Appendix G4 Concept Civil Engineering Plans

Environmental Impact Statement

for Alterations and Additions to St Philip's Christian College, Cessnock

10 LOMAS LANE, NULKABA, N.S.W. 2325 CONCEPT CIVIL ENGINEERING PACKAGE





LOCALITY PLAN

DRAWING LIST

| DIVA WING LIS | • |
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| DWG No. | DRAWING TITLE |
| DA-C01.01 | COVER SHEET, DRAWING LIST AND LOCALITY PLAN |
| DA-C02.01 | GENERAL ARRANGEMENT PLAN |
| DA-C03.01 | CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 1 |
| DA-C03.02 | CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 2 |
| DA-C03.03 | CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 3 |
| DA-C03.04 | CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 4 |
| DA-C03.05 | EROSION AND SEDIMENT CONTROL DETAILS |
| DA-C03.06 | SEDIMENT BASIN SIZING CALCULATIONS |
| DA-C04.01 | CONCEPT EARTHWORKS PLAN - SHEET 1 |
| DA-C04.02 | CONCEPT EARTHWORKS PLAN - SHEET 2 |
| DA-C05.01 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 1 |
| DA-C05.02 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 2 |
| DA-C05.03 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 3 |
| DA-C05.04 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 4 |
| DA-C05.05 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 5 |
| DA-C05.06 | CONCEPT STORMWATER MANAGEMENT AND LEVELS PLAN - SHEET 6 |
| DA-C06.01 | CONCEPT INTERSECTION DESIGN - NORTH ENTRANCE |
| DA-C06.02 | CONCEPT INTERSECTION DESIGN - SOUTH ENTRANCE |
| DA-C06.03 | PROPOSED LOMAS LANE UPGRADE |
| DA-C07.01 | CIVIL DETAILS |
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CIVIL ENGINEERING PACKAGE

COVER SHEET, DRAWING LIST AND LOCALITY PLAN

NL167397

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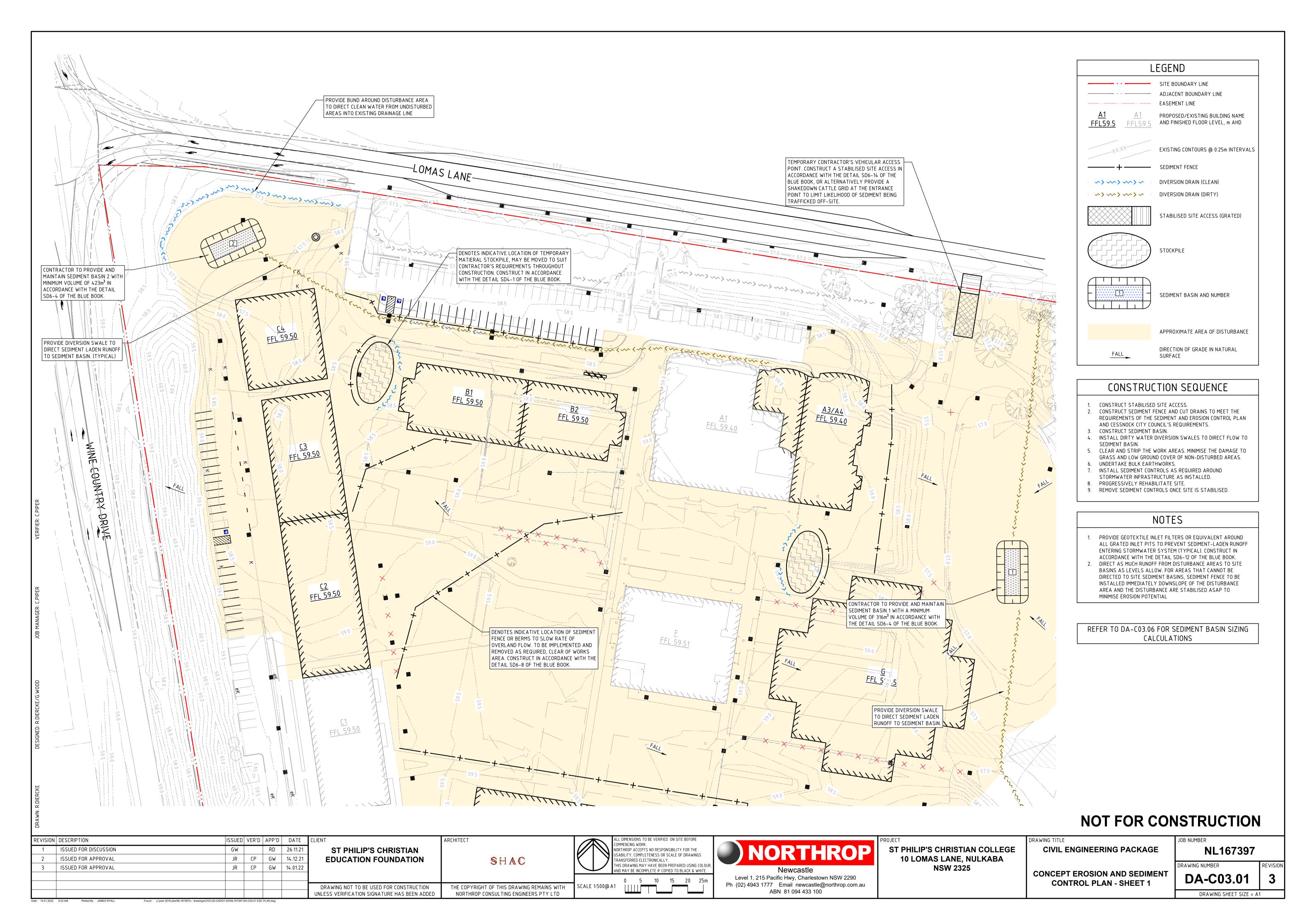
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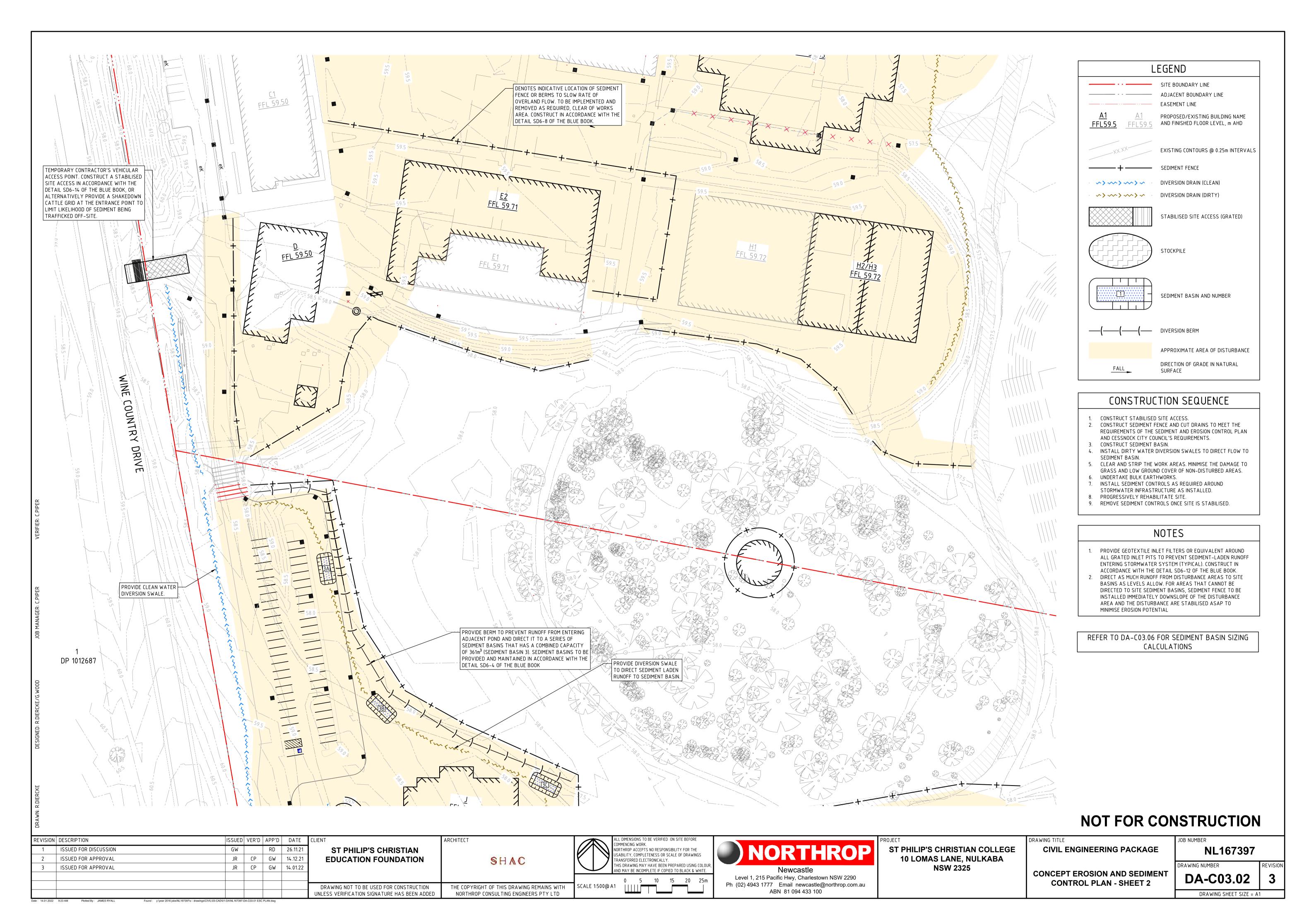
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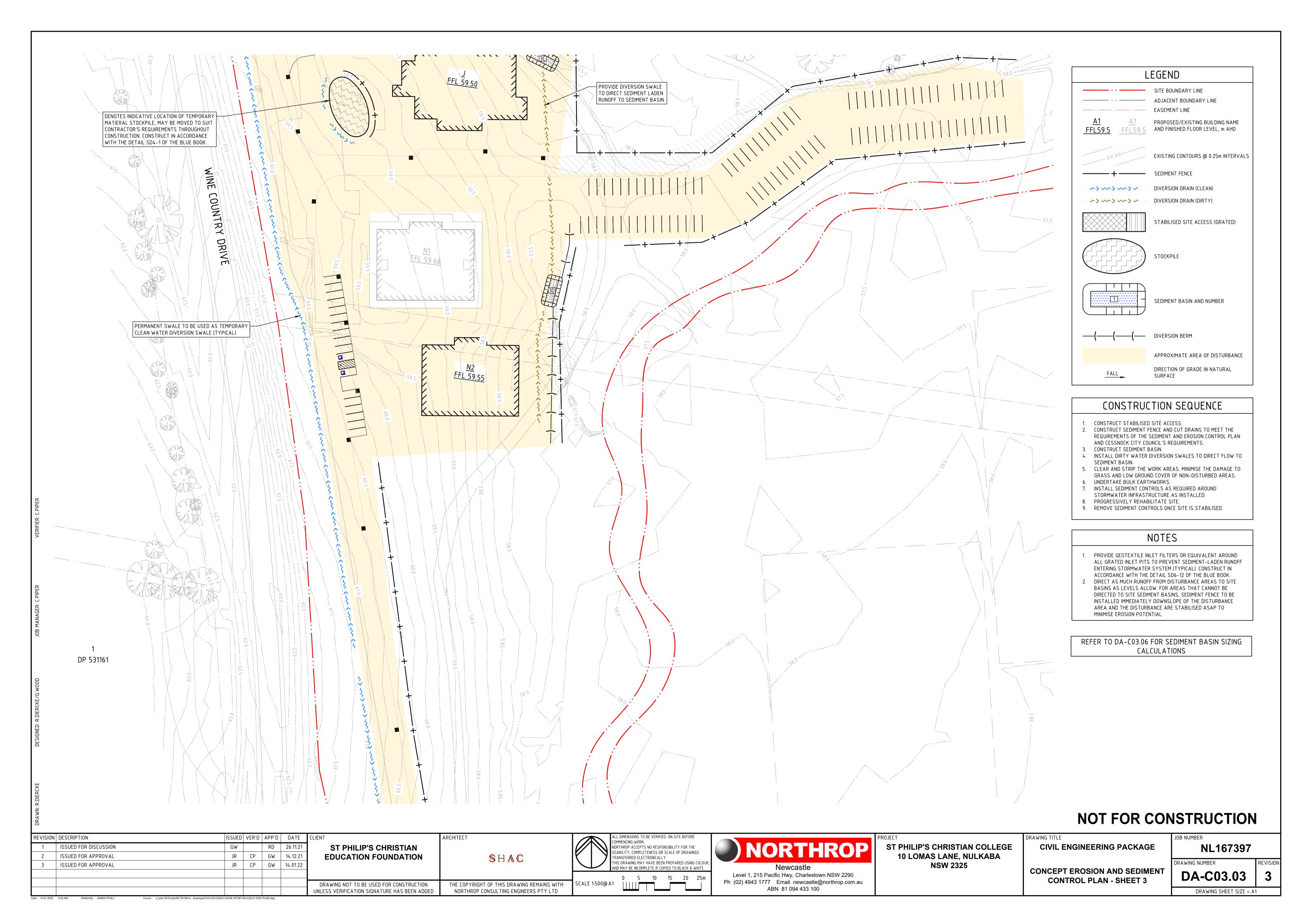
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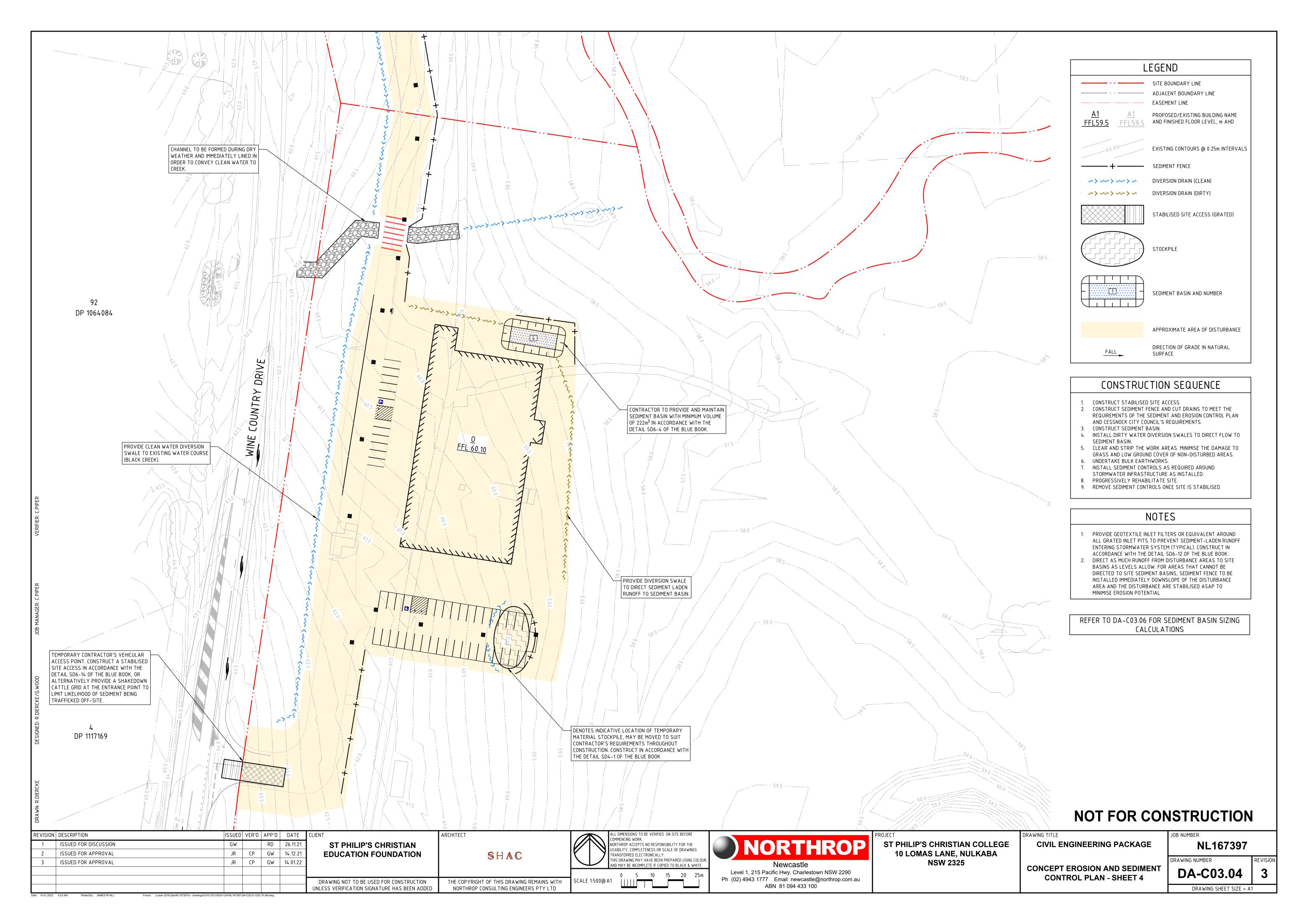
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DRAWING SHEET SIZE = A1









