NEW RESIDENCE
25 LOCH STREET, FRESHWATER
STORMWATER DRAINAGE

LP CONSULTING
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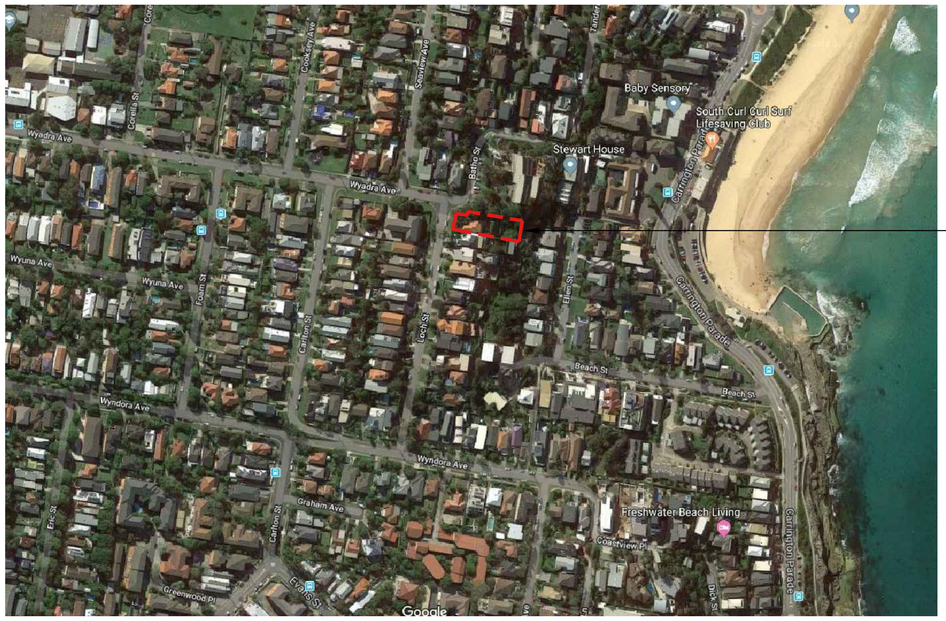


LOCATION OF SITE

LOCALITY PLAN
NOT TO SCALE

DEVELOPMENT APPLICATION

DO NOT SCALE FROM DRAWINGS, CHECK & VERIFY ALL DIMENSIONS & LEVELS BEFORE COMMENCEMENT OF ANY WORK.

THIS DRAWING IS NOT TO BE COPIED IN PART OR WHOLE WITHOUT WRITTEN PERMISSION FROM LP CONSULTING AUSTRALIA PTY LTD

NORTH POINT

TN MN

SHEET SIZE: A1

NOTES
1. REFER TO DRAWING DA-STW-002 FOR DRAWING LIST.
2. CONTRACTOR TO CHECK AND CONFIRM ALL LEVELS ON SITE.
3. CONTRACTOR TO INVESTIGATE ALL EXISTING SERVICES, SUCH AS APPLY FOR "DIAL BEFORE YOU DIG" SERVICES PRIOR TO START OF WORKS ON SITE.

ISSUE	AMENDMENT	DATE
A	ISSUE FOR ARCHITECT'S REVIEW	15.11.2018
B	ISSUE FOR DEVELOPMENT APPLICATION	29.11.2018

PROJECT
NEW RESIDENCE
25 LOCH STREET,
FRESHWATER, NSW

CLIENT
JOHANNA & ANDREW SMITH

ARCHITECT
ROLF OCKERT ARCHITECTS
SUITE 406, 64-76 KIPPAX STREET,
SURRY HILLS, NSW, 2010
Email: architects@rodesign.com.au

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 9.04, Level 9, 109 Pitt Street
Sydney NSW Australia 2000
P: PO Box 814 Kensington NSW 1465
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
TITLE SHEET AND LOCALITY PLAN

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
N.T.S.	CA	MRB	LP	
DATE Nov 29, 2018	DRAWING No. DA-STW-001		ISSUE B	
JOB No. 2018-1509	DEVELOPMENT APPLICATION			

Xrefs: 2018-1509_XH-TITLEBLK-A1
Plot Date: 29.11.2018@08:42:20 Login Name: Tony Cad File: Z:\Projects\2018\1509\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2018-1509_DA-STW-001.dwg

LEGEND

LINETYPES

- OF — OVERFLOW
- RR — RAINWATER RE-USE
- SIPH — SIPHONIC DRAINAGE
- SS — SUBSOIL DRAINAGE
- SSRM — SUBSOIL RISING MAIN
- STW — STORMWATER DRAINAGE
- SWRM — STORMWATER RISING MAIN
- STORMWATER DRAINAGE
- FRR — FILTERED RAINWATER RE-USE
- IR — IRRIGATION
- R — RECYCLED COLD WATER
- E — ELECTRICAL WIRING
- C — ELECTRICAL CONDUIT

SERVICES & UTILITIES

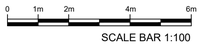
- eE — EXISTING ELECTRICAL
- eO/H — EXISTING ELECTRICAL OVERHEAD
- eU/E — EXISTING ELECTRICAL UNDERGROUND
- eG — EXISTING GAS
- eTel — EXISTING TELSTRA
- eS — EXISTING SEWER
- eSTW — EXISTING STORMWATER
- eW — EXISTING WATER
- EXISTING SERVICE TO BE ABANDONED

NOTE:
'e' ON SERVICE LINE DENOTES EXISTING SERVICE.
'x' ON SERVICE LINE DENOTES SERVICE TO BE ABANDONED.

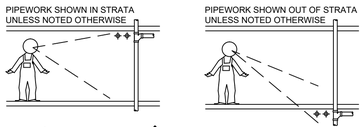
EROSION & SEDIMENT SYMBOLS

- BARRIER FENCE
- SILT FENCE
- STABALISED CONSTRUCTION SITE VEHICLE ENTRY/EXIT GRID
- STRAW BALE SEDIMENT FILTER

DRAWING INFORMATION SYMBOLS



SCALE BAR 1:100



- A / 101 — SECTION No. / DRAWING REFERENCE No.
- 1 / 401 — DETAIL No. / DRAWING REFERENCE No.
- X — AMENDMENT REFERENCE

HYDRAULIC SERVICES SYMBOLS

- VERT — VERTICAL RISER IN DRAINAGE
- CO, I.O. — CLEAROUT OR INSPECTION OPENING
- DTU — DRAINAGE TURN-UP
- FLOW DIRECTION ARROW
- P — PENETRATION CORE THROUGH STRUCTURAL ELEMENT
- DP 150 — DOWNPIPE (150mm DIAMETER)
- RISER
- DROPPER
- DROPS TO BELOW / RISES FROM BELOW
- CAPPED OFF SERVICE
- CONTINUATION OF SERVICE NOT SHOWN
- CONTINUATION OF SERVICE SHOWN ELSEWHERE
- FLANGED CONNECTION
- SERVICE CAST IN SLAB
- SERVICE CONCRETE ENCASED
- ISOLATION VALVE
- BALANCING VALVE (STAD)
- CHECK VALVE
- BACKFLOW PREVENTION DEVICE
- PRESSURE LIMITING VALVE
- PRESSURE REDUCTION VALVE
- STRAINER
- F — FILTER
- PUMP
- HT — HOSE TAP
- COLD WATER POINT
- THRUST BLOCK
- TD — TUNDISH
- REFLUX VALVE
- RWO — RAINWATER OUTLET
- RWO — SQUARE RAINWATER OUTLET
- SPREADER
- RWH — RAINWATER HEAD
- SWP — STORMWATER PIT (ACCESS ONLY)
- SWP — STORMWATER PIT (INLET)
- KERB ENTRY PIT
- GTD — GRATED TRENCH DRAIN
- FALL ARROW
- OVERLAND FLOW PATH DIRECTIONAL ARROW
- STORMWATER HEADWALL
- SWALE OR SPEED HUMP
- CP — ELECTRICAL CONTROL PANEL
- DIRECTION OF FLOW
- SERVICE
- SIZE
- XX — CONTINUED ON DWG XX

