# RIDBC MACQUARIE UNIVERSITY
# STORMWATER DRAINAGE INFRASTRUCTURE

LOCATION OF SITE

LOCALITY PLAN
NOT TO SCALE

# STATE SIGNIFICANT 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 | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007

Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
SITE & LOCATION PLAN

| SCALE N.T.S | DRAWN RW | DESIGNED LP | CHECKED LP | APPROVED |
|---|---|---|---|---|
| DATE Nov 11, 2020 | DRAWING No. DA-STW - 001 | | ISSUE C | |
| JOB No. 2020-1773 | STATE SIGN. DA | | | |

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# 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 |
| 17 | EXISTING CONTOUR LINE |
| 17 | PROPOSED CONTOUR LINE |

## SERVICES & UTILITIES

| | |
|---|---|
| eE | EXISTING ELECTRICAL |
| eG | EXISTING GAS |
| eTel | EXISTING TELSTRA |
| eS | EXISTING SEWER |
| eSTW | EXISTING STORMWATER |
| x e x e x e x e | EXISTING SERVICE TO BE ABANDONED |
| OPTICS | EXISTING FIBRE OPTIC |
| G(MP) | EXISTING GAS MEDIUM PRESSURE |
| NBN | EXISTING TELECOMMUNICATIONS |
| AARNET | EXISTING TELECOMMUNICATIONS |
| NEXT GEN | EXISTING TELECOMMUNICATIONS |
| AUSGRID | EXISTING ELECTRICITY |
| eW | EXISTING WATER |

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

## EROSION & SEDIMENT SYMBOLS

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

## DRAWING INFORMATION SYMBOLS

0 1m 2m 4m 6m
SCALE BAR 1:100

PIPEWORK SHOWN IN STRATA UNLESS NOTED OTHERWISE

PIPEWORK SHOWN OUT OF STRATA UNLESS NOTED OTHERWISE

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

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

## 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 INLET 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 |
| 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 |
| KIP | KERB INLET 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 |
| OLF | OVERLAND FLOW |
| ORG | OVERFLOW RELIEF GULLY |
| P | PENETRATION |
| PDO | PLANTER DRAIN OUTLET |
| PLV | PRESSURE LIMITING VALVE |
| PRV | PRESSURE REDUCING VALVE |
| RCBC | REINFORCED CONCRETE BOX CULVERT |
| REV | REVISION |
| RHS | RECTANGULAR HOLLOW SECTION |
| 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


| | |
|---|---|
| DA - STW - 001 | TITTLE SHEET AND LOCALITY PLAN |
| DA - STW - 002 | LEGEND, ABBREVIATIONS AND DRAWING LIST |
| DA - STW - 003 | STORMWATER DRAINAGE GENERAL NOTES |
| DA - STW - 004 | STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 1 |
| DA - STW - 005 | STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 2 |
| DA - STW - 006 | STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 3 |
| DA - STW - 007 | STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 4 |
| DA - STW - 008 | STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 5 |
| DA - STW - 009 | STORMWATER DRAINAGE UTILITY SERVICES SERVICES LAYOUT - SHEET 1 |
| DA - STW - 010 | STORMWATER DRAINAGE UTILITY SERVICES SERVICES LAYOUT - SHEET 2 |
| DA - STW - 011 | STORMWATER DRAINAGE UTILITY SERVICES SERVICES LAYOUT - SHEET 3 |
| DA - STW - 012 | STORMWATER DRAINAGE UTILITY SERVICES SERVICES LAYOUT - SHEET 4 |
| DA - STW - 013 | STORMWATER DRAINAGE STORMWATER QUANTITY - CATCHMENT PLAN |
| DA - STW - 014 | STORMWATER DRAINAGE STORMWATER QUALITY - WSUD CATCHMENT PLAN |
| DA - STW - 015 | STORMWATER DRAINAGE EROSION + SEDIMENT CONTROL |
| DA - STW - 016 | STORMWATER DRAINAGE EROSION + SEDIMENT CONTROL DETAIL SHEET - 1 |
| DA - STW - 017 | STORMWATER DRAINAGE EROSION + SEDIMENT CONTROL DETAIL SHEET - 2 |
| DA - STW - 300 | STORMWATER DRAINAGE DETENTION TANK DETAIL PLAN |
| DA - STW - 301 | STORMWATER DRAINAGE DETENTION TANK SECTION |
| DA - STW - 101 | STORMWATER DRAINAGE BASEMENT PLAN - ZONE 1 |
| DA - STW - 102 | STORMWATER DRAINAGE LOWER GROUND FLOOR PLAN - ZONE 1 |
| DA - STW - 103 | STORMWATER DRAINAGE UPPER GROUND FLOOR PLAN - ZONE 2 |
| DA - STW - 104 | STORMWATER DRAINAGE LEVEL 01 - ZONE 1 |
| DA - STW - 105 | STORMWATER DRAINAGE ROOF PLAN - ZONE 1 |
| DA - STW - 106 | STORMWATER DRAINAGE ROOF PLAN - ZONE 2 |
| DA - C - 107 | SCHOOL BUILDING DRIVEWAY ENTRY LAYOUT PLAN |
| DA - C - 108 | CONSULTING BUILDING DRIVEWAY ENTRY LAYOUT PLAN |
| DA - C - 109 | SCHOOL BUILDING CL 1 & 2 LONGITUDENAL SECTIONS |
| DA - C - 110 | SCHOOL BUILDING CL 3 & 4 LONGITUDENAL SECTIONS |
| DA - C - 111 | CONSULTING BUILDING CL 5 & 6 LONGITUDENAL SECTIONS |
| DA - C - 112 | CONSULTING BUILDING CL 7 & 8 LONGITUDENAL SECTIONS |



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NORTH POINT

SHEET SIZE: A1

NOTES
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TITLE
STORMWATER DRAINAGE
LEGEND,ABBREVIATION & DRAWING LIST

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| N.T.S | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 002 | C |
| JOB No. 2020-1773 | STATE SIGN. DA | |


Xrefs: 2020-1773_X-H-TITTLE.BLK;A1
Plot Date: 11.11.2020@15:48:28 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-002.dwg

# NOTES

## GENERAL

1. ALL DIMENSIONS IN MILLIMETRES UNO. REDUCED LEVELS AND CHAINAGES ARE IN METRES. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS.
2. THE PROPOSED WORKS DETAILED HEREIN SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF COUNCIL GENERALLY AS DETAILED HEREUNDER.
3. ALL 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. POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS FOR 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/NZ S3500 FOR EXCESSIVE DEPTH.

   D. INSTALL IN ACCORDANCE WITH AUSTRALIAN STANDARD AS/NZ S3500 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. PIPES & FITTINGS FOR SUBSOIL DRAINAGE SHALL BE SLOTTED POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS, MIN. 150mm DIAMETER.
3. IN GROUND DRAINAGE PIPEWORK SERVING DP's SHALL BE MINIMUM 150mm DIA. UNO.
4. GRATED DRAINS SHALL BE 150mm NOM.

   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 WITH STEP IRONS FOR DEPTH GREATER THAN 1000. BENCH ALL PITS MIN. 50mm & FORM SMOOTH TRANSITION FROM INLET TO OUTLET.
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.

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/NZ S3500.3-2018 PRECAST REINFORCED CONCRETE BOX CULVERTS.
    AS 3500-1990 NATIONAL PLUMBING & DRAINAGE CODE.
    PART 2, SANITARY PLUMBING AND SANITARY DRAINAGE.
    SYDNEY WATER REQUIREMENTS.
    GEORGES RIVER COUNCIL REQUIREMENTS
14. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.

## CONCRETE WORKS

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS/NZ S3500, 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 STORMWATER 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:

THESE CLAUSES SHALL BE READ IN CONJUNCTION WITH "GEOTECHNICAL INVESTIGATION "
PREPARED BY: CROZIER GEOTECHNICAL CONSULTANTS
REPORT No: 2020 - 132
DATED: JULY 2020

1. THE RECOMMENDATIONS CONTAINED IN THE GEOTECH REPORT SHALL OVERRIDE THE CLAUSES PRESENTED HEREIN.
2. STRIP ALL TOPSOIL AND UNDERLYING FILL AND STOCKPILE TOPSOIL FOR LATER REUSE FOR LANDSCAPING PURPOSES.
3. 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.
4. SELECT FILL SHALL CONSIST OF LOCALLY DERIVED OR CUT NATURAL CLAYS.
5. 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.
6. 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.
7. 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:

8. 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.
9. 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.
10. 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.
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/NZ S3500, 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.

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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 |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

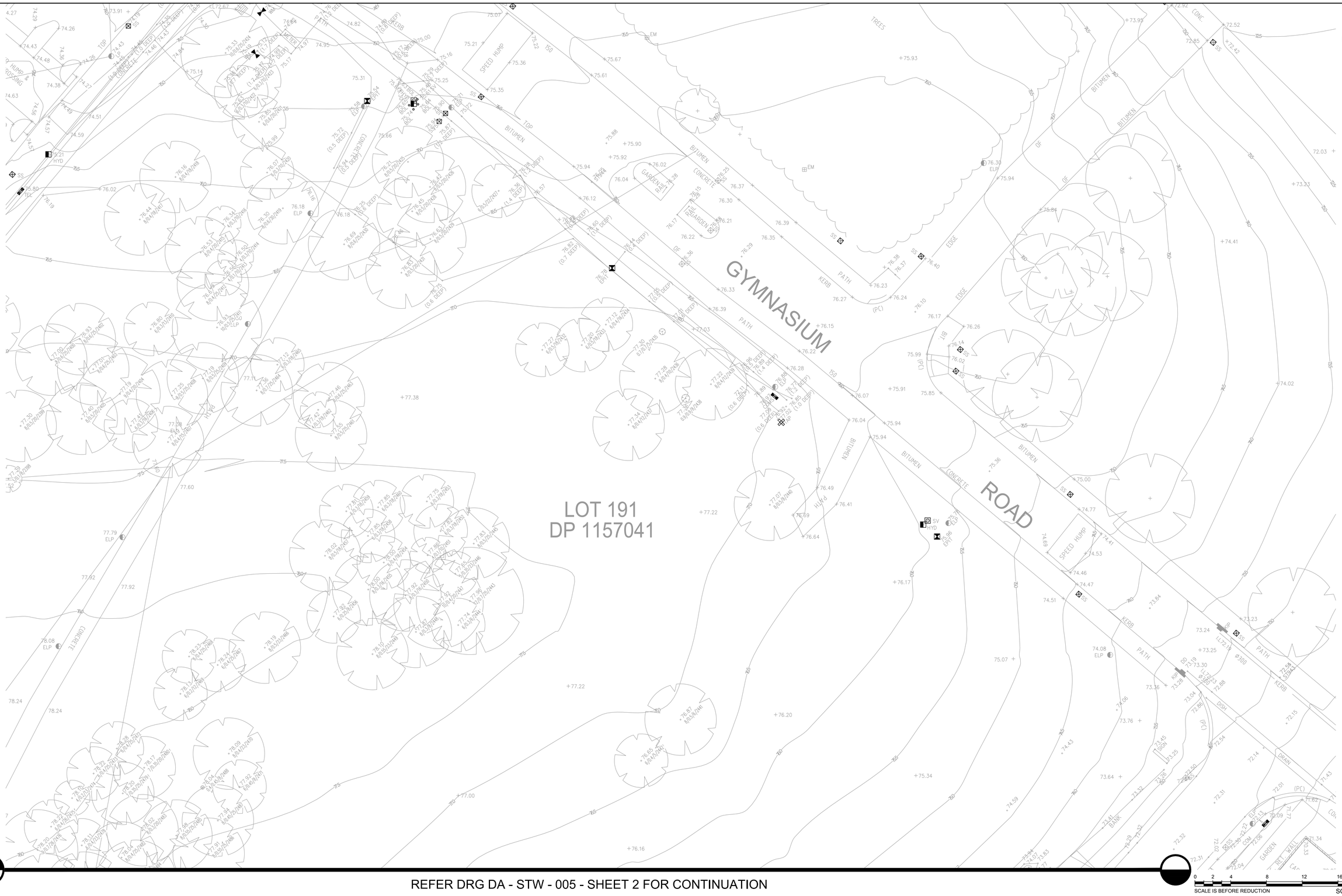
CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
GENERAL NOTES

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| NTS | RW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 003
ISSUE C
STATE SIGN. DA

Xrefs: 2020-1773_X-H-TITTLE BLK-A1
Plot Date: 11.11.2020@15:48:33 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-003.dwg




REFER DRG DA - STW - 007 - SHEET 4 FOR CONTINUATION

REFER DRG DA - STW - 005 - SHEET 2 FOR CONTINUATION

0 2 4 8 12 16 20 metres

SCALE IS BEFORE REDUCTION

SCALE 1:200

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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|---|---|---|
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PROJECT

ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT

WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER

M PROJECTS

Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007

Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT

Royal Institute for Deaf and Blind Children

CONSULTANT

LP CONSULTING AUSTRALIA PTY LTD

A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au

T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE

STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 1

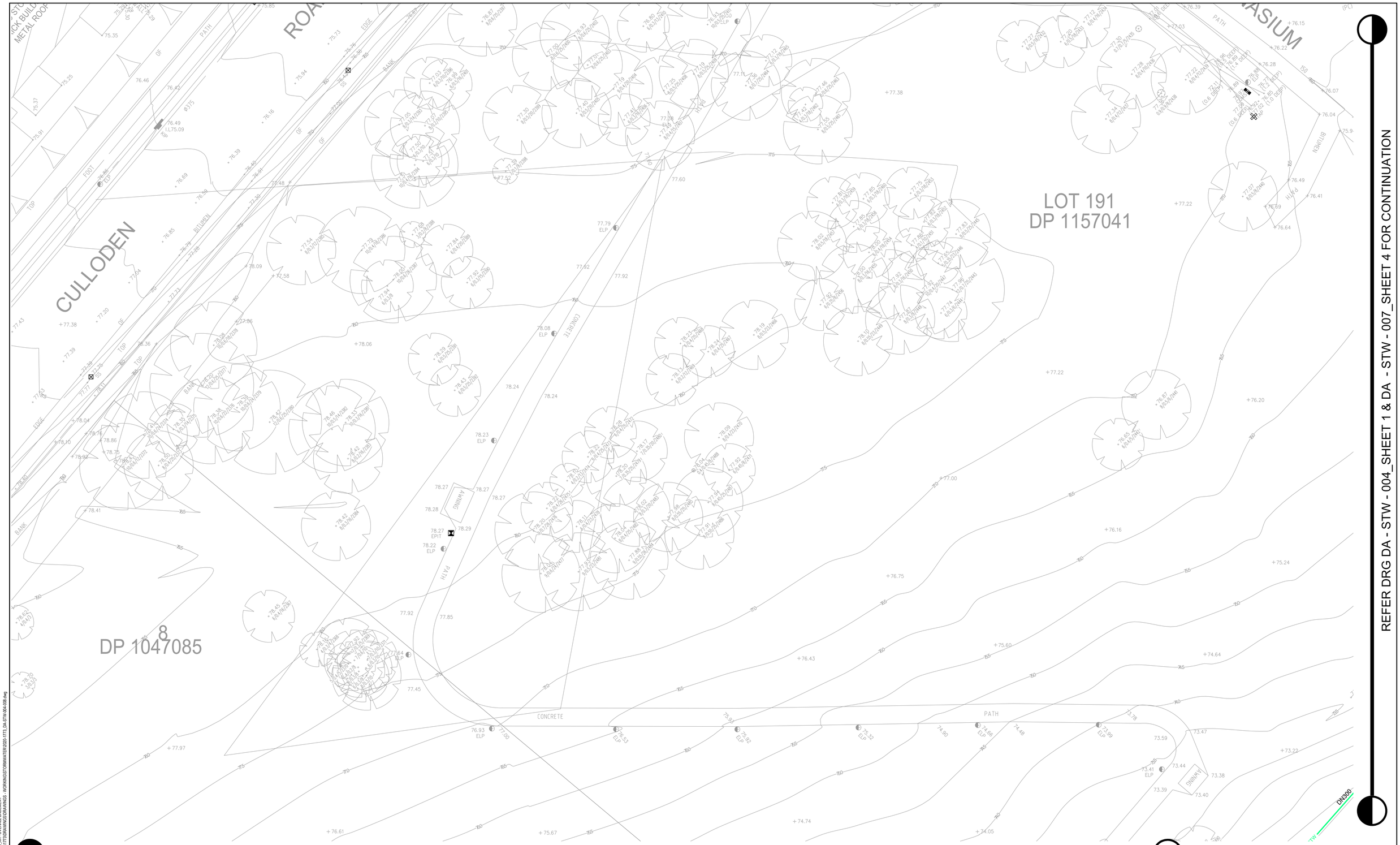
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 & A1<br>1 : 400 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 004 | C |

JOB No. 2020-1773

STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY_REF_RM; 2020-1773_XH-TITTLE BLK-A1; 2020-1773_XA - OVERALL BASEMENT
Plot Date: 11.11.2020@15:48:33 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-004-008.dwg




REFER DRG DA - STW - 007_SHEET 4 FOR CONTINUATION

REFER DRG DA - STW - 004_SHEET 1 & DA - STW - 007_SHEET 4 FOR CONTINUATION

Xrefs: 2020-1773_XS-SURVEY_REF_RIM; 2020-1773_XA-TITTLE BLK-A1; 2020-1773_XA - OVERALL BASEMENT
Plot Date: 11.11.2020@15:48:35 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-004-008.dwg

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
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PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007

Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 2

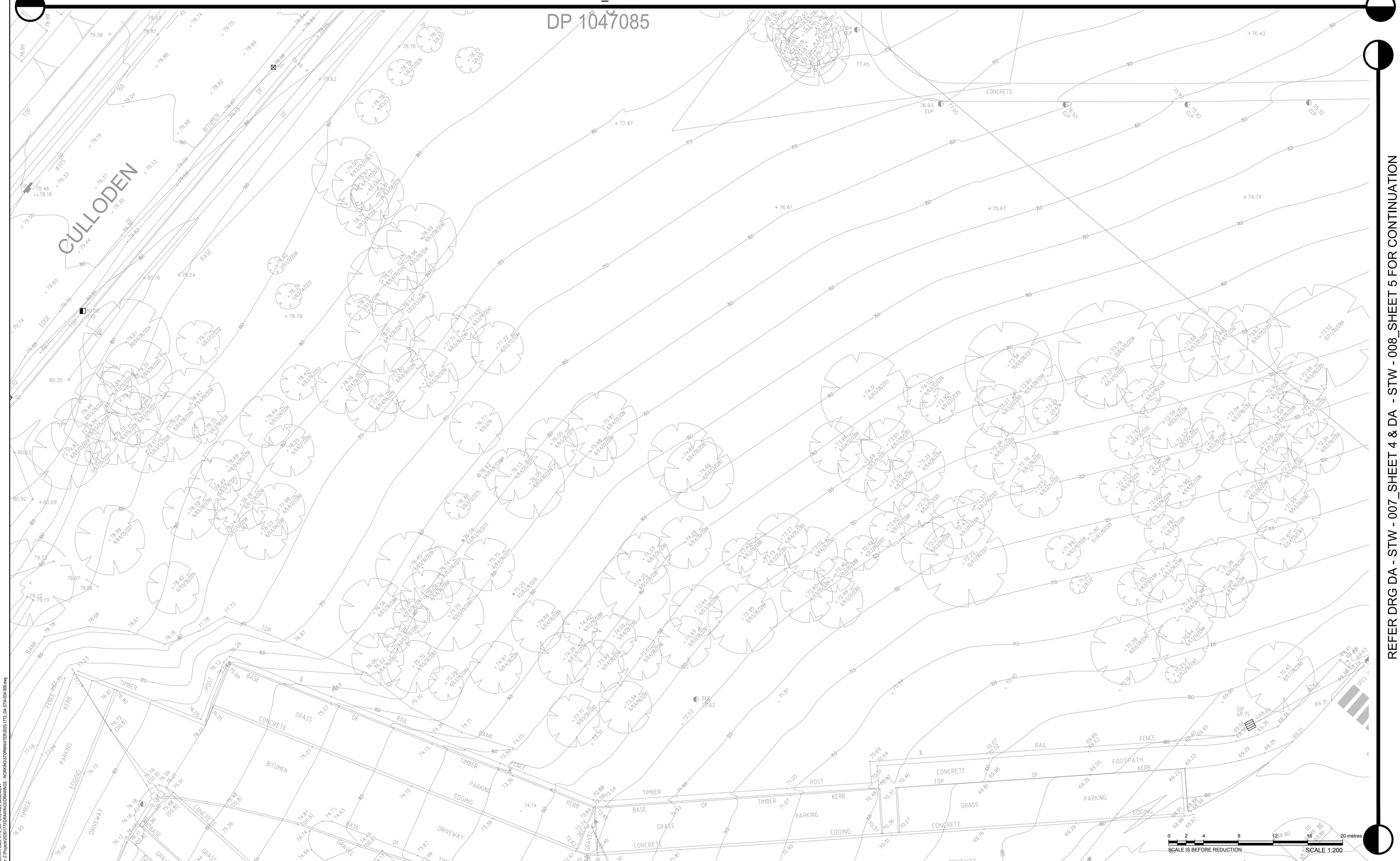
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 & A1<br>1 : 400 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 005 | C |