EROSION AND SEDIMENTATION CONTROL NOTES

- 1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ON-SITE, IN ACCORDANCE WITH THE 'BLUE BOOK' (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION, LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARDS FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS AND LINING OF CHANNELS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION AND SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS AND SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ALL MAINTENANCE, CLEANING AND BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
- INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'
- ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK' INSTALL SEDIMENT FENCING. OR OTHER SEDIMENT CONTROL DEVICES, AROUND INDIVIDUAL BUILDING ZONES/AREAS AS
- REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT OR APPROPRIATE COUNCIL OFFICER. 6. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND
- CLOSED AT THE END OF EACH DAYS WORK. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL
- BE PROTECTED DURING THE DURATION OF CONSTRUCTION. 8. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE
- 9. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE SPREAD ON-SITE AS DIRECTED BY THE SUPERINTENDENT OR REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
- 10. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
- 11. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE
- 12. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST
- 13. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.

BASIN MANAGEMENT NOTES

- PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER
- 2. ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT
- ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED. NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
- 4. THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS TO TREAT TURBID WATER CAPTURED IN THE BASIN MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.
- 5. ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
- 6. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE
- 7. ANY BASIN MUST BE DEWATERD AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES.
- 8. INSPECT THE SEDIMENT BASINS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

– FOR CLEAN WATER DIVERSION SWALES, CHANNEL

TO BE LINED WITH GEOFABRIC TO ENSURE CLEAN

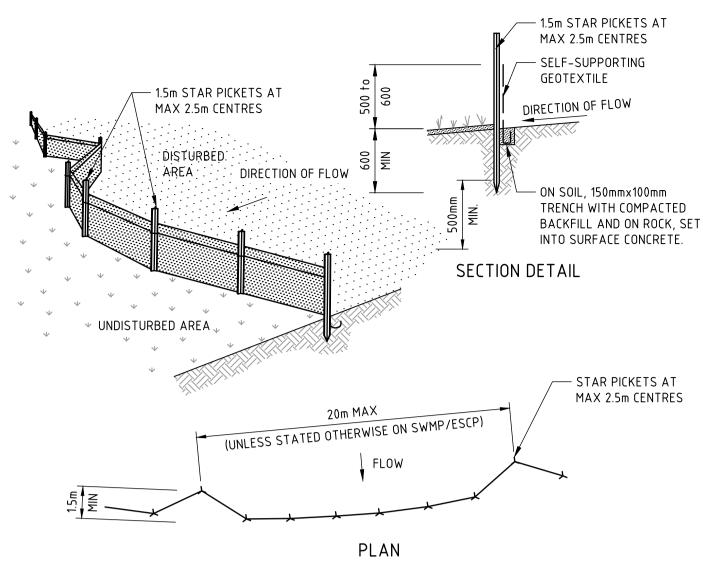
− CAN BE CONSTRUCTED WITH ← ALL BATTER GRADES

2(H):1(V) MAX.

