWEEN THE TOP OF THE LINER AND THE FINISHED SURFACE LEVEL.

M2. THE GROUND LEVEL ABOVE THE TRENCH MUST BE LEVEL SO AS TO EVENLY DISPERSE RUNOFF DOWNSTREAM OF THE TRENCH. ALL DISPERSION (LEVEL SPREADER) SYSTEMS MUST BE INSTALLED TO ENSURE AN EVENLY DISPERSED FLOW DOWNSTREAM. LANDSCAPING MUST BE GRADED AWAY FROM ANY INSTALLED DISPERSION SYSTEM AT MINIMUM 1% FALL TOWARDS THE REAR BOUNDARY U.N.O.

M3. ALLOW AT LEAST 75mm OVERLAP FOR EACH LENGTH OF EVERTRENCH LINER.

M4. FIT THREE BRACE BARS INTO EACH STANDARD EVERTRENCH LINER, THE FIRST 220mm FROM THE INLET END, AND THEN EQUALLY SPACED ALONG THE EXCAVATION.

M5. CUT THE PIPE ENTRY HOLE IN ONE TRENCH LINER END CAP, AND FIT THE CAPS TO THE LINER. CONNECT PIPING FROM THE PIT.

M6. LAY GEOTEXTILE FABRIC OVER THE FULL LENGTH OF THE LINER.

M7. PLACE A 150mm LAYER OF 20 - 45mm AGGREGATE MATERIAL ALONG BOTH SIDES OF THE TRENCH LINER, AND AT BOTH ENDS TO SECURE THE END CAPS, AND RAKE LEVEL.

M8. COVER THE LINER AND THE FLOOR OF THE EXCAVATED BED WITH 100mm OF COARSE SAND, THEN WITH SANDY LOAM.

M9. LAY A FINAL 150mm LAYER OF TOPSOIL LESS PERMEABLE THAN THE PARENT SOIL, TO HELP PREVENT STORMWATER ENTERING THE BED.

M10. LEAVE A MOUND FOR NATURAL COMPACTION. TURF MAY BE LAID OVER THE AREA.

M11. IF ROCK IS ENCOUNTERED DURING THE EXCAVATION OF THE DISPERSION TRENCH, NOTIFY THE ENGINEER FOR AN ALTERNATIVE DISPERSION SYSTEM DETAIL.

M12. ANY DISPERSION SYSTEM MUST HAVE AT LEAST ONE 450mm X 450mm GRATED SURFACE PIT AT ONE END AND AN INSPECTION OPENING AT THE OTHER END TO FACILITATE MAINTENANCE OF THE DISPERSION SYSTEM, U.N.O.

M13. STRUCTURAL ENGINEER TO APPROVE LOCATION OF DISPERSION TRENCH LOCATION ADJACENT TO NEW OR EXISTING FOOTINGS PRIOR TO CONSTRUCTION AND INSPECT ANY EXCAVATION WORKS AS REQUIRED.

M14. ALL DISPERSION/INFILTRATION SYSTEMS MUST BE MINIMUM 3m FROM THE REAR AND SIDE BOUNDARIES, AND ANY STRUCTURES ADJACENT, U.N.O.

M15. ANY DISPERSION SYSTEM THAT PROMOTES INFILTRATION MUST BE ACCOUNTED FOR WITHIN THE DESIGN OF ANY STRUCTURES WITHIN ITS VICINITY, FOR ANY EXCESSIVE HYDRAULIC LOAD AND GROUND SATURATION.

M16. THE PROJECT GEOTECHNICAL ENGINEER MUST VERIFY AND APPROVE THE METHOD, LOCATION, AND DESIGN OF THE DISPERSION SYSTEM, ESPECIALLY IN REGARD TO LONG TERM SLOPE STABILITY.

BEFORE YOU DIG NOTE:

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CABLES ARE DIGGING CAN:

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED



MINIMISE YOUR RISK AND CONTACT
www.byda.com.au BEFORE YOU DIG.

