

45 - 49 WARRIEWOOD ROAD, WARRIEWOOD

CIVIL ENGINEERING WORKS

DRAWING INDEX:

| DRAWING No. | DRAWING TITLE |
|-------------|---------------------------------------|
| 02192_100 | COVER SHEET, DRAWING INDEX & LOCALITY |
| 02192_110 | GENERAL NOTES & LEGEND |
| 02192_120 | LOT LAYOUT PLAN |
| 02192_201 | GENERAL ARRANGEMENT PLAN - GROUND |
| 02192_202 | GENERAL ARRANGEMENT PLAN - BASEMENT |
| 02192_231 | BULK EARTHWORKS PLAN |
| 02192_301 | ROAD LONGITUDINAL SECTIONS |
| 02192_401 | TYPICAL SECTION |
| 02192_621 | STORMWATER OSD TANK DETAILS - SHEET 1 |
| 02192_622 | STORMWATER OSD TANK DETAILS - SHEET 2 |
| 02192_623 | STORMWATER INFILTRATION BASIN DETAILS |
| 02192_651 | STORMWATER DETAILS |
| 02192_701 | SEDIMENT & EROSION CONTROL PLAN |
| 02192_702 | SEDIMENT & EROSION CONTROL DETAILS |



LOCALITY PLAN

NOT FOR CONSTRUCTION

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| | | | | THIS DRAWING IS NOT TO BE USED FOR TENDER/CONSTRUCTION UNLESS ENDORSED BELOW | | CLIENT | | CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT SUITE 26 11 - 13 BROOKHOLLOW AVE NORWEST NSW 2153 PHONE: (02) 9680 3100 FAX: (02) 9634 6989 ABN 21 118 134 240 | | DESIGNER | T.T. | DATE | JAN 2020 | 45-49 WARRIEWOOD RD, WARRIEWOOD | | | |
| | | | | PROJECT VERIFIER'S SIGNATURE: | DATE: | | | | | ENGINEER | E.S. | LGA | NORTHERN BEACHES | COVER SHEET, DRAWING INDEX & LOCALITY | | | |
| | | | | | | | | VERIFIER | E.S. | SCALE @ A1 | N/A | | | | | | |
| 03 | T.T. | 09/08/2021 | E.S. | ISSUE FOR DA | | | | © THIS DRAWING AND DESIGN IS THE COPYRIGHT OF C&M CONSULTING ENGINEERS PTY. LTD. NO PART OF THIS DRAWING OR DESIGN SHALL BE REPRODUCED OR USED WITHOUT PRIOR WRITTEN CONSENT FROM C&M CONSULTING ENGINEERS PTY. LTD. | | | | STATUS | DEVELOPMENT APPLICATION | DRAWING No. | 02192_100 | REVISION | 03 |
| REV. | DES. | DATE | VER. | DESCRIPTION | | | | | | | | | | | | | |

GENERAL NOTES:

- ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL'S CIVIL WORKS SPECIFICATION.
- ANY CHANGES MADE BY THE CONSTRUCTOR TO ANY LEVEL, DIMENSION, LOCATION, POSITION, ALIGNMENT ETC., OF ANY OF THE WORKS SHOWN ON THE DRAWINGS WITHOUT THE WRITTEN CONSENT OF C&M CONSULTING ENGINEERS PTY. LTD. AND OR THE PRINCIPAL CERTIFYING AUTHORITY IS DONE SO AT THE CONSTRUCTORS OWN RISK.
- THE CONSTRUCTOR SHALL ALLOW TO LIAISE WITH AND PROVIDE SUFFICIENT NOTICE TO THE PRINCIPAL CERTIFYING AUTHORITY TO ENSURE THAT ALL WORKS ARE INSPECTED TO ENABLE COMPLIANCE CERTIFICATES TO BE ISSUED THROUGHOUT THE CONSTRUCTION PERIOD. THE CONSTRUCTOR SHALL LIAISE WITH THE PRINCIPAL CERTIFYING AUTHORITY PRIOR TO ANY CONSTRUCTION WORKS COMMENCING AND PREPARE AN INSPECTION AND TEST PLAN WITH A MUTUALLY AGREED WITNESS AND HOLD POINTS FOR THE CONSTRUCTION WORKS.
- IF THE PRINCIPAL CERTIFYING AUTHORITY IS NOT NORTHERN BEACHES COUNCIL, THEN THE CONSTRUCTOR MUST CONTACT NORTHERN BEACHES WORKS DIVISION TO ENABLE THEIR INSPECTION OF ALL WORKS (INCLUDING EROSION AND SEDIMENT CONTROL MEASURES) WITHIN THE ROAD RESERVE AREA.
- THE CONSTRUCTOR SHALL USE A SUITABLY QUALIFIED SURVEYOR TO SET OUT ALL WORKS. THE SURVEYOR SHALL ISSUE A CERTIFICATE TO THE PRINCIPAL CERTIFYING AUTHORITY CERTIFYING THAT THE WORKS HAVE BEEN SET OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS PRIOR TO THE WORKS BEING CONSTRUCTED.
- ALL NEW WORKS SHALL MAKE A SMOOTH CONNECTION WITH ANY FORMATIONS, STRUCTURES, ETC.
- THE WORKS SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THERE IS MINIMUM DISTURBANCE TO EXISTING TREES AND VEGETATION.
- ALL BOUNDARY LOCATIONS, DIMENSIONS, BEARINGS, AREAS, ETC., SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND ARE SUBJECT TO A FINAL SURVEY AND REGISTRATION OF THE FINAL PLAN OF SUBDIVISION WITH LAND AND PROPERTY INFORMATION NSW.
- THE PUBLIC FOOTWAY AND ROADWAY FRONTING THE SITE SHALL BE MAINTAINED IN A SAFE AND UNOBSTRUCTED MANNER AT ALL TIMES DURING THE CONSTRUCTION WORKS.
- THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR REPAIRING TO THE SATISFACTION OF THE ASSET OWNER, ANY DAMAGE CAUSED TO ANY EXISTING INFRASTRUCTURE WITHIN THE ROAD RESERVE, INCLUDING BUT NOT LIMITED TO KERBS, GUTTERS, FOOTPATHS, VEHICULAR CROSSINGS, STREET SIGNS, SERVICE FITTING COVERS, ETC.
- THE SITE SHALL BE KEPT IN A TIDY CONDITION AT ALL TIMES. LITTER RUBBISH AND BUILDING RUBBLE SHALL BE PLACED IN CONTAINERS OR BINS AND REGULARLY REMOVED FROM SITE AS REQUIRED.

SEDIMENT & EROSION CONTROL NOTES:

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL'S GUIDELINES AND THE DEPARTMENT OF HOUSING'S "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION" MANUAL.
- NO CONSTRUCTION WORKS ARE TO COMMENCE ON SITE UNTIL ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE PRINCIPAL CERTIFYING AUTHORITY.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REGULARLY INSPECTED, IN PARTICULAR AFTER STORMS, AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE THE MEASURES CORRECT AND EFFICIENT FUNCTION THROUGHOUT THE DURATION OF THE WORKS, UNTIL SUCH TIME AS THE PRINCIPAL CERTIFYING AUTHORITY AUTHORISES THE REMOVAL OF SUCH MEASURES.
- ALL STOCKPILES SHALL BE CLEAR OF ALL TREES AND DRAINAGE LINES (INCLUDING OVERLAND FLOW PATHS) AND PROTECTED FROM EROSION.
- DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONTINUOUSLY DURING CONSTRUCTION WORKS.

KERBING NOTES:

- ALL KERBS, GUTTERS, EDGE STRIPS, LAYBACKS AND CROSSINGS TO BE BUILT ON A MINIMUM OF 100mm THICK SUBBASE. THE SUBBASE SHALL BE EXTENDED 150mm BEHIND BACK OF KERB.
- CONCRETE SHALL BE OF 25MPa COMPRESSIVE STRENGTH (F'c) AT 28 DAYS.
- EXPANSION JOINTS OF APPROVED BITUMEN IMPREGNATED JOINTING MATERIAL OR EQUIVALENT SHALL BE PLACED AT 12m INTERVALS, AT JUNCTIONS WITH EXISTING WORK, KERB TRANSITIONS AND ADJACENT TO GULLY PITS. WEAKENED PLANE JOINTS (DUMMY JOINTS) SHALL BE CUT AT 3m INTERVALS.

EARTHWORKS NOTES:

- THE CONTRACTOR SHALL STRIP THE MATERIAL CLASSIFIED AS TOPSOIL OR MATERIAL CONTAINING ORGANIC MATTER TO A LEVEL APPROVED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER AND THE SUPERINTENDENT. THE STRIPPED TOPSOIL SHOULD BE REMOVED AND STOCKPILED PRIOR TO ANY EARTHWORKS OPERATIONS.
- THE MAXIMUM HEIGHT OF TOPSOIL STOCKPILES SHALL NOT EXCEED 2.5M AND THE MAXIMUM BATTER SLOPE SHALL NOT EXCEED 2H : 1V.
- ALL EARTHWORKS OPERATIONS SHALL BE CARRIED OUT TO LEVEL 1 SUPERVISION IN ACCORDANCE WITH AS3798 - 2007. THE CONTRACTOR SHALL ISSUE A WRITTEN LETTER FROM THE GEOTECHNICAL CONSULTANT THAT THEY HAVE BEEN ENGAGED ACCORDINGLY AND TAKES FULL RESPONSIBILITY OF THE EARTHWORKS OPERATION.
- THE CONTRACTOR SHALL OVER-EXCAVATE TO REMOVE ALL UNACCEPTABLE FILL MATERIAL CONTAINING DELETERIOUS MATERIALS SUCH AS ORGANIC MATTER AND CONSTRUCTION MATERIALS. ALL OVER-EXCAVATED AREAS SHALL BE REPLACED WITH SUITABLE MATERIAL WITH A CBR AT LEAST EQUAL TO THE SPECIFIED SUBGRADE CBR, SOURCED FROM ON SITE, IF AVAILABLE, OR IMPORTED.
- WET MATERIAL WILL NOT BE REGARDED AS UNSUITABLE. SHOULD WET MATERIAL BE ENCOUNTERED, THE CONTRACTOR SHALL DRY THE MATERIAL SUFFICIENTLY BY RE-WORKING, OR SPREADING IT TO ALLOW DRYING. ALL ASSOCIATED COSTS SHALL BE BORNE BY THE CONTRACTOR.
- ALL EXCESS EARTHWORKS MATERIALS, INCLUDING EXCESS MATERIALS FROM THE STORMWATER AND SERVICE TRENCH EXCAVATIONS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE BY THE CONTRACTOR AT THE CONTRACTOR'S COST.
- ALL BATTER SLOPES SHALL BE A MAXIMUM OF 1V:5H (U.N.O.) UNLESS NOTED OTHERWISE OR APPROVED ALL FILL MUST BE CONSTITUTED OF VIRGIN EXCAVATED NATURAL MATERIAL (VENM).
- THE CONTRACTOR SHALL EXCAVATE AND/OR PLACE AND COMPACT FILL TO CONFORM TO THE LINES, GRADES, CROSS SECTIONS, AND DIMENSIONS SHOWN ON THE DRAWINGS, ALLOWING FOR PAVEMENT/SLAB AND TOPSOIL LAYERS.
- FREQUENCIES OF COMPACTION TESTS FOR EARTHWORKS SHALL BE AS FOLLOWS (WHICHEVER IS GREATER NUMBER):
 - 1 TEST PER LAYER PER MATERIAL TYPE PER 2500 m², OR
 - 1 TEST PER 500m³, OR
 - 3 TESTS PER LOT (MATERIAL TYPE AND MOISTURE).
- COMPACTION REQUIREMENTS FOR EARTHWORKS SHALL BE AS FOLLOWS:
 - GENERAL FILL : 95% OF SMDD
 - TOP 500MM UNDER PAVEMENT OR STRUCTURE: 100% OF SMDD
 - BACKFILL WITHIN 2M OF STRUCTURES: 100% OF SMDD
- MOISTURE CONTENT TO BE IN THE RANGE OF - 2% TO +2% OF THE OPTIMUM MOISTURE CONTENT.
- ALL COMPACTION TEST RESULTS SHALL BE PROVIDED TO THE SUPERINTENDENT.
- ALL SITE REGRADED AREAS AFTER FORMATION, SHALL BE COVERED WITH A 150MM SELECT TOPSOIL LAYER. TOPSOIL STOCKPILED PRIOR TO EARTHWORKS OPERATIONS CAN BE REUSED FOR THIS PURPOSE PROVIDED ANY DELETERIOUS MATERIAL IS REMOVED PRIOR TO PLACING.
- ALL DISTURBED AND DENUDED AREAS SHALL BE REGRESSED WITHIN 7 DAYS AFTER THE COMPLETION OF EARTHWORKS FORMATION.

STORMWATER NOTES:

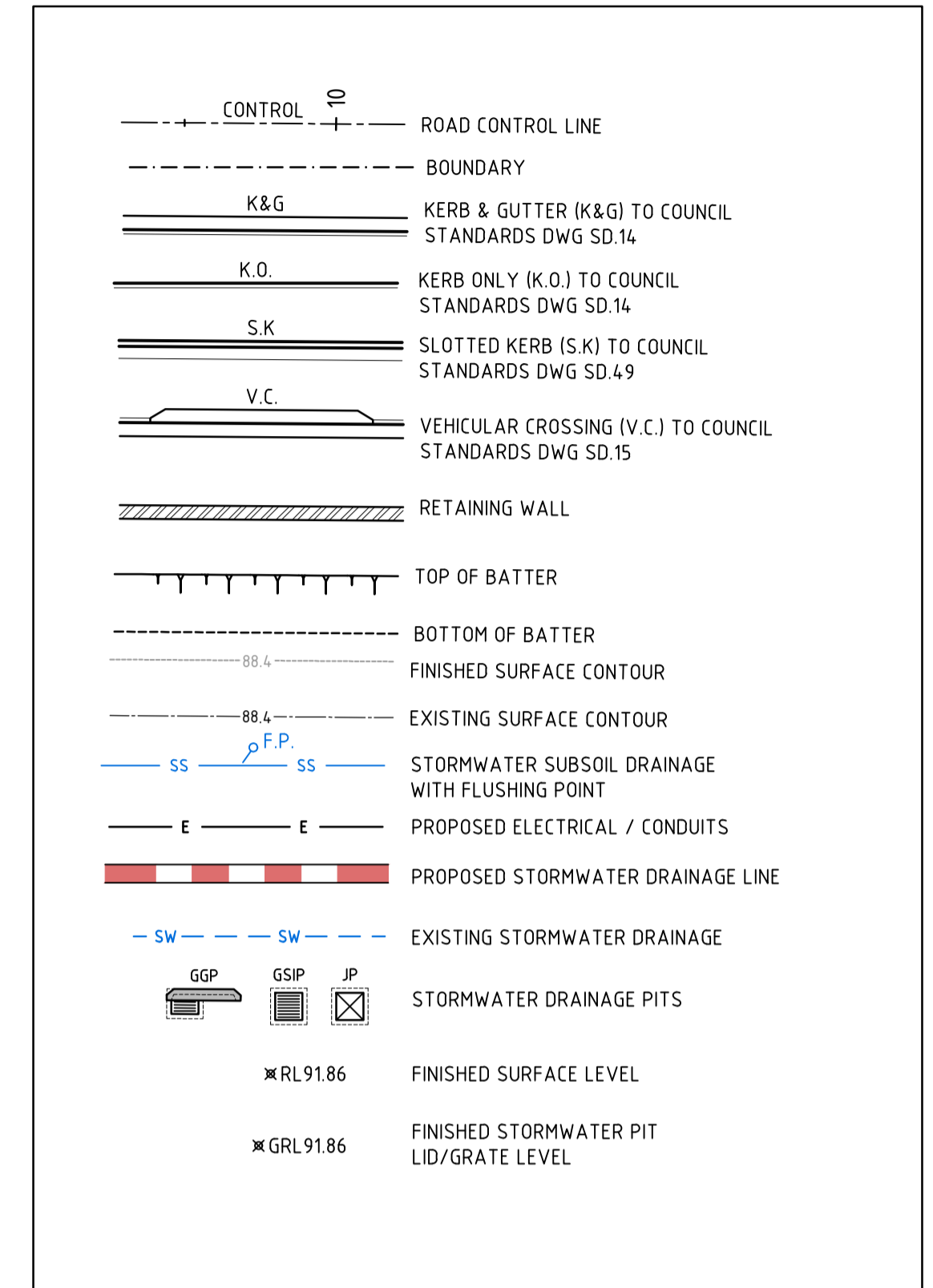
- STORMWATER DESIGN CRITERIA:
MINOR STORM ARI: 20 YEARS
MAJOR STORM ARI: 100 YEARS
IFD DATA LOCALITY: FRENCHS FOREST
- PIPES DN375 AND LARGER TO BE STEEL REINFORCED CONCRETE PIPES CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
- PIPES DN300 AND SMALLER SHALL BE GRADE SH (SEWER GRADE) uPVC WITH RUBBER RING JOINTS.
- EQUIVALENT STRENGTH FIBRE REINFORCED CONCRETE PIPES MAY BE USED UP TO DN450.
- PIPES FOR SUB-SOIL DRAINS SHALL BE SLOTTED 100MM DIAMETER CLASS 1000 WRAPPED IN GEOFABRIC, U.O.N, COMPLYING WITH THE REQUIREMENTS OF AS2439.
- PRECAST PITS, WHERE ALLOWED, AND THE INSITU BASE SHALL COMPLY WITH THE REQUIREMENT OF THE MANUFACTURER.
- ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1214 OR AS 1650, AS APPROPRIATE.
- GEOFABRIC FILTER SHALL BE PERMEABLE, NON-WOVEN FABRIC MANUFACTURED FROM A POLYMER SUCH AS POLYPROPYLENE OR POLYESTER OF MASS NOT LESS THAN 135G/M2.
- THE MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:
CONCRETE AND FRC PIPES: EXTERNAL PIPE DIAMETER PLUS 400MM.
uPVC PIPE: EXTERNAL DIAMETER OF PIPE PLUS 200MM.
SUBSOIL PIPE: 250MM.
- ALL PIPES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE EACH SIDE.
- PIPE BEDDING MATERIAL SHALL BE CLEAN COARSE RIVER SAND WITH DEPTH AS FOLLOWS:
CONCRETE AND FRC PIPES: 100MM (175MM IN ROCK)
UPVC PIPE: 75MM (100MM IN ROCK)
SUBSOIL DRAINS: 50MM
- ALL PIPES SHALL BE BACKFILLED WITH GRANULAR MATERIAL SUCH AS QUARRY FINES OR COARSE RIVER SAND TO A MINIMUM OF 150MM ABOVE THE PIPE. THE GRANULAR MATERIAL SHALL BE PLACED IN 150MM THICK MAXIMUM LAYERS AND COMPACTED TO ACHIEVE A DENSITY INDEX (DI) OF 70%. FREQUENCIES OF COMPACTION TESTS FOR TRENCHES SHALL BE 1 TEST PER 2 LAYERS PER 4.0 LINEAR METRE.
- BACKFILL THE REMAINDER OF THE TRENCH ABOVE THE SAND TO SUBGRADE LEVEL WITH TRENCH MATERIAL. PLACE AND COMPACT MATERIALS IN LAYERS NOT EXCEEDING 150MM LOOSE THICKNESS. MATERIAL LOWER THAN 500MM BELOW SUBGRADE LEVEL SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY. THE TOP 500MM BELOW PAVEMENT SUBGRADE LEVELS SHALL BE COMPACTED TO AT LEAST 100% STANDARD MAXIMUM DRY DENSITY.
- FILTER MATERIAL FOR SUBSOIL SHALL BE COARSE SAND OR CRUSHED STONE COMPLYING WITH ONE OF THE GRADINGS IN THE TABLE BELOW. WHERE NOTED ON THE DRAWINGS THE 7MM CRUSHED ROCK FILTER MATERIAL SHALL BE ENCLOSED WITHIN FILTER FABRIC SHEET AS SPECIFIED. FILTER MATERIAL SHALL BE PLACED IN 250MM LAYERS AND COMPACTED TO DENSITY INDEX (DI) OF 60%.

| AS SIEVE | SAND | 7mm ROCK |
|-----------|--------|----------|
| SIZE (mm) | | |
| 9.5 | 100 | 100 |
| 6.7 | - | 75-100 |
| 4.75 | 90-100 | 20-55 |
| 2.36 | 75-100 | 0-15 |
| 1.18 | 50-90 | |
| 0.6 | 20-60 | |
| 0.3 | 10-30 | |
| 0.15 | 2-10 | |
| 0.075 | 0-3 | 0-2 |
- UNLESS OTHERWISE DETAILED OR PERMITTED, THE MINIMUM GRADE OF ALL PIPE WORKS SHALL BE 1.0%, AND HAVE MINIMUM 300mm COVER.