JOB No. 2020-1773

STATE SIGN. DA

REFER DRG DA - STW - 005_SHEET 2 FOR CONTINUATION




REFER DRG DA - STW - 007_SHEET 4 & DA - STW - 008_SHEET 5 FOR CONTINUATION

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NORTH POINT

TN MN

SHEET SIZE: A1

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| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
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ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
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TITLE
STORMWATER DRAINAGE SURVEY PLAN SERVICES LAYOUT - SHEET 3

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 & A1<br>1 : 400 @ A3 | RW | LP | LP | |
| DATE<br>Nov 11, 2020 | DRAWING No.<br>DA - STW - 006 | | ISSUE<br>C | |
| JOB No.<br>2020-1773 | STATE SIGN. DA | | | |

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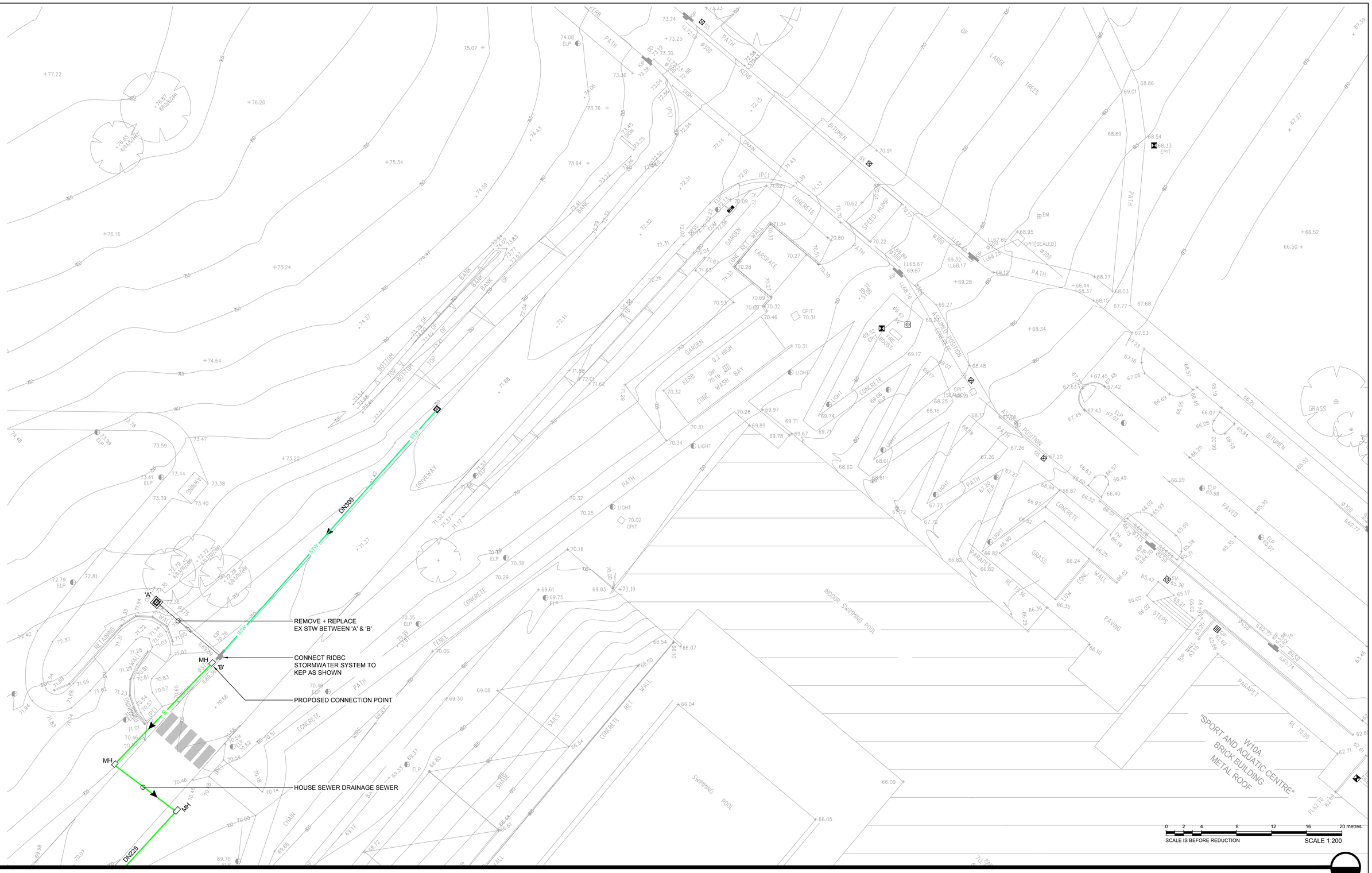
Plot Date: 11.11.2020@ 15:42:14 User: Nuwa Chaves Drawing: Z:\Projects\2020\2020-1773\CADD\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-004-008.dwg

REFER DRG DA - STW - 006_SHEET 3 & DA - STW - 005_SHEET 2 FOR CONTINUATION




REFER DRG DA - STW - 008_SHEET 5 FOR CONTINUATION

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
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ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
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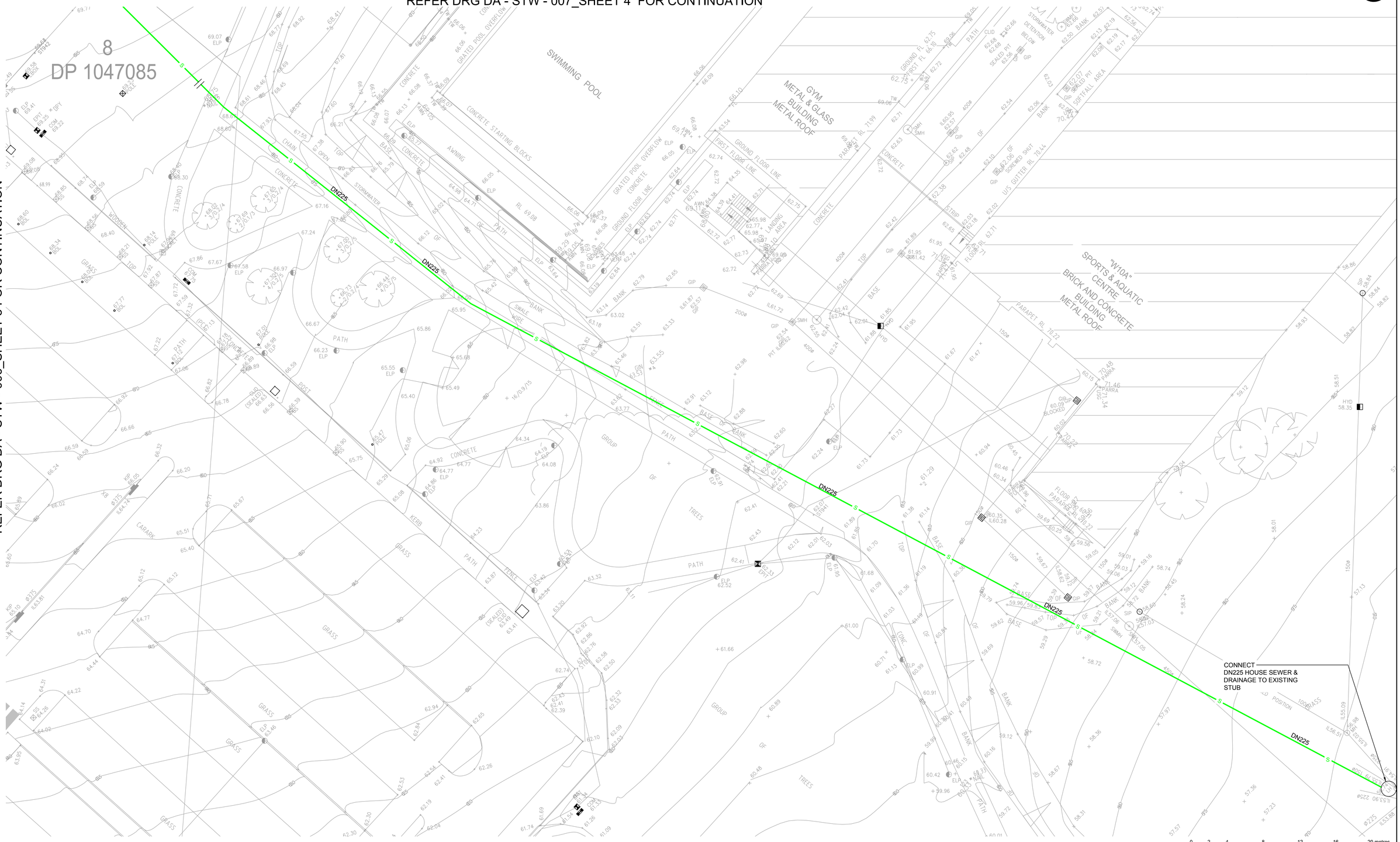
TITLE
STORMWATER DRAINAGE
SURVEY PLAN
SERVICES LAYOUT - SHEET 4

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 & A1<br>1 : 400 @ A3 | RW | LP | LP | |
| DATE Nov 11, 2020 | DRAWING No. DA - STW - 007 | | ISSUE C | |
| JOB No. 2020-1773 | STATE SIGN. DA | | | |

Node: 2020-1773_US-SURVEY_REF_RIM_2020-1773_A-H-TITLE BLK A1_2020-1773_XA - OVERALL EASEMENT
Plot Date: 11/11/2020@14:45:01 Login Name: WhiteR Cad File: S:\Projects\2020\1773\DRAWING\SERVICES - WORKING\STORMWATER\2020-1773_DA-STW-004-008.dwg

REFER DRG DA - STW - 007_SHEET 4 FOR CONTINUATION

REFER DRG DA - STW - 006_SHEET 3 FOR CONTINUATION

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
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Sydney NSW 2000

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M PROJECTS
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W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
SURVEY PLAN
SERVICES LAYOUT - SHEET 5

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 & A1<br>1 : 400 @ A3 | RW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 008 | C |
| JOB No. 2020-1773 | STATE SIGN. DA | |

Volts: 2020-1773_LS-SURVEY_REF_RM, 2020-1773_A-H-TITLE BLK A1, 2020-1773_XA-OVERALL EASEMENT
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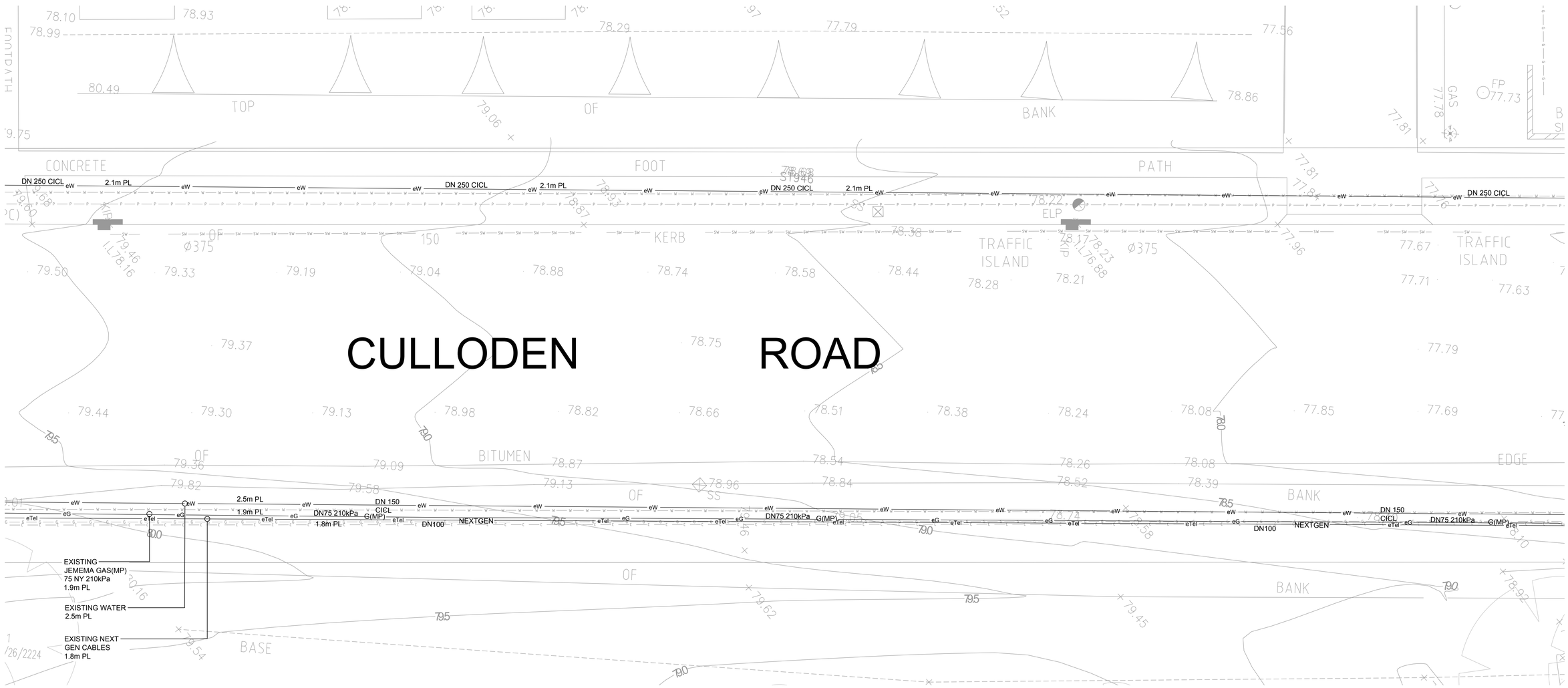


REFER DRG DA - STW - 008 SHEET 2FOR CONTINUATION

0 1 2 4 6 8 10 metres

SCALE IS BEFORE REDUCTION SCALE 1:100

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

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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 | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE UTILITY SERVICES PLAN SHEET - 1

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 100 @ A1<br>1 : 200 @ A3 | WW | LP | LP | |

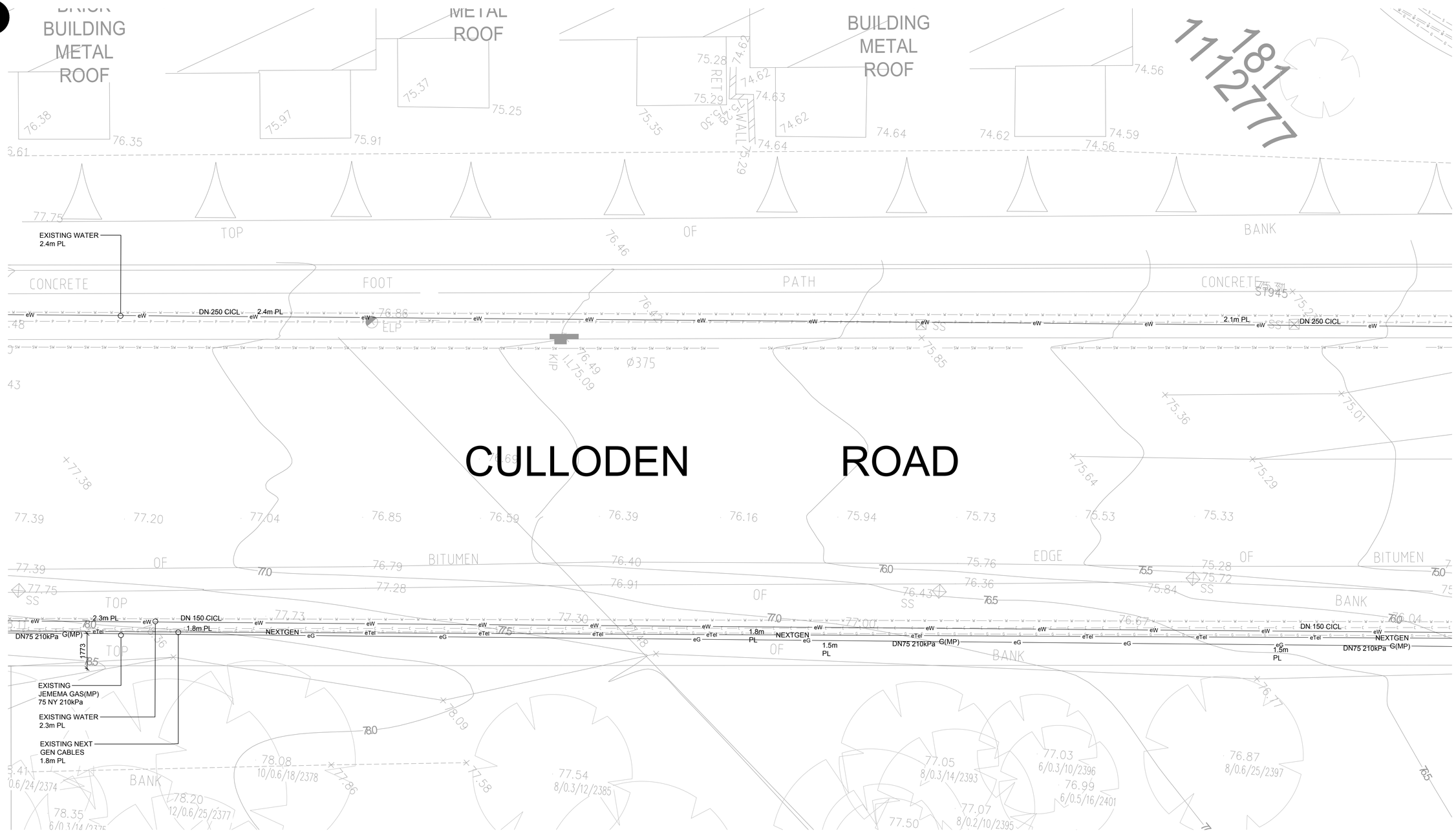
| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 009 | C |