STORMWATER INSPECTION SCHEDULE

INSPECTION ITEMS	STAGE OF CONSTRUCTION
IN-GROUND PIPEWORK	PRIOR TO BACKFILL
IN-GROUND INFILTRATION/DISPERSION TRENCHES	PRIOR TO BACKFILL
IN-GROUND PREFABRICATED TANKS	PRIOR TO CONCRETE POUR/BACKFILL
PIPEWORK CAST-IN SLABS	PRIOR TO CONCRETE POUR
BOX GUTTERS	POST INSTALLATION WITH SAFE ROOF ACCESS MADE AVAILABLE
ABOVE GROUND PIPEWORK + FINISHED SURFACE LEVELS	FINAL CERTIFICATION

**NORTHERN BEACHES COUNCIL - REGION 2
ON-SITE DETENTION SYSTEM CALCULATION SHEET**

ADDRESS: 15 LAKESIDE CRESCENT, NORTH MANLY

ALL WORKS IN ACCORDANCE WITH COUNCIL'S WATER MANAGEMENT FOR DEVELOPMENT POLICY.

DEVELOPMENT TYPE ALTERATIONS AND ADDITIONS
REGION 2

SITE DETAILS

TOTAL SITE AREA 627 m²
PRE DEVELOPMENT IMPERVIOUS AREA 387.8 m² (61.9% OF SITE)
POST DEVELOPMENT IMPERVIOUS AREA 369.1 m² (58.9% OF SITE)
DECREASE 18.7 m²

OSD REQUIREMENTS

THIS IS AN ALTERATIONS AND ADDITIONS DEVELOPMENT THAT DISCHARGES TO MANLY LAGOON, THEREFORE ON-SITE DETENTION IS NOT REQUIRED.

OSD STORAGE REQUIREMENT

OSD VOLUME REQUIRED NIL m³ (NIL m³ PROVIDED)

RAINWATER REUSE STORAGE REQUIREMENT

RAINWATER 'BASIX' REQUIRED NIL m³ (NIL m³ PROVIDED)
'BASIX' REQUIRED ROOF AREA TO RAINWATER TANKS NIL m²

OUTLET CONTROL

METHOD OF DISCHARGE DISPERSION TO MANLY LAGOON

DRAWING SCHEDULE:

- D01 ▲ - STORMWATER DRAINAGE GENERAL NOTES SHEET 1
- D02 ▲ - STORMWATER DRAINAGE GENERAL NOTES SHEET 2
- D03 ▲ - ROOF/SITE DRAINAGE PLAN
- D04 ▲ - FIRST FLOOR & LOWER ROOF DRAINAGE PLAN
- D05 ▲ - GROUND FLOOR DRAINAGE PLAN
- D06 ▲ - TYPICAL DRAINAGE DETAILS
- D07 ▲ - SPREADER PIPE DETAILS

IF IN DOUBT ASK

Scale check - 100mm when printed to scale

A3

DOCUMENT CERTIFICATION

Date : 24/01/2025
Michael Wachjox
B.E.(Civil), MIEAust.
(Director NB Consulting Engineers)
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Architect:

ACTION PLANS

Client:

L. & S. O'BRIEN

Project:

**15 LAKESIDE CRES,
NORTH MANLY**

Drawing Title:

**STORMWATER GENERAL NOTES
& DRAWING SCHEDULE-SHEET 2**

Date:

JAN. '25

Design:

W.F.

Drawn:

LFC

Job No:

2412001

Drawing No:

D02

Issue:

A



EXISTING RETAINING WALL TO REMAIN.
IF DIFFERENTIAL MOVEMENT OR CRACKING
IS EXPERIENCED IN WALL AS A RESULT OF
ADDITIONAL HYDRAULIC LOADS, CONTACT
ENGINEER FOR ADDITIONAL DRAINAGE
SPECIFICATION.

NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

FOR CONTINUATION
REFER DO5 -

ENSURE MIN. 3m
OFFSET FROM
SIDE BOUNDARY.