SERVICES NOTES:

- IT IS THE CONSTRUCTORS RESPONSIBILITY TO NOTIFY THE RELEVANT SERVICES AUTHORITIES OF THE WORKS AND VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO ANY CONSTRUCTION ACTIVITIES COMMENCING.
- THE CONSTRUCTOR SHALL LIAISE AND COORDINATE THE TIMING OF THE CONSTRUCTION OF THE WORKS WITH THE RELEVANT SERVICES AUTHORITIES AND/OR OTHER CONSTRUCTORS INSTALLING SERVICES CONCURRENTLY AT THIS SITE.
- THE LOCATION OF ALL EXISTING SERVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND HAVE BEEN TAKEN FROM INFORMATION PROVIDED BY THE RELEVANT SERVICE AUTHORITIES.
- THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE CAUSED TO EXISTING SERVICES AS A RESULT OF THE CONSTRUCTION WORKS.

LEGEND

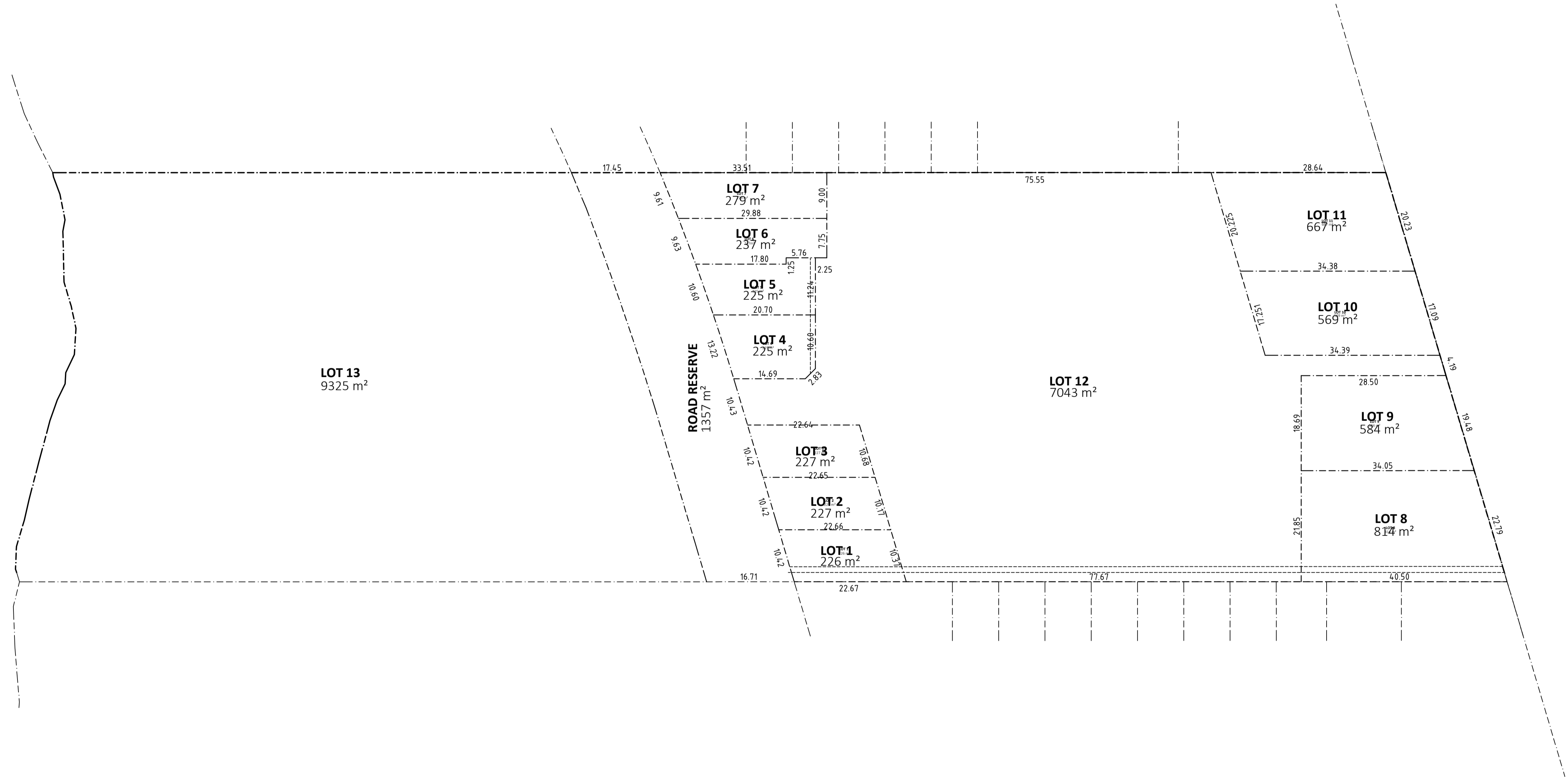


PAVEMENT NOTES:

- FOR RIGID PAVEMENT REFER TO CONCRETE PAVEMENT NOTES.
- BASE MATERIAL, UNLESS NOTED OTHERWISE, SHALL BE UNBOUND DGB20 MATERIAL AS SPECIFIED IN THE RTA 3051.
- SUBBASE MATERIAL, UNLESS NOTED OTHERWISE, SHALL BE UNBOUND DGS40 MATERIAL AS SPECIFIED IN THE RTA 3051.
- SELECT MATERIAL, IF SPECIFIED, SHALL BE CRUSHED ROCK, NATURAL GRAVELS OR SUITABLE SOILS, AND THE MATERIALS SHALL BE FREE OF ORGANIC MATTER AND OTHER OBJECTIONABLE OR DELETERIOUS SUBSTANCES. THE MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 75MM, AND SHALL HAVE A MINIMUM CBR OF 15% AT 100% STANDARD MAXIMUM DRY DENSITY.
- FREQUENCIES OF COMPACTION TESTS FOR PAVEMENT CONSTRUCTION SHALL BE AS FOLLOWS (TESTS PER LAYER AND WHICHEVER IS GREATER NUMBER):
 - 1 TEST PER 50m LENGTH OF ROAD, OR
 - 1 TEST PER 400m².
- COMPACTION REQUIREMENTS FOR PAVEMENT CONSTRUCTION SHALL BE AS FOLLOWS:
 - BASE AND SUBBASE: 98% OF MMD TO AS 1289 E2.1
 - SELECT AND SUBGRADE: 100% OF SMDD
- THE PRIMER TO BE USED SHALL BE MEDIUM CURING CUTBACK BITUMEN COMPLYING WITH THE REQUIREMENTS OF AS 2157. THE GRADE OF CUTBACK BITUMEN SHOULD BE AMC 0.
- AGGREGATES FOR THE SEAL SHALL BE ONE-SIZED OF THE NOMINAL SIZE AND CLASS SPECIFIED ON DRAWING. THESE AGGREGATES SHALL BE PRECOATED WITH A BITUMEN BASED PRECOATING MATERIAL.
- UNLESS OTHERWISE SPECIFIED OR DIRECTED, BITUMINOUS EMULSION FOR TACK COATING SHALL BE DESIGNATION CRS/170 COMPLYING WITH THE REQUIREMENTS OF AS 1160.
- ASPHALTIC CONCRETE AS SPECIFIED ON THE DRAWING SHALL COMPLY WITH AS 2150 - ASPHALT (HOT-MIXED).
- UNLESS OTHERWISE NOMINATED IN THE DRAWINGS, BINDER SHALL BE CLASS 320 BITUMEN COMPLYING WITH THE REQUIREMENTS OF AS 2008.
- ANY OTHER BITUMEN TYPE WHERE CALLED UP IN THE DRAWING SHALL MEET THE REQUIREMENTS AS SET OUT IN THE RMS MATERIALS SPECIFICATIONS 3252 OR 3253.

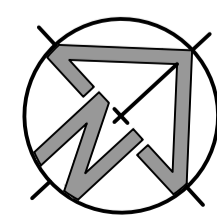
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| | | | | | | SUIITE 26 11 - 13 BROOKHOLLOW AVE NORWEST NSW 2153 | | VERIFIER E.S. | | SCALE @ A1 NULL | | | |
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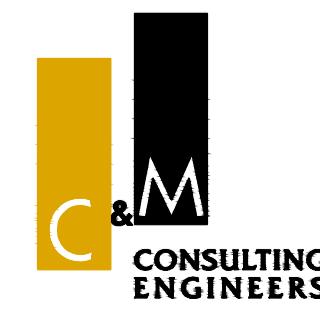
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| 04 | T.T. | 2/12/2021 | E.S. | REVISED LOT LAYOUT |
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CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

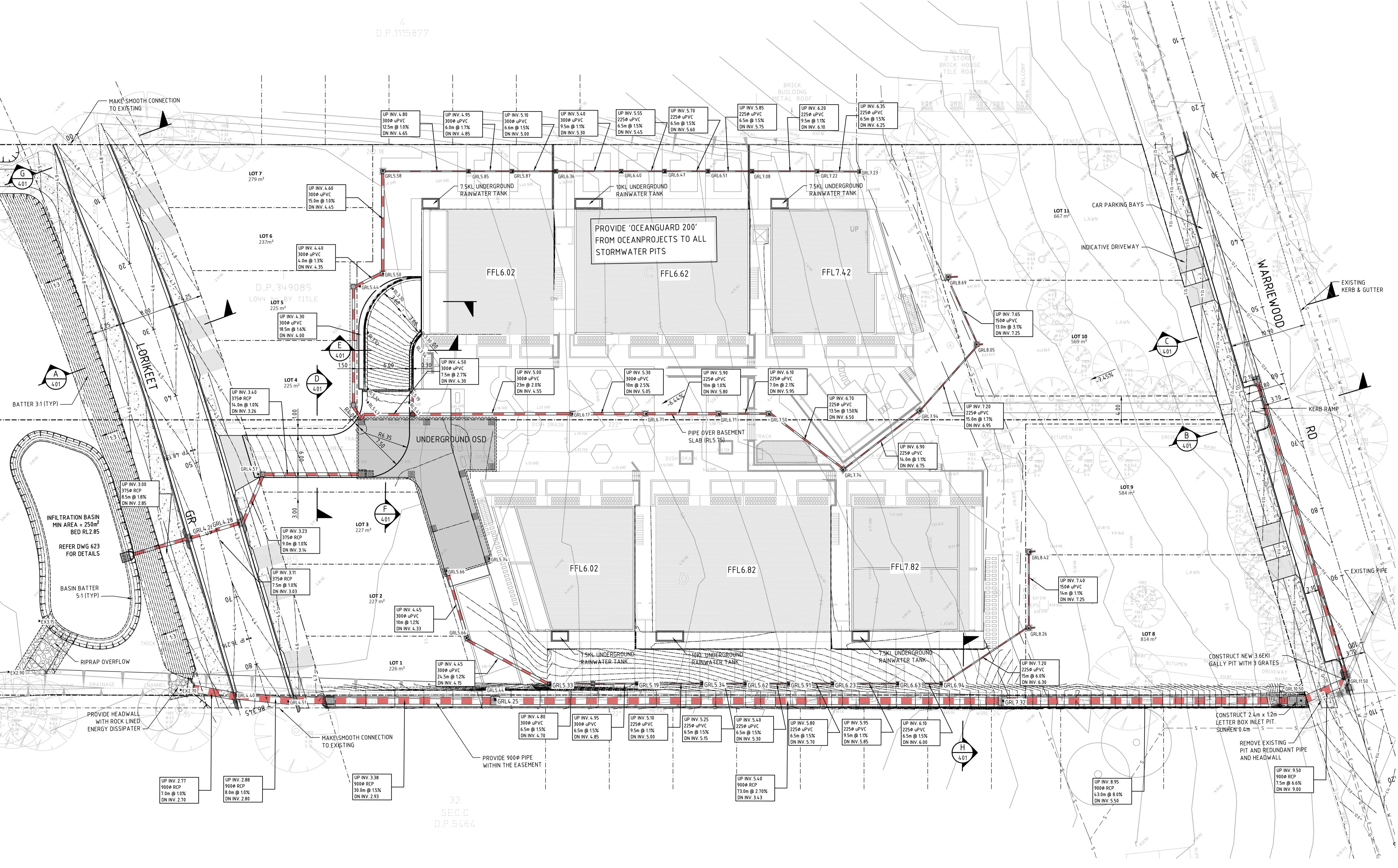
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NORWEST NSW 2153

PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

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| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
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| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| LOT LAYOUT PLAN | | |
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| REVISION | 04 | |



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| 04 | T.T. | 04/06/2021 | E.S. | ISSUE FOR DA |

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CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

SUITE 26
11 - 13 BROOKHOLLOW AVE
NORWEST NSW 2153

PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

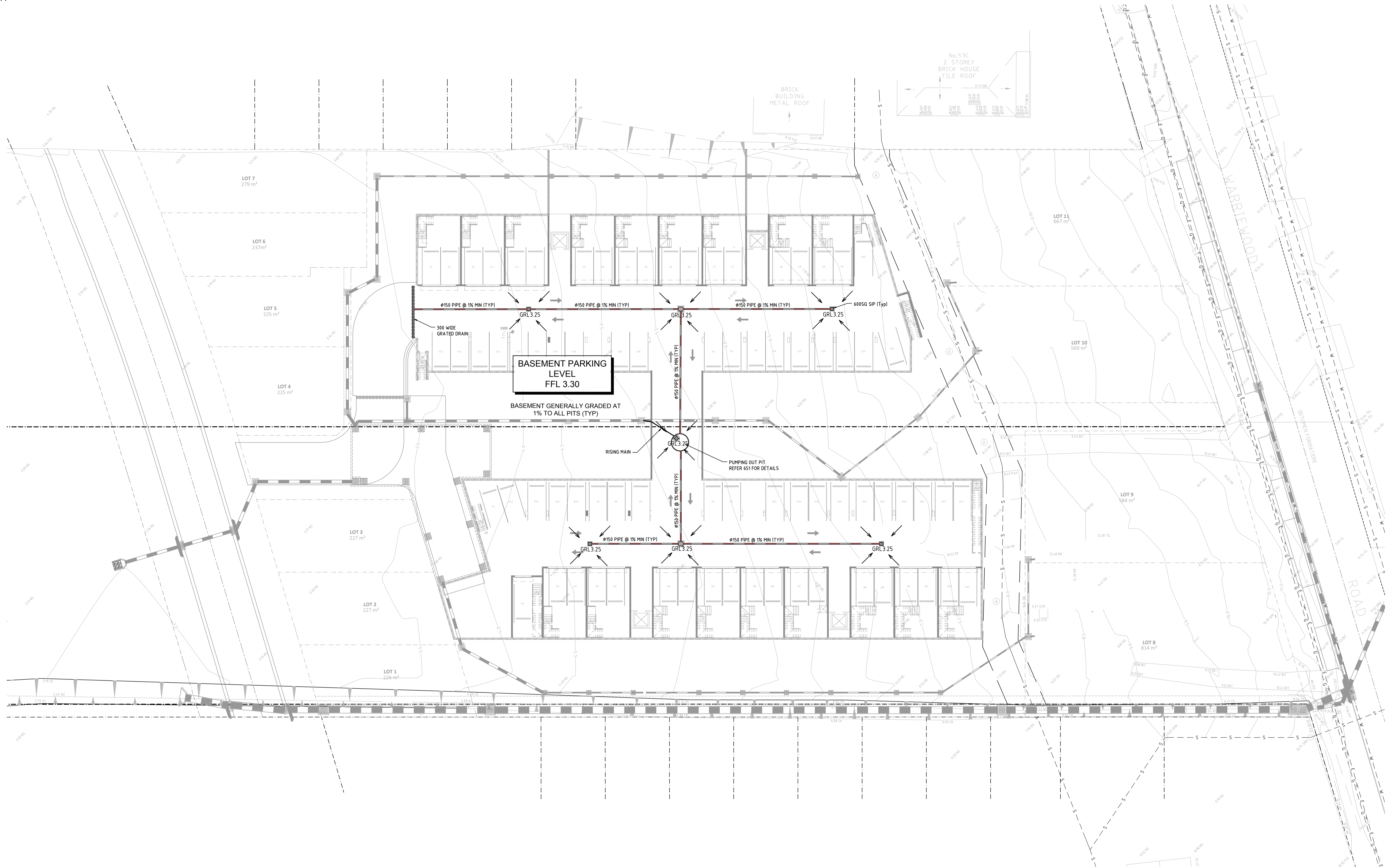
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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

45-49 WARRIEWOOD RD, WARRIEWOOD

GENERAL ARRANGEMENT PLAN
- GROUND LEVEL

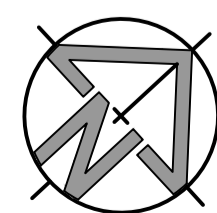
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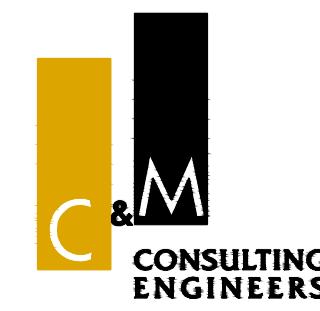
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| 03 | T.T. | 2/12/2021 | E.S. | REVISED LOT LAYOUT |
| 02 | T.T. | 16/03/2020 | E.S. | ISSUE FOR DA |
| 01 | T.T. | 28/02/2020 | E.S. | ISSUE FOR COORDINATION |