WATER RUNOFF IS NOT EXPOSED TO BARE SOIL

OR WITHOUT CHANNEL.

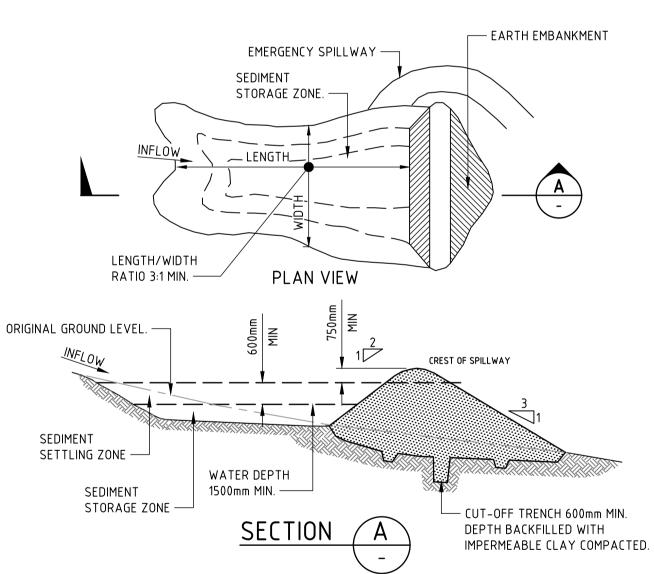
2 METRES MIN.



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.
- CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE
- DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- 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
- JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
- BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.

GRADIENT OF

DIRECTION OF FLOW

DRAIN 1% TO 5% -

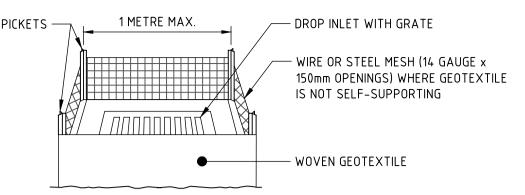
- 2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE WORK AROUND THEM.
- 3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER
- BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
- 5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO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

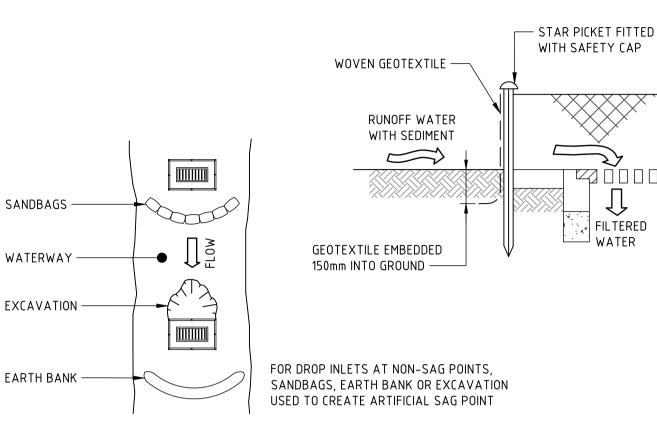
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES. EARTH BANK - LOW FLOW (SD 5-5)

CONSTRUCTION NOTES

- REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA. 2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT
- EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
- 3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
- 4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
- PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
- 6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE
- CONSTRUCT THE EMERGENCY SPILLWAY.
- 8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY) EARTH BASIN - WET (SD 6-4)

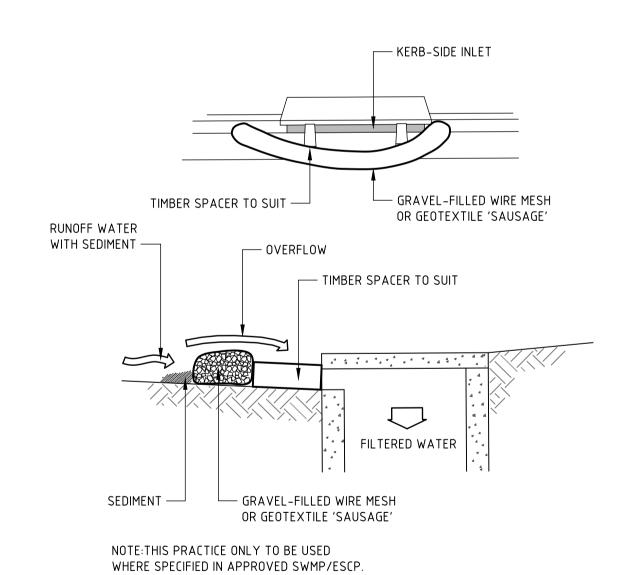




CONSTRUCTION NOTES

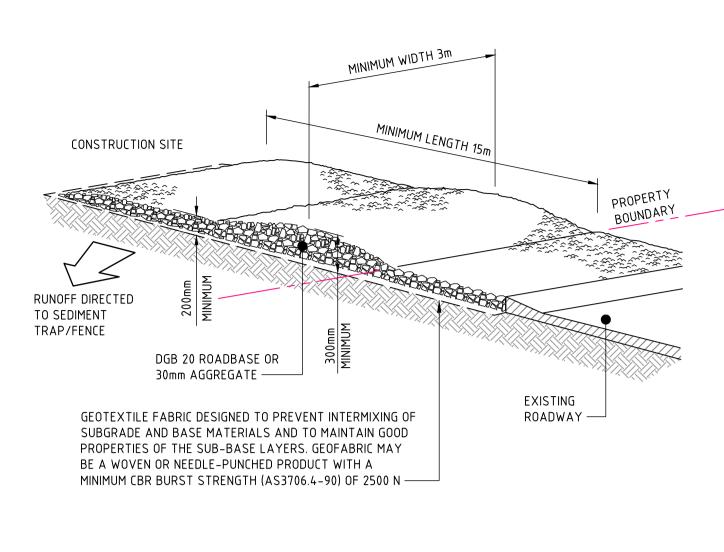
- FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
- 2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE
- STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES. 3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
- 4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER (SD 6-12)



- 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.

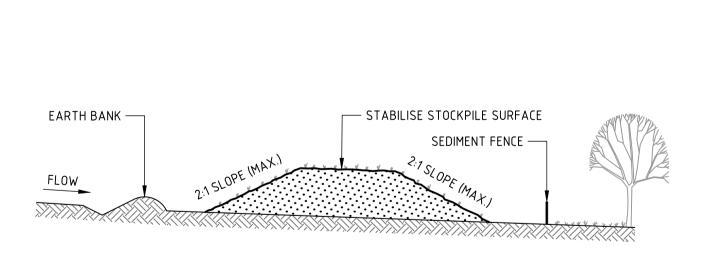
MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

- 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 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES
- 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 (SD 6-14)



CONSTRUCTION NOTES

- 1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER
- FLOW, ROADS AND HAZARD AREAS.
- 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS. 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
- 4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
- 5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILES (SD 4-1)

NOT FOR CONSTRUCTION

| REVISION DESCRIPTION | ISSUED VER'D APP'D | DATE CLIENT | ARCHITECT | ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. | | PROJECT | DRAWING TITLE | JOB NUMBER | |
|-------------------------|--------------------|---|--|---|---|-------------------------------|------------------------------|-------------------------|----------|
| 1 ISSUED FOR DISCUSSION | GW RD | ST PHILIP'S CHRISTIAN | | NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE | NODTHOOD | ST PHILIP'S CHRISTIAN COLLEGE | CIVIL ENGINEERING PACKAGE | NL167397 | |
| 2 ISSUED FOR APPROVAL | JR CP GW | 4.12.21 EDUCATION FOUNDATION | SHAC | TRANSFERRED ELECTRONICALLY. | HUNTINUF | 10 LOMAS LANE, NULKABA | | | |
| 3 ISSUED FOR APPROVAL | JR CP GW | 4.01.22 | 011140 | THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE. | Newcastle | NSW 2325 | | DRAWING NUMBER | REVISION |
| | | | | | Level 1, 215 Pacific Hwy, Charlestown NSW 2290 | | EROSION AND SEDIMENT CONTROL | DA-C03.05 | 3 |
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SEDIMENT BASIN 1 SIZING CALCULATION:

THE SITE IS LOCATED WITHIN THE BRANXTON SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDY AND SILTY CLAYS (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION).

| SITE PARAMETERS | | | | | | |
|--|------------------------------------|--|--|--|--|--|
| CONSTRAINT | BASIN 1 | | | | | |
| SEDIMENT TYPE | D (DISPERSIBLE SOILS) | | | | | |
| SOIL HYDROLOGY GROUP | D | | | | | |
| K = SOIL ERODIBILITY (K-FACTOR) | 0.05 | | | | | |
| R = RAINFALL EROSIVITY (R-FACTOR) | 1470 | | | | | |
| S = 2 YEAR, 6 HOUR STORM INTENSITY | 7.76 mm/hr | | | | | |
| LS = SLOPE LENGTH/GRADIENT | 1.19 (80m SLOPE @ 5% GRADE) | | | | | |
| P = EROSION CONTROL PRACTICE (P-FACTOR) | 1.3 (TYPICAL) | | | | | |
| C = GROUND COVER (C-FACTOR) | 1.0 (TYPICAL FOR STRIPPED SITE) | | | | | |
| SOIL LOSS (RUSLE METHOD) (TONNES/HA/YR) | 114 | | | | | |
| EROSION HAZARD (TABLE 4.2 BLUE BOOK) | VERY LOW | | | | | |

| SEDIMENT BASIN SIZING | | | | | | | | |
|---|-------|----------------|--|--|--|--|--|--|
| CONSTRAINT | VALUE | UNITS | | | | | | |
| CV = VOLUMETRIC RUNOFF COEFFICIENT | 0.64 | | | | | | | |
| R = 5 DAY, 85 TH PERCENTILE RAINFALL | 31.0 | mm | | | | | | |
| A = CATCHMENT AREA | 1.48 | ha | | | | | | |
| SETTLING ZONE VOLUME (10xCVxRxA) | 294 | m ³ | | | | | | |
| A2 = DISTURBED CATCHMENT AREA | 1.48 | ha | | | | | | |
| SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2) | 22 | m ³ | | | | | | |
| | | | | | | | | |
| TOTAL BASIN VOLUME REQUIRED | 316 | m ³ | | | | | | |