- 450 x 450 BOUNDARY PIT
RL 2.20
IL 1.90

EXISTING RETAINING WALL

ENSURE MIN. 3m OFFSET
FROM SIDE BOUNDARY

1 MIN. 6m LONG GRATED DRAIN
DISPERSION. ENSURE GRATED DRAIN
IS LAID ON LEVEL CONTOUR TO ENSURE EVEN
SHEET FLOW OF STORMWATER DISCHARGE.
EXISTING POOL.
ASSUMED OVERFLOW
TO SEWER (TYPICAL)

EXISTING ROOF & BALCONY DRAINAGE
TO REMAIN (OUTSIDE SCOPE OF THIS
DEVELOPMENT). BUILDER TO INSPECT
CONDITION & ADEQUACY & UPGRADE
WHERE REQUIRED IN ACCORDANCE WITH
AS 3500.3. TO BE CONNECTED INTO
STORMWATER DRAINAGE SYSTEM.
REFER DOS.

LEGEND :

DPI : 100mm ϕ UPVC DOWNPIPE
EDP : EXISTING DOWNPIPE

SITE / ROOF DRAINAGE PLAN

1:200

Scale check - 100mm when printed to scale -

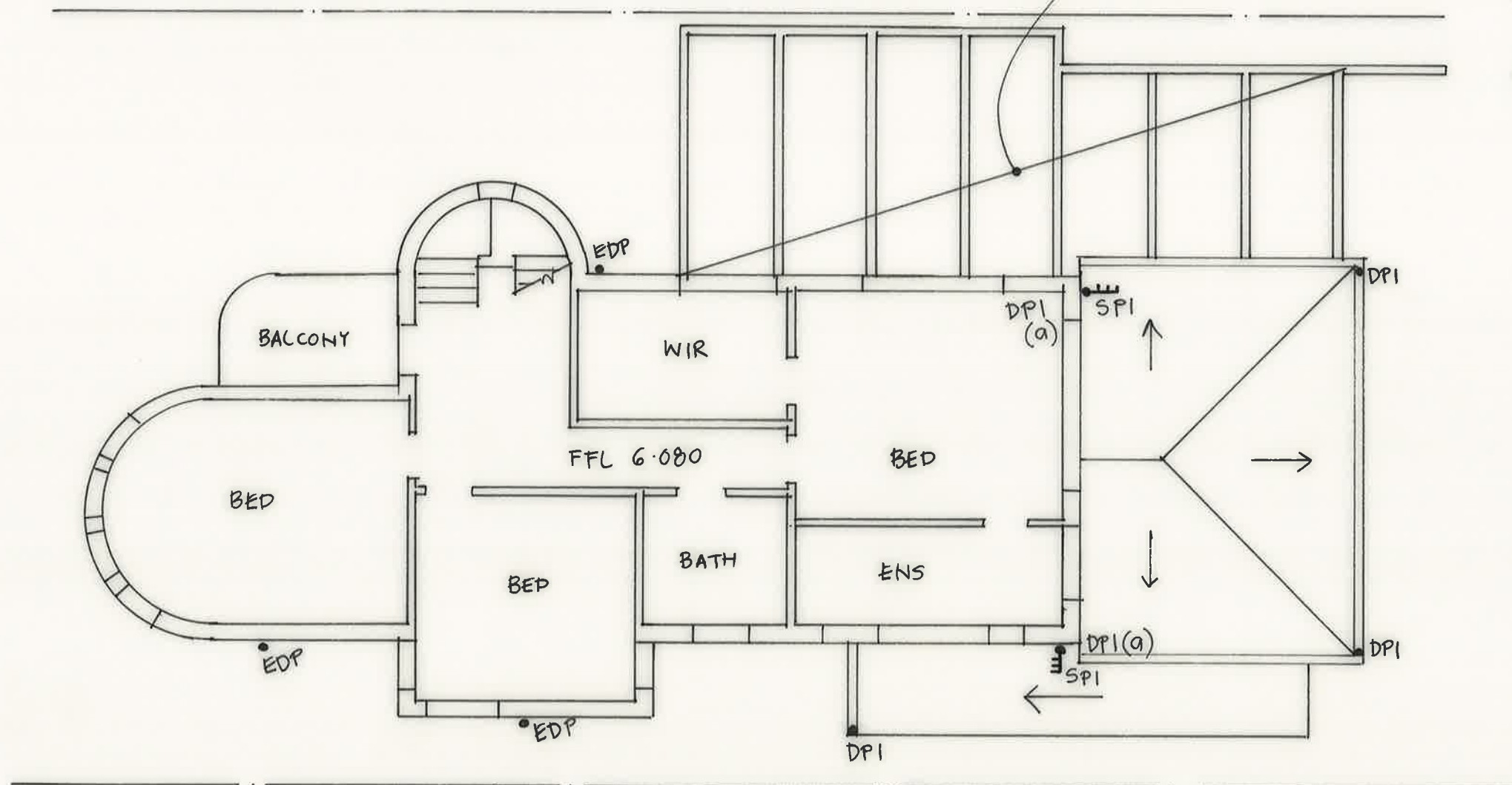
A3

IF IN DOUBT ASK

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ASSUMED OPEN CARPORT/ALFRESCO
AREA. DRAINAGE TO BE PROVIDED
IF COVERED DURING CC STAGE



NOTES:

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2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

LEGEND :

DPI : 100mm Ø UPVC DOWNPIPE
EDP : EXISTING DOWN PIPE
SPI : SPREADER - REFER DETAIL

FIRST FLOOR & LOWER ROOF DRAINAGE PLAN

1:100

IF IN DOUBT ASK

DOCUMENT CERTIFICATION

Date : 24/01/2025
Michael Wachjo
B.E.(Civil), MIEAust.
(Director NB Consulting Engineers)
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Architect:

ACTION PLANS

Client:

L. & S. O'BRIEN

Project:

15 LAKESIDE CRES,
NORTH MANLY

Drawing Title:

FIRST FLOOR & LOWER
ROOF DRAINAGE PLAN

Date:

JAN. '25

Design:

W.F.

Drawn:

LFC

Job No:

2412001

Drawing No:

D04

Issue:

A

Scale check - 100mm when printed to scale

A3

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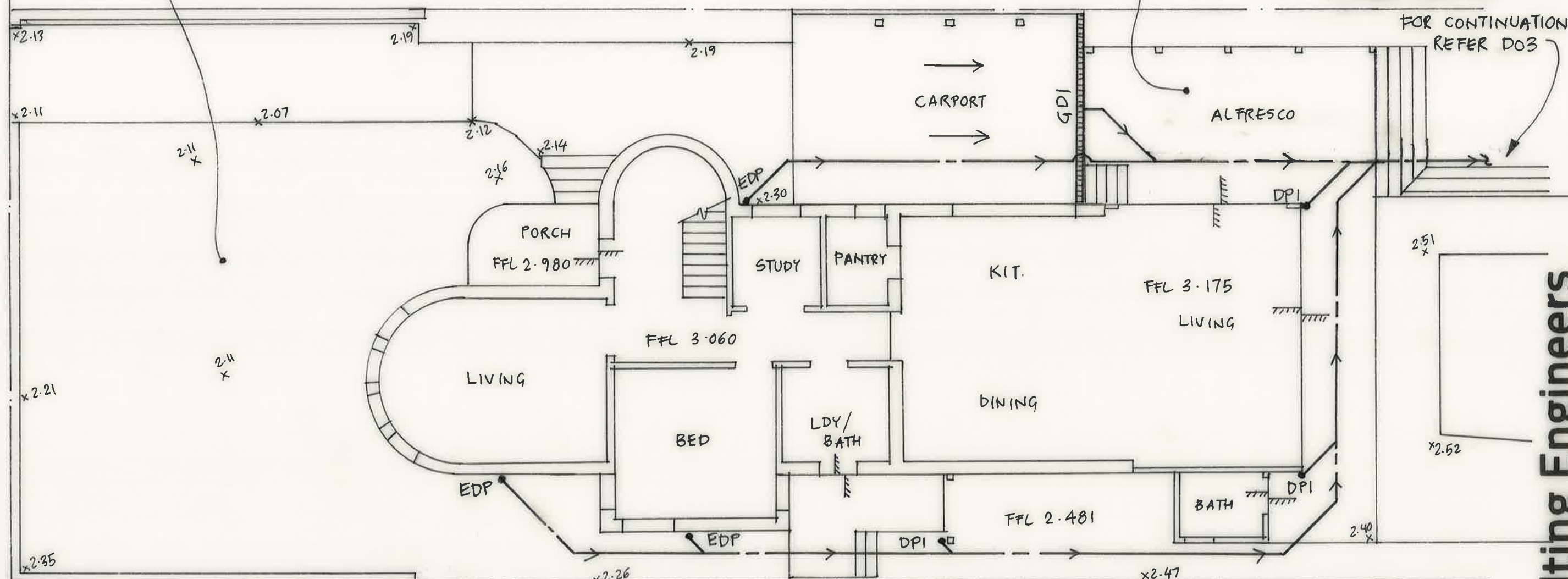
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TIMBER DECK TO BE FREE DRAINING TO PERVIOUS SUBSTRATE BELOW.