GENERAL ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AB	ACCESSIBLE BASIN
AC	AIR CONDITIONING
AV	AIR RELEASE VALVE
AWC	ACCESSIBLE TOILET (WATER CLOSET)
B	BASIN
BG	BOX GUTTER
BGO	BOX GUTTER OUTLET
BT	BOUNDARY TRAP
BTFW	BUCKET TRAP FLOOR WASTE
BTH	BATH
BWU	BOILING WATER UNIT
CAC	CIRCULAR ACCESS CHAMBER
CHVP	CHAMBER VENT PIPE
CTS	CENTRES
℄	CENTRE LINE
CI	CAST IRON
CIC	CAST IN COLUMN
CIS	CAST IN SLAB
CO	CLEAR OUT
CS	CLEANERS SINK
Cu	COPPER
CW	COLD WATER
DI	DUCTILE IRON
DIA	DIAMETER
DP	DOWN PIPE
DPFH	DOUBLE PILLAR FIRE HYDRANT
DST	DRAINAGE STACK
DTU	DRAINAGE TURN-UP
DWG	DRAWING
ED	ELEVATED DRAINAGE
EGL	EXISTING GROUND LEVEL
EGO	EAVES GUTTER OUTLET
EJ	EXPANSION JOINT
Ex	EXISTING
FFL	FINISHED FLOOR LEVEL
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FSC	FIRE STOP COLLAR
FW	FLOOR WASTE
GALV	GALVANISED
GDO	GRATED DRAIN OUTLET
GMS	GALVANISED MILD STEEL
GVP	GREASE VENT PIPE
HD	HEAVY DUTY
HDC	HEAVY DUTY COVER
HDG	HEAVY DUTY GRATE
HDPE	HIGH DENSITY POLYETHYLENE
H/L	HIGH LEVEL
HP	HIGH POINT
HT	HOSE TAP
HW	HOT WATER
HWU	HOT WATER UNIT
ID	INTERNAL DIAMTER
IL	INVERT LEVEL
IO	INSPECTION OPENING
IPMF	INDUCT PIPE MICA FLAP
KEP	KERB ENTRY PIT
KFW	KITCHEN FLOOR WASTE
KO	KEY OPERATED
LDC	LIGHT DUTY COVER
LDG	LIGHT DUTY GRATE
LL	LOW LEVEL
L.O.C.	LIMIT OF CONTRACT
MAX.	MAXIMUM
MIN.	MINIMUM
NB	NOMINAL BORE
NG	NATURAL GAS
N.I.C	NOT IN CONTRACT
NOM	NOMINAL
No.	NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
O/F	OVERFLOW
ORG	OVERFLOW RELIEF GULLY
P	PENETRATION
PDO	PLANTER DRAIN OUTLET
PLV	PRESSURE LIMITING VALVE
PRV	PRESSURE REDUCING VALVE
REV	REVISION
RL	REDUCED LEVEL
RO	RAINWATER OUTLET
RPZD	REDUCED PRESSURE ZONE DEVICE
RST	RECESSED STOP TAP
RTD	RECESSED TUNDISH
RV	REFLUX VALVE
RWH	RAINWATER HEAD
RWO	RAINWATER OUTLET

GENERAL ABBREVIATIONS CONT.

S	SINK
SHR	SHOWER
SMH	SEWER MANHOLE
SQ	SQUARE
SST	SOIL STACK
ST	STOP TAP
STD	STANDARD
STW	STORMWATER
SV	STOP VALVE (ISOLATION VALVE)
SWP	STORMWATER PIT
TBC	TO BE CONFIRMED
TD	TUNDISH
TG	TRENCH GRATE
TMV	THERMOSTATIC MIXING VALVE
TOK	TOP OF KERB
TTD	TRAPPED TUNDISH
TWL	TOP WATER LEVEL
TWVP	TRADE WASTE VENT PIPE
U.N.O.	UNLESS NOTED OTHERWISE
uPVC	UNPLASTICISED POLYVINYL CHLORIDE
UW	UTENSIL WASHING MACHINE
VB	VANITY BASIN / VACCUM BREAKER
VERT	VERTICAL
VP	VENT PIPE
WC	TOILET SUITE (WATER CLOSET)
WST	WASTE STACK

CIVIL ABBREVIATIONS

DRAINAGE LEVELS

BWL	BOTTOM WATER LEVEL
IL	INVERT LEVEL
OL	OBVERT LEVEL
RL	REDUCED LEVEL
SL	SURFACE LEVEL
TWL	TOP WATER LEVEL

GRATES & COVERS

LD	LIGHT DUTY CLASS 'B'
MD	MEDIUM DUTY CLASS 'C'
HD	HEAVY DUTY CLASS 'D'
EHD	EXTRA HEAVY DUTY CLASS 'E'
MP	MULTI PART COVER OR GRATE

PITS

DCP	DISCHARGE CONTROL PIT
JP	JUNCTION PIT
KEP	KERB ENTRY PIT
SWP	STORMWATER PIT

DRAINAGE LINES

SS	SUBSOIL DRAINAGE
STW	STORMWATER DRAIN

FEATURES

CO	CLEAROUT
DP	DOWN PIPE
FP	FLUSHING POINT
IO	INSPECTION OPENING
OF	GUTTER OVERFLOW PIPE
RWO	RAINWATER OUTLET
DTU	DRAINAGE TURNUP

CATCHMENT ABBREVIATIONS

L/s	LITRES PER SECOND
m/s	METRES PER SECOND
CUMECS	CUBIC METRES PER SECOND
Q	QUANTITY OF FLOW

DRAWING NOTES

1. DRAWINGS ARE DIAGRAMMATIC ONLY. FOR DIMENSIONS AND CONSTRUCTION DETAILS OF BUILDING REFER ARCHITECTURAL DRAWINGS AND SITE.
2. PIPEWORK SIZES ARE NOMINAL BORE FOR COPPER AND CAST IRON AND INTERNAL BORE FOR POLYMER BASED PIPEWORK. REFER SPECIFICATION FOR MATERIAL TYPE.
3. ALL PIPEWORK ON DRAWINGS IS SHOWN BELOW SLAB (OR GROUND) UNLESS NOTED OTHERWISE.

DRAWING LIST

ABBREVIATIONS, SYMBOLS AND LINETYPES IN THE LEGEND MAY NOT APPEAR ELSEWHERE ON THE DRAWINGS. THIS LEGEND SHOULD BE USED AS A GUIDE ONLY

NORTH POINT

SHEET SIZE: A1

NOTES
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2. CONTRACTOR TO CHECK AND CONFIRM ALL LEVELS ON SITE.
3. CONTRACTOR TO INVESTIGATE ALL EXISTING SERVICES, SUCH AS APPLY FOR "DIAL BEFORE YOU DIG" SERVICES PRIOR TO START OF WORKS ON SITE.