JOB No. 2020-1773

STATE SIGN. DA

Xrefs: 2020-1773_X-H-TITTLE BLK-A1; 2020-1773_XS-SITE & SURVEY OVERALL PLAN; 2020-1773_XS-SURVEY
Plot Date: 11.11.2020@15:48:52 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-009-002.dwg

REFER DRG DA - STW - 007 SHEET 1 FOR CONTINUATION




REFER DRG DA - STW - 009 SHEET 3 FOR CONTINUATION

0 1 2 4 6 8 10 metres

SCALE IS BEFORE REDUCTION SCALE 1:100

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NORTH POINT: TN / MN

SHEET SIZE: A1

NOTES

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| C | ISSUE FOR SSDA | 11.11.2020 |

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WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

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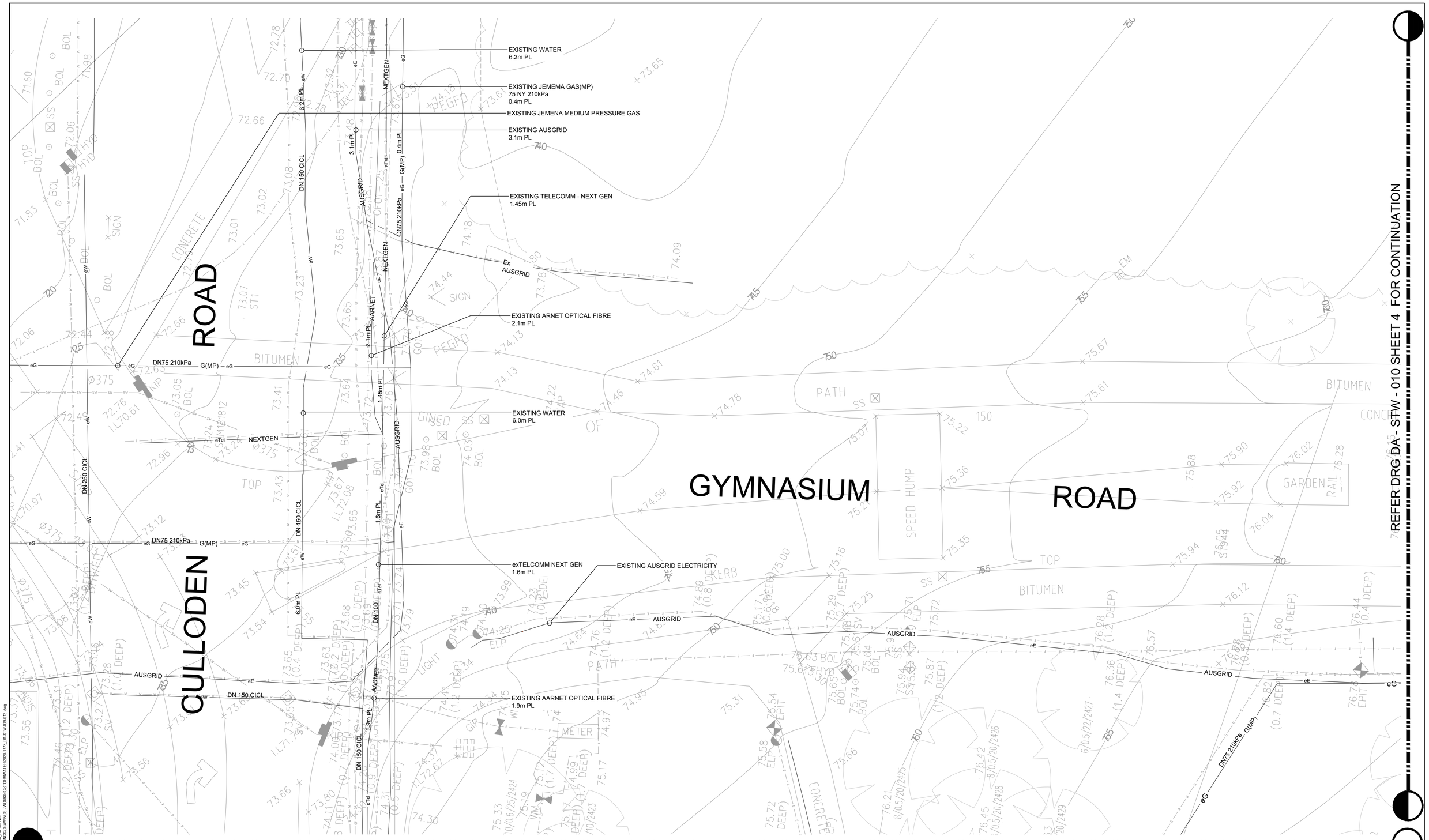
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE UTILITY SERVICES PLAN SHEET - 2

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 100 @ A1<br>1 : 200 @ A3 | WW | LP | LP | |

DATE: Nov 11, 2020
DRAWING No.: DA - STW - 010
ISSUE: C
JOB No.: 2020-1773
STATE SIGN. DA

Xrefs: 2020-1773_X-A-TITLE-BLK-A1; 2020-1773_XS-SITE & SURVEY OVERALL PLAN; 2020-1773_XS-SURVEY
Plot Date: 11:11:2020@19:48:53 Login Name: Michell Cad File: Z:\Projects\2001\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-009-012.dwg




REFER DRG DA - STW - 010 SHEET 4 FOR CONTINUATION

REFER DRG DA - STW - 008 SHEET 2 FOR CONTINUATION

0 1 2 4 6 8 10 metres

SCALE IS BEFORE REDUCTION

SCALE 1:100

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

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ARCHITECT

WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER

M PROJECTS
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22-36 Mountain Street,
Ultimo NSW 2007

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CONSULTANT

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Sydney NSW Australia 2000
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E: info@lp-consulting.com.au

T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE

STORMWATER DRAINAGE UTILITY SERVICES PLAN SHEET - 3

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 100 @ A1<br>1 : 200 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020

JOB No. 2020-1773

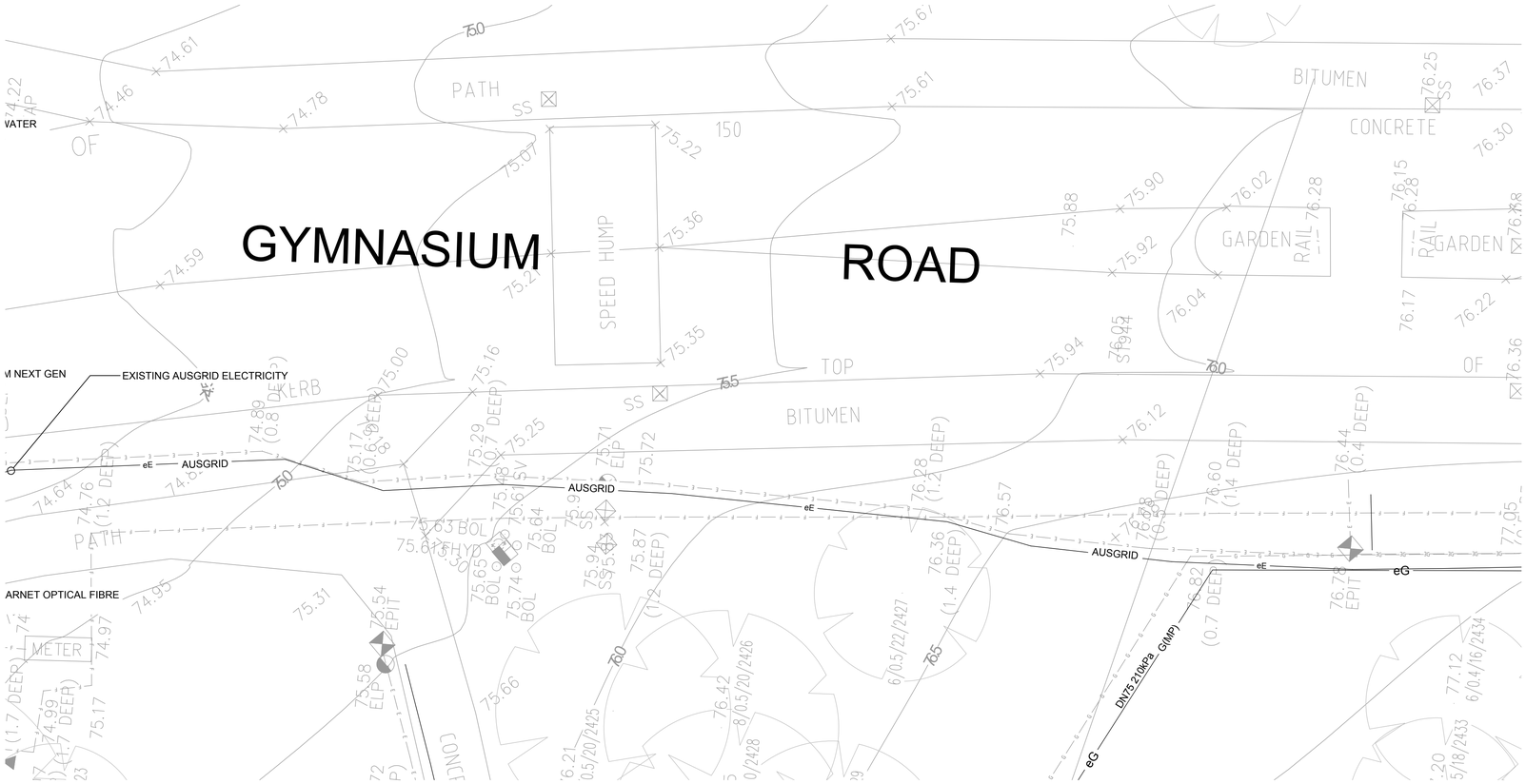
DRAWING No. DA - STW - 011

ISSUE C

STATE SIGN. DA

Xrefs: 2020-1773_XH-TITTLE BLK-A1; 2020-1773_XS-SITE & SURVEY OVERALL PLAN; 2020-1773_XS-SURVEY
Plot Date: 11.11.2020@15:48:55 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-009-012.dwg

REFER DRG DA - STW - 009 SHEET 3 FOR CONTINUATION




0 1 2 4 6 8 10 metres

SCALE IS BEFORE REDUCTION SCALE 1:100

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

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Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
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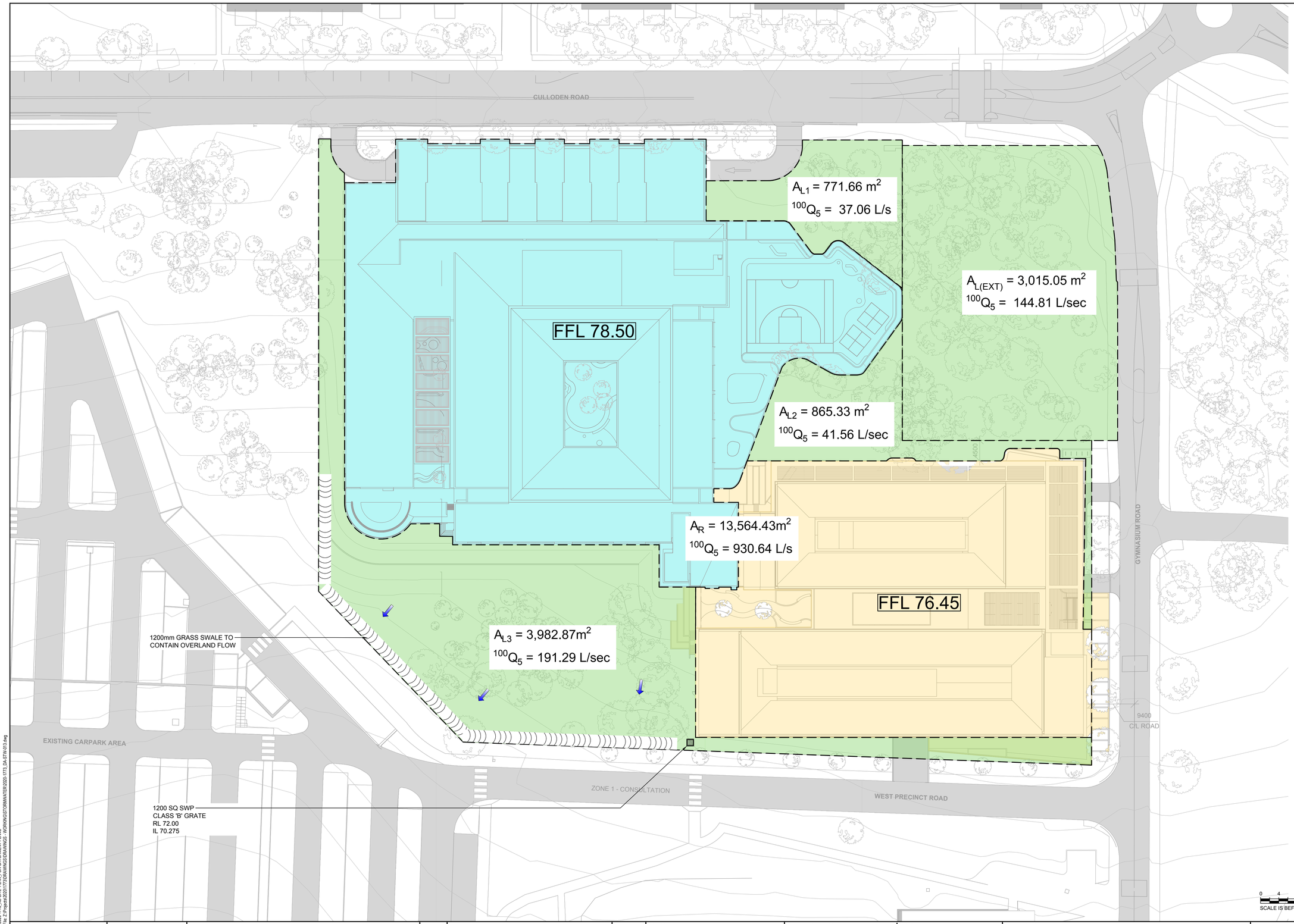
TITLE
STORMWATER DRAINAGE UTILITY SERVICES PLAN SHEET - 4

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 100 @ A1<br>1 : 200 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 012
ISSUE C
STATE SIGN. DA

Xrefs: 2020-1773_X-H-TITTLEBLK-A1; 2020-1773_XS-SITE & SURVEY OVERALL PLAN; 2020-1773_XS-SURVEY
Plot Date: 11.11.2020@15:48:58 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-009-012.dwg




STORMWATER CALCS:

C = 1.0 (ROOF)

C = 0.95 (PAVED)

C = 0.7 (LANDSCAPE)

$^{20}I_5$ = 194.9 mm/hr

$^{100}I_5$ = 247 mm/hr

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

OSD DATA :

| | | |
|---|---|---|
| PSD | = | 0.0265 L/s/m² |
| SSR | = | 0.0275 m³/m² |
| $PSD_{REQ'D}$ | = | 402.85 L/sec |
| $OSD_{REQ'D}$ | = | 418.04 m³ |

CATCHMENT AREAS :

| | | |
|---|---|---|
| $A_R$ | = | 13,564.43 m² |
| $A_{L1}$ | = | 771.66 m² |
| $A_{L2}$ | = | 865.33 m² |
| $A_{L3}$ | = | 3,982.87 m² |
| $A_{TOTAL}$ | = | 19184.29 m² |

0 4 8 16 24 32 40 metres

SCALE IS BEFORE REDUCTION SCALE 1:400

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
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TITLE
STORMWATER DRAINAGE
STORMWATER QUANTITY
CATCHMENT PLAN

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 400 @ A1<br>1 : 800 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020

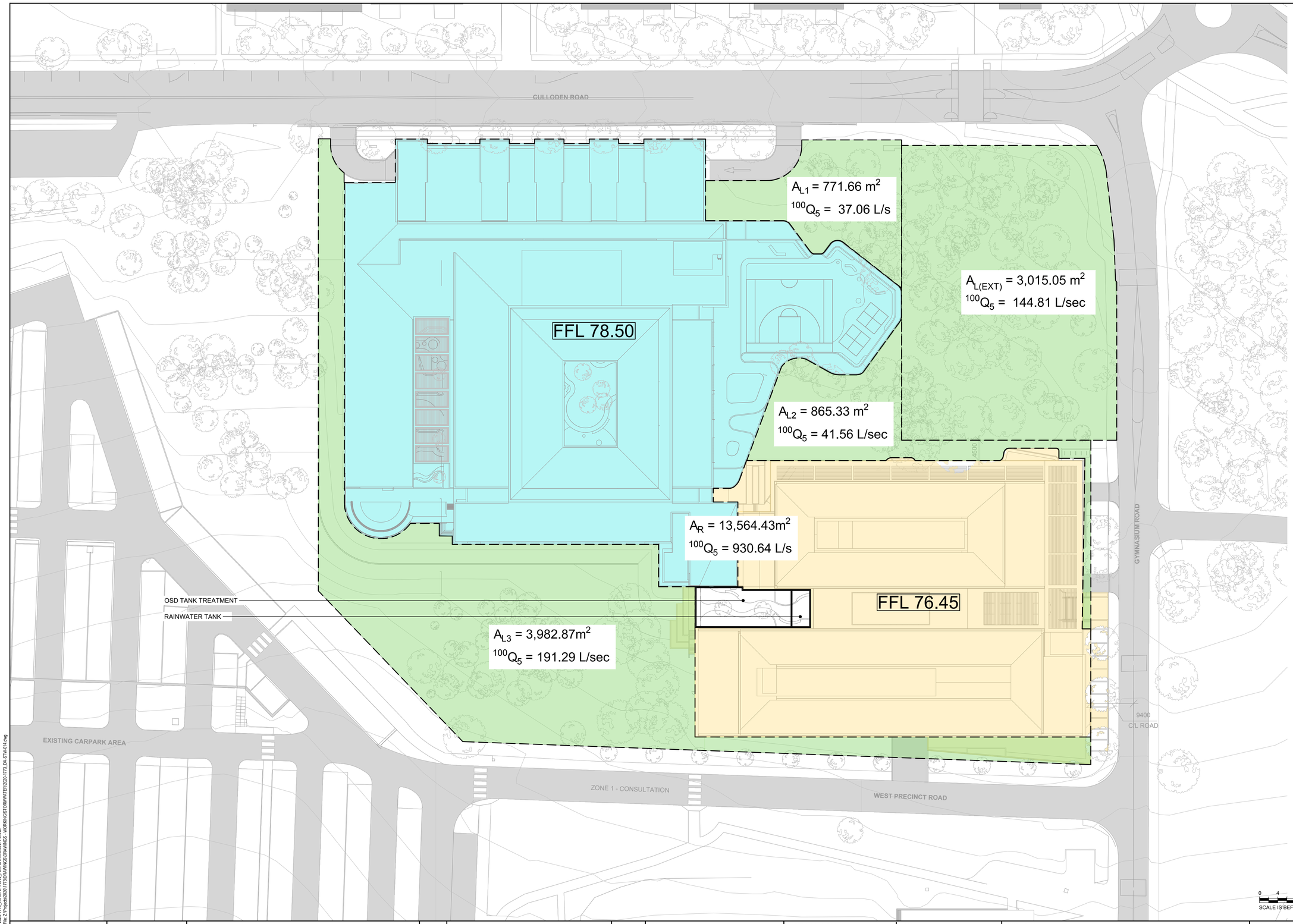
JOB No. 2020-1773

DRAWING No. DA - STW - 013

ISSUE C

STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-1-TITLE BLK-A1; 2020-1773_XS-SITE PLAN FOR CATCHMENT PLANS
Plot Date: 11.11.2020@15:49:15 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-013.dwg