SEDIMENT BASIN 2 SIZING CALCULATION:

THE SITE IS LOCATED WITHIN THE BRANXTON SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDY AND SILTY CLAYS (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION).

| SITE PARAMETERS | | | | | | |
|--|------------------------------------|--|--|--|--|--|
| CONSTRAINT | BASIN 2 | | | | | |
| SEDIMENT TYPE | D (DISPERSIBLE SOILS) | | | | | |
| SOIL HYDROLOGY GROUP | D | | | | | |
| K = SOIL ERODIBILITY (K-FACTOR) | 0.05 | | | | | |
| R = RAINFALL EROSIVITY (R-FACTOR) | 1470 | | | | | |
| S = 2 YEAR, 6 HOUR STORM INTENSITY | 7.76 mm/hr | | | | | |
| LS = SLOPE LENGTH/GRADIENT | 0.72 (100m SLOPE @ 3% GRADE) | | | | | |
| P = EROSION CONTROL PRACTICE (P-FACTOR) | 1.3 (TYPICAL) | | | | | |
| C = GROUND COVER (C-FACTOR) | 1.0 (TYPICAL FOR STRIPPED SITE) | | | | | |
| SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr) | 69 | | | | | |
| EROSION HAZARD (TABLE 4.2 BLUE BOOK) | VERY LOW | | | | | |

| SEDIMENT BASIN SIZING | | | | | | | |
|---|-------|----------------|--|--|--|--|--|
| CONSTRAINT | VALUE | UNITS | | | | | |
| CV = VOLUMETRIC RUNOFF COEFFICIENT | 0.64 | | | | | | |
| R = 5 DAY, 85 TH PERCENTILE RAINFALL | 31.0 | mm | | | | | |
| A = CATCHMENT AREA | 2.04 | ha | | | | | |
| SETTLING ZONE VOLUME (10xCVxRxA) | 405 | m ³ | | | | | |
| | | | | | | | |
| A2 = DISTURBED CATCHMENT AREA | 2.04 | ha | | | | | |
| SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2) | 18 | m³ | | | | | |
| | | | | | | | |
| TOTAL BASIN VOLUME REQUIRED | 423 | m ³ | | | | | |

SEDIMENT BASIN 3 SIZING CALCULATION:

THE SITE IS LOCATED WITHIN THE BRANXTON SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDY AND SILTY CLAYS (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION).

| SITE PARAMETERS | | | | | | | |
|--|---------------------------------|--|--|--|--|--|--|
| CONSTRAINT | VALUE | | | | | | |
| SEDIMENT TYPE | D (DISPERSIBLE SOILS | | | | | | |
| SOIL HYDROLOGY GROUP | D | | | | | | |
| K = SOIL ERODIBILITY (K-FACTOR) | 0.05 | | | | | | |
| R = RAINFALL EROSIVITY (R-FACTOR) | 1470 | | | | | | |
| S = 2 YEAR, 6 HOUR STORM INTENSITY | 7.76 mm/hr | | | | | | |
| LS = SLOPE LENGTH/GRADIENT | 1.35 (100m SLOPE @ 5% GRADE) | | | | | | |
| P = EROSION CONTROL PRACTICE (P-FACTOR) | 1.3 (TYPICAL) | | | | | | |
| C = GROUND COVER (C-FACTOR) | 1.0 (TYPICAL FOR STRIPPED SITE) | | | | | | |
| SOIL LOSS (RUSLE METHOD) (TONNES/HA/YR) | 129 | | | | | | |
| EROSION HAZARD (TABLE 4.2 BLUE BOOK) | VERY LOW | | | | | | |

| SEDIMENT BASIN SIZING | | | | | | | |
|---|-------|----------------|--|--|--|--|--|
| CONSTRAINT | VALUE | UNITS | | | | | |
| CV = VOLUMETRIC RUNOFF COEFFICIENT | 0.64 | | | | | | |
| R = 5 DAY, 85 TH PERCENTILE RAINFALL | 31.0 | mm | | | | | |
| A = CATCHMENT AREA | 1.68 | ha | | | | | |
| SETTLING ZONE VOLUME (10xCVxRxA) | 333 | m ³ | | | | | |
| | | | | | | | |
| A2 = DISTURBED CATCHMENT AREA | 1.68 | ha | | | | | |
| SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2) | 28 | m³ | | | | | |
| | | | | | | | |
| TOTAL BASIN VOLUME REQUIRED | 361 | m ³ | | | | | |

SEDIMENT BASIN 4 SIZING CALCULATION:

THE SITE IS LOCATED WITHIN THE BRANXTON SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDY AND SILTY CLAYS (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION).

| SITE PARAMETERS | | | | | | |
|--|------------------------------------|--|--|--|--|--|
| CONSTRAINT | VALUE | | | | | |
| SEDIMENT TYPE | D (DISPERSIBLE SOILS) | | | | | |
| SOIL HYDROLOGY GROUP | D | | | | | |
| K = SOIL ERODIBILITY (K-FACTOR) | 0.05 | | | | | |
| R = RAINFALL EROSIVITY (R-FACTOR) | 1470 | | | | | |
| S = 2 YEAR, 6 HOUR STORM INTENSITY | 7.76 mm/hr | | | | | |
| LS = SLOPE LENGTH/GRADIENT | 1.03 (100m SLOPE @ 4% GRADE) | | | | | |
| P = EROSION CONTROL PRACTICE (P-FACTOR) | 1.3 (TYPICAL) | | | | | |
| C = GROUND COVER (C-FACTOR) | 1.0 (TYPICAL FOR STRIPPED SITE) | | | | | |
| SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr) | 98 | | | | | |
| EROSION HAZARD (TABLE 4.2 BLUE BOOK) | VERY LOW | | | | | |

| SEDIMENT BASIN SIZING | | | | | | | |
|---|-------|----------------|--|--|--|--|--|
| CONSTRAINT | VALUE | UNITS | | | | | |
| CV = VOLUMETRIC RUNOFF COEFFICIENT | 0.64 | | | | | | |
| R = 5 DAY, 85 TH PERCENTILE RAINFALL | 31.0 | mm | | | | | |
| A = CATCHMENT AREA | 1.05 | ha | | | | | |
| SETTLING ZONE VOLUME (10xCVxRxA) | 208 | m ³ | | | | | |
| | | | | | | | |
| A2 = DISTURBED CATCHMENT AREA | 1.05 | ha | | | | | |
| SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2) | 14 | m ³ | | | | | |
| | | | | | | | |
| TOTAL BASIN VOLUME REQUIRED | 222 | m ³ | | | | | |