ISSUE	AMENDMENT	DATE
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PROJECT
NEW RESIDENCE
25 LOCH STREET,
FRESHWATER, NSW

CLIENT
JOHANNA & ANDREW SMITH

ARCHITECT
ROLF OCKERT ARCHITECTS
SUITE 406, 64-76 KIPPAX STREET,
SURRY HILLS, NSW, 2010
Email: architects@rodesign.com.au

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 9.04, Level 9, 109 Pitt Street
Sydney NSW Australia 2000
P: PO Box 814 Kensington NSW 1465
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
LEGEND, ABBREVIATIONS
AND DRAWING LIST

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
N.T.S.	CA	MRB	LP	

DATE: Nov 29, 2018
JOB No.: 2018-1509
DRAWING No.: DA-STW-002
ISSUE: B

DEVELOPMENT APPLICATION

Xref: 2018-1509_XH-TITLEBLK-01
Plot Date: 29.11.2018@08:42:17 Login Name: Tony Cad File: Z:\Projects\2018\1509\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2018-1509_DA-STW-002.dwg

NOTES

GENERAL

1. DESIGN HEREIN HAS BEEN PREPARED BY LP CONSULTING AUSTRALIA PTY LTD.
   TEL: 9223 4444 MOB: 0416 256 955
   PO BOX 814 KENSINGTON NSW 1465
   EMAIL: louis@lp-consulting.com.au
2. N/A
3. ALL DIMENSIONS IN MILLIMETRES UNO. REDUCED LEVELS AND CHAINAGES ARE IN METRES. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS.
4. THE PROPOSED WORKS DETAILED HEREIN SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF COUNCIL GENERALLY AS DETAILED HEREUNDER.
5. ALL RELEVANT EXISTING SERVICES SHALL BE VERIFIED FOR DEPTH AND HORIZONTAL POSITION BY PHYSICAL MEANS PRIOR TO EXCAVATION. ANY DISCREPANCIES SHALL BE BROUGHT FORTHWITH TO THE PROJECT MANAGER'S ATTENTION.

STORMWATER AND SUBSOIL DRAINAGE

MATERIALS:

1. PIPES AND FITTINGS FOR STORMWATER DRAINAGE SHALL BE AS FOLLOWS UNO ON THE DRAWINGS:
   A. SEWER GRADE POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS FOR SUSPENDED AND BELOW GROUND DRAINAGE UP TO 225mm.
   B. REINFORCED CONCRETE WITH RUBBER RINGS FOR PIPE DIA'S GREATER THAN 225mm UNO.
   C. REINFORCED CONCRETE WHERE REQUIRED BY AS.3500 FOR EXCESSIVE DEPTH.
   D. INSTALL IN ACCORDANCE WITH AUSTRALIAN STANDARD AS.3500 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. PIPES & FITTINGS FOR SUBSOIL DRAINAGE SHALL BE SLOTTED POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS, MIN. 100mm DIAMETER WITH FILTER SOCK, LAID IN PART DRAINING GRANULAR MATERIAL.
3. IN GROUND DRAINAGE PIPEWORK SERVING DP's SHALL BE MINIMUM 100mm DIA. UNO.
4. GRATED DRAINS SHALL BE.
   A. 150mm NOM. WIDTH IN NON TRAFFICABLE AREAS.
   B. 225mm NOM. WIDTH IN TRAFFICABLE AREAS.
5. STORMWATER PITS ARE AS SHOWN & SPECIFIED ON THE PLANS . PRECAST TYPE ACCEPTABLE FOR DEPTH. BENCH ALL PITS MIN. 50mm & FORM SMOOTH TRANSITION FROM INLET TO OUTLET UP TO 1000mm. PROVIDE STEP RUNGS WHERE DEPTH EXCEEDS 1200mm.
6. SELECT FILL SHALL BE MATERIAL OBTAINED FROM EXCAVATION OF THE PIPE TRENCH OR IMPORTED WITH A PARTICLE SIZE FOR ROCK NOT GREATER THAN 75mm OR FOR OTHER THAN ROCK NOT GREATER THAN 150mm.
7. IMPORTED FILL SHALL BE EITHER, AND GENERALLY CONSIST OF SINGLE SIZED AGGREGATE WITH PARTICLE SIZE NOT GREATER THAN 5mm WRAPPED ALL ROUND WITH GEOTEXTILE FILTER FABRIC OR APPROVED HIGH COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.
8. STORMWATER PITS AND GRATES TO CONFORM WITH STANDARD COUNCIL REQUIREMENTS, WHERE ON PUBLIC LAND. GRATES TO BE SUPPLIED IN CLASS SHOWN ON THE DRAWINGS. ADOPT HEELPROOF STYLE WHERE APPLICABLE.

INSTALLATION REQUIREMENTS:

9. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.
10. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS3500 PART3 AS FOLLOWS, UNO:
    1% FOR 100 AND 150 mm DIA.
    0.5% FOR 225 mm DIA
    0.4% FOR 300 mm DIA
    0.35% FOR 375 mm DIA
11. MINIMUM DEPTH OF COVER SHALL BE :-
    - 300mm IN PRIVATE PROPERTY (NON VEHICULAR TRAFFIC).
    - 450mm IN PUBLIC AREAS.
    - 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAY).
12. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.
13. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND:
    AS 3725-1989 LOADS ON BURIED CONCRETE PIPES
    AS 2566-1998 BURIED FLEXIBLE PIPELINES
    AS 1597.2-1996 PRECAST REINFORCED CONCRETE BOX CULVERTS.
    AS 3500-2015 NATIONAL PLUMBING & DRAINAGE CODE.
    SYDNEY WATER REQUIREMENTS.
14. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.
15. ALL RAINWATER OUTLETS TO BE Ø100mm FLAT GRATE EQUAL TO SPECIALITY PLUMBING SUPPLIES TRUFLO SERIES.
16. ALL DOWNPIPE DRAINAGE TO THE STORAGE SYSTEM SHALL BE MADE WATERTIGHT BELOW THE MAXIMUM STORAGE LEVEL.
17. CONTRACTOR SHALL PROVIDE WORKS AS-EXECUTED DRAWINGS OF FINAL DRAINAGE LAYOUT AS REQUIRED FOR CERTIFICATION AND REFERENCE PURPOSES IN SOME CASES COUNCIL MAY REQUIRE APPROVED PLANS TO BE MARKED WITH RED INK TO INDICATE CHANGES, STORAGE TANK OR DRAIN VOLUMES SHALL BE CONFIRMED BY A REGISTERED SURVEYOR.
18. ALL REQUIRED EASEMENTS, POSITIVE COVENANTS OR OTHER LEGAL INSTRUMENTS SHALL BE ARRANGED AND REGISTERED BY SURVEYOR OR OTHER APPROVED AGENT.
19. WHERE APPLICABLE, CONTRACTOR SHALL PAY ALL ROAD OPENING AND AUTHORITY FEES ASSOCIATED WITH REQUIRED CONSTRUCTION.