STORMWATER CALCS:

C = 1.0 (ROOF)

C = 0.95 (PAVED)

C = 0.7 (LANDSCAPE)

$^{20}I_5$ = 194.9 mm/hr

$^{100}I_5$ = 247 mm/hr

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

OSD DATA :

PSD = 0.0265 L/s/m$^2$

SSR = 0.0275 m$^3$/m$^2$

CATCHMENT AREAS :

$A_R$ = 13,564.43 m$^2$

$A_{L1}$ = 771.66 m$^2$

$A_{L2}$ = 865.33 m$^2$

$A_{L3}$ = 3,982.87 m$^2$

$A_{TOTAL}$ = 19184.29 m$^2$

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
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TITLE
STORMWATER DRAINAGE
STORMWATER QUALITY
WSUD CATCHMENT PLAN

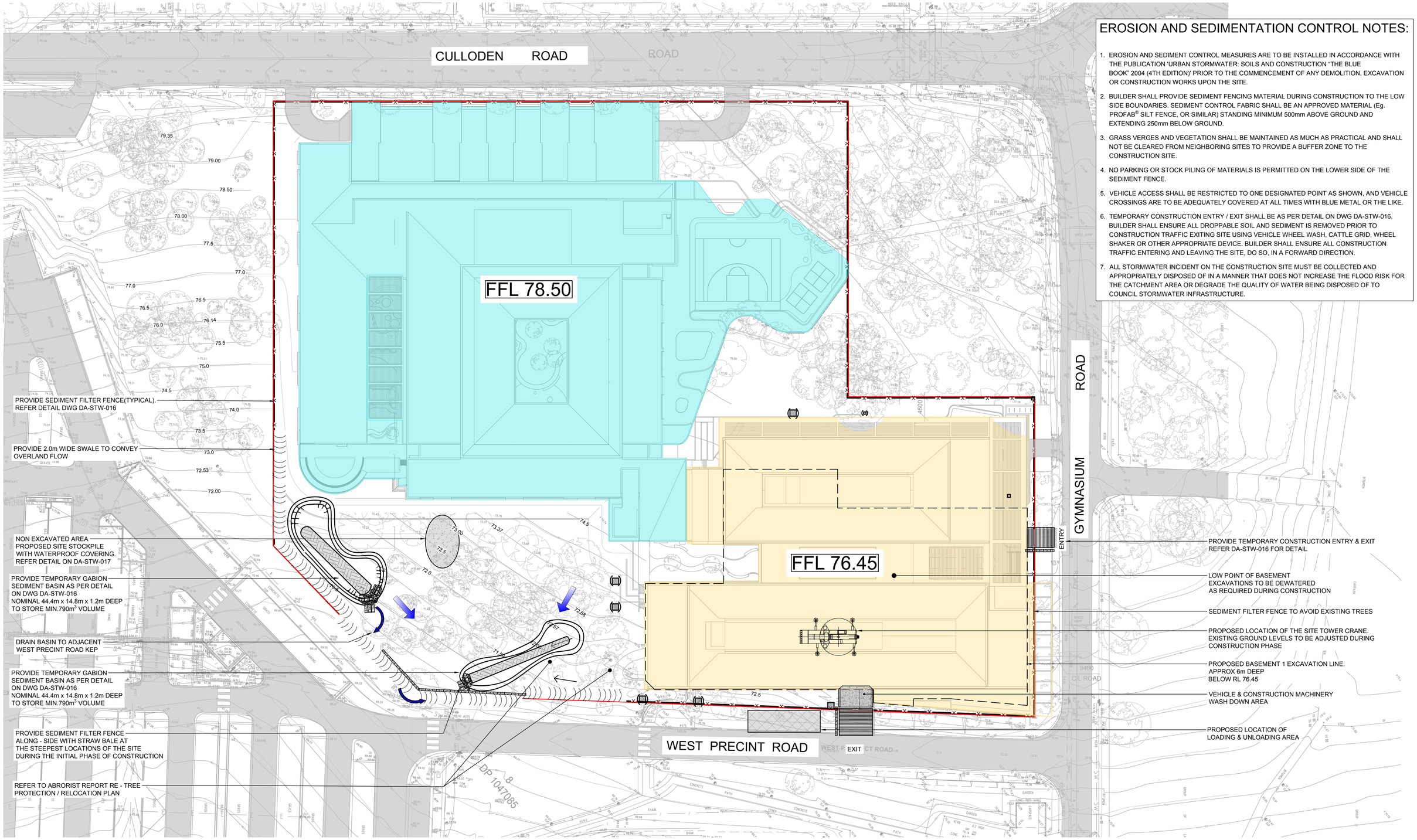
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 400 @ A1<br>1 : 800 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - STW - 014 | C |

JOB No. 2020-1773

STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITTLE BLK-A1; 2020-1773_XS-SITE PLAN_FOR CATCHMENT PLANS
Plot Date: 11.11.2020@15:49:31 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-014.dwg




## EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED IN ACCORDANCE WITH THE PUBLICATION 'URBAN STORMWATER: SOILS AND CONSTRUCTION "THE BLUE BOOK" 2004 (4TH EDITION)' PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION, EXCAVATION OR CONSTRUCTION WORKS UPON THE SITE.
2. BUILDER SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE BOUNDARIES. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (Eg. PROFAB® SILT FENCE, OR SIMILAR) STANDING MINIMUM 500mm ABOVE GROUND AND EXTENDING 250mm BELOW GROUND.
3. GRASS VERGES AND VEGETATION SHALL BE MAINTAINED AS MUCH AS PRACTICAL AND SHALL NOT BE CLEARED FROM NEIGHBORING SITES TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
4. NO PARKING OR STOCK PILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
5. VEHICLE ACCESS SHALL BE RESTRICTED TO ONE DESIGNATED POINT AS SHOWN, AND VEHICLE CROSSINGS ARE TO BE ADEQUATELY COVERED AT ALL TIMES WITH BLUE METAL OR THE LIKE.
6. TEMPORARY CONSTRUCTION ENTRY / EXIT SHALL BE AS PER DETAIL ON DWG DA-STW-016. BUILDER SHALL ENSURE ALL DROPPABLE SOIL AND SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE USING VEHICLE WHEEL WASH, CATTLE GRID, WHEEL SHAKER OR OTHER APPROPRIATE DEVICE. BUILDER SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE, DO SO, IN A FORWARD DIRECTION.
7. ALL STORMWATER INCIDENT ON THE CONSTRUCTION SITE MUST BE COLLECTED AND APPROPRIATELY DISPOSED OF IN A MANNER THAT DOES NOT INCREASE THE FLOOD RISK FOR THE CATCHMENT AREA OR DEGRADE THE QUALITY OF WATER BEING DISPOSED OF TO COUNCIL STORMWATER INFRASTRUCTURE.

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NORTH POINT: TN / MN

SHEET SIZE: A1

NOTES
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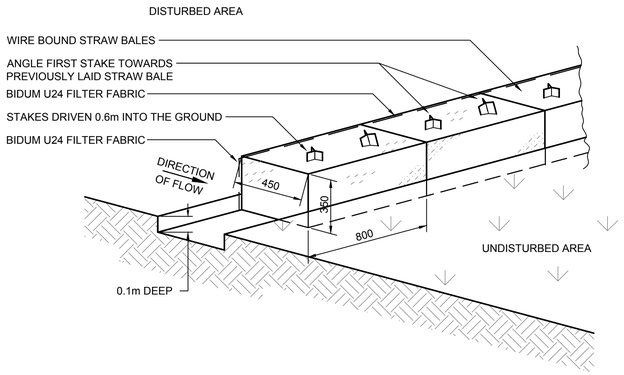
TITLE
STORMWATER DRAINAGE
EROSION & SEDIMENT CONTROL PLAN

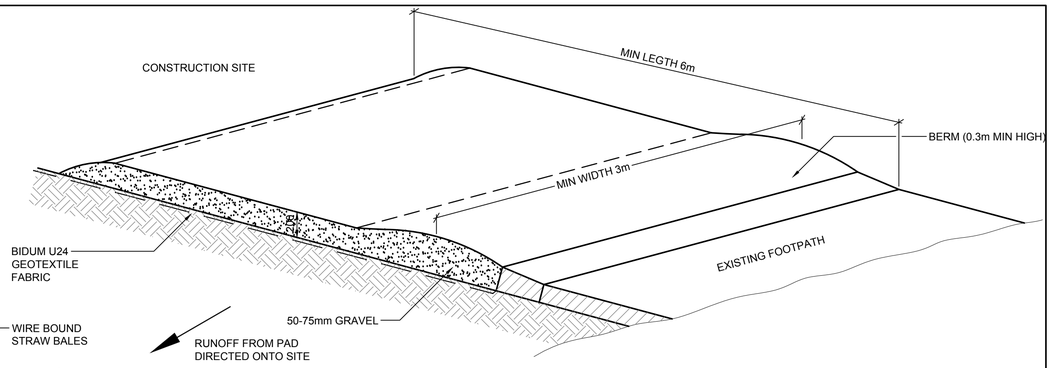
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 400 @ A1<br>1 : 800 @ A3 | WW | LP | LP | |

DATE: Nov 11, 2020
JOB No.: 2020-1773
DRAWING No.: DA - STW - 015
ISSUE: C
STATE SIGN. DA

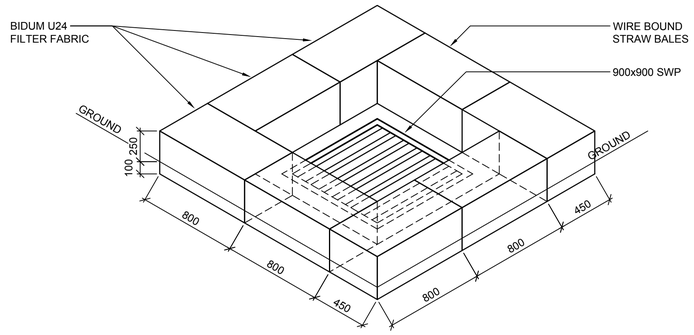
Work: 2020-1773_XS-SURVEY; 2020-1773_XH-TITTLE BLK-A1; 2020-1773_XS-SITE PLAN FOR CATCHMENT PLANS; 2020-1773_XA-BASEMENT PLAN ZONE 1
Plot Date: 11.11.2020@15:45:58 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS\ WORKING\STORMWATER\2020-1773_DA-STW-015.dwg



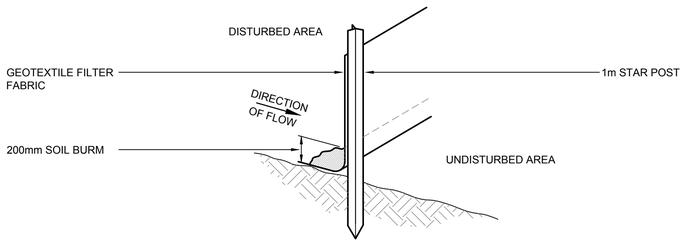

## STRAW BALE SEDIMENT FILTER
N.T.S




## TEMPORARY CONSTRUCTION EXIT
N.T.S




## SWP WITH STRAW BALE SEDIMENT FILTER
N.T.S




## SEDIMENT FILTER FENCE
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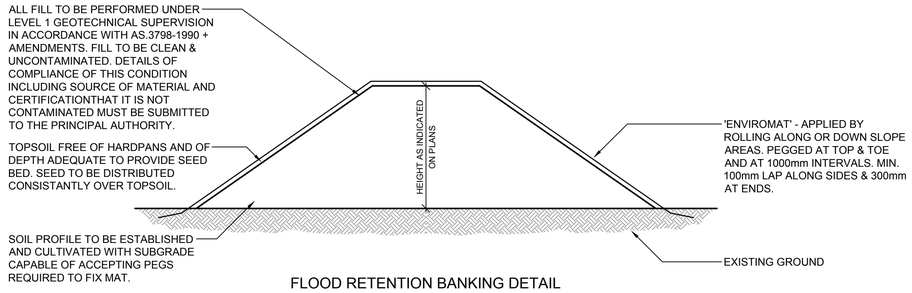
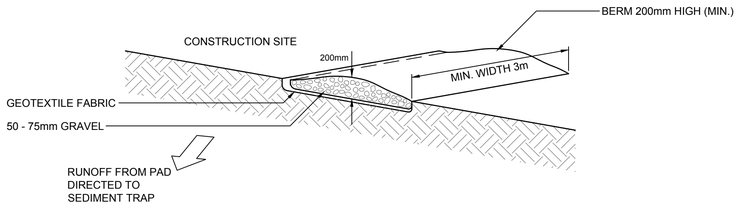
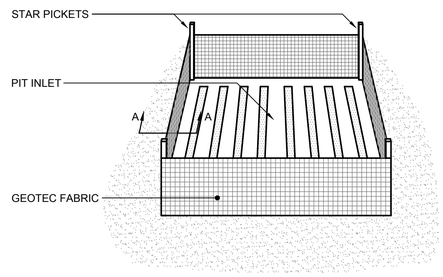
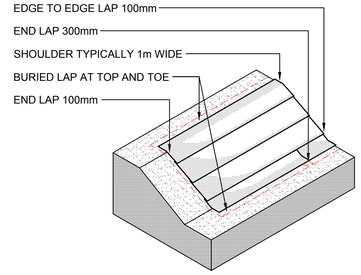



## FLOOD RETENTION BANKING DETAIL + ANTI-SOUR TREATMENT

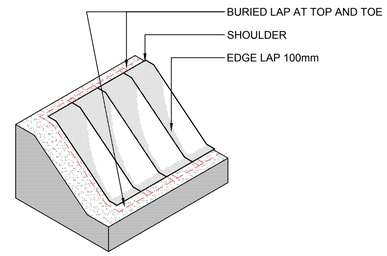



## VEHICLE ACCESS TO SITE
N.T.S

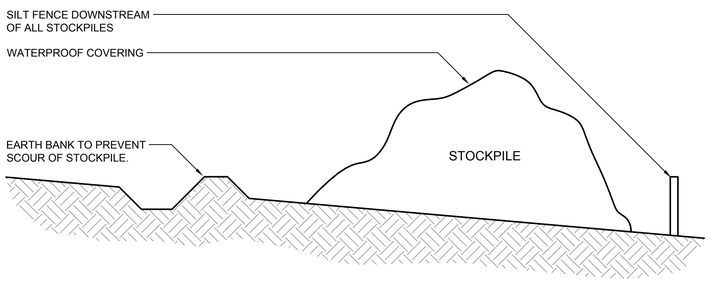


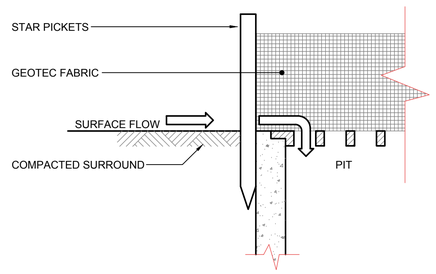

TREATMENT OF SLOPES UP TO 35° FROM THE HORIZONTAL




TREATMENT OF SLOPES GREATER THAN 35° FROM THE HORIZONTAL

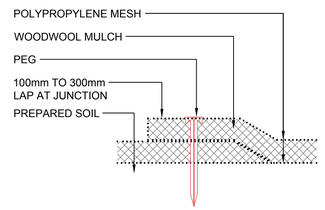



## BUILDING MATERIALS STOCKPILE
N.T.S

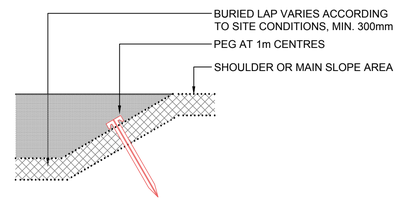



SECTION A-A
TYPICAL DETAIL

## GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP
N.T.S




TYPICAL CROSS SECTION THROUGH INSTALLED ENVIROMAT




TYPICAL CROSS SECTION SHOWING EDGE TREATMENT

## FLOOD RETENTION BANKING
N.T.S

0 10 20 40 60 80 100mm
SCALE IS BEFORE REDUCTION
SCALE 1:1

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NORTH POINT: TN / MN

SHEET SIZE: A1

NOTES
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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 | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN
MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

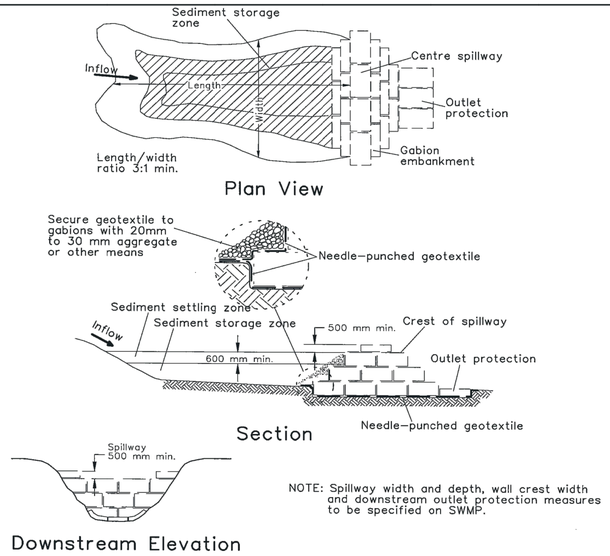
CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
EROSION + SEDIMENT CONTROL
DETAIL SHEET - 1

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| | WW | LP | LP | |

DATE: Nov 11, 2020
DRAWING No.: DA - STW - 016
ISSUE: C
JOB No.: 2020-1773
STATE SIGN. DA

Xrefs: 2020-1773_X-H-1171LE-BLK-A1
Plot Date: 11.11.2020@15:50:03 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORM\WATER\2020-1773_DA-STW-016.dwg




NOTE: Spillway width and depth, wall crest width and downstream outlet protection measures to be specified on SWMP.

## Construction Notes

(Applies to Type C soils only)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Excavate to 300 mm depth for the base of the dam wall and form a level platform for the gabions.
3. Line the excavation with a needle-punched geotextile allowing sufficient to line below the wall, and over the upstream gabions and spillway to 500 mm below the spillway exit on the downstream face.
4. Make up the wall profile and outlet protection with gabion units filled with graded rock as specified on the SWMP.
5. Construct a spillway 500 mm below the crest of the dam and for the width specified on the SWMP.
6. Lap the geotextile over the upstream face and through the spillway and fix it in place with the top row of gabions.
7. Cover the upstream face of the wall with 20 mm to 30 mm gravel and geotextile (Standard Drawing 6-2b)
8. Place a "Full of Sediment' marker to show when less than design capacity occurs and sediment removal is required.
9. Replace the upstream geotextile layer when sediment is removed if a dry basin is required.