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ST PHILIP'S CHRISTIAN COLLEGE 10 LOMAS LANE, NULKABA **NSW 2325**

CIVIL ENGINEERING PACKAGE

SEDIMENT BASIN SIZING **CALCULATIONS**

NL167397 DRAWING NUMBER

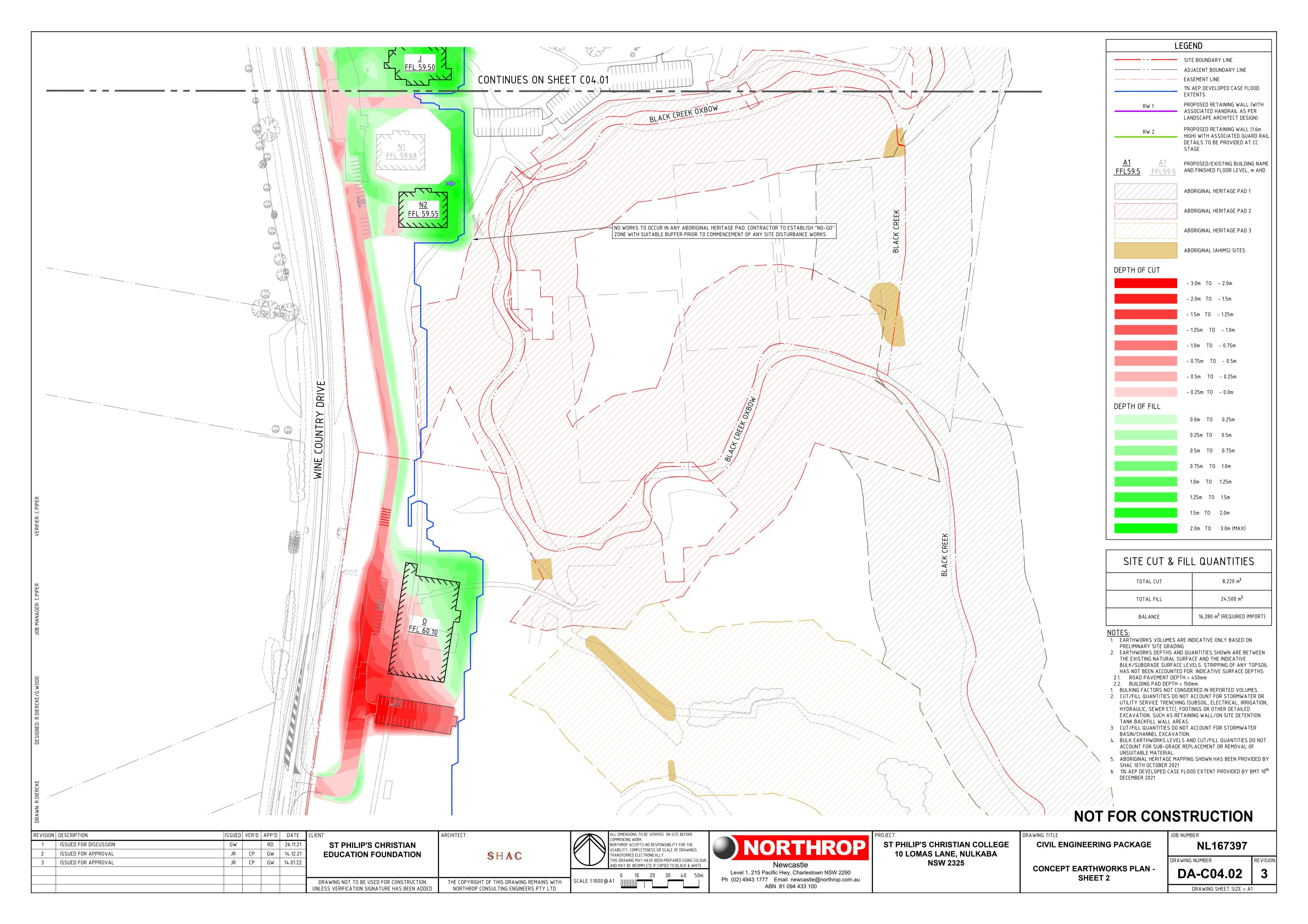
DA-C03.06

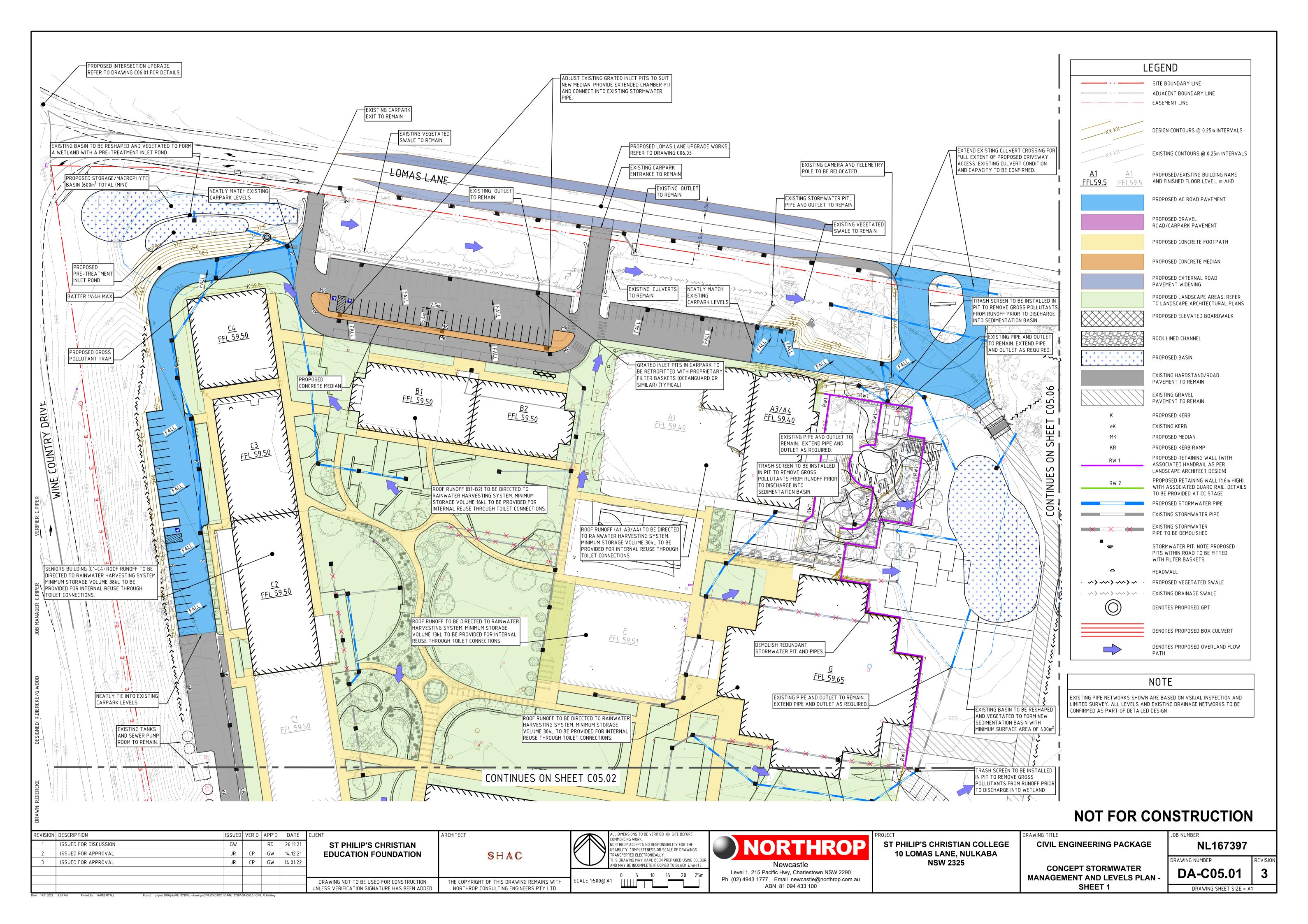
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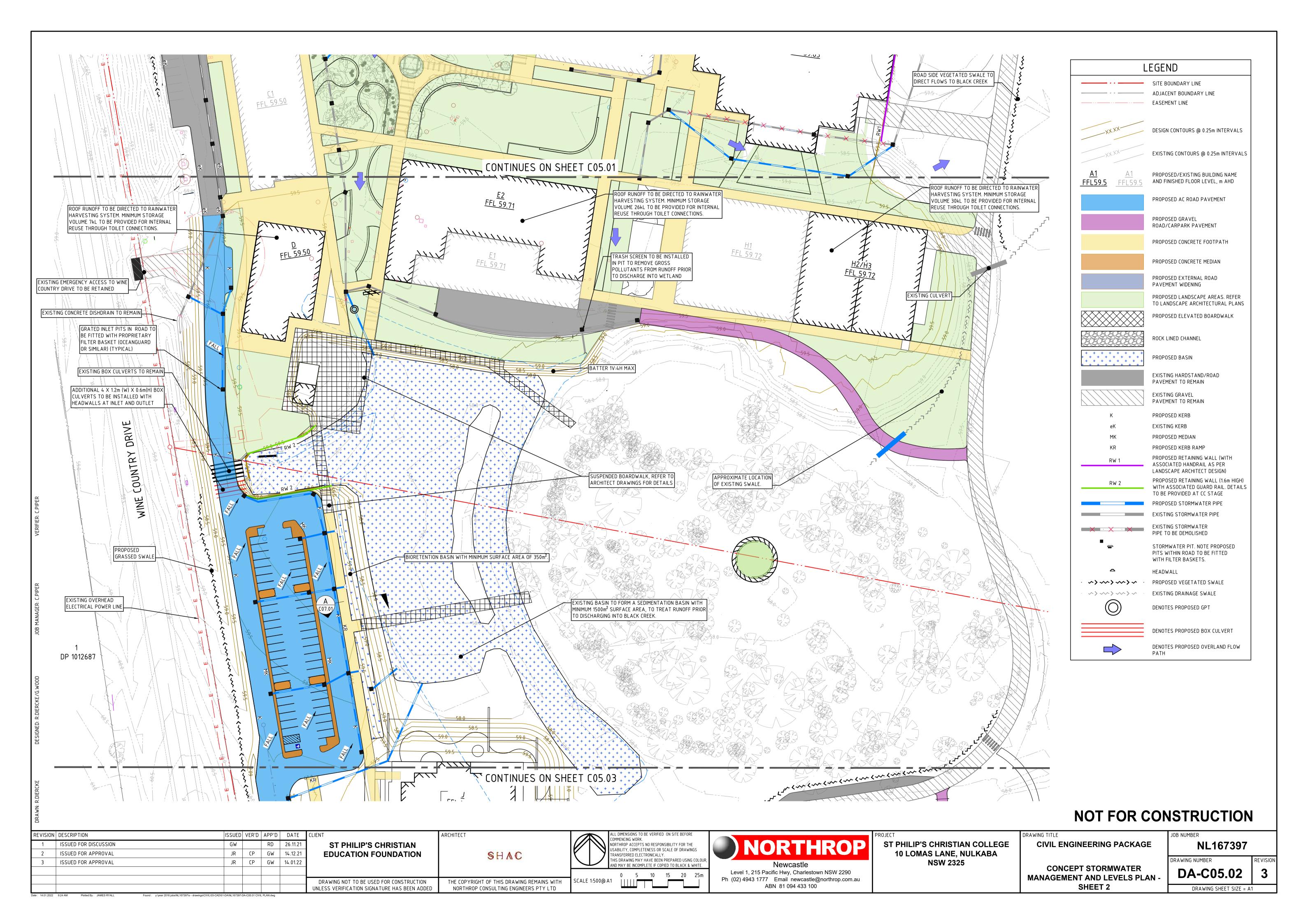
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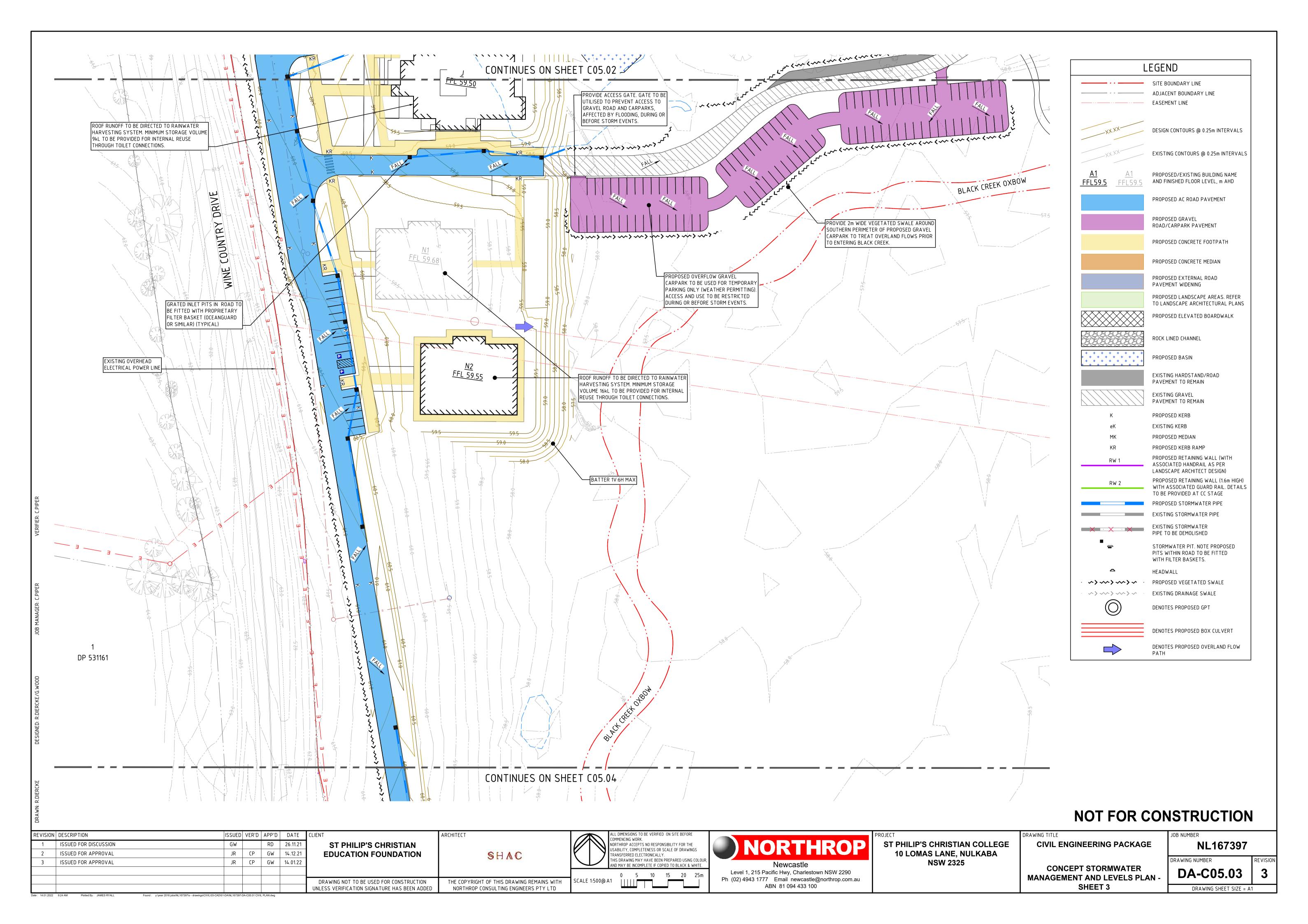
RD 26.11.21