EXISTING DRAINAGE TO REMAIN (OUTSIDE SCOPE OF THIS DEVELOPMENT).
BUILDER TO INSPECT CONDITION & ADEQUACY & UPGRADE WHERE REQUIRED IN ACCORDANCE WITH AS 3500.3.
CONTACT ENGINEER IF DRAINAGE SPECIFICATION IS REQUIRED.

FOR CONTINUATION
REFER D03



LEGEND :

- DPI : 100mm Ø UPVC DOWNPIPE
EDP : EXISTING DOWNPIPE
GDI : 100x100 GRATED DRAIN - REFER DETAIL
MIN. 50mm STEP UP OR THRESHOLD DRAINAGE.

GROUND FLOOR DRAINAGE PLAN

1:100

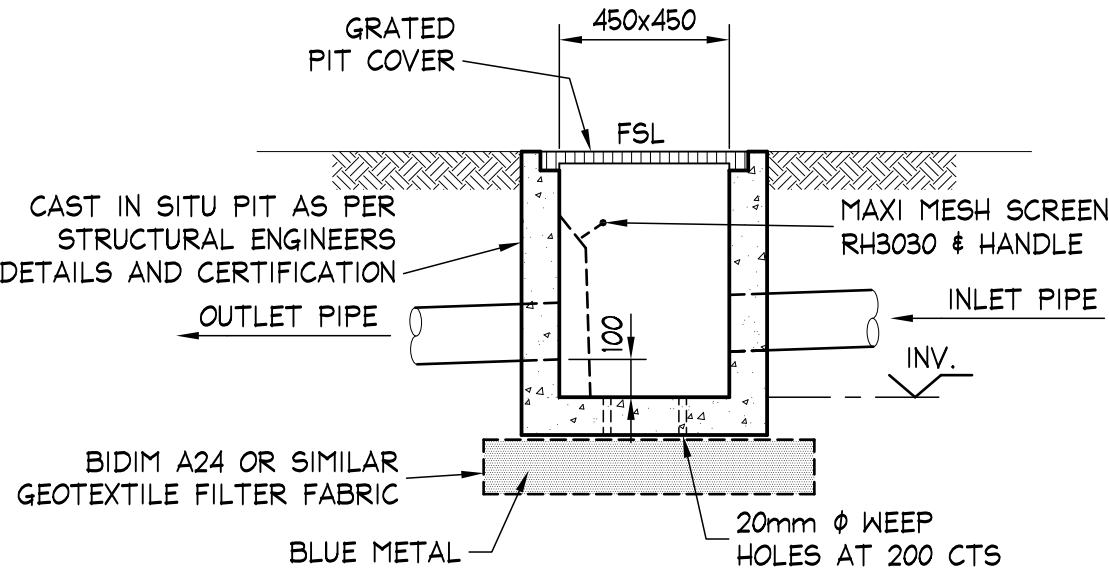
IF IN DOUBT ASK

DOCUMENT CERTIFICATION				NB Consulting Engineers		Architect:	Project:	Date:	Design:	Drawn:
Date: 24/01/2025 Michael Wachjoh B.E.(Civil), MIEAust (Director NB Consulting Engineers)				STRUCTURAL • CIVIL • STORMWATER • REMEDIAL A.C.N. 076 121 616 A.B.N. 24 076 121 616		ACTION PLANS	15 LAKESIDE CRES, NORTH MANLY	JAN. '25	W.F.	LFC
13-01-25 A ISSUE FOR DA				Sydney: Ph: (02) 9984 7000 Unit 11, 1 Vuko Place, Warriewood N.S.W. 2102 Gold Coast: Ph: (07) 5631 4744 Suite 1, 30B Griffith Street, Coolangatta QLD 4225 E: nb@nbconsulting.com.au W: www.nbconsulting.com.au		Client:	Drawing Title:	Job No:	Drawing No:	Issue:
By: Review:				L. & S. O'BRIEN			GROUND FLOOR DRAINAGE PLAN	2412001	D05	A

NB Consulting Engineers

NOTES:

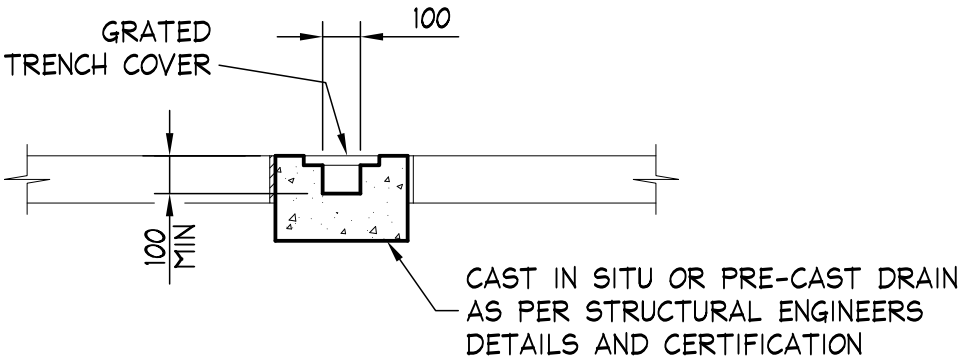
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- 2. DO NOT SCALE FROM THIS DRAWING.
- 3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
- 4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.



OR PRECAST GRATED PIT BY MANUFACTURER
ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER

450x450 PIT DETAIL

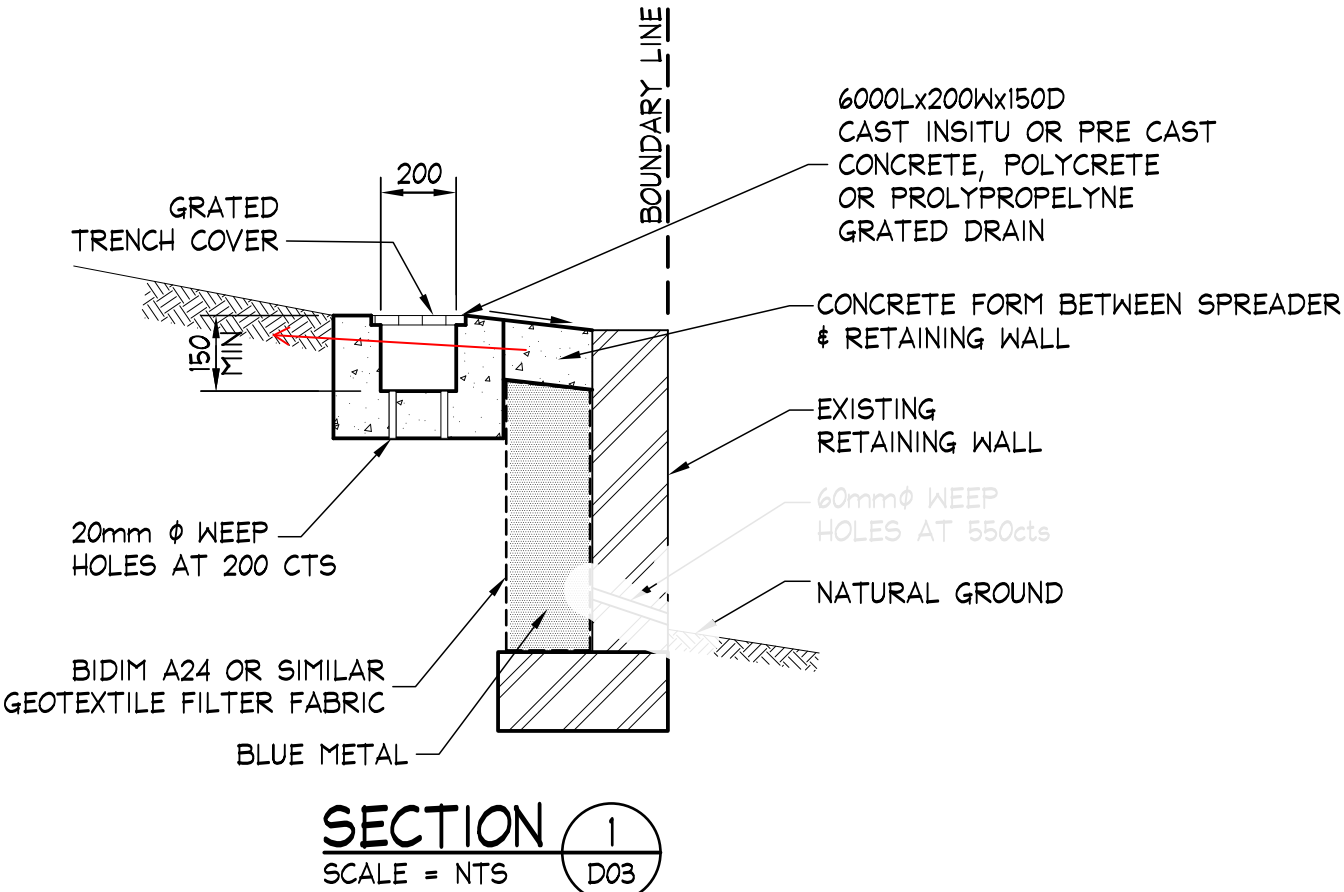
SCALE = 1 : 20



OR PRECAST GRATED DRAIN BY MANUFACTURER
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER

TYPE 'GDI' GRATED DRAIN

SCALE = NTS