**GABION SEDIMENT BASIN**
**(APPLIES TO 'TYPE C' SOILS ONLY)**

**SD 6-2**

## EROSION & SEDIMENT CONTROL ASSESSMENT

BASED ON SOILS & CONSTRUCTION: MANAGING URBAN STORMWATER 4TH EDITION, MARCH 2004 AVAILABLE FROM LANDCOM

ASSUMED AREA OF SOIL DISTURBANCE = APPROX. 19,340m²
TAKE RAINFALL EROSIVITY FACTOR R = 4000 FOR MACQUARIE UNIVERSITY (FROM APPENDIX B: MAP 10 ON PAGE B-12)
TAKE SITE SLOPE = 7.6%
INDICATIVE EROSION HAZARD IS HIGH (BASED ON SECTION 4.4.1 FIGURE 4.6 ON PAGE 4-10)
USE REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE) TO CHECK:
TAKE SOIL ERODIBILITY FACTOR K = 0.019 (FROM APPENDIX C: TABLE 20 FOR LANE COVE ON PAGE C-105)
TAKE SLOPE LENGTH / GRADIENT FACTOR L/s = 2.05 (FROM APPENDIX A: USING 80m LENGTH IN TABLE A1 ON PAGE A-9)
TAKE EROSION CONTROL PRACTICE FACTOR P = 1.3 (FROM APPENDIX A: TABLE A2 ON PAGE A-11)
TAKE GROUND COVER & MANAGEMENT FACTOR C = 1.0 (FROM APPENDIX A: FIGURE A5 ON PAGE A-12)
SOIL LOSS = 4000 x 0.019 x 2.05 x 1.3 x 1.0 = APPROX. 203t/ha/yr
SOIL LOSS CLASS = 2 (BETWEEN 151 to 225t/ha/yr) (BASED ON SECTION 4.4.2 TABLE 4.2 ON PAGE 4-13)
EROSION HAZARD IS THEREFORE LOW & THERE ARE NO SEASONAL RESTRICTIONS ON SITE ACTIVITY.
FOR A SOIL DENSITY OF 1.0t/m³ AVERAGE ANNUAL SOIL LOSS = 203m³/yr
SINCE THIS IS GREATER THAN 150m³/yr, A SEDIMENT BASIN IS CONSIDERED NECESSARY WHERE EXCAVATED SITE PORTIONS & AREAS OF SOIL DISTURBANCE EXCEED 2,500m² (REFER TO SECTION 6.3.2(d) ON PAGE 6-8).
FOR THE AREA TO BE DISTURBED ON THIS SITE, SEDIMENT FENCES ARE CONSIDERED SATISFACTORY WHERE THEY CAN BE ARRANGED TO LIMIT AREAS DRAINING TOWARDS A SINGLE SECTION OF SEDIMENT FENCING TO 2,500m² (REFER TO SECTION 2.1 ON PAGE 2-1, SECTION 4.4.1(a) ON PAGE 4-9 & SECTION 4.3.2(h)(iv) ON PAGE 4-4.
LENGTHS OF SEDIMENT FENCING SHOULD BE ARRANGED TO LIMIT SUBCATCHMENT FLOWS TO 50L/s (REFER TO SECTION 6.3.7(e) ON PAGE 6-33 & SECTION 2.3.1(e) ON PAGE 2-4).
FOR 10yr 5min INTENSITY = 163mm/h & 10yr 1hr INTENSITY 46.9mm/h A FULLY PERVIOUS AREA OF UP TO 2,500m² CAN BE ACCOMMODATED BY ONE LENGTH OF SEDIMENT FENCING (REFER TO FIGURE 6-10 ON PAGE 6-34).

ALL PITS & PIPEWORK ASSOCIATED WITH PROPOSED DRAINAGE SYSTEMS SHALL BE KEPT FREE OF SOIL, WATER & DEBRIS FOR THE DURATION OF THE CONSTRUCTION WORKS.
ALL LOOSE IMPORTED FILL & EXCAVATED MATERIAL SHALL BE STOCKPILED AS FAR AS POSSIBLE FROM SEDIMENT FENCES PRIOR TO FINAL PLACEMENT, COMPACTION OR REMOVAL FROM SITE.
EXCESSIVE SEDIMENT BUILDUP SHALL BE AVOIDED BY REGULAR MAINTENANCE OF SEDIMENT FENCES.
WHERE APPLICABLE, APPROVED LANDSCAPING & REVEGETATION OF DISTURBED AREAS SHALL COMMENCE AT THE EARLIEST OPPORTUNITY AFTER COMPLETION OF EARTHWORKS OPERATIONS.
WHERE BASEMENT EXCAVATION EXTENDS LOWER THAN THE SURROUNDING GROUND SURFACE, THE DEEPEST PART OF THE AREA SHALL EFFECTIVELY FUNCTION AS A TEMPORARY SEDIMENT BASIN UNTIL DEWATERING OPERATIONS CONVEY THE CONTAMINATED RUNOFF UP TO THE FORMAL SEDIMENT BASIN AREA AT GROUND LEVEL. WHERE PUMP DISCHARGE IS DIRECTED TO THE STREET SYSTEM, THE CONTRACTOR MUST ENSURE ADEQUATE SETTLEMENT OF PARTICULATE MATTER HAS OCCURRED (e.g. 50mg/L TOTAL SUSPENDED SOLIDS) PRIOR TO PUMPING.

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NORTH POINT

SHEET SIZE: A1

NOTES
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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
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| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
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P: GPO Box 2662 Sydney NSW 2001
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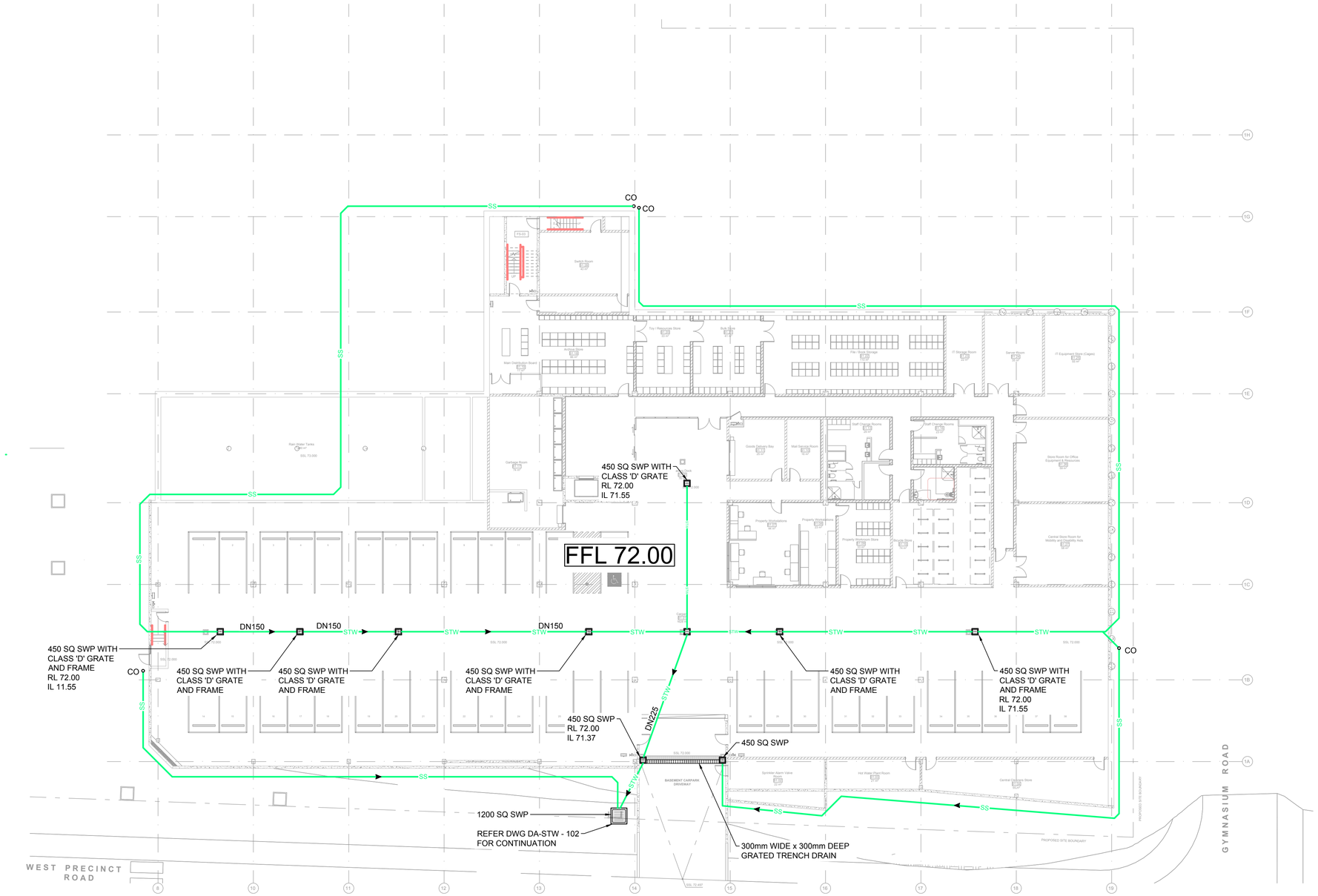
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
EROSION AND SEDIMENT CONTROL
DETAIL SHEET - 2

| SCALE N.T.S | DRAWN WW | DESIGNED LP | CHECKED LP | APPROVED |
|---|---|---|---|---|
| DATE Nov 11, 2020 | DRAWING No. DA-STW-017 | | ISSUE C | |
| JOB No. 2020-1773 | STATE SIGN. DA | | | |

Xrefs: 2020-1773_X-1-TITLE BLK-A1
Plot Date: 11.11.2020@15:50:08 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS : WORKING\STORMWATER\2020-1773_DA-STW-017.dwg




0 2 4 8 12 16 20 metres

SCALE IS BEFORE REDUCTION SCALE 1:200

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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|---|---|---|
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| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

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WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
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22-36 Mountain Street,
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P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
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TITLE
STORMWATER DRAINAGE
BASEMENT PLAN
ZONE 1

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 101
ISSUE C
STATE SIGN. DA

Xref: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITLE-BLK-A1; 2020-1773_XA-BASEMENT PLAN
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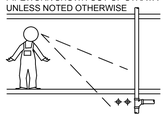
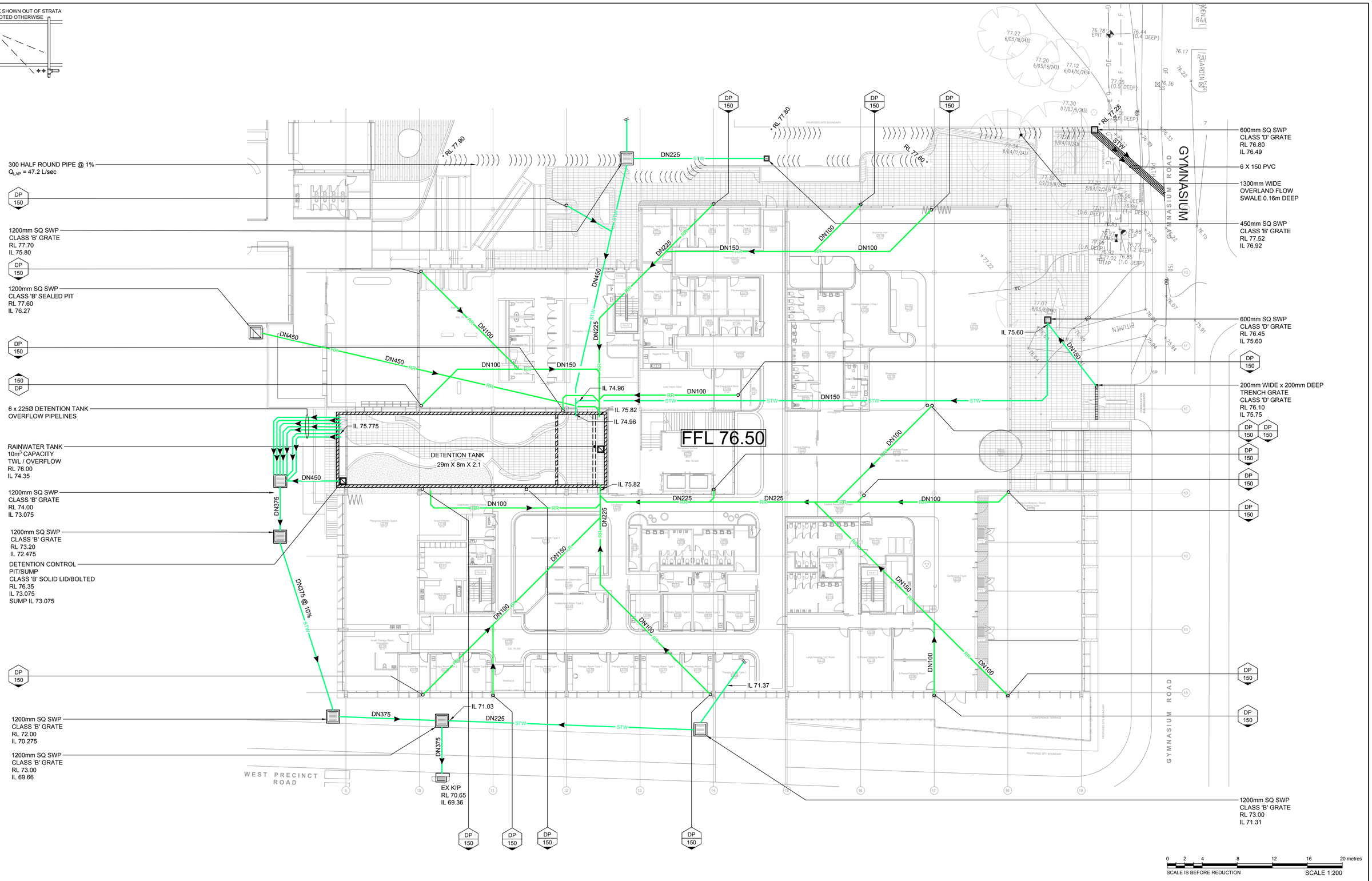
PIPEWORK SHOWN OUT OF STRATA
UNLESS NOTED OTHERWISE






0 2 4 8 12 16 20 metres
SCALE IS BEFORE REDUCTION
SCALE 1:200

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NORTH POINT
TN MN

SHEET SIZE: A1

NOTES
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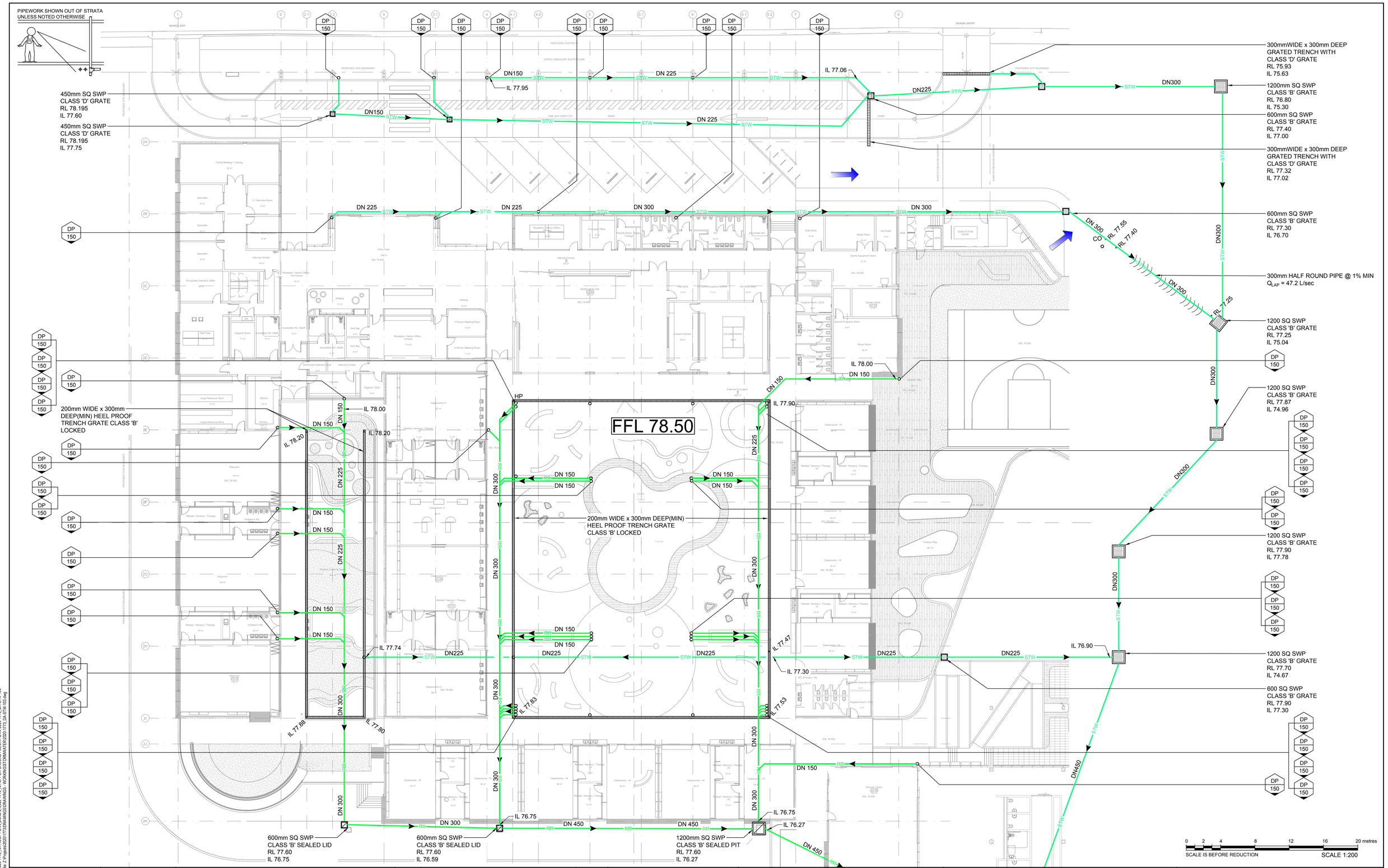
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
LOWER GROUND FLOOR PLAN
ZONE 1

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 102
ISSUE C
STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITTLE BLK-A1; 2020-1773_XA-ROOF PLAN; ZONE 1; 2020-1773_XA-LOWER GROUND FLOOR PLAN; 2020-1773_DA-STW-103
Plot Date: 11.11.2020@15:51:11 Login Name: Michael Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-102.dwg

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NORTH POINT: TN / MN

SHEET SIZE: A1

NOTES

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T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
UPPER GROUND FLOOR PLAN
ZONE 2

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |
| DATE: Nov 11, 2020 | DRAWING No.: DA - STW - 103 | | ISSUE: C | |
| JOB No.: 2020-1773 | STATE SIGN. DA | | | |

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-1-TITLE BLK-A1; 2020-1773_X4-ROOF PLAN_ZONE 2; 2020-1773_X4-UPPER GROUND FLOOR PLAN; 2020-1773_DA-STW-106
Plot Date: 11.11.2020@15:50:19 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS; WORKING\STORMWATER\2020-1773_DA-STW-103.dwg