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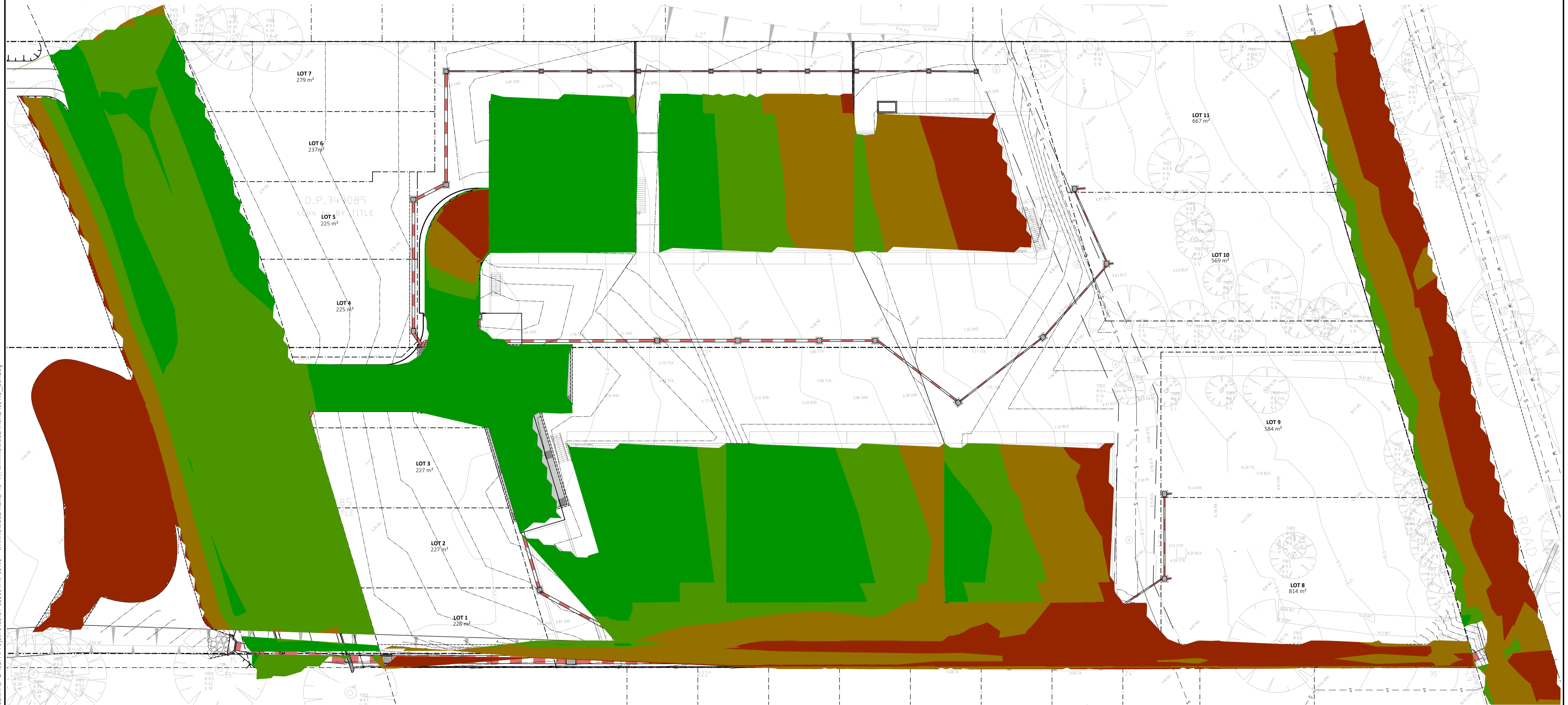
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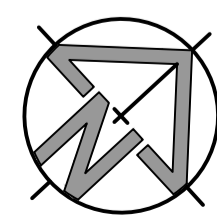
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| 45-49 WARRIEWOOD RD, WARRIEWOOD | |
| GENERAL ARRANGEMENT PLAN - BASEMENT | |
| STATUS | DEVELOPMENT APPLICATION |
| DRAWING No. | 02192_202 |
| REVISION | 03 |

| Levels Table | | | | |
|--------------|------------|----------|--|--------------------|
| No. | From Depth | To Depth | Colour | Depth Range Volume |
| 1 | -0.795 | 0.160 | ■ | 415m ³ |
| 2 | 0.160 | 0.860 | ■ | 3285m ³ |
| 3 | 0.860 | 1.380 | ■ | 1662m ³ |
| 4 | 1.380 | 2.520 | ■ | 776m ³ |



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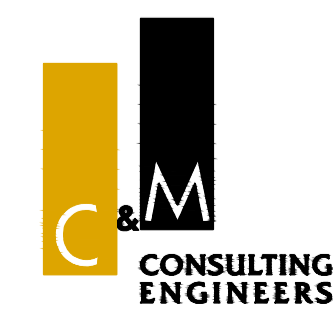
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| 05 | T.T. | 2/12/2021 | E.S. | REVISED LOT LAYOUT |
| 04 | T.T. | 04/06/2021 | E.S. | ISSUE FOR DA |



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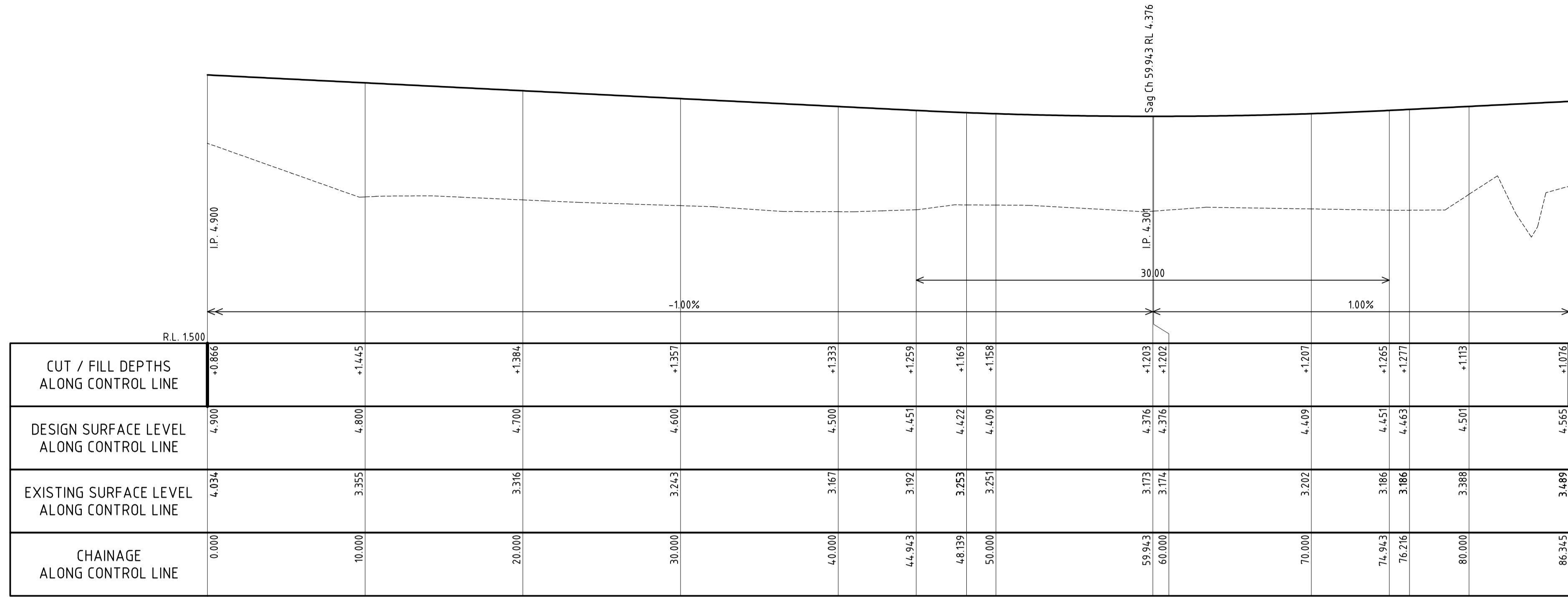
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NORWEST NSW 2153

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FAX: (02) 9634 6989
ABN 21 118 134 240

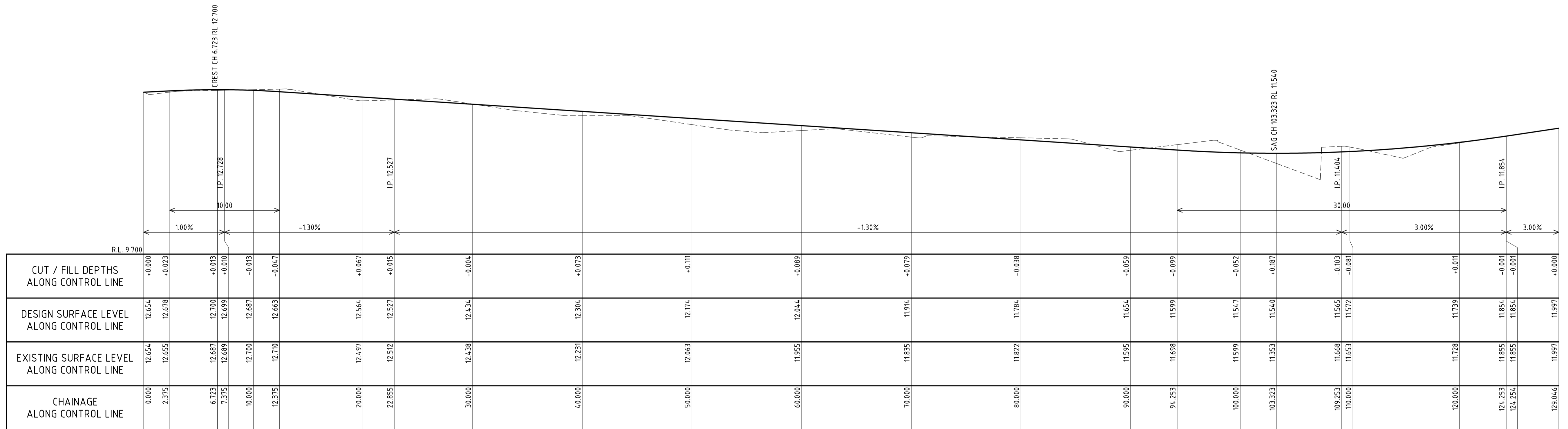
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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

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| | | |
|---------------------------------|-------------------------|-----------------------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| BULK EARTHWORKS PLAN | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_231 |
| REVISION | 05 | |



LORIKEET ROAD - LONGITUDINAL SECTION
SCALE 1:200 (H) & 1:40 (V)



WARRIEWOOD ROAD - LONGITUDINAL SECTION
SCALE 1:200 (H) & 1:40 (V)

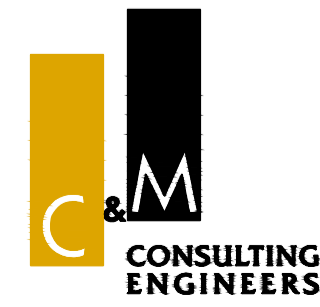
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| 04 | T.T. | 09/08/2021 | E.S. | ISSUE FOR DA |
| REV. | DES. | DATE | VER. | DESCRIPTION |

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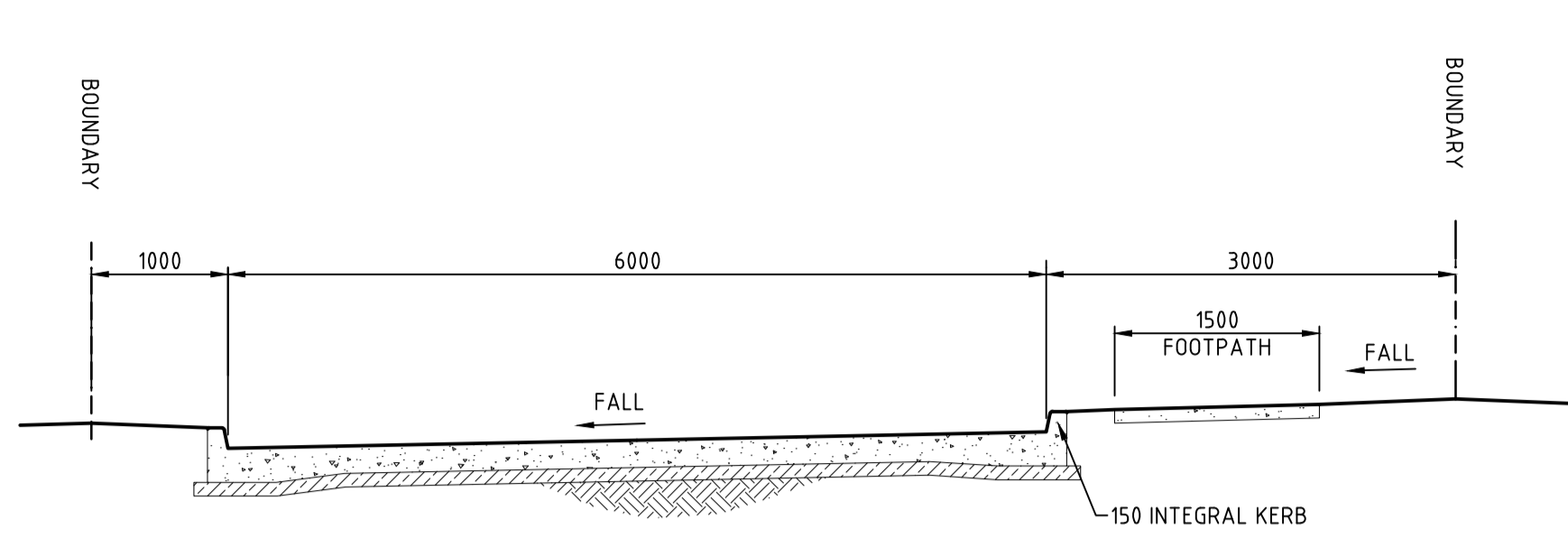
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NORWEST NSW 2153

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FAX: (02) 9634 6989
ABN 21 118 134 240

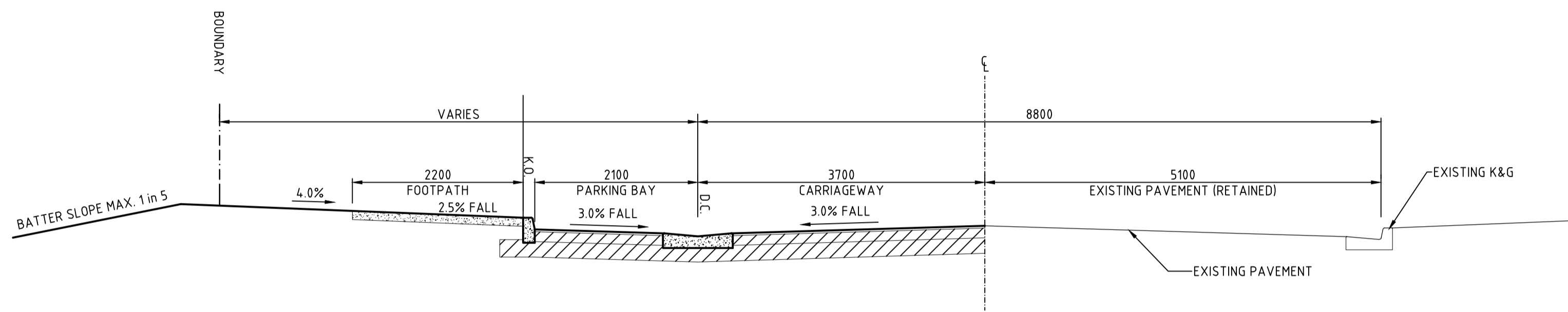
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|----------|------|------------|------------------|
| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | AS NOTED |

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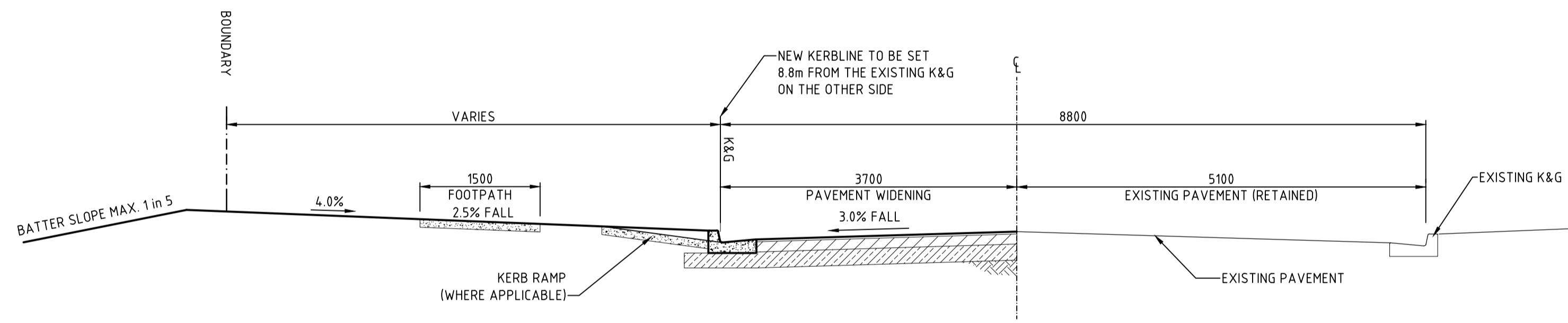
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|---------------------------------|-------------------------|-----------------------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| ROAD LONGITUDINAL SECTIONS | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_301 |
| REVISION | 04 | |



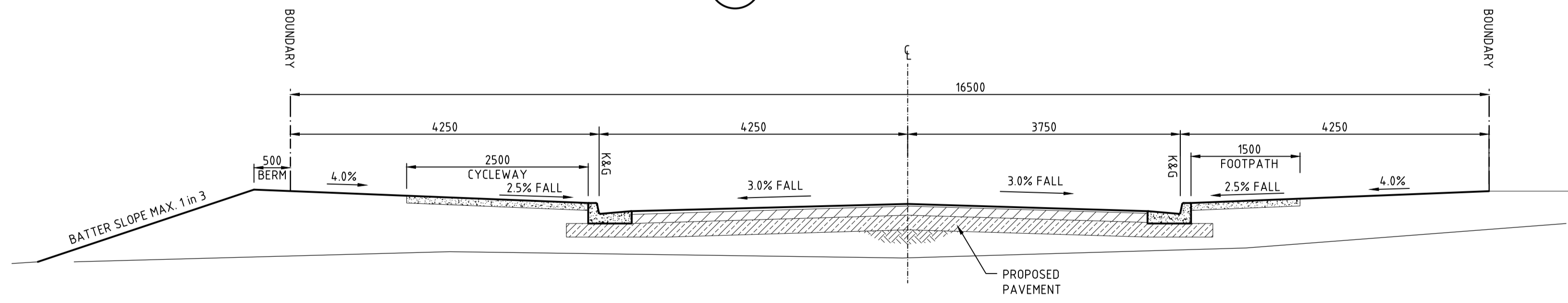
SECTION D
SCALE 1:50



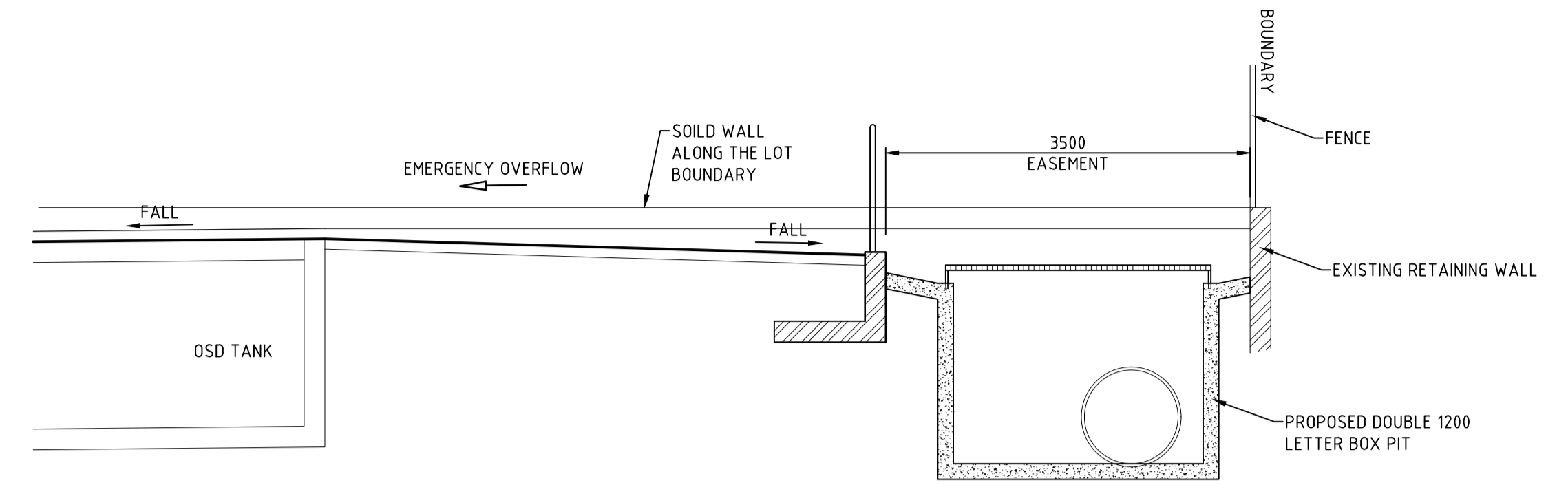
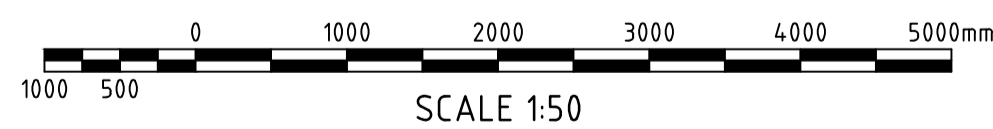
SECTION C WARRIWOOD RD WITH PARKING
SCALE 1:50