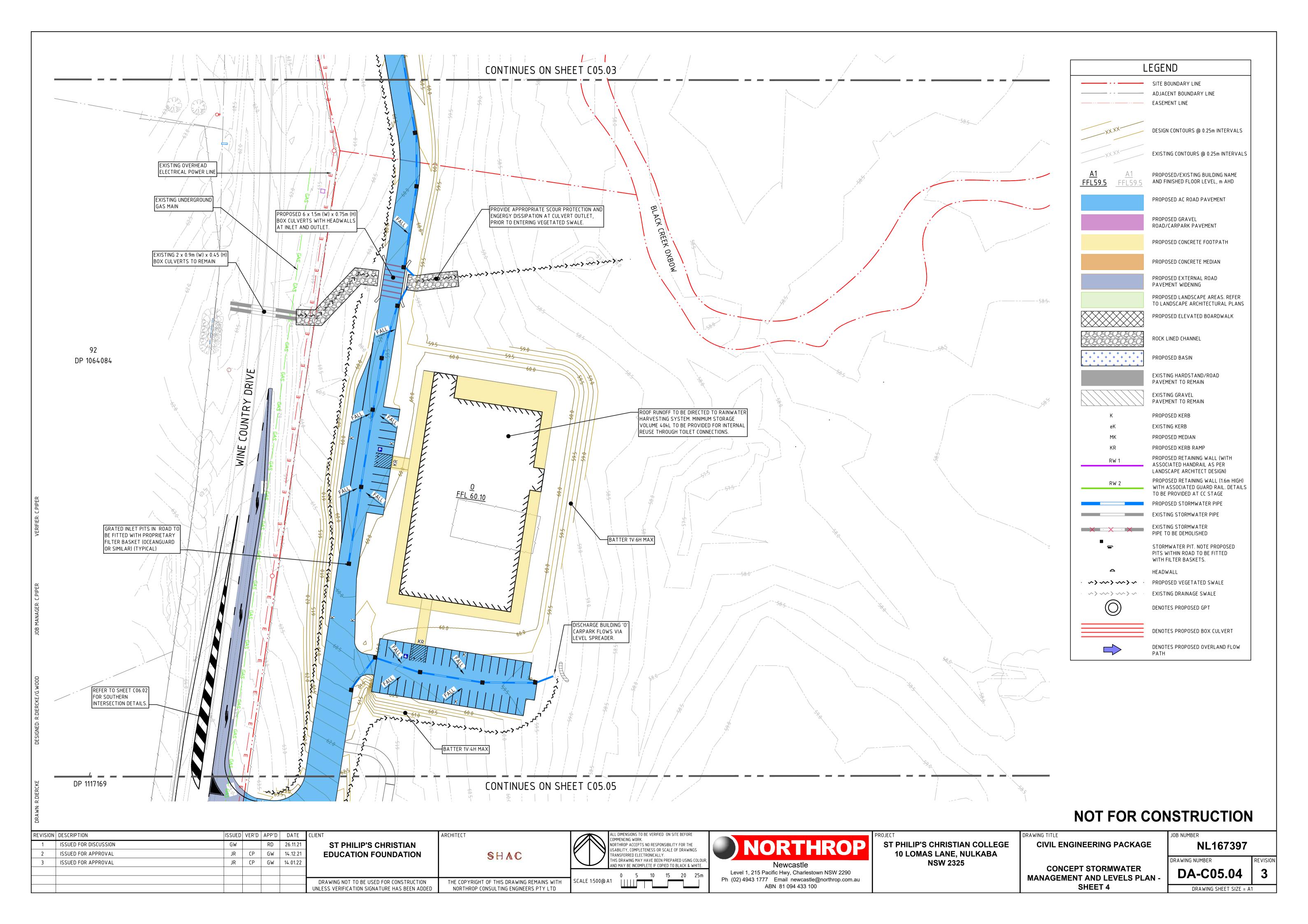


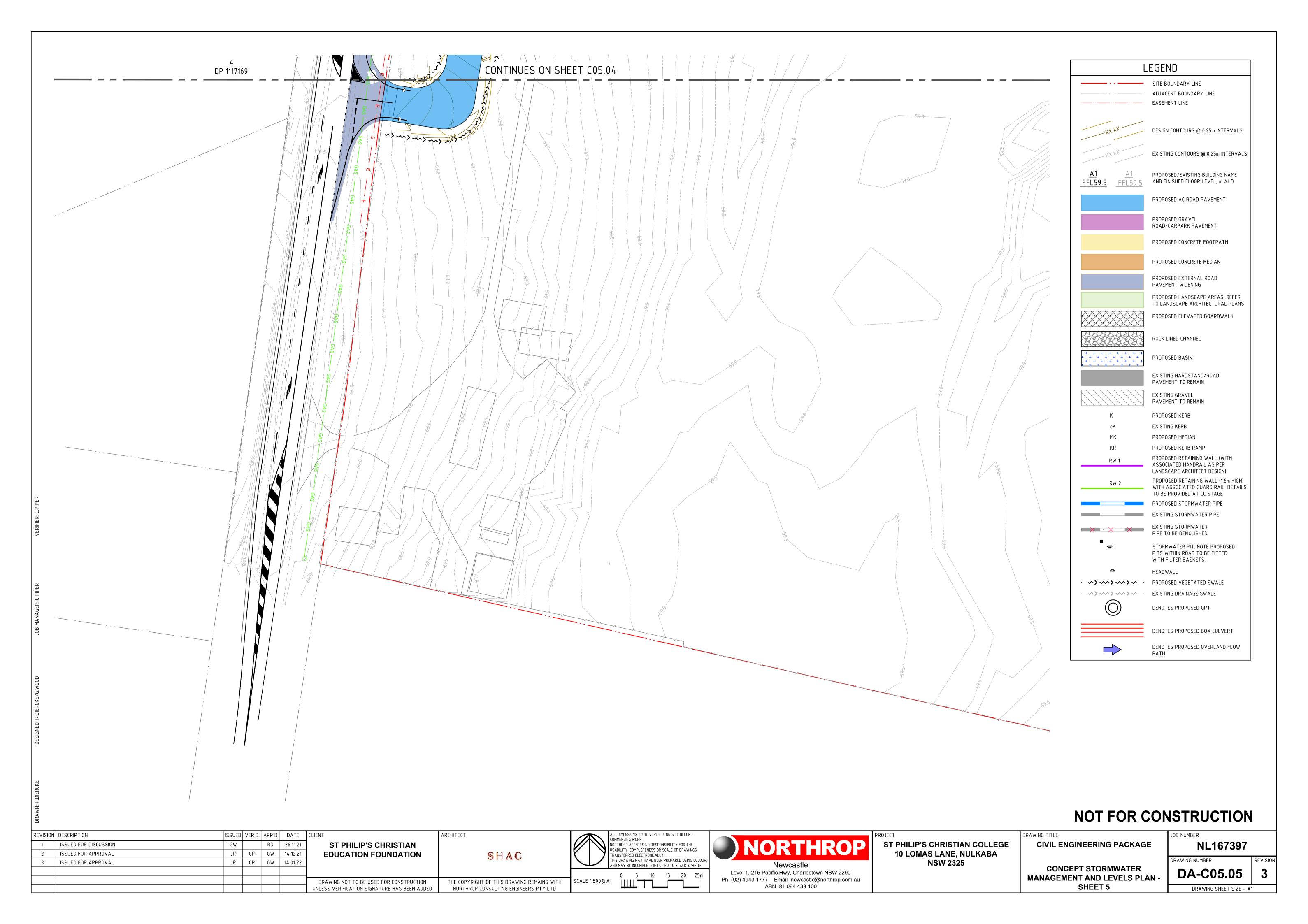


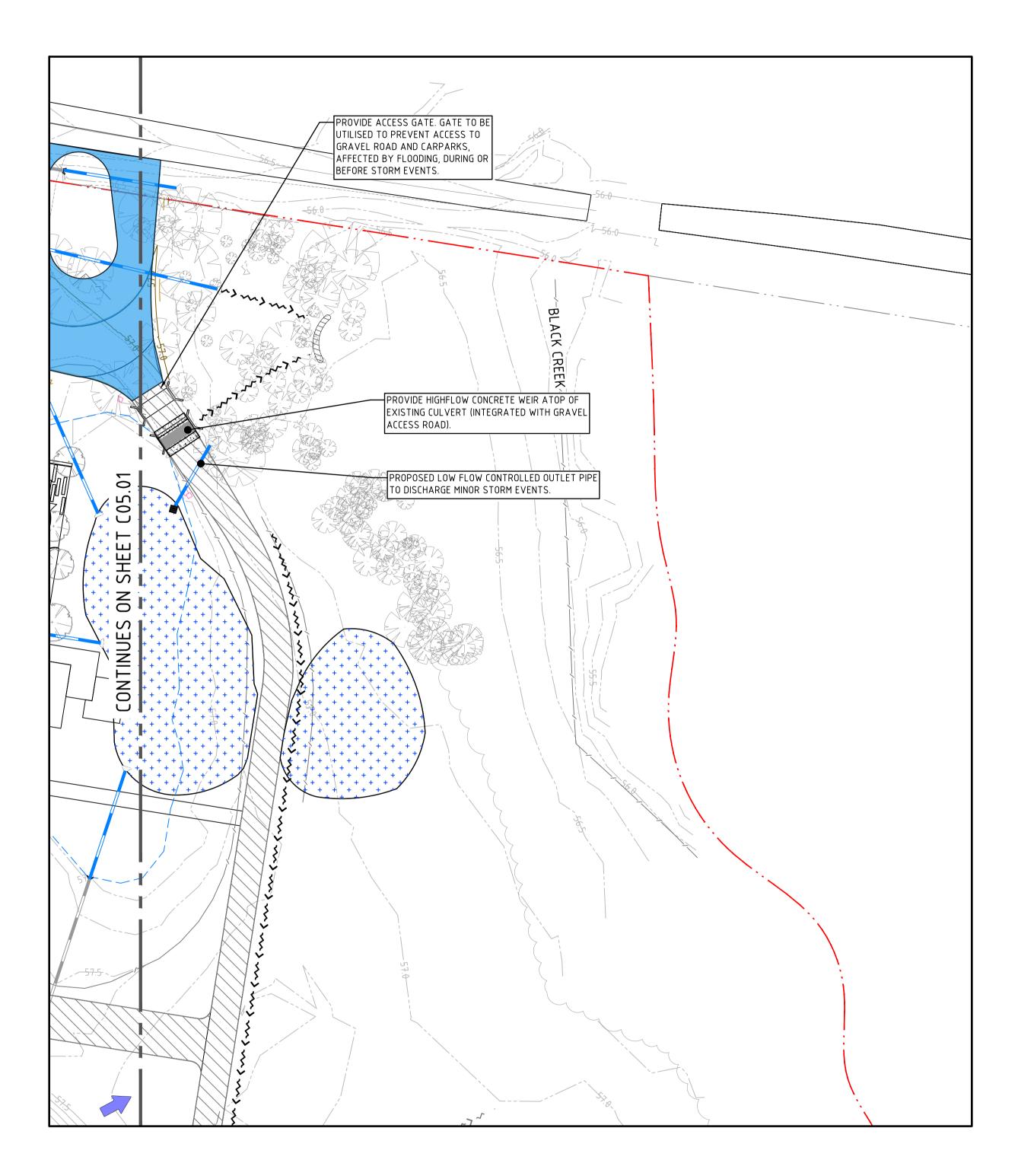


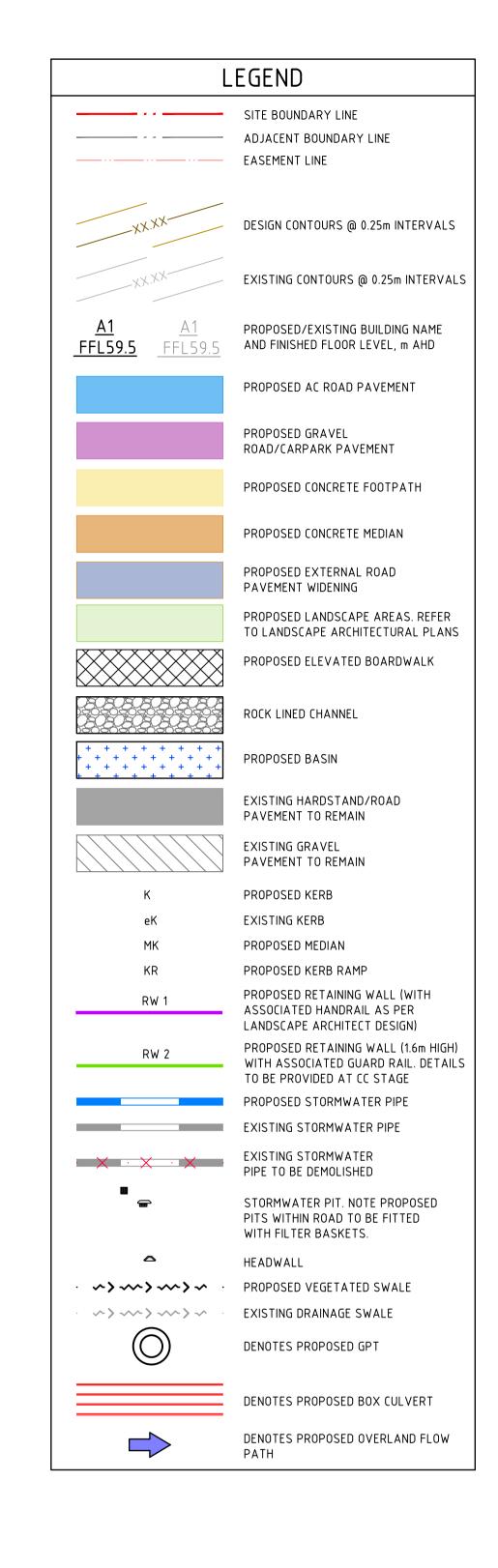






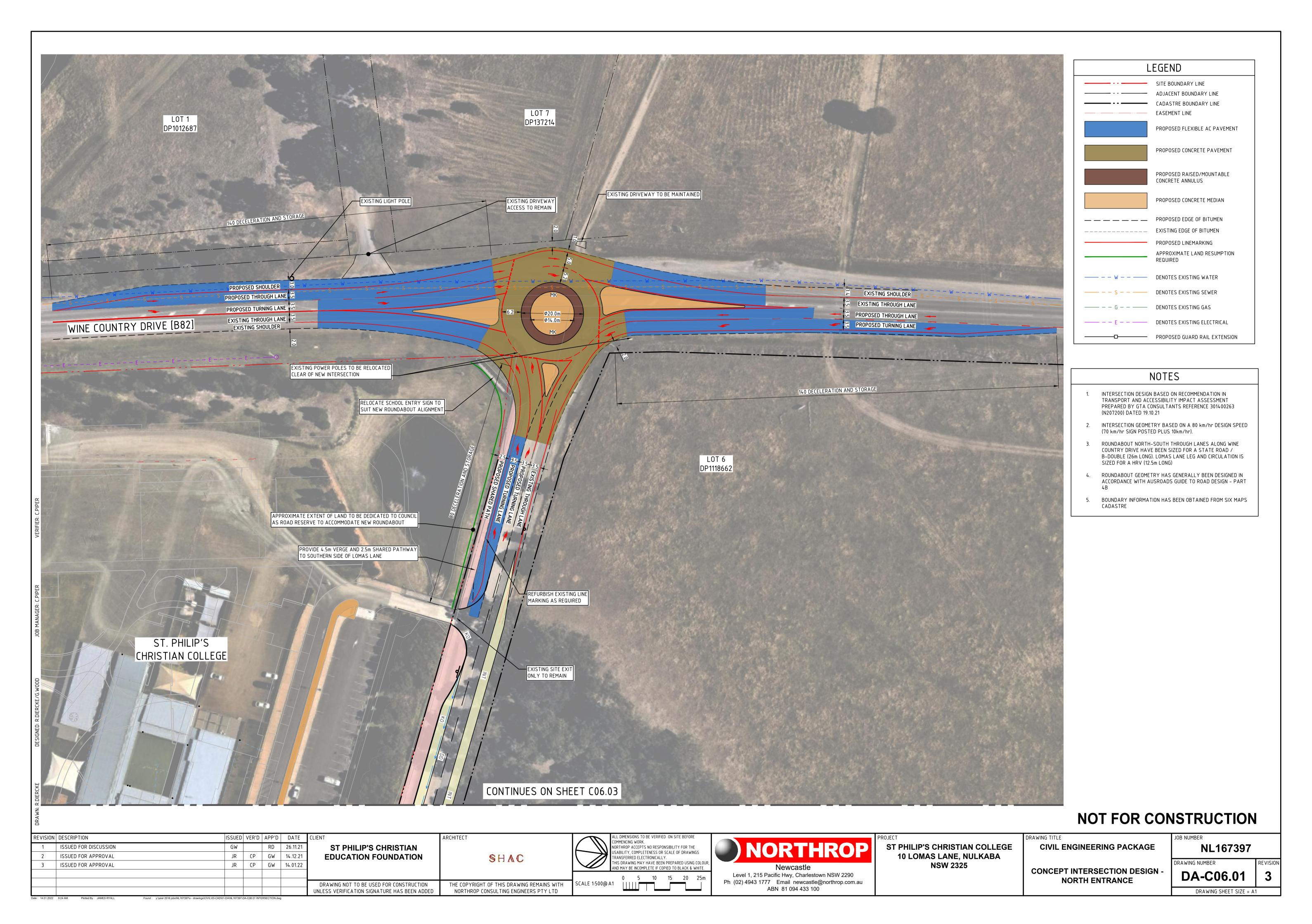






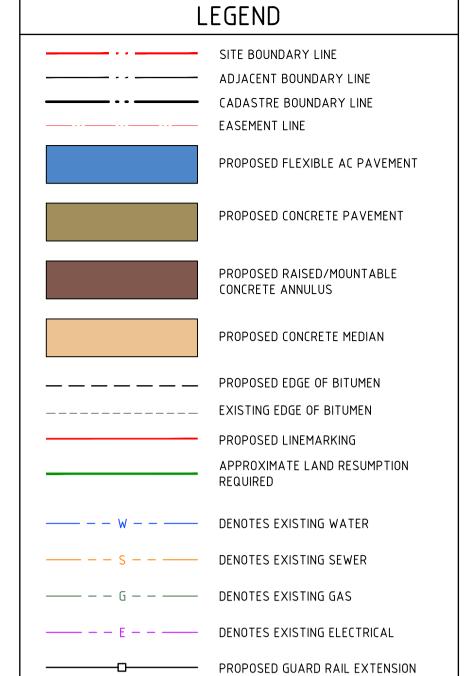
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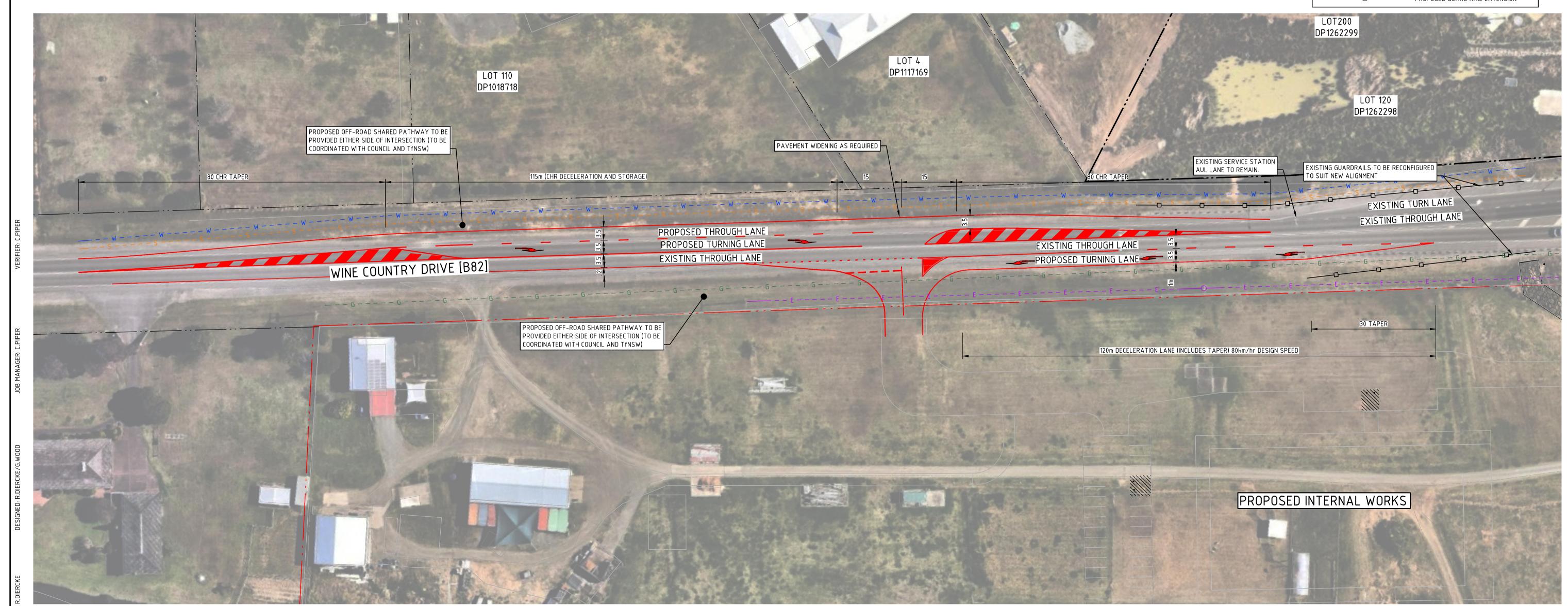
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NOTES

- INTERSECTION GEOMETRY BASED ON A 80 km/hr DESIGN SPEED (70 km/hr SIGN POSTED PLUS 10km/hr).
- 2. CHR LEFT/RIGHT IN AND OUT HAS BEEN SIZED FOR A HRV (12.5m LONG) DESIGN VEHICLE
- 3. INTERSECTION GEOMETRY HAS BEN SIZED IN ACCORDANCE WITH AUSROADS GUIDE TO ROAD DESIGN - PART 4 AND 4A





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| 2 ISSUED FOR APPROVAL | JR CP | GW 14.12.21 | EDUCATION FOUNDATION | SHAC | TRANSFERRED ELECTRONICALLY. | MONTHINOP | 10 LOMAS LANE, NULKABA | |
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| JOB NUMBER | |
|----------------|---|
| NL167397 | |
| DRAWING NUMBER | R |
| DA-C06.02 | |

DRAWING SHEET SIZE = A1



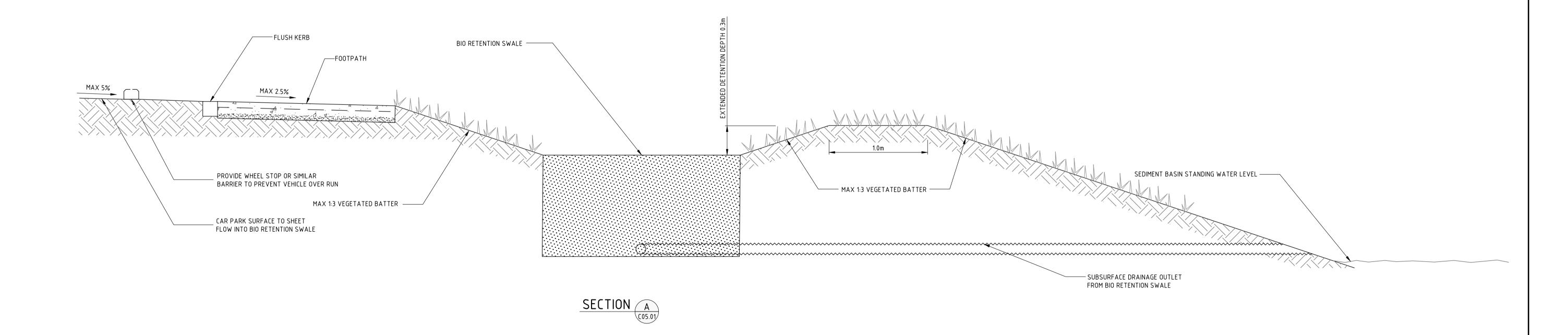