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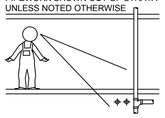
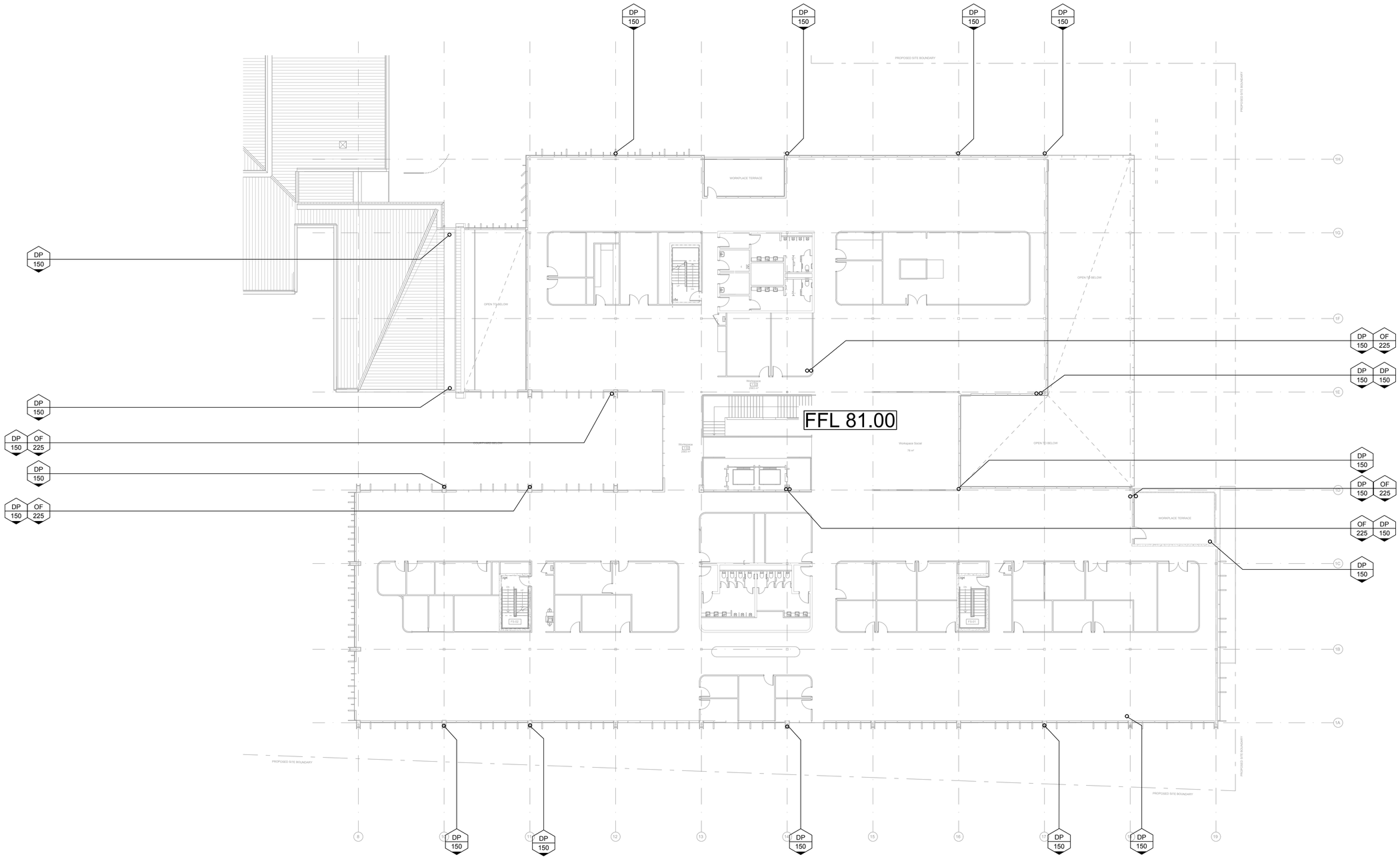
UNLESS NOTED OTHERWISE






0 2 4 8 12 16 20 metres
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SCALE 1:200

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NORTH POINT

SHEET SIZE: A1

NOTES

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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN
MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
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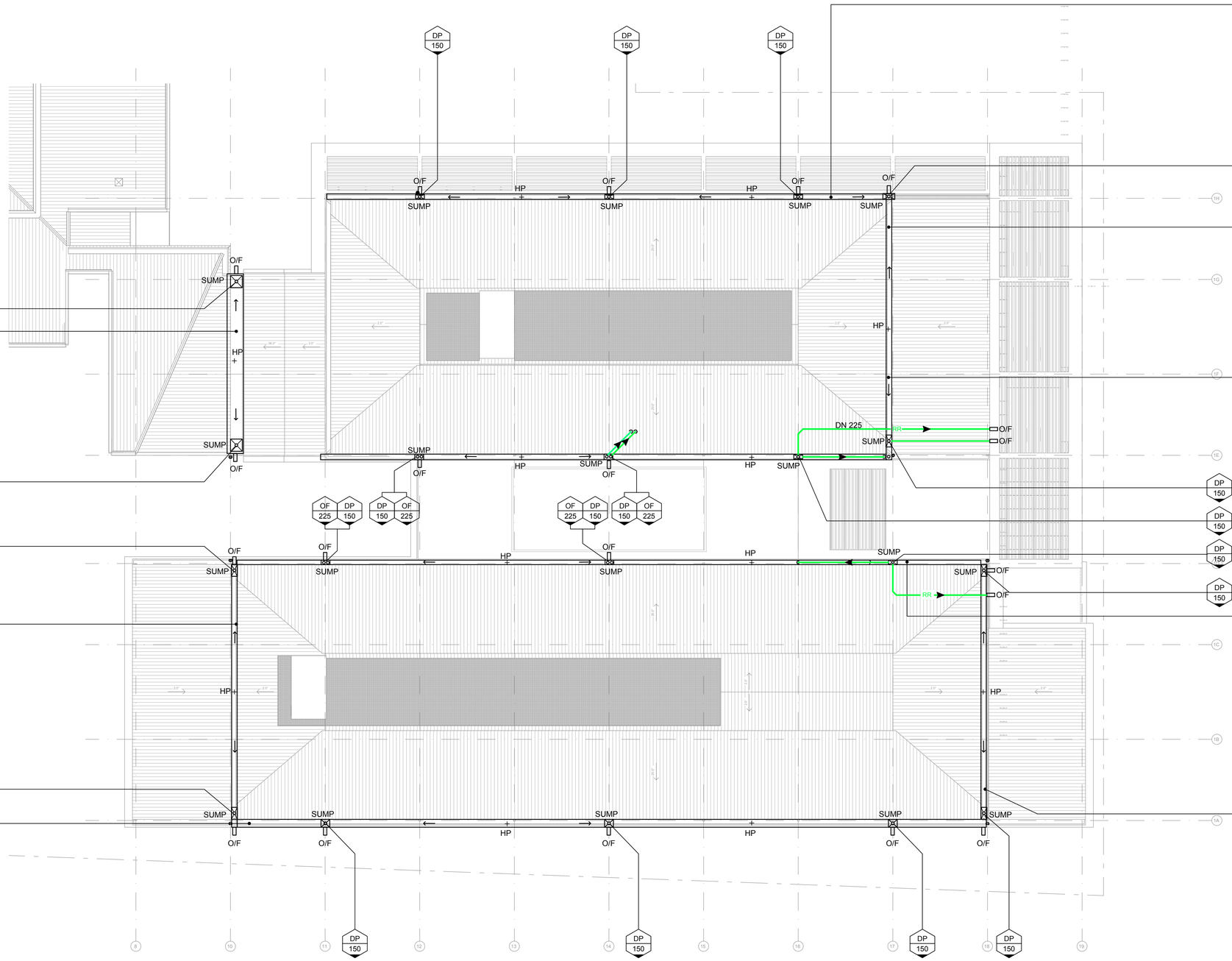
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
STORMWATER DRAINAGE
LEVEL 01
ZONE 1

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |

DATE: Nov 11, 2020
JOB No.: 2020-1773
DRAWING No.: DA - STW - 104
ISSUE: C
STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITTLE BLK-A1; 2020-1773_XA-LEVEL 1; 2020-1773_DA-STW-105
Plot Date: 11.11.2020@15:50:26 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-104.dwg




BOX GUTTER
450mm WIDE x 140mm HIGH@ HP's

SUMP
3 OFF @
WIDTH : 450mm
LENGTH : 300mm
DEPTH : 230mm

DP'S 3 OFF DN150mm

WEIR : WEIR OVERFLOW
200mm LENGTH
120mm DEEP
SET 30mm ABOVE IL

BOX GUTTER
525mm WIDE X 130mm HIGH@ HP

SUMP
WIDTH : 525mm
LENGTH: 600mm
DEPTH: 200mm

DP'S : 1 x DN 150mm @ EITHER END

WEIR: WEIR OVERFLOW
310mm WIDE
105mm DEEP
SET 40mm ABOVE IL

BOX GUTTER
450mm WIDE x 140mm HIGH@ HP's

SUMP
3 OFF @
WIDTH : 450mm
LENGTH : 300mm
DEPTH : 230mm

DP'S 3 OFF DN150mm

WEIR : WEIR OVERFLOW
200mm LENGTH
120mm DEEP
SET 30mm ABOVE IL

OVERFLOW
2 x 225mm
STANDPIPE O/FLOW
SET 40mm ABOVE GUTTER IL

BOX GUTTER
450mm WIDE X 130mm HIGH@ HP

SUMP
WIDTH : 450mm
LENGTH: 350mm
DEPTH: 210mm

DP'S : 2 OFF DN150mm DP

WEIR : WEIR OVERFLOW
310mm WIDE
105mm HIGH SET 30mm
ABOVE IL

BOX GUTTER
525mm WIDE X 130mm HIGH@ HP

SUMP
WIDTH : 525mm
LENGTH: 600mm
DEPTH: 200mm

DP'S
1 x DN150nn @ EITHER END

WEIR: WEIR OVERFLOW
310mm WIDE
105mm DEEP
SET 40mm ABOVE IL

BOX GUTTER
450mm WIDE x 140mm HIGH@ HP's

SUMP
3 OFF @
WIDTH : 450mm
LENGTH : 300mm
DEPTH : 230mm

DP'S 3 OFF DN150mm

WEIR : WEIR OVERFLOW
200mm LENGTH
120mm DEEP
SET 30mm ABOVE IL

OVERFLOW
2 x 225mm
STANDPIPE O/FLOW
SET 30mm ABOVE GUTTER IL

BOX GUTTER
450mm WIDE x 140mm HIGH@ HP's

SUMP
3 OFF @
WIDTH : 450mm
LENGTH : 300mm
DEPTH : 230mm

DP'S 3 OFF DN150mm

WEIR : WEIR OVERFLOW
200mm LENGTH
120mm DEEP
SET 30mm ABOVE IL

OVERFLOW
2 x 225mm
STANDPIPE O/FLOW
SET 30mm ABOVE GUTTER IL

BOX GUTTER
525mm WIDE X 130mm HIGH@ HP

SUMP
WIDTH : 525mm
LENGTH: 600mm
DEPTH: 200mm

DP'S
1 x DN150nn @ EITHER END

OVERFLOW
2 x 225mm
STANDPIPE O/FLOW
SET 40mm ABOVE GUTTER IL

LEGEND

HP HIGH POINT

SUMP

O/F WEIR OVERFLOW

0 2 4 8 12 16 20 metres
SCALE IS BEFORE REDUCTION SCALE 1:200

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NORTH POINT
TN MN

SHEET SIZE: A1

NOTES
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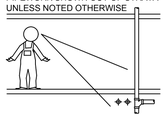
TITLE
STORMWATER DRAINAGE
ROOF PLAN
ZONE 1

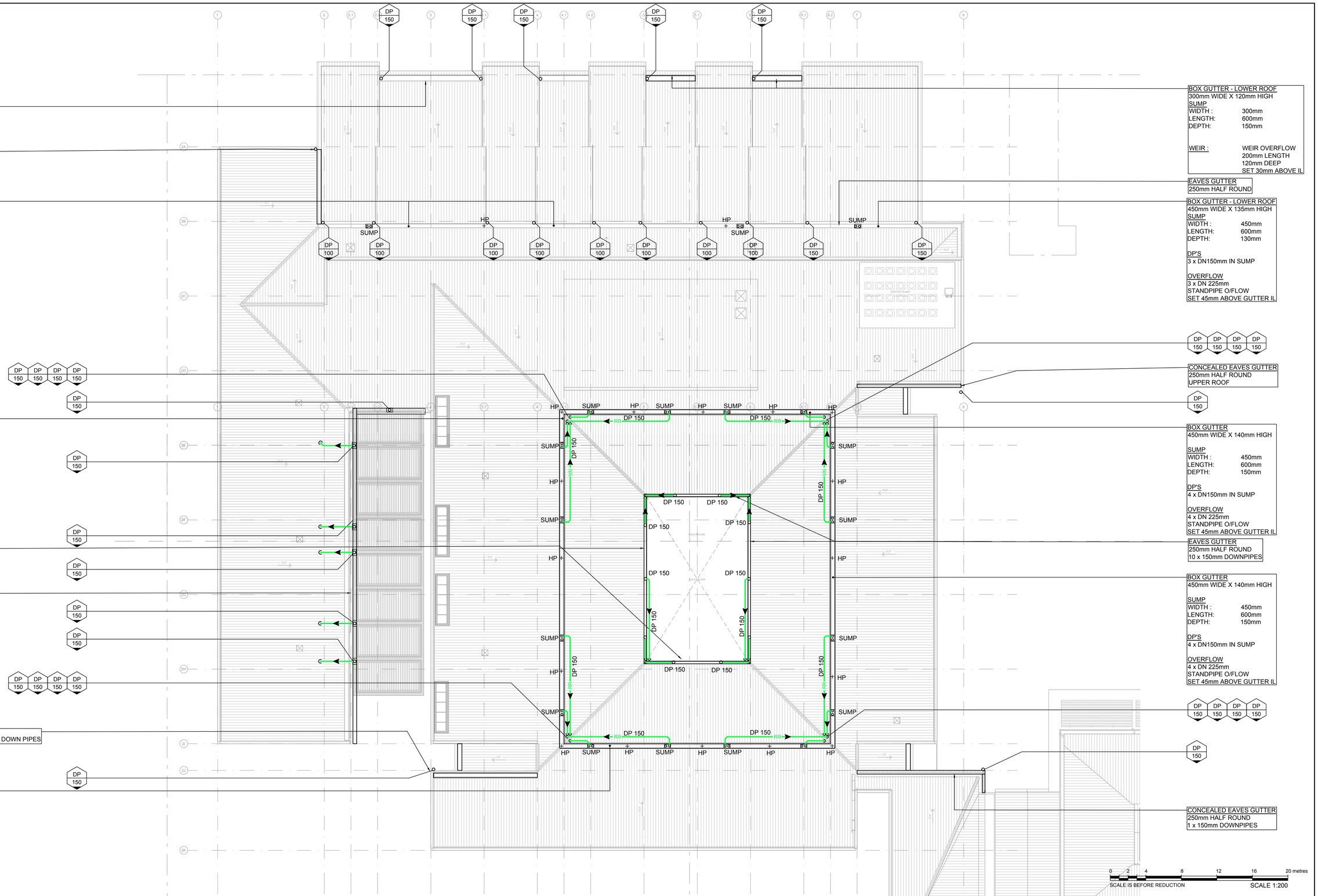
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 105
ISSUE C
STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_XH-TITTLE BLK-A1; 2020-1773_XA-ROOF PLAN_ZONE 1
Plot Date: 11.11.2020@15:50:31 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-105.dwg

PIPEWORK SHOWN OUT OF STRATA
UNLESS NOTED OTHERWISE



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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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|---|---|---|
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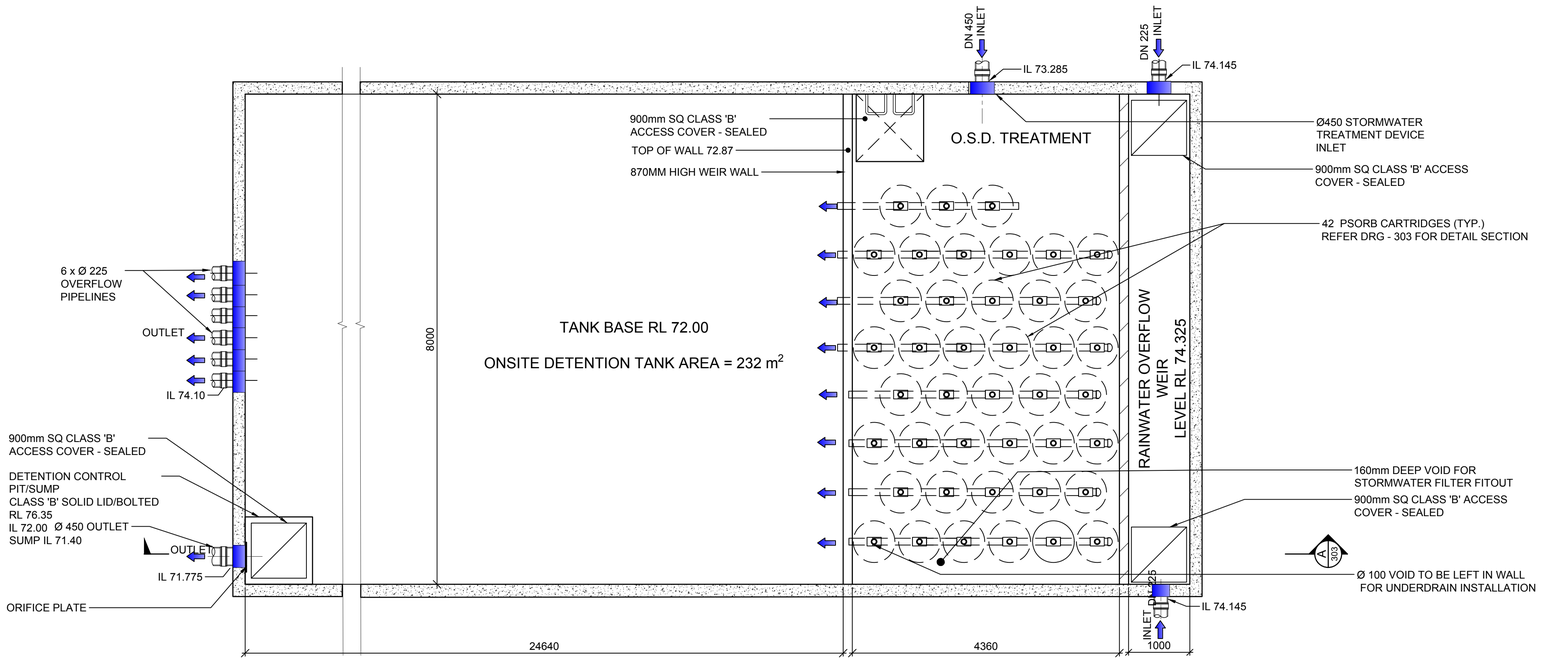
TITLE
STORMWATER DRAINAGE
ROOF PLAN
ZONE 2

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - STW - 106
ISSUE C

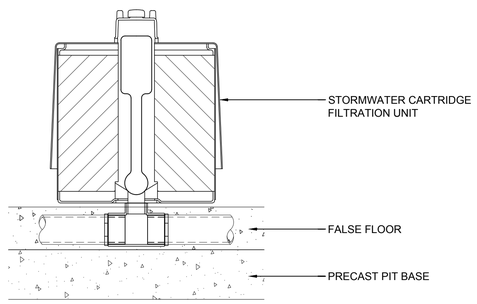
STATE SIGN. DA

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITTLE BLK-A1; 2020-1773_XA-ROOF PLAN_ZONE 3; 2020-1773_DA-STW-103
Plot Date: 11.11.2020@15:50:38 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-106.dwg




## DETENTION TANK DETAIL - PLAN (302)

SCALE: 1 : 50




## STORMWATER CARTRIDGE DETAIL (302)

## GENERAL NOTES

1. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. CONCRETE STRUCTURE TO BE PROVIDED BY OTHERS.
4. SEE STORMFILTER DESIGN TABLE FOR REQUIRED HYDRAULIC DROP. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED BY OTHERS. ACCESS COVERS TO BE A MINIMUM 900X900 ABOVE CARTRIDGES.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. CARTRIDGE HEIGHT AND ASSOCIATED DESIGN PARAMETERS PER STORMFILTER DESIGN TABLE.
10. STORMFILTER BY STORMWATER360: SYDNEY (AU) PHONE: 1300 354 722 www.stormwater360.com.au