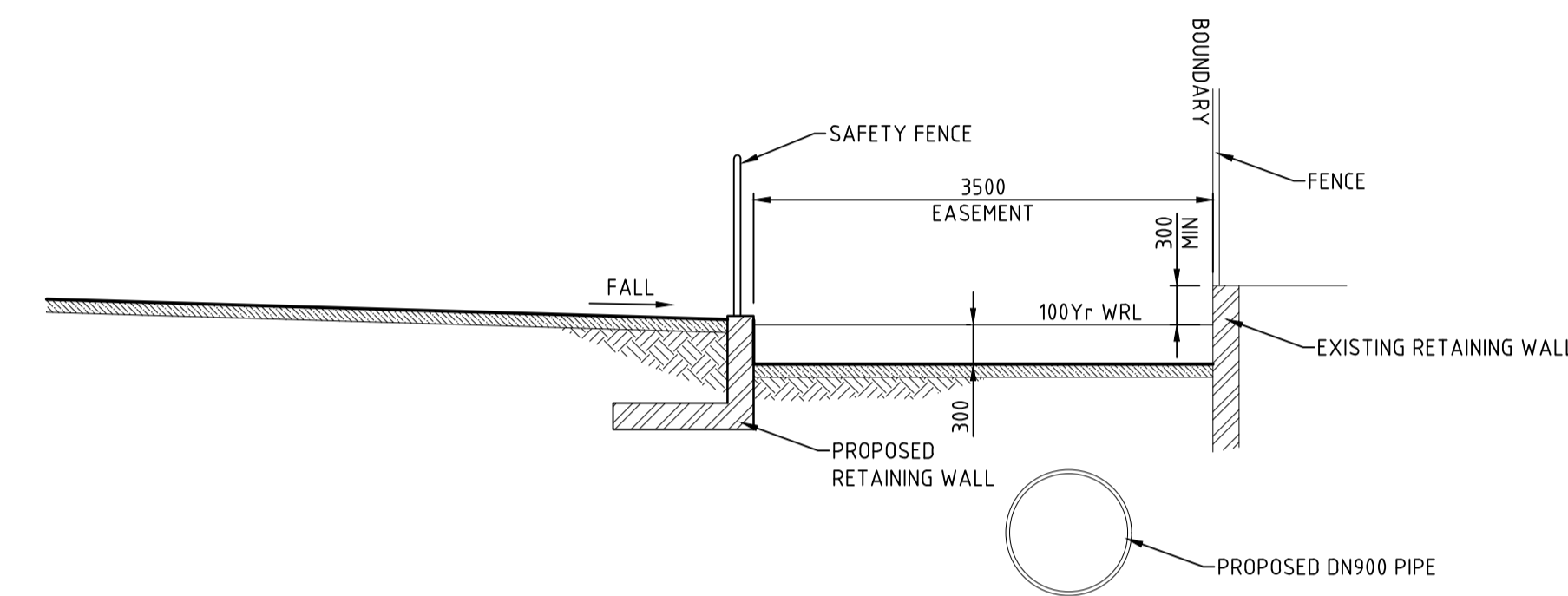
SECTION B WARRIWOOD ROAD
SCALE 1:50



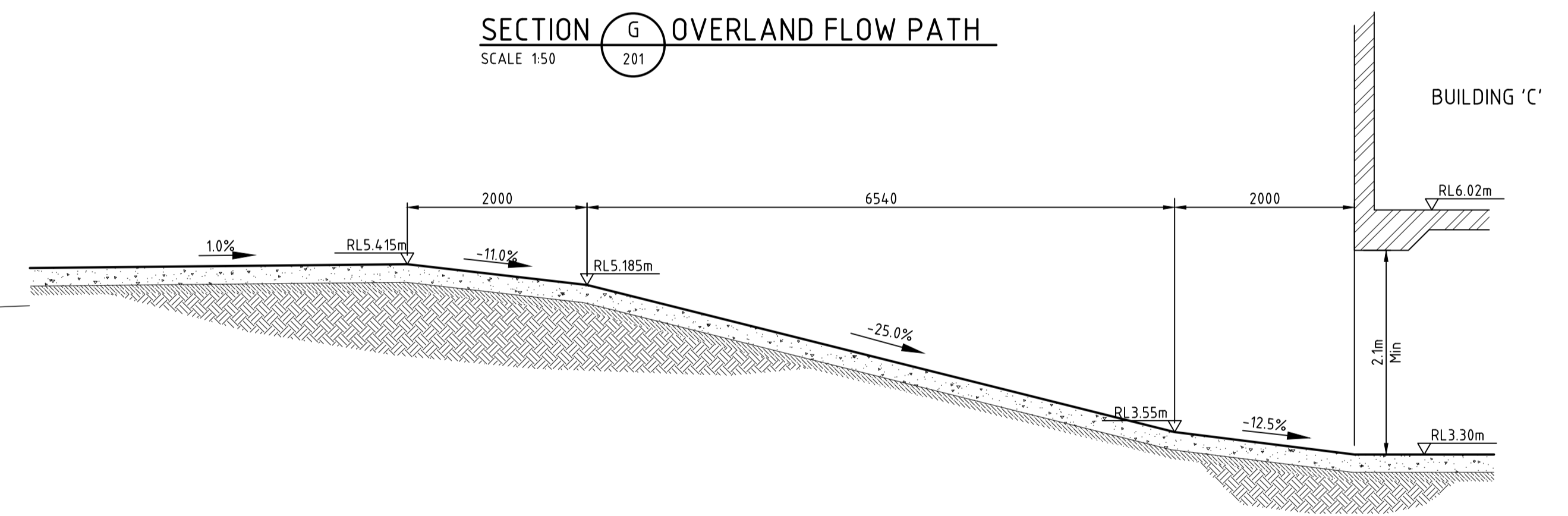
SECTION A LORRIKEET ST Ch10.0 TO END
SCALE 1:50



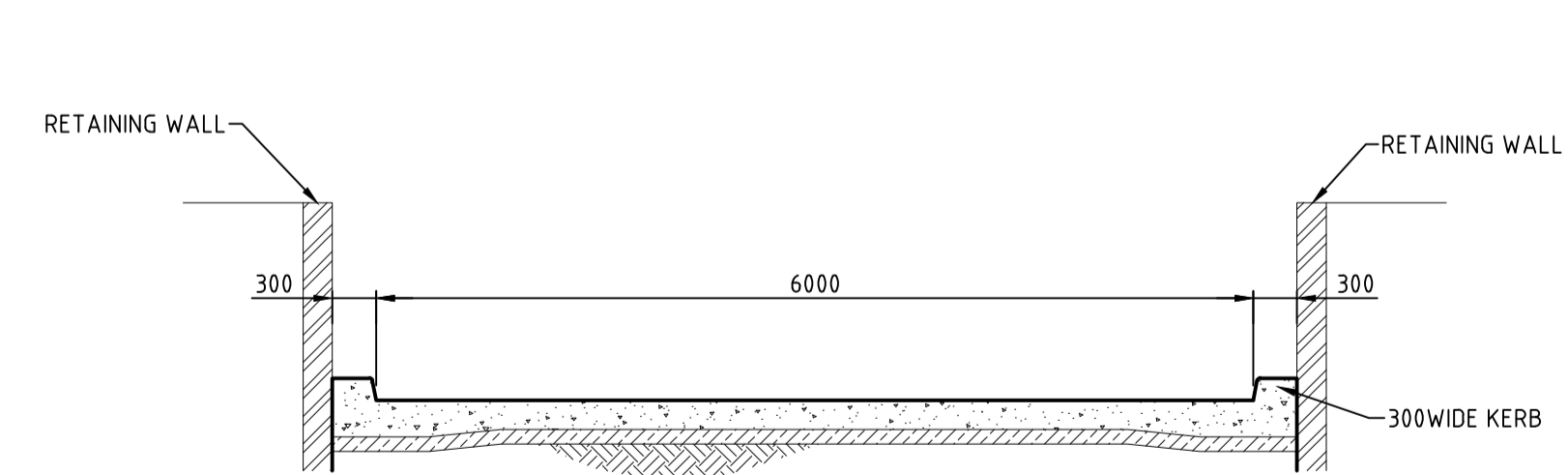
SECTION H OVERLAND FLOW PATH
SCALE 1:50



SECTION G OVERLAND FLOW PATH
SCALE 1:50



SECTION F BASEMENT RAMP
SCALE 1:50



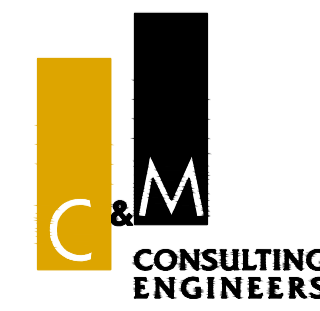
SECTION E
SCALE 1:50

| REV. | DES. | DATE | VER. | DESCRIPTION |
|------|------|------------|------|--------------|
| 04 | T.T. | 09/08/2021 | E.S. | ISSUE FOR DA |

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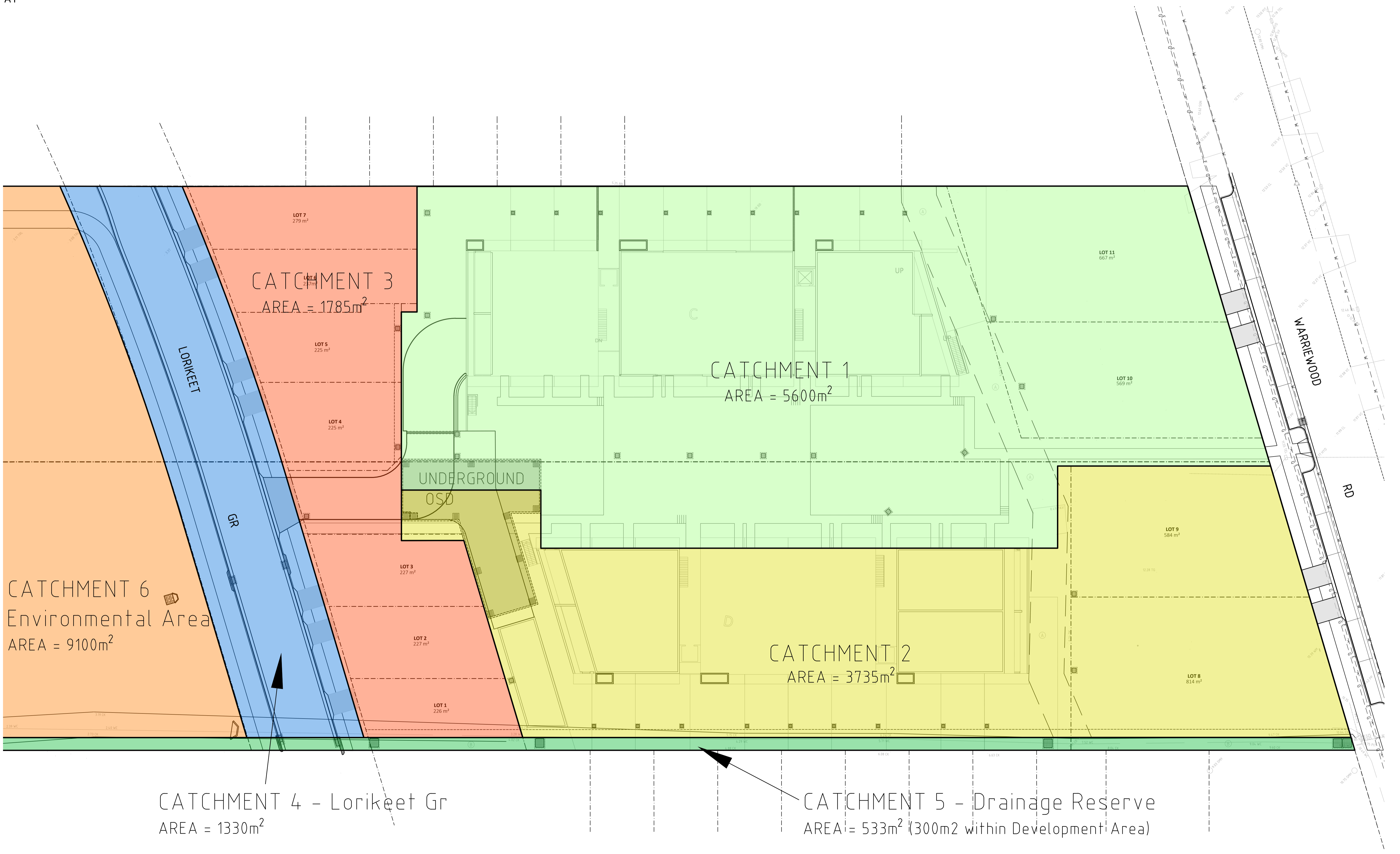
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FAX: (02) 9634 6989
ABN 21 118 134 240

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|----------|------|------------|------------------|
| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:50 |

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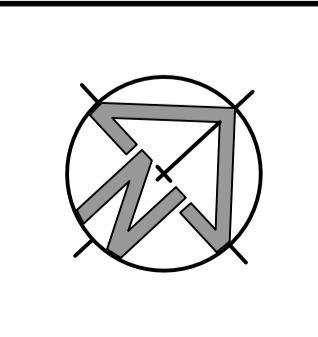
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| 45-49 WARRIWOOD RD, WARRIWOOD | | |
| TYPICAL SECTIONS | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_201 |
| REVISION | 04 | |

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CAD FILENAME: Q:\C&M\Projects\02191-02200\PN-02192 - WARRIEWOOD\ACAD\02192_601.dwg

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|------|------|------------|------|--------------------|
| 03 | T.T. | 2/12/2021 | E.S. | REVISED LOT LAYOUT |
| 02 | T.T. | 16/03/2020 | E.S. | ISSUE FOR DA |