IF IN DOUBT ASK

A3

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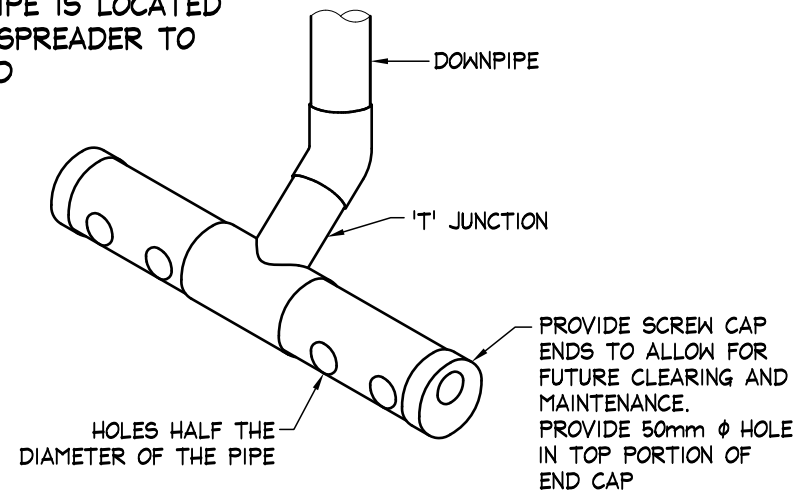
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Scale check - 100mm when printed to scale