## STORMFILTER DESIGN TABLE

- THE SIZE 4.5 x 3.0m STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 UNLESS OTHERWISE NOTED.

| CARTRIDGE HEIGHT | 690 | | 460 | | 310 | |
|---|---|---|---|---|---|---|
| SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.) | 930 | | 700 | | 550 | |
| TREATMENT BY MEDIA SURFACE AREA L/S/m2 | 1.4 | 0.7 | 1.4 | 0.7 | 1.4 | 0.7 |
| CARTRIDGE FLOW RATE (L/s) | 1.42 | 0.71 | 0.95 | 0.47 | 0.63 | 0.32 |

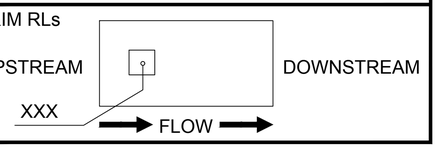
## SITE SPECIFIC DATA REQUIREMENTS

| | |
|---|---|
| STRUCTURE ID | XXX |
| WATER QUALITY FLOW RATE (L/S) | XXX |
| PEAK FLOW RATE (L/S) | XXX |
| RETURN PERIOD OF PEAK FLOW (yrs) | 6 MONTH |
| # OF CARTRIDGES REQUIRED | 42 |
| CARTRIDGE HEIGHT (310, 460 or 690mm) | 690 |
| MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG) | ZPG |

| | |
|---|---|
| PRECAST VAULT WEIGHT | - kg |
| PRECAST LID WEIGHT | - kg |

| PIPE DATA: | I.L. | MATERIAL | DIAMETER |
|---|---|---|---|
| INLET PIPE #1 | 73.285 | MATERIAL | PVC |
| INLET PIPE #2 | XXX | MATERIAL | PVC |
| OUTLET PIPE | 74.10 | MATERIAL | PVC |

RIM RLs




0 0.5 1 2 3 4 5 metres

SCALE IS BEFORE REDUCTION — SCALE 1:50

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NORTH POINT: TN / MN

SHEET SIZE: A1

NOTES
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| C | ISSUE FOR SSDA | 11.11.2020 |

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ARCHITECT: WMK Architecture, L2 364 Kent Street, Sydney NSW 2000

PROJECT MANAGER: M PROJECTS, Suite C2.08, Level 2, 22-36 Mountain Street, Ultimo NSW 2007, Tel: (02) 9262 5530, Fax: (02) 9262 5529, Web: mprojects.com.au

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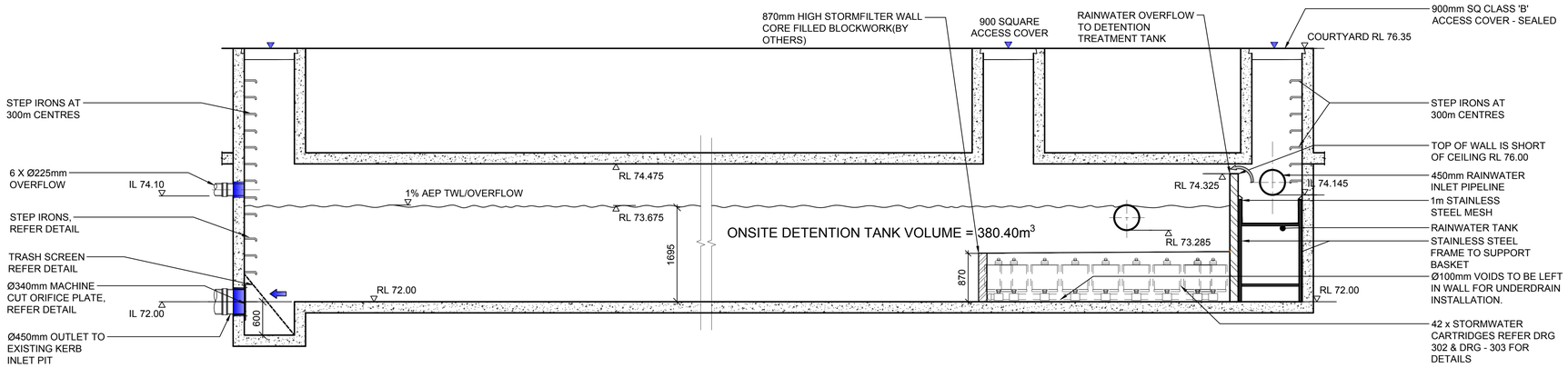
TITLE: STORMWATER DRAINAGE DETENTION TANK PLAN

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 50 @ A1<br>1 : 100 @ A3 | WW | LP | LP | LP |

DATE: Nov 11, 2020
JOB No.: 2020-1773
DRAWING No.: DA - STW - 300
ISSUE: C
STATE SIGN. DA

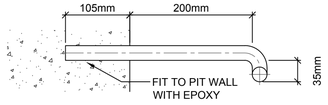
Xrefs: 2020-1773_X-H-TITTLE BLK-A1
Plot Date: 11.11.2020@15:50:43 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS\WORKING\STORMWATER\2020-1773_DA-STW-300.dwg



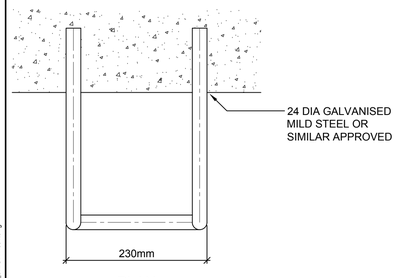

## DETENTION TANK DETAIL - SECTION (A / 300)

SCALE: 1 : 50

FRONT ELEVATION



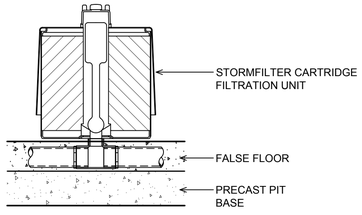

SIDE ELEVATION




PLAN

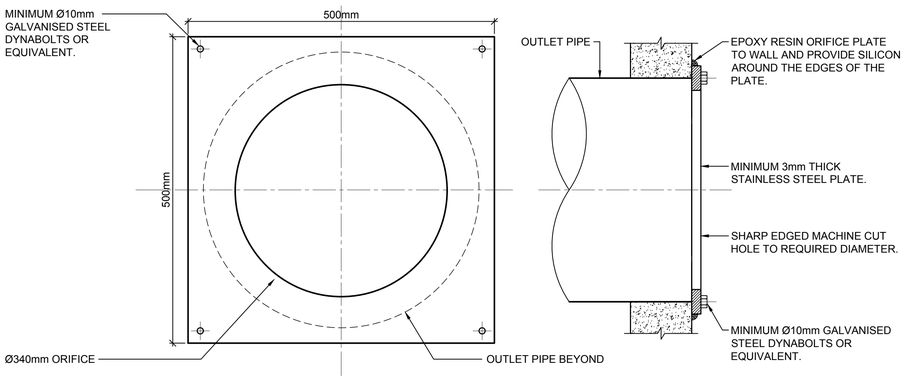
## DETAIL STEP IRONS (D6 / -)

SCALE: 1:5



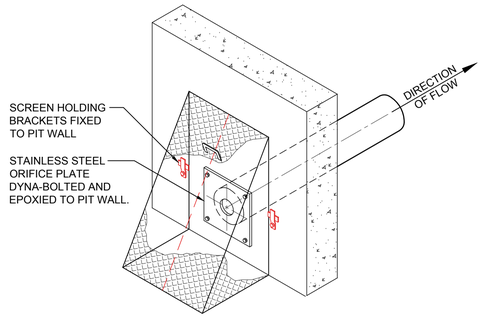

## DETAIL STORMFILTER CARTRIDGE (D3 / -)

NOT TO SCALE




## ORIFICE PLATE DETAIL (D5 / -)

SCALE: 1:5




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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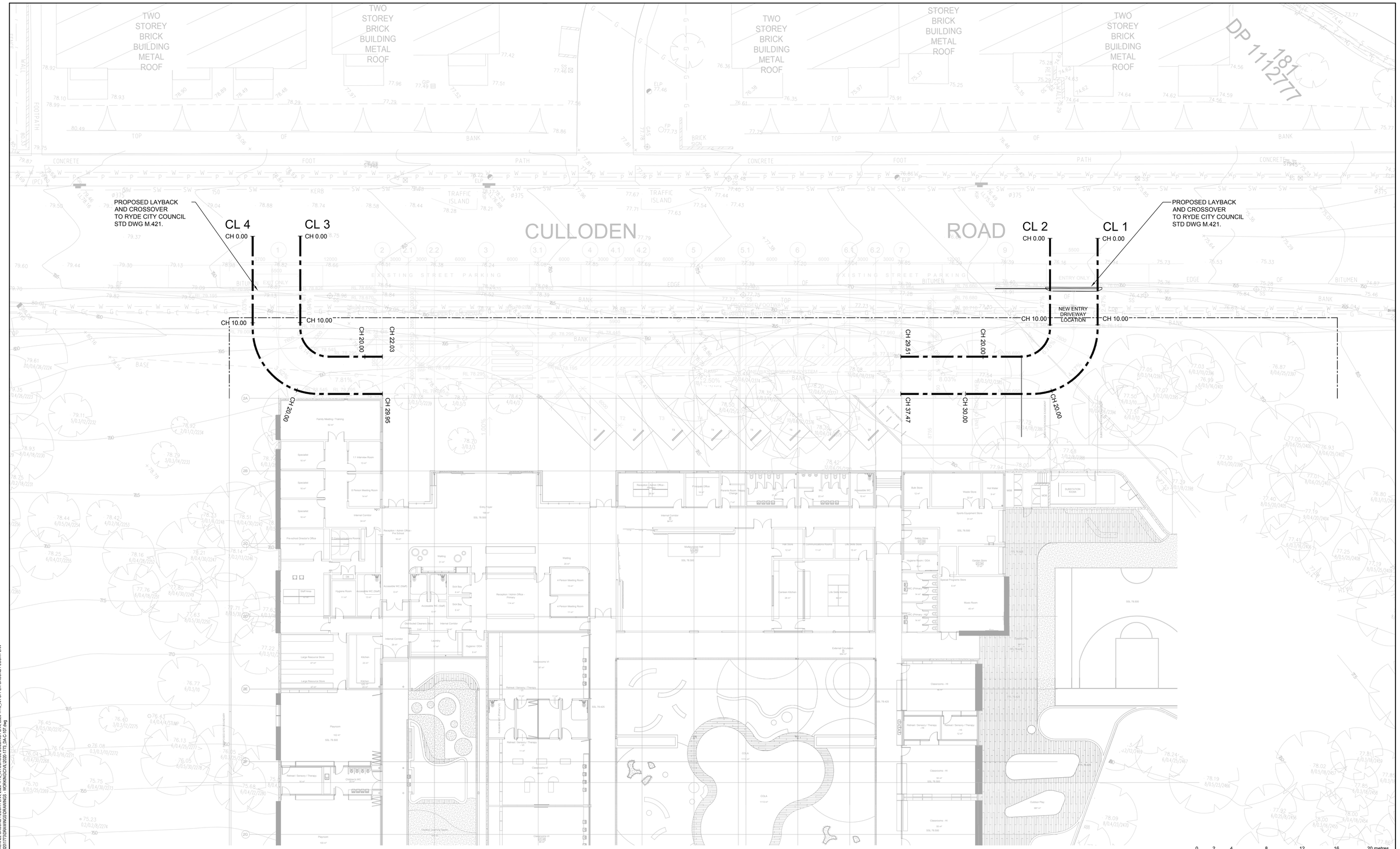
TITLE
STORMWATER DRAINAGE DETENTION TANK SECTION

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 50 @ A1<br>1 : 100 @ A3 | WW | LP | LP | LP |

DATE: Nov 11, 2020
JOB No.: 2020-1773
DRAWING No.: DA - STW - 301
ISSUE: C
STATE SIGN. DA

Xrefs: 2020-1773_X4-TITTLE BLK-41
Plot Date: 11.11.2020@15:50:48 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\STORMWATER\2020-1773_DA-STW-301.dwg

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NORTH POINT

TN MN

SHEET SIZE: A1

NOTES

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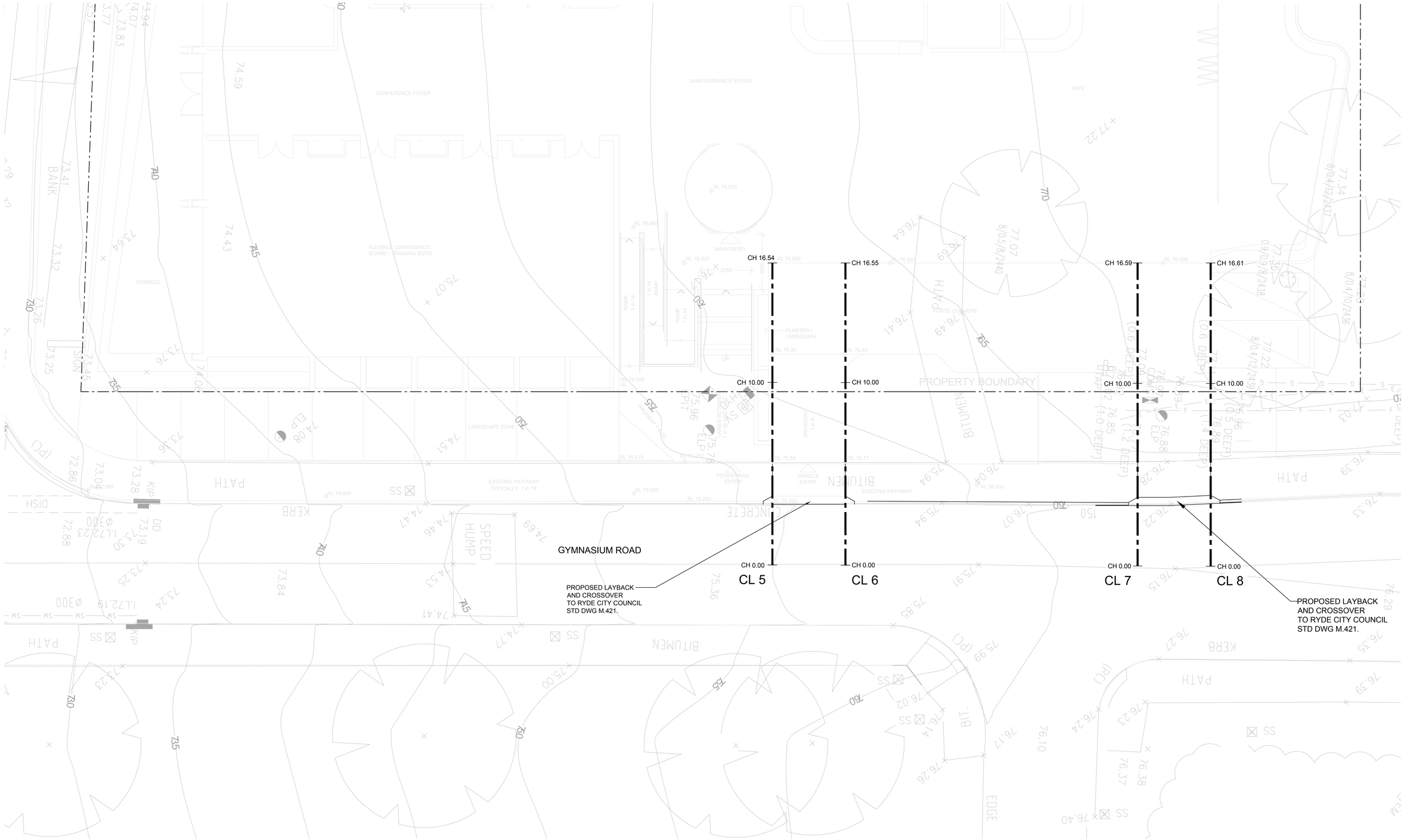
TITLE

SCHOOL BUILDING
DRIVEWAY ENTRY LAYOUT PLAN

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 200 @ A1<br>1 : 400 @ A3 | WW | LP | LP | |
| DATE: Nov 11, 2020 | DRAWING No.: DA - C - 107 | | ISSUE: C | |
| JOB No.: 2020-1773 | STATE SIGN. DA | | | |

Xrefs: 2020-1773_XS-SURVEY; 2020-1773_X-H-TITTLE-BLK-A1; 2020-1773_XA-OVERALL GROUND FLOOR PLAN; 2020-1773_XA-SCHOOL BUILDING PLAN; 2020-1773_XA-UPPER GROUND FLOOR PLAN
Plot Date: 11.11.2020@15:56:24 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\CIVIL\2020-1773_DA-C-107.dwg

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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 | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

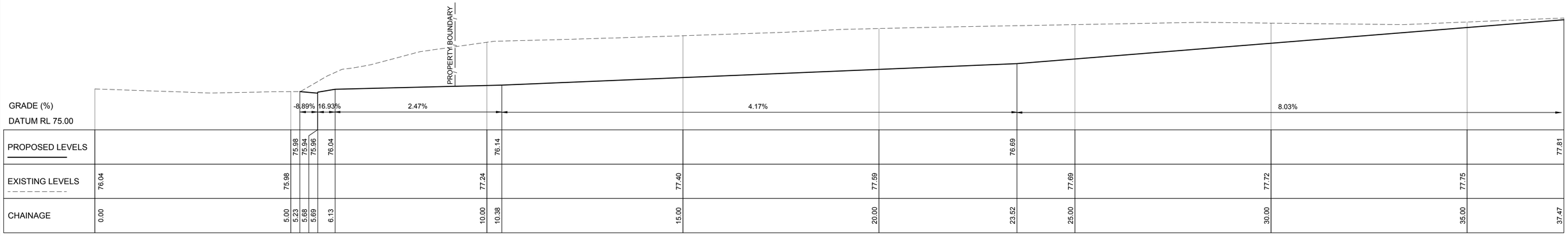
CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
CONSULTING BUILDING
DRIVEWAY ENTRY LAYOUT PLAN

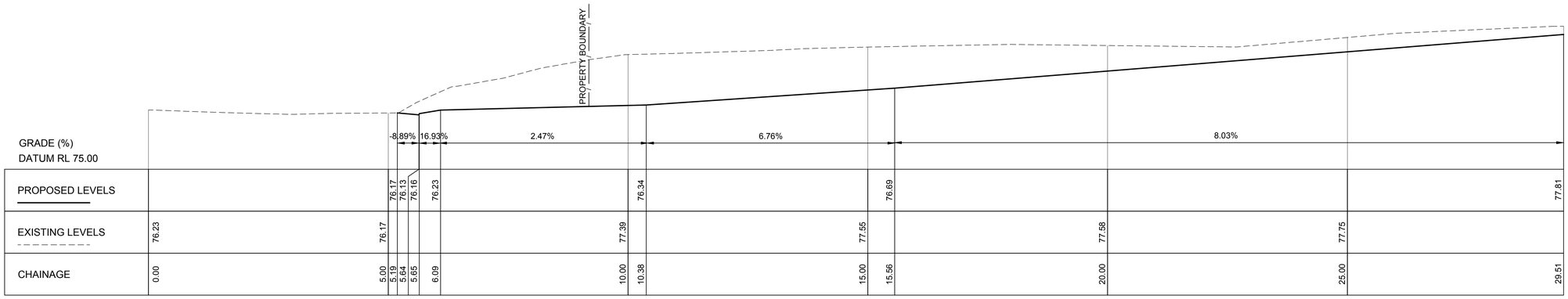
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 100 @ A1<br>1 : 200 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - C - 108 | C |
| JOB No. 2020-1773 | STATE SIGN. DA | |