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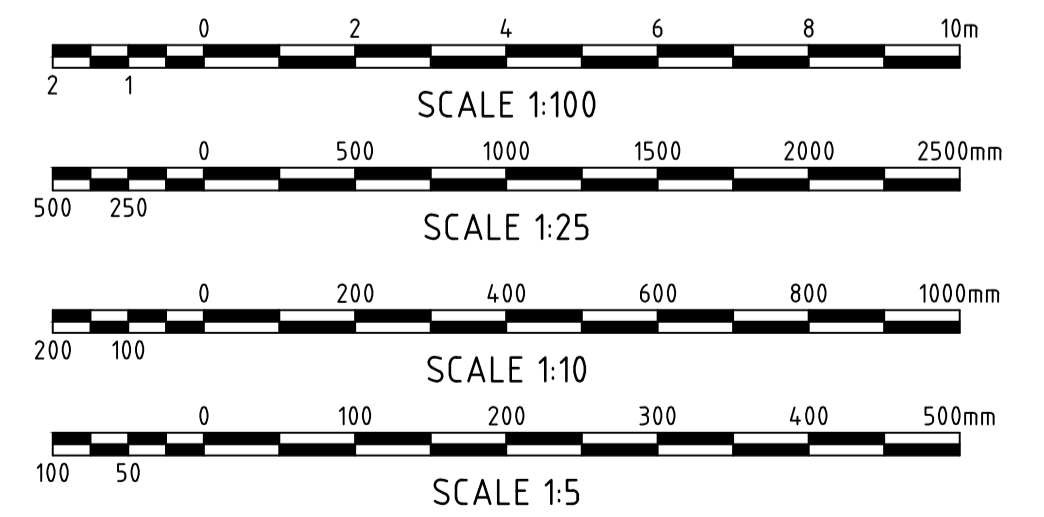
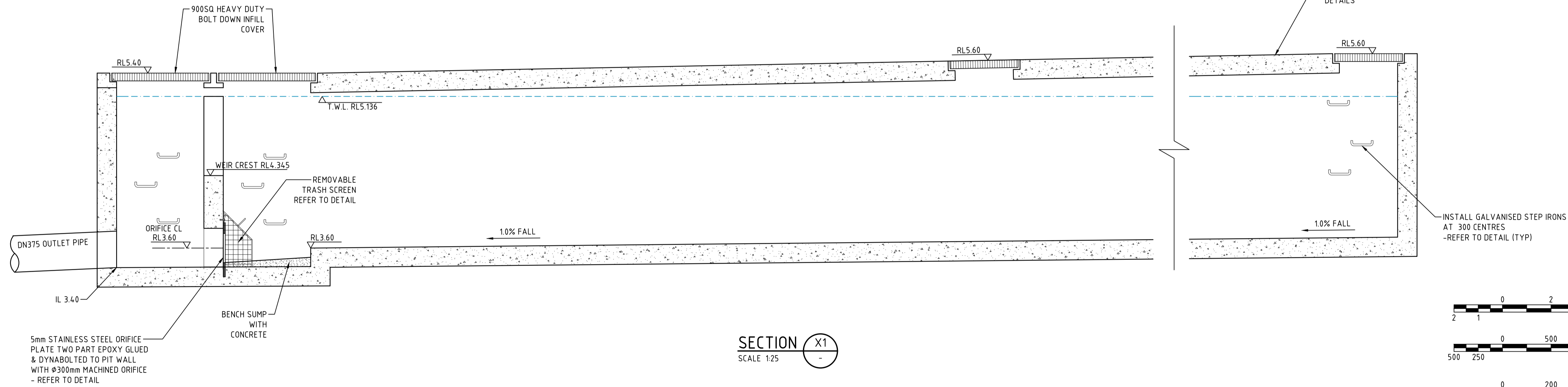
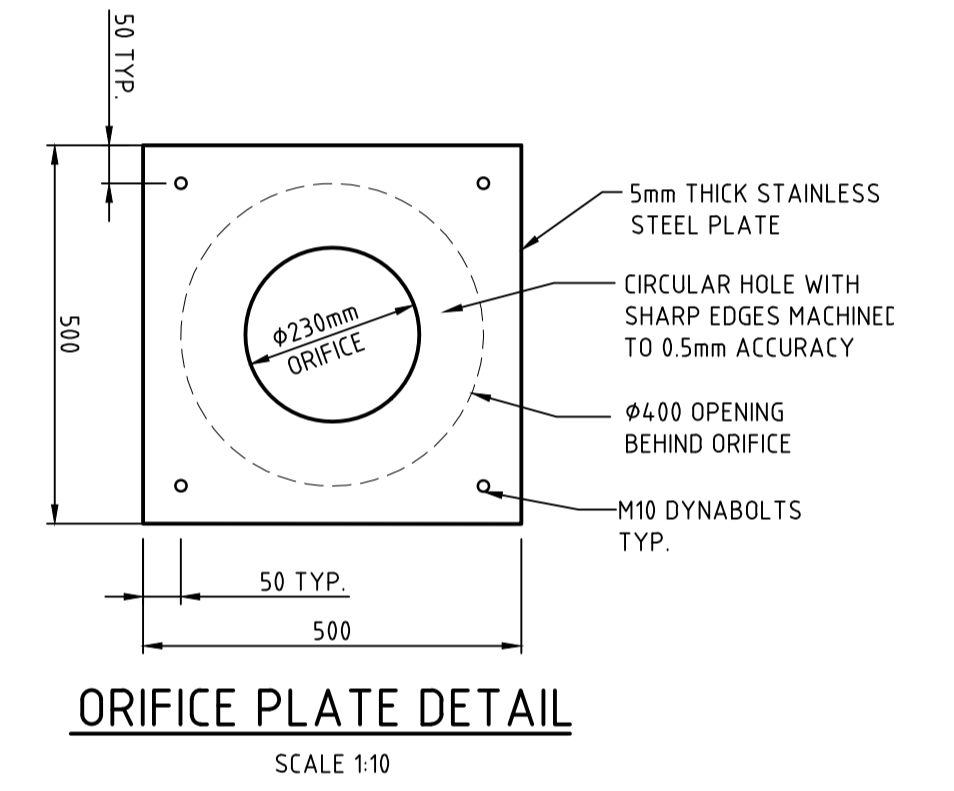
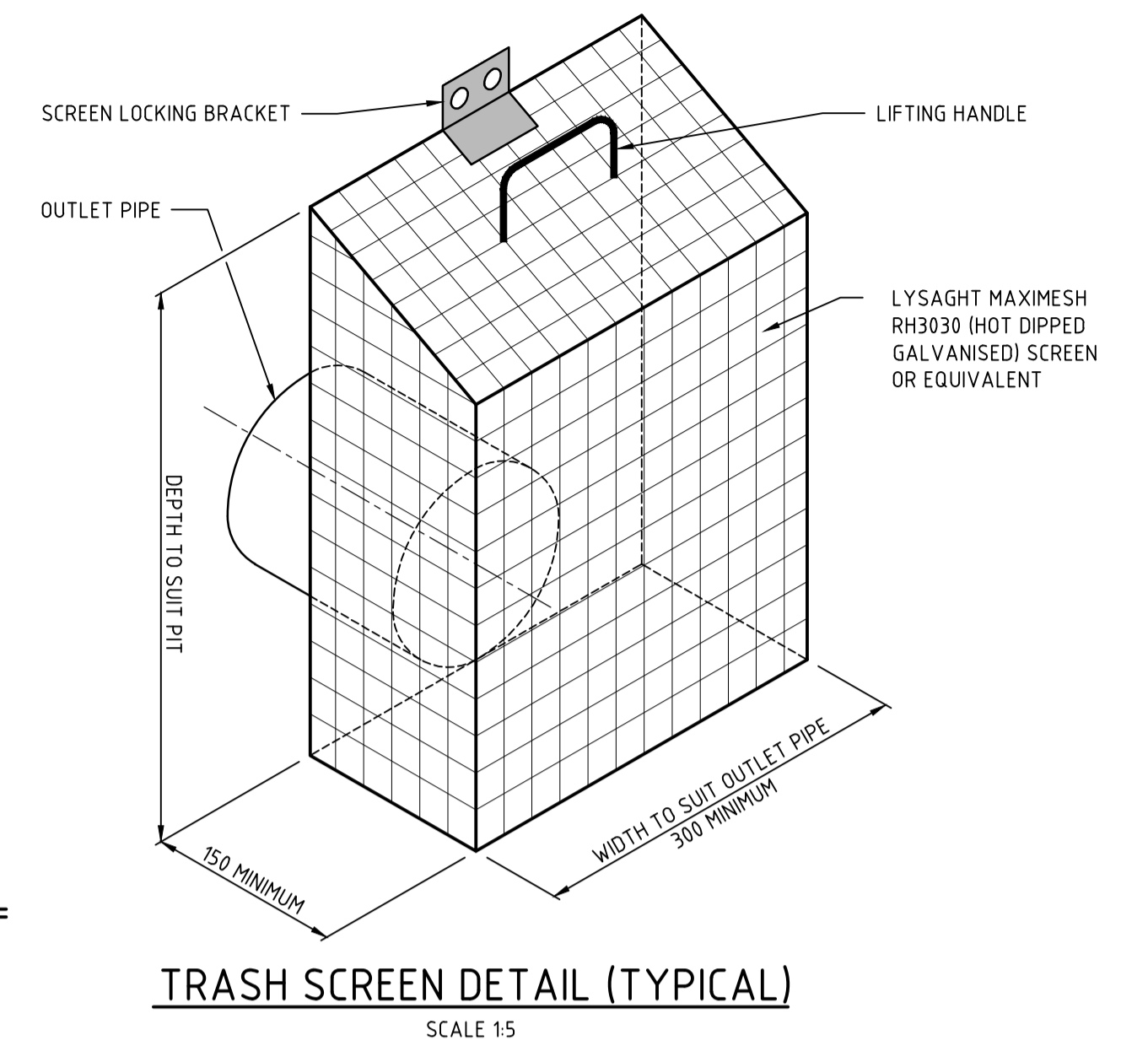
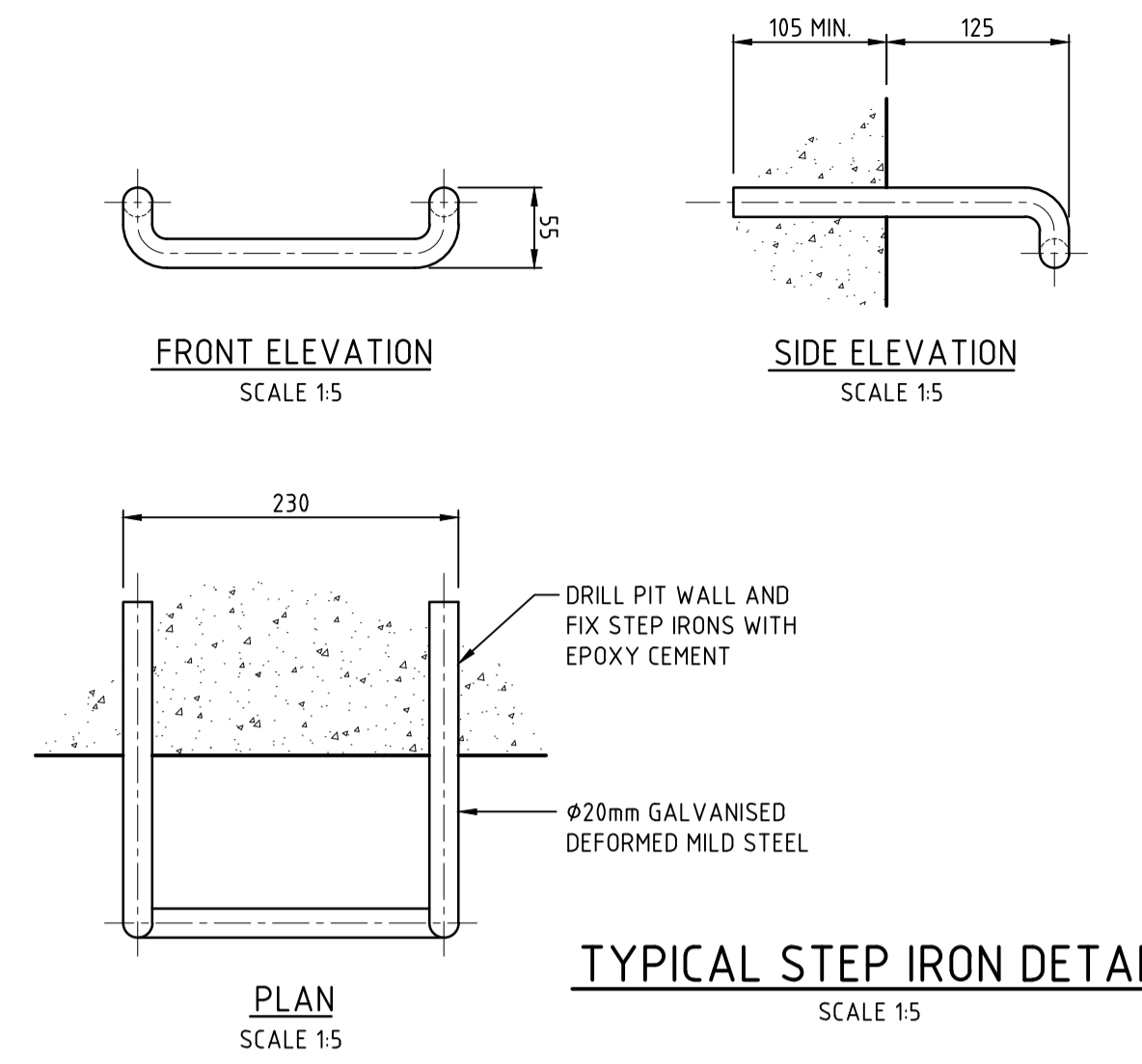
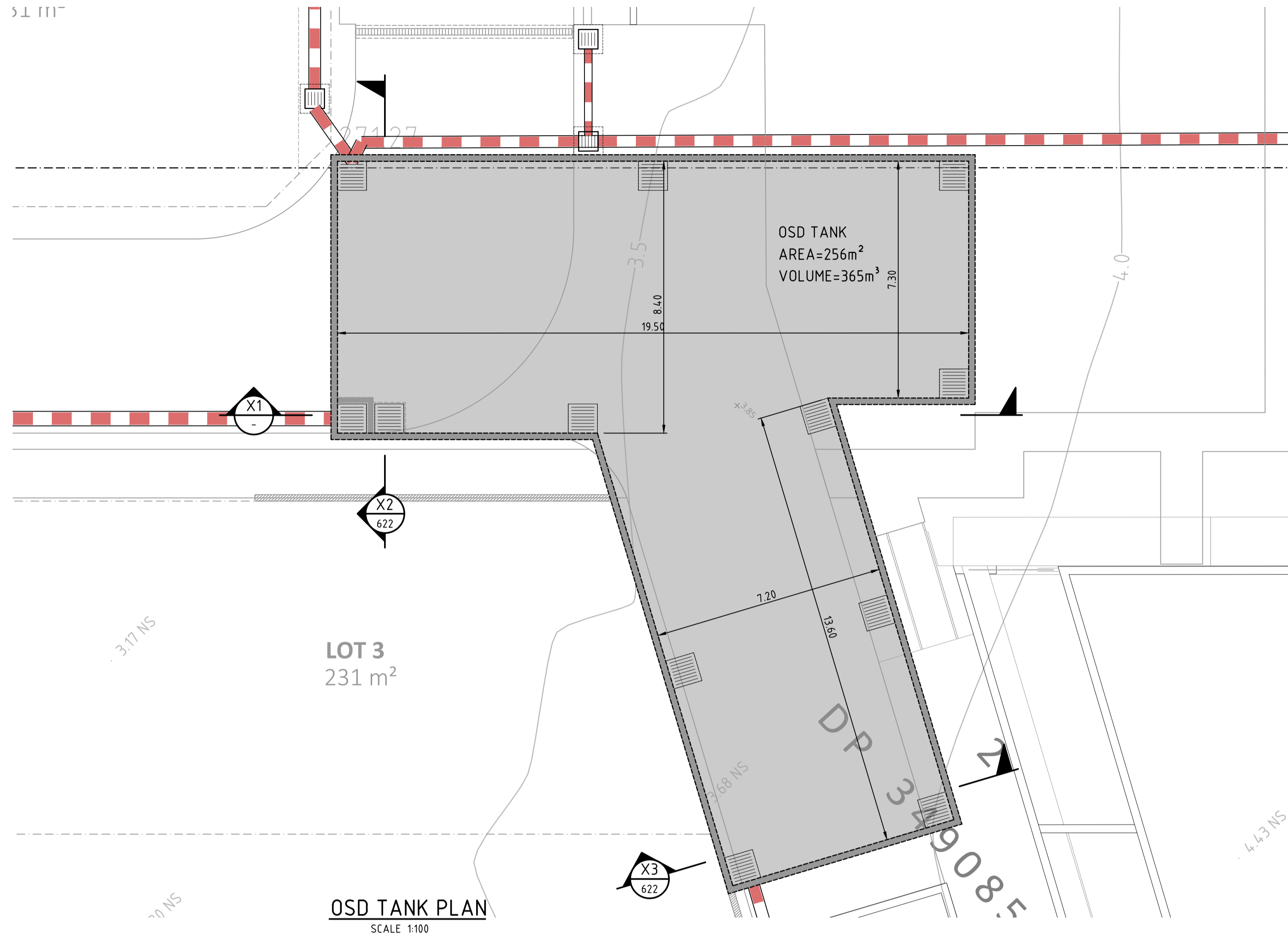
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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

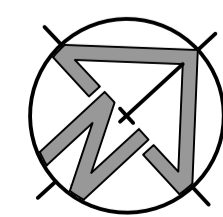
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| | | |
|---------------------------------|-------------------------|-----------------------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| CATCHMENT PLAN | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_601 |
| REVISION | 03 | |



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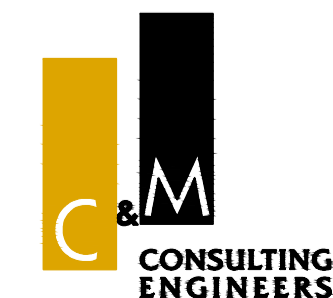
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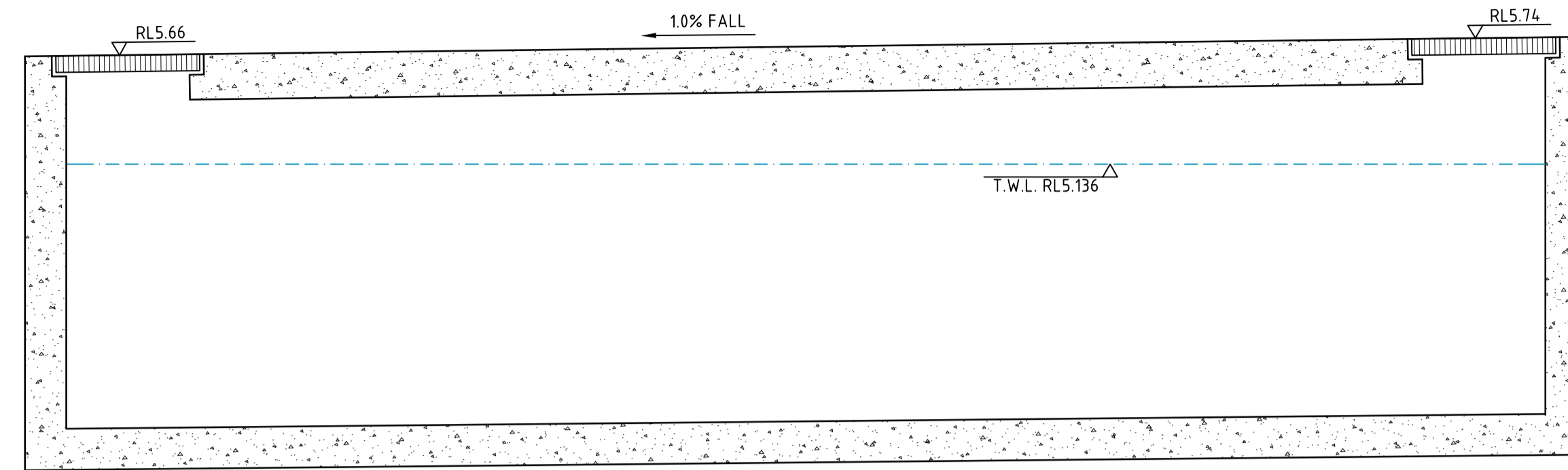
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NORWEST NSW 2153

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ABN 21 118 134 240

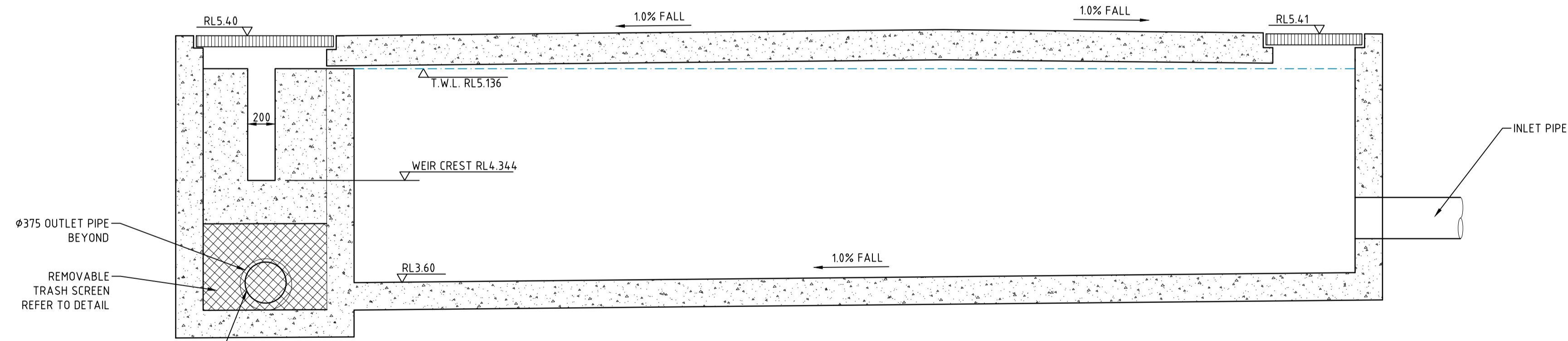
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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

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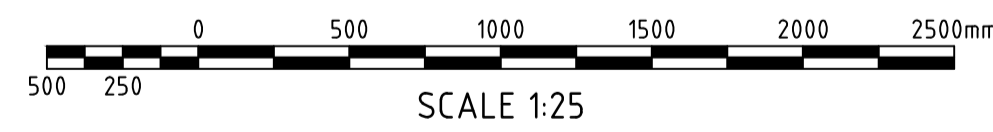
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|---------------------------------------|-------------------------|-----------------------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| STORMWATER OSD TANK DETAILS - SHEET 1 | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_621 |
| REVISION | 03 | |



SECTION X3
SCALE 1:25

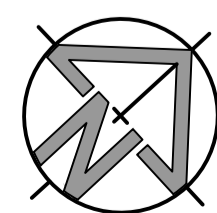


SECTION X2
SCALE 1:25



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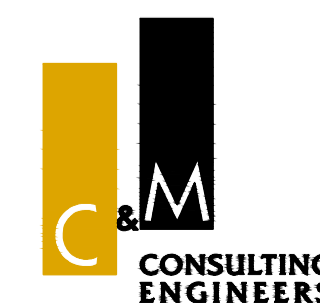
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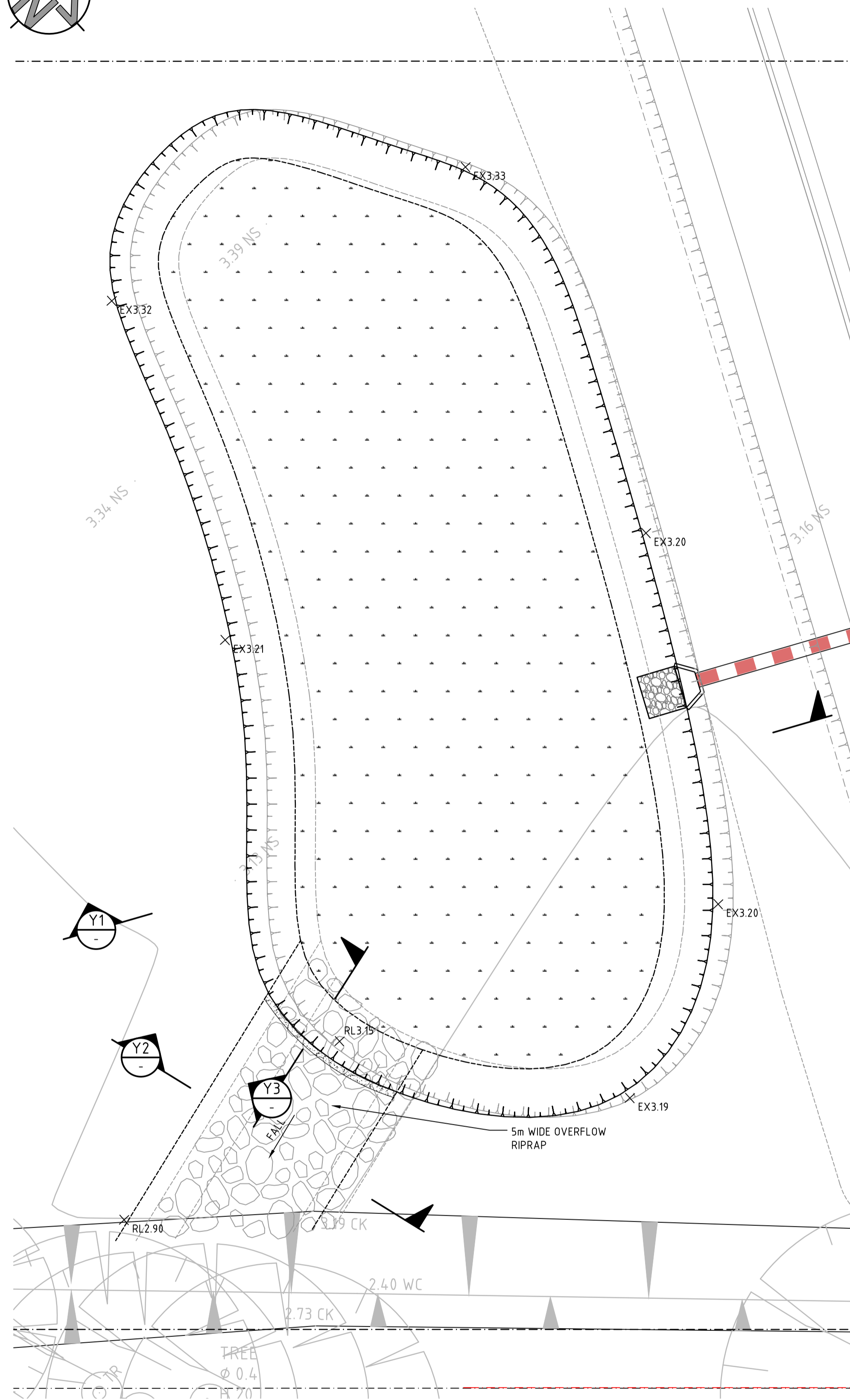
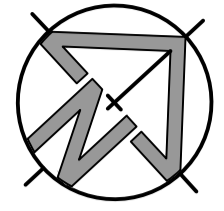
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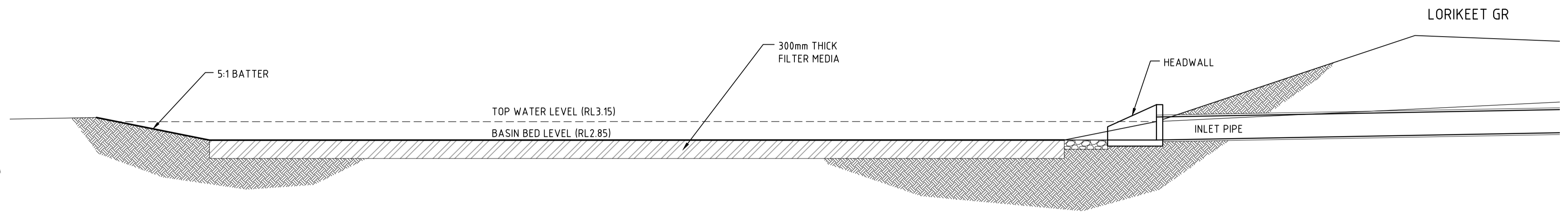
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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