CONCRETE WORKS

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600, THE STANDARDS ASSOCIATION AUSTRALIA, STANDARDS CITED IN AS3600, THE DRAWINGS AND THE SPECIFICATION
2. ALL CONCRETE SHALL BE 80mm NOMINAL SLUMP, 20mm MAXIMUM AGGREGATE WITH NO ADMIXTURES OR FLY ASH, UNLESS OTHERWISE APPROVED.
   ALL CONCRETE WORK IN CONTACT WITH SEWER TO HAVE TYPE SL PORTLAND CEMENT, OTHERWISE TYPE A CEMENT.
   FOR BRIDGE WORKS, A MAXIMUM 56 DAYS SHRINKAGE OF 600 MICROSTRAIN, A MINIMUM CEMENT CONTENT 350kg/m3 AND MAXIMUM WATER:CEMENT RATIO OF 0.40
3. STRENGTH GRADE OF CONCRETE SHALL BE:
   25 MPa (KERBS, EDGE STRIPS & CONCRETE ENCASEMENT) AND 32 MPa ELSEWHERE.
4. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR APPROVED. GENERALLY FOR HAND PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 6m. FOR MACHINE PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 12m & GUILLOTINED DUMMY GROOVED JOINTS, 25mm IN DEPTH, SHALL BE FORMED EVERY 3m OF GUTTER. JOINTS ARE ALSO REQUIRED AT EACH END OF GUTTER CROSSING AND GULLY PITS. JOINTS SHALL BE SET VERTICAL AND SQUARE TO THE KERB.
5. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
6. WELDING OR SPLICES IN REINFORCEMENT SHALL BE USED ONLY IN POSITIONS APPROVED BY THE ENGINEER.
7. CONCRETE CURING SHALL BE IN ACCORDANCE WITH AS3600. CURING SHALL BE COMMENCED WITHIN TWO HOURS OF FINISHING OPERATIONS AND SHALL BE CONTINUED FOR A MINIMUM OF SEVEN DAYS BY AN APPROVED PROPRIETARY COMPOUND OR BY KEEPING CONTINUOUSLY WET.
8. FORMWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS3610. FORMWORK SHALL NOT BE STRIPPED NOR PROPS REMOVED WITHOUT APPROVAL.
9. FABRIC LAP DETAILS SHALL BE IN ACCORDANCE WITH FIG.13.2.4 OFAS3600.
10. HOOKS, LAPS AND BENDS SHALL BE IN ACCORDANCE WITH AS3600 UNO.
11. ALL CHEMICAL ANCHORS SHALL BE EITHER 'CHEMSET' BY "RAMSET" WITH THE GLASS CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS
    OR
    HILTI HVU ADHESIVE ANCHOR WITH FOIL CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTION. ALL CHEMICAL ANCHORS SHALL BE HOT DIPPED GALVANIZED AND BE MIN M16 DIA. U.N.O.

GENERAL EARTHWORKS, SITEWORKS & FILLING:

FILLING:

1. THESE CLAUSES SHALL BE READ IN CONJUNCTION WITH "REPORT ON GEOTECHNICAL INVESTIGATION BY:
   PROJECT REF. No:
   DATED: N/A
2. THE RECOMMENDATIONS CONTAINED IN THE GEOTECH REPORT SHALL OVERRIDE THE CLAUSES PRESENTED HEREIN.
3. STRIP ALL TOPSOIL AND UNDERLYING FILL AND STOCKPILE TOPSOIL FOR LATER REUSE FOR LANDSCAPING PURPOSES.
4. NEW FILL REQUIRED TO REINSTATE CUT LEVELS TO PROPOSED BENCHING LEVELS SHALL BE SOURCED FROM OTHER PARTS OF THE EXCAVATION AS SELECT FILL OR IMPORTED FILL AS SPECIFIED BELOW IN NOTES 5 AND 6.
5. SELECT FILL SHALL CONSIST OF LOCALLY DERIVED OR CUT NATURAL CLAYS.
6. IMPORTED FILL SHALL CONSIST OF RIPPED SANDSTONE OR SHALE OR SIMILAR MATERIAL WITH MAXIMUM PARTICLE SIZE NOT GREATER THAN 120mm AND A MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.
7. ALL FILL (COHESIVE SOIL) SHALL BE PLACED IN LAYERS OF 200mm MAXIMUM THICKNESS, COMPACTED BY MACHINE ROLLING TO ACHIEVE A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.
8. IN AREAS WHERE HIGH IMPACT ROLLING IS USED TEST EACH FINAL LAYER OF NOT GREATER THAN 300mm TO 400mm TO ACHIEVE A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.

EXCAVATION BATTERS:

9. ALL TEMPORARY BATTERS CUT IN CLAY SUBSTRATE SHALL BE 1 HORIZ : 1 VERT.
   ALL LONG TERM EXPOSED BATTERS CUT IN CLAY SUBSTRATE SHALL BE 2 HORIZ : 1 VERT.
   ALL DETENTION BASIN BATTERS IN CLAY SUBSTRATE SHALL BE 3 HORIZ : 1 VERT.
   ALL DETENTION BASIN BATTERS IN ROCK SUBSTRATE SHALL BE NEAR VERTICAL.
10. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS:
    FOR GENERAL FILL OR CUT AREAS OVER THE AREA PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 500 m².
    FOR GENERAL FILL AREAS IN CONCENTRATED AREAS ADJACENT TO AND BEHIND THE STRUCTURE AND ADJACENT TO AND BEHIND RETAINING WALLS PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 50m².
11. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO LP CONSULTING AUSTRALIA FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

EARTHWORKS FOR SERVICES

1. EXCAVATE TRENCHES AND STOCKPILE ALL MATERIAL FOR INSPECTION WITH REGARD TO RE-USE FOR TRENCH BACKFILL. REMAINING MATERIAL TO BE REMOVED FROM SITE.
2. BEDDING MATERIAL SHALL CONSIST OF IMPORTED FILL ONLY. THICKNESS OF BEDDING LAYER SHALL BE 75mm IN O.T.R. AND 200mm IN ROCK.
3. EMBED ALL PIPES WITH IMPORTED FILL. PROVIDE 200mm SIDE SUPPORT AND 150mm OVERLAY ABOVE PIPE CROWN.
4. TRENCH FILL ABOVE THE EMBEDMENT ZONE TO THE UNDERSIDE OF THE ROAD PAVEMENT OR FOOTWAY FILL MATERIAL SHALL BE AS FOLLOWS :

UNDER ROADWAY:

TRENCH FILL MATERIAL SHALL CONSIST OF IMPORTED FILL AS SPECIFIED HEREIN OF EITHER HIGH GRADE COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.

OTHER THAN ROADWAY:

TRENCH FILL MATERIAL EXCAVATED SHALL CONSIST OF SELECT FILL AS SPECIFIED HEREIN AND SHALL NOT CONTAIN MORE THAN 20% OF STONES OF SIZE BETWEEN 75mm & 150mm AND NONE LARGER THAN 150mm. PRIOR TO THE USE OF THE EXCAVATED MATERIAL IT SHALL BE INSPECTED AND APPROVED BY THE CONSULTANT.

5. COMPACT BEDDING, EMBEDMENT AND TRENCH FILL MATERIALS AS FOLLOWS:
   EMBEDMENT:-
   FOR GRANULAR FILL MATERIAL (NON-COHESIVE SOILS) EG. COARSE AGGREGATE FILL, HIGH GRADE COMPACTION SAND, THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.
   TRENCH FILL:-
   FOR GRANULAR MATERIAL (NON-COHESIVE SOILS), THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.
   FOR NON-GRANULAR FILL MATERIAL (COHESIVE SOILS), THE DRY DENSITY RATIO (RD) SHALL BE NOT LESS THAN 95%.
6. MEASURE OF COMPACTION:-
   THE DEGREE OF COMPACTION SHALL BE MEASURED BY ONE OF THE FOLLOWING PARAMETERS :-
   GRANULAR FILL (NON-COHESIVE SOILS). THE DENSITY INDEX (ID) DETERMINED IN ACCORDANCE WITH AS 1289.E6.1 BASED ON THE MAXIMUM AND MINIMUM DRY DENSITIES IN ACCORDANCE WITH AS 1289.E5.1 AND THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2, AS 1289.E3.5 OR AS 1289.E8.1.
   NON-GRANULAR FILL (COHESIVE SOILS). THE DRY DENSITY RATION (RD) DETERMINED IN ACCORDANCE WITH AS 1289.5.4.1 BASED ON THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2 AND THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289.5.1.1.
7. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS:
   TEST EACH 300mm LAYER ABOVE PIPE CROWN.
   TEST BASE & SUB-BASE LAYERS WHERE APPLICABLE.
   TESTS SHALL BE REQUIRED AT EACH 50m CENTRES WHERE THE LENGTH OF TRENCH IS WITHIN THE 50m REQUIREMENT.
8. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO LP CONSULTING AUSTRALIA FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

RESTORATION

1. RESTORE ALL TRAFFIC AREAS TO PRE EXISTING CONDITION.
2. FOR ALL SURFACES OTHER THAN IN TRAFFIC AREAS RESTORE DISTURBED SURFACES TO PRE-EXISTING CONDITIONS AND COMPACT AS SPECIFIED.
3. RESTORE ALL AUTHORITY OWNED AREAS TO COUNCIL STANDARDS.