Xrefs: 2020-1773_XS-SURVEY, 2020-1773_X-H-TITLE BLK-A1, 2020-1773_X4-OVERALL GROUND FLOOR PLAN, 2020-1773_X4-CONSULTING BUILDING PLAN
Plot Date: 11.11.2020@15:57:23 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS\ WORKING\CIVIL\2020-1773_DA-C-108.dwg




LONGITUDINAL SECTION 1 C-107
CL 1
SCALE 1:50 (HORIZONTAL)
1:50 (VERTICAL)




LONGITUDINAL SECTION 2 C-107
CL 2
SCALE 1:50 (HORIZONTAL)
1:50 (VERTICAL)

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
1. REFER TO DRAWING DA-STW-002 FOR DRAWING LIST.
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|---|---|---|
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| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

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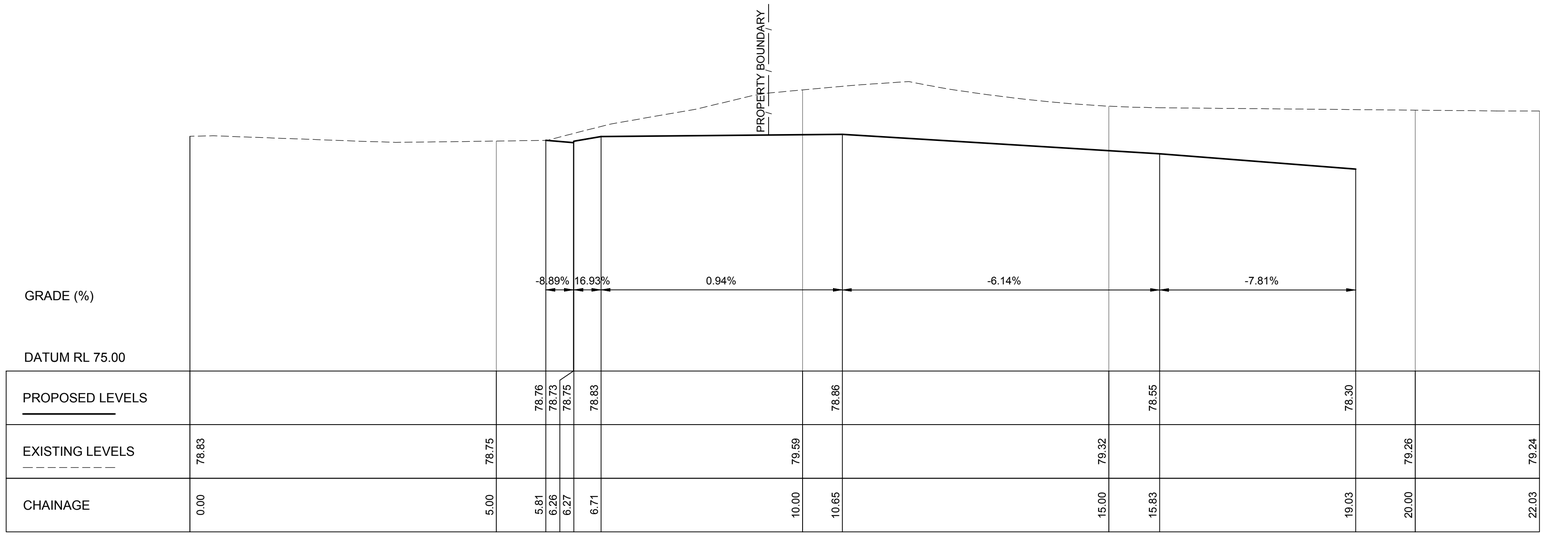
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
SCHOOL BUILDING
CL 1 AND 2 LONGITUDINAL SECTIONS

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 50 @ A1<br>1 : 100 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - C - 109 | C |
| JOB No. 2020-1773 | STATE SIGN. DA | |

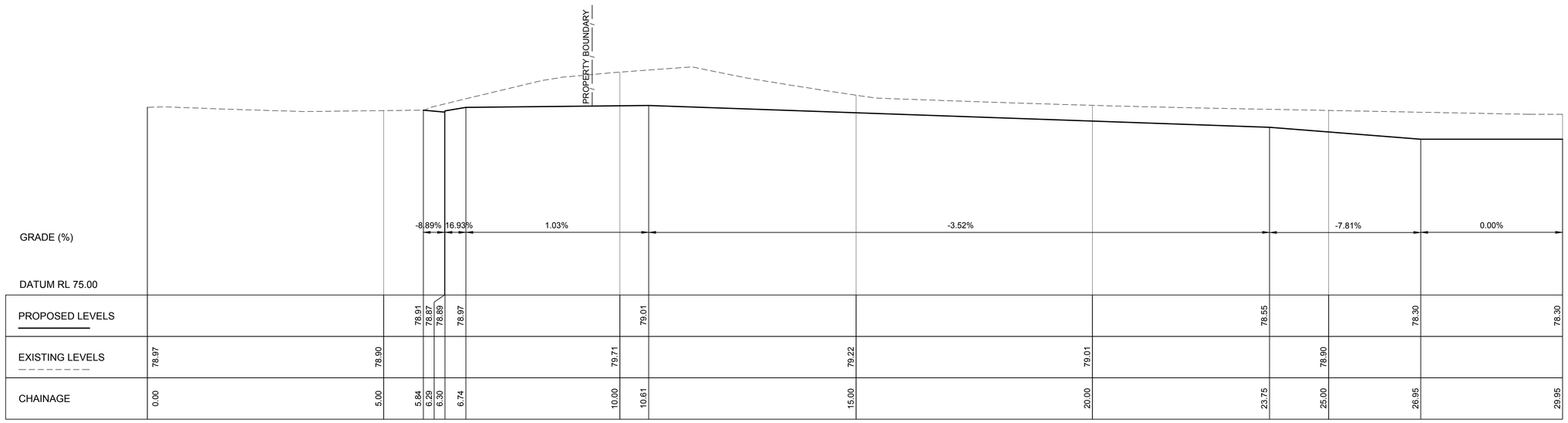
Xref: 2020-1773_X-H-TITTLE BLK-A1
Plot Date: 11.11.2020@15:57:52 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\CIVIL\2020-1773_DA-C-108-112.dwg




## LONGITUDINAL SECTION CL 3

1 / C-107

SCALE 1:50 (HORIZONTAL)
1:50 (VERTICAL)




## LONGITUDINAL SECTION CL 4

2 / C-107

SCALE 1:50 (HORIZONTAL)
1:50 (VERTICAL)

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
1. REFER TO DRAWING DA-STW-002 FOR DRAWING LIST.
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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN
MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
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Tel: (02) 9262 5530
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LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
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TITLE
SCHOOL BUILDING
CL 3 AND 4 LONGITUDINAL SECTIONS

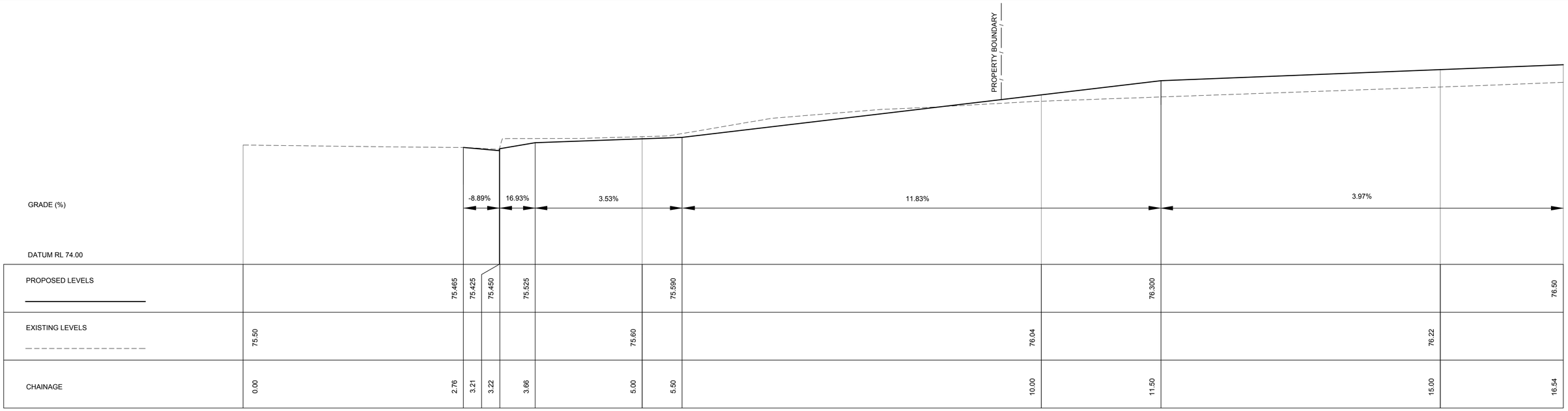
| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 50 @ A1<br>1 : 100 @ A3 | WW | LP | LP | |

| DATE | DRAWING No. | ISSUE |
|---|---|---|
| Nov 11, 2020 | DA - C - 110 | C |

JOB No. 2020-1773

STATE SIGN. DA

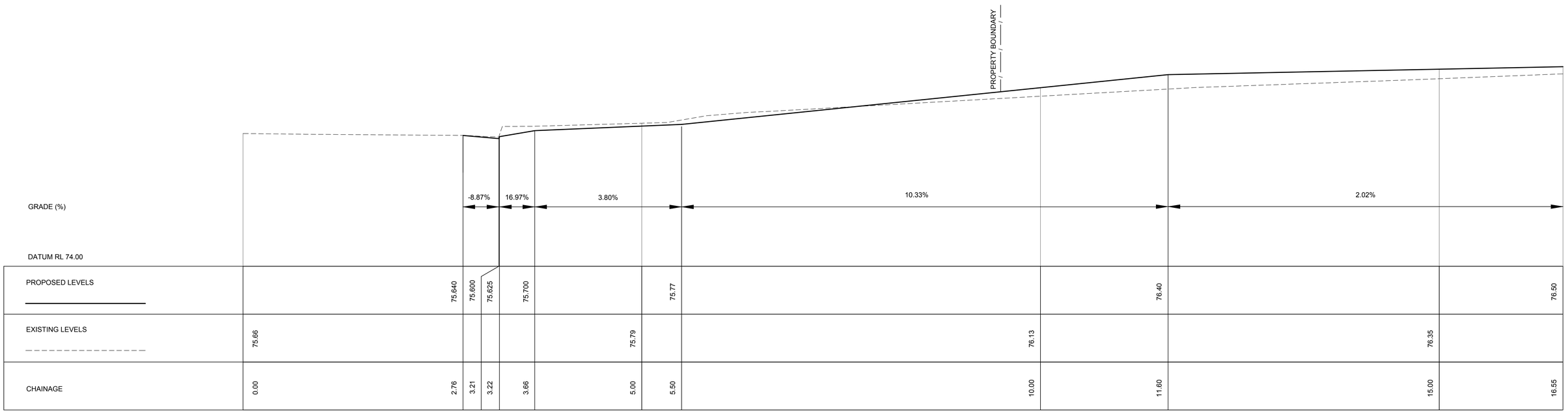
Xrefs: 2020-1773_X-1-TITLE BLK-A1
Plot Date: 11.11.2020@15:58:07 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\CIVIL\2020-1773_DA-C-109-112.dwg




## LONGITUDINAL SECTION
## CL 5

1
C-108

SCALE 1:25 (HORIZONTAL)
1:25 (VERTICAL)




## LONGITUDINAL SECTION
## CL 6

2
C-108

SCALE 1:25 (HORIZONTAL)
1:25 (VERTICAL)

0 250 500 1000 1500 2000 2500mm
SCALE IS BEFORE REDUCTION SCALE 1:25

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NORTH POINT

SHEET SIZE: A1

NOTES
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| ISSUE | AMENDMENT | DATE |
|---|---|---|
| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
| B | ISSUE FOR DEVELOPMENT APPLICATION | 16.10.2020 |
| C | ISSUE FOR SSDA | 11.11.2020 |

PROJECT
ROYAL INSTITUTE FOR DEAF & BLIND CHILDREN MACQUARIE UNIVERSITY

ARCHITECT
WMK Architecture
L2 364 Kent Street
Sydney NSW 2000

PROJECT MANAGER
M PROJECTS
Suite C2.08, Level 2
22-36 Mountain Street,
Ultimo NSW 2007
Tel: (02) 9262 5530
Fax: (02) 9262 5529
Web: mprojects.com.au

CLIENT
Royal Institute for Deaf and Blind Children

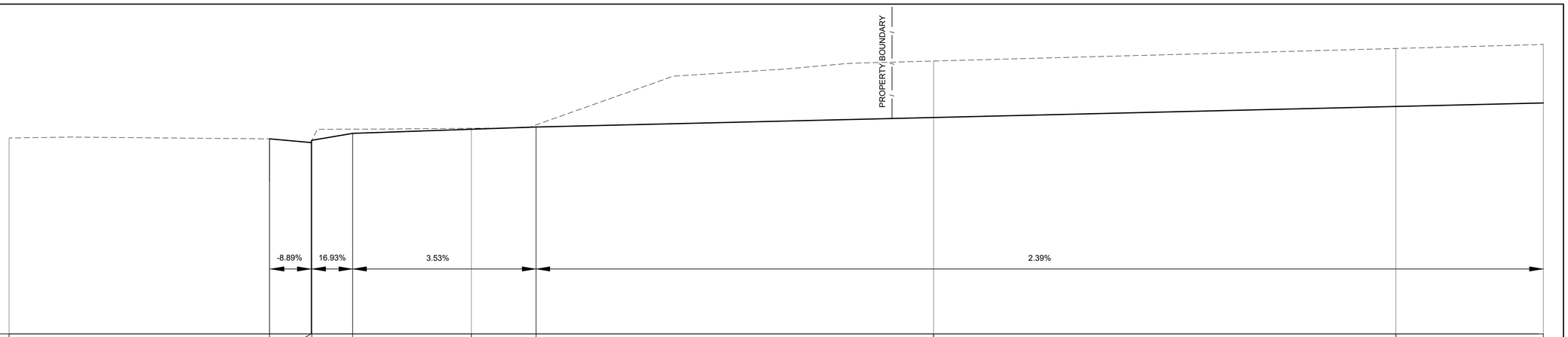
CONSULTANT
LP CONSULTING AUSTRALIA PTY LTD
A: Suite 12.01, Level 12, 300 George Street
Sydney NSW Australia 2000
P: GPO Box 2662 Sydney NSW 2001
E: info@lp-consulting.com.au
T: +61 (2) 9223 4444
W: www.lp-consulting.com.au

TITLE
CONSULTING BUILDING
CL 5 TO 6 LONGITUDINAL SECTIONS

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 25 @ A1<br>1 : 50 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
JOB No. 2020-1773
DRAWING No. DA - C - 111
ISSUE C
STATE SIGN. DA

Xrefs: 2020-1773_X-H-TITTLE BLK-A1
Plot Date: 11.11.2020@15:58:22 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\CIVIL\2020-1773_DA-C-108-112.dwg

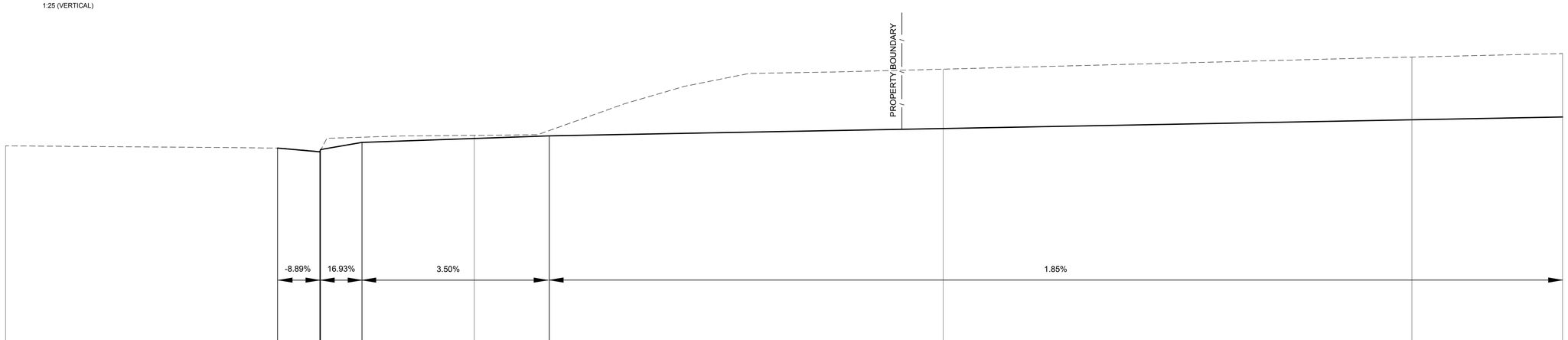



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PROPOSED LEVELS | | 76.110 | 76.070 | 76.095 | 76.170 | | 76.24 | | | | 76.50 |
| EXISTING LEVELS | 76.12 | | | | | 76.23 | | 76.95 | | 77.09 | |
| CHAINAGE | 0.00 | 2.82 | 3.26 | 3.27 | 3.72 | 5.00 | 5.70 | 10.00 | | 15.00 | 16.60 |

## LONGITUDINAL SECTION
## CL 7

1
C-108

SCALE 1:25 (HORIZONTAL)
1:25 (VERTICAL)




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PROPOSED LEVELS | | 76.170 | 76.130 | 76.155 | 76.230 | | 76.30 | | | | 76.50 |
| EXISTING LEVELS | 76.19 | | | | | 76.31 | | 77.01 | | 77.14 | |
| CHAINAGE | 0.00 | 2.90 | 3.35 | 3.36 | 3.80 | 5.00 | 5.80 | 10.00 | | 15.00 | 16.61 |

## LONGITUDINAL SECTION
## CL 8

2
C-108

SCALE 1:25 (HORIZONTAL)
1:25 (VERTICAL)

0 250 500 1000 1500 2000 2500mm
SCALE IS BEFORE REDUCTION SCALE 1:25

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NORTH POINT

SHEET SIZE: A1

NOTES
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| A | DEVELOPMENT APPLICATION - ISSUE FOR COORDINATION | 30.09.2020 |
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ARCHITECT
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L2 364 Kent Street
Sydney NSW 2000

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W: www.lp-consulting.com.au

TITLE
CONSULTING BUILDING
CL 7 TO 8 LONGITUDINAL SECTIONS

| SCALE | DRAWN | DESIGNED | CHECKED | APPROVED |
|---|---|---|---|---|
| 1 : 25 @ A1<br>1 : 50 @ A3 | WW | LP | LP | |

DATE Nov 11, 2020
DRAWING No. DA - C - 112
ISSUE C
JOB No. 2020-1773
STATE SIGN. DA

Xrefs: 2020-1773_X-H-TITTLE BLK-A1
Plot Date: 11.11.2020@15:58:39 Login Name: Mitchell Cad File: Z:\Projects\2020\1773\DRAWINGS\DRAWINGS - WORKING\CIVIL\2020-1773_DA-C-109-112.dwg