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| REVISION DESCRIPTION | ISSUED VER'D A | PP'D DATE | CLIENT | ARCHITECT | ALL DIMENSIONS TO BE VERII COMMENCING WORK. | FIED ON SITE BEFORE | | PROJECT | DRAWING TITLE | JOB NUMBER | , |
|---|----------------|-------------|--|--|--|--|---|--|------------------------------|------------------------|------------|
| 1 ISSUED FOR APPROVAL 2 ISSUED FOR APPROVAL | JR CP | GW 14.12.21 | ST PHILIP'S CHRISTIAN EDUCATION FOUNDATION | 61146 | NORTHROP ACCEPTS NO RESPONSIBILITY F USABILITY, COMPLETENESS OR SCALE OF | ONSIBILITY FOR THE OR SCALE OF DRAWINGS | NORTHROP | ST PHILIP'S CHRISTIAN COLLEGE 10 LOMAS LANE, NULKABA | CIVIL ENGINEERING PACKAGE | NL167397 | |
| 2 ISSESTON ATTROVAL | | 71.01.22 | EDUCATION TOUNDATION | SHAC | THIS DRAWING MAY HAVE BE AND MAY BE INCOMPLETE IF | EN PREPARED USING COLOUR, COPIED TO BLACK & WHITE. | Newcastle | NSW 2325 | PROPOSED LOMAS LANE UPGRADE | DRAWING NUMBER | REVISION |
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| | | | | | | _ | | | | DRAWING SHEET SIZE = A | . <u>1</u> |

OUTLET PIPE INTERLOCKING ROCK SCOUR PAD DETAIL

WETLAND ROCK SCOUR PAD CONSTRUCTION NOTES

- 1. THE SUBGRADE SHALL BE FREE FROM ROCKS, CLODS, VEGETATION AND IMPRINTS OF ANY SIGNIFICANT SIZE SO THAT THE GEOTEXTILE WILL HAVE DIRECT CONTACT WITH THE SOIL SURFACE