APPROVALS

1. THE AS CONSTRUCTED WORKS SHALL BE INSPECTED BY DESIGN CONSULTANT. MINIMUM 48 HOURS NOTICE SHALL APPLY TO ALL INSPECTIONS AND FEE ARRANGEMENTS CONFIRMED PRIOR TO INSPECTION.
2. THE DESIGN PLANS HEREIN ARE SUBJECT TO COUNCIL APPROVAL PRIOR TO CONSTRUCTION. OBTAIN EXPRESS (WRITTEN) ADVICE TO PROCEED FROM PROJECT MANAGER PRIOR TO COMMENCEMENT.
3. SUBMIT WORK-AS-EXECUTED DRAWINGS IN CIVILCAD OR DXF DIGITAL FORMAT AND HARD COPY FORMAT. VERIFY ALL CONSTRUCTION WORKS SHOWN HEREON.
4. CERTIFY THAT THE AS CONSTRUCTED SYSTEM HAS BEEN BUILT IN ACCORDANCE WITH THE APPROVED PLANS ISSUED FOR CONSTRUCTION.

SERVICES UNDER ROAD SURFACES

1. ALL OTHER SERVICES INCLUDING BUT NOT LIMITED TO WATER, HYDRANT, GAS, SEWER, ELECTRICAL AND COMMUNICATIONS CONDUITS OR CABLES SHALL BE LAID WITH MINIMUM 600mm U.N.O.
   COVER BELOW PROPOSED ROAD SURFACE OR APPROVED OTHER MEANS TO PROTECT DURING CONSTRUCTION.

HYDRAULIC SERVICES

1. ALL WORKS CARRIED OUT SHALL COMPLY WITH AS-3500, SYDNEY WATER & COUNCIL REQUIREMENTS. OBTAIN NECESSARY AUTHORITIES APPROVALS PRIOR TO COMMENCING WORKS.
2. PRIOR TO COMMENCING WORKS SURVEY & INSPECT SITE & CONFIRM LOCATION & LEVELS OF ALL HYDRAULIC SERVICES PIPEWORK.
   NO CLAIMS FOR ADDITIONAL COSTS RESULTING FROM THE LACK OF KNOWLEDGE OF SITE CONDITIONS RELATING TO WORKS TO BE DONE OR LOCATIONS AND LEVELS OF EXISTING AND NEW SERVICES WILL BE ACCEPTED.
3. PRIOR TO CAPPING OFF & REMOVAL OF REDUNDANT SERVICES CONFIRM ON SITE THAT SERVICE IS NOT SUPPLYING EXISTING BUILDINGS OR AMENITIES.
4. COLD WATER PIPEWORK SHALL CONSIST OF COPPER TUBE & FITTINGS IN ACCORDANCE WITH AS 1432 TYPE B. PIPES AND FITTINGS SHALL BE JOINTED WITH 15% SILVER SOLDER.
5. ALL NEW UNDERGROUND METAL PIPEWORK SHALL BE INSTALLED WITH POLYETHYLENE SLEEVING OBTAINED FROM "TYCO WATER AUST" AND INSTALLED TO MANUFACTURE'S REQUIREMENTS.
6. LANDSCAPE IRRIGATION WATERING PIPEWORK SHALL CONSIST OF MEDIUM DENSITY POLYETHYLENE PIPE CLASS PN16 WITH ELECTRO FUSION JOINTS OR EQUAL TO EXISTING PIPEWORK.

NORTH POINT

SHEET SIZE: A1

NOTES
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ISSUE	AMENDMENT	DATE
A	ISSUE FOR ARCHITECT'S REVIEW	15.11.2018
B	ISSUE FOR DEVELOPMENT APPLICATION	29.11.2018

PROJECT
NEW RESIDENCE
25 LOCH STREET,
FRESHWATER, NSW

CLIENT
JOHANNA & ANDREW SMITH

ARCHITECT
ROLF OCKERT ARCHITECTS
SUITE 406, 64-76 KIPPAX STREET,
SURRY HILLS, NSW, 2010
Email: architects@rodesign.com.au

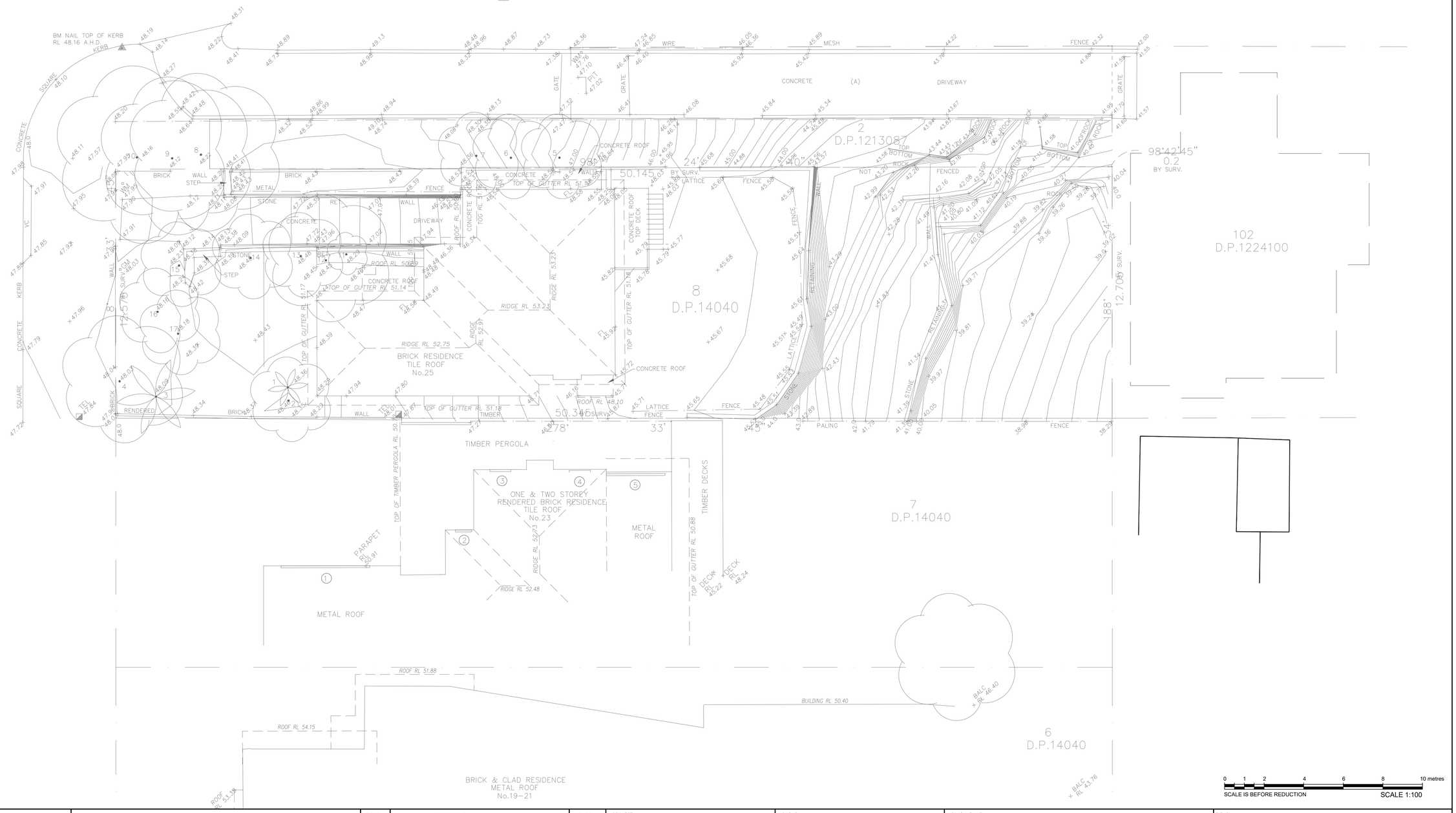
CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 9.04, Level 9, 109 Pitt Street
Sydney NSW Australia 2000
P: PO Box 814 Kensington NSW 1465
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
GENERAL NOTES