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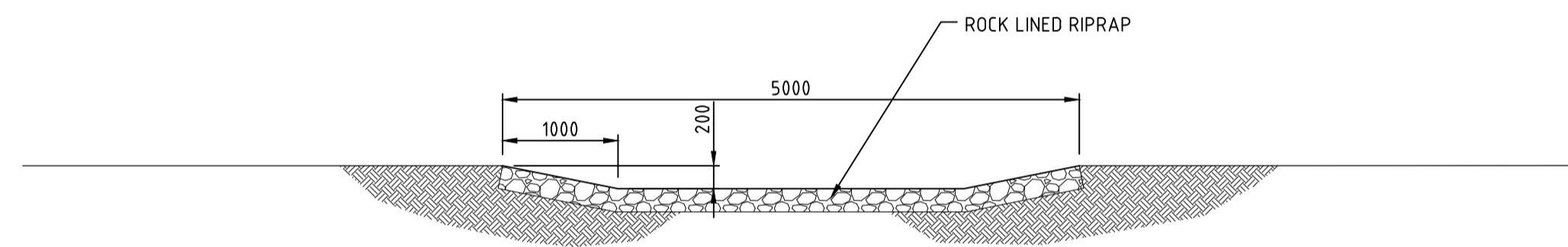
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| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| STORMWATER OSD TANK DETAILS - SHEET 2 | | |
| STATUS | DEVELOPMENT APPLICATION | DRAWING No. 02192_622 |
| REVISION | 03 | |



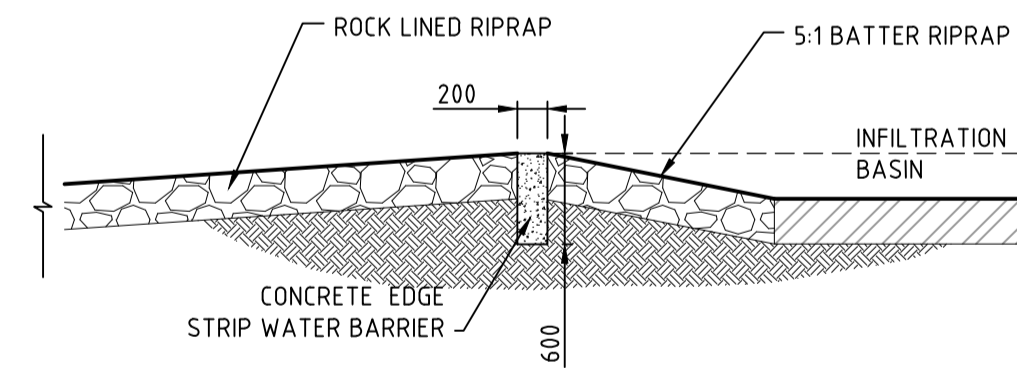
INFILTRATION BASIN
SCALE 1:100



SECTION Y1
SCALE 1:50



SECTION Y2
SCALE 1:50

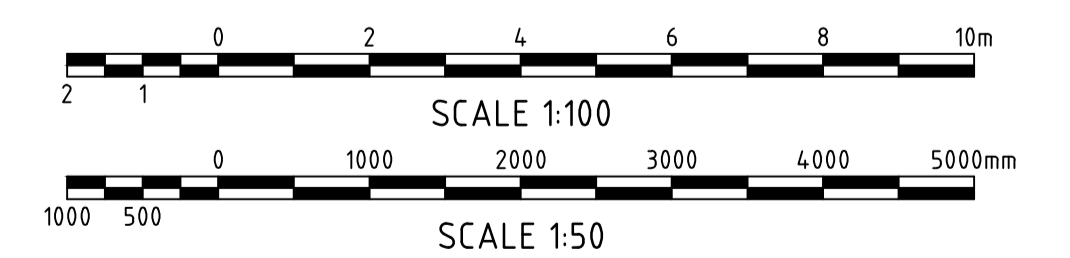


SECTION Y3
SCALE 1:50

INFILTRATION SYSTEM NOTES

FILTER MATERIAL

- o THE FILTER MATERIAL IS TO CONSIST OF A SANDY-LOAM SOIL. THE SATURATED HYDRAULIC CONDUCTIVITY FOR THE MEDIUM IS TO BE 200mm/hr WITH ±10% VARIATION UNDER COMPACTION (METHOD AS DESCRIBED IN AS 4.4.19).
- o ORGANIC MATERIAL CONTENT OF APPROXIMATELY 10% AS MEASURED IN ACCORDANCE WITH AS1289 SHALL BE ADDED TO TOP 150MM OF THE FILTRATION LAYER.
- o THE PH OF THE MATERIAL SHALL BE BETWEEN 6 AND 7.
- o THE SALT CONTENT OF THE SOIL MIXTURE FOR THE FILTRATION LAYER (AS MEASURED BY EC1:5) SHOULD BE LESS THAN 0.63 DS/M (630µS/CM).
- o SILT/CLAY (<0.075MM) CONTENT SHALL NOT BE MORE THAN 3%.



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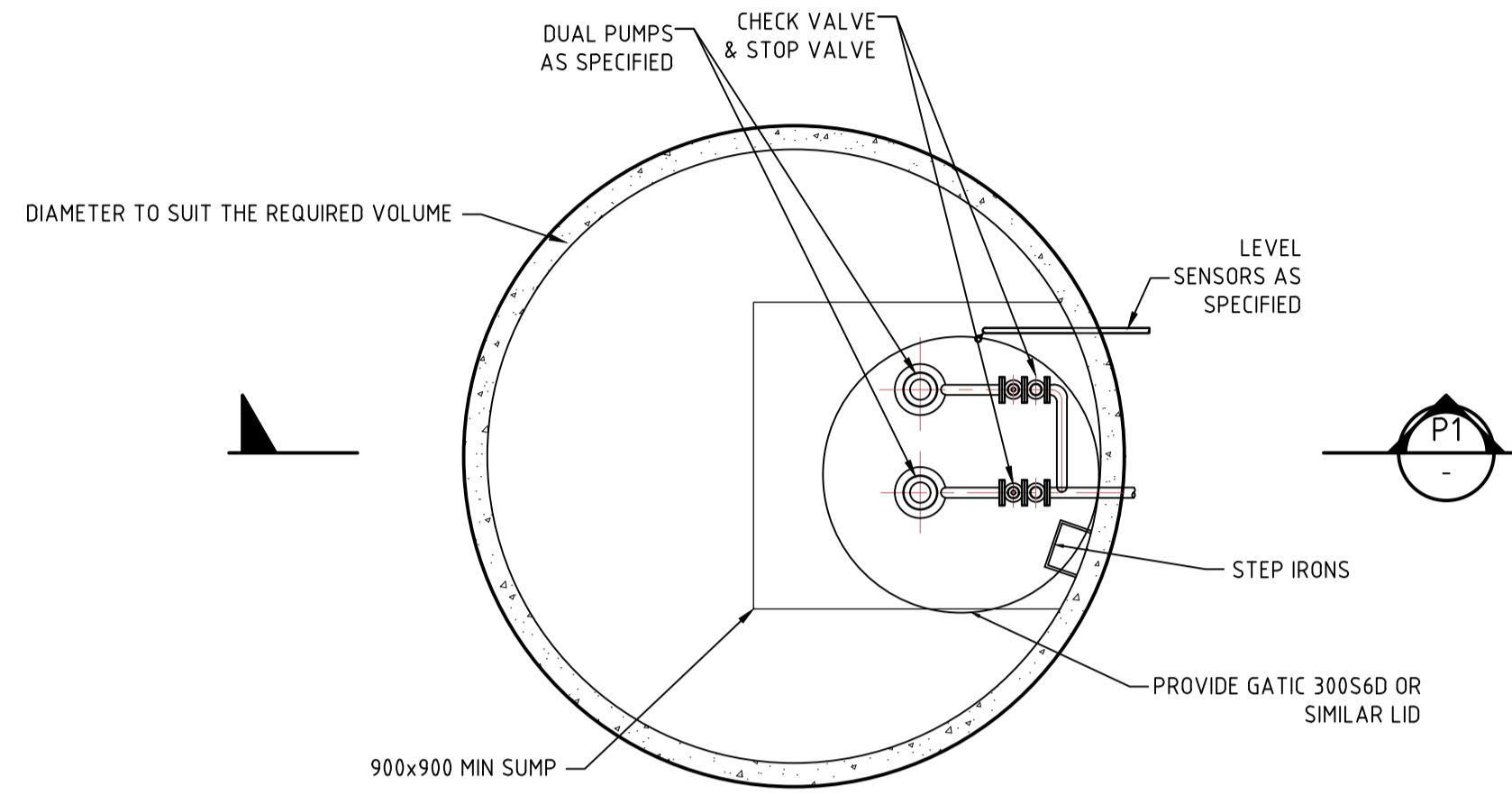
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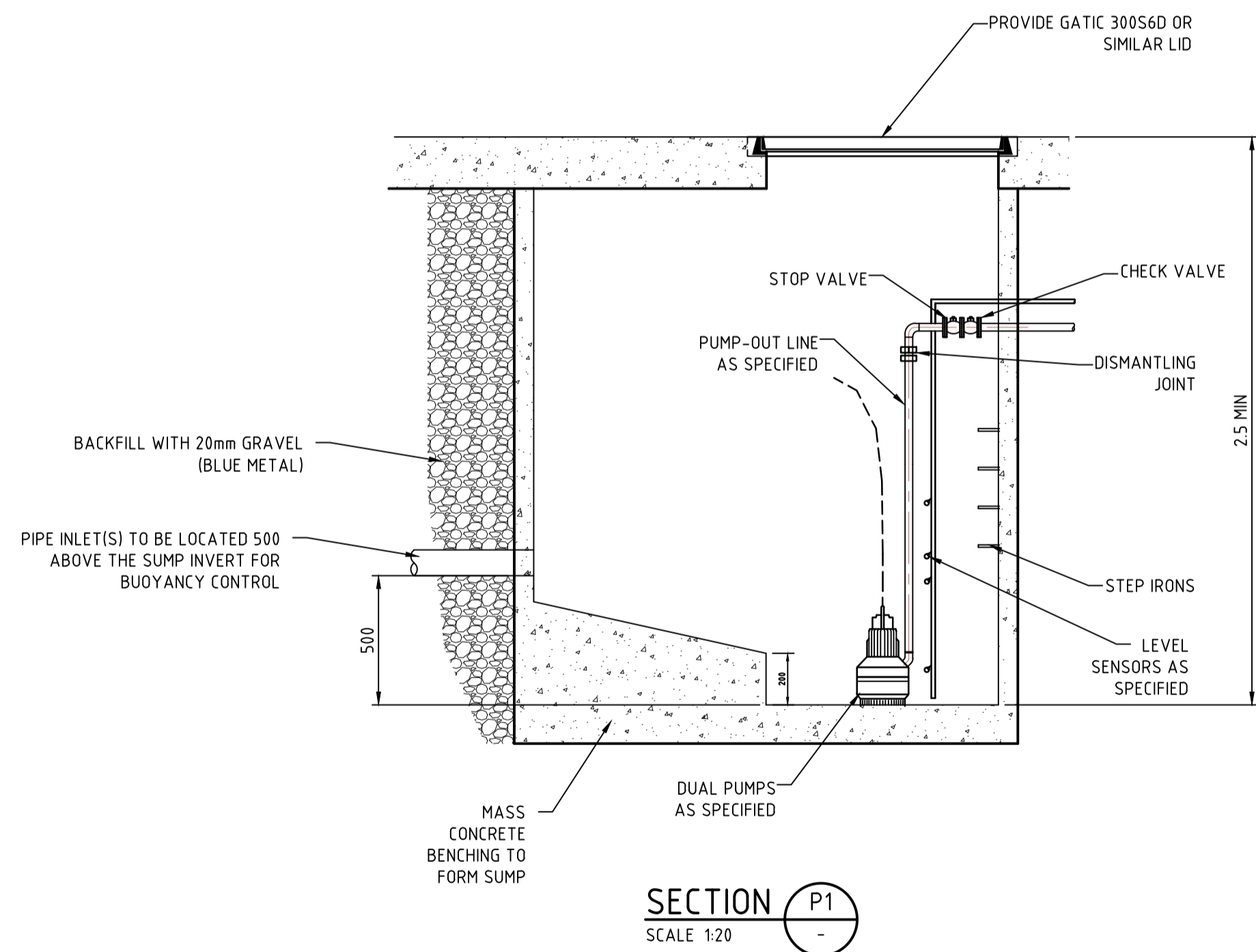
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| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

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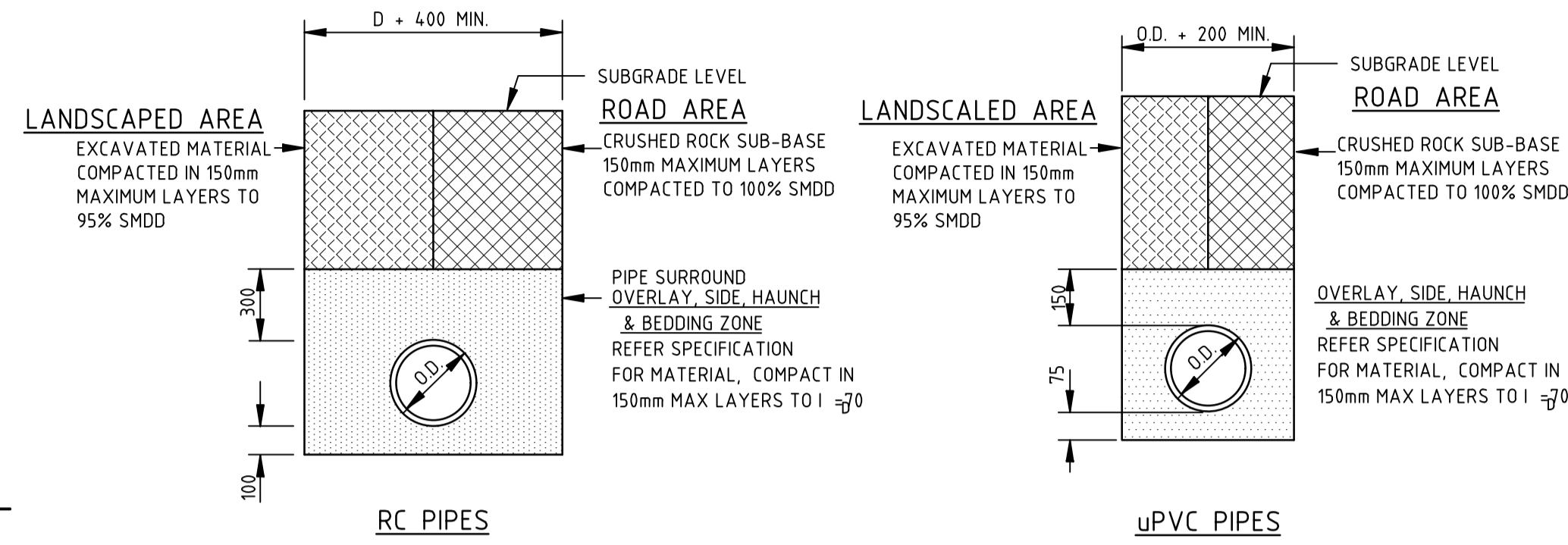
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| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| STORMWATER INFILTRATION BASIN DETAILS | | |
| STATUS | DEVELOPMENT APPLICATION | REVISION 04 |
| DRAWING No. | 02192_623 | |



PUMP-OUT PIT AND WELL
SCALE 1:20



SECTION P1
SCALE 1:20



STORMWATER PIPES BACKFILL CONDITIONS
NTS

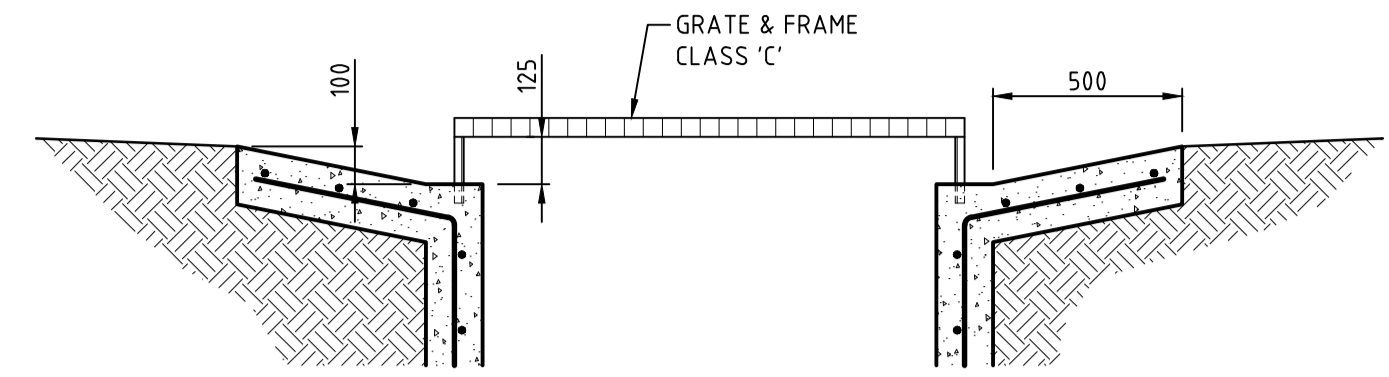
- NOTES**
- FOR MATERIALS AND COMPACTION REQUIREMENTS REFER SPECIFICATION
 - "O.D." IS OUTSIDE PIPE DIAMETER
 - PIPES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE ON EACH SIDE TO THE TRENCH WALL.