- 2. ENSURE EACH ROLE IS ANCHORED PROPERLY AT ITS UPSLOPE END VIA KEYING UNDER THE CONCRETE KEY.
- 3. LAY GEOTEXTILE IN SHINGLE-FASHION, WITH THE END OF EACH UPSTREAM ROLL OVERLAPPING THOSE DOWNSTREAM. ALL OVERLAPS SHOULD BE A MINIMUM 300mm AVOID STRETCHING OF THE GEOTEXTILE DURING INSTALLATION.
- 4. PLACE ROCK CAREFULLY ONTO THE GEOTEXTILE TO AVOID POSSIBLE RIPPING OF THE GEOTEXTILE. THE PLACEMENT OF SMALLER ROCKS FIRST CAN PROTECT THE GEOTEXTILE FOR SUBSEQUENT LARGE ROCK PLACEMENT. ROCK SHOULD BE PLACED AT A DEPTH SO THAT THE TOP LAYER OF THE ROCK SITS AT OR SLIGHTLY BELOW THE GROUND SURFACE.
- 5. THE ROCK PLACED SHOULD NOT BE SINGLE SIZED, BUT SHOULD BE A WELL GRADED MIXTURE DESIGNED TO ENSURE THAT ALL GAPS BETWEEN LARGE ROCKS ARE FILLED WITH ROCK OF PROGRESSIVELY SMALLER SIZE SO THAT NO SIGNIFICANT VOIDS OCCUR IN THE RIP-RAP BLANKET.
- 6. THE ROCK FOR RIP-RAP SHOULD BE HARD, TOUGH AND DURABLE WITH A CRUSHING STRENGTH OF AT LEAST 25MPA.
- 7. STONE PLACEMENT SHALL BE UNDERTAKEN TO ENSURE ROCKS ARE INTERLOCKED AND NO SIGNIFICANT VOIDS EXIST.



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