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
N.T.S.	CA	MRB	LP	

DATE Nov 29, 2018
JOB No. 2018-1509
DRAWING No. DA-STW-003
ISSUE B
DEVELOPMENT APPLICATION

Xrefs: 2018-1509_XA-TITLEBLK-A1
Plot Date: 29.11.2018@8:42:41 Login Name: Tony Cad File: Z:\Projects\2018\1509\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2018-1509_DA-STW-003.dwg



DO NOT SCALE FROM DRAWINGS, CHECK & VERIFY ALL DIMENSIONS & LEVELS BEFORE COMMENCEMENT OF ANY WORK.

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NORTH POINT

SHEET SIZE: A1

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SUITE 406, 64-76 KIPPAX STREET,
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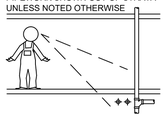
Sydney NSW Australia 2000
P: PO Box 814 Kensington NSW 1465
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
SURVEY PLAN

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
1:200 @ A3 1:100 @ A1	CA	MRB	LP	
DATE: Nov 29, 2018	DRAWING No.: DA-STW-004		ISSUE: B	
JOB No.: 2018-1509	DEVELOPMENT APPLICATION			

PIPEWORK SHOWN OUT OF STRATA
UNLESS NOTED OTHERWISE



STORMWATER CALCS:

C = 1.0 (ROOF)

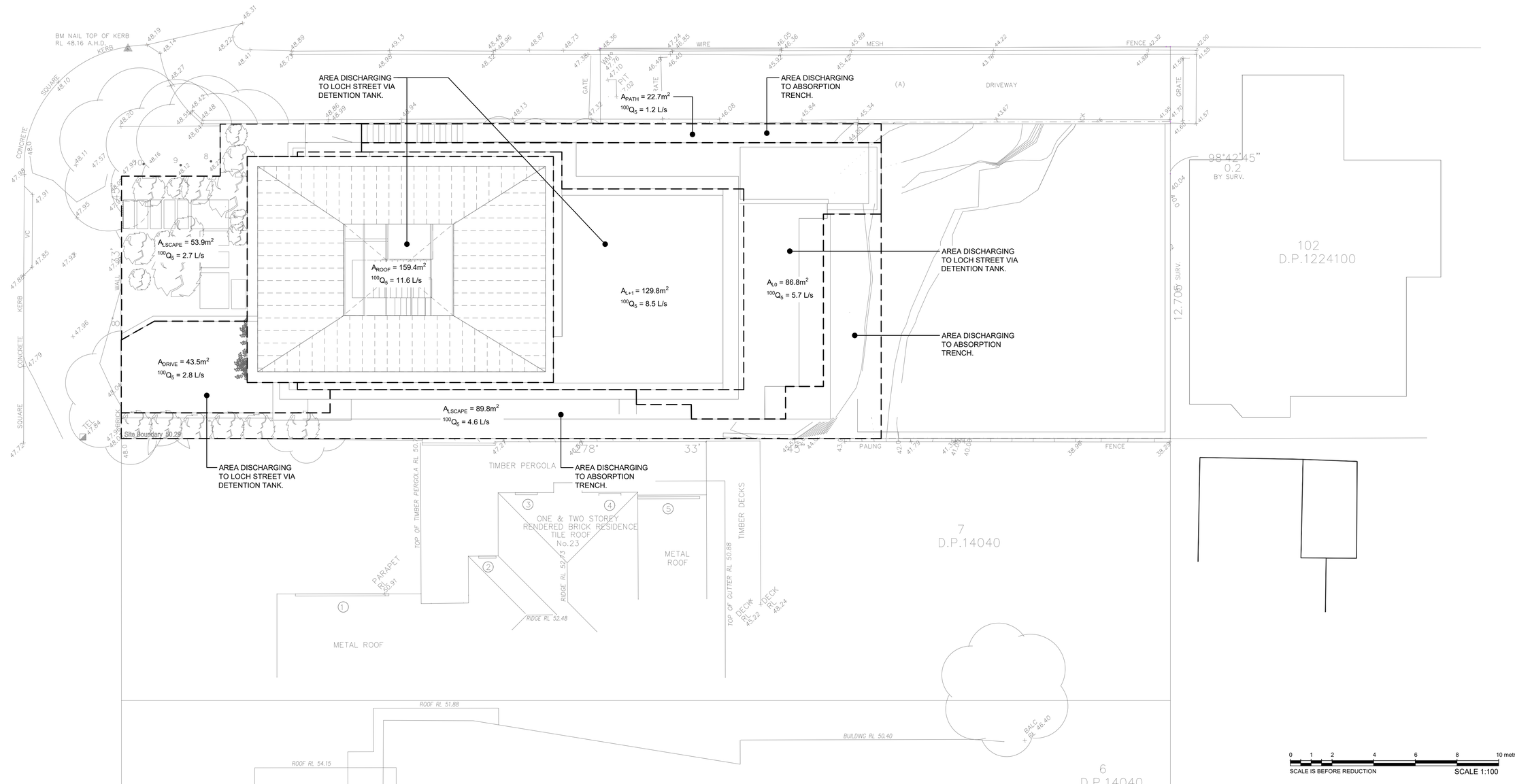
C = 0.95 (PAVED)

C = 0.7 (LANDSCAPE)

$^{20}I_5$ = 200mm/hr

$^{100}I_5$ = 262mm/hr

$Q = \frac{C\ I\ A}{3600}$ (L/s)



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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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ISSUE	AMENDMENT	DATE
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PROJECT
NEW RESIDENCE
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FRESHWATER, NSW

CLIENT
JOHANNA & ANDREW SMITH

ARCHITECT
ROLF OCKERT ARCHITECTS
SUITE 406, 64-76 KIPPAX STREET,
SURRY HILLS, NSW, 2010
Email: architects@rodesign.com.au

CONSULTANT
LP CONSULTING
AUSTRALIA PTY LTD
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Sydney NSW Australia 2000
P: PO Box 814 Kensington NSW 1465
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T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

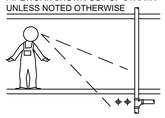
TITLE
STORMWATER DRAINAGE
SITE CATCHMENT PLAN

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
1:200 @ A3 1:100 @ A1	CA	MRB	LP	

DATE Nov 29, 2018
JOB No. 2018-1509
DRAWING No. DA-STW-101
ISSUE B
DEVELOPMENT APPLICATION

Xrefs: 2018-1509_XA-TITLEBLK-A1; 2018-1509_XA-ROOF-SITE PLAN; 2018-1509_XS-SURVEY PLAN
Plot Date: 29.11.2018@08:43:13 Login Name: Tony Cad File: Z:\Projects\2018\1509\DWG\WIP\DRAWINGS - WORKING\STORMWATER\2018-1509_DA-STW-101.dwg