PUMP-OUT SYSTEM SPECIFICATION:

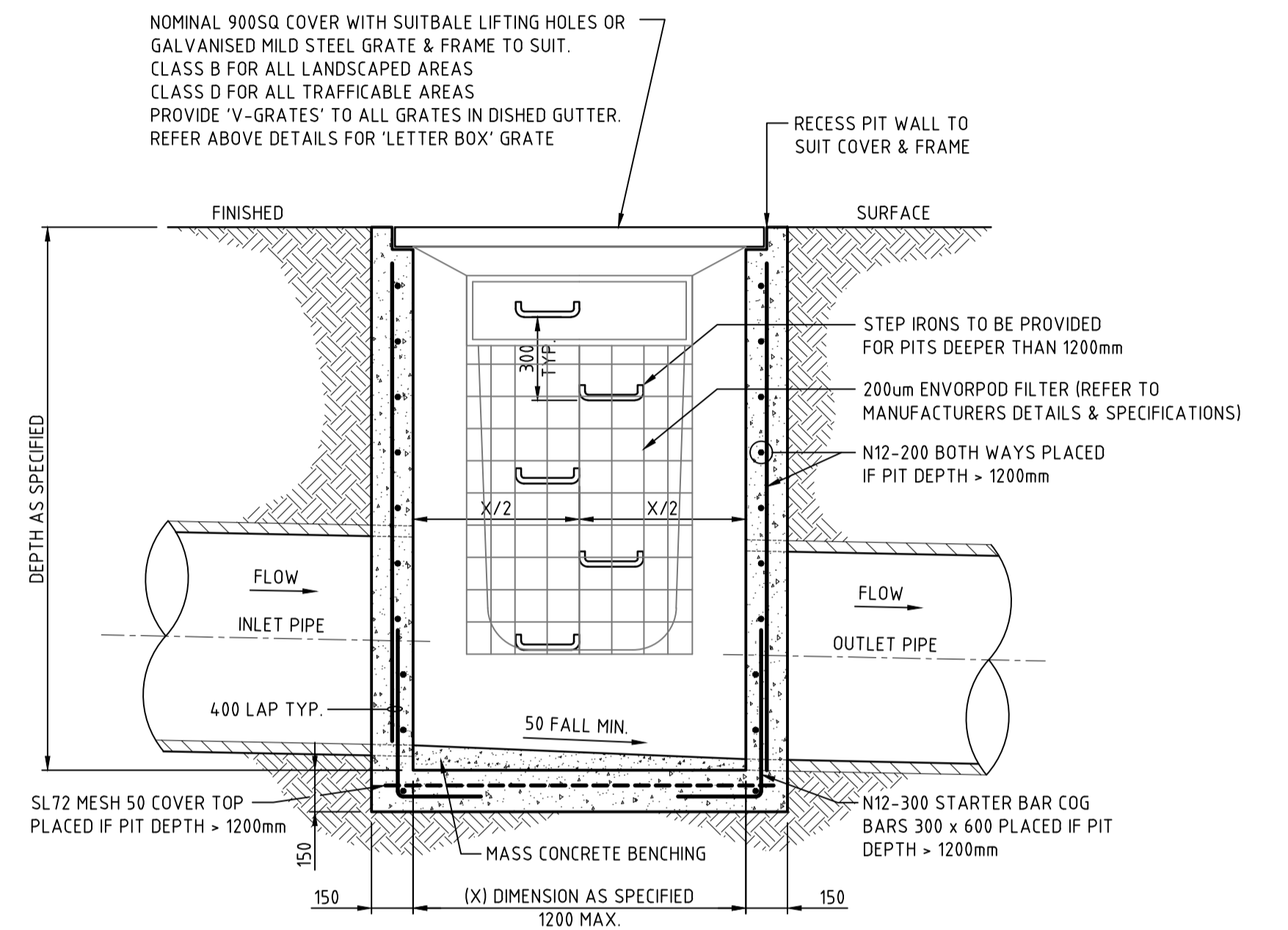
ALL COMPONENTS OF THE PUMP-OUT SYSTEM SHALL BE INSTALLED TO THE MANUFACTURER'S SPECIFICATION CONSISTING OF THE FOLLOWING MINIMUM COMPONENTS:

- PUMPS:** DUAL PUMPS (CLASS 1 ZONE 2) INSTALLED TO OPERATE WITH AN ALTERNATING DUTY AND STANDBY ARRANGEMENT
- PUMP DUTIES AND TANK SIZE (FOR EACH PUMP PIT):**

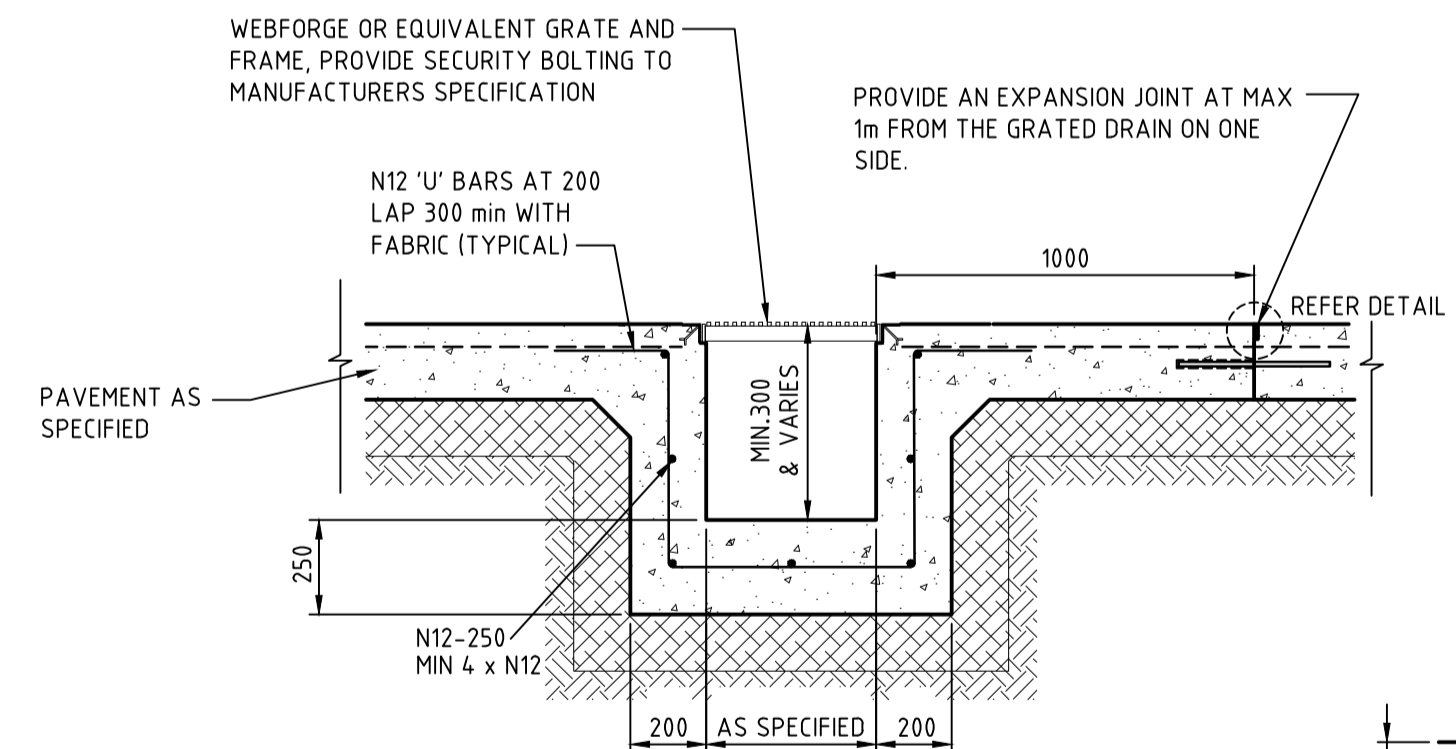
| PUMP DUTY (EACH) | TANK STORAGE |
|------------------|-------------------|
| 2 PUMPS | 90MIN 100 YR |
| 10 L/s @ 7m HEAD | 20 m ³ |
- COVERS:** HEAVY DUTY CAST-IRON SEALED INFILL COVER
- SENSORS:** LEVEL SENSORS FOR PUMP ON, PUMP OFF, HIGH LEVEL ALARM AND LOW LEVEL ALARM
- SWITCHGEAR HOUSING:** VANDALPROOF CABINET LOCATED ADJACENT TO THE PUMPING STATION IN A LOCATION TO BE APPROVED BY THE ARCHITECT
- CONTROLS:** FMC MONITORING AND CONTROL UNIT
- INDICATORS:** POWER ON LIGHT, PUMP RUN LIGHT, FLASHING LIGHT AND AUDIBLE ALARMS, VOLTMETER, AMMETER, HOURS RUN METER
- POWER SUPPLY:** THE CONTRACTOR SHALL PROVIDE ALL NECESSARY POWER SUPPLY AND METERING TO THE PUMP-OUT SYSTEM AND SHALL BE RESPONSIBLE FOR MAKING ALL APPLICATIONS AND PAYING ALL FEES AND CHARGES TO THE ELECTRICITY SUPPLY AUTHORITY



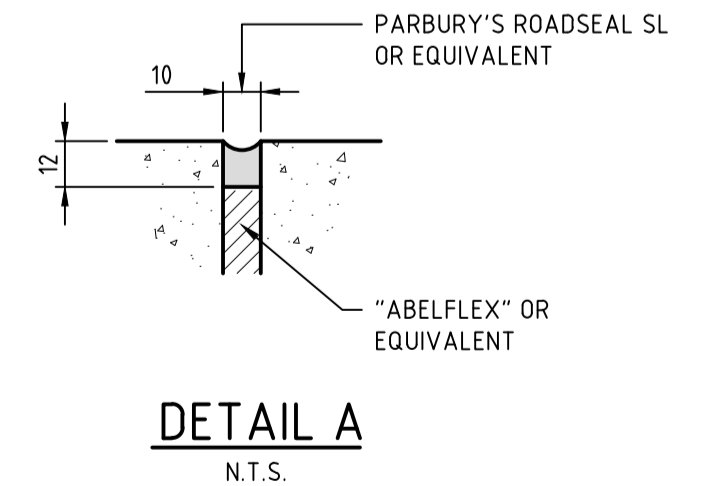
LETTER BOX GRATE DETAILS
SCALE 1:20



GRADED PIT WITH ENVIROPOD
SCALE 1:20



TYPICAL GRADED DRAIN
SCALE 1:20



DETAIL A
N.T.S.

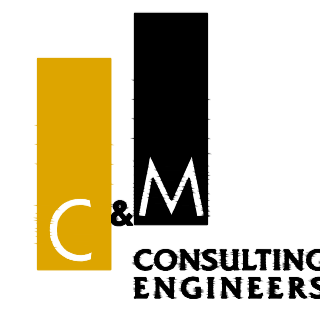
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| REV. | DES. | DATE | VER. | DESCRIPTION |
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| 03 | T.T. | 09/08/2021 | E.S. | ISSUE FOR DA |

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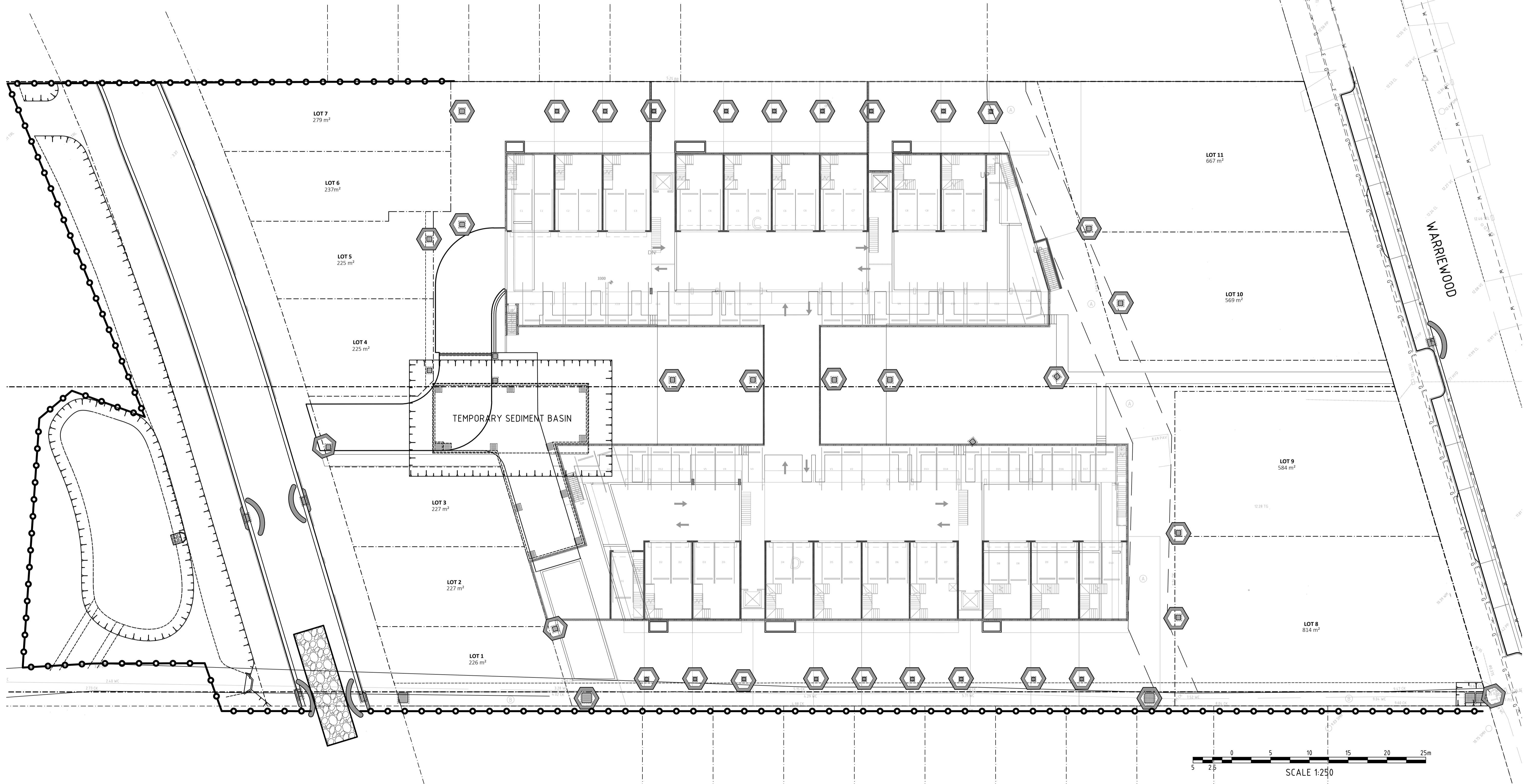
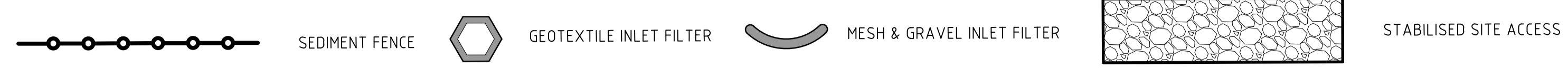
PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

| DESIGNER | T.T. | DATE | JAN 2020 |
|----------|------|------------|------------------|
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:20 |

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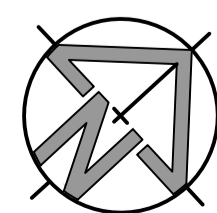
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|---------------------------------|-------------------------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | |
| STORMWATER DETAILS | |
| STATUS | DEVELOPMENT APPLICATION |
| DRAWING No. | 02192_651 |
| REVISION | 03 |

LEGEND



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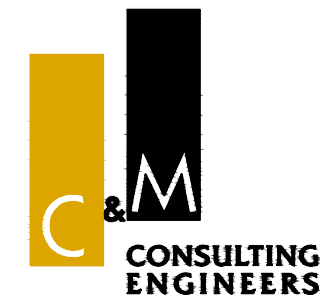
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|------|------|------------|------|--|
| 04 | T.T. | 2/12/2021 | E.S. | REVISED LOT LAYOUT |
| 03 | T.T. | 24/09/2020 | E.S. | INFILTRATION BASIN SHAPE MODIFIED TO COUNCIL REQUIREMENT |
| 02 | T.T. | 16/03/2020 | E.S. | ISSUE FOR DA |
| 01 | T.T. | 28/02/2020 | E.S. | ISSUE FOR COORDINATION |



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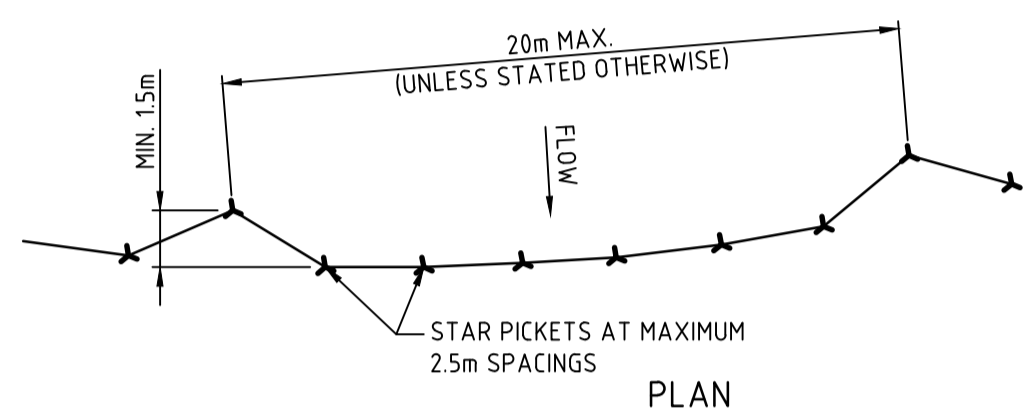
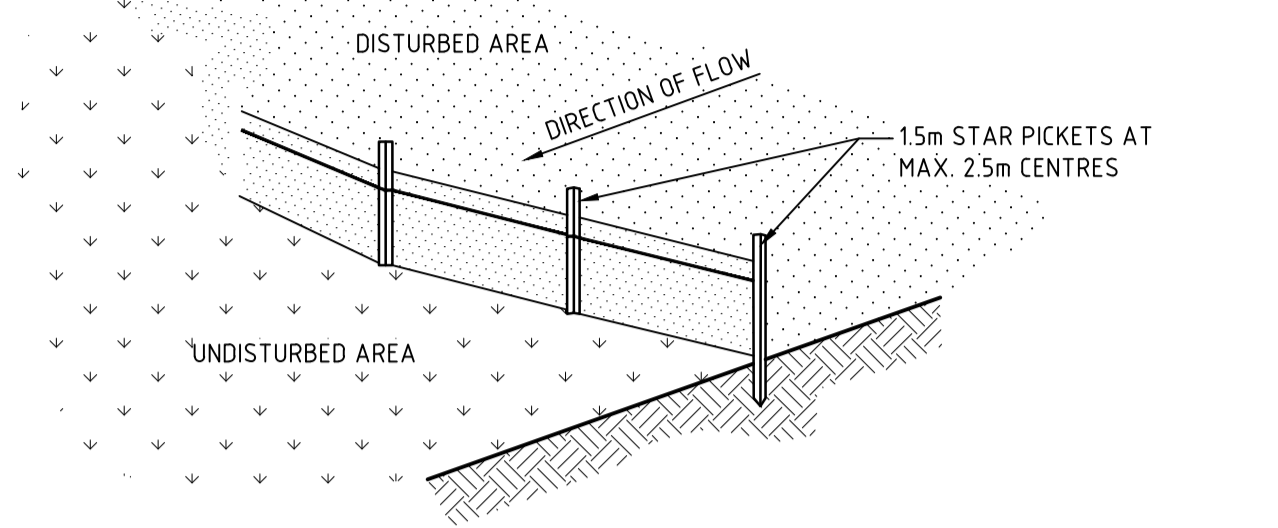
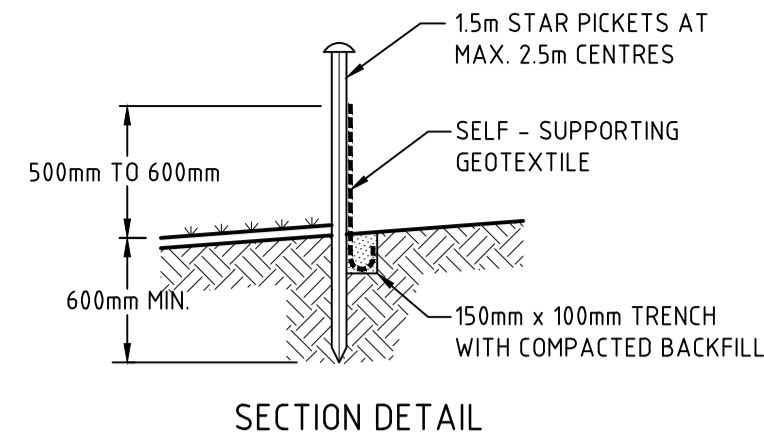
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NORWEST NSW 2153