A3

NOTE:

1. HOLE POSITIONS TO AVOID JOINTS IN ROOFING
2. WHEN DOWNPIPE IS LOCATED IN CORNER, SPREADER TO BE L-SHAPED

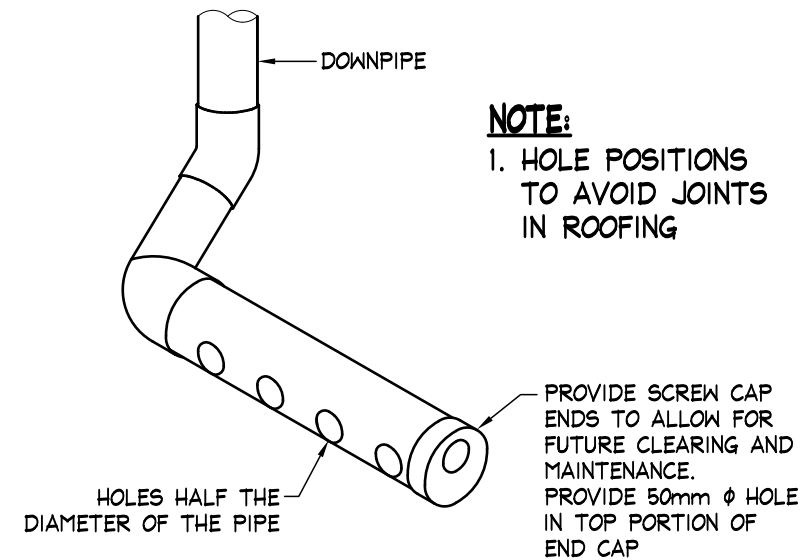


SPREADER PIPE 'SPI' DETAIL OPTION 1

SCALE = NTS

NOTE:

1. HOLE POSITIONS TO AVOID JOINTS IN ROOFING



SPREADER PIPE 'SPI' DETAIL OPTION 2

SCALE = NTS

NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

IF IN DOUBT ASK

DOCUMENT CERTIFICATION					<div><div>NB Consulting Engineers</div><div>STRUCTURAL • CIVIL • STORMWATER • REMEDIAL</div><div>A.C.N. 076 121 616 A.B.N. 24 076 121 616</div><div>Sydney: Ph: (02) 9984 7000 Unit 11, 1 Vuko Place, Warriewood N.S.W. 2102 Gold Coast: Ph: (07) 5631 4744 Suite 1, 30B Griffith Street, Coolangatta QLD 4225 E : nb@nbconsulting.com.au W : www.nbconsulting.com.au</div></div>		Architect: <div>ACTION PLANS</div>		Project: <div>15 LAKESIDE CRES, NORTH MANLY</div>		Date: <div>JAN. '25</div>	Design: <div>W.F.</div>	Drawn: <div>LFC</div>
<div>Date : 24/01/2025 Michael Wachjo B.E.(Civil), MIEAust. (Director NB Consulting Engineers)</div> <div>The copyright of this drawing remains with NB Consulting Engineers</div>							Client: <div>L. & S. O'BRIEN</div>		Drawing Title: <div>SPREADER PIPE DETAILS</div>		Job No: <div>2412001</div>	Drawing No: <div>D07</div>	Issue: <div>A</div>
13.01.2025	A	ISSUE FOR DA		LFC	SR	Date:	Issue:	Description:		By:	Review:		

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