PIPEWORK SHOWN OUT OF STRATA
UNLESS NOTED OTHERWISE



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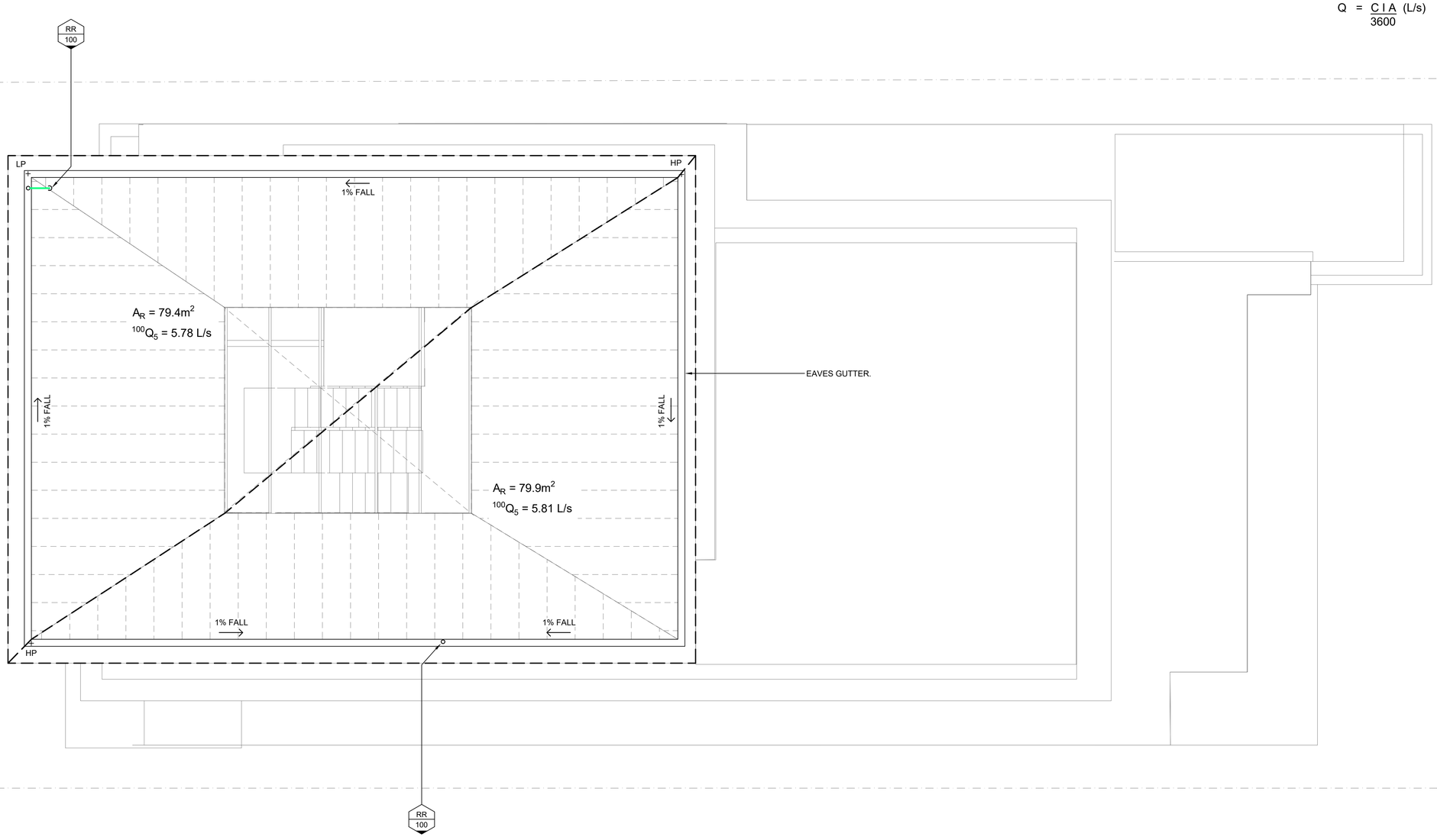

Site Boundary 50.29

0 0.5 1 2 3 4 5 metres

SCALE IS BEFORE REDUCTION SCALE 1:50

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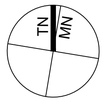
NORTH POINT



SHEET SIZE: A1

NOTES

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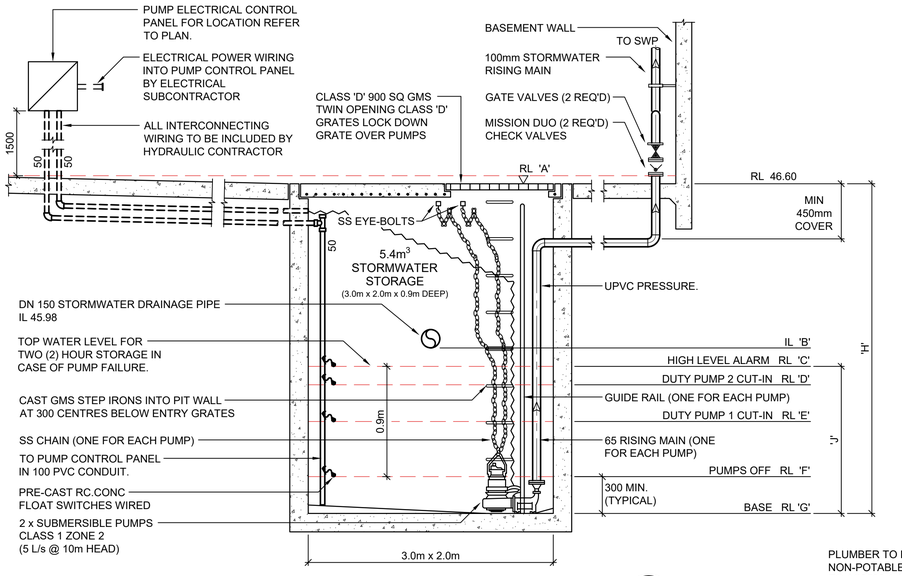
TITLE
STORMWATER DRAINAGE
ROOF PLAN

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
1:100 @ A3 1:50 @ A1	CA	MRB	LP	

DATE Nov 29, 2018
DRAWING No. DA-STW-106
ISSUE B
JOB No. 2018-1509
DEVELOPMENT APPLICATION

Xrefs: 2018-1509_XA-TITLEBLK-A1; 2018-1509_XA-ROOF
Plot Date: 29:11:2018@08:44:24 Login Name: Tony Cad File: Z:\Projects\2018\1509\DRAWINGS\DRAWINGS - WORKING\GSTORMWATER\2018-1509_DA-STW-106.dwg

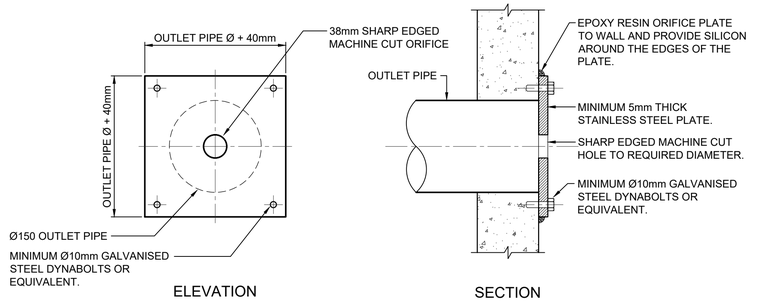


STORMWATER PUMPOUT CHAMBER

3 / 103

SCALE: 1:25

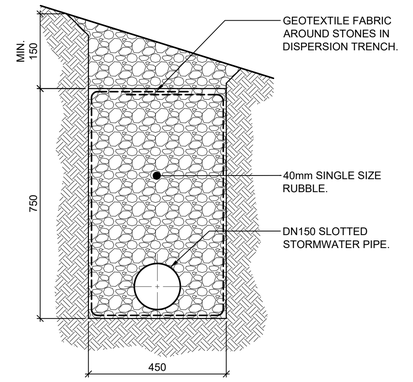
SCHEDULE OF LEVELS	
LEVEL	**RL**
A	46.60
B	45.98
C	45.83
D	45.68
E	45.38
F	44.93
G	44.63
H	1.97m
J	1.20m



ORIFICE PLATE DETAIL ABOVE GROUND OSD

7 / -

SCALE 1:5



DISPERSION TRENCH DETAIL

5 / 102

SCALE: 1:20

PLUMBER TO EXTEND DOMESTIC NON-POTABLE WATER SUPPLY SERVICE TO AS3500.1 AS REQUIRED.