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FAX: (02) 9634 6989
ABN 21 118 134 240

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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | 1:250 |

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| | | |
|---------------------------------|-------------------------|----------|
| 45-49 WARRIEWOOD RD, WARRIEWOOD | | |
| SEDIMENT & EROSION CONTROL PLAN | | |
| STATUS | DEVELOPMENT APPLICATION | REVISION |
| DRAWING No. | 02192_701 | 04 |

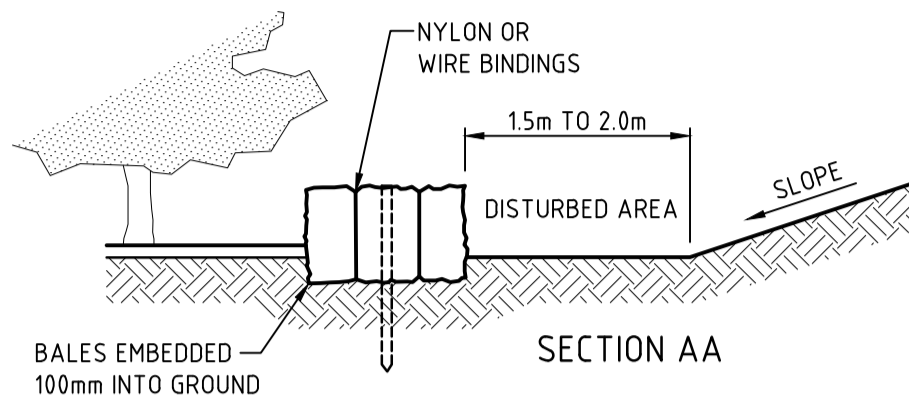
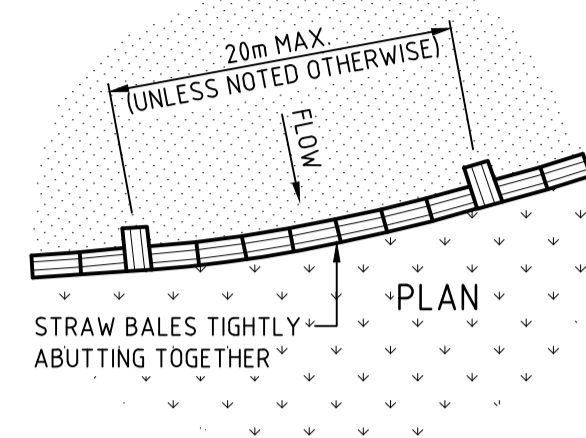
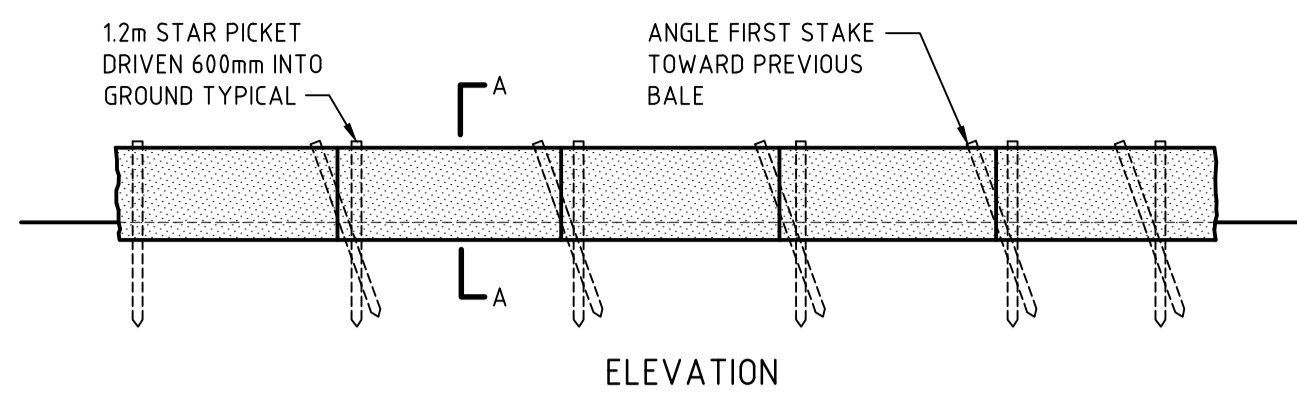


CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO THE GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE DETAIL

NOT TO SCALE

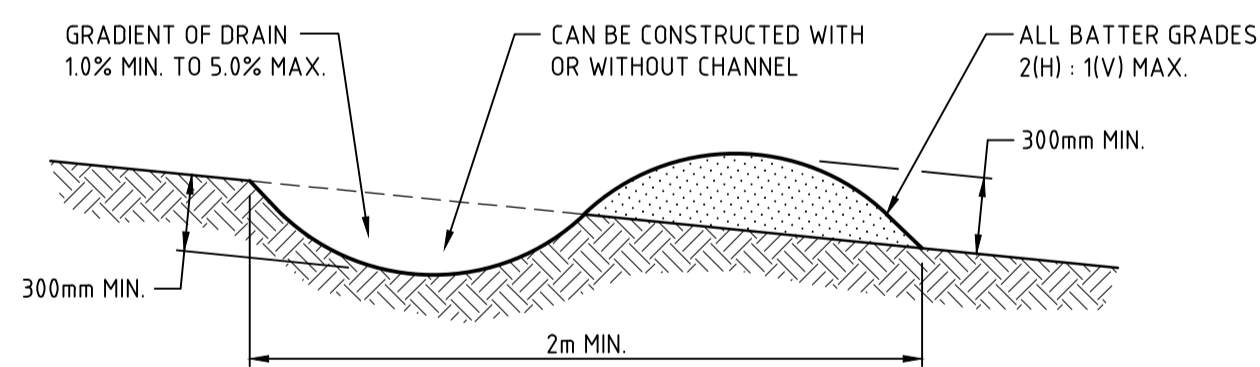


CONSTRUCTION NOTES:

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
5. WHERE STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1.0m TO 2.0m DOWNSLOPE FROM THE TOE.
6. ESTABLISH A MAINTENANCE PROGRAMME THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

STRAW BALE FILTER DETAIL

NOT TO SCALE



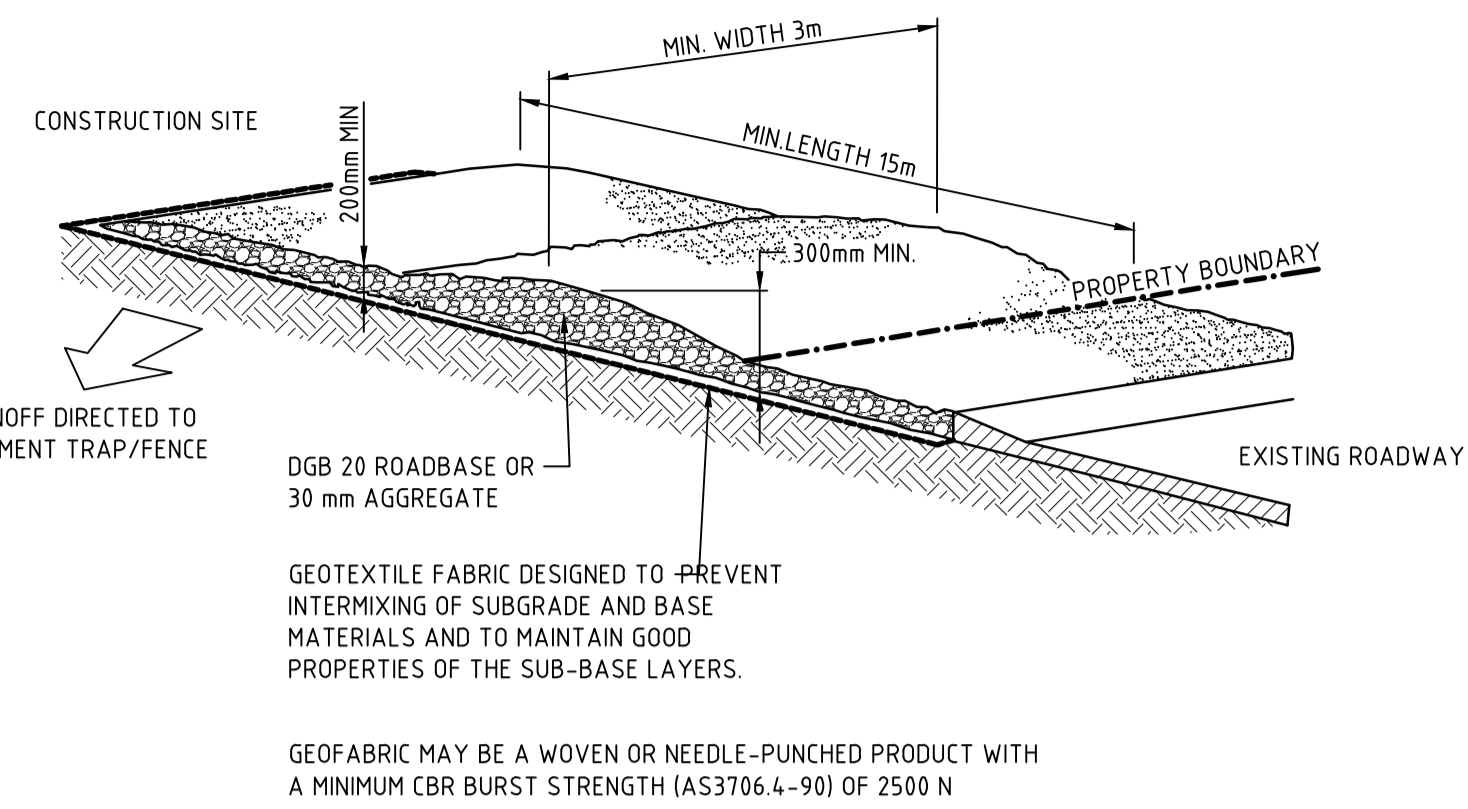
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE UPSLOPE LENGTH IS 80 METRES.

CONSTRUCTION NOTES:

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

TEMPORARY DIVERSION CHANNEL (LOW FLOW)

NOT TO SCALE

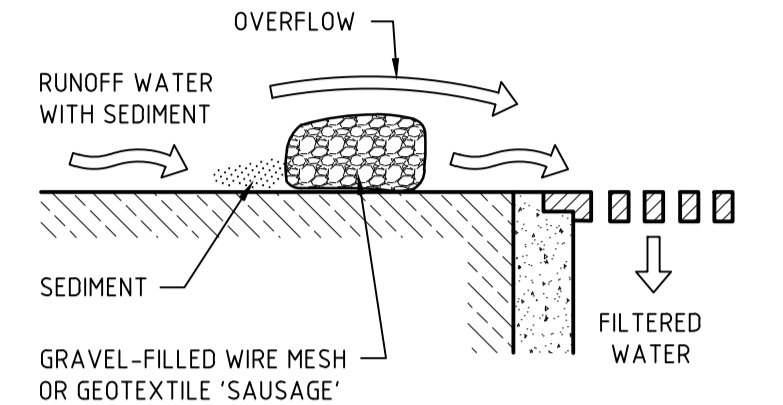
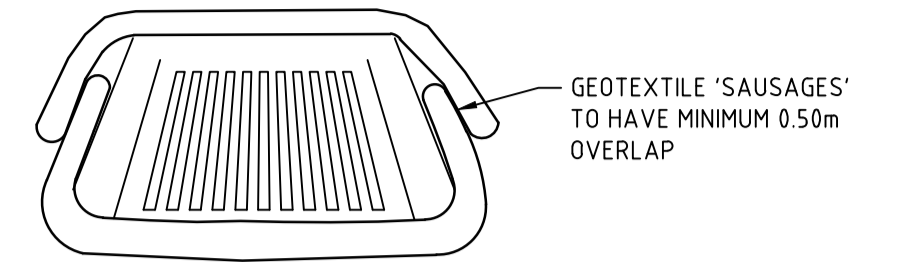


CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS DETAIL

NOT TO SCALE



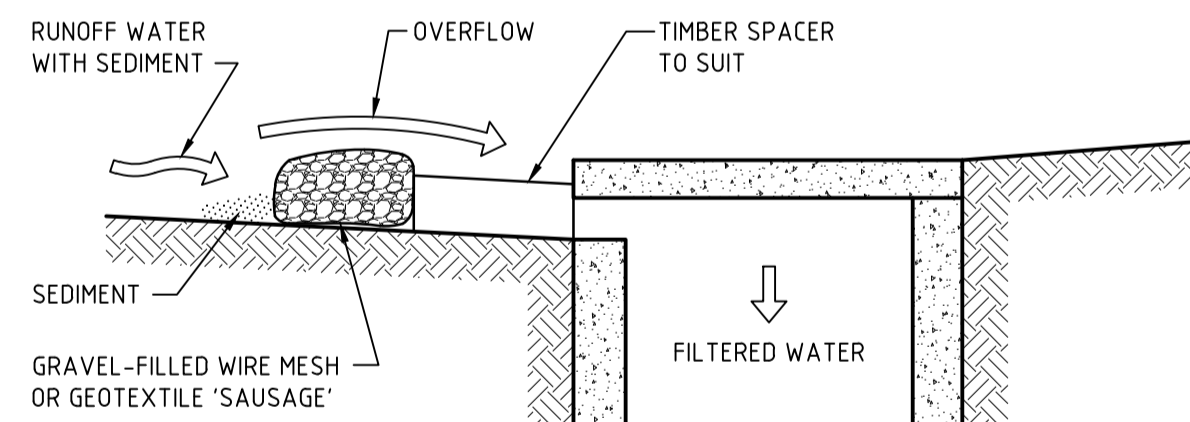
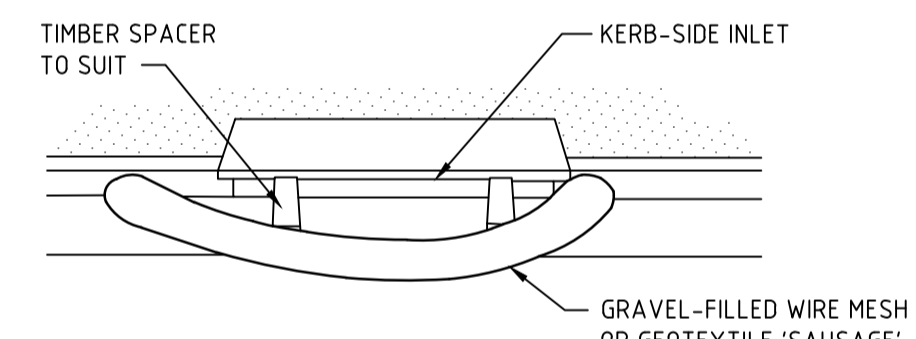
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN PAVEMENT AREAS

NOT TO SCALE

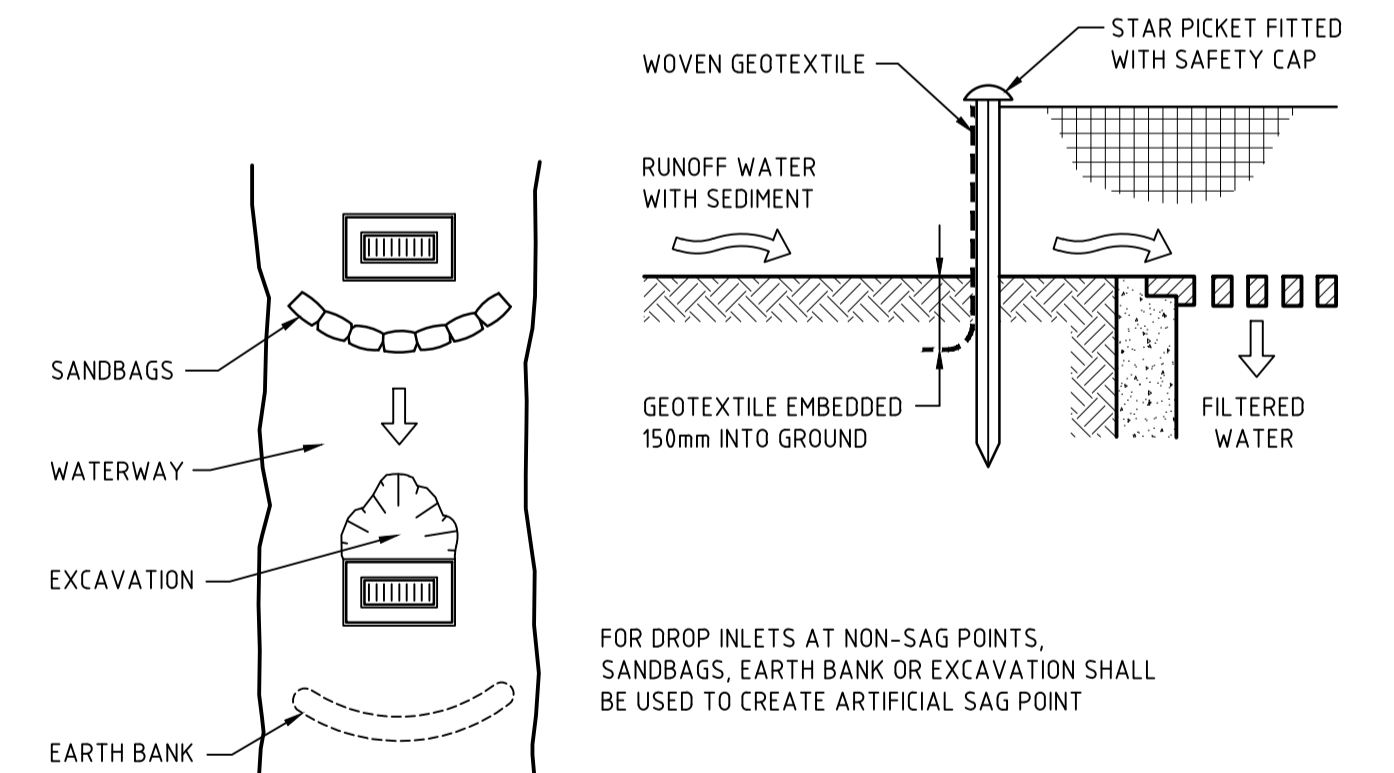
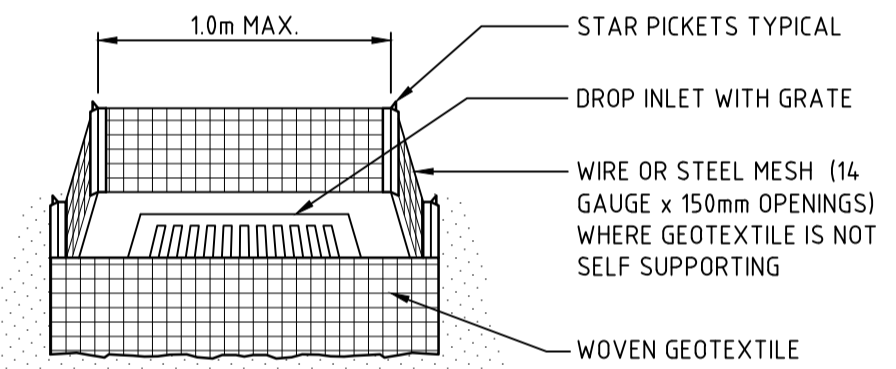


CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER DETAIL

NOT TO SCALE



CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
3. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

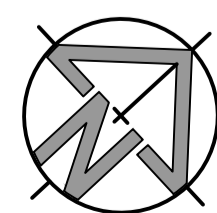
GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN LANDSCAPED AREAS

NOT TO SCALE

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FAX: (02) 9634 6989
ABN 21 118 134 240

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| DESIGNER | T.T. | DATE | JAN 2020 |
| ENGINEER | E.S. | LGA | NORTHERN BEACHES |
| VERIFIER | E.S. | SCALE @ A1 | NILL |

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| 45-49 WARRIEWOOD RD, WARRIEWOOD | |
| SEDIMENT & EROSION CONTROL DETAILS | |
| STATUS | DEVELOPMENT APPLICATION |
| DRAWING No. | 02192_702 |
| REVISION | 03 |