PLUMBING CONTRACTOR TO PROVIDE TANK BYPASS SUPPLY FROM POTABLE DOMESTIC WATER SERVICE WITH BACKFLOW PREVENTION AND ASSOCIATED VALVING IN ACCORDANCE WITH CURRENT SYDNEY WATER REQUIREMENTS (ENSURING TAPS, ETC WILL STILL FUNCTION DURING A POWER FAILURE).

FOR NON-POTABLE RAINWATER SUPPLY

NOTE:
PROVIDE VISIBLE WARNING SIGNAGE AT ALL RAINWATER TANK OUTLETS (e.g. GARDEN HOSE TAPS) IN ACCORDANCE WITH SYDNEY WATER REQUIREMENTS & AS1319

WARNING
PUMP OUT SYSTEM FAILURE IN GARAGE WHEN LIGHT IS FLASHING AND SIREN SOUNDING

COLOURS:
WARNING - RED
BORDER AND OTHER - BLACK

NOTES:

SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE GARAGE.

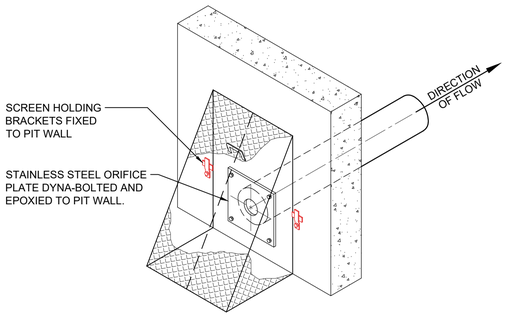
A SUITABLE ALARM SYSTEM POSITIONED AT ENTRANCE OF GARAGE TO PROVIDE A FLOOD WARNING IN CASE OF PUMP FAILURE (TO COUNCILS SPEC).

DANGER
CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

WIDTH 200mm

COLOURS:
"DANGER" AND BACKGROUND - WHITE
ELLIPTICAL AREA - RED
RECTANGLE CONTAINING ELIPSE - BLACK
OTHER LETTERING AND BORDER - BLACK

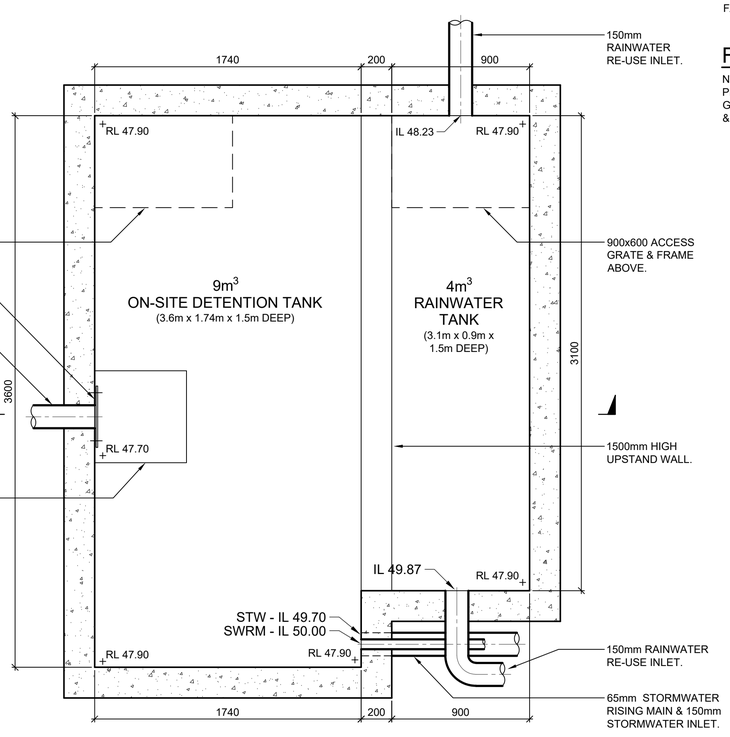
MATERIALS:
POLYPROPYLENE



TRASH SCREEN MAXI-MESH RH3030

6 / -

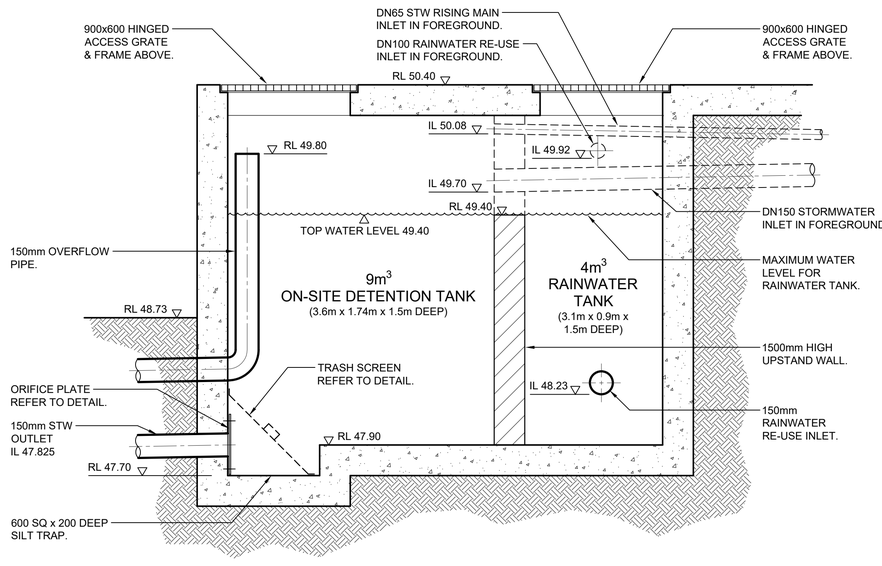
NOT TO SCALE



ON-SITE DETENTION TANK PLAN

1 / 104

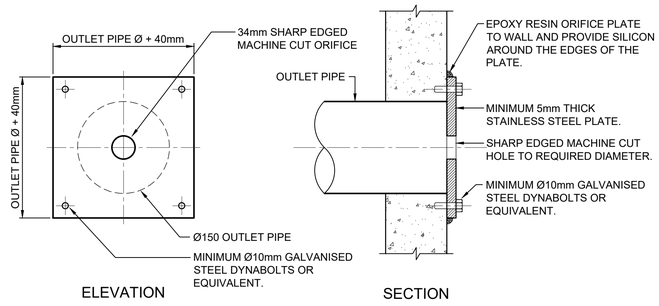
SCALE: 1:20



ON-SITE DETENTION TANK SECTION

2 / 104

SCALE: 1:20



ORIFICE PLATE DETAIL INGROUND OSD

3 / -

SCALE 1:5

0 200 400 800 1200 1600 2000mm

SCALE IS BEFORE REDUCTION — SCALE 1:20

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NORTH POINT

SHEET SIZE: A1

NOTES
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TITLE
STORMWATER DRAINAGE DETAIL SHEET

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
1:40 @ A3 1:20 @ A1	CA	MRB	LP	

DATE: Nov 29, 2018
JOB No.: 2018-1509
DRAWING No.: DA-STW-201
ISSUE: B
DEVELOPMENT APPLICATION